

From Technology Transfer to Transformation of Community

**Changing Paradigm and Practice of Agricultural Extension in
Indonesia**

Oleh:
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KATA PENGANTAR

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Acronyms

AARD	the Agency of Agricultural Research and Development
AIAT	the Assessment Institute for Agriculture Technology
Bimas	<i>Bimbingan Massal</i> (Mass Supervising)
DAFEP	Decentralized Agricultural and Forestry Extension Project
FSR	Farming System Research
ICT	Information and Communication Technology
KAP	Knowledge, Attitude and Practice
KEPAS	<i>Kelompok Peneliti Agro Ekosistem</i> (Agro-ecosystem Researcher Group)
LAKU	<i>Latihan dan Kunjungan</i> (Training and Visit)
P4K	<i>Program Peningkatan Pendapatan Petani-nelayan Kecil</i> (Income-Generating Project for Marginal Farmers and Landless)
PRA	Participatory Rural Appraisal
SLPHT	<i>Sekolah Lapangan Pengendalian Hama Terpadu</i> (Aggregated Pest Control Field School)

From Technology Transfer to Transformation of Community: Changing Paradigm and Practice of Agricultural Extension in Indonesia

Dika Supyandi

1. Introduction

It is widely accepted that farmers' performance is affected by human capital¹, encompassing both innate and learned skills, including the ability to process information (Jamison and Lau 1982, cited in Anderson & Feder 2003, p. 1). It is also generally understood that extension is an effort to develop human capital through non-formal education activities (Qamar 2005, p. 7) and communication processes (Leeuwis 2004). Hence, extension, in particular agricultural extension, is a potential process to increase farmers' performance in order to achieve a "better farming, better business, better living, and better community" of farmers (Van den Ban 1999, p. 147).

Experiences from Indonesian agricultural development showed that agricultural extension contributed significantly to several achievements in agriculture sector. Then, progress in agricultural sector has changed Indonesia's status from rice importer to self-sufficient rice producer in 1984 (Martaamidjaja & Rikhana 1996). These experiences developed an assumption that agricultural extension in Indonesia with "4-sa"² approach is a proper method for its agricultural development. However, recent development in extension paradigms convinced that in ensuring sustainability and in order to encourage democratization, particularly in the reformation and decentralization era recently, this approach is completely irrelevant. Agricultural extension should accommodate farmers' aspirations, expectations, needs, potentials and participation, as well as for those to other agricultural development actors.

¹ Coutts *et al* (2005, p. 5) states that human capital basically consists of knowledge, health, skill, competencies and general abilities.

² In pre-reformation Indonesia, agricultural extension paradigm follows a certain "method", namely "4-sa", which consists of four subsequent techniques in delivering extension, i.e. "dipaksa" (be insisted), "terpaksa" (being insisted), "bisa" (able) and "biasa" (used to). These techniques were forced by the government in order to achieve government program in rice self-sufficiency.

This essay will briefly explore several paradigms and issues in agricultural extension and its implications to agricultural extension and development in Indonesia. Furthermore, lesson learned depicted from this development process will be developed in the last part of this essay.

2. Agricultural Extension: A Literature Review

2.1 The Notions of Agricultural Extension in Rural Development

Modern agricultural extension has grown to what may be “the largest institutional development effort” the world has ever known (Jones and Garforth, 1997, cited in Alex et al 2002, p. 41). Studies frequently show significant and positive impacts of extension. These impacts are broadly, from improving agricultural productivity and increasing farmers’ income (Anderson & Feeder 2003, p. 41), developing farmers’ capacity building (Coutts et al 2003, p. 4), supporting the use of the agricultural sector as “an engine of pro-poor growth” and enabling small farmers to meet new challenges (Birner 2005, p. 1), to improving management and health of the world’s forests (Johnson *et al* 2006, p. 34). All of these impacts support the important roles of agricultural extension in agricultural development areas.

In relation to rural development, van den Ban (1999, p. 146) points out that agriculture is reaching the limits of available natural resources. To ensure its sustainability, Van den Ban goes on to argue that:

“...future increases in agricultural production and rural income must derive from intensification, rather than area expansion or exploitation of additional natural resources. Knowledge and related information, skills, technologies, and attitudes will play a key role in the sustainable intensification of agriculture and success of rural development. New technologies and markets offer new opportunities, but require farmers to have better access to information. Globalization increases the demand on farmers to become more competitive and this requires that they have more knowledge on which to base decisions” (Van den Ban 1999: 146-147).

Knowledge, information, skills, technologies and attitudes can be delivered by extension activities. Hence, agricultural extension in rural development is relevant and important. Likewise, success of rural development programs depends largely on decisions by rural people on such questions as “what to grow, where to sell, how to maintain soil fertility and how to manage common grazing areas” (Alex *et al* 2003, p. 2). The complex interaction of these decisions made in rural households will

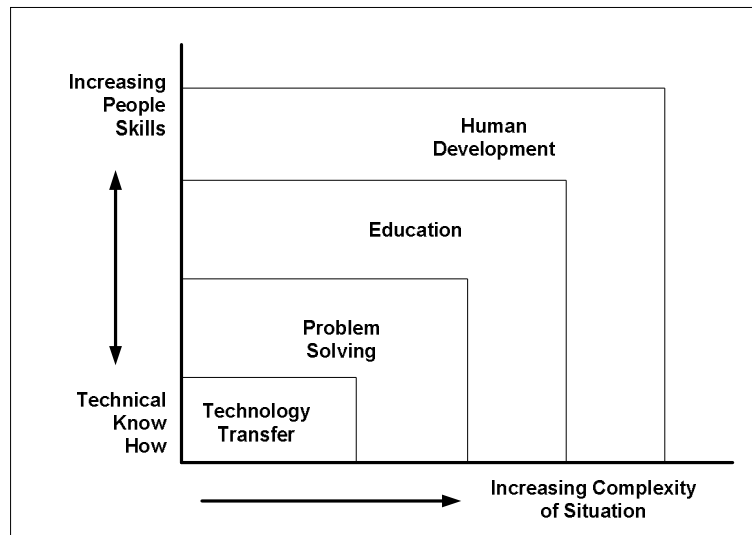
ultimately define the form of future rural development and progress towards reduction of several factors in rural context, such as poverty, food security and environment conservation. Extension services, defined broadly as the rural education and innovation system (Qamar 2005, p. 7), are keys to informing and influencing these rural household decisions.

2.2 Transformation of Models and Paradigms

Two mainstreams in understanding interactive nature of extension between extension agents and those with whom they are working for/with has been conceptualized by Coutts *et al* (1994, pp. 3-4). They point out that these two ends of a spectrum could be labeled “persuasive” extension on one extreme and “facilitative” extension on the other. Coutts *et al* go on to say that, persuasive extension reveals that there is a “predetermined correct course of action” that needs to be used by extension’s targets. Extension is to influence “voluntary” behavior, so that the innovation is adopted by the targets (Coutts *et al* 1994, p. 3). On the other hand, facilitative extension implies that, given the “right conditions, information, mutual interaction and opportunity”, people can develop solutions to problems and take steps in directions that improve their situation (Coutts *et al* 1994, p. 4).

In developing these extension practice characteristics, adopting Bloome (1991) model, in 1992 Van Beek and Coutts developed a framework as a meta-model of extension paradigms (Coutts *et al* 1994, p. 4), which is seen as complementary rather than in conflict, each relevant to different needs and situations. (Bloome 1992, cited in Coutts *et al* 1994, p. 6). This framework consists of four paradigms based on the level of situation complexity where extension held. These paradigms can be illustrated and explained as follow:

Figure 1: Complementary of Differing Extension Paradigms



Source: Van Beek and Coutts's Meta Model of Extension Paradigms (1992)

Technology Transfer

In this paradigm, extension is a means of adoption of new (“externally developed, already available and tested”) technology or management practice by providing information, opportunity and persuasion³, as pro-actively “voluntary change behavior”. The assumption is that solutions to problems have been developed by the scientists or experts, if adopted by farmers or “users”, will improve “farm output and living standards” (Coutts *et al* 1994, p. 5).

Problem Solving

Extension is “reactive experts (advisory/consultancy) function”, a means of assisting individuals to find solutions to technological or management problems arising and inhibiting their expected unit performance. The adoption of new technology/management practices are an indirect, though an unavoidable consequence of this process (Coutts *et al* 1994, p. 5).

³ In this model, the researchers are seen as the principal sources of new ideas and technologies. Research scientists develop technological innovations on research stations that are then transmitted by extension workers, and farmers are expected to adopt those technologies. The principle of the model is one-way flow of improved technologies from researchers through extension to farmers, or a “top-down communication system”. This communication system was based on the theoretical model of *diffusion of innovation* (Lacy 1996, p. 34). Although this model was successful in distributing some “packages” of technologies (seed-fertilizer-pesticide-credit) and has produced dramatic success, it has failed in many areas, particularly in developing countries. It is concluded that “Past approaches considered rural agricultural practice as a largely technical activity, rather than as social praxis” (Cornwall *et al* 1994; Pretty & Chambers 1994; Bawden 1995a, cited in Habibie 2003, p. 21)

Education

Extension is a means of “pro-active informal education” seeking to assist individuals to better understand their situation, and therefore enable them to make choices and take action in improving their situation⁴. The assumption is that an adult education approach (action learning) both assists people to make better choices, and leads to better choices being made (Coutts *et al* 1994, p. 5).

Human Development

Extension is a means to “facilitate and simulate individuals and communities” in taking “the initiative in problem definition and seeking solutions to individual and societal concerns/opportunities”. The assumption is that given the opportunity and interactive framework, individuals and communities will and can best improve their situation. It encourages people to “govern themselves” (Coutts *et al* 1994, pp. 5-6).

2.3 The Recent Debates in Agricultural Extension

Despite past successes and reported high economic rates of return to agricultural extension, extension agencies today cannot continue as “business as usual”. Major pressures driving change in extension programs derive from several aspects. In this part, these aspects will be explained concisely.

2.3.1 Privatization

The role of government in conducting extension is started to be questioned (Kidd *et al* 1999, p. 95). There are several reasons underpinning this phenomenon. Firstly, public extension services are often criticized being inefficient⁵ and ineffective; lacking clear objectives, less motivation and low incentives; poorly managed and not accountable to clients; and lacking relevant technologies (Haug 1999, cited in Alex

⁴ The goals of extension include the transferring of knowledge from researchers to farmers, advising farmers in their decision making and educating farmers on how to make better decisions, enabling farmers to clarify their own goals and possibilities and stimulating desirable agricultural developments (van den Ban and Hawkins, 1996, cited in Anderson & Feder 2003, p. 1).

⁵ Even where public financing of extension is justified, Anderson & Feder (2003: 10) state that private service delivery is often more efficient in serving clientele. This leads to strategies for contracting extension services linking funding from service delivery, which seek to reduce costs and improve cost-effectiveness of public extension services, but most current reforms go further and attempt to draw on private sector funding to improve financial sustainability of extension.

et al 2002, p. 5)⁶. Moreover, Alex *et al* state that, public extension services have low coverage, less accountable and less involved farmers from influencing extension agendas. Secondly, since farmers profit from extension advice and the government budgets for public services are decreased, the cost of delivering this advice should be recovered by charging a fee from the clientele (Qamar 2003, p. 24)⁷. Thirdly, as the private sector is actively involved in selling farm inputs and machinery, they should also advise farmers on agricultural matters as they are supposed to be more efficient than the public sector⁸. Lastly, healthy competition among service providers will lead to better quality and less cost. There have also supported the idea that delivery of extension services separately, to be performed by two different sectors, i.e. public and private (Qamar 2003, p. 24).

2.3.2 Decentralization

The decentralization of extension services keeps the public delivery and public funding characteristics of traditional centralized extension, but transfers the responsibility for delivery to local governments. This was expected to improve extension agents' incentives, and induce better service. Some advantages may also be realized in coordinating extension advice with activities of other agencies, as presumably the costs of coordination are lower for local agencies operating in a smaller geographical area. There may also be better political commitment as the clientele is closer to the political leadership.

⁶ Similar to this opinion, Qamar (2003: 23) points out that the underlying reason is the decreased budgets of governments and "business-as-usual" attitude of government employees makes the public institutions inefficient, less productive, causing financial losses and creating dissatisfaction among people. The private sector, on the other hand, has more resources, innovative ideas, and a motive for profit, and is more keen to offer efficient and better services to its clientele.

⁷ The economic rationale for farmers to pay for extension services is generally clear and the trend toward such user payment is well established in OECD countries. In developing countries, many producers are unable or unwilling to pay for services as they have not seen examples of effective, responsive extension (Marsh and Pannell, 2000, cited in Anderson & Feder 2003: 10). In deriving this phenomenon Qamar (2003: 24) states that the small farmers do not believe that the extension advice is worth paying for, or they simply cannot afford to pay. The common wisdom is that in developing countries, commercial farmers and large cooperatives should pay for extension advice while the government should provide extension services to small producers free of charge (Anderson & Feder 2003: 20; Kidd *et al* 1999: 97).

⁸ A sort of private sector involved in agricultural extension is input producers, such as fertilizer or pesticide producers. In order to sell their products to farmers, they also delivered extension activities. Regarding this situation, Schwartz (1994: 1) states that extension by commercial companies has commonly been associated with input supply and with their ability to capture part of the benefits of extension through input or output markets.

According to Swanson & Samy (2002, pp. 3-4), there are three major factors involved in the decentralization process, namely first, transferring specific decision-making functions to local people, second, public participation factor, and third, local government involvement. Moreover, they point out that the key elements of success in decentralization process are legal framework, stakeholder participation, strengthening management capacity, improving technical capacity, operational level funding and accountability (Swanson & Samy 2002, pp. 8-10).

Another variant of decentralized extension is the devolution of extension functions to farmers' associations, rather than to local governments (Anderson & Feder 2003 p. 18). Anderson & Feder go on to say that this format has a greater impact on accountability, as the employer represents even more closely the clientele, and thus the incentives for higher quality of service are better. There is also a better potential for financial sustainability, as the farmers' association that provides the public good is better able to recover costs from its members, although typically government funding is also provided to the associations.

2.3.3 Information Technology Revolution

In general, extension organizations in developing countries have two major problems when it comes to having face-to-face contacts with the farmers and researchers: first, physical distances and the second, lack of transportation facilities (Qamar 2003, p. 26). Qamar goes on to argue that information technology can bypass these physical barriers to a great extent through the development and application of appropriate, interactive information mechanisms⁹. Information technology is already developed in the area of rural and agricultural development. The use of computer and cellular phones is a routine practice and the equipment is being used for rural development projects in several developing countries, such as Bhutan, the Philippines and Bangladesh (Qamar 2003, p. 26). Moreover Qamar states that the main issue is how the powers of advanced information technology

⁹ Richardson (2006: 6-7) states that ICT intervention generally will improve the efficiency and effectiveness of agricultural extension, which ultimately will contribute to rural poverty reduction. In addition, he points out the trend in using ICT globally, particularly in supporting and facilitating emerging models of demand-driven extension (Richardson 2006: 10)

are beneficial for both extension agents and farmers without decreasing the importance of unique local factors as a source of local wisdom, such as indigenous communication patterns and without replacing the extension agents.

2.3.4 Knowledge-Intensive Agriculture

In agricultural sector, increases in productivity will come from more efficient use of inputs and technology will be customized to specific groups of farmers. Byerlee (1994, cited in Alex *et al* 2002, p. 3) states that innovation will require more knowledge and information input from extension services with information transferred in an educational rather than directive approach. Extension will have to respond to specific farmer requests for information rather than pushing “pre-determined technology packages” (Habibie 2003, p. 21) and must provide local specific recommendations rather than technology messages marketed for large different regions.

2.3.5 Addressing Environmental Issues

Environmental protection and sustainable management of natural resources are increasingly important objectives for agricultural extension. Major rural environmental issues include: conservation of natural resources land, water, and forests; conservation of biodiversity and improved protected area management; pesticide safety and residue minimization; livestock waste management; water quality preservation and watershed protection; and food safety (Alex *et al* 2002 pp. 4-5). Sustainable agricultural intensification and responsible management of natural resources require extension services to draw on agricultural science and technology, as well as on socio-economic skills needed to guide change in attitudes and local and national institutional arrangements for natural resource management.

2.3.6 Client Participation

The importance of stakeholder participation is a significant trend in the recent times. A large number of strategies have evolved in order to ensure participatory decision-

making and involvement of all stakeholders in joint planning and implementation¹⁰. This powerful trend towards involving farmers in decision-making has led to the development of several approaches such as *participatory farmer group extension*, *client-oriented extension*, *gender-sensitive extension*, *research extension-farmers linkages*, and to the development of participatory tools like *PRA* (participatory rural appraisal) and *KAP* (knowledge, attitude and practice) survey (Qamar 2003, p. 25). The advocacy for *empowering farmers* has also increased tremendously.

3. Agricultural Extension in Indonesia

In order to understand agricultural extension in Indonesia, previously we have to understand the “paradigm shift” in Indonesian agricultural research and development. Habibie (2003, p. 12) points out that the “paradigm shift” is a scientific revolution brought about by the “conversion” of the research community. Therefore, the change of paradigm from one to another is a matter of “conversion”, and it reflects a commitment to new values and beliefs in particular ways of interpreting reality.

There has been a scientific revolution in agriculture research and development in Indonesia, from its commodity-based approach of the 1970s to the present application of a farming systems approach that is concerned with benefits to smallholder farmers. Beginning in the early seventies, the research objectives were focused on “maximizing yield”. Then, they moved to focus on “maximizing farm income, crop-livestock systems; rice-fish systems and the enhancement of farm family welfare” in 1980; and most recently, to sustaining a natural resources base through low input use, such as integrated pest management (Rolling & Van de Fliert 1998, cited in Habibie 2003, p. 12). In addition, it was introduced the concepts of greater involvement of farmers and extension workers in undertaking research, such as the linking of on-station research, on-farm research and farmer participatory experiments.

¹⁰ Garforth (2004: 3) points out the idea of “demand-led extension” explaining that the information, advice and other services offered by extension professionals should be tailored to the expressed demands of the clients or recipients of the service: not just to their “needs” as identified by various stakeholders (government, corporations, scientists, extension professionals), but “the things they say they want”.

In relation to agricultural extension in Indonesia, this “paradigm shift” plays an important part in the change of Indonesian agricultural extension worldview, methods and practices. Habibie (2003, p. 18) argues that this change was due to the failures of technology transfer in ensuring sustainable agricultural production. Moreover, she goes on to say that, the current paradigm has shifted from “expert control of knowledge generation”, to “increasing the capacity of local stakeholders to learn and adapt to complex and changing situations” (Habibie 2003 p. 19). Furthermore, she compares the “technology transfer” model with the “farmer participatory model” and the “model of participatory action research”¹¹.

¹¹ Habibie divided research approach in agricultural extension into three models, namely “transfer of technology”, “farmer first” and “beyond farmer first”. Transfer of technology is characterized by diffusion of innovation model; dominant power of professionalism; teacher and trainee relationships; passive recipients of package and hard system approaches. Farmer first (farmer participatory model) is characterized by “common” goals, interests and power among farmers and communities; farmer involvement in planning and implementation; reactive respondent; passive participants and hard systems research. On the other hand, beyond farmer first (model of participatory action research) is characterized by “differentiated” interest and goals, power, access to resources between actors and networks; bridging, accommodation, negotiation and conflict mediation between different interest group; active participants and soft-systems learning and action research (Habibie 2003, pp. 23-24). Eltayeb (2005, pp. 21-24) adds another model, namely “sustainable extension model” stressing to ensure that information and the systems that support its generation and dissemination are responsive to the needs of those involved in decision-making.

3.1 Agricultural Research Paradigms

The following explanation describes agricultural research paradigms in Indonesia from times to times.

3.1.1 1960s: Maximizing Rice and Non-Rice Yield

In the 1960s, the focus of agricultural research was on maximizing production, particularly rice yield (Habibie 2003, p. 14), in order to fulfill the need of rice as a staple food (Feder & Savastano 2006, p. 8). In addition, the scientists were encouraged by the green revolution, which develops “miracle” seed, to focus their research on increasing the rice yield per unit of land. As a result, farmers increased yield two or three times higher than traditional varieties. However, critique came up because this achievement only influenced “irrigated rice land”, which leads to the fail in achieving equity. Moreover, this equity was also fail to be achieved due to the complexity, diversity and variability of farmer conditions were ignored by the green revolution (Chambers & Ghidyal 1989; Chambers 1992, cited in Habibie 2003, p. 14).

3.1.2 1970s: Maximizing Crop Yields

In spite of the focus of research was similar to that in the Green Revolution era, during this period, the research shifted from laboratory research (on-station research) to the farmers’ field, which had the same environments as the experimental station (Habibie 2003, p. 15). In explaining the situation in this period, Habibie states that:

The introduction of high yielding, short maturing rice varieties and the use of better cultural management practices enabled farmers to grow additional crops before and after rice. Cropping systems research was designed to evaluate new varieties (rice and non-rice) and to improve cropping patterns and management practices. The methodology focused more on component technology such as fertilizer rates and cultivation techniques, which were designed, managed and implemented by researchers or farmers. In fact, this period was heavily dominated by agronomic interests. (Habibie 2003, p. 15)

3.1.3 1980s: Farming System Research, Maximizing Farm Income

In this period, scientists realized that the increase of small farming households did not only deal with rice production alone but rather with combinations or mixtures of

enterprise such as livestock, fish and agro- forestry (Habibie 2003, p. 15). Hence, in this period, livestock as a component of research was begun to be inquired. In Indonesia, farming systems usually consist of smallholdings with interacting crop and livestock subsystems.

Owing to the complexity of farming systems, the adoption of a systems perspective in the interaction among activities is needed. Therefore, AARD recommended the use of Farming System Research (FSR) as an approach to doing on-farm research to benefit smallholder farmers. Scientists from different disciplines work as a team to understand a farm as an integrated system, than study separately within that system. In 1982, AARD established the research group, namely KEPAS (*Kelompok Peneliti Agro Ekosistem*) consisted of researchers from AARD and major universities (Habibie 2003, p. 16). This idea is an interdisciplinary research effort in order to achieve a consistent result across the physical, biological and socio-economic aspects of a farming system.

3.1.4 1990s: Farming System Research, Resources and Community Based

The improvement of family welfare in relation to agriculture was considered an important issue which needed to be addressed in this period. Therefore, AARD was to establish the Assessment Institute for Agriculture Technology (AIATs) at the provincial level with aims to:

1. Accelerate agricultural technology transfer
2. Provide technology services to local people, and
3. Improve optimization of research resources utilization in the region (AARD 1995, cited in Habibie 2003, p. 16).

The reasons behind the establishment of AITAs came from the over-centralization and commodity-focused research occurring within AARD. Although these represented a shift in research focus and objectives, the solution to farmers' problems was seen still in production-oriented research, in which extension workers assumed that the best solutions came from the scientists alone. In addition, the management of agricultural research and extension linkages depends mainly on AARD supervised institutes and is still largely a "top-down approach" (Agbamu 2000, p. 3).

3.2 Agricultural Extension Practices

The following explanation describes the change of agricultural extension practices from times to times. In Indonesia, agricultural extension has developed by several stages. Chronologically it can be categorized as colonization era 1817-1945, independence era 1945-1999, and transition era from 1999 to present and subsequently the period is called agricultural extension system on decentralization era (Jamil 2003, p. 9).

3.2.1 The Colonization Era

During the Dutch colonization, The Department of Agriculture Extension (“Landbouw Voorlichtings Dienst”) has experienced growths in each period of political system, which showed a pattern of agriculture extension activities. Since the development of the Great Garden of Bogor in 1817 until year 1901 “etiesche” politics, idea was spread by regional leader, technician (extension) as adviser for governmental agencies, and extension function was done by non extension agent (Darham 2001, cited in Jamil 2003, p. 107). Darham goes on to say that until the colonization of Japanese command (1942-1945), the role of extension agent was primarily in socializing irrigation management, transmigration and education for society of farmers and rural citizens. Extension was not really conducted, but only pushed for executing the farm management to fulfill the food reserves for war period (Darham 2001, cited in Jamil 2003, p. 107).

3.2.2 The Independence Era (1945-1999)

In the period of 1945-50, extension was re-organized in the development sector, conducted by local agents. However, the environment was not very conducive due to the independent war and physical revolution. In the year 1950-60, the agricultural extension system was again re-organized on an education pattern with the “oil drop” method, through developed farmers and contact farmers (Indonesian People Representatives Board 2006). This was one of the major efforts aimed at increasing agricultural production. The extension activity at that time was in the form of discussions in the evening followed by meetings in the village hall on a weekly

basis. Weekly farming courses for adult, young and woman farmers have been also delivered.

In the year 1960-70, agricultural extension was organized on the "Commando Pattern". The system of oil drop was replaced by "system command" forcing the farmers to use fertilizers and new variety of seeds and the package of practices, particularly in the paddy crop. at national level and the farmers were convinced about the use of new technology.

During 1970-99, the goals of agriculture development in general and agricultural extension in particular were redefined to achieve self-sufficiency in food, particularly, rice. With the introduction of LAKU/"Latihan dan Kunjungan" (Training and Visit) system, the focus of agricultural extension was on contact farming method¹² and educational tools like discussion with subject matter specialists (SMSs) and farmers on regular basis were held at the village level. The print media and radio were also used to reach farmers. The pattern of agricultural extension continued to be top down (Jamil 2003, p. 107). Training and Visit system dominated the method, particularly in rice producer's areas. The aim of this project is to disseminate farming technology system, knowned as "Panca Usaha" (five efforts in agriculture) and "Sapta Usaha" (seven efforts in agriculture) (Indonesian People Representatives Board 2006). In this period, agricultural extension officers have been trained to teach farmers and to deliver previously arranged recommendations in technology package models. In this system, farmers were only technology users developed by research institutes.

3.2.3 Transition Era (1999-now)

In this period, the training and visit system have decreased, when many farmers were unsatisfied with the system. Agricultural extension officers were not positioned as information sources anymore in order to help farmers solve their agricultural farming problems. Furthermore, the government developed participatory agricultural extension approaches, such as "Sekolah Lapangan Pengendalian Hama Terpadu/SLPHT" (Aggregated Pest Control Field School) model, DAFEP, P4K and Delivery Models (Indonesian People Representatives Board 2006). This is the

¹² This method has been implemented in many developing countries, such as Kenya (Gautam 2000, pp. 17-19)

period of transition of agricultural extension from training and visit system to decentralization with restructuring of extension institutes in the area as according to the needs of farmers. This was in accordance with Code/Law No. 22 of Year 1999 about Governance of Area and Code/Law No. 25 of 1999 about Monetary Counter balance Centre Area (Jamil 2003, p.107). Each autonomous area had its own authority to arrange its governance and organization including extension institute in the area and also to maintain and strengthen the extension institute on its own. There is no uniform agricultural extension pattern such as those, which were practiced during the centralized era. Therefore, the agricultural extension system has experienced a series of changes since pre independence period to its present decentralized form. Now it is moving towards demand driven and farmer responsive extension system (Jamil 2003, p. 108). However, the extension system in Indonesia is complex currently and the transition era, and it needs an ideal adjustment that fit to each of the region conditions or local characteristics.

4. Experiences of Agricultural Extension in Indonesia: Performance and Obstacles

Agricultural extension, commonly accepted, plays an important part in rural development in Indonesia. In spite of its paradigm shift in delivering extension, several success stories have been achieved during periods in rural development history, even though it depends on paradigm used in each period.

4.1 Performance and Obstacles

In the period of 1950-60, several major efforts were aimed by the extension at improving land, such as ground processing, seed technology improvement, irrigation, eradication of pest and crop disease and improving overall crop yields. In the period 1960-1970, the system had its own drawbacks and did not achieve the desired goals. On the other hand, in the year 1963 the experiences of IPB (Institute of Agriculture, Bogor) demonstrated through its pilot project the success of delivering agricultural extension purely through education and technological excellence, without following any coercive means. With the demonstration method, the yield reached desired levels much over the average yield (Indonesian People

Representatives Board 2006). However, several parties admitted the success of the programs in delivering agricultural technologies in order to overcome rural poverty and food insufficiency in Indonesia, particularly in several poor areas. In responding Bimas program, a senior agricultural officer in the end 1964 stated that “this is the first government program ever that has led me to hope that we have begun to solve the food production problem” (Roekasah & Penny 1967, p. 1).

In the year 1970-99, as one of the most rice consuming countries in the world, Indonesian success to achieve rice self-sustainability in 1984 was a significant achievement (Martaamidjaja & Rikhana 1996). It is commonly accepted that, in several countries such as Indonesia, rice is not only an economic entity but also a political entity. Rice has an important role which is potential to disturb a government power. Once the government cannot fulfill people’s need in rice sufficiency, its credibility is threatened. Hence, from the incumbent government point of view at that time, agricultural extension was very successful in supporting their power in governing Indonesia.

In the beginning of transition era, several disputes regarding the role of central and local government were happened. The freedom “euphoria” syndrome is the common phenomenon, which results in a disorganized program in conducting extension. This was actually a type of change, which surely experiencing reaction or respond (Gillard 2004). Unfortunately, the responds at that time were not in the good direction. However, as stated by Jamil (2003, p. 108), the system has adopted the changing situations in the world including globalization, cultural change of social arrangements, growth of science and technology, decentralization, privatization and continuous developments on every front.

In general, according to Indonesian People Representatives Board, in their draft to the Law of Agricultural Extension (2006), several problems in conducting agricultural extension in Indonesia are identified as follow, firstly, there were different perceptions regarding agricultural extension between central government and local governments. Secondly, agricultural extension was conducted through approaches, working systems and methods which are inappropriate with participatory development paradigm. Thirdly, diverse local agricultural extension institutions had different and own agendas. Fourthly, agricultural extension had not protect negative effects of suggested technological implementation, socially and environmentally and

lastly, there were less farmers, NGOs and private sectors involvement in agricultural extension programs.

4.2 Lesson Learned

There are several lesson learned which can be depicted from agricultural extension paradigms and practices in Indonesia, as follow:

4.2.1 Agricultural extension is a tool for community development

UN (1995) as cited in Braden and Mayo (1999, p. 192) states that community development is 'a process designed to create conditions of economic and social progress for the whole community with its active participation'. In implementing its action, community development should rely on the capacity and initiatives of relevant groups and local communities to identify needs, define problems, and plan and execute appropriate courses of action (Campfens 1997, p. 24). Moreover, even though there are disputes in the definition, participation must be enhanced and always be maximized (Ife and Tesoriero 2006, pp. 145, 151). In the current development of agricultural extension paradigm, we observed that the understanding into farmer participation, building farmer capacity, valuing local knowledge have been involved in agricultural extension practice principles. Therefore, based on the definition of community development, we can conclude that agricultural extension is a tool for community development.

4.2.2 Agricultural extension involves non technical aspects in agricultural and rural development

The importance of "multidisciplinary, integrated, and holistic" approach to development is now an undisputed fact (Qamar 2003, p. 26). In this approach, technical aspect is only a part of the holistic perspective beside social, economy, environment aspects, and so forth. In addition, agricultural extension will also develop social capital among farmers. There are three dimensions to social capital (Gittel and Vidal, 1998) as cited in Kay (2005: 166), namely 'bonding' social capital within a group and organizations; 'bridging' social capital, which allows network creatively with other individuals, groups and organizations and 'linking' social capital,

between different levels of power or social status. Is that there may be valuable to be carried out on the connections between social capital and participation process.

Involving only technical aspect will only develop farmer capacity technically in order to achieve technological diffusion and production target in the short time. However, in ensuring farmers' welfare and farmer community's cohesion, other aspects, such as social aspects that will develop social capital, will be needed. Agricultural extension undoubtedly has to involve all aspects in community development, not only the technical aspect solely.

4.2.3 Agricultural extension/education is an empowerment process.

People empowerment is based on people's abilities to understand their problems and to have the capacity to overcome these circumstances (Friere 1985, cited in Kingsbury 2004, p. 227). This empowerment insists for "autonomy in the decision making", "local self-reliance", "participatory democracy", "experiential social learning" (Friedman 1992: vii, cited in Kingsbury 2004, p. 221), resources, "opportunities", "vocabulary", "knowledge" and "skill" (Ife 2002, p. 208). Moreover, Laverack (2005, pp. 5-6) mentions the nine 'domains' of people empowerment, namely "improves participation" "develops local leadership", "increases problem assessment capacities", "enhances the ability to 'ask why'", "builds empowering organizational structures", "improves resource mobilization", "strengthens links to other organizations and people", "creates an equitable relationship with outside agents" and "increases control over program management".

Again, we observed that all principles of empowerment process have been involved in the principles of contemporary agricultural extension. Several participation tools such as PRA have been encouraged to be used in agricultural extension activities. Similarly, decentralization is a tool to deliver autonomy in decision making and to increase accountability and representation as well. In this perspective, we are convinced that agricultural extension is an empowerment process.

4.2.4 Agricultural extension/education is a tool for sustainable development process and in environmental management.

While the development is a part of new social, economic, and political order, its structure and process must be sustainable (Ife 2002, p. 202). Moreover Ife (2002, p. 202) says that community development activity must be in the framework of sustainability. On the other hand, the failure in sustainability can be caused by “top-down” approach in decision making process (Kingsbury 2004, p. 222). Moreover, in ensuring sustainability, physically community development should aim to minimize dependence on non-renewable resources, and to substitute these with renewable resources (Ife 2002: 202).

The “top down” approach in agricultural extension has been left years ago. Agricultural development actors have realized that top down approach will not ensure sustainability of agricultural development results. Involving farmers since the planning process is one of the efforts in ensuring this sustainability. Likewise, environmental issues have been increasingly important in agricultural extension. Hence, in the recent agricultural extension paradigms and practices sustainability will be maintain across the physical, biological and socio-economic aspects of the farming system. Hence, statement that agricultural extension is a tool for sustainable development process and in environmental management can be accepted.

5. Conclusion

Changing paradigms and practices in agricultural extension have been happened in Indonesia. Started from technology transfer paradigm, which was very “positivist”, “hard system” and neglected people participation to the new era of decentralization in order to transform the community, which based on “sustainable extension model” characterized by very “interpretivist”, “soft system” and lots of people participation. This changing paradigm underlies the practices of agricultural extension in Indonesia. As a result, from several aspects, agricultural extension in Indonesia has changed follows this shift of paradigm.

Nevertheless, all of this change was not a simple and short process. Global consciousness regarding several aspects, such as democratization and environmental consideration is a driving force encouraging the change in extension practices in Indonesia. Likewise, internal conditions, such as reformation process,

were also factors accelerating the change. Similarly, lesson learned from failures in the previous period remind agricultural development actors to change their approach in conducting development. Hence, this change was a complex and (sometimes) an erratic process. This change was a long process, experiencing a lot of failure, consumed lots of cost, and sacrificed a lot of efforts. Hitherto, Indonesian agricultural development has found the best way in participatory approach extension system. The system which could be reviewed and be revised as it experiences the fail in the future.

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