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The role of community participation in the sustainability of nature-based solution implementation: The case of Trapeang Sangkae Community-Based Natural Resource Management Project in Cambodia

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Summary

Climate change has produced a lot of disturbances and impacts on the existing coastal ecosystems and human settlements in term of the rise of sea level and the more frequent and intense incidents of storm resulting in flooding and loss of land. Regarding to this matter, the idea of utilizing natural resource as a tool to address climate change issues have gained in popularity, and it has been framed as a new concept called “Nature-Based Solution” or NBS. The implementation of natural resource protection, conservation, restoration and management, a mixture of the first two typologies in NBS, the local participation is seen as an effective intervention contributing to the achievement of project goals in a sustainable manner. Community participation is one of the most influential aspects for the sustainability of NBS-related projects. Particularly, characteristics of local community participation differently take part in the project implementation and support the sustainability of projects.

In this study, the researcher conducted a comprehensive analysis and description about the role of community participation in the sustainability of the NBS implementation for coastal resilience by selecting a successful case of the coastal resource conservation and management, especially for mangrove forests in Trapeang Sangkae Commune, Cambodia. The main objective for this study is to explain how characteristics of local community participation influence the sustainability of the Trapeang Sangkae CBNRM project.

Regarding the methodology of this research, a specific empirical case that satisfies the sustainable implementation of NBS-related project and particularly fulfils the criteria of being sustainable in term of institutional issues was chosen as the main area of focus. 7 key informant interviews, and a focus group discussion followed by the application of observation and the analysis of the secondary data were conducted to gather the information and data for analysis.

The finding of the study positively confirms that the project is the most successful project in the coastal area that could sustainably maintain its performance and the positive outcomes of the project. Also, the study found out that all particular the participation characteristics namely the level of involvement, form of involvement, methods and mechanism, citizen control, allocation of resource, institutional system adaption and management, accountability, benefits, local people attitude, and leadership quality do exist and take a separate role in the project. However, only a few main characteristics including project benefits, local people attitude, the institutional adaptation and management perspective, leadership quality, and the citizen control seem to take a lager and interactive role concerning the sustainability of the project.

Keywords: Nature-Based Solution, Community based Natural Management, Characteristics of the local community participation, and the project sustainability

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Chapter 1: Introduction

1.1 Background Information

As a global issue, climate change has manifested its considerable impacts on various aspects including water resource, food security, human health, poverty, social security, people's livelihood, and ecosystems throughout the world (Intergovernmental Panel on Climate Change or IPCC, 2014). Likewise, in some of the coastal regions and the low-lying areas in the world, climate change has produced a lot of direct and indirect burdens on the existing coastal ecosystems and human settlements. The direct impact can be seen in the rise of sea level and the more frequent and intense storm incidents, which cause flooding and the loss of land. At the same time, the impacts can indirectly put pressure on socio-economic development and the livelihood of the local people in the areas as well (Nanlohy et al., 2015). To attenuate those unavoidable impacts, a variety of adaptation approaches, such as human resettlement, the construction of flood defence infrastructure, and natural resource restoration and management, are recommended as possible solutions (Gopalakrishnan et al., 2018). Apart from conventional engineering perspectives, the idea of utilizing natural resource as a tool to address climate change issues have gained in popularity, and it has been framed as a new concept called "Nature-Based Solution" or NBS (Cohen-Shacham et al., 2016; Raymond et al., 2017). Particularly, NBS is believed to contribute to both climate change mitigation and adaptation in a very cost-effective way while at the same time provide co-benefits to the environment and society. However, if the implementation of NBS does not take into account the full dimension of biodiversity values and the different services of ecosystems, it will cause the issue of maladaptation - leading to a failure for NBS to yield its potential benefits (Seddon et al., 2020). In coastal regions, the practice of NBS, including the establishment, the rehabilitation and the management of green and blue infrastructures like oyster and coral reefs, coastal wetlands, beaches, and coastal forestry resources (Depietri and McPhearson, 2017), is counted as an effective response to foster resilience amidst global challenges (Cohen-Shacham et al., 2016). Specifically, the availability and the sound management of these infrastructures and resources could help maintain and provide multiple ecosystem service benefits in the regions including greenhouse gases emission reduction, as barriers against storm surges, and provision of habitats for biodiversity (Arkema et al., 2017; Baustian et al., 2020). However, NBS, which can be classified into three types of actions namely (1) natural resource protection and conservation, (2) resource restoration and management, and lastly, (3) creation of new ecosystems (Eggermont et al., 2015), needs the engagement of various stakeholders and decision-makers from different backgrounds and with varying knowledge and capabilities, ranging from the grassroots level until the national and regional levels through multiple divergent development and management processes (Raymond et al., 2017; Sarabi et al., 2019).

Noticeably, when it comes to natural resource protection, conservation, restoration and management efforts, which is also a mixture of the first two typologies in NBS, the involvement of local community is seen as an effective intervention contributing to the achievement of project goals in a sustainable manner (Owuor et al., 2019; Roka, 2019). Nevertheless, local communities experience limited participation throughout the whole life cycle of NBS-related projects (Baustian et al., 2020), which can lead to failure in achieving the ultimate goals and the sustainability of the project. In this study, community participation simply refers to "a process where the residents of a community actively engage in their own development" (Matarrita-Cascante et al., 2019, p. 487). On the other hand, the sustainability of NBS in this context refers to institutional issues concerning the continuity of the program functions and the long term viability of the project (Datta et al., 2012) or the active status of all components or

any specific element in the project that also improve community capacity and address community problems (Ceptureanu et al., 2018). Therefore, the detailed explanation about the casual relationship between the role of community participation and the sustainability of the NBS implementation for coastal resilience is discussed in this study.

1.2 Problem Statement

As one of the developing countries in Southeast Asia that suffers from the impact of climate change, Cambodia especially its coastal region is marked as highly vulnerable to sea level rise and will experience more intense coastal impacts from climate change (Rizvi and Singer, 2011; USAID, 2019). As mentioned in the section above, the practice of NBS should be regarded as a means to solve these problems. One of the most common NBS in the coastal areas in the country is mangrove forest conservation and restoration since the presence of the forest provides significant beneficial contributions, such as coastal and marine ecosystem protection, carbon emission reduction, and local people's livelihood improvement (Brander et al., 2012; Nop et al., 2017). Unfortunately, despite the enormous advantage of the mangrove system to deal with climate change issue, the amount of mangrove forest in the country has decreased over the years due to both climate stressors and anthropogenic factors, such as illegal logging, charcoal production, farmland expansion, coastal area development, and unclear management and insufficient monitoring (USAID, 2019; Veettil and Quang, 2019). If the existing mangrove system is not protected and improved effectively, its benefits as a solution for climate change in the coastal region will no longer be applicable.

Regarding this issue, the Participatory Management of Mangrove Resource (PMMR) has been introduced in Cambodian coastal areas. Led by Canada's International Development Research Centre (IDRC) in cooperation with the Ministry of Environment (MOE) and Ministry of Agriculture, Forestry, and Fisheries (MAFF), the programme aimed to empower the local community to take responsibility for the sustainability of their own mangrove and fishery resources (Marschke and Nong, 2003). This participatory management initiative is inspired by the Community-Based Natural Resource Management (CBNRM) approach which acknowledges the significant role of local community participation for sustainable natural resource management and protection (Gruber, 2010). With this participatory management initiative, a lot of CBNRM projects have been established since the early 2000s in coastal regions in Cambodia, most of which are located in Kampot Province, a Southwest coastal province in the country. However, the majority of those projects are still facing a lot challenges regarding the availability supporting laws and policies, the stakeholders' collaboration, the level of community empowerment, resources for implementing the project, evaluating and monitoring mechanisms, local awareness and knowledge on the importance of the project, and other administrative and managerial issues. Those challenges usually create barriers to the local participation leading to the undesirable project's outcomes and ineffective project performance. (Nop et al., 2017).

Community participation is one of the main determining factors for the sustainability of projects (Ceptureanu et al., 2018). So far, among the established CBNRM projects in the country, Trapeang Sangkae CBNRM project, which is located in Kampot province, seems to have an impressive achievement regarding coastal resource conservation and management, especially for mangrove forests. It was unofficially established by groups of fishermen in the neighbourhood and officially recognized by the government in 2009 (Kaarlep, 2014). This community project has been generally viewed as one of the most outstanding project in the coastal areas in the country in terms of its dynamic function and its ability to cope with challenges in order to maintain its performance to fulfil the goals concerning the natural resource management and the improvement of local livelihood.

Apparently, characteristics of local community participation, such as level of involvement, forms of involvement, mechanism, citizen control, resource allocation, institutional system adaptation, accountability, benefits for residents (Matarrita-Cascante et al., 2019), as well as management, knowledge, and attitudinal factors (Hanifah and Eddiwan, 2018) embedded in the community, encourage members to differently take part in the project implementation and support the sustainability of projects. According to Katz and Sara (1997), there is a close relationship between the involvement of community and project sustainability as the level of sustainability can be influenced by the engagement of community members who are able to obtain information, join in training or capacity building sessions for project implementation and monitoring, and take over financial issues (as cited in Oino et al., 2015).

However, much of the research up to now has been descriptive in terms of the development of NBS-related projects, but existing studies have not treated in much detail enough yet on how to maintain the project implementation, and how it links with the characteristics of local community participation (Wamsler et al., 2020). Therefore, this study attempts to critically examine the above issues by selecting the case study of Trapeang Sangkae CBNRM project in Kampot province, Cambodia.

1.3 Research Objectives

The main objective for this study is to explain how characteristics of local community participation influence the sustainability of the Trapeang Sangkae CBNRM project in Kampot Province, Cambodia.

The sub-research objectives include:

- To understand characteristics of local community participation in Trapeang Sangkae CBNRM project
- To examine the sustainability of the Trapeang Sangkae CBNRM project

1.4 Main research question and research sub-questions

Main Research Question

How do the characteristics of local community participation influence the sustainability of the Trapeang Sangkae CBNRM project?

Sub-Research Question

1. What are the characteristics of community participation in the Trapeang Sangkae CBNRM project?
2. How sustainable is the Trapeang Sangkae CBNRM project?

1.5 Significance of the Study

As a broad concept which covers various types of classical natural resource management theories, NBS and its application has gained a lot of attention in dealing with a wide range of social and global issues (Cohen-Shacham et al., 2016; Raymond et al., 2017). Likewise, this study is expected to contribute to the growing body of knowledge and a more in-depth understanding on how to sustain the implementation of NBS. The findings also highlight the significant role of local community participation in maintaining the performance of NBS. Moreover, it provides recommendations to all stakeholders especially the existing local communities in Cambodia on how to achieve long-term project implementation.

Chapter 2: Literature review/theory

2.1 Introduction

This section shows the state-of-the-art literature and theoretical perspectives on the concepts related to this research. It describes the main concepts related to the topic which are: the application of NBS in the coastal area, the community participation theory, typology of community participation, sustainability of projects, and the relationship between community participation and the sustainability of projects. The chapter ends with the development of a conceptual framework for this thesis.

2.2 NBS in Coastal Areas

2.2.1 Introduction to NBS

The attempt to identify a simple definition of the term NBS is quite challenging as it was originally built up from and broadly covered by different existing ecosystem and natural management concepts including ecosystem restoration approaches, issue specific ecosystem-related approaches, infrastructure-related approaches, ecosystem-based management approaches, and ecosystem protection approaches. According to the International Union for Conservation of Nature (IUCN) report, NBS refers to “actions to protect, sustainably manage and restore natural or modified ecosystems, which address societal challenges (e.g. climate change, food, and water security or natural disasters) effectively and adaptively, while simultaneously providing human well-being and biodiversity benefits” (Cohen-Shacham et al., 2016, p. 5). The European Commission, on the other hand, defines NBS as “living solutions inspired by, continuously supported by and using nature designed to address various societal challenges in a resource efficient and adaptable manner and to provide simultaneously economic, social and environmental benefits (European Commission, 2015, p. 4)”.

In view of all that has been mentioned so far, this concept can be, more or less, regarded as the way to harness the benefits from natural resource conservation, restoration, and management with the aim to deal with social issues and wicked problems in order to achieve sustainable development (Calliari et al., 2019; Cohen-Shacham et al., 2016; European Commission, 2015; Pauleit et al., 2017). Furthermore, NBS seems to be versatile, focusing beyond the traditional natural resource conservation concept, and put emphasis on sustainable exploitation of benefits from ecosystem services (Nesshöver et al., 2017) to achieve socio-ecological resilience (Sarabi et al., 2019) and to address the unforeseen and complex issues in the future caused by climate change and other global challenges (IPCC, 2014)(Hobbie and Grimm, 2020).

The development and implementation of NBS requires a broad spectrum of stakeholder participation from different levels and expertise (Frantzeskaki, 2019; Raymond et al., 2017; Sarabi et al., 2019). Nesshöver and his co-authors (2016) introduce five main elements to be considered when designing NBS-related projects in order to become a successful solution for global challenges and produce environmental, social and economic benefits. Those elements focus on dealing with uncertainty and complexity, enforcing the involvement of multiple stakeholders, ensuring the sound use of multi-disciplinary and transdisciplinary knowledge, developing the common understanding of multifunctional solutions, and evaluating and monitoring for mutual learning across scales.

NBS is seen as more economical, adaptable, and inclusive in terms of development and execution (Calliari et al., 2019). Also, local characteristics embedded in NBS projects can have considerable potential influence in addressing climate change related impacts (Kabisch et al.,

2016; Malhi et al., 2020). The practice of NBS can also yield possible co-benefits and trade-offs across different sustainable development dimensions and over various social and global issues including climate change impact and adaptation, water management, coastal resilience, green space management, air quality, urban development, governance and planning, social justice, health, and economic activities (Raymond et al., 2017).

2.2.2 Mangrove Projects as NBS in Coastal Regions

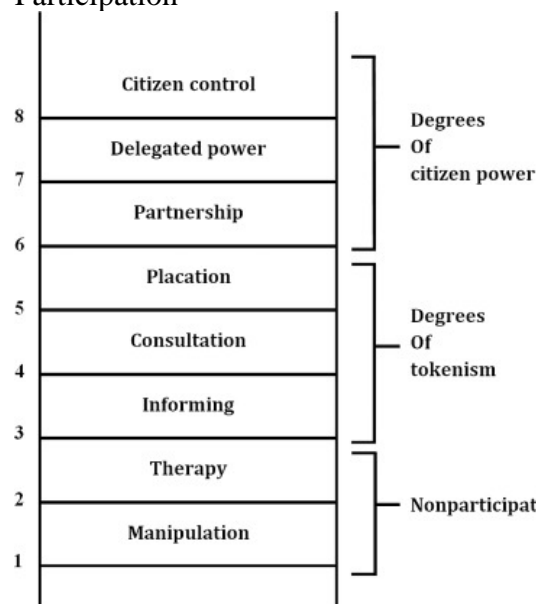
Enhancement of coastal resilience amid the era of climate change is one of the main focus areas of NBS (Raymond et al., 2017). The protection of the coastal communities and infrastructures using NBS approaches by making use of the benefits from ecosystem services, namely provisioning services, regulating services, supporting services, and cultural services (TEEB, 2011), has been considered as a more favourable and less expensive choice compared to the application of physical engineering approaches (Jones et al., 2012; Temmerman et al., 2013). Out of many well-known NBS in coastal regions such as the creation, restoration, and management of tidal marshes, ridges (Baustian et al., 2020; Temmerman et al., 2013), and other green and blue infrastructures (Depietri and McPhearson, 2017), utilizing the enormous advantage of mangrove system to deal with global challenges is a common measure in the tropical and sub-tropical countries where the resource is abundant in place (Gandhi and Jones, 2019). Mangrove forest is an important coastal ecosystem which provide substantial distribution of services, such as timber and non-timber products to the communities, as biodiversity and natural habitat, and provision of coastal protection from natural disasters (Gandhi and Jones, 2019; Veettil and Quang, 2019).

2.3 Community Participation: Definition and Theory

The term “Community Participation” is defined differently by many experts and authors (Bamberger, 1988). A vague definition of community participation can cause practical issues when it comes to real life situations (Jackson, 2001). In order to provide a better view and clear definition of the term, an analysis of the two key words, namely community and participation, should also be done. Community refers to the group of people living in a specific location and society who share common interest, value, and cultural identity (Lachapelle and Austin, 2014), whereas, Reed (2008), p. 2418 defines participation as “a process where individuals, groups and organizations choose to take an active role in making decision that affect them”. The commonly accepted definition of the term as a whole refers to “an active process whereby beneficiaries influence the direction and execution of development projects rather than merely receive a share of project benefits” (Paul, 1987 as cited in Bamberger, 1988, p. 5). Similarly, Lachapelle and Austin (2014) indicate that the common principle for community participation emphasizes on the exercise of decision making rights and power of the people especially the one affected by a decision to take part in or cause certain impact on the procedure and development result of any regulation, implementation, or pronouncement.

Citizen participation is not a new topic. One of the earliest prominent classical concept about participation in the decision-making process is

Figure 1: Ladder of Citizen Participation

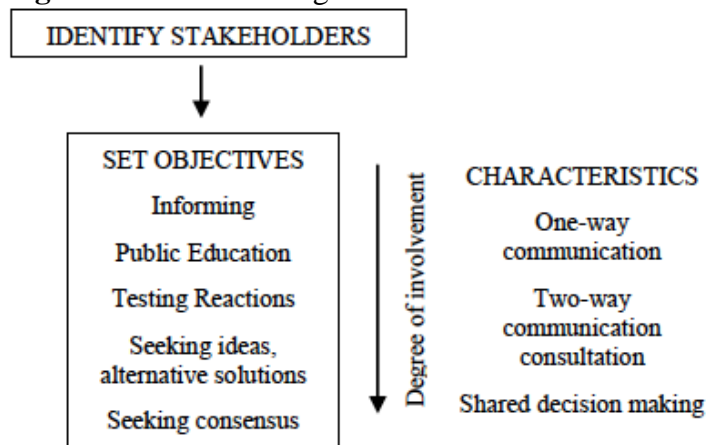


source: Arnstein, 1969, p. 217

the “Ladder of Citizen Participation” theory from Arnstein (1969), which categorizes eight levels of citizen involvement from nonparticipation to full managerial power by comparing citizen’s involvement power to rungs. The author then defines participation as the readjustment of power to promote social reform which empower the involvement of all citizens, especially those who were previously excluded, in the political and economic process. The first two rungs from the bottom, manipulation and therapy stage, represent no contribution from the citizen as the real objective of the program is to allow the host of the program to manipulate the participants. The next rungs of the ladder, namely informing, consultation, and placation, are classified under the degrees of tokenism, which resembles the gradual increase of participation power from being informed or consulted about the decision process to the highest level of tokenism that allow the citizen to give some advice but still hold the limited power to decide. On the other hand, the last three rungs on the ladder represents the degree of citizen power to exercise significant roles in decision making process. It begins with the stage in which citizens and powerholders work cooperatively together as a partner to share responsibility for making decision, then the powerholders delegate the power and finally offer full managerial power or have citizen control to be in charge of any decision. Simply, if the real power is not delegated to citizens, the participation is not sound (Arnstein, 1969).

In another comprehensive analysis of public involvement theories, Jackson (2001) claims that identifying as well as analysing the stakeholders involved in the issues, and then setting up the appropriate participation objectives are the main initial steps since all levels of community participation could be applicable under specific conditions and for certain stakeholders. In the public involvement model, Jackson (2001) mentions that there are five different stages in the involvement such as informing, public education, testing reaction, generating ideas, and shared decision making.

Figure 2: Jackson’s Stage of Public Involvement Model



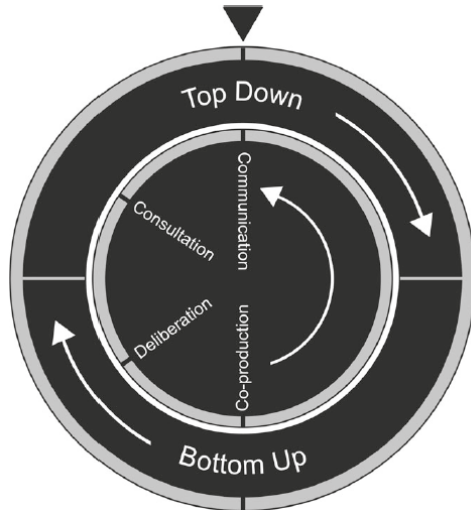
Source: Jackson, 2001, p. 139

According to Jackson (2001), the purpose in the informing stage is a kind of one-way communication as to draw attention and increase awareness about the program to certain groups of stakeholder through different means of communication. To achieve the objective, it is recommended to prepare a public meeting or group discussion in a less formal way. The next stage about public education is an additional intervention from the previous stage, which need to progress continuously to raise knowledge about the issue and attract a higher level of involvement. Then it comes to testing reaction stage when the discussion about the decision with the stakeholders will be made, and feedbacks from them will be gathered. Then in seeking ideas stage is described as a more open-ended phase which utilize the knowledge of the community and the experts in the relevant fields to generate more ideas and advice on specific topics and situations. Lastly, seeking consensus stage represents “a devolution of power” when

cooperation, shared decision making responsibility, and consensus decision making between different stakeholders exists, and those actors allocate their time and expertise to assist in setting up the objectives and providing solutions to fulfil common interest (Jackson, 2001).

A recent study about stakeholder and public participation in environmental management work is a built up theory from Arnstein (1969) and Davidson (1998). Reed and his co-authors (2018)

Figure 3: The wheel of participation



Source: Reed et al., 2018, p. 10

introduced a concept called “The Wheel of Participation” which describe four forms of involvement concerning the different levels of management and communication approaches namely top-down one-way communication and/or consultation, top-down deliberation and/or coproduction, bottom-up one-way communication and/or consultation, and bottom-up deliberation and/or coproduction. The first type directly refers to the involvement of other stakeholders, initiated and led by the highest level of actors or organization, in order to receive information about the decision, which is already made. The second form refers to a more interacting approach between the highest level actors and the other stakeholders which produce a joint decision. However, the implementation of the decision is only under responsibility of the actors in the top position. On the contrary, the third type refers to the act of

involvement in the decision making process which is initiated and led by the collection of grassroots actors in order to obtain enough power to make change on the decision or show some influences on the decision making process. The last form acknowledges the two-way communication interaction among all stakeholders in order to make a collaborative decision. When the decision is made, a specific public group will be in charge of the execution. However, apart from those four main forms, in some empirical cases a cross-cutting type can be found (Reed et al., 2018).

2.4 Typology of Community Participation

The shift from the classical top down to the bottom up approach, which values the voices and the responsibilities of the people at the grassroots level, for natural resource management has gained popularity for many years throughout the world. The collective participation of local people in NBS-related projects has been confirmed to produce high efficient and effective results leading to foster the improvement of local livelihood and sustainable development. Through community participation, ownership, awareness, and accountability to manage resources is determined so that the possibility of achieving the project’s goals is higher (Matarrita-Cascante et al., 2019). Another benefit of the local community involvement in the project since the early phase of development is that traditional ecological knowledge and the understanding of the relationship between ecosystem services and human welfare will be clearly explained and well-described (Baustian et al., 2020). Moreover, initiating the idea to address the social and global challenge from the viewpoint of the local community can provide the specific contextual baseline information and existing solution of the problems, increase the mutual understanding among stakeholders, and enhance the social capital in the neighbourhood (Forino et al., 2015; Short et al., 2019).

In almost the same vein as the participation theory from Reed and his co-authors (2018), Matarrita-Cascante and his colleagues (2019) classified community participation into three

main types such as community-located initiative, community-based initiative, and community-driven program. The brief descriptions of each community participation type are as follows:

2.4.1 Community-located initiative

The role of community involvement in the conservation project which fall under this category usually follows the request initiated by the project’s donors, the government, or any other formal organizations in order to achieve their project’s goals. In this type, the local people have little rights and authority to make any decision as the ownership and the authority to manage the resource are still under the government responsibility. The common examples which best fit to this type of community intervention are the creation of national park and protected areas.

2.4.2 Community based initiative

It refers to another effort of the participation from the community in term of sharing experience, exchanging ideas, and supporting the implementation of the project, which was originally proposed by external agencies like the government, or the non-government organizations (NGOs). Compared to the previous type, the community plays a more active and important role since the early cycle of the project, starting from the setting up until the management of the project as the ownership of the project will be legally transferred from the initial project founder to the community.

2.4.3 The Community-driven program

This type considers pure community initiative as the main factor for project establishment and management. Because the local people are the most influential actors in the project, their participatory role is the most active one among the other types of participation. However, this participatory model does not exclude the involvement of other stakeholders at all. Therefore, when needed, outsourcing intervention for technical and financial resource is still applicable.

2.5 Characteristic for Community participation

The classification of community participation differs from one to another depending on the main embedded characteristics including level and forms of involvement, mechanisms, citizen control, institutional system adaption, accountability, and the amount of prospective benefits for the community (Matarrita-Cascante et al., 2019). Matarrita-Cascante et al., (2019) outlined different characteristics of community participation, depending on the type. Table 1 shows the framework or characteristics of community participation across all three main types, namely community-based initiative, community-based effort, and community-driven program.

Table 1. Framework of community participation

	<i>Community-located initiative</i>	<i>Community-based effort</i>	<i>Community-driven program</i>
<i>Description</i>	<ul style="list-style-type: none"> - Residents have limited input in the design yet no role in implementation - are typically imposed, created and owned by initiating organization/institutions yet seeks input from residents 	<ul style="list-style-type: none"> - Residents have larger role in design and implementation yet no management rights - are directed, created, and owned by initiating organization/institutions yet later on let residents take larger roles 	<ul style="list-style-type: none"> - Residents design, implement, manage and own the program - are autonomous, created and owned by residents
<i>Level of involvement</i>	Low	Moderate	High
<i>Forms of involvement</i>	Passive	Semi-active	Active
<i>Mechanisms</i>	<ul style="list-style-type: none"> - Residents gather information on existing issue/program and express 	<ul style="list-style-type: none"> - Residents become member of a group and attend meetings 	<ul style="list-style-type: none"> - Resident lead program, manage all decisions

	opinions and or votes on a side		
	No control	Directed control	Resident control
<i>Citizen control</i>			
<i>Resource allocation</i>	<ul style="list-style-type: none"> - Resource ownership is NOT transferred to local communities 	<ul style="list-style-type: none"> - Government owns resources, but customary law may also apply in resource allocation - Community reserve is created and co-managed by the community and the government 	<ul style="list-style-type: none"> - Resource ownership is shared between the government and local communities, but customary tenure law is principal - Community controls the management of the resource reserve under government approval
<i>Institutional system adaptation</i>	<ul style="list-style-type: none"> - Follows customary or pre-existing system of community representation - Community representative entity is consulted at the initial phase of the project - Limited to no input in the implementation phase, and no management rights 	<ul style="list-style-type: none"> - Some restructuring of local political framework occurs either through the formation of a CBO or the formalization of customary systems to be included in the decision-making process - CBO or customary chief has the authority to represent community interest in the decision-making process. However, program management is still externally owned 	<ul style="list-style-type: none"> - Some restructuring of local political framework occurs to include CBO, customary chief and community members in the decision-making process - Ownership and control is at the hand of the local community. While CBO and/or customary chief can as community representatives, community members can also participate in program design and implementation. - Collaboration with outside group is possible
<i>Accountability</i>	<ul style="list-style-type: none"> - No mechanism in which local authorities are accountable to local population 	<ul style="list-style-type: none"> - CBO or local authorities are accountable to the local community - Mechanism to ensure downward accountability may be in place but loophole may exist for elite capture 	<ul style="list-style-type: none"> - CBO or local authorities are accountable to the local community - Strong mechanism to ensure downward accountability are in place throughout the entire program
<i>Benefits for residents</i>	<ul style="list-style-type: none"> - Increase knowledge of program - Limited empowerment to local residents 	<ul style="list-style-type: none"> - Increase social capital, trust, capacity, odds of program support, odds of inclusion of local knowledge, odds of inclusion of local wants and needs - Medium levels of empowerment to local residents 	<ul style="list-style-type: none"> - Increase social capital, trust, capacity, and development of management skills - Strong odds of program support - Inclusion of local knowledge, want and needs - High levels of empowerment to local residents, and capacity for self-organization

Source: Matarrita-Cascante et al., 2019, p. 490

In addition to this, in the analysis of community participation in a mangrove forest management project, it is also recommended to include three important domains concerning management factors, knowledge factors, and attitude factors (Hanifah and Eddiwan, 2018). Similar to a few main features as mentioned by Matarrita-Cascante et al., (2019), the management factors focus

on community's ability and authority, in cooperating with external organizations to perform an active decision making and management roles within the whole project cycle by using adaptive management approach in order to not only achieve conservation goal but also address socio-economic issues (Hanifah and Eddiwan, 2018).

The adaptive management approach give prominence to the self-organizing ability of the community to deal with the unforeseen change and disturbances through processes of trial and error and learning from experiences (Armitage, 2005). For the knowledge factor, it relates to the awareness raising activities and the technical as well as management training to encourage local people to support the operation of the project and improve the community's confidence to effectively manage the project in a sustainable manner. Besides that, the attitude of residents in the community toward the projects should be regarded as a matter of concern. If the residents sacrifice their own economic benefits, but instead emphasize on the achievement of the project as the common interest, the implementation and monitoring challenge will be reduced (Hanifah and Eddiwan, 2018).

The motivation of individual members to participate in NBS-related projects can be various as the citizen involvement mostly come from the pursuit for a better physical and mental health; whereas, the advantages of social interactions and relationships as well as the promotion of environmental quality are the other drivers for public participation in projects (Zare et al., 2015). A large and growing body of literature has identified three crucial motives, namely environmental, communal, and personal interests, for the participation in projects. The environmental perspective is concerned with the motivation to protect the environment and promote sustainable development. Another reason for participation is derived from the collective action to protect the community as well as improve the public health, build social relationship, and ensure other social benefits in the community. Beside this, participation in urban green space management mostly starts with the residents' personal interest that is connected to their sense of place attachment and their positive behaviour toward nature (Ferreira et al., 2020). Likewise, personal interest can determine the level of willingness and commitment for individual community members to take part in projects as well (Abdullah et al., 2014). Aside from that, the level of involvement in the project can be affected by social factors namely rule and regulation, composition of social connection, and trust (Faizal, 2017).

2.6 Methods for community participation

In order to gather information from residents and stakeholders, an extensive range of methods and tools can be applied such as survey, focus group discussion, interview, meeting, workshop, visual aid techniques, observation, electronic-based tools and so on. Each of the methods and tools serve different purpose in participatory processes; whereas, among all of these methods, surveys, meetings, workshops and group discussions seem to be the most popular in term of collecting people's judgement, preference, knowledge, and understanding (Ferreira et al., 2020). However, Arnstein (1969) argued that due to the improper design of questionnaire and survey, the public might not be able to express their perception correctly which lead to a wrong assumption of their needs. Sometimes, integrative methods which merge a list of tools is also applicable (Ferreira et al., 2020). In addition to this, in order to receive feedback and gather ideas effectively, the performance of any method and tools to gather information, especially survey and focus group discussion, is suggested to be employed in a more open and informal way (Jackson, 2001).

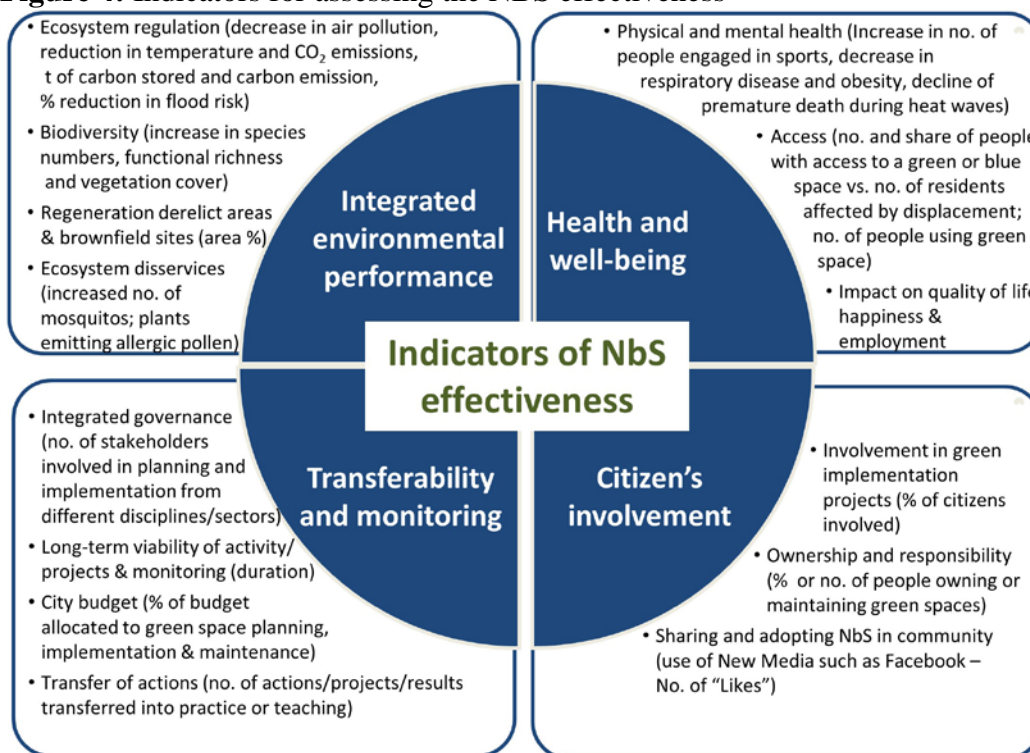
2.7 The Sustainability of Nature Based Solutions

The sustainability of NBS as one of the main focus of this study basically signifies institutional sustainability issues (Datta et al., 2012) which refers to the active status of all components or

any specific element in the project that also improve community capacity and address community problems (Ceptureanu et al., 2018). In order to measure the implementation effectiveness of NBS-related projects, Kabisch, et al. (2016) developed indicators from different components namely integrated environmental performance, public health and well-being, citizen’s involvement, and transferability and monitoring. Integrated environmental performance generally concerns with the environmental related subjects and the benefits of ecosystem services. The indicators associated with health and well-being relates to advantages of NBS on physical and mental health as well as social welfare. Indicators for citizen’s involvement aims to examine level of participation and public awareness regarding to the implementation of NBS.

The last group of indicators, namely transferability and monitoring, is closely related to the institutional sustainability of NBS which include the aspects of city budgeting, integrated governance, transferability of actions, and long term viability (Kabisch et al., 2016).

Figure 4: Indicators for assessing the NBS effectiveness



Source: Kabisch et al., 2016

In term of measuring the institutional sustainability of NBS, an indicator from the last domain, specifically the long-term viability of activity/projects and monitoring (Kabisch et al., 2016) can be adopted. As the nature of the NBS related project is associated with uncertainty and complexity, it is necessary to consider for the continuous or regular monitoring and evaluation activities, which involve a wide range of stakeholders, as the crucial domain for the assessment of the effectiveness and the sustainability of projects (Raymond et al., 2017).

Adding to this, the sustainable function of projects can also be substantiated by scrutinizing different criteria with respect to project functionality, sufficiency of supporting legal and institutional frameworks for the project implementation and the management, and the outcomes of the project (Datta et al., 2010). Despite this list of indicators, project functionality and project outcomes, are the most relevant for project sustainability in this study context. These can be unpacked in terms of long-term functioning of the project and sustainably achieving the goals of the project (Ceptureanu et al., 2018; Datta et al., 2010).

2.8 The Relationship Between the Community Participation and the Sustainability of the NBS-related project

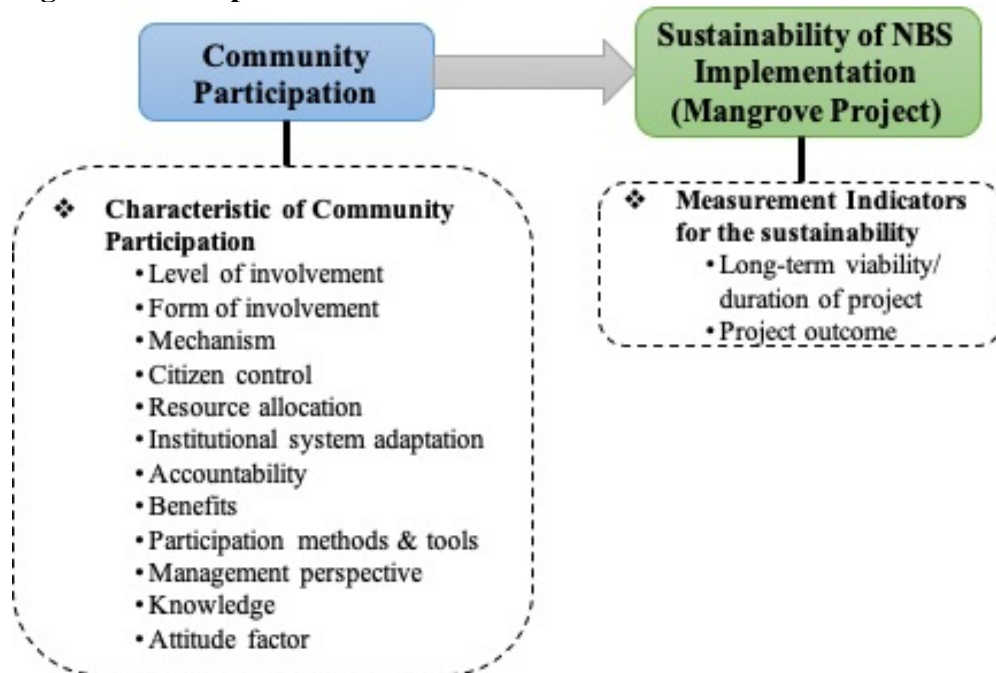
Taking the participation of the community into account, especially as the main stakeholders in NBS-related projects, promote social and economic benefits as well as the sustainability of projects, whereas at the same time it could increase complexity if a management method is not properly exercised (Giordano et al., 2020; Short et al., 2019). According to Katz and Sara (1997), there is a close relationship between the involvement of community and project sustainability as the level of sustainability can be influenced by the engagement of community members who are able to obtain information, join in training or capacity building sessions for project implementation and monitoring, and take over financial issues (as cited in Oino et al., 2015). Community participation is one of the main determining factors for the sustainability of projects (Ceptureanu et al., 2018). It is, therefore, recommended to include community actors in all stages of project cycle. Moreover, external support from other stakeholders in term of both financial and technical assistance will also affect success of the project (Spaling et al., 2014). Nevertheless, when it comes to project sustainability issues, the ability of the community to sustain the function on their own without external support still produce positive results or advantages as well as address the issues in the community should be taken into account (Oino et al., 2015).

In order to allow the community to exercise its potential role in sustaining the function of the project, a few crucial aspects regarding the allocation of managerial power and resource ownership, implementation legitimacy of the project, management strategy and leadership skill, financial and technological support, and lastly regular monitoring and evaluation, need to be considered (Datta et al., 2012). The sustainability factors of the project should be pre-determined in the planning and designing phase, but in a more flexible way as the nature of the factors vary from one phase to another in a whole project cycle (Spaling et al., 2014). Therefore, the inclusion of community member in monitoring and implementation of the project together with the application of adaptive management principle could also influence the outcome and sustainability of the project (Aarseth et al., 2017; Armitage, 2005; Ceptureanu et al., 2018; Datta et al., 2012; Hanifah and Eddiwan, 2018; Matarrita-Cascante et al., 2019; Norris et al., 2018; Reed, 2008).

2.9 Conceptual Framework

Building from the above literature review, the conceptual framework of this research is presented in this section. In view of all that has been mentioned so far, it is understood that the close relationship between the sustainable implementation of NBS-related projects and the community participation does exist. The participation of community members in the whole project cycle especially during the designing and monitoring stage plays a significant role to maintain the implementation progress of the project. Moreover, different typologies of community participation can be determined by a list of main embedded features such as level of involvement, form of involvement, mechanism, citizen control, resource allocation, institutional system adaptation, accountability, and benefit (Matarrita-Cascante et al., 2019), as well as management approach, knowledge, and the individual attitude (Hanifah and Eddiwan, 2018). However, in order to measure the sustainability of the NBS-related project implementation, some indicators regarding long-term viability/ duration of project which can be unpacked from specific domains concerning transferability and monitoring (Kabisch et al., 2016), and the ability to fulfil goals of the project (Ceptureanu et al., 2018; Datta et al., 2010), need to be taken into account.

Figure 5: Conceptual Framework



source: Author, 2020

Chapter 3: Research design, methods and limitations

3.1 Introduction

As an explanatory research (van Thiel, 2014), this thesis aims to explain how characteristics of local community participation influence the sustainability of NBS implementation. This chapter discusses about the operationalization and research design for this research.

3.2 Research Strategy

The decision regarding which research strategy to be implemented is regarded as the most critical step in the development of a research study. A certain choice of research strategy will guide the researchers to get the data needed to respond to the research problem (Verschuren et al., 2010). In this study, a specific empirical case that satisfies the sustainable implementation of NBS-related project and particularly fulfils the criteria of being sustainable in term of institutional issues was chosen as the main area of focus. Specifically, this study wishes to insightful understanding about the casual relationship between characteristics of local community participation and sustainability of the Trapeang Sangkae CBNRM project in Kampot Province, Cambodia. Therefore, a single holistic case study is the research strategy for this study as it offers opportunity for a researcher to understand in great detail why a certain phenomenon happens with the emphasis on depth rather than breadth (van Thiel, 2014). In addition to this, causal process tracing analysis, which goes beyond the analysis of the contemporary causal correlation between the variables and emphasize more detailed storyline of the phenomenon (Blatter and Blume, 2008; Blatter and Haverland, 2012), is applied as the development of the certain case or relationship need to be analysed over time. Thus, the certain characteristics of the community participation within different timeframes were investigated, and the link between those characteristics and the sustainability of the project is explained in detail in the next chapter.

3.2.1 Validity and Reliability

Validity and reliability issues in any research strategy are the fundamental challenge in scientific research. Particularly, low (internal and external) validity and reliability are the common problems in the case study approach (van Thiel, 2014). The low external and internal validity can be the key issues for this study as the research finding could not be generalized and the main concepts in this study might not be adequately operationalized. Also, as the social perception can vary from time to time, the repeatability of the finding, which is perfect reliability of study could hardly be achieved (van Thiel, 2014).

Initially, to address the issue of validity, triangulation approach by using different data sources and methods like observation, semi-structure interview, focus group discussion and secondary data analysis are adopted. Furthermore, in order help increase the level of reliability of the study, being more transparent about the whole research process should be taken into account. The openness of research process can be enhanced by recording and documenting the whole procedure of research especially during the data collection and analysis period (van Thiel, 2014).

3.3 Operationalization: Variables, Indicators

In this section, the main variables shown in the conceptual framework namely community participation and the sustainability of NBS implementation are operationalized. These two theoretical concepts are translated into measurable indicators based on the definitions within the context of the study. The variables are defined as below:

Table 2: The main variables in the study

Authors	Definition of the Concepts
Community participation - Independent Variable	
Paul, 1987 as cited in Bamberger, 1988, p. 5	“An active process whereby beneficiaries influence the direction and execution of development projects rather than merely receive a share of project benefits.”
Matarrita-Cascante et al., 2019, p. 487	“A process where the residents of a community actively engage in their own development.”
Lachapelle and Austin, 2014, p. 1073	“The general tenet of community participation holds that those who are affected by the decision have a right to be involved or have some degree of influence over any process and outcome related to its legislation, execution, and adjudication.”
Sustainability of NBS implementation - Dependent Variable	
Datta et al., 2012	refers to the institutional issues concerning the continuity of the program functions and the long term viability of the project
Ceptureanu et al., 2018	refers to the active status of all components or any specific element in the project that also improve community capacity and address community problems

Table 3: Operationalization of dependent and independent variable

Variable	Sub variable	Indicators	Description	Data Collection	Data Source
Community Participation-Independent Variable	Characteristics of Community Participation	Level of Involvement	<p>The extent to which local community members were involved in the project development and design</p> <p><i>Note: Involvement can be divided into three levels: High, Moderate, and Low</i></p> <p><i>High – Local community members have an autonomous role in the project</i></p> <p><i>Moderate – Initiating organizations or institutions play a larger role in the project, and local community members play a role at a later stage</i></p> <p><i>Low – Local community members have a limited role in the project</i></p>	- Semi-structured interview	- Community Representative - Community members
			The extent to which local community members have played a role in the project implementation	- Semi-structured interview - Observation	- Community Representative - Community members
			The extent to which local community members have played a role in the project management and monitoring	- Semi-structured interview - Observation	- Community Representative - Community members
	Form of Involvement	<p>The involvement efforts of local community members in the project development/ design</p> <p><i>Note: Involvement can be divided into three forms, “Active, Semi Active, Passive”</i></p>	- Semi-structured interview	- Community Representative - Community members	

			<ul style="list-style-type: none"> ○ <i>Active: all or a majority of community members involve(d) in the project activities.</i> ○ <i>Semi active: half or almost half of community members involve(d) in the project activities.</i> ○ <i>Passive: A few community members involve(d) in the project activities.</i> 		
			The involvement efforts of local community members in the project in the implementation of the project	<ul style="list-style-type: none"> - Semi-structured interview - Observation 	<ul style="list-style-type: none"> - Community Representative - Community members
			The involvement efforts of local community members in the project management and monitoring of the project	<ul style="list-style-type: none"> - Semi-structured interview - Observation 	<ul style="list-style-type: none"> - Community Representative - Community members
		Mechanism	The means e.g. public hearing, survey, consensus meeting in which community members are involved in the decision making process	<ul style="list-style-type: none"> - Semi-structured interview - Focus Group Discussion - Observation 	<ul style="list-style-type: none"> - Community Representative - Community members
			The frequency of meetings or information sharing activities for community members	<ul style="list-style-type: none"> - Semi-structured interview - Focus Group Discussion 	<ul style="list-style-type: none"> - Community Representative - Community members
			The methods e.g. workshops, meetings in which community members can express ideas and provide feedback	<ul style="list-style-type: none"> - Semi-structured interview - Observation - Focus Group Discussion 	<ul style="list-style-type: none"> - Community Representative - Community members

		<p>Citizen Control</p>	<p>The extent in which the community has control/power/authority in the decision making process of the project.</p> <p><i>Note: Citizen control can be divided into three levels such as no control, directed control, and community control.</i></p> <ul style="list-style-type: none"> ○ <i>No control: local community has no significant role in the decision making process</i> ○ <i>Directed control: the local community member is invited to take part in any decision making</i> ○ <i>Community control: local community has control in decision making</i> 	<ul style="list-style-type: none"> - Semi-structured interview - Focus Group Discussion 	<ul style="list-style-type: none"> - Community Representative - Key stakeholders outside the community (Government Official, NGOs) - Community members
		<p>Resource Allocation</p>	<p>The extent in which the community has ownership rights over the mangrove resources in the area</p> <p><i>Note:</i></p> <ul style="list-style-type: none"> ○ <i>High level: the community can solely take the decisions on the allocation of resource in the project</i> ○ <i>Medium level: the community and the government need to reach the joint decision on resource allocation in the project</i> ○ <i>Low Level: the community does not have any ownership rights on the resource. Only the government can make decision on the allocation of resources</i> 	<ul style="list-style-type: none"> - Semi-structured interview - Focus Group Discussion 	<ul style="list-style-type: none"> - Community Representative - Community members? - Key stakeholders outside the community (Government Official, NGOs)

			<p>The approaches in which mangrove resources in the area managed or possessed.</p> <p><i>Example of the possible approach include:</i></p> <ul style="list-style-type: none"> ○ <i>Community solely takes action regarding the management and control the resource.</i> ○ <i>Another option is the co-management approach between the community and the government.</i> ○ <i>Another possible approach to control and manage the resource exclusively falls under the external agencies like the government, donors, or the host of the project.</i> 	<ul style="list-style-type: none"> - Semi-structured interview - Focus Group Discussion 	<ul style="list-style-type: none"> - Community Representative - Community members - Key stakeholders outside the community (Government Official, NGOs)
		Institutional System Adaptation	Availability of policy, law, rule and regulation in the community to manage the mangrove resources	<ul style="list-style-type: none"> - Semi-structured interview 	<ul style="list-style-type: none"> - Community Representative - Key stakeholders outside the community (Government Official, NGOs)
				<ul style="list-style-type: none"> - Secondary Data 	<ul style="list-style-type: none"> - Existing laws or policies regarding the establishment of Community Forest in Cambodia, ToR of Community, and so on)

			Community institutional structure to manage the mangrove resource	- Semi-structured interview	- Community Representative - Key stakeholders outside the community (Government Official, NGOs)
				- Secondary Data	- Existing laws or policies regarding the establishment of Community Forest in Cambodia, ToR of Community, and so on)
			The extent to which local political framework has been restructured to include community, based organizations, customary chiefs, and community members in the decision making process	- Semi-structured interview	- Community Representative - Key stakeholders outside the community (Government Official, NGOs)
				- Secondary Data	- TOR of community, Management Structure, so on
			Existence of collaboration between the community and outside groups to support the project	- Semi-structured interview	- Community Representative - Key stakeholders outside the community (Government Official, NGOs)

		Accountability	Specific roles and responsibilities of the community leader and community representatives in the project	- Semi-structured interview - Focus Group Discussion	- Representative Community members - Key stakeholders outside the community (Government Official, NGOs)
				- Secondary Data	- Existing laws or policies regarding the establishment of Community Forest in Cambodia, ToR of Community, and so on)
			Availability of mechanisms e.g. reporting, monitoring, auditing, and so on to ensure accountability are in place throughout the program	- Semi-structured interview - Focus Group Discussion	- Community Representative - Community members - Key stakeholders outside the community (Government Official, NGOs)
				- Secondary Data	- Existing laws or policies regarding the establishment of Community Forest in Cambodia, ToR of Community, and so on)

		Benefits	Social capital e.g. relationship/interaction among community members and between community members and other stakeholders	<ul style="list-style-type: none"> - Semi-structured interview - Focus Group Discussion 	<ul style="list-style-type: none"> - Community Representative - Community member - Key stakeholders outside the community (Government Official, NGOs)
			Trust among community members and between community members and other stakeholders	<ul style="list-style-type: none"> - Semi-structured interview - Focus Group Discussion 	<ul style="list-style-type: none"> - Community Representative - Community member - Key stakeholders outside the community (Government Official, NGOs)
			Capacity and development of management skills	<ul style="list-style-type: none"> - Semi-structured interview - Focus Group Discussion 	<ul style="list-style-type: none"> - Community Representative - Community member - Key stakeholders outside the community (Government Official, NGOs)
			Inclusion of local knowledge, wants, and needs	<ul style="list-style-type: none"> - Semi-structured interview - Focus Group Discussion 	<ul style="list-style-type: none"> - Community Representative - Community member

					<ul style="list-style-type: none"> - Key stakeholders outside the community (Government Official, NGOs)
			Level of empowerment to local community	<ul style="list-style-type: none"> - Semi-structured interview - Focus Group Discussion 	<ul style="list-style-type: none"> - Community Representative - Community member - Key stakeholders outside the community (Government Official, NGOs)
		Participation Methods & Tools	Methods and Tools for members to participate in the project	<ul style="list-style-type: none"> - Semi-structured interview - Focus Group Discussion 	<ul style="list-style-type: none"> - Community Representative - Community member - Key stakeholders outside the community (Government Official, NGOs)
		Management Perspective	Managerial competency of the community leader and representatives	<ul style="list-style-type: none"> - Semi-structured interview 	<ul style="list-style-type: none"> - Community Representative - Community members - Key stakeholders outside the community (Government Official, NGOs)

			Management principles e.g. adaptive management, laissez-faire, authoritarian etc. that the community have been using	- Semi-structured interview	- Community Representative - Community members - Key stakeholders outside the community (Government Official, NGOs)
		Knowledge	Level of community awareness and understanding in the management of mangrove forest	- Semi-structured interview - Focus Group Discussion	- Community Representative - Community members - Key stakeholders outside the community (Government Official, NGOs)
			Educational activities e.g. disseminations or information sharing events organized in the community	- Semi-structured interview - Focus Group Discussion	- Community Representative - Community members - Key stakeholders outside the community (Government Official, NGOs)
			Frequency of community organized technical and management training to community members	- Semi-structured interview - Focus Group Discussion	- Community Representative - Community members

					- Key stakeholders outside the community (Government Official, NGOs)
		Attitude Factor	Community member's motives for participation in the project	- Semi-structured interview - Focus Group Discussion - Observation	- Community Representative - Community members - Key stakeholders outside the community (Government Official, NGOs)
			Community members' willingness and commitment to participate in the development, implementation and monitoring	- Semi-structured interview - Focus Group Discussion - Observation	- Community Representative - Community member - Key stakeholders outside the community (Government Official, NGOs)
			Cooperative attitude among members in the community	- Semi-structured interview - Observation	- Community Representative - Community members? - Key stakeholders outside the community (Government Official, NGOs)

Sustainability of NBS implementation-Dependent Variable	Sustainability of the project	Long-term viability/duration of project implementation	Duration of the mangrove project since its establishment	<ul style="list-style-type: none"> - Semi-structured interview - Focus Group Discussion 	<ul style="list-style-type: none"> - Community Representative - Key stakeholders outside the community (Government Official, NGOs)
				- Secondary data	- Existing law and regulation, records, documents regarding the establishment of community group
			Current status of the project e.g. implementation and monitoring	<ul style="list-style-type: none"> - Semi-structured interview - Observation 	- Community Representative
		Project Outcome	Achievement of the goals, e.g. initial goal, emerging goal, for the project	<ul style="list-style-type: none"> - Semi-structured interview - Focus Group Discussion - Observation 	<ul style="list-style-type: none"> - Community Representative - Community members? - Key stakeholders outside the community (Government Official, NGOs)

3.4 Data Collection Methods & Sample Size and Selection

3.4.1 Data Collection Methods

The qualitative primary data is considered as the principal source of information for this study; whereas, the reliance on the secondary data was also taken into consideration whenever necessary in order to triangulate the data sources. Primary data, both qualitative and quantitative types, refers to the first-hand information collected by the researcher and has never been used any research before; whereas the secondary data deals with existing statistical and non-statistical data, findings or information from the previous research which can be utilized in new research (van Thiel, 2014).

The primary data collection in this research was done through the semi-structured interview with the relevant key informants, focus group discussion, and field observation in order to explore the experience, knowledge, and perception concerning the role of community participation and the sustainability of Trapeang Sangkae CBNRM project in Kampot Province, Cambodia. In the meantime, for secondary data sources, the content analysis approach was also conducted to triangulate the finding obtained from the primary data collection and improve the internal validity of the research. The secondary data related to this study were accessed from the relevant research journals, articles, reports, and documents available online and in the library. Also, some existing information regarding the community participation of the project can be located from the records or minutes of the meeting, and any documents in Khmer (Cambodian official Language).

3.4.2 Sampling Technique

The sampling methods for this research are purposive sample and snowball sample. These methods are categorized in the “non-probability sampling” group, which provides much freedom and ease for the researchers to select and look for the samples for their study (van Thiel, 2014). Therefore, the pre-determination of the sample size was not applicable in this study, but it was based on the saturation concept. However, since the generalization and statistical representative is not the main target of the case study, but it aims to get a depth and more insightful information, the number of the sample is rather small than large. Simply, the data collection ends when there is no new information discovered.

The main criteria for selecting the respondents for this study is concerning the first-hand interaction of a person or institution with regard to the development, implementation, management, and monitoring of the Trapeang Sangkae CBNRM project. The respondents for the data collection were sorted into two groups, primary and secondary stakeholders. The primary stakeholders are the community leader, community members, and other actors like local authorities who have a closer contact and more significant role in the project; whereas, the latter group include relevant governmental officials and national NGOs representatives, who mainly perform a supporting role for the project.

Table 4: Interviewee’s Profile

Code	Quota	Respondent’s Description	Source	Interview Duration
P-01	Community Leader	Is one of the main founders of the project and recently is in charge of the general management and implementation of the project.	Secondary Data and Purposive	62mn
P-02	Community Representative	Is responsible for sharing the information and advertising the project. She needs to apply her	Snowball	41mn

		communication skill to contact with the project members and the other stakeholders.		
P-03	Community Representative	Is a patrol chef whose main duty is to perform the monitoring activities of the project.	Snowball	31mn
P-04	Member	Lives in Trapeang Sangkae village for almost 30 years. He is fishermen who became a member of the project in 2010.	Snowball	28mn
D-01	Member	Is a fisherman who live in Trapeang Sangkae village. He became a member of the project in 2010.	Snowball	(Participated in FGD) 40mn
D-01	Member	Is a fisherman who lives in Kampong Kes village. He became a member of the project in 2010.	Snowball	(Participated in FGD) 40mn
D-01	Members	Lives in Trapeang Thom village and is a full-time tourist boat driver. During the low tourist season, he changes his job to be a farmer and fisherman. He became a member of the project in 2010.	Snowball	(Participated in FGD) 40mn
D-01	Member	Lives in Trapeang Thom village. He has a small store in the project selling snack and drinks. He hasn't registered as a member of the project yet.	Snowball	(Participated in FGD) 40min
D-01	Member	Is a primary school teacher who lives in Trapeang Sangkae village. She is one of the project supporter, but he is not a member of the project.	Snowball	(Participated in FGD) 40mn
S-01	Local NGO	Is the project coordinator from the Children and Women Development Centre in Cambodia (CWDCC), a local NGO in Kampot province. His organization has been working cooperatively with the project since the early project development stage.	Purposive	44mn
S-02	Local NGO	Is working a project coordinator in the Fisheries Action Coalition Team (FACT), a national NGO located in Phnom Penh Cambodia. He was a former project officer who worked closely in the project and provided technical supports regarding the sustainable fishing and livelihood improvement in Trapeang Sangkae community.	Snowball	51mn
S-03	Official	Is a deputy commune chef in Trapeang Sangkae commune. He represents one of the main actors in commune level.	Secondary Data and Purposive	46mn

S-04	Official	Is working in the Ministry of Environment. Before changing his position in the pollution control related tasks, he was actively involved the development and execution of the project.	Purposive	43mn
S-05	Official	Is the official working in the provincial department of Tourism in Kampot. He usually provides the support regarding the hospitality management skills, and other related skills.	Snowball	32mn
S-06	Official	Is the official working in the Fisheries Administration Office in Kampot province. He is one of the main actors who took part in the project since the early development stage until now.	Snowball	45mn

3.5 Data Analysis Techniques

The implementation of the case study approach mainly focuses on gathering qualitative data and provide a limited choice for quantitative data analysis (van Thiel, 2014). Thus, the qualitative data analysis is the prominent method of analysis for this proposed study. Unlike the quantitative data, most of the time the qualitative are unstructured and cannot be ranked in order (van Thiel, 2014). Therefore, each researcher has to prepare a proper arrangement for the collected qualitative data and develop a good outline for the analysis. The collected data were organized via three (3) steps, namely data management, data coding, and data analysis. Qualitative data management can be firstly done by storing the collected data in a systematic way. To do so, the originally collected data from the field was checked and digitally transcribed into Word Document Format with a proper title and folders. Then, the next step is coding by importing transcribed data into Atlas ti, one of the most popular user friendly software for qualitative analysis. Then coding of the data was done in the deductive way based on the operationalization framework. However, the iterative coding was also applied when the emerging concepts were identified during the analysis of the transcript texts.

Finally, the data analysis step is the last important step which requires the researchers to apply their critical thinking and analytical skill to discuss possible findings of the research. To begin with analysis of the data, a couple of the main analysis tool in Atlas ti, specifically the Query tool and the Co-occurrence, were utilized to examine the possible interrelation between the code, and seek for the interesting quotes and claims from the interview. Still, the application of these tools does not simply give a full picture and detailed stories of the data. It is noteworthy to highlight that the combination of code recurring in the quotation counts only when the respondents talk about the themes or the codes at the same time by using the exact same words. Therefore, the personal observation and the analytical skill of the researchers is the main inputs for the data analysis part of the research. There is no one size fits all methods for performing the data analysis (van Thiel, 2014).

3.6 Expected Challenges and Limitations

Besides the common problems of validity and reliability for the proposed research strategy, a considerable amount of time, labour, knowledge, and commitment to complete this type of study is another crucial challenge (van Thiel, 2014). Due to the time and budget constraint, only a single case of community participation for the sustainability of the project was

investigated by focusing mainly on the qualitative data analysis. Furthermore, the other possible challenges caused by the response error, human error, and the personal researcher bias could also emerge during the study process. Therefore, the careful sample selection, data review and cross check as well as the performance of high transparency for the study process (van Thiel, 2014) was contemplated as the possible solution for those issues.

Apart from that, the possibility to obtain the complete data and in-depth knowledge especially regarding some participation activities of the project, social interaction and group meeting events was affected due to the current measures against the COVID-19 pandemic in Cambodia. However, face to face interaction and communication can still be employed with a strict precaution practice by keeping the 1.5-meter distance and using the face masks. Also, group meeting interaction was allowed for no more than 5 participants by following the same precaution exercise with the addition of temperature screening and frequent hand washing activities. Moreover, upon request from some of the respective respondents, a few interviews were done through virtual means of communication and the telephone call.

Chapter 4: Research Findings and Analysis

4.1 Sustainability of NBS Implementation

4.1.1. Long term viability / duration of project implementation

Trapeang Sangkae Community-Based Natural Resource Management Project is located in Trapeang Sangkae Commune, Teuk Chhou District, Kampot Province at the Southwest around 150 Kilometres from the main capital city of Cambodia. Noticeably, according to the Commune Database 2018, Trapeang Sangkae Commune, one of coastal commune among the other 92 communes in the Province, had the total population of 6,244 (equals 1,151 families). Currently, it consists of 758 active members whose main occupations are the farmers, and fishermen. Almost half of the total members are women, and around 40% of all members are Khmer-Muslim. The project covers the total area of 415 hectares, surrounded mostly by the coastal ecosystem, which extends its administrative border at the north to Trapeang Pring commune, at the south to the open-sea, at the east to Kon Sat Commune, and at the west to Chum Kreal Commune in Teuk Chhou District, Kampot Province. The area of the project is divided into several core zones including community fishing area, sea weed conservation zone, mangrove forest conservation zone, mangrove tree nursery center, and eco-tourism center and zone.

Remarkably, the project was officially registered and recognized by the Ministry of Agriculture, Forestry, and Fishery in the early 2009 (Kaarlep, 2014; Trapeang Sangkae Project Management Committee, 2010). However, many key informants stated that the idea to develop the project was initiated since the early of 2005. Interestingly, during the early development stage, the project experienced a lot of unpredictable challenges and difficulties to get public support from different stakeholders and receive the official recognition the concerned authorities. Result from the interviews shows that the main constraints during the initiation stage of the project were knowledge incompetency of the project initiators, public and stakeholder's misconception, and the lack of financial support.

"[...] It was the toughest moment [the early development stage]. All of us are undereducated people. We had been working on our own without any support from anyone even the local authorities until 2007. The main reason was that during that time, our team were perceived as an opposite political group who gather local people to involve in the politic issues. So by pointing their fingers at us like that the other stakeholders like the NGOs, sponsors, or development partners dared not to cooperate or provide us any supports." (P-01, June 2020)

"In the past, we did not know who really was who. We often heard that they had a secret meeting or public gathering without informing us. We were afraid that they would plan something bad or disturb the peace and harmony in our neighborhood. That was why we had to prevent them from gathering. They did not share us any information about their intention, so we couldn't predict what they wanted to do." (S-03, June 2020)

According to the respondents, through various sessions of negotiation and communication, the initiation of project was verified by the local authorities in 2007. From then, a decent amount of local people led by the project initiators started to implement the pilot project regarding the conservation and rehabilitation of the natural resource in the area. By endeavoring to overcome all the unexpected obstacles and sticking to main intention to conserve and sustainably manage the resource in the area, the project could steadily attract sponsors and stakeholders to provide

both financial and technical supports. With all the unconditional supports from all stakeholders, the project finally obtained the official recognition from the concerned government agencies in 2009, and was successfully registered into the governmental system in 2011.

“I first met them [the project team] in a workshop in Phnom Penh in maybe in 2008 or 2007. [...] I told them to prepare all the necessary documents and follow all the legal procedures in order to get the approval [from the government]. They seemed to know nothing about the process so my office often guided them to write the official request letter for the establishment of the project and other stuffs like that. We did it from our heart without asking anything back from them” (S-06, June 2020)

Counting from the initiation phase, which is the design and development stage, until now, the project has been implementing its activities to conserve, protect, use, and manage the natural resources in the neighborhood for almost 15 years. The project has still maintained its strength to achieve the main goal and objectives, and it has been developed itself better from day to day. Therefore, Trapeang Sangkae CBNRM project is considered as one of the most successful and long-running projects in the province as well as in the country.

4.1.2. Project outcome

Having suffered severely from the first-hand impacts of the natural resource degradation mainly due to anthropogenic factors and the improper management, the group of the 18 local fishermen, as the project founders, who live in same neighborhood in Trapeang Sangkae Commune optimistically believed that the problem would no longer exist, or at least be minimized if people could come together as a group and work collectively to achieve a common goal, which is to conserve and manage the resource in their own neighborhood. The respondents stated that the initiators of the project have learnt and adopted the idea of the community based natural resource management from the similar successful coastal communities located nearby as well as in the other provinces. This initiative was started to widespread among the local people in the community, and gradually gain its reputation.

“The idea was initiated since the early 2000s. Under the Participatory Management of Mangrove Resource (PMMR) project, the first pilot project was conducted in Koh Kong province, and it produced successful outcomes. Because of that, a lot of new CBNRM projects in the coastal areas were developed. The implementation of the project in Trapeang Sangkae commune seems to be inspired by the outcome of that pilot project as well.” (S-04, June 2020)

“No one really taught or guided us to come up with an idea to start the project like this, but we have observed and adopted the concepts from the other successful coastal community projects nearby and in the other areas like in Koh Kong province. At first, we thought that we couldn't be like them because those projects are very well-organized, and they had a lot of sponsors. But right now our performance is standing in the top.” (P-01, June 2020)

The result from the fieldwork describe that the establishment of the project was initially based on a single main objective, which is to conserve and protect the coastal natural resource and biodiversity such as the sea weed, coral reef, mangrove forest, fishery resources, and other natural resources in the project area in order to help improve the local livelihood. Adhering strictly to the same objective, recently, the project had just introduced another main activity regarding the eco-tourism aiming to relieve the pressure on the overexploitation of resources and, at the same time, provide more income generation opportunity to the local people.

“There is no change for the initial objectives, but a new emerging objective was introduced by sticking with their initial goals to conserve and manage the mangrove forest and the fishery resources in the area. The new objective concerns with ecotourism, which aims to welcome tourists to enjoy the beauty of mangrove forest and can stay in the area overnights. With this emerging objective, the community can earn more income from the tourist activities like homestay, boating trip, local bistros, café, and local souvenir shops.” (S-01, June 2020)

“[...] We introduced another objective because recently the fishing zone and fishery resources cannot fulfil the needs of the local people as the population is growing remarkably. Here it is almost like a norm for the local like us to teach our kids how to earn money from fishing when they become teenagers, or when they finish the high school. This cause a problem since our fishing zone is the same, or somehow it’s getting smaller while the number of the fisherman is growing. Being aware of this issue, we’ve decided to practice providing the ecotourism service [...] with a hope that it will provide another choice of income to people and help reduce the pressure on the fishery resource.” (P-01, June 2020)

Many respondents stated that compared to the past, the natural resources mainly fisheries, mangrove forests, and sea weeds have increased considerably, which can be marked as the positive outcome of the project.

“We have been living here all of my life to witness the down fall and rise up of the natural resources status here. We can confidently tell you that the recent status of fisheries resources, mangrove forests, and sea weeds in the neighborhood is far better than in the past when it was not properly managed” (D-01, June 2020)

Moreover, speaking of the introduction of ecotourism, which is another emerging focus of the project, it is also getting acclaim and credits from national and international guests as well as the other stakeholders.

“It [the project] has become an attractive tourist destination in the province. During the high tourist season, the community can afford to welcome the local and international tourists up to 2000-3000 guests at the daytime. People can spend time in the community to do a lot of activities like fishing, planting the trees, staying overnight, taking the boat trip, and more.” (S-05, June 2020)

However, some respondents recommended that the quality of ecotourism service in the community could be improved by focusing more on the hospitality, safety, hygiene, and the management and arrangements of the physical infrastructures in the project.

4.2 Characteristics of Local Community Participation in Trapeang Sangkae CBNRM Project

4.2.1 The Involvement of Local People

The result of the study on first two main comparable characteristics embedded in the local community participation, the involvement level and involvement form, in Trapeang Sangkae CBNRM project shows a complete contrasting state. The former remains unchanged from the initiation until the recent stage of the project while the latter is a reverse.

A. Level of Involvement

Level of involvement or the extent to which local community members were involved in the project, were classified into three levels: high, moderate, and low. The high level of involvement refers to the autonomous role of the local community members in the project; whereas, the low level simply refers to the minimum and limited role of the community members in the project. For moderate involvement level means that the initiating organization or institution played a larger role in the project and local community members has a secondary role in the project. Majority of the respondents confirmed that the involvement level has remained quite high from the stage of project development and design, implementation, and management and monitoring. For instance, in the early development stage, around 2005, the local people in the neighborhood were the only actor who initiated the project without any external support. Likewise, at the present time which is in the project implementation, management and monitoring stage, the local people still firmly hold their dominant role in the project.

“For us, we started it from our bare hands. We decided to do it [the project] because we were the ones who suffered the first-hand impact from the resource depletion in our area. We were also concerned about our next generation’s future. So we had immediately take the action even though we had not received any fund or other support.” (P-01, June 2020)

B. Form of Involvement

The form of involvement or the involvement efforts of local members in the project can also be described into three form including active, semi-active, and passive. The active involvement refers to all or a majority of community member involve in the performance of the project activities; in contrast, the passive involvement denotes that only a few members or none of the member take part in the project. When half or almost half of the community members participate in the project, the form of involvement can be regarded as semi-active.

Interestingly, the study found out that the form of involvement in the project randomly changed from passive in the design stage to active in the development stage, and back to semi-active in the current stage, which is the implementation, management and monitoring stage. As mentioned by the respondents from community, the early stage of the project, particularly the design stage, the project encountered so many problems caused mainly by the misunderstanding among the local stakeholders particularly between the project initiators and the local authorities, which created a lot of burdens for the local participation and regularly disrupted the establishment progress of the project.

“At the initial stage of the project, only a few people took part seriously in the discussion for the development of the project. At that time, the local authorities always jumped in and banned us from any kind of gathering. They accused us of having illegal political gathering and stuff like that.” (P-01, June 2020)

“There were lot of problems at the early stage. We remembered that during that time people working in the commune office usually came in and cut off our discussion. They told us that without informing them, such gathering was illegal or something like that [...] Frankly speaking, most of us got scared, and didn’t want to take part in project” (D-01, June 2020)

By the handwork of the project team in advocating and disseminating information regarding the development of the project, and its benefits, the project began to gain more active involvement and support from the people in the neighborhood and the other stakeholders. Many

key informants stated that the project attracted a great deal of public attention and enjoyed the massive support of the local people during the development stage. Remarkably, at that time, almost two-third of the total population in 2005 (equal around 2,000 people) voluntarily gave their signatures in the petition, which later was delivered to the concerned public entities, and the local authorities, to show their support to the project.

“They [the project team] were very insisting and hardworking. They always tried their best to peacefully settle down the misunderstanding problems with the local authorities through the face-to-face interactions and negotiations. They also successfully gather a massive support from the local people to give a sign or thumbprint in the petition, and sent it to the government” (S-02, June 2020)

The local people, who are the main supporters of the project, took part seriously in the discussion, and other activities including the selection and arrangement of management committee, the construction of communal physical infrastructures, the demarcation of the project boundary, document preparation and the other administrative tasks, and so on. These contributions represent the most active form of involvement from the local people, which could be cogitated as the solid foundation for the project development.

“[...] We believed that the implementation of the project really scratches the itch [solve the natural resource depletion problems], so we tired our best to help and participated enthusiastically in the project development process like selecting and forming a project team, making poles for boundary demarcation, finding solution for the conflicts and misunderstanding, preparing documents for project legalization, and so on to ensure the project would move on.” (D-01, June 2020)

However, the status of involvement seems to be lower at the implementation, management, and monitoring stage of the project. According to the information from focus group discussion, the passive participation from the local people doesn't reflect the less public attention on the existence of the project, but the local people who are the members of the project seems to heavily rely on the project management committee to deal with the project operation, and the other general tasks. Remarkably, based on the project's ToR, members are required to voluntarily participate in the monitoring activities and any decision making process of the project (Trapeang Sangkae Project Management Committee, 2010). Since most of the key implementation and monitoring tasks, which aim to achieve project objectives and goals, fall under the responsibility of the committee, the members spend most of their time to enjoy doing other activities to earn more income for their family like fishing, selling souvenirs, serving local foods and snack, and so on. Therefore, in the current stage of the project, the local participation is semi-active.

“The project management committee has the main duties to handle the daily tasks and other regular project activities like taking care of young mangrove trees, operating the patrol activities, and many more. Mostly we enjoy the benefits of the project, and let committee take care of overall tasks. [...] But if they need us to participate in the meetings or to take part in cracking down the illegal activities in our project boundary, we rarely refuse” (D-01, June 2020)

“As the ones who represent all members in the project, we are in charge of the general management and facilitating tasks to ensure that our project is working fine and on the right track. Well, it is like an extra task for us, but it

is not big deal. Whenever we need them to join us doing something like fighting the crimes, or participating in social activities, we can easily gather the participant.” (P-01, June 2020)

4.2.2 Mechanism for Participation

Based on the conceptual framework in this study, mechanism and methods and tools of participation are sub-variables which was divided separately. However, the term “mechanism” have covered the other indicators including the means or methods for local participation, the frequency of meeting or information sharing activities, and the methods for expressing ideas and providing feedback. Therefore, due to the similar definition and explanation of the concepts, the terms can be used comparably; thus, the method and tools of participation code was merged into the mechanism during the analysis.

A variety of available mechanisms are applicable for encouraging the local involvement in the decision making process, and gathering information as well as feedback concerning the individual’s perception, knowledge, impression, and more. As claimed by the majority of the respondents, several means or methods for participation such as interview, public hearing, group discussion, meeting, and workshop were utilized in order to provide the opportunity for the people to share their thoughts and reactions regarding the general implementation and any decision of the project. Moreover, currently, the project has its regular schedules for the internal meetings and other similar gatherings in the community to discuss and share information about the project. The frequency of the meeting or the gathering and the amount of participation may vary from one event to another depending on the agenda and objectives. For example, for monthly meeting, the participants are the community representatives, and a few community members only. However, based on the terms and reference (ToR) of the project, for the annual congress, it needs the participation at least two third of the total members in the project. The annual congress is an important gathering event in the community to finalize the proposed action, development plans of the project and other important decisions for the project; thus, a large amount of participants from the project members is required (Trapeang Sangkae Project Management Committee, 2010).

“I am often invited to join the meeting or the gathering in the project. [...] We don’t have to join every time. They [the project management committee] never force us [to join]. [...] During the meeting, people can freely raise out their concerns, and opinions for the sake of achieving common benefits and the goals of the project.” (P-04, June 2020)

“We always welcome the participants from our members to take part in to give opinions and feedback about the project. [...] Since our meeting space is not that big, and we don’t want to disturb our members’ time to earn income for their family, we usually invite them to participate in the big events like the annual congress, or any important event to contribute their voices in final decision.” (P-02, June 2020)

Nevertheless, remarkably, during the early development phase of the project, known as the hardest time for the local participation, the methods, mentioned above, were not applicable. At that time, the community had to practice a participation approach which is almost like a network marketing to disseminate the information about the project and receive back the comments and feedback from the local people for the development of the project. It was noted as the most effective approach to cope with the participation restriction during that time.

“Our team could think of a strategy that all of us had to share the information about the project to at least 10 other people including our families, relatives,

and neighbors. Then we asked those people to share it to the other people as well. Each of them needed to share it to at least 5 more new people. This simple method is like a snail racing game story. We followed this until the message was sent to the whole neighborhood.” (P-01, June 2020)

4.2.3 The Citizen Control

The study on the citizen’s influence in the decision making process could determine the extent in which citizen has control in the project. Citizen control can be divided into three levels such as no control, directed control, and community control. The citizen has no control in the project means that the local community has no significant role in the decision making process. When the local community member is invited to take part in the decision making process of the project, it means that the citizen has the directed control in the project. The project is in the community control when the local community has control in any decision of the project.

Many key informants described that the community members play the most predominant role in making the decision on any issues related to the project. At the same time, the analysis on the existing project documents consistently found out that the members of the project have a full right and authority to close the final decisions on the proposed actions which aim to serve the benefits of achieving the goal and objects of the project. Therefore, the project is obviously in the community control.

“Our community alone is fully in charge of the project, and we are the independent community. We will not simply accept or follow any one’s command or order. If we do so, then the project is not ours, it will belong to the NGOs or the donors.” (P-01, June 2020)

“The community is in charge of their own fate and development. As I know, if the community wants to make any change or develop anything in their area, they usually notify the information to the concerned authorities and ministries. However, those concerned organizations don’t have much influence on the decision of the community.” (S-01, June 2020)

4.2.4 The Allocation of Resource

The extent in which the community has ownership rights over the natural resource especially the mangrove forest in the area, and the approach in which the resources are managed or possessed can determine the resource allocation the project. The level of the ownership rights can be classified into three level such as high, medium, and low. The high level means that the community can solely take a decision on the allocation of resource in the project. When the community and the government need to reach the joint decision on resource allocation in the project, then the community has a medium level of ownership rights. However, the low level of the ownership right means that only the government can take the decision on the resource allocation in the project.

The result from the interview reveals that the community has a medium level of the ownership rights over the natural resource in the project. The rights and power of the members in Trapeang Sangkae are demarcated by the current laws and existing national regulations to mainly exercise the management of resources within the scope of protection, restoration, and improvement. Almost all of respondents explained that although the community has control in making decision regarding the overall project implementation in order to achieve the main goals and objectives of the project; however, the decision on the allocation of the natural resources is co-managed by the community and the governmental agencies. This simply indicates that the co-management is the main practical approach for the project.

“The community have a rights to take care of the natural resources of the project, but it is totally against the laws, if they want to gain the benefits from the natural resource from selling or any other commercial practices, which could destroy the resources in the area. If they want to do something with the resources, they have to come to us or any concerned governmental agencies like the FiA and so on” (S-04, June)

However, the majority of the respondents complained that the cooperation often take time, and cannot promptly take the intervention against the violation problems as a result of limited monitoring funds and time. Therefore, when the project cannot locate the competent authorities to participate in the action, which is most often the case, the community has to take the action on their own to tackle the problems even though the practice is regarded as ineffective and causes a high risk of violence. Eventually, it can be assumed that the community has the medium level of ownership rights over the resource allocation in the area.

“We could not wait for them to join us, so most of the time we have to do the task alone with our members. However, by doing so, we take a high risk because some cases, the offenders tried to fight back against us by hitting our boats, or using knives to frighten us back.” (P-01, June 2020)

“It is hard to find the cooperation with the competent officials as they are usually unavailable, and we don’t have enough funds to support the cooperation too. We have just enough to fill in the gas for our boats and only a small incentive for our members.” (P-03, June 2020)

4.2.5 Institutional System Adaptation and Management Perspective

Originally, in the conceptual framework, institutional system adaptation and management perspective are the two different sub-variable, but practically these concepts were hardly distinguished. Since the respondents always mentioned them interchangeably, the coded were merged during the data analysis.

The main focus on this section are: (i) the availability of laws and regulations for the management of the project and natural resources in the area, (ii) community institutional management structure for the project, (iii) managerial competency, (iv) the extent to which the local political framework has been restructured, (iv) the existence collaboration between the community and outside group to support the project and (v) the management principles.

In order to exercise the rights and authority in management of the natural resources in the neighborhood, the community can refer to numerous existing laws, sub-decrees and other regulations. Specifically, those laws and regulations can be briefly described as below:

Table 5: The existing laws and regulations related to the community based natural resource management in Cambodia

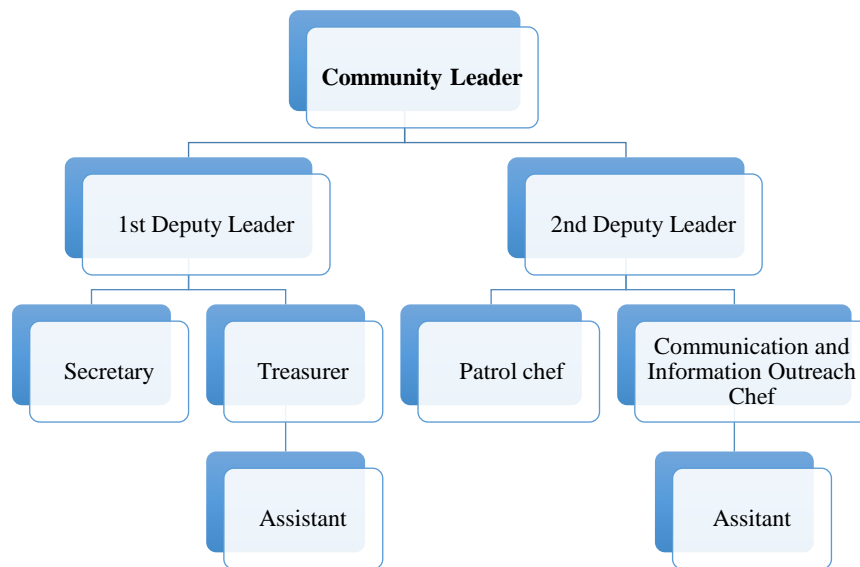
No	Title	Description	Year
1	Law on Environmental Protection and Natural Resource management	The two main purposes of this law are to protect, conserve, promote the environmental quality in the country, and to encourage the public participation in the natural resource management (Royal Government of Cambodia, 1996).	1996
2	Law on Forestry	Aims to ensure the sustainable development through the forestry resource conservation and management (Royal Government of Cambodia, 2002).	2002

3	Law on Fisheries	The main purpose of this law is to sustainably manage, use, and improve the fisheries and fishery resources in the country (Royal Government of Cambodia, 2005).	2006
4	Royal Decree on the Establishment of Community Fisheries	Enables the rights for Cambodian people to voluntarily form a community to improve their living by using the fisheries resource in the sustainable manner (Royal Government of Cambodia, 2005).	2005
5	Law on Fisheries	The main purpose of this law is to sustainably manage, use, and improve the fisheries and fishery resources in the country (Royal Government of Cambodia, 2005).	2006
6	Sub-Decree on Community Forestry Management	Provides the general rules, and legal procedures for the establishment, organization and practice of community forests in Cambodia (Royal Government of Cambodia, 2007a).	2007
7	Sub-Decree on Community Fisheries Management	Provides rules and legal procedure for the development, organization, and practice of community fisheries in Cambodia (Royal Government of Cambodia, 2006a).	2006
8	Proclamation (Prakas) on Guideline for Community Forestry	Entails specific rules and explains in detail the legal procedure the establishment, management, and practice of community forestry in Cambodia (Royal Government of Cambodia, 2006b).	2006
9	Proclamation (Prakas) on Guideline for Community Fisheries	Entails specific rules and explains in detail the legal procedure the establishment, management, and practice of community fisheries in Cambodia (Royal Government of Cambodia, 2007b).	2007

Source: Author, 2020

Besides those existing laws and regulations, the project had produced a couple more supporting rules and principles such as the project's ToR and the internal regulation for management and implementation of the project. Furthermore, the project management committee has been set up in order to be in charge of the general project tasks. As stated in the ToR, the project has the following management structure:

Figure 6: The institutional structure of the project management committee



Source: Trapeang Sangkae Project Management Committee, 2010

According to the figure 6 above, the project management committee consists of 9 people from the community. All of the respondents stated that the treasurer and his assistant are the only committee members who finished their higher education from the university, and majority of the members in the committee are the poorly educated people who are not able to complete their general education from secondary school. However, their ability to communicate, work within the team, and manage the project is somewhat remarkable as the project has produced so many achievements and fruitful outcomes.

Moreover, the result from the interviews consistently describes that the project management committee does not have much influence on the local political framework in the neighborhood as the committee and the community members are not included in the institutional management structure at the local level. Therefore, there is no change in the local political framework as the roles and responsibilities of local political agencies and the project management committee are completely different.

“We developed the management structure for the sake of our project only. The person who is selected to be the member of the committee has to be our project members, not the people from outside or the local authorities whose key duties are concerning with the general issues in their own administrative boundaries. But our team always work together with the local authorities for the improvement of our entire neighborhood.” (P-01, June 2020)

However, the community has established a strong collaboration with the local authorities to accomplish the proposed action plans as well as the goal and objectives of the project. Under this partnership, the project through the community representative could play a minor role and contribution in the decision making progress of the general management and development of the local neighborhood.

“The institutional structure of the project is nothing to do with our management structure. They have their own structure, and we have ours since our roles and responsibilities are different. [...] but we usually encourage the representatives from the project to express their voice and concerns to us during the meeting or any important decision making progress” (S-03, June 2020)

Based on the updated newsletter on the project, the project has also built a good relationship with the national and international NGOs, governmental institutes and other stakeholders such as the Children and Women Development Centre in Cambodia (CWDC), ActionAid Cambodia, Food and Agriculture Organization (FAO), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), European Union (EU), Forum Syd, Plan International, Fisheries Action Coalition Team (FACT), Community Empowerment and Development Team (CEDT), Building Community Voice (BCV), the provincial department of environment, the provincial department of tourism, Fisheries Administration (FiA), MoE and MAFF (Trapeang Sangkae Project Management Committee et al., 2017). Many key informants pointed out that CWDC and FA are the most crucial stakeholders of all who took part in the beginning stage of the project and always provide supports upon request.

“As one of the main stakeholders, our organization started to support the community to prepare some legal documents and other administrative tasks since the very beginning of the project. [...] nowadays, our organization still occasionally offers the capacity development trainings to the community regarding some importance skills to manage and monitor the project as well as conserve the natural resource in the area” (S-01, June 2020)

Lately, since the project is fully independent, most of the mentioned stakeholders had already completed their supporting missions and tasks. Thus, recently, the project no longer receives funds, and other supporting materials from those stakeholders. However, many key respondents of the study claimed that the project does not close the door to further cooperation with any agencies and stakeholders. At the same time, the cooperation with the local authorities, and the other governmental agencies is still effective as normal.

“We [Fisheries Administration] still work together with the community in the project because my organization is a competent governmental institute and a main stakeholders of the project. We often check about the status of the project, and we often receive the request from them regarding the intervention to crack down the crimes and conflicts.” (S-06, June 2020)

Most of the key informants responded that the project team, and members have mainly adhered to adaptive management approach which give them freedom to be flexible and adjustable to the unpredictable situations and complexity, but the main existing laws, rules, principles, and other related regulations must be strictly followed in order to be on the right track toward the achievement of the main project objectives and goals. Problems could easily occur if the project team impose the strict management practice or allow too much freedom for the members to exploit the benefits of the project.

4.2.6 Accountability

The roles and responsibilities of the different community actors including community leader, deputy community leader, secretary, communication and information outreach chef, patrol chef, treasurer, project assistants and members are precisely defined in detail in the ToR. According to the ToR, and the other existing project documents, the description of roles and responsibilities for each community actors can be summarized as following:

A. Community Leader:

- Leads and be responsible for the general implementation tasks and duties
- Coordinate with the competent institutions, and local authorities to support the community’s works
- Communicate with NGOs to seek for support for the project activities
- Solve problems emerged in the project and monitor activities of the project
- Be fair and transparent with the members of the community.

B. Deputy Community Leader

- Involve in the implementation of community's work with the community leader
- Substitute the role when the community leader is not available
- First deputy community leader is responsible for treasury and secretary
- Second deputy community leader is responsible for outreach, education and patrol
- Accept tasks as assigned by the chairman

C. Secretary

- Keep record all the activities and documents related to the project
- Write up minute of the community meetings and other official gathering
- Keep the membership forms and cancelation forms
- Keep record of the project's equipment and materials
- Provide administrative support to the project

D. Communication and Information Outreach Chef

- Educate and disseminate the project's ToR, internal regulations, laws, and other regulations related to fishery management, environment, human rights, hygiene and health to the members
- Prepare documents, signs and pictures to educate and disseminate the information
- Arrange trainings and workshop to enhance the understanding and knowledge regarding the project implementation
- Gather the participants to voluntary take part in project implementation and monitoring activities
- Provide the project monthly reports and work plans to the community leader.

E. Communication and Information Outreach Assistant

- Explore methods of information dissemination according to social context
- Assist the communication and information outreach chef as required

F. Patrol Chef

- Be responsible for the protection of natural resources, and prevention of crimes incidents in the project's territory
- Form a team to check, monitor, watch and patrol all natural resource exploitation activities
- Cooperate with competent authorities to suppress crimes in the project area or to detent crime evidences and perpetrators and transfer them immediately to the authorities to deal with according to the laws
- Prepare patrol plan and design prevention measures for natural resource protection in the project area
- Report monthly to the community leader monthly about the work achievement

G. Treasurer

- Be responsible for financial issue for the project
- Prepare budget plan for the project to the committee for the review and approval
- Report monthly on the income and expense of the project to the committee

H. Assistant Treasurer

- Be responsible for all the tasks assigned by the community leader
- Assist treasurer as required

I. Community Project Members

- Follow the project's ToR, internal regulation, agreements, and other existing laws and regulations regarding the implementation of the project
- Participate in the activities for the benefits, the improvement, and the sustainability of the project
- Follow the final decisions from the meeting and the congress

- Protect and manage the natural resources in the area
- Watch, prevent and report all crimes in the project areas.

As specified in the ToR of the project, internal regulation, and project agreement and contract, if anyone fail to perform their tasks, punishments and penalties will be applied. The level punishments and penalties vary depending on the severity of the mistakes or offenses. If the project representatives or any project members commit a minor mistake, the verbal warning and educating will be used against the offender. The termination of membership and the expulsion from the project will be applied when people in the project commit the serious offence. Moreover, in case of crime and unacceptable offence, the offender will be considered as the criminal so that he or she has to take the severe consequences according to the Cambodian criminal law, and other related existing regulations.

The result from the interview shows that zero tolerance practice and the strict enforcement of internal rules and regulations are not always the suitable option to deal with the conflict and the minor and acceptable violations since the management committee and the project members are working on the voluntary basis. Therefore, whenever there is problem, the project committee will try to compromise the conflicts through personal communication and negotiation. By following this method, so far, there is no report of the serious offence and conflict caused by the representatives and any members of the project.

“It is also quite a challenge to work without the salary with the local people. Whenever we find anyone break the rule or violate the conditions as mentioned in the ToR, our intervention is trying to talk to and educate him or her. We cannot easily force the offender to leave the group or the project because all of our members are the ones who reside in the same neighborhood.” (P-01, June 2020)

To ensure the accountability are in place throughout the program, each subordinate member in the project management committee is obligated to regularly report the progress, achievement, and challenges to the community leader who is in charge of overall project implementation and monitoring activities. All information and reports retrieved from the project management team usually disseminate and share to all members and the public. Moreover, many respondents described that for the sake of the auditing the project concerning the natural resource management in the area, the competent authorities including FA, MoE, and local authorities normally conduct a cross check and project documents once or twice a year.

“Every year, the concerned officials from FA, MoE, and other provincial departments as well as the other governmental institutes always conduct a site visit in our project to check about the natural resources in the area. The main purpose of their visit is to about the progress of the project, and to see if we need any more assistance from them or not.” (P-01, June 2020)

“The status of natural resources in the project’s territory will be regularly checked at least once a year. It is our obligation to make sure the resources are well protected and the community is working on the right track toward the sustainable natural resources management.” (S-04, June 2020)

4.2.7 Project Benefits

High level of trust, strong social connection, capacity and knowledge enhancement, and local livelihood development are the social and economic benefits that the local people in community could obtain from participating in the project. In consistency with this, the study found out that there is a positive change regarding the social capital, trust among community members and between community member and other stakeholders, and management skills and capability.

Several key respondents confirm that unlike the situation in the past, the social relationship and trust among the project members and between members and the non-members as well as the other stakeholders grow stronger and better. People in the community always give helping hands to those who are in need despite the different personal perspective, ethnicity, and political interest.

“From my observation, people in the community really love and take care of each other. However, the thing was completely different in the past. People seemed to split up and discriminate each other mainly because of the different political interests. But then, we [Project team] tried to explain the people especially the local authorities to put those things aside, and start working together to achieve a strong internal solidarity for the sake of our local livelihood and common interest.” (P-01, June 2020)

“We used to have some relationship issues because of the minor misunderstandings. [...] But recently we have a good and close relationship just like a family. [...] Also, people also have a good culture of helping and communicating among each other very well even though here we have a mixture of ethnicity.” (S-03, June 2020)

Moreover, despite the fact that, the level of education of the members and the project management committee is somehow low, almost of all of the respondent stated that each of the project management team is now well equipped with a lot of useful skills and knowledge to run the project on their own without outsourcing. However, compared to the past, the project management team is required a lot of guidance and supports from different stakeholders on how to successfully handle the project. Even so, all of the respondents from the community mentioned that each of the project member is still encouraged to participate in the training or workshop to obtain more practical experiences and additional knowledge to upgrade his or her capacity and the improvement of the project. Also, the support for the arrangement of any kind of capacity development and training sessions in the community is greatly appreciated and welcomed.

“I, myself, and the other project management member have gone through a lot of trainings and workshops regarding how to manage the project, and many topics. I can tell you that even though most of us cannot finish the high school, all of us can help sustain and manage the activities of the project for almost 15 to 16 years already. [...] in the past we needed a lot of assistance and sponsors from the other stakeholders. [...] but now we can manage it on our own.” (S-01, June 2020)

Another major benefit of the local involvement in the project is the inclusion of local knowledge, wants and needs as the community project belongs to everyone in the community. Majority of the respondents stated that the voices and opinions of the local people is one of the significant inputs for the project. Their views, concerns and feedback regarding the development, implementation, and management of the project are usually seriously taken for consideration.

“Everyone’s voice does matter because this project belongs to all of us here. The project team cannot work on their own without consulting with our members. Sometime our members help provide us a lot of meaningful advices and ideas to deal with some issues, and the improvement of the project” (P-01, June 2020)

“We can share our opinions more on how to manage the project, how to sustain it, how to improve it, and so on. We really enjoy raising our idea during the meeting or the gathering like we’re doing now, because our voice is never taken for granted without the discussion and explanation” (D-01, June 2020)

Nonetheless, the level of empowerment to the local people is still an issue. As the all most of the respondents stated that does not have a full competency and authority to suppress crimes and deal with the illegal invasion and violation of the natural resources in the project area from the outsiders. In order to address, the cooperation between the community and the competent governmental authorities is necessary. The community has no authority and rights to temporarily seize the outlaws or the violators.

“The people in the community are just like normal citizens. They have no authority and competency to suppress the crimes. So they have to cooperate with us and the other local authorities.” (S-06, June 2020)

“[...] When they need supports from the local authorities or the competent agencies to deal with illegal activities like logging, or fishing, the community will contact them directly.” (S-01, June 2020)

4.2.8 Local Awareness of the Project

This sub-variable was formerly framed as the knowledge factor in the conceptual framework; however, to avoid the misinterpretation of the concept, the code was changed to the local awareness of the project. This section mainly describes the level of community awareness and understanding in the project management and implementation, the educational activities in the project, and the frequency of the training to the community members

A common response from interview indicated that in the past few years, the implementation of the project is well-known and well-informed to not only the local people and the members of the project, but also to the entire public. The impressive popularity of the project relies on the outstanding achievement of the project goal and objectives, the efficient practice of information dissemination, and the effectiveness of social media.

“Not only the local people, but people from outside know what we are doing here. Most of them have learnt the information through word of mouth, and some of them know from our Facebook page.” (P-02, June 2020)

“A lot of people know clearly about the community project in Trapeang Sangkae. At there, the natural resources especially the mangrove forest is well conserved, and the scenery is stunning. You also can find a lot of information about the project on the websites and in the Facebook.” (S-04, June 2020)

Moreover, as confirmed by the key informants, a variety of capacity building and training sessions on innumerable subjects related to project management and monitoring, basic financial management, communication, administrative, and other sustainable livelihood approach skills were provided to the members and the project management committee. The project team, mostly cooperated with the key project stakeholders, frequently prepare some sort of capacity building event, small training session, and educational sharing activities in the community, which aim to raise more awareness regarding the significant of the project, the updated status of the project, and to improve the knowledge and capacity of the project members. As mentioned during the interview, the trainings and skill development events are usually held once or two per month, and the participation is required on voluntary basis.

4.2.9 Local People Attitude

In order to understand the attitude factor embedded in the project, three main focuses such as the community members' motives for the participation, community members' willingness and commitment, and the cooperative attitude among each member in the community were analyzed and discussed during the fieldwork.

According to the literature review, personal interest is a main subject of involvement matter in the project. In agreement with this, as confirmed by the key informants, the members of the project give a high value for the existence and the achievement of the project. The accomplishment of main goal and objectives of the project is not only dealing with the natural resource depletion problems in the neighborhood, but also directly contribute to the improvement of local livelihood. As stated by respondent of the study, the natural resource in the area is regarded as the local people's rice pot. Therefore, achieving the goal for the conservation and sustainable management of the natural resource is their top priority and main motivation for local participation in the project.

“From our views, the project it is like our rice pot, so if the natural resource especially fisheries, mangrove forests and sea weeds were destroyed, so does our rice pot. So we take part seriously to take care of it.” (D-01, June 2020)

A common statement from the respondents stated that the strong motive for the participation can lead to the high level of willingness and commitment to participate in the project. The result from the interview highlights that there is a strong commitment and willingness of the individual in the project, which play a very crucial role in the active implementation and the achievement of the project.

“Everything has to start from personal interest which push the level of commitment and willingness up high. I can evaluate that the local participation of project comes from their pure heart and soul. No one has ever forced them, and they also cannot be forced to take part in the project if they don't want to. To them, the existence of the natural resources is their life and also the next generation's” (S-02, June 2020)

As mentioned in the section 4.2.7, the local people as the members of the project, have a strong bond and relationship among each other. They always provide help and assistance to each other whenever needed. This clearly illustrate members in the community have an undeniable decent level of the cooperative attitude among each other.

4.2.10 Leadership Quality

Leadership is an emerging sub-variable that has not been previously included in the conceptual framework. Information with regards to this concept was repeatedly found from the interview; therefore, the iterative coding was done during to data analysis.

The study found out that the leadership quality of the project management committee especially the community leader is something to talk about. As raised out by many respondents, the community leader is a visionary, hardworking and selflessness person who is quite determined and devoted to his work in order to maintain and improve not only the status of the project, but also the social relationships among all stakeholders in the project. His leading style is unique, critical, but flexible which could effectively deal with the conflicts and all kinds situation in the project.

“The personality of the project leader is very impressive. No one can really do things like him. Under his leadership, the status of the project is improving. It started from no financial support, then it attracted a lot of sponsors, but

now it can generate some income on its own to sustain the main project activities. [...] Without his and his team's hardworking effort, the dream may have failed." (S-06, June 2020)

"He guides us do many things for the sake of the project. He doesn't care much about his own benefits. For example, since he is the leader, he has the power to build more good rooms for the guest, but he did not do that and let the other qualified members to build it in order to earn more income." (P-04, June 2020)

Members and other stakeholders are very inspired by his efforts for the achievement of the project as well as the impressive social bond and connection in the community. With regards to this matter, the community leader has earned a lot of loves and respects from his co-partners and local people in the neighborhood.

"I have known him for many years already. People including me really love him and appreciate with what he has been doing so far the natural resources in the area, and the public benefits" (S-01, June 2020)

"He [the community leader] is our role model. [...] I think all of us [project members] would agree with me that he is the most respectful person in the project." (P-04, June 2020)

4.3 The Relationship Between the Community Participation and the Sustainability of the Project

As previously mentioned, the project seems to effectively achieve the institutional sustainability to maintain the program operations and functions regarding the conservation and management of the natural resources for 15 years already. As compared to the previous state of natural resource before the establishment and the implementation of the project, the amount natural resource in the neighborhood has increased significantly. Moreover, coming along with the accomplishment of the initial goal, the project has just introduced another emerging goal concerning the provision of ecotourism service in the community. Majority of the respondents commonly raised that the development of the project was fairly challenging but the mission to accomplish the long-term project implementation is the most difficult part of the project life cycle as it essentially depends on the involvement of members to work together on the common goal and objectives.

"In our case, even the project team seems to be strong enough to run the project by its own, but the project cannot survive if there are only community representatives or a few people take part in the project. It needs all or majority of members to support and actively participate in the project implementation and other related activities" (S-01, June 2020)

The study confirms that the characteristics of community participation embedded in this project differently contribute to achieve the project goals and help sustain the active status of the project. The co-occurrence analysis outputs of the interrelation between the two main themes, the characteristics of the community participation and the sustainability of the project (figure 6) shows that the project benefits, local people attitude, the institutional adaptation and management perspective, leadership quality, and the citizen control are the most recurring combination of the code, which can be considered as the more important community participation characteristics that influence the sustainability of the project. However, the less important characteristics of the community participation in the project are the mechanism for participation, and the allocation of resource.

Table 6: The result of co-occurrence tool in Atlas Ti.

	Level of involvement	Form of Involvement	Mechanism for Participation	The citizen control	The allocation of resource	Institutional Adaptation and	Accountability	Project Benefit	Local Awareness	Local People Attitude	Leadership Quality	Sustainability of the project
Level of involvement	0	0	14	5	0	12	4	9	18	26	17	13
Form of Involvement	0	0	12	0	7	9	9	5	8	5	9	11
Mechanism for Participation	14	12	0	0	0	0	4	6	6	36	0	9
The citizen control	5	0	0	0	5	8	11	18	0	11	4	21
The allocation of resource	0	7	0	5	0	1	1	2	0	0	0	4
Institutional Adaptation and Management	12	9	0	8	1	0	6	4	0	1	9	26
Accountability	4	9	4	11	1	6	0	9	4	5	7	17
Project Benefit	9	5	6	18	2	4	9	0	16	26	3	41
Local Awareness	18	8	6	0	0	0	4	16	0	12	3	18
Local People Attitude	26	5	36	11	0	1	5	26	12	0	0	34
Leadership Quality	17	9	0	4	0	9	7	3	3	0	0	29
Sustainability of the project	13	11	9	21	4	26	17	41	18	34	29	0

Source: Author, 2020

The benefits which can be obtained from the project seems to play the most leading role for the institutional sustainability of the project. Regardless of the benefits previously discussed in the section 4.2.7 above, the active function of the project can help the majority of the community members whose livelihood mainly rely on the natural resources enjoy with the project co-benefits in term of income growth and the improvement of their livelihood.

“In the past, due to some reasons, a large amount of the resources was illegally washed-out. People who depended on those resource found it hard to earn a living. [...] With the existence of the project and all the hardworking effort of the team, most of problems were solved, and people can freely and happily rely on the natural resources for their living.” (D-01, June 2020)

Besides this, nowadays, the project can also directly generate some revenue from the ecotourism activities. In order to support the main activities of the project, 20% of incomes generated from the provision of ecotourism services especially the homestay and the boat trip will be deducted from the service providers and transferred into the project’s saving account. The project budget will also be partly spent for local physical infrastructure maintenance and development as well as the charity purpose.

“The project has the saving budget generated from the practice of ecotourism. [...] Some amount of it is contributed to construction and repairing of the roads in our neighborhoods. [...] A large amount of it is used to support the patrol and the conservation activities. Part of it was shared to poor family and to those who are in need.” (P-01, June 2020)

Another outstanding community participation characteristic which have a close association with the project sustainability are the citizen control and local people attitude. The finding remarkably confirms that since the project is under the community control, and local people seem to have a high motivation, willingness and commitment to support the development and implementation of the project, the community members tend to have a strong sense of belonging, and a positive attitude toward the project. Attached with this positive feeling and

manner, the community members were able to pass through many difficult challenges and obstacles in order to help maintaining the progress and the active status of the project.

The institutional system adaptation, the management perspective and the leadership quality can also be considered as the most influential characteristics which essentially take a larger role in contribute to the project sustainability. The connection between these community participation characteristics and the sustainability of the project is established through the supports of the existing laws and regulations that provide the legitimate power to the local people to take care the natural resource in their neighborhood, the application of flexible approach to manage the project, and the high leadership quality and personality of the community leader and his team to guide project toward the achievement of the long-term viability, the positive outcomes and the strong internal solidarity in the project. It is important to note that the strong internal solidarity resulting from the good management and leadership is a crucial pushing factor for the active local participation in the project. As confirmed by most of the respondents, under management and leadership of the current project committee especially the community leaders, the fair and equitable benefit sharing were reported; whereas, the conflicts and social disruptions were effectively managed and solved.

Besides this, the other remaining community participation characteristics also have a link to the sustainability of the project. However, those characteristics does not have much significant impact on each indicator regarding the institutional project sustainability.

Chapter 5: Conclusion

5.1 Research Purpose

Climate change has produced a lot of disturbances and impacts on the existing coastal ecosystems and human settlements in term of the rise of sea level and the more frequent and intense incidents of storm resulting in flooding and loss of land. The impacts can also indirectly put pressure on socio-economic development and the livelihood of the local people in the areas (Nanlohy et al., 2015). Regarding to this matter, the idea of utilizing natural resource as a tool to address climate change issues have gained in popularity, and it has been framed as a new concept called “Nature-Based Solution” or NBS (Cohen-Shacham et al., 2016; Raymond et al., 2017). Particularly, the practice of NBS, including the establishment, the rehabilitation and the management of green and blue infrastructures is counted as an effective response that help maintain and provide multiple ecosystem service benefits and foster resilience amidst global challenges (Arkema et al., 2017; Baustian et al., 2020; Cohen-Shacham et al., 2016). However, in order to achieve the successful implementation of this concept, a wide range of stakeholders from different levels, backgrounds and knowledge should be considered (Raymond et al., 2017; Sarabi et al., 2019). Noticeably, in respect of the implementation of natural resource protection, conservation, restoration and management, a mixture of the first two typologies in NBS, the local participation is seen as an effective intervention contributing to the achievement of project goals in a sustainable manner (Owuor et al., 2019; Roka, 2019). Moreover, The recent study by Ceptureanu et al.,(2018) states that community participation is one of the most influential aspects for the sustainability of NBS-related projects. Particularly, characteristics of local community participation, such as level of involvement, forms of involvement, mechanism, citizen control, resource allocation, institutional system adaptation, accountability, benefits for residents (Matarrita-Cascante et al., 2019), as well as management, knowledge, and attitudinal factors (Hanifah and Eddiwan, 2018) embedded in the community, encourage members to differently take part in the project implementation and support the sustainability of projects.

However, a large volume of the published studies up to now has been descriptive concerning the development of NBS related projects, but there is a lack of detail explanation in what way to maintain the project performance, and how it relates with the characteristics of the local participation (Wamsler et al., 2020). Therefore, in this study, the researcher conducted a comprehensive analysis and description about the role of community participation in the sustainability of the NBS implementation for coastal resilience by selecting a successful case of the coastal resource conservation and management, especially for mangrove forests in Trapeang Sangkae Commune, Tek Chhou District, Kampot Province, Cambodia.

5.2 Conclusion

5.2.1 Sub-Research Question 1: What are the characteristics of community participation in Trapeang Sangkae CBNRM project?

The result of the study on the participation characteristics in the Trapeang Sangkae project mainly match the third type of community project expressed by (Matarrita-Cascante et al., 2019), which is the community driven program. All particular the participation characteristics namely the level of involvement, form of involvement, methods and mechanism, citizen control, allocation of resource, institutional system adaption and management, accountability, benefits, local people attitude, and leadership quality do exist and take a separate role in the project. The result from the interview and focus group discussion shows that the level of local involvement has been very energetic even without any support since the beginning phase of the project. However, the effort of involvement, which indicates the involvement form, varies from passive to active in the early development stage to the planning and development stage, and the status

change to semi-active in the recent stage. The finding also describes that to encourage people to express their opinions and feedbacks, the project interchangeably adopted a few participation methods and mechanism such as the interview, group discussion, meeting, workshop, and public hearing events. This present findings seem to be consistent with the research from the Ferreira et al (2020), which mentioned that those mentioned participation methods are the most common practice for collecting people's opinions and feedback.

In regard to the citizen control, majority of the respondent states that the project is in the community control since the community has the most leading and independent role in making decisions related to the progress of the project. Although the community has control in making decision regarding the overall project implementation and management, the decision on the allocation of the natural resources is co-managed by the community and the governmental agencies. However, some issues have been reported due to the application of this management approach. This also accords with the previous findings which have demonstrated that the although several regulations related to the organization and the establishment of community were developed so that the natural resources can be legally managed and utilized in the sustainable manner by the groups of local people, the lack of full ownership right and the ineffective approaches in which the resources is managed still exist as the community hasn't been rewarded a full authority to deal with the violations and other disruptions (Chap et al., 2016). Also, the result of the study narrates that to manage the project, the project management committee has been organized, but their institutional structure has influence on the local political framework. Moreover, the project has also established and maintained good cooperation and partnerships many stakeholders from the government and non-government institutes.

To ensure the accountability are in place, the role and responsibilities of different actors in the project are also clearly defined. Each subordinate member is obligated to regularly report the progress, achievement, and challenges to the community leader, and the project implementation progress will be audited by the competent authorities. Furthermore, the concerned authorities and stakeholders will also conduct a regular site visit and cross check to evaluate the progress and the outcomes of the project.

Furthermore, the study confirms that the majority of community members in the project are really satisfied with the benefits of the project as the social connection and trust between the local people as well as the members of the project and the other stakeholders is closer. Also, the management skill and capacity of the community has considerably improved; at the same time, the local knowledge, wants and needs are always seriously taken for consideration.

Interestingly, the information and reputation about the project is widely known in whole community and the public. Even so, the capacity building events, small training sessions, and educational sharing activities, which aim to raise awareness, and enhance the knowledge and skills, are still regularly prepared. The study also discovered that the local community give a high value of the project and they have a strong commitment and willingness to support the development and implementation of the project.

Lastly, the finding remarkably points out that the high leadership quality embedded in the project can lead to an effective project management, strong social relationship and the internal solidarity in the project. These are the fundamental factors to encourage the local people to actively take part in the project.

5.2.2 Sub-Research Question 2: How sustainable is the Trapeang Sangkae CBNRM project?

In order to describe the sustainability of the project, which in this context refers to institutional issues concerning the continuity of the program functions and the long term viability (Datta et al., 2012), the evaluation was based on two main indicators, the project implementation duration and outcomes.

The study reveals that if estimating from the design stage, the project has been initiated and implemented for almost 15 years already. It has been gone through a lot of challenges and obstacles to establish the project and maintain its current status. The result from the interview describe that the supporting agencies and the other stakeholders had already completed their supporting projects for a few years already, but the local community can still sustain the project activities on their own without disruptions and constraints. Moreover, the project also contributes some sort of support to local development activities and charity in the neighborhood.

For the outcome of the project, the study points out that the project has fruitfully produced a lots of positive change on the status on the natural resources mainly the mangrove forest and fisheries in the areas. As narrated by many informants in the past, the resources were almost depleted which created a lot of problems to the local people especially the one who mainly relies on it for the livings, but recently, the resources have been well conserved, restored and rehabilitated. Not only achieving the main conservation and management goals, the project is seen as to be positively on the right track for the implementation of the emerging goal regarding the ecotourism as it has recently gained popularity and support from the public. In short, Trapeang Sangkae CBNRM project is the most successful project in the coastal area in the country which could sustainably maintain its performance and the positive outcomes of the project.

5.2.3 Main Research Question: How do the characteristics of local community participation influence the sustainability of the Trapeang Sangkae CBNRM project?

After the thorough analysis of the case study in the Trapeang Sangkae CBNRM project, the finding further supports the idea of the casual relationship between the community participation and the sustainability of the project, which has been mentioned in the literature review section. The study shows that different characteristics of the local participation contribute to the current project status, and majority of the positive characteristics were confirmed leading to a desirable outcomes and the sustainability of the project. Among all discussed characteristics of community participation in the above section, project benefits, local people attitude, the institutional adaptation and management perspective, leadership quality, and the citizen control play a crucial interactive role concerning the achievement of the goal and objectives and the long-term implementation of the project. However, for the other remaining characteristics have only minor influential roles in the project sustainability as the correlation between those characteristics and the sustainability is found as less relevant and insubstantial.

Since the project of case study can be considered as the community driven program, positive changes regarding the social capital, trust, capacity and management skill along with a strong odd of program support are confirmed as the main benefits from the project (Matarrita-Cascante et al., 2019). However, the high levels of empowerment to the local people has not been previously described in this study as the project members still endure with the lack of power to completely manage the project.

Moreover, the result of the study related to the local people attitude are consistent with those of Zare et al (2015), which stated that the participation in NBS-related project mainly deprives

it from the common interest to seek for environmental, social, and economic benefits. The study also found out that the relationship between the project benefits and the local people attitude can be established to boost the project sustainability. Simply, the strong willingness and commitment toward the project is one of the main reason for the participation in the project. At the same time, when people can experience multiple benefits from the project, their participation spirit can be exceptional. Moreover, in consistent with Hanifah and Eddiwan (2018), the study firmly believe that the implementation and monitoring issues will be minimized if people mark the common interest to achieve the goals and objective of the project as their top priority, and leave the individual benefits aside.

Without the sufficient support of the legal and institutional framework for the overall project implementation and management, the sustainable function of the project is infeasible (Datta et al., 2010). Nevertheless, the current study seems to have a slightly contrast result to the previous claim, as in the context of the study, despite the numerous existing laws, and regulations related to the establishment and management of the CBNRM or NBS-related projects, the project still encounter some practical implementation issues, most of which are related with the effectiveness of the co-management approach and the legitimate power to control the project. However, despite the fact that the problems and challenges are still reported, the project team can manage it quite well by adhering the adaptive management approach, which is a kind well-known management approach in the field of natural resource management to cope with the unforeseen changes, challenges and complexity through the process of trial and error (Armitage, 2005).

Last but certainly not least, the leadership quality should be treated as a main focal point when discussing about the sustainability of the project. Basically, the generalizability of much published research on the concept of leadership fails to reach a consensus on the certain definition for it. However, to some extent, it can refer to the unique abilities of leaders to guide their subordinates to successfully accomplish the institutional goal and objective. Intriguingly, the finding observed in this study mirror of the previous study by Marjanović et al (2019), which stated that a proficient leader can achieve the proper natural resource management and sustainable development. The quality of the leadership of the current community leader in the case study should be regarded as the role model for the similar NBS-related projects.

5.3. Suggestion for Future Work

The research has focused on the case study of Trapeang Sangkae CBNRM project in Cambodia, one of the most prosperous and famous project in the coastal areas, have been just concluded. Only the qualitative insightful information and data about the role of the community participation in the project sustainability of NBS-related were collected and analyzed leaving a room for further quantitative investigation and research.

Moreover, due to the time and budget constraint as well as, the current situation of the global pandemic, the comparative research between the most successful case and the least successful one could not be done. Therefore, it would be interesting to carry on this research by making an attempt to understand why some practices fail or cannot achieve the institutional sustainability. Also, the co-management approach in the management of natural resource should be tested in order understand the effectiveness the approach, as well as the difficulties and challenges of the application. Furthermore, it can an attractive point of focus if the future research could conduct a project assessment and evaluation regarding how well the existence and achievement the project goals and objective contribute to the sustainable development in the neighborhood and the country.

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Annex 1: Research Instruments

ERASMUS UNIVERSITY ROTTERDAM (EUR)
INSTITUTE FOR HOUSING AND URBAN DEVELOPMENT STUDIES (IHS)
MSc. URBAN MANAGEMENT AND DEVELOPMENT (UMD 16)

June/July 2020

RESEARCH TOPIC:

“The Role of Community Participation in the Sustainability of Nature-based Solution Implementation: A case study of a CBNRM project in Trapeang Sangkae coastal community in Cambodia”

1) INTERVIEW PROTOCOL: “Local Community Representative & Members”

Hello! My name is **VICHET SIM**, a Master candidate from the Institute for Housing and Development Studies (IHS) at Erasmus University Rotterdam in The Netherlands. The main objective for this study is to explain how characteristics of local community participation influence the sustainability of the Trapeang Sangkae CBNRM project in Kampot Province, Cambodia. The purpose for this interview is gather information and data for academic purposes only, and I would like to assure that all information you provide will be confidential.

The interview should take around 40 min (or less) of your time. If you give permission, I would like to voice record the interview. I will use the record solely to transcribe the interview to ensure that that data is as accurate as possible.

Part 1: Introduction

Q1: Could you please briefly tell me about yourself?

- Name:
- Occupation:
- Role in the community:
- Level of education:
- Types of training you have been involved:

Q2: How did you get involved in the project? How long have you been involved in this CBNRM project?

Q3: Can you tell me what was your main motivation of involvement in the project?

Part 2: Information about the project

Q4: Could you briefly describe the history of the Trapeang Sangkae CBNRM project? How did it start? What was the action taken?

Q5: How long has the project been established?

Q6: Who are the stakeholders in the projects? And what are their role and responsibility?

Q7: What is the current status of this project?

Q8: What were the main initial goals of the project? What are the emerging goals of the project? Were these goals achieved?

Q9: How would you describe the outcome of the project now?

Part 3: The community participation

Q10: To what extent were the local community involved in the project development and design?

Q11: To what extent have local community members played a role in the project implementation, management, and monitoring?

- Q12: How did the involvement effort of local community members in the project development/design? (By involvement effort, it's whether active, semi-active, or passive)
- Q13: How does the involvement effort of local community members in the project implementation, management, and monitoring? (By involvement effort, it's whether active, semi-active, or passive)
- Q14: How can the community members be involved in the decision making process of the project?
- Q15: How frequent is the meeting or information sharing activities in the community?
- Q16: What are the methods the community members apply in order to express their views and feedback on certain decision?
- Q17: How does the community have an influence on the decision making process of the project? (Whether no control, directed, or community control)
- Q18: To what extent does the community have the ownership rights over the mangrove resource in the area?
- Q19: What are the approaches that the mangrove resource in the area is managed or possessed?
- Q20: What are the policies, laws, rules and regulation in the community to manage the mangrove resources?
- Q21: What is the community institutional structure to manage the mangrove resource in the area?
- Q22: To what extent has the local political framework has been restructured to include the community actors in the decision making process?
- Q23: Is there any collaboration between the community and outside groups to support the projects? If yes, how does it work?
- Q24: What are the specific role and responsibilities of the community leaders and community representatives in the project?
- Q25: What are the availability of mechanisms to ensure the accountability are in place throughout the program?
- Q26: What are the social capital the community member could obtain from the participation?
- Q27: How did the level of trust change among the community members and between community members and other stakeholders?
- Q28: How did/does the community management capacity and skill change?
- Q29: Were the local knowledge, wants and needs included?
- Q30: How did the level of empowerment to local community change?
- Q31: What is the managerial competency of the community leaders and representatives?
- Q32: What are the management principles that the community have been using?
- Q33: To what extent were/are the community members aware of the project?
- Q34: Are there any educational activities like dissemination or knowledge sharing events organized in the community? How frequent is that?
- Q35: What are the community member's motives for the participation in the project?
- Q36: How does the community member's willingness and commitment to participate in the project?
- Q37: How is the cooperative attitude among member in the community?

Part 5: Conclusion

Q38: How do you describe about the role of community participation in the sustainability of the project?

This is the end of our discussion at this moment. Before we stop, do you have any further suggestion or comment about the topic? Is it ok if I need to contact you later on for further clarification about what we discussed today?

Thank you for your response, time and attention! Wish you all the best

**ERASMUS UNIVERSITY ROTTERDAM (EUR)
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June/July 2020

RESEARCH TOPIC:

“The Role of Community Participation in the Sustainability of Nature-based Solution Implementation: A case study of a mangrove project in Trapeang Sangkae coastal community in Cambodia”

2) INTERVIEW PROTOCOL: “Other key stakeholders - Government Official, NGOs”

Hello! My name is **VICHET SIM**, a Master candidate from the Institute for Housing and Development Studies (IHS) at Erasmus University Rotterdam in The Netherlands. The main objective for this study is to explain how characteristics of local community participation influence the sustainability of the Trapeang Sangkae CBNRM project in Kampot Province, Cambodia. The purpose for this interview is gather information and data for my master thesis writing for academic purposes only, and I would like to assure that all information you provide will be confidential.

The interview should take around 30 min (or less) of your time. If you give permission, I would like to voice record the interview. I will use the record solely to transcribe the interview to ensure that that data is as accurate as possible.

Part 1: Introduction

Q1: Could you please briefly tell me about yourself?

- Name:
- Occupation:

Part 2: Information about the project

Q2: Could you briefly describe the history of the Trapeang Sangkae CBNRM project? How did it start? What was the action taken?

Q3: How long has the project been established?

Q4: What were the main initial goals of the project? What are the emerging goals of the project? Were these goals achieved?

Q5: What is the current status of this project?

Q6: Who are the stakeholders in the projects? And what are their role and responsibility?

Q7: How would you describe the outcome of the project now?

Part 3: Participation in the Project

Q8: How long have you (or your organization) been involved in the project?

Q9: What are your (or your organization) roles and responsibilities in the project?

Q10: What are the collaboration between your organization and the community? how does it work?

Q11: To what extent were the local community involved in the project development and design?

Q12: To what extent have local community members played a role in the project implementation, management, and monitoring?

Q13: How did the involvement effort of local community members in the project development/design? (By involvement effort, it's whether active, semi-active, or passive)

Q14: How does the involvement effort of local community members in the project implementation, management, and monitoring? (By involvement effort, it's whether active, semi-active, or passive)

Q15: How does the community have an influence on the decision making process of the project?

Q16: How can the community members be involved in the decision making process of the project?

Q17: To what extent does the community have the ownership rights over the mangrove resource in the area?

Q18: What are the approaches that the mangrove resource in the area is managed or possessed?

Q19: To what extent is your organization in charge of the resource allocation?

Q20: What are the policies, laws, rules and regulation in the community to manage the mangrove resources?

Q21: What is the community institutional structure to manage the mangrove resource in the area?

Q22: To what extent has the local political framework has been restructured to include the community actors in the decision making process?

Q23: What are the availability of mechanisms to ensure the accountability are in place throughout the program?

Q24: What are the social capital the community member could obtain from the participation?

Q25: How did the level of trust change among the community members and between community members and other stakeholders?

Q26: How did the community management capacity and skill change?

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Q28: How did the level of empowerment to local community change?

Q29: What is the managerial competency of the community leaders and representatives?

Q30: What are the management principles that the community have been using?

Q31: To what extent were the community members aware of the project?

Q32: Are there any educational activities like dissemination or knowledge sharing events organized in the community? How frequently is that?

Q33: What are the community member's motives for the participation in the project?

Q34: How does the community member's willingness and commitment to participate in the project?

Q35: How is the cooperative attitude among member in the community?

Part 5: Conclusion

Q36: How do you describe about the role of community participation in the sustainability of the project?

This is the end of our discussion at this moment. Before we stop, do you have any further suggestion or comment about the topic? Is it ok if I need to contact you later on for further clarification about what we discussed today?

Thank you for your response, time and attention! Wish you all the best

ERASMUS UNIVERSITY ROTTERDAM (EUR)
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June/July 2020

RESEARCH TOPIC:

“The Role of Community Participation in the Sustainability of Nature-based Solution Implementation: A case study of a mangrove project in Trapeang Sangkae coastal community in Cambodia”

3) Focus Group Discussion Manual

Hello! My name is **VICHET SIM**, a Master candidate from the Institute for Housing and Development Studies (IHS) at Erasmus University Rotterdam in The Netherlands. The main objective for this study is to explain how characteristics of local community participation influence the sustainability of the Trapeang Sangkae CBNRM project in Kampot Province, Cambodia. The purpose for this interview is gather information and data for my master thesis writing for academic purposes only, and I would like to assure that all information you provide will be confidential.

The group discussion should take around 30 min (or less) of your time. If you give permission, I would like to voice record the discussion. I will use the record solely to transcribe the interview to ensure that that data is as accurate as possible.

Part 1: Project Information

Q1: Could you briefly describe the history of this project? How did it start? What was the action taken?

Q2: How long has the project been established?

Q3: What were the main initial goals of the project? What are the emerging goals of the project? Were these goals achieved?

Q4: What is the current status of the project?

Q5: How would you describe the outcome of the project now?

Part 2: Stakeholders in the Project

Q6: Who are the stakeholders in the projects?

Q7: Who are the most influential stakeholders in the project? And who are the least influential one?

Q8: What are their role and responsibility?

Part 3: Project Participation

Q9: In what way does the community member are involved in the decision making process of the project?

Q10: How regular is the meeting or information sharing activities in the community?

Q11: What are the methods the community members apply in order to express their views and feedback on certain decision? What is the most frequent methods?

Q12: How does the community have an influence on the decision making process of the project?

Q13: What are the approaches that the mangrove resource in the area is managed or possessed?

Q14: To what extent does the community have the ownership rights over the mangrove resource in the area?

- Q15: What are the specific role and responsibilities of the community leaders and community representatives in the project?
- Q16: What are the availability of mechanisms to ensure the accountability are in place throughout the program?
- Q17: What are the social capital the community member could obtain from the participation?
- Q18: How did the level of trust change among the community members and between community members and other stakeholders?
- Q19: How did the community management capacity and skill change?
- Q20: Were the local knowledge, wants and needs included?
- Q21: How does the level of empowerment to local community change?
- Q22: To what extent were the community members aware of the project?
- Q23: Are there any educational activities like dissemination or knowledge sharing events organized in the community? How frequently is that?
- Q24: What are the community member's motives for the participation in the project?
- Q25: How does the community member's willingness and commitment to participate in the project?
- Q26: What are the challenges in the participation of the project?
- Part 4: Conclusion**
- Q27: How do you describe about the role of community participation in the sustainability of the project?

This is the end of our discussion at this moment. Before we stop, do you have any further suggestion or comment about the topic? Is it ok if I need to contact you later on for further clarification about what we discussed today?

Thank you for your response, time and attention! Wish you all the best

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