

CHAPTER IX. CONCLUSION AND RECOMMENDATION

This chapter concludes the result's findings and gives recommendations that have been found during the research to farmers, local authorities and also in the theory's field.

A. Conclusion

In Vietnam, the Mekong delta is affected more than other places by sea-level rise, uncertain rainy season and also increases in temperature. Impacts of climate change are various from the upper and lower parts of the Delta. In coastal areas, saline intrusion has increased which is recognized as climate risk.

Exposure to SI is increasing from both sides of the Delta both in elevated salinity and distance of salt-water intruding farther inland. SI in the East occurred earlier than it was in the West due to the greater tidal effect. However, it is happening more in the West leading the farmers in the West to be more aware of SI's status than those living in the East since they have been protected by salt-water projects.

SI status related to the water level on the Mekong River, the high level of fresh-water leads to less salt-water in coastal areas. Causes of SI are variously influenced by climate change impacts, actions of those countries along the Mekong river's banks and development process in Vietnam. In the future SI has been predicted to be more serious and uncertain in the VMD since natural conditions in the Mekong Delta are complicated and lack of budgets for the planed salinity projects will be conducted on time.

SI causes impacts on agriculture (rice dead due to the high level of salt). In this case, shifting the farming system is the main response to adapt to SI. Types of adaptation are different from the West to the East; rotation shrimp-rice system is applied mostly on the West, while intensive shrimp is common on the East. The differences resulted from various levels of capital at the household level (land, perception, labor). Shifting from rice to shrimp culture brings economic benefits but environmental and social challenges have emerged. In this regard, the social change occurring to take part to solve these problems by establishing collective adaptation.

Collective adaptation can be identified in forms of structure and function. In terms of structure, they are in two forms classified as social groups and formal organizations. Regarding functions, more collective adaptations have existed in the West (including four

forms of functions, building institutions, mobilizing resources, coordinative activities and sharing information), while only coordinative activities and sharing information have been found in the East.

Social and ecological factors take part to form CRA, their links include four levels from interpersonal, organization, community and policy within the three parts listed as physical, so-economic and institutional factors. The relations are expressed in two loops, environmental loop (resources system and resource unit) and social loop (Governance system and resource user).

CRA is a human action to respond to SI in the VMD. Environmental change requires coastal farmers to adjust their activities to adapt. In this regard, social capital plays an important part in the formation and maintenance of these changes which can be understood as collective adaptation. For both social groups and formal organizations, social entrepreneurship and partnership should be given to both to build a better relationship among members in groups and also between groups and other organizations.

B. Policy recommendations

1. For farmers

People in the Mekong Delta of Vietnam should bear in mind that SI happens and it will be more serious. The Delta is not fertile for us to try to exploit as much as possible. To adapt to SI, being a smart farmer to decide for long terms sustainable strategy, economic in balance with social and environmental benefits.

Farmers should discover that they have own sources of adaptive capacities because they have been living in those areas for a long time. So, they know clearly about the areas and also how to adapt.

Regarding techniques of growing rice, AWDT¹ (Alternate Wetting and Drying Technique) should be adopted to make sure that they only take enough water for using in their rice field.

¹ Alternate Wetting and Drying Technique (AWDT) is a water management technique, practiced to cultivate irrigated lowland rice with much less water than the usual system of maintaining continuous standing water in the crop field.

Be ready to cooperate with other people (living in the same area or working in the same agricultural sector) because adaption to change of environmental changes cannot be done by the individuals. To be sure that building co-operation is the main way to achieve sustainable development.

2. For local authorities

To provide accurate information about SI to local farmers to make sure that they know exactly how it happens (including the status, causes, impacts and also potential to reduce SI) in order helps both policy-makers and farmers to have suitable decisions.

For the local region (based on ecological area), the roles of collective adaptation should be discovered. By understanding these factors and developing policies to enhance them (at province and district levels), the level of collective adaptation generated at the local level can be increased.

Design mechanisms to debate by local users (especially farmers, group leader) in their effort to learn and discover new strategies. It is also important that policymakers from a higher level (district, province) not presume that they are the only relevant actors in efforts to solve collective action problems. They have local partners if they are willing to recognize them (farmers are the available ones).

To raise local people's awareness about SI should be taken into account of any development project. Warning local farmers about the environment changes are necessary to attract their attention to be active to adapt to environmental changes. In addition, environmental and social assessment needed to be conducted before making the decision of any environment intervention to better manage natural resources.

Social entrepreneurship and partnership are two concepts which have potential to enhance and improve CRA in Vietnam. They have just being applied in in Vietnam for one decade. The need is to study how they can be incorporated into the political system. Looking for models of partnership in the shrimp value chain (for both a social group and formal organization) is necessary to enhance CRA in the case of SI which brings balance benefits to achieve sustainable development.

3. For theory

IADF can be applied to the social and ecological concept to understand collective adaptation in a specific situation which can explain why coastal farmers in the West act more collectively on those people living in the East. Physical, so- economic and institutional conditions contribute to form collective adaptation. Levels of interaction between social and ecological framework base on the local context, in the case of Vietnam the individual level is not be taken into account due to Vietnamese culture, the lowest level is household.

Many factors shape CRA, out of what has been mentioned by Ostrom, there some factors important case of SI in the VMD listed as human construction facility, monitoring and sanction process, social and economic attributes of users, history of use and technology.

The roles of the group leader are very important, especially to form a social group. In the case of the political system in Vietnam, it should be explored more in case of representing the group to do lobby activities (to get a closed connection with the Government).

4. For future research

For the future, the issues below should be studied for better understanding of collective adaptation in the case of VMD:

The result has found that collective adaptation exists in both sides of the Delta. The issue of partnership model should be studied more, particularly in integrated shrimp and rice products in the West and shrimp in the East to for better development of the farming system.

The leader of the group has shown the vital roles in creating and maintaining the collective group's activities. The question should be learned to what extent the group leader can act best to support CRA.

In the West, shrimp-rice farming has shown its capacities as a sustainable system. It is better for local farmers can join in more in this process, so what are the fields in which local labor can take part and their capacities to carry out.