STRENGTHENING INSTITUTIONS FOR SUSTAINABLE LAND MANAGEMENT IMPLEMENTATION - EVIDENCES FROM HOA BINH AND QUANG TRI PROVINCES

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SUMMARY
Agricultural land use in Vietnam is taken by millions of farmer households from upland to coastal areas and land degradation is a serious problem with 7.6 million hectares of land degraded. Under land degradation issues from different regions, there is a range of sustainable land management (SLM) programs undertaken by different institutions from governmental to international, national and local non-governmental organizations. In this context, the inner-agency capacity and interagency collaboration are very important for SLM effectively implementation. The study assessed SLM programs and institutions, examined institutional obstacles to SLM implementation in the selected study sites, and recommended policies and measures that aims to improve the implementation of SLM initiatives. The results show that there are a number of institutional challenges that hindering Vietnamese farmer's adoption of SLM practices. The policy recommendations therefore focus on solving three main aspects as capacity building for extension services and other SLM implementers, revising financial mechanism for SLM supports and, improving institutional structures of SLM implementation from central to local levels.
Keywords: Farming systems, institutions, land degradation, sustainable land management (SLM).

I. INTRODUCTION

Sustainable land management (SLM) is a knowledge-based procedure that helps integrate land, water, biodiversity, and environmental management to meet rising food and fiber demands while sustaining ecosystem services and livelihoods (WB 2006). SLM is necessary to meet the requirements of a growing population. Improper land management can lead to land degradation and a significant reduction in the productive and service (biodiversity niches, hydrology, carbon sequestration) functions of watersheds and landscapes. SLM requires the integration of technologies, policies and activities in the rural sector, particularly agriculture, in such a way as to enhance economic performance while maintaining the quality and environmental functions of the natural resource base (FAO, 2011).

Agricultural land use in Vietnam is taken by millions of farmer households from upland to coastal areas and land degradation is a serious problem with 7.6 million hectares of land degraded (VNFOREST, 2015). Under land degradation issues from different regions, there are a range of SLM programs undertaken by different institutions from governmental to international, national and local non-governmental organizations. It expresses the concerns and interests of these organizations with special emphasis on SLM in Vietnam although the programs were not explicitly expressed SLM implementation as the purpose (Government of Vietnam, 2002a). Efforts on supporting implementation of SLM have undertaken by the Government since nearly 20 years ranged from greening bare land and denuded hill program to rural reconstruction program.

Nevertheless, the state land management systems are organized from central to local levels from both the legal and technical aspects such as land use planning or production and crop planning. The state system to provide agricultural extension services is also structured from central to communal levels. Regarding to SLM implementation aspect,

there are a number of organizations in charge of transferring SLM to farmers and implementing SLM. However, the agency that plays an important role in training and supporting farmers to adopt SLM is agricultural extension services, by their own programs/projects or in cooperation with other organizations. In this context, the inner-agency capacity and interagency collaboration are very important for SLM effectively implementation. However, the results have not really met expectation and institution obstacles are seen as one of the main reasons (VNFOREST, 2015). The questions raise are what the institutional obstacles for SLM implementation and what are policies and measures need to be made targeting sustainable agricultural land use in Vietnam.

The research was taken in Hoa Binh and Quang Tri provinces representatives for the North West and Central Coast regions respectively. These are the two areas considered to have serious land degradation problems in four regions of Vietnam: the North West, the Central Highlands, the Central Coast and the Mekong Delta. Two districts are selected as study sites: (1) Da Bac district- Hoa Binh province is representative for the North West region where various land degradation issues come from cultivation in sloping land; (2) Hai Lang district, Quang Tri province is representative for the Central Coast region with the main feature of coastal land is sandy soil, which is derived from granite weathering, alluvial deposition and windblown coastal dune systems.

The overall objective of the research is to strengthen institutions for SLM implementation in Vietnam with the specific objectives are: (i) to draw land degradation issues and institutional mapping for SLM implementation; (ii) to investigate institutional constraints and challenges in implementing SLM; (iii) To propose recommendations for overcoming these institutional constraints and challenges targeting sustainable agricultural land use in Vietnam.

II. METHODOLOGY

Secondary data on institutions of crop production and farming systems and agricultural extension programs were collected from Department of Agriculture and Rural Development (DARD and Agriculture and Fishery Extension Centre and Station at province and district levels. Primary data were selected from several sources: (i) Eight semi-structured interviews with local government officers from commune, district and provincial levels; (ii) Two FGDs with farmers each commune in order to discuss more about the issues of the constraints and challenges in implementing sustainable land use and recommendations to overcome these challenges; (iii) Households survey with both SLM adopted and non-adopted households in Da Bac district (181 HHs and 119 HHs respectively) and in Hai Lang district (110 HHs and 129 HHs respectively).

III. RESULTS AND DISCUSSION

3.1. Land degradation issues and causes

Table 1 presents land degradation issues have been solved and its causes in the study sites. In Hoa Binh province, an upland areas, soil erosion and leaching in mountain which have high slope of land with lower level of forest cover and shorten fallow period are the main reasons for land degradation. On the other hand, soil becomes harder, drier and less of fertility and overuse of chemicals; herbicide and inorganic fertilizers are seen as the main cause. It is also the problem of Quang Tri province together with the causes of drought and less of alluvia; and land preparation techniques applied by farmers.

Table 1. Addressed land degradation issues and causes

Nr.	Land degradation issues	Causes
1. Land degradation issues in upland northwest region (Hoa Binh province)		
1.1	Soil erosion and leaching	- Deforestation and forest degradation/low forest cover; - Monoculture on sloping land with shorten fallow period.
1.2	Soil become harder, drier and less fertility	- Overuse of chemicals, herbicide and inorganic fertilizers; - Less use of organic fertilizers; - Monoculture (cassava, sugarcane…)
2. Land degradation issues in central coast region (Quang Tri province)		
2.1	Salinization in sandy soil	- Natural causes (climate change, natural condition, drought…)
2.2	Soil becomes harder, drier and less fertility	- Overuse of chemicals, herbicide and inorganic fertilizers; - Less use of organic fertilizers; - Drought and less of alluvia; - Land preparation techniques.

(Sources: Implementer surveys and interviews, 2016)

3.2. Institutional mapping in SLM implementation

Table 2 presents SLM implemented programs in different areas. SLM programs classify into three types of agroforestry, conservation farming and organic agriculture based on applied cultivation systems and techniques.

Table 2. Types of implemented SLM programs

Nr.	Types of SLM	SLM programs implemented
1	Agroforestry	- Sustainable sloping land use project; - Mixed forest plantation with domestic trees program; - Agroforestry models on sandy soil; - Cash crop plantation under forest canopy.
2	Conservation farming	- Integrated cassava and short-day crop cultivation pilot project; - Integrated maize and groundnut program; - Rotation cropping of *Nem* (*Allium schoenoprasum)* cultivation on sandy soil program; - Improvement of mixed garden program; - "One Must - Five Decrease" for rice cultivation; - "Three Decrease - Three Increase" program.
3	Organic Agriculture	- Using microbial fertilizer program; - Using micro-organic fertilizer program; - Organic agricultural cultivation project.

(Sources: Implementer surveys and interviews, 2016)

As previously mentioned, the rate and status of land degradation in Vietnam differ from one region to another. Based on the causes of land degradation, SLM programs are implemented by different agencies, which have their own respective agenda and interests. The results of the implementers' surveys and semi- structured interviews show the mapping of SLM programs and implemented institutions as follows:

In Da Bac district in Hoa Binh province: The SLM programs being implemented in this region include mixed forest plantation with domestic trees program, sustainable cassava cultivation program, and intercropping of maize and legume program. These SLM programs are introduced by the Agricultural Extension Center and Station with the main objective of reducing erosion and increasing fertility of soil. The extension station also trains farmers to make organic fertilizers from postharvest residuals, and farmers are encouraged not to overuse chemicals, herbicide, and inorganic fertilizers.

In Hai Lang district in Quang Tri province: The SLM programs are implemented by the Crop Production & Protection division in collaboration with agricultural extension stations. Programs are focused on sustainable use of sandy soil through agroforestry models and on intercropping or rotation cropping on sandy soil to increase fertility and productivity (chives or cassava with legume). The Agricultural Extension Centre also trains farmers in composting and fertilizer use (microbial fertilizer pilot program in two communes), and implements the "One Must-Five Decrease" program in rice-farming areas.

3.3. Institutional challenges and constraints in SLM implementation

With respect to the aforementioned institutional issues and concerns, the following are the institutional obstacles to SLM implementation:

1. Despite the fact that agricultural extension services are the most important institution to support farmers in SLM adoption, the agencies have limited human and financial resources

The agricultural extension system is organized from central to village-based level, has total 34,747 staff, average 1 staff per 280 farming households; at commune level, there are 11,232 extension workers (32.3%), or 1.2 people per commune; at village level, there are 17,587 staff, mainly working as part-time extension workers. For example, in Hai Lang district, Quang Tri province, Agricultural Extension Station has 4 staff, being in charge of 20 communes and 57 cooperatives for all extension activities and implementation of SLM programs at the sites. Agricultural extension staff is working in a very difficult situation with large area of activities.

The extension services at site-based level therefore depend on activities of farmer interest groups or farmers extension groups. However, farmers are facing difficult in making these groups work effectively due to weak in term of leadership, management skill and financial constraints as seen in Hai Lang district (Quang Tri province) or in Da Bac district (Hoa Binh province) that all the farmer extension clubs have stopped its activities since 2012. Moreover, most of extension staffs are limited in knowledge and capability to work on market analysis and demand, risk avoidance. Increasing knowledge and capacity of extension staff on these issues is important to effectively support farmers and enhance SLM adoption.

Funding from the state for agricultural extension activities is very limited but extension services are free for farmers even farmers get payment for participating on training. Average budget for all extension activities of the country accounting for 20 millions USD, or average 2USD/farming

household. In Hoa Binh province, for example, budget for extension activities 3 years recently is about 45,000 USD/year, in which about more than 30,000 USD training and pilot farming model establishment. The results of implementers survey show that one of the main problems they faced is lacking of budget for practical SLM training for farmers. Limitation of funding for training lead to the result that lack of knowledge of SLM is one of the reasons for average 60.9% of households from three study sites have not adopted SLM. Finding appropriate financial mechanism for extension services to fulfill their tasks is important to SLM implementation.

2. Agricultural extension services mainly focus on technical transfer rather than supporting farmers with market information or risk avoidance

Agricultural extension services in some cases are only to implement programs assigned from the Government but not to fully assess land use techniques that really improve soil conditions or protect environment. In some other cases, the SLM introduction and implementation are not met farmer's need and ability. The results from the sites show that the most difficulties mentioned by SLM adopted households are: complex techniques of SLM (92.7% households) and high cost of SLM (78.4% households). It is the reason why spreading out SLM is the main problem for many SLM programs as seen on the cases of sustainable cassava cultivation system in Hoa Binh province or compost fertilizer use in Quang Tri province.

Moreover, 80.6% SLM adopted households see that difficulties on selling products are also the problem for them to continue SLM practices. In that sense, the roles of private sectors – agribusiness companies for output services are important. Solving these issues to ensure the sustainability of SLM adoption is vital in which extension services should integrate a more comprehensive approach and activity that account not only technical dimension but also the growing focus on the marketing and business needs of farmers.

3. Staffs of SLM implementers have limited capability on participatory approach, communication skills and propaganda methods

The data and information that follow are results of assissted survey of 32 SLM implementors involving local government institutions. Table 3 present educational and professional background of SLM field implementers.

Table 3. Education background of SLM filed implementers

Unit: Person

Field of study	High school	Undergraduate	Postgraduate
1. Environmental science		01	02
2. Land administration		01	03
3. Agriculture		04	
4. Agricultural economics		01	01
5. Forestry		08	01
6. NR Management		05	
7. Irrigation		03	
8. Farmer Union	01		
9. People's committee	01		
Total	**02**	**23**	**07**

(Sources: Implementer surveys, 2016)

Most of them are technicians with professional background on environmental science, agriculture, forestry, natural resource management; and some on management aspect such as land administration or agricultural economics. These knowledge and skills do not receive significant attention in the undergraduate training programs of compares to agricultural extension major. Lack of solf skills on working with local people together with existing backward farming systems and difficult socio-economics conditions have restricted the ability of farmers to apply SLM.

4. Differences on expertise, regulations and structures of the implemented-SLM organizations lead to difficulties and time-consuming for interagency collaboration

Table 4. Assessing of implementers on collaboration problems

Problems	Ranking
1. Lack of a lead agency for coodinating the programs	***
2. Different of rules and regulations of institutions	*
3. Time constraints, not be able to assess need and ability of farmers	*
4. Institutions often rely on their own provisions of expertise	**
5. Lack high professional staff/uneven on capability	**
6. Bureaucratic process of disbursement	**

(Note: ***: high level ** Medium level * Low level)

(Sources: Implementer survey, 2016)

The results from implementer surveys and interviews (both the GOs and NGOs organizations) show that lack of a leading agency to coordinate program, self-interest of different institutions, uneven in capability of staff are difficulties that hindering SLM implementation. As mentioned before, sustainable land use objective and SLM implementation are integrated in other programs and under the management of different institutions with their own interest and concerns. These interagency collaboration constraints strongly affect to effectiveness, efficiency and sustainability of SLM implementation.

3.4. Recommendations to overcome challenges

According to World Bank (WB), in the twenty-first century, agriculture production and natural resources management systems will need to meet the following three major requirements: (i) adequately supply safe, nutritious, and sufficient food for the world's growing population; (ii) significantly reduce rural poverty by sustaining the farming-derived component of rural household incomes and; (iii) reduce and reverse natural resource degradation, especially that of land. These challenges are likely more serious under the significant and highly unpredictable changes of global climate change, together with other issues such as food security in globalization of markets and trade, the increasing market orientation of agriculture, significant technological changes, and increasing public concern about the effects of unsustainable natural resource management. In this context, SLM is one of the solutions to meet the requirements of a growing population in a rapid changing and under pressures world. Effective implementation of SLM programs will deliver social and economic benefits through productivity gains and enhanced resilience of agro-ecosystems, which are essential to addressing the major challenges

facing the world today as mentioned above (GEF, 2016). SLM is defined as a knowledge-based procedure that helps integrate land, water, biodiversity, and environmental management to meet rising food and fiber demands while sustaining ecosystem services and livelihoods (WB, 2006).

When initiating a program in SLM, one of the key considerations is opportunity for scaling up from field trials to increase the number of land managers adopting SLM practices (GEF, 2016). There are however, a number of institutional, policy and market bottlenecks in the context of SLM adoption. From institutional point of view, inappropriate national and local political agendas, lack of operational capacity, overlapping and unclear demarcation of responsibilities, ineffective decentralization and, lack of good governance are seen as obstacles to SLM adoption (TerrAfrica, 2009). It expresses the importance of institutional strengthen in SLM adoption. While natural resources define the possible farming systems, institutional changes will determine the socio-economic factors that underscore the continuation of land degradation or alternatively create an enabling environment for SLM to spread (TerrAfrica, 2011). Scaling SLM involves beyond technology to institutional that foster arrangements to enhance capacity of organizations to catalyze change. In order to facilitate SLM adoption, adaptation and spread, enhancing incentives are needed. These include awareness raising, promotion, training and financial or material supports.

In order to effectively implement SLM in Vietnam, thereby enhance sustainable agricultural land use, the followings policy actions from institutional aspects are proposed:

Firstly, in terms of the limited manpower for extension activities, the government could instead mobilize SLM farmer adopters as volunteer extension workers. Experience from World Bank show that for improved land management practices, it is important to build farmer innovation into national extension programs (WB, 2006). A major advantage of innovations by farmers is that they are site-specific and often are readily acceptable to neighboring farmers. The incorporation of the farmer innovation can significantly improve the performance of agro-extension and techno-advisory services, particularly in the field of soil and water conservation, where the visual impact of demonstrations can be a powerful way to attract potential end users of new "best practices". Local knowledge combined with scientific understanding will help develop locally acceptable and effective strategies for SLM (GEF, 2016). Therefore, technical and financial support could also be extended to farmer extension clubs or farmer interest groups by providing them with capacity-building activities to improve their managerial skills or by providing them with other incentives. This is highly important because increasing the number of state extension staff is highly improbable given the limited state budget and administration systems. Moreover, previous studies have shown that farmer-to-farmer extension can be an effective approach in technology adoption.

Secondly, the capacity of extension staff and workers on the subjects of market information and analysis needs to be improved. In many cases, adoption of soil conservation practices may in fact occur because of the opportunity to increase income, with soil conservation occurring as a by-product. However linking market opportunity to conservation practices is vital. In particular, upland farmers lack

information about marketing opportunities. On the other words, the price mechanism strongly influences the relative profitability of land management options, and thus land user decisions on production and consumption levels. If markets are inefficient and prices are distorted, land endowments may be significantly undervalued, leading to overconsumption and degradation. There is evidence that vertical marketing system that link farmer producers to product processors might facilitate the exploitation of new market opportunities by small-scale farmers (WB, 2006).

Likewise, technical assistance should be provided to farmers to enable them to establish linkages to agribusiness companies that would help them to market their SLM-based agricultural products. To ensure the continued adoption of SLM models, SLM technologies must be (i) specifically designed according to the local conditions of the farming community, (ii) should meet the farmers' technical ability to adopt the same, and (iii) need to meet market demand. These factors are important to encourage farmers' participation and to create a ripple effect in adoption, and thus ensure the success of SLM implementation.

Thirdly, due to the state's limited budget for agricultural extension services and SLM projects, there is a need to enhance policies and institutions that would enable financing for extension services on SLM implementation.

Incentives for SLM should not exclusively be seen as financial or material support, but as the intangible stimulus that farmer's experiences through higher production, saving time or reducing cost. Therefore, SLM implementation should explore adapting existing technologies or choosing "simple and cheap technologies (FAO, 2011) because "the lower the degree of outside financial or material support, the greater the level of genuine land user self-initiative and participation, and thus the probability that the interventions are sustainable". Access to credit and financing schemes can be vital to help for farmers to start SLM initiatives (such as micro-credit) but also enabling farmers to to take initiative for self-financing SLM interventions.

Extension offices therefore should actively search for more funding from other sources—rather than depend solely on state fund—and use effectively the financial and technical support provided by international and local NGOs projects/programs. On the other hand, for the more developed economic areas or for households with higher income, extension services could be in the form of the benefit-pay-principle, in which farmers have to pay for a part or for the full cost of the extension service. Moreover, farmers (even in difficult situation) should not be paid for participating in training and in technology transfer activities; this leads to bias problems within the farming communities.

Lastly, improving the capacities of technicians who are directly involved in SLM implementation on how to effectively communicate with the local communities through providing refresher courses and through exchange of knowledge and experiences among organizations. To support the capacity building of technicians, there is a need to involve academic institutions on SLM implementation through research and technical support. Academic research projects could focus on SLM models and techniques suitable to specific locations or on the analysis of economic and environmental benefits of SLM. This would contribute to the body of knowledge that would encourage farmers to

adopt SLM systems. Moreover, strengthening organizational structures of SLM implementation from the provincial to the village level is important. This would help to improve interagency collaboration, as it would integrate SLM implementation into other national programs and projects at site- based levels. There is no need create a new institution; but clearly establishing a lead agency at the local level is critical in order to coordinate and harmonize the goals of the concerned institutions.

IV. CONCLUSIONS

SLM requires the integration of technologies, policies and activities in the rural sector, particularly agriculture to enhance economic performance while maintaining the quality and environmental functions of the natural resource base. In Vietnam, under land degradation issues from different regions, there are a range of SLM programs undertaken by different institutions from governmental to international, national and local non-governmental organizations. It expresses the concerns and interests of these organizations with special emphasis on SLM in Vietnam although the programs were not explicitly expressed SLM implementation as the purpose. In this context, the inner-agency capacity and interagency collaboration are very important for SLM effectively implementation.

The results from Hoa Binh and Quang Tri provinces show the institutional obstacles to SLM implementation as follows: (1) Despite the fact that agricultural extension services are the most important institution to support farmers in SLM adoption, the agencies have limited human and financial resources; (2) Agricultural extension services mainly focus on technical transfer rather than supporting farmers with market information or risk avoidance; (3) Staffs of SLM implementers have limited capability on participatory approach, communication skills and propaganda methods; (4) Differences on expertise, regulations and structures of the implemented-SLM organizations lead to difficulties and time-consuming for interagency collaboration. The policy recommendations therefore focus on solving three main aspects as capacity building for extension services and other SLM implementers, revising financial mechanism for SLM supports and, improving institutional structures of SLM implementation from central to local levels.

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TĂNG CƯỜNG THỂ CHẾ TRONG THỰC HIỆN QUẢN LÝ ĐẤT BỀN VỮNG - BẰNG CHỨNG TỪ HOÀ BÌNH VÀ QUẢNG TRỊ

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TÓM TẮT

Đất nông nghiệp ở Việt Nam được sử dụng bởi hàng triệu hộ nông dân từ vùng cao đến vùng ven biển và suy thoái đất là một vấn đề nghiêm trọng với 7,6 triệu ha. Từ các vấn đề suy thoái đất ở các vùng khác nhau, đã có rất nhiều chương trình quản lý đất bền vững (SLM) được thực hiện bởi các tổ chức khác nhau gồm cả các tổ chức chính phủ, phi chính phủ, quốc tế và địa phương. Trong bối cảnh đó, năng lực của các tổ chức và sự hợp tác liên ngành là rất quan trọng để thực hiện có hiệu quả các chương trình SLM. Nghiên cứu này nhằm đánh giá các chương trình và thể chế thực hiện SLM, xác định những trở ngại về thể chế đối với việc thực hiện SLM tại các địa điểm nghiên cứu được lựa chọn, đề xuất các chính sách và biện pháp nhằm cải thiện việc thực hiện các sáng kiến SLM. Kết quả nghiên cứu cho thấy có một số thách thức về thể chế đã cản trở việc áp dụng SLM của nông dân Việt Nam. Do đó, các khuyến nghị về chính sách tập trung vào việc giải quyết ba khía cạnh chính: xây dựng năng lực cho các dịch vụ khuyến nông và các nhà thực hiện SLM khác, sửa đổi cơ chế tài chính cho hỗ trợ SLM và cải thiện cơ cấu thể chế thực hiện SLM từ trung ương đến địa phương.

Từ khoá: Hệ thống canh tác, quản lý đất bền vững, suy thoái đất, thể chế.

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