INSTRUMENTS OF AGRI-ENVIRONMENTAL POLICY TOWARDS SUSTAINABLE AGRICULTURE

EXPERIENCE FROM THE NETHERLANDS AND FRANCE TO BE A LESSON LEARNED FOR INDONESIA

THESIS

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ABSTRACT

Sustainable agriculture nowadays becomes a widespread consensus in managing environment and agriculture. In the Netherlands and France, the commitment to achieve sustainable agriculture is strong, not only because they are dictated by the EU direction but also because their government and society have high awareness to environment. In Indonesia, sustainable agriculture is still growing implemented in many field of development. Yet nowadays Indonesia still faces a dilemma in performing sustainable agriculture. Its agriculture is still concerned to high production to feed its huge number of population which and the same time agriculture has to avoid environment deterioration. Some launched initiatives still need to be improved. Policy instruments should be carefully selected. Learning from the Netherlands and France experience, in dealing to some similar constraints to Indonesia's in achieving sustainable agriculture by implementing certain policy instruments, will be a useful lesson for Indonesia to get closer to sustainable agriculture. This study is mainly aimed to get lessons for Indonesia from the Dutch and French experience of their agri-environmental policy instruments for sustainable agriculture.

This study explores about three kinds of existing instruments of agri-environmental policy towards sustainable agriculture in the Netherlands and France: economic instruments, regulatory instruments, and voluntary instruments. The same exploration is also accomplished for Indonesia case to recognize the existing instruments and by considering the Dutch and French experience, the study searches the opportunity to impalement other types of instrument can be applied.

The result of this research show that the most common used policy instruments for sustainable agriculture in Indonesia is regulatory instrument which is still more copying and adopting regulations from other countries. It is important for Indonesia to take into account the pre-condition for implementing such policy instruments, adapting to Indonesian characteristics. And furthermore it has to be understood that the success of sustainable agriculture depends on, not just on the motivation, skill, knowledge of individuals of farmers, but on action of collective communities as a whole. Learned from the Dutch and French experience, coordination inter-agency (both governmental and non governmental agency) and farmers' participation are key success for setting good conditions for achieving sustainable agriculture.

Key Words: Sustainable agriculture, agri-environmental policy, policy instruments, the Netherlands, France, Indonesia

PREFACE

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I dedicate this thesis to my father, mother, and my sisters: Rita Febriani, Mariam, Sovi Carolin, and Chici Adhariyanty.

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CHAPTER 1
INTRODUCTION

This chapter elaborates the research design which consists of Background, Objectives, Research Questions, Methodology and Structure. The Background describes general review about the importance of sustainable agriculture and policy instrument on sustainable agriculture. Then it also explains generally about the Dutch and French agriculture and their attempts for more sustainable way in agriculture. The Objectives underline the purpose of the study. Research Questions section provides questions as guide for the study findings. Scope of the research makes the research more focused. The methodology section describes how this research is conducted. The structure of research explains the emphases of each chapter of the study.

1.1 Background

Agriculture is the oldest type of environmental management by humans. Agricultural activities generates a range of environmental benefits including aesthetic value, recreation, water accumulation and supply, nutrient recycling and fixation, soil formation, wildlife protection and flood control, and carbon sequestration by trees and soil. However, major changes in farming practices in the past forty years have brought new pressures to bear on natural resources. To meet increasing food demands, agriculture has been evolving in general through an industrialization process characterized by farming practices using more chemicals, machinery inputs and knowledge. Technological and economic developments have given rise to a marked increase in productivity (more output per unit of land or labor). Moreover, for many decades, agricultural policies in some countries have encouraged the expansion of commodity production as a response to increasing population growth. Agriculture has intensified and intensification has in turn increased pressure on the environment. These developments have contributed to a wide range of environmental concerns.

The relationship between agriculture and the environment is indeed not static. The history came up with past civilizations flourished which was at the same time eventually partly declined environment as a result of lack of proper management of their respective environments.

Sufficient attention then must be devoted to the good management and conservation of the environment so that increased resources can be produced at a minimum cost and the risk to the survival of future generations can be minimized. Rational and awareness sustainable exploitation to the natural resources is inevitably needed to avoid irreplaceable and probably irreversible damages to environment. Efforts to understand more relationship between agriculture and environment have to be developed.

The desired relationship between agriculture and environment can be captured by term "sustainable agriculture". Sustainable agriculture as the management and utilization of the agricultural ecosystem in a way that maintains its biological diversity, productivity, regeneration, capacity, vitality, and ability to function, so that it can fulfill today and in the future significant ecological, economic and does not harm other ecosystem (Lewandowski *et al.*,1999 in van Cauwenbergh, 2007). In the same tone, USDA Natural Resources Conservation Service (NRCS) defines sustainable agriculture is a way of practicing agriculture which seeks to optimize skills and technology to achieve long-term stability of the agricultural enterprise, environmental protection, and consumer safety.

The interest in sustainable agricultural development has raised rapidly after the United Nations Conference on Environment and Development in Rio de Janeiro (1992), as - in the spirit of the Brundtland Report (1987) - it was recognized that, as a consequence of the intensified use of natural resources and the rise in pollution world-wide, more serious attention was needed for environmental protection and sustainable development. In the action program labeled 'Agenda 21' a vast array of policy proposals and plans has been laid down.

There is a widespread consensus about the importance of sustainable agriculture. The growing interest in sustainable agriculture, in developed countries, is driven by the manifest limitations of the conventional agriculture, in terms of negative impact on environmental quality and on resource availability, of deterioration in human health, of family farms difficulties and desertification of rural areas Ambroise et al., 1998; Legg and Viatte, 2001). In many developing countries, biodiversity is threatened because wilderness areas such as tropical rainforests are being converting to farmland to meet the demand of food production. Therefore, farmers need to find new ways to boost production using fewer natural resources. This will require effective management of natural resources for agriculture and an understanding of the patterns and processes that influence resource availability. If not, we may do irreversible harm to the ecosystem and threaten the long-term economic viability of many countries.

However there are some difficult problems in both financial and policy support towards a more sustainable futures for agriculture. In a few countries, the problems have been translated into highly supportive and integrated policy frameworks. Yet in some other countries, sustainable agriculture policies remain at the margins, still not yet to be translated into actual policies.

Unfortunately, most policy instruments used to support agriculture in some countries currently act as powerful disincentives against sustainability. In the short-term, farmers switch their agriculture from modern high-input to resource-conserving technologies without incurring some transition costs. In the long term, it means that, sustainable agriculture will not spread widely beyond the types of localized success. Furthermore, in some countries, including some areas in Indonesia, farmers still continue using high-input practices under some policies; agricultural policies that encourage farming by subsidizing farm inputs, such as pesticides, fertilizers, credit and irrigation have reduced the economic viability of sustainable agriculture.

Changing agriculture in ways that make it more sustainable is indeed a big challenge. There are some efforts from all stakeholders to make agriculture sustainable or more

sustainable mostly is making appropriate policies and choosing its instruments. One of big efforts from government is making policies and then determining the instruments. The concept of sustainable agriculture indeed represents a new public policy mandate for agriculture. The policy for sustainable agriculture is important part of the process of incorporating principles and objectives of ecologically sustainable development into the ethos of agricultural industries of a country. It also aims to facilitate a change in agricultural production towards ecologically and economically sustainable practices and farming systems. The implementation of strategies presented in the policy for sustainable agriculture furthermore involves government agencies, farmers, industry groups, local authorities and environmental interest group.

There is considerable policy work on the concept of sustainable agriculture internationally and regionally. This gives some countries the opportunity to interpret that work for their own context. Some countries explore lesson from other countries by developing initiatives such as definitions, strategies, and instruments. Some other countries like European Union Member States interpret regional policies into their national and local initiatives.

There are some differences among countries in developing their public policies and choosing the policy instruments for sustainable agriculture. The differences may come from character, form of governance, political interest, economy, and so on. For example, Netherlands and France have the European Union agri-environmental policy as their umbrella to make national and local policies. In another hand, Indonesia adopts international guidelines and learns from other countries to make policies on sustainable agriculture. Also Indonesia faces problem in achieving sustainable agriculture due to its huge number of population.

Yet, still it is possible to gain lesson from other countries, especially European Union member states since they have a long dynamic agri-environmental policy history, started at its Common Agricultural Policy (CAP) formed in 1960. Wickman (2003) explains that agriculture has for a long time been a central policy field in the European Union and the CAP now embraces approximately 90% of all agricultural output within the EU. Over the last 30 years, the Common Agricultural Policy (CAP) has brought about a massive reversal in the agricultural trading position of the EU, transforming the world's largest importer of temperate-zone agricultural products into the world's second largest exporter of food and agricultural products.

Two EU member states, the Netherlands and France have some similar agricultural characteristic to Indonesia. In both countries, agriculture takes a very important place in their economy. The Netherlands has a problem that population density that forces the agriculture horticulture and forestry sectors to compete for land with urban areas. In both developed and developing countries the agricultural sector is currently under considerable pressure, as one of important fact about agriculture in the Netherlands, is that production is relatively intensive and small scale compared to other European countries (Horlings, 1994, de Snoo and de Ven, 1999). The Netherlands applies a highly intensified conventional agriculture with a high input of chemicals and a technically well developed organic agriculture which lead to considerable biodiversity degradation (van Bellegem and Eijs, 2002). Horlings (1994) says that the Dutch

agriculture is (still) not completely industrialized and functions merely in an open ecological system.

In the other hand, France, at the beginning of 2000, was the first agricultural producer in EU, second agri-food exporter in the world, and the first exporter of food-transformed products all over the world. France is one of the leaders in Europe in the value of agricultural exports—chiefly wheat, sugar, wine, and beef. How France still can yield its productivity high in their sustainable way of agriculture can become a good lesson learned for Indonesia to fulfill the demand of food for its huge population. French agriculture is also based on tradition and cultural practices that conflict with many modern farming practices, such as organic farming. Society wishes to preserve the French culture and environment through supporting small farms and regional diversity.

Both the Netherlands and France have strong commitment for supporting sustainable agriculture. In the Netherlands there is a growing consensus regarding the necessity for a more sustainable form of agriculture, mostly measured by organic farming. The umbrella organization for the organic sector, Platform Biologica, advocates the realization of ten percent organic agriculture by 2010. French commitment to sustainable agriculture is figure out in the *contrat territorial d'exploitation* – or territorial farming contract (TFC) and the sustainable farming contract (Contrat d'Agriculture Durable) which aims to integrate of the economic, social and environmental functions of farming.

Both the Netherlands and France experienced some constraints to achieve a more sustainable farming. The first constraint came from farmers denial for new method introduced for sustainable agriculture because it decreased production. Second, both countries, particularly France experienced in weak institutional capacity including lack of capacity in carrying out the EU legislations into local practices. These constraints, in some part, has similar characteristic to constraints faced by Indonesia in achieving sustainable agriculture. For example, farmers in Indonesia still stick with conventional farming method; they are money oriented, so that achieving highest production is main concern in doing agriculture. Indonesia now also still faces institutional capacity, for example lack of coordination among agencies and lack of capacity in delivering international environmental issue into local practices. Third, according to OECD, both the Netherlands and France are good sample for selecting and implementing some policy instruments towards sustainable agriculture. Since mix policy instruments are better implemented instead of single instrument, the experience of choosing a policy instruments package from other countries might become useful consideration for Indonesia to choose appropriate policy instrument package towards sustainable agriculture. Learning from other countries' experience to overcome their constraints in achieving a more sustainable agriculture is important for Indonesia. Even though there is some differences in characteristics, level of economy, and technology between Indonesia and the Netherlands and France, the national strategy which realized by policy instruments will become a good inspired approach for Indonesia to cope with such similar constraints/problems.

However, Indonesia, as other developing countries is challenged to identify and adopt policy instrument that integrate environmental and economic policy and that are parsimonious in using scarce of development and management resources. The search

for instrument of environmental management in such transitional economy may be a search for instruments of sustainable development.

1.2 Research Objectives

The objectives of this research are:

1. to explore and compare instruments of agri- environmental policies towards sustainable agriculture in the Netherlands and France, and
2. to get lessons from the Dutch and French experience of their agri-environmental policy instruments for sustainable agriculture for Indonesia sustainable agriculture.

1.3 Research Questions

Research questions in this research are:

1. What are agri-environmental policies to achieve sustainable agriculture in the Netherlands and what are their instruments?
2. What are the context (historical background, goal, and interests) of the chosen instruments in the Netherlands?
3. What are agricultural and environmental policies to achieve sustainable agriculture in France and what are their instruments?
4. What are the context (historical background, goal, and interests) of the chosen instruments in France?
5. What are agricultural-environmental policies to achieve sustainable agriculture in Indonesia and what are their instruments?
6. What are the context (historical background, goal, and interests) of the chosen instruments in Indonesia?
7. What are lesson can be learned from the Netherlands and France experience to Indonesia case? (considering factors and conditions under which the policy instruments can be adopted and implemented)

1.4 Scope of Research

Scope and limitation of the research is needed for focusing the analysis. This research is about instruments of agri-environmental policies on sustainable agriculture. There are some scopes for this research as stated as followed:

a. Focus on agricultural and environmental policy on sustainable agriculture in the Netherlands, France and Indonesia
b. Focus on instruments of agricultural and environmental policy on sustainable agriculture in the Netherlands, France and Indonesia
c. Focus on normative issue behind a policy instrument chosen by each country (the Netherlands, France and Indonesia)
d. Take lesson learned from the Netherlands and France experience in using/choosing policy instruments for their sustainable agriculture for Indonesia case.

1.5 Research methods

1.5.1 Data Collection

Most of data required for the analysis will rely on *secondary data or literature study/review*. Source of data consists of previous research findings or comparative study/report, governmental paper, European Union paper, publications such as journal, text book, articles and other sources from internet.

1.5.2 Analysis

This research is an exploratory and qualitative research. The analysis is conducted based on literature review, available secondary data. In explanatory research, the focus is on gaining insights into knowledge about the subject area, the practical possibilities and the definition of some concepts (Hussey, 1997). Babbie (2001) adds that exploratory research may also be important in the development of grounded theory.

Related to the analysis, there are two strategies of research that will be held in this research which are theoretical review and analysis of instruments of agricultural and environmental policy towards sustainable agriculture in Netherlands, France, and Indonesia to get outcome of the research. This research is developed into several methodological steps as follows:

1) Description and development of Theoretical Review

A comprehensive review was undertaken to establish theoretical foundation for the study and was the earlier step or the research. However the literature survey continued throughout the research to enhance subject knowledge and to clarify questions that arose.

This review focuses on the journals, articles, working and government paper, and relevant books. The review also uses other relevant data and information from other sources such as internet and other publication. Most of data and information more focus on indirect/secondary data.

2) Exploration Instruments of agricultural and environmental policy in the Netherlands, France and Indonesia

This stage explores empirical data about agricultural and environmental policies towards sustainable agriculture and its instruments in the Netherlands, France and Indonesia.

This step uses EU documents, work paper, the Netherlands governmental/ministerial documents, France governmental/ministerial documents, journals, books, and other relevant reliable publication.

3) Analysis to get lesson from the Netherlands and France experience

By analyzing context of each type policy instrument including historical background, policy goal, and political interest, and other normative things behind the policy instruments chosen by the Netherlands and France, this step takes lesson learned for Indonesia. Analysis uses both theoretical and empirical data used in the previous steps.

The research methodology of this study is generally drawn in Figure 1.

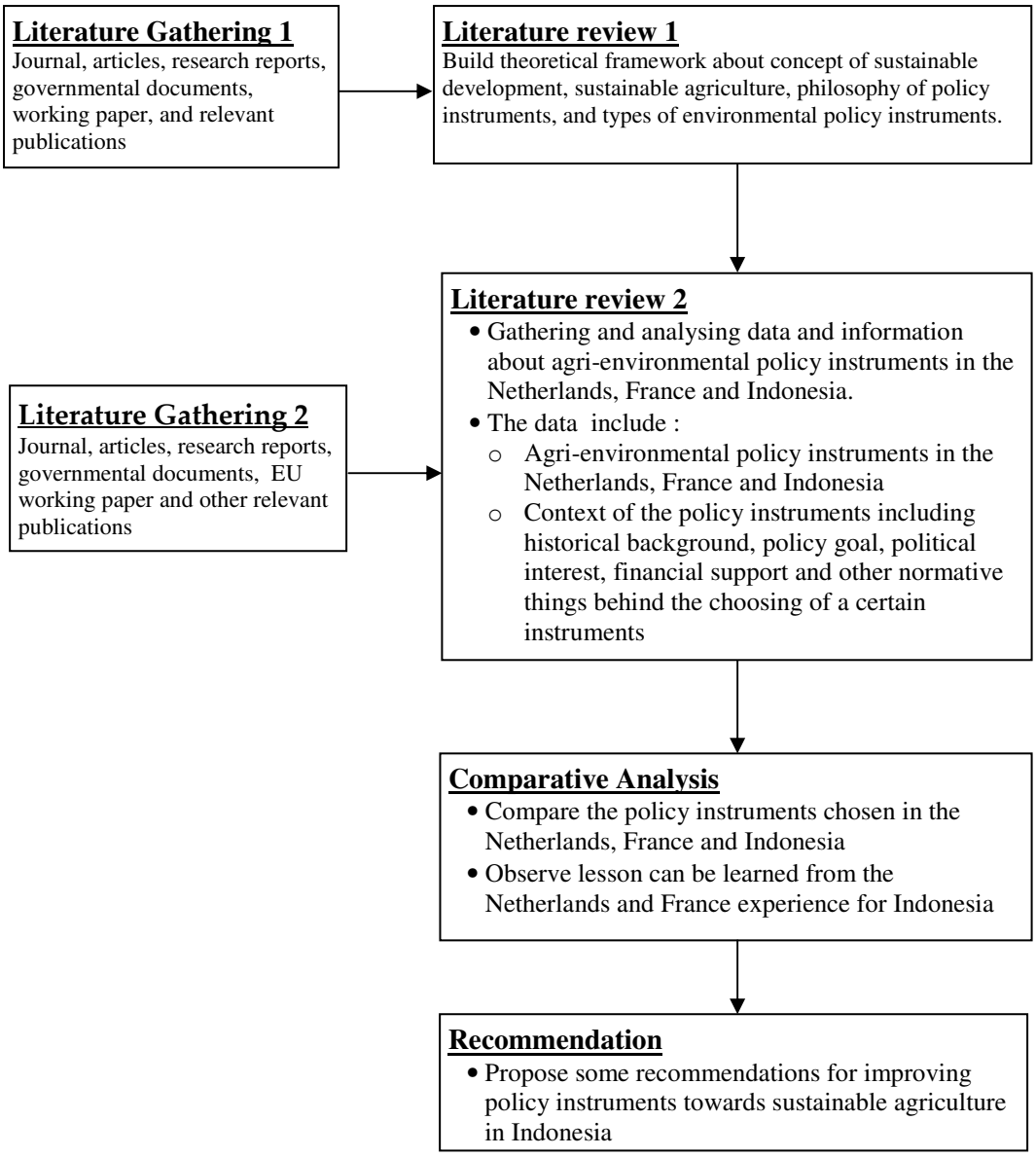

Figure 1. Research Methodology

1.6. Structure of Research

This research consists of six chapters and the description of each chapter is described as follows:

Chapter 1 : Introduction
This chapter consists of background, research objectives, research questions, methodology, and structure of research.

Chapter 2 : Theoretical Review
This chapter provides theoretical review of sustainability concepts, sustainable agriculture, agri-environmental policy, policy instruments, and environmental policy instruments.

Chapter 3 : Instruments of Agri-Environmental Policy towards Sustainable Agriculture in the Netherlands and France

This chapter explores European Union, Dutch and French agricultural and environmental policies on sustainable agriculture and its instruments. The Netherlands and France serves as lending countries.

Chapter 4 : *Instruments of Agricultural and Environmental Policy towards Sustainable Agriculture in Indonesia*

This chapter explores Indonesian agricultural and environmental policies on sustainable agriculture and its instruments.

Chapter 5 : *Analysis comparative of the instruments of Agri-Environmental Policy towards sustainable agriculture in the Netherlands, France, and Indonesia*

This chapter analyzes and gets the lesson(s) learned from the Netherlands and France experience to Indonesia case. Normative issue including historical background, interests, policy goal will be considered to get right and adoptable lessons for Indonesia.

Chapter 6 : *Conclusion and Recommendations*

The final chapter consists of conclusion of the research and recommendations.

CHAPTER 2
THEORETICAL FRAMEWORK

This chapter elaborates the concept of sustainable development and sustainable agriculture. The third part of this chapter elaborates policy instruments. First it discusses definition and type of policy instruments. Then the common used environmental policy instruments are described. From the available environmental policy instruments, countries or societies choose its instruments, so that the policy instruments choice is also discussed in this chapter. The next part discusses analysis framework used in this research.

2.1 Sustainable Development

The 1987 Bruntland Report defined sustainable development as "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*". At the heart of this concept is the belief that over the long term, social, economic and environmental objectives should be complementary and interdependent in the development process. In 1992, the Rio Summit established sustainable development as the guiding vision for development in both industrialized and developing countries, and for international development co-operation.

In Agenda 21, there are three *multiple domains* described as three pillars of sustainable development. These pillars are 'economic sustainability', 'social sustainability', and 'environmental sustainability' (Kahn 1995). The three pillars are described as (Kahn, 1995):

- *Economic sustainability* implies a system of production that satisfies present consumption levels without compromising future needs. The 'sustainability' that 'economic sustainability' seeks is the 'sustainability' of the economic system itself. It by way of growth, development, and productivity, has guided conventional development science in the past. Market allocation of resources, sustained levels of growth and consumption, an assumption that natural resources are unlimited and a belief that economic growth will 'trickle down' to the poor have been its hallmarks. 'Sustainable development' expands development's concern with monetary capital to consider natural, social and human capital. Restraint upon economic growth and consumption which deplete these is favored (Kahn, 1995).
- *Social sustainability* implies a system of social organization that alleviates poverty. In a more fundamental sense, however, 'social sustainability' establishes the nexus between social conditions such as poverty and environmental decay. It encompasses notions of equity, empowerment, accessibility, participation, sharing, cultural identity, and institutional stability. It seeks to preserve the environment through economic growth and the alleviation of poverty. Some commentators have suggested that poor countries must accept

environmental degradation as a short term consequence of economic development. Others have argued that an enabling environment that optimizes resource allocation can obviate the need for such a trade-off (Kahn, 1995)

- *Environmental sustainability* requires maintaining natural capital as both a provider of economic inputs (called 'sources') and an absorber (called 'sinks') of economic outputs (called 'wastes'). Environmental sustainability involves ecosystem integrity, carrying capacity and biodiversity. It requires that natural capital be maintained as a source of economic inputs and as a sink for wastes. Resources must be harvested no faster than they can be regenerated. Wastes must be emitted no faster than they can be assimilated by the environment (Kahn, 1995).
  Kahn (1995) furthermore says that those three pillars must be 'integrated' and 'interlinked'. They must be coordinated in a comprehensive manner.

The application of sustainable development is different in countries and also in regions in a country. There may be differences in prioritizes the pillars of sustainable development among countries, regions, societies, cultures, and individuals. The practical response can vary due to national and local definition. Approaches to sustainable development reflect the diversity of the social, economic and environmental challenges faced by developing countries (OECD, 2001). The pursuit of sustainable development is a local undertaking not only because each community is ecologically and culturally unique but also because its society have specific place-based needs, requirements, and interests.

In many countries, the responsibility for sustainable development issues has been given to environmental ministries and departments—often amongst the weakest and least influential in government. This has avoided the necessary process of cross-sectoral integration.

2.2 Sustainable Agriculture

Sustainable agriculture has been defined in some ways. Horlings (1994) considered sustainable agriculture as "a form of agriculture which fulfils several functions in the fields of food production, nature and landscape preservation, and in the development or rural areas now and in the future". Furthermore she explained that sustainable agriculture should be carried out on ecological, economic, socio-political and cultural conditions. Legg *et al.* (1997) argued that sustainable agriculture is one that can indefinitely supply the goods and services demanded of it at socially acceptable economic and environmental costs.

Leggs and Viatte (2001) added that sustainable agriculture seeks to achieve three main goals: economic efficiency, environmental quality and social responsibility. Economic efficiency means meeting an increasing global demand for food at the lowest cost, while responding to changing preferences for different foods and adjusting to structural change within the agro-food sector and in the overall economy. At the same time, sustainable agriculture requires farming activities for improved environmental performance, by reducing pollution from agriculture, conserving the natural resource base, and generating environmental benefits. And agriculture must achieve all of this in socially acceptable ways, by for example, increasing farmers'

education and skills, taking account of animal welfare concerns and ensuring that working the land can provide an acceptable level of income.

Sustainable agriculture does not simply mean the projection of criteria for sustainability on a voluntary sector. Pretty (1995) explains that sustainable agriculture presents a deeper and more fundamental challenge than many researchers, extensionists and policy previously assumed. Sustainable agriculture needs more than new technologies and practices. It needs agricultural professionals willing and able to learn from farmers; it needs supportive external institutions; it needs local groups and institutions capable of managing resources effectively; and above all it needs agricultural policies that support these features (Smith, undated in Ellis *et. al*, 2001).

OECD (1998) also reported that different countries have taken different approaches to promoting sustainable agriculture because of differences in geography, climate, population density and level of economic development. The relative importance of particular environmental issues also varies widely from one country to another. For instance, France's *whole-farm* approach to sustainable agriculture is based on 10-year, farm-level sustainable development plans, which combine land consolidation with the encouragement of less intensive animal production methods, and pilot project in each major agro-ecological zone. Other countries are discovering that the improving performance can be done much more effectively when the farmers themselves are encouraged to take a leadership role in the process. The Netherlands is conducting a special experiment with five farmer-led "eco-cooperatives" to see whether they can meet public policy objectives using their own innovative approach. Smith and McDonald (1998) also noted that agriculture considered sustainable in developed countries may be inappropriate for use in developing countries. Reeves (2000) explained that the concept of sustainable agriculture is difficult to deal with in most countries, particularly in many developing countries, where farmers have few resources and little flexibility to change their practices, and where the risks of failure often have tragic consequences.

The basic long term challenge to achieve sustainable agriculture is to produce sufficient food and industrial crops efficiently, profitably, and safety, to meet a growing world demand without degrading natural resources and the environment (OECD, 1995). When agricultural productivity has been substantially improved, it has often been accompanied by resource degradation, such as soil erosion and water depletion. However farmers have also made positive contributions to landscapes and the maintenance of rural communities and agricultural land can also provide important habitats for wildlife and act as a sink for greenhouse gases (Legg, 1999).

Parris (1999) furthermore explains that because of differences in climate, agro-ecosystems, population density and levels of economic development, the relative importance of particular environmental issues varies widely between and within countries. He argues that the differences are also reflection of varying perceptions as to what is meant by the "environment" in agriculture. For example, some agree that "environment" covers biophysical and ecological aspects, while for others, landscape, cultural features, and rural development are also important.

As sustainable agriculture is indeed a complex issue involving many elements, many level of geographical scale, governmental level, participation of farmers and

stakeholders, availability information and technology, etc. The government has an important role to make policies supporting sustainable agriculture. And then one important thing to implement the policies is the instruments chosen for the policies.

2.3 Policy Instruments

2.3.1 Definition and Types

In Oxford English dictionary, "policy" is defined as "a course or principle of actions adopted by government, parties, business or individual". In the Policy Studies Journal, Howlett (1991) explains that policy instruments is the generic term provided to encompass the myriad techniques at the disposal of governments to implement their public policy objectives. Sometimes, as Howlett adds, it referred to as "governing instruments" or "tools of government". According to European Environmental Information and Observation Network "policy instrument" is the method or mechanism used by government, practical parties, business or individuals to achieve a desired effect, through legal or economic means.

Policy instruments can be clustered in various ways. A document of Public Policy and Instruments in the UK (undated) classify policy instruments into four groups as illustrated in Figure 2 below.

General	Multi-sector instruments that have a direct effect on innovation by construction firms, e.g. university research and teaching programs	e.g fiscal policy, monetary policy, and industrial policy
Construction-Specific	e.g. construction best practice programs	e.g. planning system, procurement system, and system of building regulations and control
	Direct Effect	**Indirect Effect**

Figure 2. A classification of public instruments

A compendium of policy instruments for resource efficiency Germany (2007) clusters the policy instruments into five categories: regulatory, economic, informational, cooperation and educational instruments. Regulatory instruments include norms and standards, environmental liability, environmental control. Economic instruments include environmental taxes, fees and user-charges, certificate trading, environmental trading, green public procurement, and subsidies. Informational instruments include eo-labelling, sustainability reporting, consumer advice service, information centers, and environmental quality targets and environmental monitoring. Cooperation instruments include voluntary agreements and technology transfer. Education and research instruments include research and development and education and training.

According to Linder and Peters (1989) in Jordan *et al.* (2000) most categorization of policy instruments put forward focus on the following attributes: resources intensiveness, precision and selectivity of targeting, political risk and the amount of constraint and coerciveness.

Bemelmans-Videc *et al.* (1998) in Jordan (2000) One frequent approach is to differentiate three basic types of policy instruments which typology focused on constraints, those are, regulation (*stick,s i.e.* highly choice constraining), economic instruments (*carrots, i.e.* moderately choice constraining) and information (*sermon, i.e.* facilitates and informs free choice). Jordan (2000) agrees to this categorization, as his four-fold distinction: traditional regulatory instruments, market instruments, informational devices, and voluntary agreements. Yet he adds those four categories are not mutually exclusive.

Instruments, according to Huppes (2000) are building blocks in the process of policy formulation and policy implementation; they are not the policy itself. Huppes (2000) then provides four dimensions as central to the definition of specific instruments but he emphasizes that they probably not enough for a full specification of operational instruments. They are: the nature of actor relations; the instrument mechanism in implementation; the objects influenced; and the operational environmental goals embodied in the instruments.

Table 1. Four dimensions as central to the definition of policy instruments

Actor relations	**Instrument Mechanisms**	**Object Influenced**	**Operational goals**
Regulatory Instruments	Binding instruments prohibiting	Single product	Direct technical characteristics
Political-Administrative Instruments	Binding instruments Descriptive	Single immobile or facility	Indirect system characteristics (in chain)
Social Instruments	Option Creation	Single installation	Direct environmental interventions
	Market Influence	Classes of products, regional	Indirect environmental interventions
	Cultural/Informational	Classes of products, global	Direct theme cores
	Structural/Institutional Influences	Classes of activities, regional	Indirect theme scores
	Procedural Influence	Classes of activities, global	Indirect ecoindicator scores
			Indirect total effect scores
			Secondary environmental affect scores

The same (type of) policy instruments may be implemented differently by the government even though they use the same policy tool in exactly the same manner (Hood, 1986 in Jordan, 2000). In looking how policy instrument work and the impact they have, it is important to understand the context in which they are used and with which they interact, from standpoint of the policy maker choosing the instruments to the target groups whose environmental behavior needs to be altered (Jordan *et al.*, 2000).

2.3.2 Environmental Policy Instruments

Huppes (2000) states there are many instruments that are possibly relevant for environmental policy, like tools for analysis, checklists, and plans. More generally, instruments for environmental policy can be seen as the means for executing this policy. Here, a more restrictive definition is used:

"Instruments for environmental policy are structured activities aimed at changing other activities in society towards environmental goals".

A range of diverse instruments is already applied to promote environmental policy goals. Organization for Economic and Co-operation and Development (OECD) have classification of policy instruments into six types, they are:

- *Economic instruments* (market-based incentives) can be defined as policy tools that create price signals to encourage polluters and consumers to make decisions that help achieve environmental objectives. Economic instruments increase the cost of behavior that harms the environment, and reduce the cost (or increase the value) of behavior that protects the environment. They can include both payments (e.g., pollution taxes/charges, product charges, natural resource taxes, tradable permits, and deposit refund systems) for the use of the environment as well as government subsidies (grants, soft loans, tax breaks, etc.) that defray the costs of pollution control and prevention measures (on the other hand, subsidies promoting environmentally damaging activities need to be removed).
- *Regulatory (command-and-control) instruments*, including standards (ambient, discharge, and technological); licenses or permits (a tool to manage the attainment of the standard); monitoring (ambient environmental quality monitoring, self-monitoring of pollution discharges by industrial facilities, and outside inspections by a relevant authority); and sanctions (penalties that result from violations of standards and permit conditions). Complementing a command-and-control program for *existing* pollution sources should be an environmental impact assessment (EIA) program for *new*sources.
- *Liability rules* serve both as a mechanism for the fulfillment of the polluter's responsibilities for cleaning up and/or compensating the environmental damage resulting from accidental pollutant releases, and as an incentive for polluters to take preventive measures even beyond existing regulatory requirements.
- *Voluntary approaches* (unilateral commitments, voluntary certifications, and negotiated agreements) are increasingly practiced in industrialized countries but are not common in the NIS due to the deeply rooted distrust between environmental regulators and industry. They can succeed in a well-developed regulatory framework if they are carefully designed and implemented with clear objectives, and with time-specific targets for achieving them. For example, industrial enterprises may be encouraged to implement internal ISO 14001-type environmental management systems in exchange for some regulatory forbearance in terms of timeframes for achieving more stringent standards, inspection frequency, and/or sanctions.
- *Information-based instruments* (information dissemination, pollutant/polluter inventories, eco-labeling, education and training, etc.) are also critical tools. Data must be collected and retrieved efficiently to support design and monitor implementation of environmental programs. The information management system should be used to perform the necessary regulatory functions (permit tracking, ambient and compliance monitoring, reporting of violations, etc.) and to involve relevant stakeholders and the general public in the program through open information access and education to promote awareness and put pressure on polluters to comply with environmental requirements.
- *Land use planning* is a way to restrict or prevent potentially polluting development projects in environmentally sensitive areas and/or consolidate

industrial facilities in certain areas (industrial parks or zones) where special environmental infrastructure is provided to mitigate their impacts. The use of this instrument is closely related to the EIA.

There is another classification of environmental policy instruments used by Defra (Department of Food and Rural Affairs) of the UK (Oxera, 2003). The classification is simpler and generally covered almost all kind of instruments of environmental policy exist in the EU and Indonesia. The classification divides policy instruments into four types:

- Economic instruments, such as taxes or grants, to *incentivise* people to change their behavior
- Regulatory instruments, such as licenses or standards to *require* people to change their behavior.
- Voluntary instruments, such as industry-led environmental initiatives, to *encourage* people to change their behavior
- Information instruments, such as the provision of free advice, to *raise awareness* and *facilitate* changes in behavior

Economic instruments give a financial incentive to alter behavior. They change the marginal cost of an activity and thereby cause substitution of other activities. Some designs of economic instrument also result in transfers of funds, either into or out of the public purse, or between individuals (Oxera, 2003). There are three main types of economic instruments: subsidies, taxes, and tradeable permits—and a range of design options involving these three on their own or in a hybrid system (Oxera, 2003).

Regulatory instruments (or 'command-and-control' regulation) are often chosen over economic instruments where a high level of certainty of outcome is required, or where there is little flexibility allowable on the timing or nature of the outcome required. In EU environmental legislation, it is often drafted in a way that explicitly or implicitly requires member states to implement it using regulatory instruments. Regulatory instruments have in the past been the most common policy instruments for environment.

Regulatory instruments either require a certain process to be carried out or a certain target to be achieved. They are the traditional means of controlling point-source pollution. They are less suitable for diffuse agricultural pollution, where monitoring of activities and measurement of pollution or inputs are more difficult. They are particularly appropriate where the risk of damage escalates quickly, and so are commonly used to govern health and safety risks. They may be less appropriate where it is desirable to achieve a target only if the cost is reasonable. Regulatory instruments are usually accompanied by charges to recover the cost of monitoring and administration.

The choice of regulatory instrument depends on the nature of the problem to be addressed. A mandatory environmental management standard is useful where a general improvement in environmental performance is desired, and it is impossible to dictate exactly what changes in behavior would be appropriate for a wide range of operators and local environmental conditions. Banning the use of a particular substance is useful where it can be demonstrated that an immediate cessation in use is

essential for environmental protection and alternatives are available at reasonable cost.

There is a most important limitation is implementation of regulatory instrument, due to design problems, lack of political will, monitoring costs and the relative complexity and costs of the legal process involved. They have shown relatively efficient results to control point sources or risks of environmental degradation, such as construction standards.

Voluntary instruments are designed to encourage changes in behavior, usually to adopt behavior that makes commercial sense, or to raise compliance with existing regulatory standards. Rational individuals do not voluntarily make themselves worse off (unless they are altruistic), so voluntary instruments do not generally involve significant net cost for those opting for them. Sometimes the voluntary option is decided collectively and is not optional at an individual level.

Voluntary agreements can be introduced swiftly because they do not have a legislative basis. They can also adopt forms that would be difficult to create through legislation. These are their two main advantages. The most serious disadvantages are that they may be difficult to enforce, since no statutory penalties are available, and they may only deliver a limited selection of the changes in behavior that could be achieved through a statutory scheme.

Voluntary instruments work best where people already have some incentive to change their behavior. It may be that just bringing different players in the market together and helping them agree common aims, or providing a scheme for people to join is enough to encourage them to change their behavior. For example: farmers join farm assurance schemes because it provides them with a marketing advantage; companies work towards attaining environmental management standards for the same reason as well as to reduce potential environmental liabilities or environmental liability insurance costs.

Voluntary instruments also tend to be chosen in preference to regulation or economic instruments where: changes in behavior can be secured through the actions of a small number of market players; the scale or localized nature of environmental impacts would not warrant the introduction of national regulations or economic instruments; monitoring and enforcement of regulations and economic instruments would be so difficult that they would have little credibility; or where it would be difficult to design a regulation or economic instrument that would be environmentally effective.

Information instruments raise awareness and facilitate changes in behavior, and may allow products to be more accurately valued. They may correct market failure caused by imperfect information, and enhance the acceptability and effectiveness of other measures where they explain other policies. The information instruments includes on-farm advice; training and education, nutrient and water management; demonstration farms; decision tools; information technology training; product-labelling schemes; publication of performance indicators; benchmarking (measuring comparative performance); facilitation of information exchange; and teaching measuring and monitoring methods. Educated and informed farmer are more likely to be motivated to look after the productivity of their land, to be receptive to policies that constraint

their activities in the interest of environmental protection, and to be able to implement any changes require of them. Farmers are more likely to adopt, adapt and further refine new practices when they are able to try them out first, at minimal financial risk to themselves, and when they can compare notes with other farmers. Technology is then helping to facilitate such communication, both among farmers and between education to integrating farm-level environmental plans across a rainfall catchment. And when a country have internet expansion, more and more farmers are trapping into public database in search of information on everything from reports, new regulation, methods, innovation until daily weather forecast.

To address the complex environmental problems in agriculture sector, governments increasingly combine different policy instruments in form of 'policy mixes' that aim at providing a sound framework for an increase of resource efficiency and the development of sustainable consumption and production patterns.

2.3.3 Policy Instrument Choice

"…the choice and implementation of specific policy instruments depends to a considerable degree on the national context.. the national policy style. …Each nation's regulatory style is thus a function of its unique political heritage. It requires comprehensive knowledge of constitutional, administrative, historical and cultural institutions to understand the opportunities and limitations arising from a particular policy style" (Andersen, 2001)

What factors are likely influencing the choice of policy instrument types and how is that choice likely to be affected by its institutional and political characteristics? Howlett (1991) explains that policy instruments are chosen based on technical grounds, not only according to efficiency ad cost criteria but also according to the political preferences of interest groups and governments, including sociological and ideological constraints; and taking into account institutional limitations of the political system. He furthermore explains that in the case of continua models such as Dahl and Lindblom's the same basic logic applies although the emphasis on the technical capacity of governments and societies which define the continua.

Jordan (2000) concludes there are three streams of work in public policy literature to address the question above. Crucially, they make different predictions about the nature of the selection process and the intervening influence of endogenous factors such, as country's institutional make-up and distinctive policy style, in shaping the form in which they are adopted. The three streams are: ideas dominant, settings dominant, and chaos dominant.

Table 2.
Dahl and Lindblom's Continua of Instruments Choice

Continuum 1. Nature of Instrument Ownership: *Government to Private*
Government---Part Government---Joint Government-Private---Private

Continuum 2. Nature of Government Influence: *Compulsion to Persuasion*
Compulsion---Arbitration---Mediation---Conciliation---Information

Continuum 3. Nature of Government Control: *Direct to Indirect*
Nationalization---Licensing---Taxes/Subsidies---Macro-manipulation

Continuum 4. Nature of Instrument membership: *Voluntary to Compulsory*
Private Clubs---Compulsory Membership Organizations---Nation-State

Continuum 5. Nature of Instrument Autonomy: *Full to None*
Autonomous Agencies---Semi-Autonomous Agencies---Bureaucratic Agencies

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Source: Adapted from *Politics, Economics and Welfare* by R.Dahl and C.Lindblom, 1953, New York: Harper and Row in Howlett (1991)

In ideas dominant approaches, policy instruments play an instrumental role in the policy process which is associated more with lesson drawing than coercive forms of policy transfer. Policy makers have certain ideas and beliefs which drive the selection process. It is likely a dominant coalition sets the intellectual framework within individual policy decision are made, and defines a series of minority coalitions. The struggle between these coalitions provides the primary motor of policy change ideas play a dominant role whereas institutional factors and questions of implementation are down played.

Setting dominant theories begins with the assumption that that instrument choice is dependent upon the context in which it takes place. Actors preferences are derived endogenously on the basis of what is appropriate (i.e. politically acceptable and can be implemented on the ground) in a given institutional context. Therefore the aim is to satisfies rather than maximize (Hall and Taylor, 1996 in Jordan, 2000). This approach suggests that institutions form and adapt slowly, investing in certain norms, values and cultures. Institutions are stable and resistant overall change. When confronted with challenges (such as the selection of the most appropriate policy instrument), actors prefer to refine what they have already before searching for new approaches. In other word, institutions are sticky in the sense of persisting beyond the historical moment and condition of their original design. However, institutions may also influence the search of process.

Chaos dominant approaches, according to Cohen *et al.* (1972) in Jordan (2000) have three characteristic properties: (1) problematic preferences—preferences are often inconsistent and ill-defined; actors discover preferences through action more than they act on the basis of preferences, (2) unclear technology—although the organization appears to prosper none of its members are entirely sure why; it muddles through problems, looking for solutions on the basis of trial and error, and (3) fluid participation—participants vary in the amount of time they can devote to different problems; attention spans are short and the pressure to find solutions is often great.

In their study of privatization policies, Howlett and Ramesh (1993) argue that the choice of instruments is akin to process of muddling through. The final selection is often dependent on a whole hot of factors including the instrument's internal characteristics, the problem at issue, its history, and the anticipated reaction of affected groups.

Local, regional, and national government as well as countries can apply a wide range of different policy instruments. Lada (2005) argues that the development of policy instruments is conditioned by (pre)-existing political institutions, the source of policy provisions, and the location and nature of environmental authority. A combination of policy instruments may work better in practice than reliance on a single instrument. Furthermore, an instrument that works well in one country may not work well in another country with different social norms and institutions.

2.4 Analysis Framework

To conduct analysis, it is important to have a framework for comparing policy instruments is the Netherlands and France and then to Indonesia. The framework also serves as guide for the next chapters.

To compare agri-environmental policy instruments on sustainable agriculture in the Netherlands, France and Indonesia, this study uses six types of environmental policy instruments according to OECD as written in section 2.4.2. From the six types of environmental policy instruments, some literatures classify the types of agri-environmental policy instruments into three, they are:

1. Economic instruments (market-based incentives)
2. Regulatory instruments (command-and-control measures)
3. Voluntary instruments (advisory and institutional measures)
4. Information instruments

The study uses the three types of agri-environmental policy instrument above. In comparing the instruments, the study uses the context of each type of policy instrument in each country. The context includes historical background, policy goal, political interest, financial support, and some other normative things behind the instruments.

CHAPTER 3
AGRI-ENVIRONMENTAL POLICY INTRUMENTS IN THE NETHERLANDS AND FRANCE

This chapter depicts instruments of agri-environmental policy used in the Netherlands and France. First section explains about history of agri-environmental policy in the European Union following by description about the Choice of Instruments of the European Union Member States. The next section explains about the Netherlands including general review about Dutch agriculture, sustainable agriculture in the Netherlands, and Agri-Environmental Policy Instruments in the Netherlands including economic, regulatory, voluntary, and information instruments. The last section of this chapter explains France in the same way as the Netherlands is.

For general information, besides as the EU member states, both of the Netherlands and France are OECD country members too. OECD (Organization for Economic Co-Operation and Development) established at 1961 in Paris, France. The total member now is 30 countries. The goal of the organization is bringing together the government to democracy and market economy from around the world to support sustainable economic growth, boost employment, raise living standards, maintain financial stability, assist other countries' economic development, and contribute to growth in world trade. With active relationships with some 70 other countries, NGOs and civil society, it has a global reach. The organization is best known for its publications and its statistics, its work covers economic and social issues from macroeconomics, to trade, education, development and science and innovation.

3.1 History of Agri-Environmental Policy of the European Union

Agri-environmental policy generally refers to a group of programs that encourage farmers to adopt environmentally sound production practices. Agri-environmental policy emerged for the first time in some of the northern European countries in the early 1980s, particularly in Britain and in the Netherlands (with the Relatienota program). Agri-environmental policy of the European Union (EU) was formally introduced by the European Commission along with the MacSharry reform of the Common Agricultural Policy (CAP) in 1992. Over the last two decades, agri-environmental schemes were adopted on a larger scale throughout the EU and have become a significant element of the CAP. During this period, the approach has evolved and different countries have developed their agri-environmental programs, differ in terms of the environmental objectives pursued, the type of measures taken, payment rates offered, the speed of implementation, and the overall amount of public money spent on agri-environment.

The participation in European agri-environmental programs is voluntary for farmers. However, for the member states it is obligatory to implement such programs. This

became the first common European framework for national policies in EU member states in the agri-environmental field.

The agri-environmental policy is a very diverse with broad instrument and has wide flexibility to consider differences in geographical conditions, agricultural production systems, and rural traditions within the territory of the European Union. Because of the diverging regional circumstances, it is obvious that the elaboration and implementation of these policies takes place on a national, regional or even local level, resulting in a large number of different implementation strategies.

Broadly, the Regulation 2078/92 contains two objectives, corresponding to two different lines of intervention in the agri-environmental policy of the EU member states: one concerns reduction in the negative impact of agriculture on the environment through reduction in the use of chemical products and adoption of ecocompatible practices, while the other is aimed at compensating farmers for the positive externalities connected with countryside stewardship and environmental conservation.

3.2 Choice of Instruments of the European Union Member States

Even though dictated by EU legislation, the choice of policy instrument is basically based on the costs and benefits of the options. The 'best' instrument will have the highest environmental and wider benefits with the lowest cost of implementation and compliance.

Policy instruments are often not purely 'regulatory', purely 'economic' or purely 'voluntary', etc. Information instruments can be subsidized, for example where government ensures that advice is provided at reduced cost or free of charge. Voluntary schemes are also often subsidized to ensure that participation is free of charge. Tradable permits are regulatory in that people must operate within the bounds of their permit, but economic in that they are tradable and therefore provide an incentive to further improve environmental performance. Compliance with regulations is given incentive through fines and environmental liability.

For a better result, it is often, a member state uses not a single instrument, but a package of instruments. Combinations of different types of instrument work together with each other to achieve a desired environmental outcome, with some elements of the package having an effect in the long run, others in the short run. The composition of the package may need to change over time. Then care needs to be taken in the choice and design of the different instruments to ensure that they are mutually reinforcing and that there are no perverse incentives created.

The European Union's Common Agricultural Policy (CAP), set up in 1962 to deal with food shortages following the Second World War, is now the main policy driver behind conflicts between agricultural practices and biodiversity. The CAP initially aimed to increase productivity and provide more food at a lower cost for EU countries, while also achieving a fair standard of living for farmers. This was achieved through stabilization of markets (through a single market with common prices) and a more autonomous approach with less reliance on imports and preference given to member states as well as free movement of goods. Habitat degradation or loss, food overproduction, social discontent leading to rural depopulation and the cost associated with the accession of a further 10 countries to the EU in 2004 all led to pressure for the reform of the CAP. CAP is continually reformed to accommodate recent environmental and agricultural issue. The prominent reforms are in 1992, 2000, and 2003.

3.3 The Netherlands

3.3.1 Agriculture in the Netherlands

The Netherlands is one of the smallest and most densely populated countries in the world. Hence the pressure on the rural area is considerable. People have to live, work and relax there. Besides, space is needed for agricultural production and transport, while valuable nature areas and unique landscapes must be conserved for future generations. The government of the Netherlands realizes that a balance must continually be struck between the various uses of the rural area.

The agricultural developments have led to a considerable contribution of agriculture to the national economy. The Netherlands, where agricultural products are concerned, is far more than self-sufficient. Much employment has been created in the industries linked to agriculture, at processing plants and producers of fodder. The social welfare of the farmers has increased, and physical labor has become less hard because of mechanization. Finally, the market prices for agricultural products have declined. But over the last 50 years, agricultural sector in the Netherlands has lost much of its importance in terms of the number of people involved and its relative contribution to the economy compare to other sectors, even though production is still increasing.

The massive agricultural development and production on a small amount of land remain high pressure on environment. There are also many farming activities in the Netherlands are no longer dependent on the fertility of the land. Farming use high chemical inputs such as fertilizers and pesticides. A negative result of this is environment deterioration, for instance, pollution from livestock to groundwater and greenhouse gas impact from greenhouse horticulture.

Yet, since 1980s, consensus has been growing regarding the necessity for a more sustainable form of agriculture. There were some regulations launched in the Netherlands, and after 1990s most environmental regulations are under EU Directive.

The role of farmers:

The resistance of farmers about interfere environmental issue in farming practice was aroused because they believe that environmental requirement in farming practice is costly and the will reduce production. And farmers, unlike many other occupational groups, are very much attached to their profession. A farmer wants to stay a farmer. As a consequence, a farmer who finds that his environmental costs are becoming prohibitively high, will become increasingly zealous in his fight against the environmental conditions. This resulted in a militant front of activists called ‘Green Front’.

Breeman (2003) also described the emergence of the “Green Front”. In 1973 Dutch farmers encountered a lot of major economic setbacks. The successful modernization of Dutch agriculture had resulted in large production surpluses as of which the consumer-prices had declined. The European Commission, who had become responsible for the fixed-price system, had decided not to increase the minimum prices to make up for the lost incomes. An extra increase in efficiency or production could not make up for the income-losses. When in 1974 a drought had oppressed the

farmer's incomes even further, farmers spontaneously started protesting. Their protests increased further when, in contrast to the Belgium, Danish, French, and German governments, the Dutch minister of agriculture did not provide supplemental policies in order to soften the financial burdens of their farmers. They were especially angry because of the reluctant behavior of the Dutch government and the leaders of their very own farmer associations who were so much involved in the policy-making process. The farmers protest group named themselves "Green Front".

To response environment deterioration and farmer distrust, the government of the Netherlands made some movements. Some public dialogue held involving society, farmers, and government representatives. New policy perspective was made but it was not easily accepted by farmers. However in the government side, there was internal conflicts were happened. Civil servants of the department of agriculture had to adapt to the new policy-perspective as well. Since they were also interwoven with the traditional policy community and not used to formulate detailed restrictive regulations, they had difficulties to change their habits. While in the past they only formulated general regulations, which were thereafter smoothly further implemented by various corporatist farmer bodies, had now to formulate legally detailed legislation. This has resulted in the increase of legal staff, who had no traditional ties to the agricultural policy community and possessed legal know-how for formulating the new types of policies. There was also reorganization of departments which responsible to agriculture.

In recent situation in the Netherlands is now there is an open dialogue between sector and society. Dutch farmer have a positive image in the Netherlands. Society is changing and agriculture authorities' thinking is increasingly dominated by urban cultural concepts.

Environmental Co-operatives were established in the Netherlands in 1992 as local organizations of farmers (and often non-farmers) who work in close collaboration with each other and with local, regional and national agencies to integrate nature management into farming practices. There are about 125 Environmental Co-operatives in the Netherlands (although the exact number is uncertain as it depends on the definition used), 3 with an estimated 10 000 members, involving about 10% of all farmers and 40% of all agricultural land: about 2500 members are non-farmers as 60% of Environmental Co-operatives allow non-farmer members (Oerlemans et al., 2004 in Franks and McGloin, 2006). Environmental Co-operatives play many important roles in supporting the rural economy, but it is their work coordinating joint submissions, managing scheme payments and monitoring progress towards achieving environmental output targets.

Additionally, there are farmer-led associations or co-operatives concerning to protection to environment (including nature and landscape and essential component of production process, furthermore take joint responsibility for the outcomes) in the Netherlands. The goal of co-operatives included improvement of the environment, improvement of financial position, and development opportunities available, its members (van Dijk, 1990 in OECD, 1998). By early 1994, at least 30 group with a membership almost 2000 farmers and located throughout the country, declared co operatives. One of they initiatives is a desire to apply locally-tailored solutions to national and regional environmental problems. The emergence of farmer-led

initiatives can be seen, to some extent, as a logical outgrowth of the agriculture sector historical propensity to organize and regulate itself.

Dutch farmers are also horizontally and vertically linked within a much broader, over-arching institutional structure, comprising commodity boards, and farmers' unions. And they have a long-standing tradition of learning new techniques together and of sharing information, such as in the horticultural growers' study groups (OECD, 1994).

Learning from the Netherlands experience, it is not easy to change farming and policy making culture. Yet, with high commitment to improve environment, the Netherlands nowadays in advanced environmental-friendly farming practices. The Dutch government has been coping with agricultural challenges with making adjustments, however lies with the entrepreneurs with their creativity, courage and determination. They are always looking for new opportunities; furthermore create possibilities, to achieve their goal. The government has been seeking its role by finding the right balance between many interests.

3.3.2 Sustainable Agriculture in the Netherlands

The Netherlands agrees with the concept of sustainable agriculture as the sustainable management of agricultural ecosystems (the Ministry of Agriculture, Nature and Food Quality of the Netherlands, 2006). Furthermore it explains that a key aspect of sustainable management is that the primary objectives of agriculture are **achieved without damaging the quality of nature and the environment**, **while making optimal use of biodiversity and related natural processes**. Dutch policy is guided by the concept of 'good agricultural practice', which adds two elements to the principles of sustainable use: the protection of biodiversity including nature, landscapes and habitats, and participation and joint responsibility.

The Netherlands is now working to place sustainable agriculture on the global agenda, based on **the strengthening and sustainable use of agri-biodiversity with a fair socio-economic distribution.** The availability of food is no longer issue of Dutch agriculture. The sector now continues to play important role in supplying food for the world.

Considering environmental issue in agricultural sector, the Netherlands presents, however the most comprehensive, policy approach of all European countries. The central government issued a *National Environmental Policy Plan* in 1989, underlining its resolve "to retain the carrying capacity of the environment for the benefit of sustainable development". Three main concepts in the plan are: integral life cycle management; less intensive use of energy; and quality improvement.

The government oh the Netherlands has been helping their farmer through extension services, the promotion of scientific research, and the creation of specific types of agricultural education. In recent years, the government has also actively encouraged the consolidation of small landholdings into larger, more efficient units.

The new role of government of the Netherlands in agriculture is not one of direct intervention, but indirect inducement. This means that in achieving its policy aims and pursuing the public interest, the Ministry of Agriculture, Nature and Food Quality

call to a greater extent on agricultural holdings and the public to take responsibility themselves. The government creates the necessary terms and conditions to find answers to problems and challenges facing Dutch society.

Experience gained the Netherlands' sustainable agriculture movement is that Dutch agriculture is an outstanding example of intensive farming in a densely populated area. The sector was one of the first sectors to be confronted with the public demand to reduce its effects on the environment. In recent years the sector has shown that, with their new techniques and methods, Dutch agriculture are now at the forefront of environmental efficiency.

3.3.3 Agri-Environmental Policy Instruments in the Netherlands

Dutch agriculture is characterized by a high intensity and productivity. For a large number of products, total production is far more than the national consumption. The intensiveness of production brings on a variety of environmental problems, for instance due to pesticides, mineral pollution due to livestock production and greenhouse gas emissions from greenhouse horticulture. One of the priorities of Dutch agricultural policy is reducing the burden on the environment. There are two strategies to deal with this: a step-by-step introduction of environmental management and environmentally friendly technology on farms, and the development and stimulation of sustainable production systems.

The Netherlands has one of the most progressive and comprehensive environmental policies in the world and significant experience with market instruments. The approach to administration and formulation of policy is consultative and inclusive. Dutch officials seek to engage economic sectors in negotiations, leading to covenants on environmental objectives. Subsequently, these covenants are enacted into law and form the legislative basis of environmental policy (World Resources Institute, 1994). Environmental programs have followed the Dutch philosophy of establishing taxes that, as closely as possible, place the fiscal burden of government programs on the economic actors that create the need for public expenditures (Oosterhuis & de Savornin Lohman, 1994). There is significant damage from an agriculture with limited arable land and intensive use of chemicals. The Dutch manure problem causes water pollution, and in the late 1980s policies specific to this were adopted, including application of market instruments.

Agri-environmental measures in the Netherlands have focused on better control of use of farm inputs to minimize diffuse pollution and reduce eutrophication and acidification by nitrates, phosphates and ammonia. Many initiatives were launched in 2000 to achieve this aim, including proposals to limit the number of animals per hectare and support for organic farming. In 2001, the government released a policy document, Vision for Healthy Crop Production, which established the goal of reducing pollution from plant protection product by 95% by 2010 compared to 1998. The policy instruments are using for this policy includes education, farm certification, tightening of regulation on the sale and use of pesticide and pesticide tax from 2003.

3.3.3.1 Economic Instruments

a. Payment

In the Netherlands payment is aimed to encourage farm practices to preserve specified cultivated areas, rare animal breeds or other flora ad fauna.

- Payment program to support the adoption of less intensive farming practices for example programs to promote the extensification of crop production and livestock farming and the adoption of integrated crop production. Second is the payment program to support farmers at least 5 years to encourage the conversion from conventional to organic farming. Furthermore support for the maintenance of the organic farming beyond the initial conversion period is also offered by this payment.

- Payments based on far assets covers granting a monetary transfer including implicit transfers, such as tax and credit concession, to farmers to offset the investment cost of adjusting farm structure or equipment to adopt more environmentally friendly farming practices. The Netherlands offers payments to farmers to improve land and water quality by leaving land along watercourses free from manure and agricultural production and instead for promoting natural management.

b. Environmental Taxes/Charges

Since 1998, the Netherlands required farmers to submit to the authorities, an overview of inputs and outputs, leading to a surplus of phosphorus and nitrogen produced on their farms through Mineral Accounting System (MINAS). A prohibitive levy is then charged on estimated losses of nutrients over a certain limits.

c. Tradable Permits

To assist the management of nutrient pollution, a system of manure production quotas was created in the Netherlands in 1986. In 1994, these permits were made tradable with various constraints, including the government taking 25% of the quota involved in each transaction, and geographical restriction to keep the animal population from further increasing in the areas which are identified as having high concentrations of manure production.

3.3.3.2 Regulatory (Command and Control) Instruments

- Nitrate Directive no. 676/91 which requires member states to limit the application of manure in nitrate vulnerable zones to 170 kg/hectare/year.
- The EU Integrated Pollution Prevention and Control Directive which has been applied since 1999, requires member states to impose emission limits in environmental permits which are mandatory for potentially polluting plants of a given scale, particularly very large pig and poultry facilities.

- Under the Bird Directive no. 409/79 and the Habitat Directive no. 43/92, the member states are required to take steps to protect endangered species, as well as the habitats upon which they depend for feeding and breeding.
- Manure policy. The main aim of the Fertilizers Act (Meststoffenwet) is to improve the quality of the soil, groundwater and surface water by using smaller quantities of minerals in agriculture and by doing so more efficiently. Since 1991, the fertilizers Act has also served to implement the objectives of the EU's directive on nitrates. The nitrates Directive is intended to reduce the level of water pollution caused by the nitrates used in agriculture and prevent further pollution.
- In 2006, The Netherlands is introducing a new policy on minerals and fertilizers. The most important feature of the new policy will be that the system of levy-free surpluses will be replaced by a system of use standards for animal manure, total nitrogen fertilization and total phosphate fertilization.

3.3.3.3 Voluntary (Advisory and Institutional Measures)

a. Research and Development

The Netherlands held cooperative research program, a special research institutes jointly funded by government and industry to conduct research, with a specialized agricultural research focus.

Dutch environmental research an development are influential at national and international levels, with respect to technical and political issues.

b.Technical Assistance

The government has also set up an extensive demonstration and information program to assist farmers to comply with the Mineral Accounting System (MINAS) standards.

c. Labeling

Eco-labelling: Interest in organic food has grown considerably in recent years. In 2000, the businesses covered by one eco-labelling system, EKO-keur, sold approximately 6,800 products with an estimated turnover of EUR 330 million. Their share of the total food market was only 2%. The largest market share is in fresh fruit and vegetables (about 5%) and dairy products (about 10%). The substantial rise is mainly due to the introduction and promotion of organic products in supermarkets.

Certified companies: The number of Milieukeur businesses marketing approved products (food en non-food) which has risen sharply since the early 1990s. In 2001, the Milieukeur system included 142 certified non-food companies and 46 certified food companies. The number of EKO-keur certified companies in 2001 was 917. Certified companies are companies which market products with the Milieukeur or EKO-keur label. The companies are producers, importers and traders. The Milieukeur system sets general requirements for the products,

whilst the EKO-keur guarantees biological production methods (i.e. entirely without synthetic pesticides or artificial fertilisers).

The number of certified companies provides only a limited indication of the development of the market. It groups together large and small companies. The scaling up of activities means that actual turnover growth may be larger than suggested by the number of certified companies. For example, the number of products granted the EKO-keur label may have increased much more than the number of certified companies.

The MBT ('Environmentally Aware Cultivation'): certificate, serves mainly to increase farmers' awareness of nutrient and pesticide use. With regard to both administrative obligations and actual management practices, the MBT label largely mirrors the terms of standing Dutch legislation.

The CC ('Controlled Cultivation') and AMK ('Agro-Environmental') labels comprise more and more stringent criteria. With their restrictions on nutrient and pesticide use, these two labels serve as the two principal labels in the field of integrated agriculture. There is little difference between the two and it is recommended that they be merged, on the basis of a standardised definition of integrated agriculture.

The EKO ('Organic Agriculture') label proceeds from different principles, but as a minimum should also comply with Dutch legislation without exception.
For both integrated and organic agriculture, in addition to criteria on pesticide and nutrient use, criteria should also be developed for water management, energy and materials use and habitat management. The relationship between the criteria and their respective thresholds and Dutch legislation is also addressed. Existing criteria are frequently specified in such a way that the environmental benefits cannot be ascertained. This is a serious drawback for the parties further down the chain: auctioneers, retailers and consumers. It is recommended to develop qualitative guidelines for an Agricultural Stewardship Council at international level, like the Forest Stewardship Council, and a separate label for integrated agriculture per country comprising quantitative criteria for all relevant aspects of farming operations.

d. Community Based Measures

In the Netherlands, pig farmers, nature groups, pig processing firms and government representatives are working together in order to promote farm practices that take into account community concerns, including environment.

3.3.3.4 Information Instruments

The Netherlands is making strong efforts to inform and educate the public about environmental protection (OECD, 2003). The quality of environmental information is high and reporting activities and access to this information is well established.

Tradition of openness and transparency in policy making and goal setting is maintained for the benefit of civil society. Key documents like the National Strategy

for Sustainable Development, the National Environmental Policy Plans (NEPPs) and annual "balance" reports present environmental issues using a forward looking approach.

Public access to information is well institutionalized. The environmental information is publicly available on internet and special information offices including environmental reports. To get information from companies, financial incentives have been encourage them to co-operate with research institute. The right to access environmental information is embodied in national law and recognized as enforceable in the courts.

3.3.4 Mixed Instruments

The Netherlands often use mixed instruments to achieve a certain goal of environmental policy under the EU directive. For example program to reduce ammonia emission from agriculture. This program uses regulation instruments including rule for assessing environmental permit application for farmer in storing manure and manure spreading methods and period. There is also decree on the Use of Livestock Manure which describes the application methods that minimize emissions.

The government also provides plans to make low-emission livestock housing, which has been encouraged through incentives. Another instrument used in this program is tax to encourage use fulfill the requirement. Furthermore there is regulation that farmers who keep livestock must apply for an environmental license from municipality. The licensed will only be given if the farmers satisfy all environment criteria set by the local authorities.

"A mix policy instruments supporting market based measures to move towards sustainable development" (OECD, 2003). The Netherlands has used diverse mix of measures to move towards more sustainable in agriculture.

3.4 France

France is one of the largest and wealthiest countries in Europe and is the world's second largest exporter of agricultural products, after the USA. French culture is strongly linked to food, agriculture and, to some extent, hunting. In France, agriculture has historically stood for the civilization of that territory, its appropriation from its natural state and its conversion into something useful both in economic and social terms.

France is a country of proud peasant farmers; it has been a major player in the development and shaping of the European Union's Common Agricultural Policy since its inception in 1957. France has a very strong agricultural and hunting lobby group and has a relatively weak nature conservation lobby.

Farmers unions are perceived as being an action-oriented lobby that is resistant to change and the imposition of central legislation. French farmers are supported with a very complicated system of payments; there is an extensification scheme which is meant to encourage farmers to graze fewer cattle over a wider area.

3.4.1 Agriculture in France

In all European states, the emergence of agri-environmental policy is fundamentally rooted in national rural and agrarian culture (Buller 1997 in Buller, 2000). Buller (2000) argues that the agri-environmental agenda in France reflects above all a wider and more complex internal debate about the future direction for French farming a a whole and the future role of the agricultural profession n contemporary society (Cortet et al, 1993 in Buller, 2000). The socio-cultural backdrop to agri-environmental policy can be briefly summarized under three courses: (1) the territorial importance of agriculture, the demographic and economic heritage of the Frenh farming profession, and the relative absence of an alternative non-production related conception of French rurality.

France is one o the largest European states. The relative vastness of the national territory, even with the great variety of landscape types, has produced a particular relationship between the natural environment and primary production. On the one hand, agriculture in France has historically stood for the "civilization" of that territory, its appropriation from its natural state and its conversion into something useful both in economic and social terms. On the other hand, it has given to the belief that the territory is sufficiently large to accommodate individual instances of pollution and degradation. It has, in turn, led a long standing separation (in spatial and policy terms) of the environment to be specifically protected and the environment as it is farmed. Furthermore, national parks, nature reserves and ecologically sensitive areas tend to be located in areas where agricultural activities are not much (Moreux, 1994 in Buller, 2000).

Second, France's long standing agrarian tradition and the importance of farming symbolism, within the national economy and in national socio-professional and political structures, continue to play a significant role in setting attitudes to both agriculture and the rural environment (Hoggart *et al.*, 1995 in Buller, 2000). A large peasant agricultural population who occupy a multitude small land holdings, selling its' surplus product locally, has been the dominant model of French farming for centuries. Supporting by successive political regime, the defining role and function of rural environment has been agricultural exploitation. Although post war modernization has greatly changed the social and economic structure of France's rural, it also reinforced the economic and political hegemony of the agricultural policy community within rural areas and rural policy formulation (Buller, 1997 in Buller, 2000). The active agricultural population in France in 1954 was 27% of national working population but now it is decreased to 5.6%. In social, territorial, economic and latterly environmental terms, the decreasing of the French agricultural population and the real possibility of a *France sans paysans* become the dominant concern to make the maintenance of agricultural activities become a critical element in protecting rural space.

Third, France was an essentially rural nation until the 1950's. France has not developed a tradition of rural preservationism and amenity protectionism. An explicit social demand for protected landscape and on-farm environmental management is a relatively recent phenomenon, and even then, it is often limited to rural areas that have experienced population growth which follows urban outmigration (Buller, 2000). In France, the agricultural occupation and exploitation of the countryside

remain the critical defining components of that space and its social and political representation.

Reflecting those three considerations and the implicit linkage between an active agricultural population and a "healthy" countryside, the agri-environmental debate in France has primarily focused on the sustainability of French agricultural activity, particularly in areas of relatively marginal economic viability (Buller, 2000). The central concern of agri-environmental policy is threat of agricultural treat, farm abandonment, declining agricultural population, and shrinking rural economy.

France, as Buller (2000) argues, has benefited more that any other states of EU from CAP, and become the largest exporter of foodstuffs within the EU. A great number of farmers remain fragile. In one side, France agriculture is the major producers (who are also the main recipients of subsidies) and the other side it is less economic viable.

The role of farmers:

In the early 1960s, France embarked on a bold program of agricultural modernization, and by the 1980s France had become the second largest exporter of agricultural commodities in the world. The structural program was partly formulated by the Fédération nationale des syndicats d'exploitants agricoles (FNSEA), a France's largest farm group, which enjoys a corporatist relationship with the state (Muller 1984; Servolin 1985; Keeler 1987 in Montpetit, 2000). In the context of this relationship, the FNSEA even shared through the Chambers of Agriculture in the actual implementation of the government's structural policies which were designed to increase the productivity and efficiency of farming (Coulomb, 1990 in Montpetit, 2000). With a such close relationship in a highly institutionalized policy network, it seems that farmers in France are well placed to fight off any policy for the agricultural sector, including an environmental policy that does not 'fit' with the productivist goals that the FNSEA has traditionally pursued (Montpetit, 2000).

The environmental measures most in demand by farmers are those which require a reduction in agricultural inputs. Great interest has also been shown amongst farmers for grassland extensification programs. This indicates that many farmers chose to participate in measures which necessitate only minimal changes to their production systems.

The reasons farmers participate in agri-environmental programs are very varied and linked to their degree of production specialization. However, one motive, which dominates in every country discussed in this paper, is that of economic gain, i.e. additional support and payment for agricultural production is reason enough to apply the measures. However, the payments may be limited and a significant effect on income only achieved in combination with other agricultural support programs, however coherent or not these may be with agri-environmental programs. Ecological motives, for example concern for the environment or a desire to protect landscape and natural heritage, seem to be merely of secondary importance.

The correlation between different types of specialized production systems, their participation in agri-environmental programs and their motives for participation can only be analyzed at the level of empirical. Beyond predominantly economic motives

combined with an increasing environmental awareness on the part of French farmers, there appears to be no generalized or coherent motive as to why farmers participate in agri-environmental programs. Increasing environmental awareness amongst French farmers can be seen as a turning point in the agricultural community's long dominance in France. Another factor in this change may be that farmers have now begun to realize that they must negotiate their production methods with other groups in society.

3.4.2 Sustainable Agriculture in the France

France is the EU country with the largest area of agricultural land and the highest number of farms. In France, the Farming Orientation Law of July 1999 has set down a precise procedure for the implementation of sustainable agriculture: the contrat territorial d'exploitation – or territorial farm contract (TFC).

The recent national sustainable development strategy was approved in 2003. The authorities apply the polluter pays and user pays principles, so both direct and indirect subsidies for environmental protection are generally minimal. The recent reforms of the EU's Common Agricultural Policy have also tended to dissociate farm subsidies from environmental pressures. Environmental decision making has been made more coherent through various consultation mechanisms (e.g. the National Commission for Public Debate, the 2003 national sustainable development strategy and preparation of the water development and management master plans) and through joint management mechanisms (e.g. territorial contracts on coastal areas and Natura 2000 sites).

3.4.3 Agri-Environmental Policy Instruments in France

Important characteristics of the French regulatory regime include a high degree of centralization and extensive cooperation between regulators and firms. Economic development and environmental regulation are seen as closely linked, and both are within the province of state authority in keeping with the French tradition of indicative economic planning. The French experience with market instruments is limited to two effluent charges and the provision of subsidies.

The French first agri-environmental policy is resulted directly from Regulation 2078/1992 were divided into three central elements (Buller *et al.*, 2000). The first consists of the national grassland premium for the maintenance of their extensive husbandry (a horizontal scheme made available to eligible farmers throughout France and for which the contractual obligations, rules and payment levels have been set nationall (Buller *et al.*, 2000).

The second element consists of the regional programs that include seven standard measures broadly corresponding to agri-environmental actions identified in Regulation 2078/1992 (Buller *et al.*, 2000). The contractual obligations, rules and payment levels for these are set nationally through the definition of target zones, and the setting of budget allocations are undertaken by the regional level administrations in consultation with local actors (Buller *et al.*, 2000). Scheme of this measures are: protection of water resources through the reduction of entrants, conversion of arable land to extensive grassland, 20-year set-aside for water protection, extensification through the reduction in stoking rate or by enlarging grazing area, preservation of

threatened breeds, 20-year set-aside for wildlife protection, and conversion to organic farming (Buller *et al.*, 2000)..

The final element of the French policy is the local operations which through they in fact form part of the regional programs, maybe considered separately because of their fundamentally different structure (Buller *et al.*, 2000). Scheme of this measure is landscape and wildlife protection, the maintenance of traditional farming practices and countryside management (Buller *et al.*, 2000).

Environmental policy implementation is carried out through a *balanced package of instruments* including regulation, economic instruments, and voluntary approaches.

3.4.3.1 Economic Instruments

This section provides some example of each instrument used in France. Enforcement of environmental regulations has benefited from a strengthened inspection system. France makes *extensive use of economic instruments* in the form of environmental taxes, charges and various types of financial support.

Charges for water services and waste management, and some other economic instruments, are used effectively. Several environmental taxes (as part of the general tax on polluting activities) were created. New instruments, such as trading in greenhouse gas emission permits, are being developed. Planning tools (e.g. state-regional contractual plans, climate plan, health and environment plan) and the system of land use planning play their part. Better institutional integration of economic concerns within environmental policies has been made possible by remarkable progress on *economic studies* and environmental assessments within the *Ministry of Ecology and Sustainable Development*.

a. Payment/Subsidy/Incentives

Direct farm subsidies (i.e. not counting price support) accounted for some 60% of farm income in France in 1997. Farming was also one of the main beneficiaries of water subsidies, especially for irrigation. Between the 1960s and mid-1990s the amount of irrigated land more than quadrupled under the combined effect of undercharging for water and subsidising irrigation investment. Water users pay considerably less in agriculture than in other sectors; the withdrawal charge for farms is roughly one-fifteenth of what households pay, for instance.

Irrigation is also subsidized (up to 65%), through direct support to develop water supplies and EU aid linked to irrigated land. Moreover, certain cross-subsidies, such as reduced fuel taxes, indirectly benefit agricultural production.

Developments in the World Trade Organization and EU in recent years have led to a *gradual reduction in farm subsidies*. Structural changes to EU subsidy programs have also shifted support away from production-based payments to aid with beneficial long-term environmental effects. Improved access to markets and lower export subsidies are other positive steps in the right direction.

EU subsidy reform has included *agri-environmental measures*. In France, such transfers, through sustainable farming contracts, totalled some EUR 1.6 billion over 2000-03, or almost one-third of expenditure budgeted in the national rural development plan. Added to that is financial aid in national programs addressing particular environmental problems. Some of these programs, such as *PMPOA* and programs to help farmers switch to more environment-friendly production methods, have resulted in observable environmental improvements. *Territorial farming contracts*, and the sustainable farming contracts that followed them, have encouraged conversion to organic farming.

Most decisions concerning subsidy programs, however, continue to be based on available financial resources rather than expected environmental or economic effects. Hence, it is important to continue reforming *environmentally harmful subsidies*. Measures needed include improving information about such subsidies, improving analysis of their dynamic and long-term effects on the environment and the economy, putting in place adjustment policies and transition measures to gradually introduce the necessary reforms and increasing international co-ordination to minimize effects on competitiveness. More generally, support programs of all types (economic subsidies with environmental effects, payments with direct environmental objectives, ecoconditionality measures) should be examined from the standpoint of their net impact on environmental effectiveness and economic efficiency.

France implements a variety of payment including:

- Farm pollution scheme, offering financial incentives to farmers agreeing to improve pollution control techniques on their holdings. The participation of farmers in this program is voluntary.
- Sunsidy for encourage less input-intensive and more environmental friendly farming practices. The program is strengthened by Territorial Farming Contract and the Sustainable Farming Contract, in order to encourage conversion to organic farming
- Subsidy for supporting farmers at least 5 years to encourage the conversion from conventional to organic farming.
- Subsidy to introduce, maintain, and restore specific landscape features, such as hedges and trees, as part France's plan de développment rural national (PDRN) 2000-2006
- Direct Farm Subsidies accounted for some 60% of farm income in France in 1997. Farming was also one of the main beneficiaries of water subsidies, especially for irrigation. Water users pay considerably less in agriculture than in other sectors. It is roughly one-fifteenth of households pay.
- From 2005, as one of the conditions on farm subsidies under the EU's Common Agricultural Policy (CAP), farmers have to establish grass strips, first along watercourses, then at breaks in slope and in protection perimeters of public water supply sources.

b. Environmental Taxes/Charges

- The Water Act of 1964 created a system whereby watershed-based agencies were mandated to collect a royalty from those who use or pollute water and to reinvest the money in water quality improvement projects. Farmers who

do not follow more sustainable practices face the risk of paying royalties to the water agencies and other penalties.

- Charges for water supply including for agriculture
- *Taxes* have been introduced on pesticides, on phosphate detergents and on aggregates extraction; the scope of a more recent levy on nitrates should be extended.
- Pollution tax on antiparasite pesticides in 1999

c. Tradeable Permits

Tradeable or transferable permits are increasingly recognized as a cost-effective and flexibly policy instrument for pollution control and natural resources management. One example of this instrument is land preservation.

3.4.3.2 Regulatory Instruments (Command and Control Measures)

Today some 70% of French environmental legislation is of EU origin. Transposing directives into national law is not entirely straightforward: a European Commission report has identified 38 shortcomings on France's part. The directives on nitrates, urban waste water, habitats and birds have posed particular problems.

- France used the EU extensification program (4115/88) briefly to support conversion to organic farming in 1992. It was implemented by **Decree 92-369.**
- In France, the water-management system, in operation since 1968, is a complex combination of direct regulations and incentive instruments. Water-effluent charges play a major role in financing pollution-control facilities. A sizable share of these achievements can be attributed to the use of revenue raised by the charges, although the impact of the charges as an incentive not to pollute is unclear; it is probably low.
- France, almost 60% of whose territory is farmland, gives legal recognition to *agriculture's role in landscape protection and management*. The 1993 Law on Landscape Protection and Enhancement recognises the importance of addressing quality for all landscapes. Agricultural policy measures have an effect on the maintenance and quality of landscapes, especially through conditions attached to subsidies (e.g. regarding land maintenance and grass strips) and support for farming in mountain areas (e.g. natural disadvantage compensation payments).

3.4.3.3 Voluntary Instruments (Advisory and Institutional Measures)

a. Research and Development

- There are many organizations, both governmental and non-governmental organizations, conduct research for agricultural development in France. For example French Agricultural Research Centre for International Development (CIRAD) conducts research in seven classifications: annual crops; perennial crops; fruit and horticultural crops; animal production and veterinary medicine; forestry; land, environment and people; and advanced methods for innovation in science. CIRAD are also fully or partly devoted to agricultural research and training for development, in partnership with the scientific community from developing and emerging countries

- The national research agency (ANR), a funded agency, is aimed to rationalize the balancing of rural and development programs which allow more focus on national priorities.
- *environmental education* in primary and secondary schools
- Concerning *pesticides*, in late 2003 the ministries dealing with health, agriculture, consumer affairs and the environment asked the French Environmental Health Safety Agency, the French Food Safety Agency and IFEN to establish a research centre on pesticide residues. Its tasks are to gather information about pesticide residues in various environments and in products for human consumption, to estimate exposure levels and to identify ways to improve information systems.

b. Technical Assistance

This instrument provides farmers with on-farm information and technical assistance to plan and implement environmentally friendly farming practices.

c. Labeling

Eco labeling: in France the national standardization organization is in charge of the certification.

3.4.3.4 Information Instruments

Information instruments used in France includes education, transfer technology and policy to farmers. But the public still needs to be better informed about its *right of access to information*. Web sites are often unclear to inexperienced users; a national environmental information portal could improve the effectiveness, efficiency and use of the information available. More extensive environmental information on subjects such as industrial waste and biodiversity would be helpful.

3.4.4 Instrument Mix

Most decisions about *subsidies* are still based on availability of financial resources rather than expected environmental or economic outcomes. *Taxes* take little account of environmental externalities, and some aspects of transport and energy taxation are harmful to the environment. Problems remain, especially at *local level*, with integrating environmental concerns into economic decisions and with achieving economic efficiency in implementing environment policies.

Environmental policy implementation is carried out through a *balanced package of instruments* including regulation, economic instruments, planning and voluntary approaches. Enforcement of environmental regulations has benefited from a strengthened inspection system. A wide range of *economic instruments* is used. Charges for water services and waste management, and some other economic instruments, are used effectively. Several environmental taxes (as part of the general tax on polluting activities) were created. New instruments, such as trading in greenhouse gas emission permits, are being developed. Planning tools (e.g. state-regional contractual plans, climate plan, health and environment plan) and the system of land use planning play their part. Better institutional integration of economic concerns within environmental policies has been made possible by remarkable

progress on *economic studies* and environmental assessments within the *Ministry of Ecology and Sustainable Development*.

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CHAPTER 4
INSTRUMENTS OF AGRICULTURAL AND ENVIRONMENTAL POLICY ON SUSTAINABLE DEVELOPMENT IN INDONESIA

This chapter depicts instruments used for sustainable agriculture in Indonesia. Section 4.1 reviews general information about agriculture in Indonesia. It explains briefly the agriculture condition in Indonesia and some programs launched for agricultural development. Section 4.2 depicts context sustainable agriculture in Indonesia. It explains some initiatives towards sustainable agriculture in Indonesia and stakeholders playing role in agriculture sector.

4.1 Agriculture in Indonesia

Indonesia is a developing country and is the fifth most populated country in the world. The population is concentrated mainly on six main islands: Java, Sumatra, Bali, Kalimantan, Sulawesi and Irian Jaya. The Java Island is the most densely populated areas in the world; with about 60% of total Indonesian population live there. Estimates reveal that there are 60% of the total Indonesian population works in agriculture sector and most of them are in Java and Bali islands because the islands have higher degree of fertility than other parts of Indonesia. The agriculture area covers about 20 million hectares compare to total land area 202 million hectares.

Agriculture has played an important role in Indonesia's economies and as a source of both GDP and employment. There are three main types of farming: (1) smallholder farming (mostly rice), (2) smallholder cash cropping, and (3) large foreign-owned or privately owned estates. The latter two produce export crops. Small-scale farming is usually carried out on modest plots, those in Java Island average about 0.8–1 ha (2–2.5 acres), often without benefit of modern tools and methods, good seed, or fertilizer.

The staple food commodity is rice. It is planted mostly in the agricultural land (approximately 7.5 million hectares of agricultural land) (FAO, 2004). Apart from being a staple food, rice is a major source of income and employment, especially in rural areas. Therefore, rice is considered a socio-economic as well as a political commodity.

Before Green Revolution, Indonesian agriculture was held by natural farming. Farmers were the subject in farming. The farmers grew their crops and cultivated the land in accordance with nature, using natural resources without dependence on external inputs. They had a natural crop diversification and did not cultivate large areas of monocultural crops. Since the coming of the Green Revolution, however, the farmers have been forced or persuaded to monocultural farming methods, with a dramatic loss of crop diversification. Younger farmers do not understand about traditional methods and values, and have come to depend on this type of farming

using high external inputs of chemicals and water. However, present day farmers in Indonesia are generally the poorest community of all. The farmers' holistic understanding of natural science is being lost, and many parties are concerned with rehabilitation of the agriculture system in Indonesia - NGOs, researchers, etc.

The Green Revolution in Indonesia, in 1980s, was attempted to achieve food self-sufficiency through expansion of arable acreage, improved farm techniques (especially the use of fertilizers and improved seeds), extension of irrigation facilities, and expanded training for farmers. Production of rice and other food were increasing to meet domestic demand. Many attempt and policies supporting this effort were launched, including high degree of fertilizers and pesticides uses, better transportation network between rural and urban areas, and irrigation network expansion.

To provide more land for agriculture, the government of Indonesia has released program of conversion peatland in Borneo (Kalimantan Island) for agricultural lands during the mid of 1990s. The policy has been criticized in its approach as too centralistic, without support of the collective action from the public. If this mega project continually carried out it will contribute to the deterioration of environment. Another centralistic approach, in almost all of irrigation investment in Indonesia, has weakened collective action from farmer communities and created dependency to the government.

The efforts for achieving rice self-sufficiency were not economic sustainable especially the resources for doing the efforts and resources for maintaining the infrastructure built to achieve it. The government of Indonesia, also considering international issue on sustainable development, began to do more sustainable faming in last 1990s.

Farmer Organization:
In Indonesia, farmer originations are sporadic over the country and are established for different aims for example organization for learning such new methods or technology, organization for taking responsible in managing irrigated water, organization for gaining micro credit. Amongst, there is almost no strong farmer organization in national level. Some temporary organizations for gaining technical assistance and incentives from government or NGO sometimes exist.

The dialogue between farmers, authorities, and other stakeholders are held in every year in each level. But mostly, the dialogues are such for formal procedures for development planning. The voice from farmers is not significant for directing the agricultural development indeed. The mechanism for farmers to give their aspirations and ideas for agriculture development does not exist. This may be because farmers are considered as still low educated community that cannot be involved in development planning. In my opinion, it is important now to encourage farmers to involve in real development planning because they are very important actor in making such strategies and programs to achieve sustainable agriculture success. Some educated people also now start choose job as a professional farmers and they are potential for sharing knowledge for farmer community.

4.2 Sustainable Agriculture in Indonesia

Since the government of Indonesia realized that efforts for achieving rice self-sufficiency in Green Revolution era has resulted to many environment deterioration and economic unsustainable, initiatives for a more sustainable farming were introduced. The first policy made for this is the removal of pesticides and fertilizer subsidy in 1998, as well as the banning of some of pesticides uses. The government also introduced the subsidized credit scheme to help the farmers to produce the foods. The scheme was not successful since it had a very low repayment from the farmers. Despite the problems faced by this sector, its role as a buffer during the period of crisis appeared to be important.

For transferring technology to the farmers more effectively, since 1995, an Assessment Institute of Agricultural Technology (AIAT) or Balai Pengkajian Teknologi Pertanian (BPTP) has been established in each of the provinces which are expected to shorten the transfer of technology to the stakeholders. AIAT has a strategic role in linking research or technology generation and development program. In strategic from the view point of its function to translate the research results into adaptive research and to make necessary adjustment and modification by taking into account the feedback. Further the role of AIAT is to backstop the close and reciprocal interaction between the three important actors in technology generation and dissemination i.e. researchers, extension workers, and farmers in the locale-specific activities.

Since 1999, Indonesia has entered into the era of decentralization after the effectiveness of the law on regional government and the law of fiscal decentralization. The first law is an attempt to democratize district government with minimum intervention from the central government while the second is designed to support fiscal resources or balancing financial power between central and district government. Within the context of the role of agriculture, a positive signal about decentralization is that almost all district government has put high priority on agricultural development as one of the main priorities for regional development.

There are some dynamic changes and situation have led Indonesia to take a new approach to agricultural development in Indonesia (Rasahan, 1996):

- From centralized to decentralized planning, in order to ensure people's participation, optimize the use of diverse natural resources, and to achieve a more equitable development of different regions.
- From agricultural production to farmers' incomes and welfare, which means, it is not only technical improvements, but marketing and socio-economic aspects.
- From the production of primary commodities to agribusiness in rural areas, in order to create added value and retain it for rural households.
- From labor-intensive technology to create more employment opportunities, to capital-intensive technology and agricultural mechanization as a means of increasing productivity and efficiency.
- From a strategy of development led by agricultural import substitution to one led by agricultural exports in response to world trade liberalization.
- From a dominant government role in economic development activities to more participation by the private sector.

An important policy on sustainable agriculture in Indonesia was Integrated Pest Management IPM) launched in 1979. This program altered the reign Indonesian pest control policy from a unilateral approach (depending solely on pesticides) to a more comprehensive one (combining various control tactics such as culture control, plant resistance, biological control, and pesticides). In 1986 the government intensified implementation of the program through Presidential Decree No. 3/86**.** Starting in that year, the National Development Planning Agency (Bappenas) took over the implementation. Bappenas invited officers and scientists from various government agencies, leading universities, and international organizations to participate. In 1989, a Working Group of Indonesian and international IPM experts was formed to guide the day to-day implementation of the program. The programs were funded by USAID and supporting technically by FAO.

The GOI had continued introducing environmental policies and programs to deal with its highly complex natural environment. The policies were intended to encourage wise use of resources, control of pollution, deforestation and other activities that potentially degrade biological diversity. One of prominent recent policy towards sustainable agriculture in Indonesia is organic farming.

There are also some projects funded by foreign NGO and ADB for sustainable agriculture. For example project funded by USAID called Farmer Learning and Environmental Stewardship in Indonesia which held in 2000-2006, provides farming communities with training and technical assistance to develop more productive and ecologically sound agriculture and agroforestry systems. This project engages farmers in season-long training courses where farmers learn to experiment and pioneer new cultivation techniques in their own fields. Through these activities, farmers learn how to improve their agricultural practices and learn how to establish sustainable agroforestry systems, as well as develop livestock. Some recent practices on sustainable agriculture in Indonesia can be concluded as:

- ***Integrated pest management (IPM)*** is an ecosystem-based strategy that seeks to control pests or their damage through a combination of techniques (biological control, pest monitoring against economic thresholds, habitat manipulation, modification of cultural practices, use of resistant varieties), using less toxic chemical pesticides only after pest monitoring indicates their need.
- ***Conservation farming (CF)*** encompasses four broad, intertwined management practices: minimal soil disturbance (no plowing and harrowing), maintenance of a permanent vegetative soil cover, direct sowing, and sound crop rotation.
- ***Low external input and sustainable agriculture (LEISA)*** uses farmers' knowledge and a range of management practices (agroforestry, IPM, intercropping, crop-livestock integration, microclimate management) to minimize the need for purchased inputs.
- ***Organic agriculture*** employs agronomic, biological and mechanical methods to control pests and maintain soil fertility with virtual elimination of synthetic chemicals for crop and livestock production.
- ***Precision agriculture*** maximizes productivity of inputs, often using a global positioning system (GPS) to match input application and agronomic practices with soil attributes, seasonal conditions, and crop requirements as they vary across a field or between small plots.
- ***Diversification*** is an adjustment of the farm enterprise pattern in order to increase farm income or reduce income variability by reducing risk, by

exploiting new market opportunities and existing market niches, and diversifying not only production but also on-farm processing and other farm-based, income-generating activities (Dixon et al. 2001).

In respect to environmental issues, the most important of the State departments with sectoral responsibilities are those involved in large-scale land-use activities. These include: The Departments of Mines and Energy; The Department of Forestry and Estate Crops (DFEC); The Department of Agriculture; The Department of Public Works; The Department of Transmigration; and The Department of Home Affairs.

Regarding sustainable agriculture policy formulation and implementation, the government has not assigned authority to develop and implement policy to a single agency. Consequently, several government agencies have responsibilities relevant to sustainable agriculture issues. They can be generally divided into first, State ministries with a planning and coordination role and, second, Ministry of Agriculture, Ministry of Environment, and sectoral departments with line agencies in the provinces.

The powerful national development planning agency, BAPPENAS, is the body charged with the coordination of all planning activities at the national level, also playing a key role in the coordination of annual budgets. While BAPPENAS has no obvious sustainable agriculture responsibility, given its responsibility for overseeing state planning and budgeting, it plays a key role in sustainable agriculture planning. In a similar fashion, in the provinces and regencies the planning boards (Bappeda provinsi and Bappeda kabupaten/kota) play important roles in coordinating all planning and advising and monitoring development programs, thereby becoming indirectly responsible for conservation (NRMP & BAPPENAS 1994).

Considering decentralization, the Department of Agriculture is redefining its role in response of agriculture development in Indonesia, with a greater focus on facilitation, policy framework and resource mobilization. It retains an important role in assuring that national systems are sustained and built for the delivery of public goods, technology, regulation and research to regencies/municipalities.

In regency/municipality level, transition to a policy on sustainable agriculture is, however, a significant process involving many change actions and stakeholders. A more conducive policy framework was required for the further development of more sustainable agricultural practices. This policy is expected to establish the necessary framework for specific action while it also values the alternative aspirations of the population within the district.

There are also NGOs concerns to sustainable agriculture which active in action research, resource management programs, raising public awareness on conservation issues and advocacy. At times NGOs have also had a significant effect on agricultural and environmental policy.

The multilateral and developed nation donor agencies responsive to international environmental concerns have also supported sustainable agriculture projects and reform policy on it. Some programs towards sustainable agriculture are funded and/or technically assisted by those agencies, e.g. FAO, LEISA, USAID, ADB, and UN.

Recent strategy of Indonesia to create a sustainable development of food and agricultural systems is to change agricultural development into agribusiness system development having a reliable competitive strength, people oriented, sustainable, and decentralized. In this system, sustainability is indicated by long-term oriented, continued technology innovation using environment-friendly technology, applies measures to ensure resources and environmental sustainability, and the ability to respond to the market signals timely and efficiently.

4.3 Instruments of Agricultural-Environmental Policies in Indonesia

A wide range of policy instruments has been used to achieve government objectives for sustainable agriculture.

4.3. 1 Economic Instruments

The economic instruments in Indonesia are mostly held by payment. The government, from its expenditure, or together with loan or grant from international agencies, give farmers subsidy and credit.

a. Payment

- Subsidy for seeds in almost held every year. The Department of Agriculture allocated resources for provinces, then provinces allocate it for their regencies and municipalities.
- Soft credit for farming capital. Farmers were lent sum of money from the government with guarantee.
- The Ministry of Agriculture is funding farmer training in 39 districts in 14 provinces on organic SRI methods, both for the higher price that this rice can obtain in the market and for the more benign impact on soil and water resources.

b. Environmental Taxes/Charges

Still not in used in agricultural sector. This instrument may be still not good to be applied in Indonesia regarding to farmers (as potential polluter to environment) considered as the lowest income community in Indonesia. Besides, regulation for the charge has to be clear and furthermore control and monitoring for this kind of instrument has to be good. It is such a constraint for Indonesia to implement this kind of instrument.

c. Tradable Rights

Still not in used in agricultural sector. There are some preconditions for tradable permits that Indonesia still cannot make them at this time. Tietenberg (2002) explain that tradable permits systems may not maximize the value of the resource if the market conditions are not right. Circumstances when the conditions may not be right include the possibility for market power, the presence of high transaction costs and insufficient monitoring and enforcement. Because tradable permits involve an aggregate limit on access, however, the consequences of market power and/or high transactions cost typically affect costs more than environmental quality. Furthermore even in the presence of these imperfections, tradable permit programs can be designed to mitigate their adverse consequences.

Another important precondition involves the absence of large uninternalized externalities. The presence of uninternalized externalities would imply that maximizing the net benefits of permit holders would not necessarily maximize net benefits for society as a whole even with a fixed environmental target. Polluters that reduce a covered pollutant by switching inputs could well increase emissions of another unregulated pollutant. The regulation could serve to protect one environmental resource at the expense of another.

4.3.2 Regulatory Instruments (Command and Control Measures)

Some regulations for supporting sustainable agriculture have been made including regulation for banning some fertilizers and decree for organic farming. Regulation for a more sustainable farming can be different among regions, depend on some factors such as their concern in agricultural development, characteristics of region and farmers, and political interest of the local authorities.

4.3.3 Voluntary Instruments (Advisory and Institutional Measures)

Many voluntary programs held by government and NGO to transfer organic farming technology for farmers.

Sustainable agriculture training in Indonesia. The project focuses on sustainable agriculture technologies based on local knowledge to help stabilize farm production thereby reducing dependence on forests, and ensures that all members, including women have equal opportunities to participate.

Small Scale Irrigation Management Project (SSIMP)

Since 1990, in accordance with the Government of Indonesia's policy to prioritize development in eastern Indonesia, where water resources are limited and the economy is depressed, a Small Scale Irrigation Management Project (SSIMP) has been undertaken with financial assistance from the Japan Bank for International Cooperation (JBIC). The executing agency for the project is the Directorate General of Water Resources (DGWR), Ministry of Public Works (PU) in Indonesia. The fourth phase of this project (SSIMP-IV) started in 2003, when its name was changed to the Decentralized Irrigation System Improvement Project in Eastern Region of Indonesia (DISIMP). This series of four SSIMPs has been under continuous management by the same consultant (Nippon Koei, NK) for over 15 years.

SSIMP has been implemented with unique approaches that are expected to contribute to improving project sustainability, namely (a) comprehensive project management to cover the whole project cycle, (b) flexible project formulation to meet local needs, (c) good quality control, (d) capacity building among officials and engineers, (e) intensive guidance for beneficiaries and operators, and (f) continuous learning made possible by the project continuity provided by Government of Indonesia and JBIC.

Irrigation Management Project phases I, II and III (SSIMP-I to III) and its successor, the Decentralized Irrigation System Improvement Project (DISIMP,

or SSIMP-IV), staff of the Japanese consulting firm Nippon Koei have evaluated and disseminated SRI in eastern Indonesia.

Integrated Pest Management (IPM)

The integrated pest management (IPM) program that was started in Indonesia in the 1980s with FAO support has grown and evolved greatly over the past 20 years. Over 1 million farmers have gone through its farmer field schools (FFSs), which imparted knowledge and practices for IPM through participatory methods. FFS alumni are organized into farmer science centers (KSPs) that continue farmers' experimentation and farmer-to-farmer extension to improve smallholder agriculture, mostly in rice-based farming systems.

After 2001, when donor funding came to an end, efforts were made to carry on the IPM work independently of government agencies. An NGO called the Field Foundation was established to carry on the IPM/FFS work. There were still links and cooperation with government as a former Minister of Agriculture, Dr. Sjarifuddin Baharsjah, serves as chair of the foundation's board of directors. The Field Foundation receives support from the Asian Development Bank (ADB) and other agencies to maintain a national program of smallholder training and organization.

The Indonesian IPM program now operates under the aegis of the Field Foundation, continuing Farmer Field School programs with a somewhat broader agro-ecological focus and including System of Rice Intensification. In 2002, under the Small-Scale

SRI (System of Rice Intensification)

The Farmers got idea of the developing of SRI in KSP from FAO Community IPM Program as information on improving of rice farming and developing of farmer science. As a group of researcher farmers, they didn't apply directly every information they receive from others but they use the information as a tool to generate their critical thinking through participatory analysis. The strategies in this program is

- Use farmer meetings/forums
- Assisting farmers' neighbors to follow SRI
- Integrating SRI method into FFS curricula
- Using high-performing SRI farmers/farms as "learning centers"

In West Java, organic SRI was first practiced in 2000. By a continuous effort, a series of farmer training programs over 4 years, in the 2006/07 cropping season, organic SRI area in West Java. This group has established an Indonesian NGO named "Aliksa Organic SRI Consultant" (AOSC) will commence a series of training for trainer (TOT) programs on organic SRI in 14 provinces under the SRI extension policy by the Ministry of Agriculture in Indonesia. The strategies used are giving technical and technological assistance for farmer for them to be independent from irrigation with higher yield from conventional farming system.

4.3.4 Information Instruments

Environmental and agricultural information is not well accessible in Indonesia. The research and development cannot be easily access by citizens, moreover farmers. The lack of internet network and education level of farmer may be two of main problem here. Information about new technology and policy are commonly transferred by formal meeting by local authorities with farmers, but mostly the sharing information is not equipped by detailed procedures and methods, so it remains farmers' constraints in implementing such new technology or policy.

One big NGO aids farmers to access information and furthermore help farmers technically is WALHI. There are many others NGO, local and international transferring information to the farmers.

4.3.5 Policy Instruments Mix

The use of mix policy instruments in Indonesia is more common at the recent time. For example in IPM program, there are regulatory (Regulation), economic (Incentive) and voluntary instruments (Technical assistance and education to farmers) are used.

CHAPTER 5
ANALYSIS COMPARATIVE POLICY INSTRUMENTS ON SUSTAINABLE AGRICULTURE IN THE NETHERLANDS, FRANCE AND INDONESIA

This chapter analyzes instruments of agri-environmental policy towards sustainable agriculture used in the Netherlands, France and Indonesia. From the analysis, the study then gains a lesson learned for Indonesia including policy instrument alternative and precondition to implement such policy instruments. First, this chapter compares the agri-environmental policy exist in the Netherlands, France and Indonesia. Then the chapter analyses policy instruments used in each country. The last part of this chapter is analysis to get some lesson from the Netherlands an France for Indonesia.

5.1 Comparison of Agri-Environmental Policy in the Netherlands, France and Indonesia

Most agri-environmental polices in the Netherlands and France is under the EU Directive. However, the EU directive gives a wide range of flexibility in implementing to accommodate different characteristic of each member state.

The Netherlands, with a small scale of farming land and furthermore has to intensified more its agriculture, has agri-environmental policies more about how to produce more with environmental-friendly farming practices. Since the society is aware to environment, the effort to achieve sustainable agriculture is ubiquitous done. There are many researches and studies to find new methods and technology for a more sustainable farming practice.

Since farmers through farmers organizations are involved in policy making process, the policy implementation is relatively supported by all farmers. The information of policy and program is accessible, supporting by farmers' high awareness of national program on agriculture, national program and policy are well practiced and relatively similar in each region over country.

In France, national and regional schemes exist alongside 'local operations'. As regional schemes are the same in each region, both the national and the regional schemes can be considered horizontal whereas the local operations are zonal. Main goal of the AEP is to maintain agricultural activities in areas with a high risk of agricultural land abandonment and rural depopulation.

The priorities of agri-environmental policy in the Netherlands are designated conservation areas, rural conservation, and training demonstration. The highest uptake is management agreements (90% of Agri-Environmental Policy area) (Anonymous, 2000). In France, the agri-environmental policy priorities are land use, extensification which includes organic farming, and traditional farming. The highest

uptake is the national scheme – maintenance of extensive animal husbandry (70% of the total Agri-Environmental Policy budget) and local operations (Buller, 2000)

In the Netherlands and France, it is important to recognize the international context strongly influences the context in which public sector directors formulate government policy. Representatives of the states' agencies attend high-level conferences and summits, become parties to international agreements, and develop policies, craft laws and gazette natural areas to meet their obligations as signatories to international conventions. Multilateral and developed nation donor agencies enter into agreements with recipient states to support implementation of policies.

In Indonesia, The executive authorities in regency/municipality level had to fight with the legislative powers in the district parliament. One reason is that some members of parliament may be not enthusiastic about the suggested changes in the agricultural outlook for the district. Common arguments brought forward were that without the use of fertilizers and pesticides, farming would not be economically profitable; low input would only mean low output. Another obvious reason was that suppliers of agricultural inputs would lose business.

Key stakeholders both within and outside these formal structures also significantly influence policy formulation and implementation. As MacAndrews (1986) has noted, "if one looks at the Indonesian system of government and the way that it works on a day-to-day basis, one is acutely aware that beneath the formal structure of government that appears logical and rational, there are a wide range of complex personal relationships and connections that determine to a great extent decision making and, ultimately, how the government performs".

Another problem is however, as new policy initiatives filter down from distant policy making arenas to the district and village levels, all too often accommodations need to be made with the particular pressures that local officials face. Consequently, policy implementation has proved extremely difficult (McCarthy, 2000).

5.2 Comparison of Agri Environmental Policy Instruments in the Netherlands, France and Indonesia

5.2.1 Economic Instruments

a. Payment/Subsidy

There are two kind of economic instruments, positive incentives (payments to farmers) which is designed to encourage environmentally beneficial activities and negative incentives (taxes farmers pay) which is designed to discourage environmentally harmful activities. In the European Union, economic instruments (payment) were originated in the mid of 1980s and became expanded significantly through the 1990s. The source of fund came from OECD. The first payment introduced under *Environmentally Sensitive Areas (ESA)* scheme in 1986. Later, in 1992, the reform of the CAP required the EU member states to implement agri-environmental payment program. This policy was then reorganized under second pillar of the CAP under Agenda 2000 reforms and beyond 2006 enhancement in 2006.

The EU co-finances with the EU member states set a wide range of agri-environmental payment program, based on farming practices. The policy was first established in 1992 under the agri-environment regulation (no. 2078/1992) and later encompassed under the Rural development Regulation (no. 1257/1999). The main payment program of this measure is the support for less input-intensive farming practices. For example, in the mid of 1990s, the EU member states introduced a variety of national and/or regional programs to support organic agricultural production. The support was held within at least 5 years to encourage conversion from conventional to organic farming. Both the Netherlands and France implement this kind of payment. Furthermore, the Netherlands also offer ongoing support for the maintenance of organic farming beyond the initial conversion period.

In Indonesia, the payment program for organic farming is now increasing. There are trend in municipalities and regencies to held payment program for organic farming. This is because on of the national agricultural development program of Indonesia called Agriculture Revitalization, concerns to organic farming. Besides held by government, trend to encourage farmers to do organic farming comes from NGOs, domestic or international NGOs. They train farmers and support inputs for the organic farming.

However organic farming in Indonesia is still faced some constraints. Factors may result the organic farming growing slowly are: farmers' motivation, society awareness of organic product and government support. Farmers in Indonesia are the lowest income workers compared to other fields' workers. They work hard for their life so that they become money-oriented in doing agriculture. Meanwhile, the production cost organic farming is much higher than conventional farming with lower quantity of production so the products are more expensive than which from conventional farming. The farmers in Indonesia tend to stay in conventional farming because it gives higher income for them. In the Netherlands and France, farmers are subsidized to doing organic faming. Almost 60% of farmers' income comes from the subsidy.

Besides that, in Indonesia markets for organic farming are still limited. It is hard to find to find people who want to pay more for the organic agricultural products. People still only concern to food availability, instead of food healthy. Farmers need market opportunities for their products. This means fair prices for their products and furthermore a more level playing field for their trade. In the Netherlands and France, people awareness of food healthy is increasing and they tend to choose organic food. Efforts from the government of Indonesia to increase society awareness of food healthy are needed. Another challenge is then not only in terms of the size and scale of the task and the resources needed for the organic farming, but also in educating and convincing farmers of the benefits of sustainable practices.

Another payment exist in the Netherlands and France is payment program for encouraging less input-intensive and/or more environmentally friendly farming practices. This program includes program promoting extensification of crop

production and livestock farming and the adoption of integrated crop production.

In Indonesia, such payment exist as Less External Input and Sustainable Agriculture (LEISA). The program refers to small scale farming which is a major part of rural livelihoods and thus contributes significantly to developing economies in Indonesia. It is about finding technical and social options open to farmers who seek to improve productivity and income in an ecologically sound way; furthermore optimal use of local resources and natural processes and, if necessary, safe and efficient use of external inputs. This program is funded by NGO from the Netherlands.

There some other payment instruments in Indonesia. The instruments can be different in each municipality or regency to support its sustainable agriculture. The instruments exist at this time include seed subsidy, fertilizer subsidy, farming machines (e.g. hand tractor), and soft credit for the farmers. The credit require guarantee such as land certificate, so that farming worker who do rent land from someone else, cannot get the credit.

The diversified economic instruments exist in Indonesia may be because of some factors including: financial support for agricultural development; motivation of district to achieve sustainable agriculture, political interest of the authorities of the district. Financial support is main issue of payment program. The government needs money to fund the payment program. The district government with limited revenue may not use this kind of economic instruments; they may prefer other kinds of instruments. More financial support for the "poor" district is needed. It may be solved by allocate international funds (loan or grant) to these districts, rather than other districts which can relatively support their payment instruments towards sustainable agriculture. Another important issue regarding financial support is that the support should be given in some periods, not only in period conversing conventional into organic farming, but also subsidy for maintaining it until it benefited farmers economically. According to the Netherlands experience, the subsidy for their farmers for supporting organic farming is given within 5 years. After that there is another subsidy for maintenance the organic farming.

Motivation to achieve sustainable agriculture is varied among districts. This factor is closely related to political interest of district authorities that can be classified into two cases. First, the executive authorities in district level sometimes had to fight with the legislative powers in the district parliament. One reason is that some members of parliament may be not enthusiastic about the suggested changes in the agricultural outlook for the district. Common arguments brought forward were that without the use of fertilizers and pesticides, farming would not be economically profitable; low input would only mean low output. Another obvious reason was that suppliers of agricultural inputs would lose business. Second, the authorities have a political will to be elected again in the next period of authority, so that they tend to "spoil" farmers with the subsidy in order to make the farmers choose them in the next election. Besides that, corruption issue also influences to make the subsidy program keep existed. The subsidy fund is relatively easy to be corrupted because of lack of

control until subsidy receiver level. So that it is important for Indonesia to control more the implementation of payment subsidy programs.

A variety of payment program in the EU member states also exist under the Rural Development Regulation (No. 1257/99). In the Netherlands and France, there are payment programs to encourage farms practices to preserve specified cultivated areas, rare animal breeds and other flora and fauna. The Netherlands also offers payments to farmer for improving land and water quality by leaving land along watercourses free from manure and agricultural production and instead for promoting nature management. While France offers a range of agri-environmental payments designed to introduce, maintain and restore specific landscape features, such as hedges and trees, as part of its *plan de développement rural national (PDRN) 2000-2006*. In Indonesia, many program of sustainable agriculture are related to rural development but most of them are voluntary instruments such as farmer education and training.

Another economic payment instrument in France is payment programs offering a range of land retirement targeting a variety of environmental objectives, including the conversion of arable land to grassland, and the introduction of grassland buffer strips around watercourses.

In the Netherlands, there is another measure to reduce negative impact on environment from a certain farming practices. The programs, held in 2000, introduced a package of measure to buy out pig production quotas. It was anticipated that this buy-out scheme would reduce the Dutch national manure surplus by around 12 million kg phosphate by 2003.

One further there is a trend in the EU member states to introduce the structural cost-share program specifically to assist farmers in meeting the costs of environmental *regulatory requirements*. In 1993, France introduced the *farm-source pollution control program (PMPOA)*, which provides up to 65% funding to assist farmers in bringing buildings and manure storage facilities into line with environmental regulations.

Important characteristics of the French regulatory regime include a high degree of centralization and extensive cooperation between regulators and firms. Economic development and environmental regulation are seen as closely linked, and both are within the province of state authority in keeping with the French tradition of indicative economic planning. The French experience with market instruments is limited to two effluent charges and the provision of subsidies through grants, soft loans, and accelerated depreciation allowances. Much of the subsidy support is linked directly to the charge revenues, and both charge systems operate in conjunction with CAC regulation.

For the Netherlands, moreover France, financial supporting for subsidy is mostly from the CAP and agri-environmental scheme of the EU Directive. Besides subsidy may from other environmental tax, through cross compliance scheme. The environmental tax/charge become local/national revenue for subsidy expenditure. The culture of both country in managing their subsidy is good, in term choosing the right subsidy and corruption side. For Indonesia,

selecting policy instrument subsidy has to be in careful consideration through research and lesson from other country. The subsidy is supposed to go to enhancing environmental performance in agriculture, instead of raise production level with environmental burdening. The culture of corruption is also to be consided by setting good control of the policy implementation.

b. Environmental taxes/charges

Environmental taxes and charges are policy instruments imposing a tax or charge relating to pollution or environmental degradation, including taxes and charges on farm inputs or outputs that are a potential source of environmental damage. This is sometimes called negative incentives. The implementation of taxes and charges appears to be rare in agriculture, compared to other sectors. This may at least partly reflect practical problems of *measurement.* Unlike a factory where pollution can normally be monitored at "point", the pollution from agriculture is much more dispersed, as it tends to originate from many different farms and in varying intensities.

Besides positive incentives (payment), the EU member states also use negative payment (environmental charges/taxes). The polluter should bear the expenses of carrying out the pollution prevention and control measures introduced by public authorities. For example, since 1998 the Netherlands has required farmers to submit to the authorities an overview of inputs and outputs, leading to a 'surplus' of phosphorous and nitrogen produced on their farms via a minerals accounting system (*MINAS*). A prohibitive levy is then charged on estimated losses of nutrients over a certain limits. In Indonesia there is no negative payment instruments exist. It may be because the farmers, in this term as subjects in polluting environment, are not high educated and have high income, this kind of instrument will be not appropriate. The culture of farming tradition is so close related to rural society may be resulted in controlling farmer activities in polluting environment. The local authorities may not easily charge the farmer due to emotional relationship among them.

In France, there is a significant legislation for agriculture in 1993. It is the negotiations to submit agriculture to the water agency system of royalties and aid. The Water Act of 1964 created a system whereby watershed-based agencies were mandated to collect a royalty from those who use or pollute water and to reinvest the money in water quality improvement projects. In France also farmers who do not follow more sustainable practices face the risk of paying royalties to the water agencies and other penalties.

Regarding to pollution issue by farmers, France adopted program called the *Programme de maîtrise des pollutions d'origine agricole* (PMPOA) in 1993. The objective of the program is to provide farmers with financial assistance in conforming to various regulations of agricultural pollution in the EU. More specifically, farmers who choose to participate in the program are required to produce an environmental assessment of their farm called DEXEL. The DEXEL are conducted by technicians attached to the *Directions départementales de l'agriculture et la forêt*. Following the assessment, a contract on the work to be undertaken is established between the farmer, the

water agency, and the state. On the completion of the work, the farmers are no longer considered as a polluter and so that they do not have to pay a royalty to a water agency. This program combined economic (charge), regulatory (standard), and voluntary (technical assistance) instruments.

Especially in the Asian context, a concise definition of the term 'tax' can be somewhat problematic. Tax is generally regarded as a compulsory contribution in monetary or other form by certain entities (including individuals) to the government for public purposes. Yet, any definition of tax would likely fall short of capturing adequately the full legal, sociological and economic implications of tax and taxation. Indeed, taxes are not only a valuable tool used by governments to obtain revenues needed in order to provide essential government services. Taxes also provide a valuable mechanism for reallocating resources from the private to the public sector; effecting the redistribution of income, such as through a progressive tax system; correcting the effects of negative external costs; aiding in the redistribution of income and managing (manipulating) demand in the economy.

Environmental taxation at the regional level would generate more revenues for regional governments and shift the tax burden away from less popular and less economically desirable taxes on labour, capital or other inputs to production, possibly stimulating the economy as well. Environmental taxes also have the added 'green' dividend of encouraging technological innovations towards a cleaner environment and efficiently regulating environmental protection efforts, especially as an effective and efficient complement to other regulatory efforts at both the central government and regional levels. Although corruption and other potential obstacles currently hinder the implementation of a new scheme of environmental taxation at the sub-national level in Indonesia, the fuel tax in place since 1997 is indicative that a sub-national environmental tax can and does succeed in Indonesia today.

5.2.2 Regulatory Instruments (Command and Control)

a. Regulatory Requirements

Regulatory requirements are compulsory measures imposing requirements on producers to achieve specific levels of environmental quality, including environmental restrictions, bans, permit requirements, maximum rights or minimum obligations. Enforcement mechanisms, such as the courts, police or fines, are used where producers are found to be in breach of regulations or other legal requirements. Some of these requirements are specific only to agriculture, while others are part of broader national environmental legislation affecting many sectors, including agriculture. These instruments include regulatory requirement, cross compliance mechanism.

From France experience, the French institutional setting in the agricultural sector was not conducive to the resolution of environmental problems arising out of some farming practices. There was no command and control instrument in agriculture sector. The farmers would not negotiate to integrate their practice with new regulation without promise of financial aid. The governments then

offered the farmers a compensation for the adoption of intrusive and moderately comprehensive command and control environmental policy instruments. For example in 1964, the farmers got financial support for fulfilling the water management law. The French government started allowing the adoption of stringent environmental regulations for the agricultural sector. And the experience shows that, Europeanization has improved France's capacity to solve the problem of agricultural activities deteriorating environment, mainly pollution.

An increasing number of regulatory requirements imposed in the EU countries derive from state, provincial, regional or local measures, often under the framework of over-arching legislation. For example, since 1991, the European Union has addressed issues of water pollution from agriculture through the *Nitrate Directive (No. 676/91)* and the *Drinking Water Directive (No. 778/80)*. The regulations require member states to limit the application of manure in nitrate vulnerable zones to 170kg/hectare/year. Each European Union member is responsible for meeting the targets set by the *Nitrate Directive*, so differences emerge at the country level. The regulations can vary from region to region within EU member states, particularly where member states have designated certain areas as nitrate vulnerable zones.

Regarding to Nitrate Directive, the farmers in France were objective to this regulation because the regulation will cost them a lot of money.

The implementation of the Nitrate Directive actually used compiled some policy instruments. First, command and *control measures* (e.g. compulsory rules of animals per hectare, design of installations, fertilizer application and cropping pattern) involve authorities setting fixed standards with which farmers must comply. Second, *Charge instruments* (e.g. taxes on fertilizers and protein, and subsidies to environmentally sound farming practices) use market-based systems to influence behavior, and allow farmers to act individually according to their economic preferences. Third, *Public information and education* methods (e.g. meetings and courses in order to provide training to farmers, support to advisory services, guidance standards or codes of good agricultural practice) encourage farmers to change towards more environmentally friendly practices and enable them to explore new methods of production. And fourth, *Scientific research and technological development* provide farmers with opportunities to adjust their traditional practices.

b. Cross Compliance Mechanism

Cross-compliance mechanisms are instruments imposing environmentally friendly farming practices or levels of environmental performance on farmers participating in specific agricultural support programs. Where support payments remain relatively high, cross-compliance may be characterized as *de-facto* regulatory requirements for farmers that are eligible for payments.

Cross-compliance mechanism refers to the linking of environmental conditions to agricultural support payments (Baldock and Mitchell, 1995). Compliance with a series of restrictions related to the environment, food safety or animal

welfare is required to be eligible for other schemes. Thus *ex ante*, each farmer has to compare additional costs involved by the compliance mechanism to the additional benefit from the support scheme. This instrument indirectly results into the provision of positive externalities. Nevertheless the voluntary nature of cross-compliance mechanism may be questioned. Indeed, where support payment is high, it is very close to a mandatory tool (OECD, 2003).

Cross-compliance has also been introduced by a number of EU member states, including France and the Netherlands, in order to tie environmental requirements to direct support offered under a variety of the *CAP* commodity regimes. Common rules for the application of cross-compliance requirements across the European Union were introduced in 1999 (*Council Regulation No. 1259/99*). Under these rules, payments may be reduced or cancelled in the case of non-compliance, and EU member states may then re-direct funds thus released to finance agri-environmental or rural development measures. Beyond 2005 cross compliance measures were used in all European Union member states. Direct aid payments were reduced in the case of non compliance with basic standards for the environment, food safety, animal health and welfare.

In 2000, France introduced cross compliance from maize area payments to cover program irrigated crops. In the same year, the Netherlands introduced cross compliance for silage maize area payment.

In Indonesia, this kind of instrument is still not common in use. It may be because environmental charge or tax for the agricultural sector now does not exist. Other sectors' tax/charge cannot be used for incentive for agriculture because of lack of coordination among sectors in Indonesia and commitment towards sustainable agriculture over country. Revenue from one sector mostly cannot be used by other sectors for subsidy, this happens in almost all local authority level.

5.3 Voluntary Instruments

Voluntary Instruments include collective projects to address environmental issues and measures to improve information flows to promote environmental objectives. This information can be provided to both producers, in the form of technical assistance and extension, and to consumers, via labeling. Voluntary instruments are common used in the Netherlands and France, particularly labeling. It may be because the society in those country concerns to healthy product and saving environment. In Indonesia, the common focus of society is still to fulfill their basic needs.

Other voluntary instruments exist in Indonesia and potential to encourage society awareness about save agricultural products for both environment and health. Mostly voluntary instruments such as education to enhance society awareness to environment come from NGO. Education to increase environment awareness should be started in elementary school to build good understanding of next generations about the importance of keeping environment well.

a. Research Development

Across all the EU member countries, governments fund *research* into the relationship between agriculture and the environment. This research is often undertaken in order to establish best management practices to be communicated to farmers through on-farm technical assistance, or to establish the most appropriate regulations or other policy measures. It covers a broad range of scientific enquiry including ecology, engineering, farm management practices, farmer behavior, and economics.

Both in the Netherlands and France, there are many research and studies by governmental and non-governmental organizations for searching innovation for agriculture. In the Netherlands, incentive instruments are introduced in encourage industry to be involved in research development. In Indonesia, there are research and development for agriculture by governmental or non governmental organizations. The research from government mostly comes from AIT and furthermore this institution is responsible in transferring the new knowledge to farmers. Many researches are conducted by NGO, and they work in voluntary scheme to help farmers in doing their farming practices better in environment term.

The main issue in conducting research and development in Indonesia is financial support and data. Most time, there is not sufficient financial support to conduct good research; combining with relatively bad database of agriculture the research sometimes remains inapplicable for farmers. In the Netherlands research funding is increasingly being channeled through joint agreements with industry. In France, the government support financially research conducted by national research organizations for agriculture.

b. Technical Assistance/Extension

There is a growing number of national initiatives have been implemented to more closely monitor the environmental performance of agriculture. A wide range of technical assistance programs are also offered in the EU. In Netherlands the government has set up an extensive demonstration and information to assist farmers to comply with the Mineral Accounting System (MINAS) standards.

In Indonesia, technical assistance instruments conducted by government through technician for farmer assistance called penyuluh pertanian. Normally in one village there is, at least, one technical assistant. The person is responsible to introduce new regulation and technology for farmers. Unfortunately, the performance of technical assistance is not good in all areas. Some technical assistance come from NGO which help farmers voluntarily.

c. Labelling/standards/certification

Labelling standards/certification are voluntary participation measures defining specific ecolabelling standards that have to be met by farm products for certification. In order to help customers distinguish products grown without

chemical fertilizers or pesticides from conventionally produced agricultural products, a number of EU member states have established standards for "ecolabels" and have set up bodies to certify their authenticity.

Labelling standards for private goods helps create efficient markets for goods produced with environmental sound practices. Certification standards will generally be effective only where private gains from participation can be captured in a market setting.

In the Netherlands, products from organic farming can be easily differing from which of other because they have special label and sometimes package. In France there is a growing efforts for eco labeling. In Indonesia, there is also eco labeling for organic products. But since society image about organic products is wrong, that organic products are not tasty and genetically engineered, eco labeling is still not effective to be used broadly. The first thing may be to be done by Indonesia is building right ides about organic farming in Indonesian society. Even though the price of organic products are higher than conventional farming products, the growing understanding and aware of the importance of organic farming and environment in general, I am quite sure that there will be growing community who prefer organic products.

Ecolabelling could give a beginning movement to the development of sustainable agriculture, but it is rather slow and unstructured (no evaluation, not all topics are considered). The first thing to do to improve this situation is to formulate clear targets for the environmental topics, within the different labels. If ecolabels are to become manageable and effective instruments for sustainable agriculture, there must be a scientific framework for analyzing their environmental impact, and the criteria of the labels should be expanded to all environmental topics.

d. Community-Based Measures

Community-based measures are measures that involve government support to community-based groups implementing collective projects to improve environmental quality in agriculture.

Legislation about community-based support for environmental purposes in rural regions is available in some EU member states under the *Rural Development Regulation (No. 1257/99).* In the Netherlands pig farmers, nature groups (including the *Foundation for Nature and Environment*), pig processing firms and government representatives are working together in order to promote farm practices that take into account community concerns, including the environment.

The integrated pest management (IPM) program that was started in Indonesia in the 1980s with FAO support has grown and evolved greatly over the past 20 years. Over 1 million farmers have gone through its farmer field schools (FFSs), which imparted knowledge and practices for IPM through participatory methods. FFS alumni are organized into farmer science centers (KSPs) that continue farmers' experimentation and farmer-to-farmer extension to improve smallholder agriculture, mostly in rice-based farming systems.

5.4 Lesson Learned from the Netherlands and France experience for Indonesia

In the Netherlands and France, it is important to recognize the international context strongly influences the context in which public sector directors formulate government policy. Representatives of the states' agencies attend high-level conferences and summits, become parties to international agreements, and develop policies, craft laws and gazette natural areas to meet their obligations as signatories to international conventions. Multilateral and developed nation donor agencies enter into agreements with recipient states to support implementation of policies.

In Indonesia, some of international context about sustainable agriculture come as the requirement of fund donor organizations such as international NGO or monetary fund (ADB). They will assist Indonesian agricultural development if only Indonesia commit to fulfill the requirement, which is mostly international environmental issue requirement, from the donor agencies. The transferring of new technology in farming practices may be brought by international NGO which work as volunteer with target group is directly Indonesia farmers. Some of NGO also have co-ordination with the local authorities. The co-ordination can be support from the local authorities including: permit, data, supporting regulation, supporting fund, and technical assistance for the program monitoring.

The implementation of sustainable farming practice is still low that is maybe because of some factors. First, the general culture of Indonesia people awareness to environment is low. Farmers and other people in other jobs mostly do not take into account about environmental issue in their activities, instead of productivity, furthermore become money-oriented. For this reason, it is important for government to educate, training, and give information to farmers about the importance of environment issue in doing farming practice. This effort may use voluntary instrument by giving technically assistance for new farming technology. Another instrument may be used, as France experience in encouraging their farmers to fulfill regulation, is economic instrument by giving incentive to farmers who want to convert their conventional farming into more sustainable practices. Using charge for those who will not do sustainable farming practice maybe not useful at this time because farmers in Indonesia are still the lowest income worker and mostly not well educated community.

Methods and programs used in achieving sustainable agriculture often cannot encourage farmers to join in. Sustainable agriculture in Indonesia is often introduced by organic farming, banning of using chemical substances and integrated of pest management. Those methods sound like decreasing of production and furthermore income, that become a reason that farmers are reluctant to join sustainable agriculture program. To cope with this, it is important to find other approach for Indonesia's farmers to be more encouraged to join more sustainable agricultural programs. Research for finding the methods and approaches may be useful to do.

Farmers still use restricted pesticides because it can be cheaper and more available in market than other legal pesticides. This is because control for the regulation from government is still weak. Regulation for people control the market of farming production inputs is also still weak. Furthermore, to achieve more environmental-

friendly farming, it is actually no chemical input is allowed to be used. But since in to conduct organic farming is still high costly and still need many supporting infrastructures and legislation, for Indonesia case, I think using relatively low negative impact chemical inputs is still good, however, for transition stage for a better farming practice in the future.

I think it is better now to decrease policy instruments incentive or subsidy for farmers for their production with conventional farming practices. In fact, in many regencies and municipalities in Indonesia, there are still subsidies for fertilizer, seeds, and pesticides. There is also soft loan, called micro credit for farmers to increase their capital to enhance production. This kind of instrument will let conventional farming practice continue. Besides, subsidy is vulnerable money to be corrupted by actors involved in the program.

Subsidy may be useful for introducing new technology or method in farming practice to achieve sustainable development. But the implementation has to be equipped by clear procedure or method. It need control and commitment from all stakeholders.

In Indonesia also, across the region, national government have delegated certain environmental management responsibilities to the province and local administrations, often without providing adequate resources and detailed technical information. Different interpretation from regencies and municipalities can be resulted to make many different, even wrong, local practices.

Lack of monitoring, permitting and enforcement from government agencies create some problem in implementing a policy instrument effectively. However, the regulation is sometimes already well established, but in fact, the implementation is bad. Generally, Indonesia's regulatory framework in this domain is quite developed but attention is needed on capacity building, maintaining the integrity of national systems with decentralization, and focusing on assisting local level of policy implementation to meet the policy goal and program requirements. As MacAndrews (1986) has noted, "if one looks at the Indonesian system of government and the way that it works on a day-to-day basis, one is acutely aware that beneath the formal structure of government that appears logical and rational, there are a wide range of complex personal relationships and connections that determine to a great extent decision making and, ultimately, how the government performs".

Because some provincial and local policies and programs relating to agriculture conflict with one another, they may actually undermine efforts to attain national and local environmental objectives and sustainable development goals, as well as inefficiently use public resources. To eliminate this conflict, all levels of government should review these policies and programs and work together to coordinate them. In doing so, they should invite nongovernmental organizations, such as university research institutions and agribusinesses, to help identify policies that potentially hinder farmers and ranchers from protecting natural resources and preventing pollution.

Moreover horizontal interagency coordination committees sometimes created by high-level government decisions do not fulfil their policy coordination purpose. Learning from the Netherlands experience, it is important to have one coordinator for national

agency for environmental issue. In the Netherlands, the Ministry of Environment (MLV) is responsible for accommodating environmental issues. This ministry is responsible for making national strategy for environmental issues, in which, other involved agencies/ministries, take a part in the implementation.

Achieving Sustainable Agriculture

For achieving sustainable development and sustainable agriculture, it is important for a country to have a national strategy for sustainable development which allows a coordinated set of participatory and continuously improving processes of analysis, debate, capacity-strengthening, planning and investment, which integrates the economic, social and environmental objectives of society. The strategies cannot be implemented like a 'plan', but need flexible approaches on the government side with at the same time firm and accountable objectives, and ideally also quantitative targets.

The Dutch government has a National Strategy for Sustainable Development "Nationale Strategie voor Duurzame Ontwikkeling", (NSDO) launched in early 2001. The Dutch Cabinet has also released several strategic plans, including the Fourth National Environmental Policy Plan and the Fifth White Paper for Urban and Rural Planning. The guiding group decided that the current government would publish an overview of sustainable development policies on five subjects and to indicate which dilemma's would influence the further policy debate over the next decade. For sustainable agriculture, the Netherlands has "A Vision for Future Agriculture", a memorandum dealing with the areas under the remit under the ministries.

Also important is where responsibility is placed for overseeing the coordinating mechanism and the different participating agencies. In the Netherlands, an interdepartmental body was formed guided by a ministerial group, lead by the prime minister. The ministers for Environment, for Economic Affairs and for City Development and Integration have been permanent members of the guiding group. Overall responsibility for strategy implementation is housed in the Ministry of Environment either directly or indirectly through a coordinating committee which it oversees. France has placed responsibility for their national sustainable development strategies directly under the Prime Minister's office to achieve maximum coherence.

Sustainable development strategies should involve local authorities and be a two-way iterative process between national and decentralized levels. The main strategic principles and directions should be set at the central level, but more detailed planning, implementation and monitoring can also be undertaken at a decentralized level, with appropriate transfer of resources and authority. But promoting sustainable development effectively when governments with different geographical jurisdictions may be pursuing various agendas is complex.

France has fully included local and regional authorities in the preparation of their national sustainable development strategies. France devotes attention to the "territories" in its sustainable development strategy which encompasses both regional and sub-regional levels of government. The *National Strategy for Sustainable Development* of the Netherlands gives general guidance for sustainability processes at sub-national levels which are to be tailored to the local situation.

Active stakeholder participation (*e.g.*, business, trade unions, nongovernmental organizations, indigenous peoples) in the development and implementation of national strategies for sustainable agriculture should be an inherent feature. Sustainable agriculture involves trade-offs among economic, social and ecological objectives which cannot be determined by governments alone. These value judgments require participatory approaches to sustainable agriculture which engage the public through effective communication. However, the extent to which stakeholders are involved in policy processes reflects national institutional settings and preferences.

National strategies for sustainable agriculture are not meant to be static plans. Rather, they should evolve as more information becomes available about priorities, technological options and policy cost effectiveness and in order to overcome problems in implementation. Learning, adaptation and continual improvement should be characteristics of national strategies. This requires a process to monitor strategy implementation, to report to governing bodies and stakeholders, and to feed back information for adjustments and improvements.

France has developed a methodology for peer reviews of national strategies for sustainable development involving civil society, international organizations and other countries which make recommendations on the process, content, indicators and implementation approaches.

In Indonesia, the overall strategic directions of government are enunciated by the National State Policy Guidelines, approved by parliament. These guidelines are the instrument which is supposed to guide the executive branch and against which the President is held accountable to parliament as the representative of the Indonesian people. For sustainable development, Indonesia has Agenda 21 as a country's vision aiming at incorporating economic, social, and environmental development into one integrated package.

The document of Agenda 21 is a great importance for the action plans. In the plans, every unit, either government or non-government group, can make changes, which are necessary for social and economic developments. The Government of Indonesia takes any action to follow up the general pre-requisites of agreeable principles regarding the environment according to sustainable development.

The Indonesian agenda 21 also allows a series of suggestions and recommendations for sectoral units, private and NGOs, both at central and regional levels. In short, the Agenda 21 is advisory document comprising policy, programmed development and strategy embracing almost all development plans in social, economic and environmental aspects.

To avoid the agenda 21 become conceptually ideal but hard to implement because of limiting factors such as financial, time, economic and development constraints, which had not been carefully considered beforehand during the Agenda formulation phase that lead to commitments that could not be fulfilled, Indonesia can, and should, establish a national vision using the plan outlined in Agenda 21 along with studying other countries' experiences. But it is important to always remember that each country has its own distinct characteristics and directly adopting other countries' Agenda 21 will certainly not apply. Instead, adapting the Agenda 21 to be more

location, culture, government style, and management level specific to each country will secure a national vision that is particularly suitable while at the same time not repeating the same mistakes that other countries have made.

Integrating various stakeholders will help widen the perspective of the Agenda 21. For this reason, consensus building skills have become an indispensable tool in the government officials' arsenal. However, with a number of stakeholders involved, the process will become more complicated, time consuming and costly.

For sustainable agriculture, in June 2005 the Government of Indonesia has initiated a revitalization program targeting the agriculture, fishery, and forestry sectors. This program forms an integral, community-focused plan chosen by Indonesian President and his cabinet for supporting increased economic growth, employment opportunities, and poverty alleviation. Agricultural revitalization is meant by having the awareness to proportionally reposition this vital sector through improvement of its performance and contribution to the nation's economic development. Agricultural revitalization also is aimed to solidify commitments and cooperation among various stakeholders by changing the way Indonesian stakeholders and peoples' think about agriculture from other than just as source of commodities for consumption because agriculture has to be considered as a multi-dimensional sector of which a majority of Indonesian livelihoods depend on.

The program has three goals: increase food security systems, develop agribusiness, and increase farmers' welfare. One of financial support for this program came from World Bank which finances by empowering of farmers through improved information networks, community agribusiness development, enhanced linkages between research and extension that is expected to result in increased diversification, higher farmer incomes and agricultural competitiveness.

By considering effort in improving agricultural productivity remains the best single measure to reduce poverty, the project was aimed to be on the cutting edge bringing public and private initiatives and farmer friendly communications technologies. These goals were then supported by a new Extension Law (Law No. 16/2006) that would improve delivery of public agricultural services and empower Indonesian farming communities to have a greater voice in this process.

Yet there is still no clear strategy for achieving a more environmental friendly farming practices with integrated policies and instruments. While there was a relatively widespread understanding of the concept of sustainable agriculture, there was much less awareness of the government of Indonesia in relating its national strategy for sustainable development and agriculture development. According to my opinion, there is virtually no knowledge of the linkage between Agenda 21, Agriculture Revitalization, and commitment to Sustainable Agriculture. But it may be explained that Indonesia's focus in this recent time for agriculture development is still increasing agricultural productivity for feeding its huge number of population.

CHAPTER 6
CONCLUSION AND RECOMMENDATION

6.1 Conclusion

Indonesia has reformed elements of agricultural policies through new regulations, incentives and/or environmental taxes, and administrative mechanisms to be more sustainable in agriculture. The implementation of new policies used a wide range of policy instruments, including economic, regulatory, voluntary, and information instruments. The most common used policy instrument considering environmental issue in agriculture is regulatory instruments. There is much legislation for achieving more sustainable agriculture in Indonesia, adopted from other country experience or transferred directly (by educating or technically assisting farmers) or indirectly (by requirement of loan) by international agencies. In Indonesia is now also many research and study for finding new technology for the better farming practices. One problem happens here is that, although arrange of better technology in farming practices have been introduced, the total of farmers using them is still small. This may be overcome by using information instruments. Spread information about new technology, together with good access on the information, is important to do. Furthermore, it is important for Indonesia to make use more of resources-conserving technologies, such as integrated pest management, soil and water conservation, nutrient recycling, multiple cropping, and so on.

From the Netherlands and France experience in achieving a more sustainable agriculture, it is clear that a sustainable agriculture cannot be realized without the full participation and collective action of farmers. First it is because the external costs of resource degradation are offer transferred from the conventional farmer to the sustainable farmer. Second, one sustainable farm situated in a landscape of high input, resource-degrading farms may produce environmental goods which are undermined or diminished by the lack support from neighboring farmers. A necessary condition for sustainable agriculture is therefore the motivation of a large number of farming holdings for coordinated resource management. The success of sustainable agriculture depends on, not just on the motivation, skill, knowledge of individuals of farmers, but on action of collective communities as a whole.

Considering condition of farmer community in Indonesia, as a lowest income worker and relatively unwell educated, the instruments might be relevant to be applied are education, technical assistance, and incentive. It is commonly believed that low or no external input farming produces low levels of output and so can only supported by the high levels of subsidy. The government may need to encourage farmers' motivation in doing more environmental-friendly practice of agriculture by giving information, technical assistance and incentive. Moreover, the government may need to create market for the product of organic farming by promoting the importance of environment in agriculture to whole society.

Most policy framework, specifically in regency/municipality authorities, still actively encourage farming dependent on external inputs for example subsidy for fertilizers and pesticides. These policy frameworks are the principal barriers to a more sustainable agriculture. The embedded conventional farming culture in most representatives and authorities mind has to be altered; otherwise the policy for a more sustainable agriculture will never be approved. Bad behavior, like corruption in implementing subsidy and short term thinking in making policy and choosing its instrument has to be replaced.

The Netherlands and France have the EU directives to be their umbrella for their agri-environmental policy. Even though the implementation of the Directive in each country is different depend on some factors, but at least, the Directive dictates their legislation and makes it more regulated. Furthermore the EU member states get financial support for their agriculture, for example France which roughly 60% of their farmers' income comes from CAP financial support. To support such instrument, both countries are advanced in financial, technical, and however farmers' motivation support.

Considering of limited resources, Indonesia has to do research and learn from some countries experience in their transition to achieve a more sustainable agriculture. From the Netherlands and France, there was resistance from farmer community in doing sustainable agriculture. The government of the countries introduced some policy instruments like incentive, opening market for the products, information, research and development, until charge for them who do not want to do suggested farming methods. Even though the culture, level of economy, characteristic of agriculture is different from Indonesia, lesson from how the government coped with transition toward sustainable agriculture can be gained for Indonesia case.

For the transition to a more sustainable agriculture to occur, government of Indonesia must facilitate the process with an appropriate range and mix of policy instruments and measures. They can decentralize administrations to reach down to local people, develop economic instrument that encourage to more efficient and careful in using natural resources, and encourage new institutional framework that would be more sensitive to the needs of local people. Farmers face transition costs in the process of adopting sustainable agriculture practice and technologies and acquiring new management and learning process.

6.2 Recommendation

Through this study, I recommend some points for the government of Indonesia and for the next study for advancing this research.

<u>For the Government of Indonesia:</u>

It is important to integrate policies and instruments towards sustainable development and sustainable agriculture for all involved sectors. Besides having a good national strategy for sustainable development, it is also important to have national strategy for achieving sustainable agriculture. It is understandable that Indonesia faces dilemma in feeding its huge population and doing more environment friendly farming practices. But efforts to maintain environment in agriculture is crucial for continuing

productivity for the next generation. Agricultural development should concern much to achieve high productivity with more sustainable agriculture way. For this, the government of Indonesia has to be more careful in selecting policies and instruments for agricultural development. Some grant and loan from international monetary agency has to be carefully considered because the programs can sound only productivity instead of sustainable agriculture. Some programs also still shows direct subsidy for farmers which in long term will lead to farmers' dependencies to financial support. Programs to enhance capacity building, farmers' knowledge, training and awareness-raising have to be increased. Because educated and informed farmer are more likely to be motivated to look after the productivity of their land, to be receptive to policies that constraint their activities in the interest of environmental protection, and to be able to implement any changes require of them. Farmers are then more likely to adopt, adapt and further refine new practices when they are able to try them out first, at minimal financial risk to themselves, and when they can compare notes with other farmers.

Sustainable agriculture presents a deeper and more fundamental challenge than many researchers, extensionists and policy previously assumed (Pretty, 1995). Sustainable agriculture needs more than new technologies and practices. It needs agricultural professionals willing and able to learn from farmers; it needs supportive external institutions; it needs local groups and institutions capable of managing resources effectively; and above all it needs agricultural policies that support these features.

The next important thing has to be more considered to achieve sustainable agriculture is integrated policies and inter-coordinated agencies (ministries, authorities and stakeholders). Since there are still many overlapped and opposite programs carried out by different agencies, it is crucial for the government of Indonesia to have more integrated policies and then the implementation has to be more coordinated. There is still a lack of coordination among agencies, particularly in regency/municipality level. Programs under department of agriculture, department of environment, department of mining, and department of public work can sometimes opposite and do not support to sustainable agriculture. Even though every regency/municipality has already its own regional development planning as development guidelines for each department, the interpretation to the guidelines and implementation of the departments can be conflicting. Coordination among governmental authorities both vertical and horizontal has to be increased.

<u>For the Next Study:</u>

The literature for Indonesia case is very limited because there are not many data, information, articles, and readings can be accessed via internet. It is important to gain more complete and recent information about Indonesia in sustainable agriculture. Since the implementation of sustainable agriculture policy in Indonesia is huge diversified among regencies, it will be good to take a special case from a regency or area in Indonesia which success, fail and in progress for achieving sustainable agriculture to get more applicable lesson from other country.

It will also be good idea to learn deeply about one type of instrument. And for this case, I recommend economic instruments (subsidy and incentives) because this instrument may be effective for now to encourage farmers in Indonesia to do a more

sustainable agriculture, besides good regulation and controls. Considering farmers as a low income community in Indonesia and furthermore their farming activities concern much to enhance productivity, economic instruments—subsidy or incentives— may be a very good way to encourage farmers to shift their farming practices from conventional into more environmental friendly compare to other kinds of instruments. Incentives, for farmers, can replace their "lost production" from doing a more sustainable farming which uses less external inputs that mostly means less production too. The problem may emerge is that incentive for farmer community wil burden government budget. The further research then can be study on finding the best of incentives and/or subsidies for Indonesian farmers, and furthermore what are the pre-condition to implement it effectively.

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