

**TOWARDS SUSTAINABLE LIVELIHOODS IN THE  
INDUSTRIALIZING ECONOMY: A case study of the  
agricultural communities in the Eastern Economic Corridor,  
Thailand**



A Thesis Submitted in Partial Fulfillment of the Requirements  
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ในขณะที่นโยบายการพัฒนาที่เกี่ยวข้องและการบริการภาครัฐที่มีจุดมุ่งหมายเพื่อพัฒนาการเกษตร ภายใต้ **Thailand 4.0** ในระเบียงเศรษฐกิจภาคตะวันออก อาจเป็นโอกาสให้ชุมชนเกษตรกรรมได้เข้าร่วมโครงการและตอบรับกับโอกาส ในการสร้างรายได้และส่งเสริมความเป็นอยู่ที่ดี อย่างไรก็ตามมีงานวิจัยเพียงไม่กี่ชิ้นที่ประเมินความสามารถของชุมชนที่มีต่อโอกาสเหล่านั้น จิตความสามารถเป็นคุณสมบัติหลักในการพัฒนาชุมชนและยังสามารถช่วยประเมินโอกาสสำหรับการเข้าถึงในพลวัตใหม่ของการพัฒนาทางโครงสร้างเศรษฐกิจและสังคม จิตความสามารถที่ไม่เพียงพอหรือไม่ตรงกันกับนวัตกรรมในระบบเศรษฐกิจ ณ ปัจจุบันนั้น อาจกลายเป็นอุปสรรคสำหรับชุมชนในการเข้าถึงประโยชน์ที่หลากหลายของโครงการวิสาหกิจชุมชนสองแห่งในมาบตาพุด “วิสาหกิจชุมชนที่ใช้ความหลากหลายทางชีวภาพกรกยชา” และ “วิสาหกิจชุมชนเกษตรอินทรีย์โขดหิน” เป็นแหล่งชุมชนที่มีศักยภาพในการศึกษาบทบาทของชุมชน สมาชิกในชุมชนส่วนใหญ่ยังคงทำงานในภาคเกษตรกรรมผลไม้มือเมืองร้อนที่สำคัญ วิสาหกิจชุมชนก่อตั้งขึ้นเพื่อตอบสนองทั้งโอกาสและความท้าทายของการเปลี่ยนแปลงทางเศรษฐกิจสังคมในการพัฒนาเศรษฐกิจคู่ขนานของระเบียงเศรษฐกิจภาคตะวันออก การใช้กรอบการดำรงชีวิตอย่างยั่งยืน (**Sustainable Livelihoods**) ช่วยให้การศึกษามีความซับซ้อนของปัจจัยที่มีอิทธิพลต่อการดำรงชีวิตของคนในท้องถิ่น โดยเฉพาะอย่างยิ่งกรอบการทำงานของทฤษฎี จะให้เข้าใจเกี่ยวกับปฏิสัมพันธ์ระหว่างองค์ประกอบทั้งห้าของบริบทความเปราะบาง ทุนหรือทรัพย์สิน แนวทางการดำรงชีวิตและความเป็นอยู่ที่ดี และรวมไปถึงสถาบันและกระบวนการที่มีอิทธิพลต่อการตัดสินใจและการเลือกแนวทางของผู้คนในการสร้างผลลัพธ์ของการดำรงชีวิต โครงการและแนวปฏิบัติที่สร้างโดยชุมชนเพื่อเพื่อตอบสนองต่อการเปลี่ยนแปลง เช่นการท่องเที่ยวชุมชน เกษตรอินทรีย์ การผลิตปัสสาวะและธนาคาร์บอนได้ออกไซด์ สาขาวิชา การพัฒนาระหว่างประเทศ ลายมือชื่อนิติ

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Whilst, the associated development policies and government services for agricultural development under Thailand 4.0 in the Eastern Economic Corridor has potential implication to provide the opportunity for the agricultural community to greater their income and enhance well-being. However, there are few studies assessing the community capacity toward those opportunities. The capacity is the key feature for community development. It can also become the justification for accessibility into the new dynamic of the structural development. Insufficient or mismatched capacity with the current innovation activity and economic system could become a barrier for the community to access the range of project's benefits. Two community enterprises in Map Ta Phut, "Biodiversity-based community enterprise, Krok Yai Cha" and "Khod Hin Organic Farm Community Enterprise" are potential sources to apprehend the role of agent-oriented development. Most of the community members remain working in the agricultural sectors, significantly tropical fruit farm. The community enterprise has been established to respond to both opportunity and the challenge of socio-economic transformation in dual-economic development. By using the Sustainable Livelihoods Framework allows the study

Field of International Student's Signature

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# TABLE OF CONTENTS

	<b>Page</b>
ABSTRACT (THAI) .....	iii
ABSTRACT (ENGLISH).....	iv
ACKNOWLEDGEMENTS .....	v
TABLE OF CONTENTS.....	vii
CHAPTER I.....	13
INTRODUCTION .....	13
1.1 Background to the Study .....	13
1.2 Objective of the Study .....	14
1.3 Scope of the Study .....	15
1.4 Research Contribution .....	15
1.5 Structure of the Thesis .....	16
CHAPTER II.....	18
LITERATURE REVIEW .....	18
2.1 Innovation for inclusive growth and development .....	18
2.1.1 Poverty and Inequality.....	18
2.1.2 Inclusive Innovation Policy.....	20
2.1.3 Grassroots Innovation.....	22
2.2 Thailand’s Eastern Economic Corridor .....	25
2.2.1 Development of Thai Economy (1960-2020) .....	25
2.2.2 Overview of the Eastern Economic Corridor .....	27
2.2.3 Policy and Development Program of the Agricultural Sector in the Eastern Economic Corridor. ....	28
2.2.4 The implication of the Eastern Economic Corridor on livelihood context .....	30
2.3 Agricultural Community and Location Background .....	32
2.3.1 Economy and Agriculture in Thailand .....	32



2.3.2 The importance of agriculture to human and national security .....	33
2.3.3 Agricultural sector in the Eastern Economic Corridor .....	33
2.4 Livelihoods Security and Interventions .....	34
2.4.1 People-centered development: Security, Rights and Development .....	34
2.4.2 Livelihoods Risk Assessment.....	36
2.4.2.1 Health Security .....	36
2.4.2.2 Education Security.....	38
2.4.2.3 Economic Security.....	39
2.4.2.4 Environmental Security .....	40
2.4.3 Thailand’s Human Development Performance .....	40
2.5 Sustainable Livelihoods.....	42
2.5.1 The Sustainable Livelihoods Concept.....	42
2.5.2 Sustainable Livelihoods Framework .....	43
2.5.2.1 The Vulnerability Context.....	45
2.5.2.2 Transforming Structures and Processes .....	46
2.5.2.3 Livelihoods Strategy.....	47
2.5.2.4 Livelihoods Assets.....	47
2.5.3 Relationships between livelihoods capitals and livelihoods security.....	49
2.5.4 Livelihoods Outcomes.....	49
2.5.5 Sustainability .....	50
CHAPTER III .....	52
RESEARCH METHODOLOGY.....	52
3.1 Research Design and Conceptual Framework.....	52
3.1.1 Diagnosis of livelihood security: Human Security Approach.....	52
3.1.2 Adaptive Capacity: Sustainable Livelihood Approach (SLA) .....	53
3.1.3 Sustainable Livelihood Outcome .....	53
3.2 Qualitative Research .....	54
3.3 Case study Approach .....	55
3.4 Data Collection .....	55

3.4.1 Literature Data.....	55
3.4.2 Primary data collection.....	56
3.5 Unit of Analysis.....	57
3.6 Sampling.....	57
3.7 Determinant on Research Location.....	58
3.8 Respondents.....	58
3.9 Ethnic Issue.....	59
CHAPTER IV.....	60
CASE STUDY CONTEXT.....	60
4.1 Introduction.....	60
4.2 Rayong Province.....	60
4.3 Study area: Krok Yai Cha Community Khod Hin Community.....	64
4.3.1 Krok Yai Cha Community.....	65
4.3.1.1 Geographical strategic locations.....	65
4.3.1.2 Economic Setting.....	65
4.3.1.3 Social Setting.....	66
4.3.1.4 Agricultural livelihoods.....	66
4.3.2 Khod Hin Community.....	68
4.3.2.1 Geographical strategic locations.....	68
4.3.2.2 Economic Setting.....	68
4.3.2.3 Social Settings.....	69
4.3.2.4 Agricultural livelihoods.....	69
4.4 Chapter Summary.....	71
CHAPTER V.....	72
FINDINGS.....	72
5.1 The Vulnerabilities Context.....	72
5.1.1 Economic Dimension.....	73
5.1.1.1 Area of development and equity.....	74
Farm Revenue.....	74

Off-farm revenue .....	76
5.1.1.2 Area of Concerns .....	77
Trade-off between income and spending.....	77
Small farm capacity constraint export opportunity .....	78
Incoherent opportunity to sell the products to the related industrial cluster for a small agricultural farm .....	79
5.1.2 Health Dimension.....	79
Area of development and equity.....	81
Mobile Healthcare services .....	81
Health accessibility, low cost of medical expense .....	82
Area of Concerns .....	83
Remain health insecurity .....	83
Increase risk of emerging disease .....	83
Borden insecurity to mental health and psychological adversity .	83
Treat the symptom rather than the cause .....	84
5.1.3 Education Dimension .....	84
Area of development and Equity .....	85
Accessibility to the formal education .....	85
Increase opportunity to gain external source of knowledge and information from diverse partner .....	86
Area of Concerns .....	86
Asymmetry of policy recognition and change in macro-economy .....	86
5.1.4 Environmental Dimension.....	87
Area of development and Equity .....	87
Area of Concerns .....	88
A declining of natural resource .....	88
Environmental Degradation.....	88
5.2 Livelihoods Assets.....	90
5.2.1 Human Capitals .....	91

5.2.1.1 Education and knowledge (Level of education, literacy, second language acquisition) .....	92
5.2.1.2 Health .....	94
5.2.2 Natural Capitals .....	96
5.2.2.1 Land Endowment.....	97
5.2.2.2 Environmental Condition .....	98
5.2.2.3 Significant natural capital characters in the local.....	99
Krok Yai Cha Community:.....	99
Khod Hin Community: .....	100
5.2.3 Physical Capitals .....	100
5.2.3.1 Road Infrastructure .....	100
5.2.3.2 Infrastructure support export opportunity under the Eastern Fruit Corridor (EFC) .....	101
5.2.3.3 Information and Communication Technology .....	103
5.2.4 Financial Capitals .....	104
5.2.5 Social Capitals .....	106
5.2.5.1 Bounding social capital .....	107
5.2.5.2 Bridging social capital.....	109
5.2.5.3 Linking social capital .....	111
5.3 Livelihoods Strategy .....	112
5.3.1 Biodiversity-based community enterprise, Krok Yai Cha .....	113
5.3.1.1 Acquirement of Good Agricultural Practices (GAP) strategy....	115
5.3.1.2 Livelihoods diversification and change of economic activity ....	116
5.3.1.3 Livelihoods Diversification: .....	118
5.3.1.4 Entrepreneurial strategy: .....	119
5.3.1.5 Natural Resource-Based Strategy.....	119
5.3.2 Organic Farm Community Enterprise, Khod Hin Community .....	122
5.3.2.1 Transformation of farm practices to organic farm .....	123
5.3.2.2 Natural Resource-Based Strategy.....	127
5.3.2.3 Entrepreneurship and marketing strategy.....	128

5.4 Livelihoods Outcome.....	128
5.5 Chapter Summary .....	129
CHAPTER VI.....	131
DISCUSSION AND CONCLUSION.....	131
6.1 Introduction.....	131
6.2 Grassroots innovation .....	132
6.2.1 Socially- driven Solution.....	132
6.2.2 Sustainability-driven innovation .....	132
6.2.3 Frugal Innovation .....	133
6.3 Synergies between Inclusive Innovation, Partnership and Capacity Building	134
6.4 Sustainability .....	135
6.5 Recommendation .....	137
6.6 Future study .....	138
Appendix A: Community Respondents .....	140
Appendix B: Photos of the Research .....	142
REFERENCES .....	150
VITA.....	156

# CHAPTER I

## INTRODUCTION

### 1.1 Background to the Study

The notion of inclusive growth is the growth that creates opportunities for all and distributed fairly across sections of society (OECD, 2013; Deighton-Smith et al., 2016). During the economic development, the concept allows to include all economic participants concerning excluded groups or people to have equitable opportunities for advancing their income and non-income aspect of well-being (Ali and Son, 2007). The macro-economic policy which is the origin of national development could be the challenge for a country to include inclusive development across population groups and sectors (Afreen, 2017). The challenge of policy for inclusive growth and development can be derived by two major grounds. Originally, the policy did not provide an opportunity for inclusive growth and development. Secondly, the policy shaped an opportunity for inclusive growth and development but a limited capacity of individuals and institutions creates the barrier to access the opportunity. Therefore, the absence of either opportunity or capacity is inconceivable to generate the development outcomes.

Under Thailand 4.0, the country has established the Eastern Economic Corridor (EEC) to be a key fuel for economic development, aims to increase economic performance, and step up to a high-income country through a value-based economy. However, from the previous phase of Thailand's first-generation Eastern Seaboard development had been reported on its development impact to several dimensions of human insecurity. The character of the development scheme also distinct from livelihoods context where up to 131,000 households engage in agricultural-based economy. The novel phase of the Eastern Economic Corridor, therefore attempt to allocate the resource and opportunity for balancing the development outcome. Rang of associated strategy in promoting inclusive development in this dual-economy, for instance, the smart farmer, the Eastern Fruit Corridor (EFC), and the fruit tourism become the development plan in the area.

Whilst the policy has potential to either posed the challenge or provided opportunities for the agricultural community, there remain few studies assessing the community capacity to cope with the challenge or to access to available opportunities. The capacity is the key feature of community development. It can also become the justification for accessibility into the dynamic of new structural development. Insufficient or mismatch capacity with the current innovation activity and economic system could become a barrier for the community to access a range of project benefits. As a result, this thesis aims to assess the community capacity as an essential source to capture the interrelation between capacity and opportunity.

## **1.2 Objective of the Study**

The study aims to explore the aspects of sustainable livelihoods of the agricultural communities influenced by the Eastern Economic Corridor, Thailand. In regard to achieve the sustainable livelihoods, the capacity of the communities to adjust to potential damage, to take advantage of new opportunities, or to respond to consequences are the key capacity to endorse and promote sustainable livelihoods. Therefore, the research question is mainly focusing on “To what extent does community adaptive capacity respond to the socio-economic transformation of the Eastern Economic Corridor?” Before proceeding to the process of what capacity is and how is the livelihoods outcome, the contextual context of macro phenomenon in the Eastern Economic Corridor is equally importance to understand. The associated question on “what are the impacts of Thailand's Eastern Economic Corridor on the livelihood of the agricultural community?” will be also assessed in the study.

The sustainable livelihood outcome of community floorplan may different from what the national policy plan. Thus, it will provide the gap for policy attention to improve the appropriate strategy and implementation in accordance with the community context. Throughout this process, it will facilitate balancing the development stance between macro-economic policy and livelihood development scheme which will facilitate policy-led to inclusive development. While, structure and process such as government policy, law and institution can be the supporting measure

for the community capacity. Therefore, the study aims to explore three issues that listed below.

1. To identify the impact of the Eastern Economic Corridor initiative to the livelihoods of the agricultural community.
2. To assess a community's capacity to respond to the socio-economic transformation of the Eastern Economic Corridor.
3. To develop the recommendation on how the government ensures the inclusive development for local agricultural community.

### **1.3 Scope of the Study**

Two community enterprises in Map Ta Phut, “Biodiversity-based community enterprise, Krok Yai Cha” and “Khod Hin Organic Farm Community Enterprise” are potential sources to apprehend the role of agent-oriented development. Most of the community members remain working in the agricultural sectors, significantly tropical fruit farm. The community enterprise has been established to respond to both opportunity and the challenge of socio-economic transformation in dual-economic development. By using the Sustainable Livelihoods Framework allows the study to understand the complexity of factors that influence the local livelihoods. Particularly, the framework provides the understanding of interaction among the five components of the vulnerability context, assets pentagon, livelihoods strategy, and institution and process which influence decision and choice of people to generate livelihood outcome. Livelihoods assets and livelihoods strategy which the community has generated the solution and organized the activities and projects for livelihoods development for example community tourisms, bio-fertilizer production and groundwater banks. The innovation for inclusive development by diversity of partnership and the role of participatory development has a significant implication for sustainable livelihoods and capacity development of this case study.

### **1.4 Research Contribution**

This thesis will achieve a better understanding of the impact of Thailand’s Eastern Economic Corridor on the agricultural community in both positive impact, the



opportunity to develop and negative impact, as the project might create a zero-sum game. The agriculture community has been disregarded and overlooked due to the literature reviews and lack of the distinction between industrializing economy and agricultural-based economy in the EEC area. The main contribution of the research will be to perceive the challenge towards community capacity in the new development structure which will contribute to policymakers, academics, local NGOs and INGOs who work in the inclusive development, human security, and social development field.

## **1.5 Structure of the Thesis**

### **Chapter II: Literature review**

This chapter the research discusses the various relevant literatures on poverty and inequality which allow to pave the ideas to relevant solution for instance inclusive innovation and grassroots innovation. The, the chapter will provide the background of the development of the EEC and the associated polity of agricultural development in the EEC development scheme. The chapter expands to the theories and approaches that will apply in for this study. Human development and Human Security Approach will be utilized for analyzing the impact of the EEC on livelihoods and well-being. The Sustainable Livelihoods Approach will be discussed on its concepts and features of framework.

### **Chapter III: Research Methodology**

The chapter will outline on the research methodology. The conceptual framework will be provided to perceive the concept of this study. The approach, strategy, and method of collective action in this study will be presented.

### **Chapter IV: Case Study Context**

Before going to present the findings, case overview is important to provide some background context of the community study. Two community enterprise in the Noen Phra Sub-district where concentrated with the manufacturing site will allow the

research to access on how the agricultural community become the change actors and respond to the transformation of the development in the area.

### **Chapter V: Findings**

The chapter presents the findings that have been collected from “Biodiversity-based community enterprise” in Krok Yai Cha and “Organic Farm Community Enterprise” in Khod Hin. The key points were derived from interview. Following the primary data collection, the interviewer will embrace the concept of empathize which allow to understand people through engagement and conversation. It becomes an evidence-based analysis to support the argument and hypothesis of this research. Throughout the fieldwork study will facilitate to frame the research analysis and enhance the argument through the context, culture, and value of the target community.

### **Chapter VI:**

This chapter concludes the study by answering the research questions. Though the dimension of community development in this chapter will further provide the role of community collective group in contributing to sustainable development. This chapter will provide the summaries and make a recommendation. This study would provide the further step to enhance better understanding on the related issue. Some key interested issues for further research have been identified in this chapter.

## **CHAPTER II**

### **LITERATURE REVIEW**

#### **2.1 Innovation for inclusive growth and development**

##### **2.1.1 Poverty and Inequality**

Exclusion can be examined in several dimensions, for instance, social, economic, political, and opportunity exclusion. It can be represented among individuals, communities, or even across segments. The exclusion could limit the opportunity to be equal development which will subsequently lead to poverty and inequality. The level of inequality does not only effect on the well-being of the population but also determines countries economic performance. Since disadvantaged segments obtain fewer resources to invest in their skills and education (Planes-Satorra and Paunov, 2017).

The case of inequality can be categorized into two groups which are structural attribution and personal attribution (Wright, 1989, 2009). Firstly, the structural attribution refers to the structure that can influence the outcome of development. The structure includes policy, institution, process, and system. These structures generate the social norm, economic regulation, and law which can influence the activity and capacity of people. It can allow or limit the capacity to access into the structure of development. Thus, the structural attribution can become the determination of the development outcome and the opportunity for development outcome. Top-down policy, absence of participatory, preferential policy, government failure, resource misallocation, and asymmetric distribution of power could be the challenge to generate the equitable growth and development across population and sectors.

Another case of inequality can be observed at personal attribution. The personal attribution reflects the capacity of individuals to access the window of opportunity from the existing structural attribution. Despite the fact that several of opportunities in economic activity would open for all people, capacity approach, thus, urges to recognize that people capacity is heterogeneous. It is inadequate to signify that all people have the same capacity and skills to access a particular opportunity. To support

people who have a lower capacity would reduce the asymmetric of personal attribution. On the other way, to diminish inequality can also be done by investing in human capital for example education, health, and nutrition.

Base on the nature of the current economic system and innovation activity, today skills required at a sufficient level and appropriate to an existing system. The capacity-building approach expanded the focus to solid science and technology training. Complex problem-solving ability, good communication skills, vocational education, and entrepreneurial and marketing skills are the relative importance. These skills support the individual to engage in innovation activity. The skills are equally applicable to improve the productivity and expand the market outreach (Planes-Satorra and Paunov, 2017).

Nevertheless, personal attribution could be inferior base on a range of social factors, for instance, race, ethnicity, religious, gender, and age discrimination (Stewart, 2013). For this reason, the equity approach argues that a person's achievement should determine primarily by their talents and efforts rather than predetermined circumstances (Stewart, 2013). In particular, a value recognition and cultural respect are relevant factors for well-being and dignity.

Throughout the failure of structural attribution to delivery equitable growth and development across groups and sectors, Pro-poor growth approach denotes that if these structural factors are influence to “outcome and opportunity to outcome”, therefore policy measures need to address inequality within and provide opportunity to equitable development which required to encompass people to grow unreservedly (UNDP,2015). However, the policy instruments can also accomplish through an independent set of policies of redistribution. It underlined that policy is the essential source of inequality reduction. Economic and monetary policy, notably progressive tax measurement demonstrates the role of policy in reducing income and wealth inequality across the population and sector.

### 2.1.2 Inclusive Innovation Policy

Once, the structural attributions may fail to deliver equitable development (George et al., 2012; Mariano, 2014). Several policies have been implemented to reduce inequality. Yet, it seems to reduce in particular dimensions of inequality. Even so, the inequality of opportunity is still questioned. Combining with the low capacity of individuals and sectors would constrain the opportunity to engage in the process of development and innovation.

Inclusive innovation addresses innovation that creates or enhance opportunities to improve wellbeing. *“It develops and implements new ideas which aspire to create opportunities that enhance social and economic wellbeing for disenfranchised members of society.”* (George et al., 2012) The inclusive innovation tailors to include the underrepresented groups to join the process of innovation and research and development (Klingler-Vidra, 2019). Since the policy could become a source of inequality and poverty reduction, policy innovation can potentially be developed to the novel modified model to remove the barrier of opportunity.

Throughout inclusive innovation, it values the power and capability of every institutions in the society to become a source of inclusive innovation for inclusive growth and development. Government, academic institution, civil society, private sector, individual and grassroots movement are some key innovator for inclusiveness (Dahlman, 2014; George et al., 2012; Klingler-Vidra, 2019). The diversity of people from different backgrounds will contribute a different set of knowledge. Thus, the products of innovation will include the definition of development from each collaborator which leads to address the inclusive development and growth for all.

The inclusive innovation policy will work towards empathic innovation which faith in process of inclusive practice rather than political problem-solving (Smith et al., 2014). The policy will consider regards on distribution, not only a resource but also decision-making power. The process of inclusive participatory development will give privilege for policy to be changed its strategy at different stages of the value chain negotiation

and compromising among multi-stakeholders (Gupta, 2012). This innovation does not aim to disrupt the existing system but strengthens to a more inclusive way.

While, the inclusive growth and development are mostly expected to be delivered by government. The inclusive innovation allows the role of the private sector who might out of the discussion for social development to become agents in creating inclusive innovation. The entrepreneurs perform their inclusive innovation through business model, supply chain, services, and marketing (George et al., 2012). The domestic and transnational companies more engaged in inclusive innovation due to they begin to develop goods and services for these low-income markets (Dahlman, 2014). Inclusive innovation policies can facilitate to bridge between the private sector and the unrepresented group to collaboratively generate the innovation for growth and development. Policy required to find the overlapped areas of value, objective, and goal for growth among actors. The policy can be initiated by choosing a similar or close industrial cluster for example a value chain of food production. Thus, it will include the actors from agrarian, water and soil quality specialist, botanist, agriculture food scientist, product designers to the entrepreneurs in the food industry to cooperatively work for inclusive innovation.

The study of OECD science, technology, and industry working paper (2017), policy innovation for social inclusiveness can act base on industrial inclusiveness (sector), territorial inclusiveness (place), and social inclusiveness (people). These dimensions are the area that most exposure to the exclusion. Using the monetary and financial support for example provide investment incentives can enhance the inclusiveness, yet it is not sufficient. Non-monetary policy approaches for instance capacity building, business development training, promoting network, facilitate in accessing global knowledge and technology, and attracting innovation institutions to the peripheral regions are examples of policy tools for inclusiveness (Satorra and Paunov, 2017).

According to UNDP and Nesta suggest that technology is part of the solution to social and economic challenges. Technology will play the role to identify the

challenge and at the same time, it will perform along the process of solution. However, the fixed technology may not applicable for variable environment and heterogeneous of user needs (Fressoli et al., 2014). Therefore, the policy of inclusive technology needs to perceive the citizens as the customer and delivery the suitable technological services and products based on variable needs. The policy can apply the social market-oriented approach base on people needs (Dann, 2010; Gupta, 2012; Walker et al., 2016). Once again, the process must act towards inclusiveness by included all the stakeholders and expand the foundation locally especially for the poor to perceive their needs (Stanley et. al., 2020).

The result of inclusive innovation policy can reduce the *ex-ant* (cost of searching for information and finding suppliers) and *ex-post* (cost of monitoring, inducement, and cost of conflict resolution) transaction costs. Due to the fact of inclusive stakeholder engagement in co-produce inclusive innovation will systemically allow policy to access to data and information (Gupta, 2012). While the cost of maintaining and implementation will be saved through inclusive operation among stakeholders. Moreover, inclusive innovation policy will also strengthen equality of opportunity especially for underrepresented groups to join the innovative solution for inclusiveness. The inclusive innovation of policy platform would allow multi-actors to claim their rights and freedom from want as the basic source of human dignity. Moreover, collaborative work among all actors will build value-added to participants' understanding which will enrich the empathy among participant engagement. Co-production knowledge and innovation will also strengthen the capacity of human capital base on knowledge and information exchanges.

### **2.1.3 Grassroots Innovation**

Innovation and community action are important strands of sustainable development (Seyfang and Smith, 2007). For the time being, they have not yet been linked. The mainstream institution creates the legitimacy for their knowledge and practice to rule the socio-economic norm. Consequently, it overshadows the value of community capacity and the way of living.

Grassroots innovative movement is the idea that opens the space of local knowledge and communities to lead in the framing of a collaborative innovation activity (Gupta et al., 2003). By self-recognition towards challenge and goal for development, the unpopular issue may not be taken by the mainstream but it will be brought in the surface by locals since they know the best what is matter for people (Seyfang and Smith, 2007). Grassroots innovation generates the bottom-up innovation from local material, skill, and knowledge to seeks development and social justice (Heeks et.al, 2014). The grassroots innovation also refers in other labels for example below-the-radar innovation and BoP (base-of-the pyramid) innovation (Heeks et. al. 2014).

By dimensions of membership, influence, reinforcement and shared emotional connection of community contain to make community different (McMillan and Chavis, 1986). These senses of livelihood will extendedly concern regards on the common resource and environment. At this result, it will lead the community to produce a sustainability-driven solution. Grassroots movement took their role in the development field in three dimensions which are consumer, co-producer, and innovator (Pansera and Sarkar, 2016).

The grassroots innovation is the role of the community who become agent-oriented development organized local groups take the initiative, without waiting for external input. This type of innovation can be exemplified in community enterprise and community movement as a source of innovative potential. However, livelihood has been criticized for the lack of engagement with the process of globalization, macro-scale and mainstream approach (Scoone,2009). The design of local innovation is quite unique. Some innovations may meet the needs of a small community but may not meet the large-scale application. Thereby, grassroots innovation has a low capacity to influence things. However, this should not become an enemy of sustainability (Gupta,2009) because the niche is the source of innovation. It would take time to transform the niche to mainstream but it does not mean that it is impossible.



Communities can provide niche settings and scale up into more commercial and market settings. Enacting a new business model by taking the Frugal innovation will develop innovation from a lower-income, then transfer, adapt, apply, and distribute in a developed market (Weyrauch and Herstatt, 2017). The Frugal innovation is an innovation process that minimizes resource usage, along with cost-saving in the production. In other words, it usually involves with pro-poor business models (Abrol, 2013; Fressoli, et al. 2014). To influence the mainstream, the community does conceivably work through a novel organizational arrangement and lifestyle practice (Satorra and Paunov, 2017).

External parties assume an advisory role, acting as partners (Chaskin, 2001). Grassroots innovation can scale up their implementation and strategy by becoming partnerships with other institutions to co-produce solutions for sustainable development. (Smith and Seyfang, 2007) Another role of the community is a consumer who consume the deliverable policy or the actual goods and services in the market. In this character, community might not be the producer, but the key reviewer and developer on particular products. Inclusive innovation suggests that a technology may become part of development. However, grassroots innovation is perceived as technology taker. Once, the local group might not directly be the technology innovator, but developer. It needs to make sure that they are fully included in adopting and benefiting from the technology (Fressoli, et al. 2014). At this point, it also shows that one particular institution is unable to work alone in achieving sustainable development. The contradiction between top-down and bottom-up become the key challenge to integrate in collaborative working. It can apply the bottom up-top down strategic alignment to bridge the common ground of work for inclusive innovation.

## 2.2 Thailand's Eastern Economic Corridor

### 2.2.1 Development of Thai Economy (1960-2020)

Developmental state is the key source for national security. The production of state's development policy can result in political stability, economic development and social development. Traditional insecurity provides the implication of national security as being originally towards military and physical security. However, with the process of time and the political economy ideology transforms national security towards economic, social and ecological security.

Thailand started to concentrate the economic growth with development policy under World Bank suggestions during the second half of 1950 decade. (Yothasmutr,2008 p.3) The result endorsed Thai government to organize the first national plan with economic development scope. The plan was first implemented during 1961-1966. The first and second of the national development plan has been focusing on providing basic infrastructure and decentralized development to peripheral areas. Until the beginning of 1972 of the third five-year national development plan, the economic development was restructured from import-substitution industrialization to export-oriented industrialization. Up to the 1980s, the non-agricultural sector was in its significance (Kasem and Thapa, 2010 p.1). The export-oriented industrialization, financial liberalization and foreign-investment led growth became the model of economic development which resulted in the rapid development phenomenon of Thai economy. During that time, Map Ta Phut industrial estate, established under the Eastern Seaboard initiative became the key engine growth of Thai heavy industry, such as petrochemical, automobile and electronics industries. The result of the development project has affected the livelihoods of local communities learned by several case studies of land lost, health insecurity and natural resources extraction.

Thailand has experienced successful economic growth during 1965-1990 by implementing trade liberalization, export-oriented industrialization and foreign-investment led growth strategy. The GDP growth rate was hit 13.28 percent in 1988, before tremendously declining to -7.63 percent as the result of the economic crisis

1998. (World Bank,2020) After the 2000s, the GDP of Thailand still grew approximately 3-4 percent. The country still cannot step over middle-income country status. With the challenge of economic inequality and unbalancing development led Thailand to the new era of economic development concept under Thailand 4.0 Model.

The model allows the country to reorganize the concept of development from a long period of liberalization-based plans as well as economic-growth-oriented to the dual economic concepts. This model will be run by “value-based economy” which is also known as innovation-driven-economy (BOI, 2017). With dual economic development, the concept tries to strengthen the local economy and connect the country to the global economy in parallel. The objective of Thailand 4.0 can be categorized into 4 mains objectives. (MaesinCESS, 2016)

- 1) Economic Prosperity: to create the value-based economy that is driven by innovation, technology and creativity.
- 2) Social Well-being: to create inclusive society that focus on equitable distribution of income, opportunity, and wealth, operating under a notion of “a society that moves forward without leaving anyone behind”
- 3) Human Capitals Development: to transform the human capital of the countries as the competent human being in the 21 centuries, so-called Thai 4.0. Under this objective will be measured by raising Thailand HDI from 0.722 to 0.8.
- 4) Environmental Sustainability: to become the economic system that capable of adjusting to climate change and low carbon society.

Thus, Thailand 4.0 will become the socio-economic transformation factor of Thailand. This transformation will shift from traditional farmer to smart farmer, from traditional SMEs to start up, from traditional service to high value services, from unskilled labour to knowledge and high skilled worker, and from buy technology to make technology in order to increase country’s competitive capacity in the global arena. The idea of the innovation-driven-economy led Thailand establish the New Engines of Growth to increase competitive capacity in the world economy. Throughout these concepts, thus, it has applied significantly in the Eastern Economic Corridor initiative.

### 2.2.2 Overview of the Eastern Economic Corridor

The challenge of slow economic growth and low export capacity urges Thailand to establish a new strategy to regain economic and trade capacity status. Under Thailand 4.0, the country has established the Eastern Economic Corridor (EEC) to be a key fuel for economic development, aims to increase economic performance, and step up to a high-income country through a value-based economy. The idea of this initiative is replicated from the successful phenomenon of Thailand's first-generation Eastern Seaboard development. The EEC project will be initially expanded into 3 designated provinces which are Chachoengsao, Chonburi and Rayong province, occupying an area of 134,609 rai (215.37 sq.km)

The main focus of the EEC consists of 6 key strategic plans. First, development of fundamental infrastructure and public utility systems. The airport, port, and high-speed railways are planned to be constructed to facilitate the seamless connection for both national and international linkage, together with improving the utilities system. Second, Government of Thailand plans to develop 10 targets industries, "New Engine of Growth" which include First S - Curve of 5 target industries, namely Next-Generation Automotive Industry, Intelligent Electronics Industry, Advance Agriculture and Biotechnology Industry, Food Processing Industry and initially developed New S - Curve of 5 target industries, namely Robotics Industry; Automation Industry, Aviation Industry; Logistics Industry, Comprehensive Healthcare Industry, Biofuel and Biochemical Industry and Digital Industry. The clusters are aimed to become a high technology and knowledge-based economies. Third, the tourism promotion plans are oriented to increase tourists in the EEC area especially, family and business tourism. Fourth, human resource, education, research, and technology development have been set. Throughout this programme the EEC Office will arrange the training and producing skilled people into scientific, robotic, communication fields, coupled with setting up a learning center. Fifth, the smart city and financial center will be prepared for the incoming population. Lastly, the digital infrastructure is responding to the need for advanced technology of industrial clusters. (EECO, 2020) The project expects to develop the total national economic value to be two-times growth by the next ten years.

Spatial development plans prepare Chachoengsao to become the Smart City, residential area, and logistics hub to connect with neighboring countries such as Cambodia, Laos, and China. While, Chonburi is aimed to promote eco-tourism, the center of education, financial center, and research and development. Rayong is expected to be an innovative city, research and development, and agricultural tourism (EECO,2019).

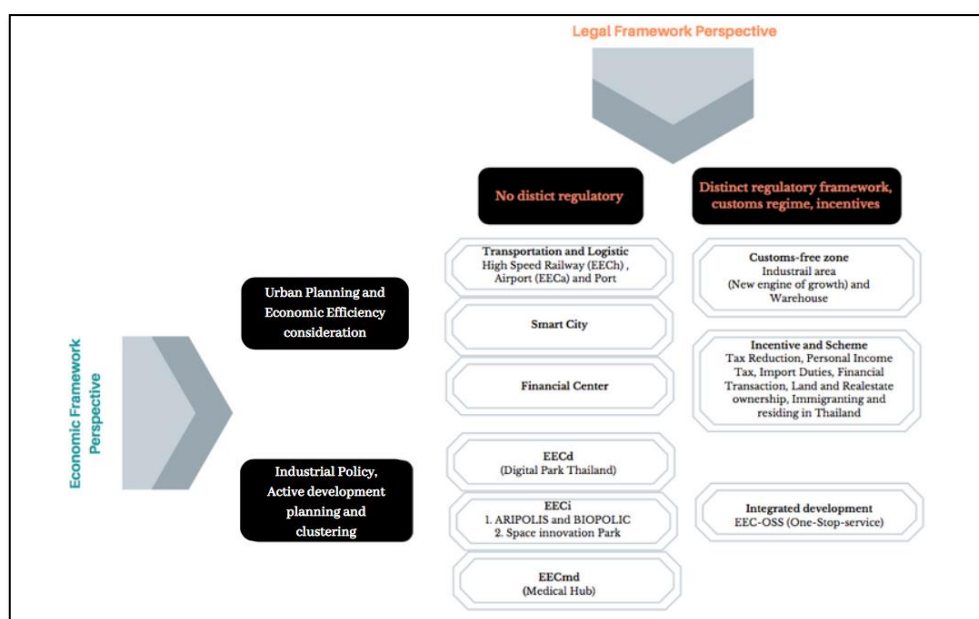


Figure 2.1: The Eastern Economic Corridor (A Matrix of Economic and Legal perspectives) (Adapt from UNCTAD)

The Eastern Economic Corridor Office of Thailand (the EECO) is the institution that corresponds to the development in the area. Up to twelfth ministries are the key partners to the project. The Secretary-General of the Office of the National Economic and Social Development Council (NESDC), the board of investment of Thailand (BOI), Thai Chamber of Commerce and the Federation of Thai industries are included in the EECO board.

### 2.2.3 Policy and Development Program of the Agricultural Sector in the Eastern Economic Corridor.

The prosperity of Thailand 4.0 aims to create the inclusive society. Upwards of 131,000 local households engage in the agricultural sector. However, the first-

generation of industrialized economy of the Eastern Seaboard did not provided the official development project justification to support the dual sector which include agricultural sector in the industrialized economy. The new phase of the Eastern Economic Corridor, therefore perceive the needs for even development scheme which would distribute the development to other sectors in the project site.

Smart farmers (Thailand 4.0) and sub-plans of the EEC initiative for instance the community-based tourism and the Eastern Fruit Corridor (EFC) become the policy driver for the inclusive development in term of development opportunity distribution.

The official agricultural development project of EEC initiative is the Eastern Fruit Corridor (EFC). The project has been approved by the cabinet on February,6th 2018 aims to scale up the Eastern of Thailand to become the world tropical fruit trading nations. (SOC,2018) Rayong is the main pilot province of the EFC program while the province already had a port facility (Sangsuban, 2020). The project will provide the cold warehouse for storing fruits, packaging building, customs and shipping building and exhibition area, cover the 23 rai. in Rayong Smart Park. The range of physical and infrastructure benefits aim to increase the export capacity of Thai tropical fruit. The cold warehouse will remedy the challenge of low price of agricultural commodities at the time of fruit season causes oversupply. In addition, the area will also become the research and development center for product innovation.

The dimension of government services on market facility, the government will facilitate a new market by using encouragement policy to attract more private sector to invest in Thai fruit industry. This project is perceived by the government as it could become the opportunity for farmers to sell their agricultural commodities as a staple to processing industry of the EEC industrial clusters for example Advance Agriculture and Biotechnology Industry, Food Processing Industry, and Biofuel and Biochemical Industry (SOC,2018). Not only the market from the industrial cluster that would facilitate the distribution channel of the ago-products but the exporter auction/inter auction would provide the opportunity to sell the agricultural product in premium grade price. The opportunity for farmer to attend the export auction program will be operated through the own group of agriculture community enterprise (Sangsuban,

2020). According to the Department of Internal Trade presents the strategy for driving the EFC programme by following derives. Firstly, promote production and trade standard of premium products and farm practice through the Q-GAP, Thai GAP and Thailand Trust Mark. Secondly, promote undersized fruit market and create the value-added by agriproduct processing. Thirdly, promote the new market channel for example, online market, inter auction, market from connections of public and private partners. Lastly, support the advertisement of the agricultural products though media and another channel.

#### 2.2.4 The implication of the Eastern Economic Corridor on livelihood context

The policy-split over from accelerating economic growth both from physical and social infrastructure is beneficial to the agriculture community in poverty reduction and social well-being improvements. Several studies show that farm income and productivity are highest near the center of urban-industrial development (T.W. Schultz,1953; Tickamyer and Duncan ,1960). The concentration of industries and business clusters provide job opportunities, especially for the poorer area of agriculture join the tide of urban migration workers (Xu and Tan,2002). The number of migrations will move into the area. Hence, the needs of food and agriculture products are increasing which requires farmers to produce more products and gain more income. The study of industrialization's effect on the agricultural sector in Algeria also shows that farmers can increase the price of agricultural products as a result of increasing market demands (Fraser and Antrobus;1989).

Besides, the effort cluster of industries such as advanced agriculture and biotechnology, food processing industry facilitate the market of agriculture commodities to sell their product for the production process and increase vertical agriculture through business relations. The standard of food production from the local agricultural community will be improved and increase the practice of sustainable agriculture production towards private sector requirements and consumer rights (Wilkins, 2005). Along with transportation such as airports and ports integrates Thai agricultural commodities to the world economy and facilitates exporting.

However, risk and vulnerability from a state-led development policy may exclude local communities in the development process. Consequently, neglect in the context of livelihood creates key features of poverty and lowering community well-being (Chamber,1995). Land development has already transformed about 393,226 Rai of agricultural areas to industrial zone (2007-2016).<sup>1</sup> The less agricultural land will possibly impact on food security and food shortage. As a result, the country may depend on importing agricultural commodities from other countries instead of using domestic commodities (Fader et.al 2013; Kalnay and Cai,2003). In the agriculture community, the land is the heart of their livelihood. Speculation of land loss, derived from the need of land use to project development causes their livelihood security such as job loss.

New urban sprawl from central planning could lead to utility system scarcity such as water shortage. Along with the concentration of industries will rely on huge water usage. Consequently, it may impact both agricultural quantity and quality. Since both sectors depend on water (Kalnay and Cai,2003; Brown,2012). To respond to the problem by building a dam may not be the best solution since it may additionally encroach into preservation forest areas or using the water from nearby agricultural communities.

Even though the agriculture community may increase their productivity and income from an increasing population, however, urbanism may also increase living costs as exemplified in several urban-developed cities. The increase of income may be trade off with a high cost of living (Tiffen, 2003). The result of policy may fail to guarantee livelihood's economic security. The opportunity of increasing agricultural products from the community will be challenged by high capable suppliers that can sell at lower prices or diverse products.

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<sup>1</sup> EECO (2019), overview of land utilization plan (Version August 2019), p.24



The unhealthy environment from industrial zones, city expansion, traffic, and lack of social responsibility of business could pose harm to people's health issues especially on respiratory problems. According to the report of the Ministry of Natural Resources and Environment reports on chemical volatile organic compounds (VOCs), nitrogen oxides (NO<sub>x</sub>), Sulfur dioxide (SO<sub>2</sub>) failed to control in the previous project area from the past decade, soil and water contaminate and waste management also exceed limit of province's capacity.<sup>2</sup> Besides, Labor influx and new disease through commercial port channels increase the risk of an emerging disease. Absent of local community participation in the policy process and inaccessibility to information is another key challenge of the community to obtain the information or/and design their sustainable livelihood development.

## **2.3 Agricultural Community and Location Background**

### **2.3.1 Economy and Agriculture in Thailand**

The agricultural sector is remarkably important to the economy and society of Thailand. It employs more than 30 percent of the country's labor force, covering 6.4 million households, while agricultural land covers 40 percent of the nationwide area. However, the agricultural sector value accounts for only 10% of the Gross Domestic Product (Bank of Thailand, 2019). The growth rate is slower and more fragile than the other economic sectors of the country. The reduction of agricultural land area and the decline of labor in the agricultural sector are also becoming the risk of the future of Thailand's agricultural sector.

World Bank (2020) reveals the poverty is more prevalent in households where the head has low education or employment in the agriculture sector. The poverty indication will correlate to the agriculture sector since about one-third of the labor force are in this sector. However, agriculture labor force still-low employed in low-productivity agriculture. Thus, it creates poverty in the agriculture labor force (Yang et al., 2020). Bank of Thailand (2019) shows agricultural households have an average

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<sup>2</sup> Pollution Control Department (2019), Ministry of Natural Resources and Environment.

net income of 16,000 THB per month, of which 60 percent of agricultural households have a net monthly income below the average (Kingnetr and Maneechan, 2019).

Slow growth rate of agriculture, declining land and labor derived from several reasons. The most significant factor is the structural adjustment programs (SAPs). It needs to step back when the Thailand and Economic development plan has shifted their agenda from sending agricultural commodities as the main exporting products during 1954. However, the 5th of the national economic and social development plan (1982-1986) has changed the country's development agenda to heavy industry. In addition, the influence of production process transformation and the declining trends of agricultural labor has deflected the attention of the growth of the agricultural sector.

### 2.3.2 The importance of agriculture to human and national security

At the community level where the main profession is in agriculture. The sector is the main source of their livelihoods, income and provides job opportunities. The significance of agriculture does also become the main source of national food security. This sector contributes to export, economic development and contributes to other sectors since the agricultural sector links with several sectors for example textile industry, transportation, retail market, and food processing industry. The risks of losing the main source of agriculture raw material can lead the country to import food from other countries to use in the production process and to feed the population in the nationwide. At this point, it would create insecurity of nations on self-resilience as well as independence from the international market.

### 2.3.3 Agricultural sector in the Eastern Economic Corridor

The three-EEC designated area, population has a profession in agriculture accounted up to 131,000 households engages in the agricultural sector. The total value of the agricultural sector in the EEC area is worth about 60,707 million THB or 3.17 percent of total gross product value in 2014.

Gross Provincial Product (GPP) in the Eastern Economic Corridor										
Unit: Millions of Baht										
Province	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
<b>Agriculture</b>										
Rayong	15,187	17,212	21,103	22,856	22,376	27,363	33,705	25,199	22,115	20,962
Chonburi	12,513	10,223	12,464	14,545	14,424	17,785	21,218	17,185	19,171	19,398
Chachoengsao	11,564	12,025	13,031	16,251	15,748	16,415	20,334	20,957	21,578	20,347
<b>Total</b>	<b>39,265</b>	<b>39,461</b>	<b>46,598</b>	<b>53,652</b>	<b>52,549</b>	<b>61,563</b>	<b>75,257</b>	<b>63,341</b>	<b>62,864</b>	<b>60,707</b>
Ratio (Percentage)	3.79	3.22	3.33	3.63	3.84	3.89	4.53	3.50	3.30	3.17
<b>Manufacturing</b>										
Rayong	192,392	229,408	270,885	246,926	231,420	311,187	286,181	299,090	335,906	314,381
Chonburi	236,210	300,411	356,325	365,345	334,656	352,735	353,510	311,384	334,549	346,679
Chachoengsao	99,595	116,394	135,016	150,512	126,497	166,244	169,447	237,479	216,627	221,040
<b>Total</b>	<b>528,196</b>	<b>646,213</b>	<b>762,225</b>	<b>762,783</b>	<b>692,574</b>	<b>830,165</b>	<b>809,138</b>	<b>847,953</b>	<b>887,082</b>	<b>882,100</b>
Ratio (Percentage)	51.01	52.67	54.41	51.55	50.57	52.40	48.67	46.79	46.63	46.08
<b>Total of Gross Provincial Product in Rayong, Chonburi and Chachoengsao</b>										
Rayong	454,203	539,225	613,674	639,115	592,742	716,125	764,558	841,935	889,458	874,547
Chonburi	426,605	510,263	585,556	615,054	576,720	620,601	639,951	630,075	693,025	716,051
Chachoengsao	154,663	177,510	201,658	225,391	200,001	247,686	257,866	340,252	319,780	323,528
<b>Total GPP</b>	<b>1,035,471</b>	<b>1,226,999</b>	<b>1,400,888</b>	<b>1,479,560</b>	<b>1,369,464</b>	<b>1,584,412</b>	<b>1,662,375</b>	<b>1,812,263</b>	<b>1,902,263</b>	<b>1,914,126</b>
Ratio (Percentage)	100	100	100	100	100	100	100	100	100	100

Table 2.1: Gross-product contribution of Agricultural and Manufacturing sectors in the Eastern Economic Corridor Comparison  
Source: National Statistical Office (NSO)

Province	Total area	Total Agricultural area	Number of households	Number of Agricultural households	Rice	Field Crop	Fruit and perennial plant	Vegetable
Rayong	2,056,554	1,306,783	264,009	37,566	30,390	257,103	1,435,547	2,425
Chonburi	2,726,875	1,030,840	597,249	40,196	97,613	652,103	700,729	21,362
Chachoengsao	3,344,375	1,698,738	199,197	52,743	763,195	521,010	266,804	20,136

Table 2.2: Agriculture sector in Rayong, Chonburi, and Chachoengsao in 2018

Source: Office of Agriculture Economy, Rayong Agriculture office, Chonburi Agriculture office and Chonburi Agriculture office.

The ratio between total area of agricultural sector and total land area in the EEC designated provinces which are Rayong, Chonburi, and Chachoengsao are accounted up to 57.37, 37.63 and 50.79 respectively. Fruit and perennial plants shared the highest amount of agricultural land in Rayong, and Chonburi, while rice is the most significant crop in Chachoengsao.

## 2.4 Livelihoods Security and Interventions

### 2.4.1 People-centered development: Security, Rights and Development

Towards the developmental state, state-led development focuses on developing infrastructure, economic development, and modernization aims to reduce poverty and enhance the well-being of the people. However, those policy tools can partially reduce human's challenge while poverty and inequality still remain. The

focus of the development paradigm has been shifted to the subject of well-being and quality of life (Healy and Côté,2001).

Henceforth, People-centered paradigm was increasingly recognized in the field of development (Aspalter, 2006). This concept is shared with diversely related approach for instance human security, human rights and human development. By placing people at the center of development, human security approach become the vehicle to identify the certain cause or threat to the human being. According to the UNDP's 1994 Human Development Report argued that the scope of global security should be expanded to include threats in seven areas; Economic security, Food security, Health security, Environmental security, Personal security, Community Security, and Political Security.

The components of human security are interconnected. It can be exemplified by the connection of financial security which can determine other non-income outcomes of well-being (Sen, 2003). Another example is health security can impact economic security as the result of conditions to work. The security components do cross-connect among each other. At the same time, the consequences of its security also interconnect to a network of diverse agents and institutions. Therefore, the human security approach can lead to the establishment of synergies and partnerships respond towards the common threats. Moreover, the concept prioritizes the right-based approach which considers individuals and communities to have the right to identify their insecurity or needs for development (Muguruza,2007; Gomez,2013). Community can become the active agent of change to secure well-being. It leads the community to work towards community collective action to determine available resources and coping mechanisms against insecurity.

To overcome or to respond to the challenge from the human security dimension, it requires “the capacity” to move the goal of well-being and security to become a reality. The human development approach underlines the central idea of “capabilities”. These capabilities are the equipment one has to pursue a life of value. The normative indicators of capabilities that ensure people's capability to pursue the

standard of basic needs and well-being was demonstrated in the human development index of the UNDP Human Development Report. The composite of index - a long and healthy life, being knowledgeable and having a decent standard of living became the standard measurement of human well-being that was employed in each country. These dimensions of health, education, and income, hence become the ingredients of people's capacity to secure their livelihoods and well-being (UNDP,1990). However, people's capabilities can be expanded or constrained by their own efforts and by the institutions and conditions of living society (Stewart, 2013).

#### 2.4.2 Livelihoods Risk Assessment

The security of livelihoods is originated from livelihoods outcome and capabilities to generate the livelihoods outcome. The intervention of livelihoods security can be developed from both concepts. The overlapped dimension that required to access well-being and quality of life would be apprehended by these two key approaches of human development and human security concept. The intervention for livelihoods security, therefore includes "health, education and income". However, in this study aims to access the livelihoods of the agricultural communities. Agricultural livelihoods are vitally influenced by the environment and natural resources. As a result of their economic activities relying on these resources and systems. Environmental sustainability thus became part of the security of people who work in this sector.

##### 2.4.2.1 Health Security

Health conditions are the most valuable capability people possess. To be alive and healthy allows people to pursue the activity for a means of living. Human development concept requires to expand people's opportunities to avoid mortality, disease and injury, to live in a healthy environment, to maintain a healthy lifestyle, to receive quality medical care, and to attain the highest possible standard of physical and mental health.

Health security is inseparable from the human rights concept (Periago, 2012). It was declared in the 1948 Universal Declaration of Human Rights which is referred to "the

right to have an adequate standard of living” (Article. 25, UDHR, 1948). “The right to health” was commonly perceived as a human right in the 1966 International Covenant on Economic, Social and Cultural Rights (UNHCR,2008). In Thailand, the National Health Act B.E. 2550 (2007) codifies important rights and duties on health for instance the right to live in a healthy environment, the right to receive sufficient health information to make an informed decision to accept or refuse any health service.

The health dimension is represented in the Human Development Index (HDI). It stands for life expectancy at birth. It refers to the average number of years in people’s lifetime. The opportunity for a long and healthy life contribute to people capacity to make their mean of living and perform in the overall development. The health security recognized the responsibility of governments to protect people from the risks and threats that can adversely affect the quality of life.

Health security is complex and collapse with diverse issues, for instance access to safe water, living in a safe environment, access to health services, access to safe and affordable family planning and basic support during pregnancy and delivery, prevention of diseases, and to have basic knowledge to live a healthy life (UNDP,1994). Several factors, for instance population growth, rapid urbanism and environmental degradation can disrupt people’s health and cause social and economic impacts. According to Szreter (2004) examine the relationship between industrialization and health security of the people which can produce the major cause of potential hazard to circulatory system. Moreover, the world’s population becomes more mobile and increases its economic interdependence. These global health threat is considered that traditional defenses at national borders is more difficult to protect against the invasion of a disease or vector (Käferlein, 2010). In addition, the risks of health security are also related to the pattern of consumption and people’s life-style which can cause the chronic disease (WHO,2018).

#### *2.4.2.2 Education Security*

Education gives a knowledge of the world around us. Ability to assess education is a critical determinant of long-term well-being. It is an essential factor for individuals to gain the perception and interpret things in order to gain and make a living. According to the Human Development Index, education is measured by “means of years of schooling” for adults aged 25 years and more. The index also includes “expected years of schooling” for children of school entering age (UNDP, 1994). In addition, the index is based on the adult literacy rate and the combined Gross Enrollment Ratio (GER) for primary, secondary and tertiary education can become the formal intervention of human development which allow people to protect related insecurity to their livelihoods.

However, the knowledge can be gained from other informal sources as well, for example socially organized learning and even from the experience in daily life (Mincer, 1974; OECD,2001; Gupta et al., 2010; Jones et.al, 2017). The study of farmer education and farm efficiency in 1979 by Lockheed et al. examined the relationship between the role of education of small farmers and production efficiency. The study of small farms in 13 countries of Africa, Asia, Europe, and Latine America recognized that higher levels of formal education increase farm efficiency. In a synchronized manner, non-formal education was positively related to advancement of farm practices and extension of farm productivity.

It was noted that effective education is an important determinant on farm production. Whether formal education and non-formal education, both act as substitutes or complements to the result of farm efficiency. In particular, Schultz (1973), argues that education is likely to be effective under a modernizing environment. Modernizing environment pertains to the availability of new crop varieties, innovative planting methods, adult literacy rates, and the role of science and technology (Schultz, 1973; Lockheed et. al., 1979). Nature of today’s globalization, science, and technological changes have significantly increased the role for farm productivity. It can be exemplified in the case of smart farms and smart famer. Mellor

and Ahmed (1988) and Olafar (2013) agree that all aspects of agriculture growth through technology and research of technology will take place when government policies are appropriate and expand the number of rural supporting institutions to benefit the small farmer. The reason is that the agricultural sector is massive in size. It required the trained manpower who plays a crucial part in high-growth strategy. The investment in education, providing information and knowledge resources to the farm community are the central ingredient strategy to enhance farmer's capabilities and livelihoods outcome.

#### *2.4.2.3 Economic Security*

The risks towards economic or income security can refer to poverty and unemployment. Income is essential to meeting basic needs like food and shelter - and to moving beyond these necessities to a life of choice and freedom. It can be considered that income can expand the options and alternatives. Its absence can limit life chances and restrict access to many opportunities.

The income measurement at macro scale or a country level is measured by Gross National Income (GNI). The GNI referred to the total amount of money earned by a nation's people and business. However, this indicator cannot be use to guarantee the equal distribution of wealth across individual and sectors. The human security approach underlines the dimension of income security based on ability to access to secure income, employment, and fair pay condition.

Income of people in the agricultural sector are not scope to only farm income. According to Adato and Meinzen-Dick (2003) indicate that farmers can engage their economic activity with the non-agricultural sector. The household possibly consists of family members who are off-farm workers. At the same time, people in the agricultural sectors can diversify their livelihoods to another off-farm income activity. The challenge on farm income of the agricultural sector in Thailand faces the challenge of low price of products. The risks of income insecurity significantly



depend on the productivity which shows the significant role of environment and natural condition.

#### *2.4.2.4 Environmental Security*

Ability of agricultural household to pursue a means of living vitally depends on environmental and natural conditions. The factors relate to their context of the agricultural production activity. The factor of environmental security become determinant of diverse dimension of livelihoods security; income security, together with food and health security.

The human security approach denotes that environmental security aims to protect people from short- and long- term ravages of nature, man-made threats in nature and deterioration of the natural environment. One of the major threats in industrial development is air pollution. Man-made threats in nature from the farm operation is also considered as a threat to the natural environment in both developed and developing countries (Olafare, 2003).

Apart from these normative standards to measure quality of life of people and capabilities to pursue mean of living, it has been recognized that the role of alternative measurement for example gender equality, civil and political rights can become intervention for poverty and inequality assessment across individual, household, and sectors (Yale, 2001).

#### **2.4.3 Thailand's Human Development Performance**

Human development Index for all countries are classified into three clusters of achievement in human development; high human development (with an HDI of 0.800 or above), medium human development (HDI of 0.500–0.799) and low human development (HDI of less than 0.500).

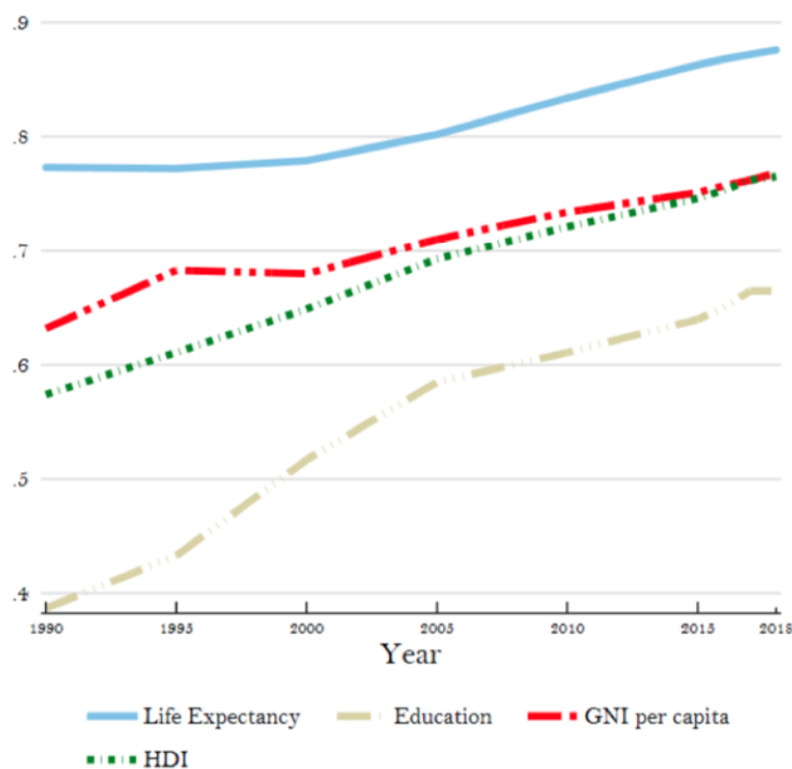


Figure 2.2: Trends in Thailand's component indices (1990-2018) UNDP, Human development report 2019

Thailand's HDI value for 2018 is 0.765 which put country's positioning at 77 out of 189 countries and territories. However, the country's performance in HDI has improved in all dimensions. Towards the value-based economy aims to improve country's performance and move Thailand HDI from 0.722 to 0.8.

	Life expectancy at birth	Expected years of schooling	Mean years of schooling	GNI per capita (2011 PPP\$)	HDI value
1990	70.2	8.4	4.6	6,562	0.574
1995	70.2	9.6	5.0	9,180	0.611
2000	70.6	11.2	6.1	9,004	0.649
2005	72.1	12.7	7.0	11,008	0.693
2010	74.2	13.3	7.3	12,921	0.721
2015	76.1	13.9	7.6	14,466	0.746
2016	76.4	14.3	7.6	14,966	0.753
2017	76.7	14.7	7.7	15,548	0.762
2018	76.9	14.7	7.7	16,129	0.765

Table 2.3: Component index of Thailand's HDI (1990-2018)

## 2.5 Sustainable Livelihoods

### 2.5.1 The Sustainable Livelihoods Concept

“Sustainable livelihoods” was first discussed in the Brundtland Commission Report 1987 of the World Commission on Environmental and Development in context of resource ownership, basic needs, and rural livelihood security (WCED,1987). The concept has been developed primarily to address the needs of policies and project interventions to reduce poverty especially in the 1992 United Nations Conference on Environment and Development (UNCED) and the context of Agenda 21. The framework further advocates to link the context of socioeconomic and ecological concerns in cohesion to policy-relevant structure as the factors contributing to poverty.

In the late 1900s to 2000s, The Sustainable Livelihood became an approach employed by many donor organizations as an instrument to examine the local people’s way of living and complexity of the factors relevant to poverty. (Brocklesby & Fisher,2003). The concept of sustainable livelihoods base on the Department for International Development (DFID), can flexibly apply to specific local settings. However, the approach provides some key principle to employ in particular study.

**People-centered:** The livelihoods put the people at the center of the study. Sustainable Development and poverty reduction required human rights and choice of people to be respected. In addition, understanding on the different attribute of people and group are important.

**Holistic:** Poverty is complex and multi-faceted. The approach attempts to explain what shape the livelihoods of the people and how can be improved in the holistic way. Perceiving from people’s own perception of threat and opportunity, hence it can address the appropriate intervention.

**Dynamic:** Social and economic condition is dynamic. The approach required on seeking and learning from the change which will help alleviate negative patterns.

**Building on strengths:** The sustainable livelihoods approach signifies the important to understand on people's strengths, rather than needs. By a recognition of everyone's inherent potential is necessary to enhance people's capacity to become more robust and better to be able to achieve their own objective.

**Macro-micro links:** The multi-level of focus is important in development activities, emphasizing the importance of macro level policy and institutions to the livelihood options of communities and individuals. Much macro policy is developed in isolation from the people it affects. Indeed, understanding of the effects of policies on people and people on policies is limited. Both these areas will need to be better understood if the full value of the livelihoods approach is to be realized.

**Sustainability:** Sustainability has many dimensions, all of which are important to the sustainable livelihoods approach. Livelihoods are sustainable when they are resilient in the face of external shocks and stresses; are not dependent upon external support; maintain the long-term productivity of natural resources; and do not undermine the livelihoods or livelihood options of others. Another way to conceptualize the dimensions of sustainability can be distinguished base on environmental, economic, social and institutional aspects of sustainable systems.

### 2.5.2 Sustainable Livelihoods Framework

The definition of livelihoods reflexes the common understanding as a means of subsistence or a means of securing the necessities of life. With this narrow scope of its definition, livelihoods are typically associated with the means of living including a job, monetary income, and other similar substances that enable people to have basic needs which include food, shelter, and clothing (Silva,2003). In consonance with Chambers and Conway (1991),

*“Livelihoods comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next*

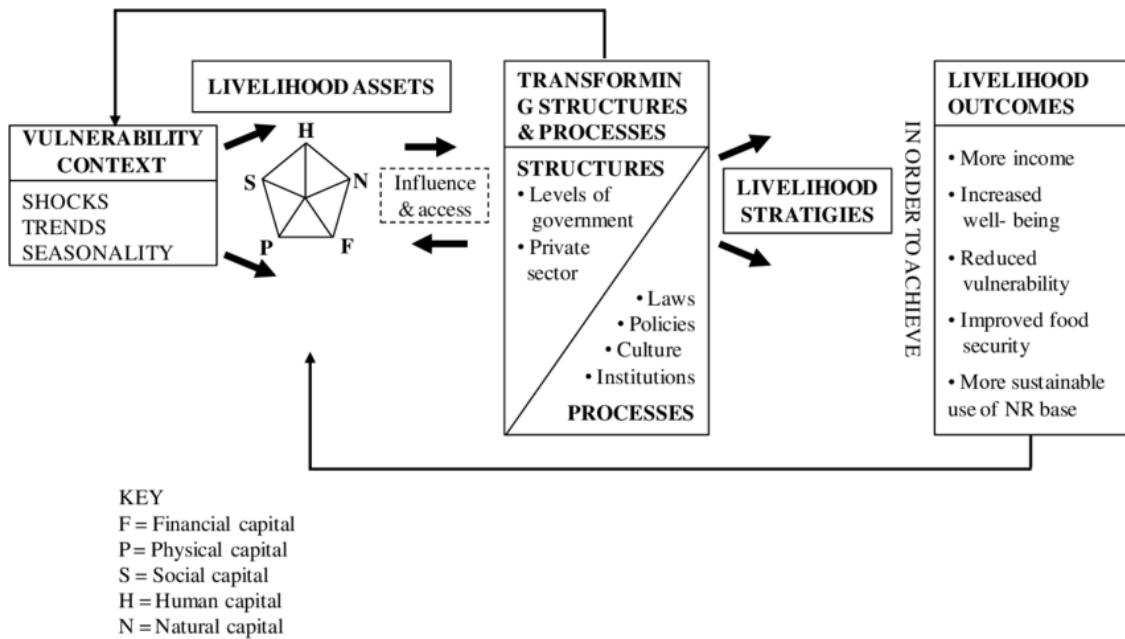
*generation, and which contributes net benefits to other livelihoods at the local and global levels and in the short and long-term” (Chambers & Conway, 1991, p.7).*

The central idea of sustainable livelihoods perceives the importance of capacities that allows people to plan and generate strategy to achieve their livelihood goal. It shows the role of the set of assets which become the resources contributing to the strategy and capability. While, the assets, strategy and livelihoods outcome can be influenced by external factor of structural attribute and process.

The approach enhances the understanding of livelihoods dynamic in the face of change under environmental and socio-economic conditions. It highlights the role of human agency, rights, and capacity to prepare to cope with challenges and improve their well-being under the particular condition (Tanner et al.,2015). It requires “the capacity” to move the goal of well-being to become a reality.

Several scholars denoted that resilience is implicit in nature of sustainable livelihoods. Adger (2000) defines of social resilience as the ability of groups or communities to cope with external disturbances as a result of social, political, and environmental transformation. While resilience can be done at individual, community and larger societies (McFarlane and Norris, 2006), In addition, the sustainable livelihoods also have the linkage implication with the adaptive capacity. The adaptive capacity refers to ability of enable system, institution, and human to adjust to potential damage, to take advantage of new opportunities, or to respond to consequences (Engal et al.,2011). In this regard, the sustainable livelihood is set of assets, capabilities and activities that supply the values for people to meet their basic needs and provision their well-being (Ingold, 2000).

The Sustainable Livelihood Framework (Figure 2.3) represents the factors that affect people’s livelihoods. Particularly, it provides the understanding of interaction among the five elements of the vulnerability context, livelihood capitals (assets), livelihoods strategy, and institution and process which influence decision and choice of people to generate livelihood outcomes and provision of their well-being.



**Figure 2.3 Sustainable Livelihoods Framework (DFID,1999)**

### 2.5.2.1 The Vulnerability Context

People are conceived of living within the vulnerability context in which they are exposed to risks, sudden shock, trends over time and seasonal changes (Brocklesby and Fisher, 2003 p.187). The livelihood will become vulnerable when they cannot cope with the stress or shock. In this manner, the vulnerability thus has two sides: an external side of risks, shocks, and stress to which an individual or household is subject: and an internal side which is defenselessness, meaning a lack of means to cope without damaging loss (Chambers, 1989, p.1).

Vulnerability from the external side refers to the external environment in which people are living. For instance, national and international economies, trends in population growth, politics and technology, natural resources, agriculture problems, diseases, economic shocks and seasonal vulnerability of production, prices, health or employment opportunities can also create a severe impact on livelihoods (Birkmann et al., 2013). The external environment can generate a negative impact on livelihoods security and destroy capitals. (Gallopín, 2003) It can force people to dispose of capitals as part of coping strategies. At the same time, the vulnerability from the external side can become a window of opportunity facilitating people to a beneficial

transformation. (Young,2005). It allows people to access the available opportunity of transformation to gain a living.

Vulnerability within the internal side refers to the lack of means to cope with the exposure. Towards the Sustainable Livelihoods Approach has significantly referred to the means to cope as the availability of livelihoods assets and strategy that are used to respond from the exposure (Devereux, 2001). However, not all individuals have a fair capacity to respond to the external side as a result of different assets, insufficient resources, lack of opportunity to correspond as well as mismatched skills. Thus, this group of people are more susceptible to shocks. The vulnerability context of the internal side can be diminished by strengthening an individual's capacity or adjusting the system that people are living in (Gallopín, 2003; Stewart, 2013)

#### *2.5.2.2 Transforming Structures and Processes*

Transforming Structures and Processes refer to the institutions, organizations, policies and legislation that shape livelihoods by influencing access to capital, livelihood strategies, vulnerability, and terms of exchange (DFID, 1999). Institution and process can enable or hinder access to both assets and activities.

According to Kollmair and Gamper (2002 p.8) determine “structure” as the hardware or institution/organization (both public and private). These structures generate the social norm, economic regulation, and law which can influence the activity and function of livelihoods. While, “processes” denoted as the software in which the way of structures and individuals operate and interact. It includes domestic legislation, international agreement, markets, culture, norms, belief and power relations. According to Scoone (1998) states on the importance to understand the structural and process attribution that it will allow to identify the restrict and opportunities of people to achieve sustainable livelihoods outcome. Thus, the transforming structural and process become determination of both livelihoods outcome and the opportunity to livelihoods outcome.

### 2.5.2.3 *Livelihoods Strategy*

Livelihood Strategy refers to the range and combination of activities and choices that people undertake to pursue the livelihood goal. Most common livelihood goal is to ensure economic and social security (Koczberski et al., 2011). The sustainable livelihoods approach mostly applies to perceived strategies for poverty reduction. Ashley (2000) argues that the livelihoods approach that describes a resource that people have and strategies that they adopt to make a living can help to improve the understanding of adaptive capacities and how to reduce the livelihoods insecurity as people put in concerns.

The ability to undertake the livelihoods strategy and range of development activities have major influenced by the existing of livelihoods capitals. The more capital people have in their possessions allow people choice to pursue more range of livelihood strategies (DFID, 1999b). In additions, the structural attribution and process can play the influenced role in the determination of the livelihoods strategy and choice. Towards scope of this study, the livelihoods strategy can be investigated on how the agricultural community corresponds to their vulnerability context base on their dimension of security from the socio-economic transformation in the Eastern Economic Corridor.

### 2.5.2.4 *Livelihoods Assets*

The ability to pursue different livelihood strategies is dependent on tangible (resource and store) and intangible (claims and access) assets that people have in their possession (Chambers and Conway, 1991). The livelihoods assets are the determinations of the community's capacity and performance in resilience and development. Scoone (1998) underlines the importance of livelihoods capitals/assets as part of one's capacity to make a mean of living. Livelihoods is a sufficient movement of capitals to meet the basic requirements of individuals and to sustain and support a given standard of living (Scoone, 1998). The key livelihood capitals which are financial, physical, natural, human, and social capitals are the substantial elements that allow the community to exercise resilience or development activities towards



their strategic plan. Without the attention of the community's resources, models of resilience and development may have limited functionality. (Zautra et. al.,2010)

- 1.) Human capital is determined by people's attributes such as - the skills, knowledge, ability to labour and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives (Department for International Development, 1999b, p.7). At the household level, human capital is a factor, which determines the quantity and quality of the available workforce. This varies according to size of family unit, level of education, leadership ability, and health status. (DFID 1999; Krantz 2001; Carney 2003).
- 2.) Natural capital is the term used to describe the natural resources stock such as environmental services, freshwater availability, land management, agricultural space, forest resource, marine resource, air quality, erosion protection, and biodiversity. Within the framework for sustainable livelihoods, the relationship between natural capital and the context of vulnerability is remarkably close.
- 3.) Physical capital comprises the basic infrastructure and producer goods needed to support livelihoods. It can be affordable transport, secure shelter, adequate water supply and sanitation, clean, affordable energy, access to information (communication) and education and health facilities which provide the opportunity for people to improve their own human capital. (DFID 1999; Krantz 2001; Carney 2003).
- 4.) Financial capital is the financial resource that people use to achieve their livelihood objectives and contribute to consumption as well as production (Department for International Development, 1999b, p.15). Financial capital is the most flexible among the five asset categories because it can be converted into other types of capital. Moreover, it can be used for the direct acquisitions the livelihoods outcome for example when food is purchased to reduce food insecurity. (UNDP, 2015).
- 5.) Social capital means the networks of mutual support that exist within and between households, extended family, and communities where people can access, for example, loans, childcare, food, accommodation and information about career path, employment, and opportunities (Moser, 1998) The strong tide of social capitals can

enhance the communities move towards a state asking for the improvement of services and public rights (Putnam, 1993, as cited in Farrington et al., 2002).

### 2.5.3 Relationships between livelihoods capitals and livelihoods security

Light of the foregoing of the livelihoods security (Health, Education, Income and Environment insecurity) from the concept of human development and human security reveal the correlation with livelihoods capitals of sustainable livelihoods approach. To illustrate this viewpoint, the study of Su et.al. (2018) on the relationship between livelihoods risks and livelihoods capitals examined the correlation as followings;

<b>Types of Livelihood Capitals</b>	<b>Definition</b>	<b>Corresponding Livelihood Risks</b>
<b>Human Capital</b>	Personal development ability, including education level, technical competence, and health status	<b>Health Risk Education Risk</b>
<b>Natural Capital</b>	As the basis of human survival, environmental conditions in which farmers engaged in agricultural productive activities are including soil quality, shortage of water resources.	<b>Environmental Risk</b>
<b>Financial Capital</b>	The money which is used for purchasing productive materials or consumer goods, including personal credit.	<b>Financial Risk</b>
<b>Physical Capital</b>	Assets which are used in economic production process, such as some agricultural machinery.	
<b>Social Capital</b>	Social network which is formed by people who have common interest, generally it can be understood as trust, cooperation, participation in various associations.	<b>Social Risk</b>

Table 2.4: Relationships between Livelihood Risk and Livelihood Capitals

Adapted from Su et.al. (2018)

### 2.5.4 Livelihoods Outcomes

Sustainable livelihood outcomes can be measured based on normative standards for instance increase household income, increased community coping capacity, reduce livelihoods vulnerability, enhance social and human capital, and

improved food security. Additionally, the alternative measurement of outcomes such as technological capacity, entrepreneurship skill, community good governance, and social inclusion practice can be used to strengthen the key intervention of livelihood outcomes. To maintain sustainable livelihoods can be done by working through an adaptation process. (Bonanno, 2004) Hence, the sustainable livelihood is a process of continuous improvement and adaptation. Working through these processes, the community will evolve and make a transition to accomplish the goal (ISC; Bonanno, 2004).

#### 2.5.5 Sustainability

We must distinguish carefully on the meaning of sustainability. Sustainability in the context of livelihoods can be apprehended on the role of ability to maintain and improve livelihoods while capitals and capabilities of livelihood have been maintained and accumulate (Chambers, 1989). According to the Chambers and Conway (1991), the “sustainability” shall be considered to take its role into two dimensions, including environmental sustainability and socially sustainability. For environmental sustainability, the notion does sympathize to the Scoone’s idea on sustainable livelihoods outcome. It is referred to ability of the system to avoid depleting stocks of natural resources to a level which results in an effectively permanent decline in the rate at which the natural resource base yields useful products or services for livelihoods (Scoone, 1989).

Additionally, Chambers and Conway perceive the role of socially sustainability as the “capacity” of the individual or community. The ability to cope with stress and shocks is the capacity for achieving the sustainable livelihoods. Sustainable livelihoods are about dealing with the long-term and future change. The capacity for sustainable livelihood shall provide the character of dynamics livelihood competency. It means the ability to perceive, predict, adapt to, and exploit change in the physical, social and economic environment. The dimension of socially sustainability is also perceived on the intergenerational sustainability. It is referred to the capability of the community to maintain and enhance capabilities for future generation. Therefore, socially sustainability can be developed to 1.) Adaptive Capacity Enhancement

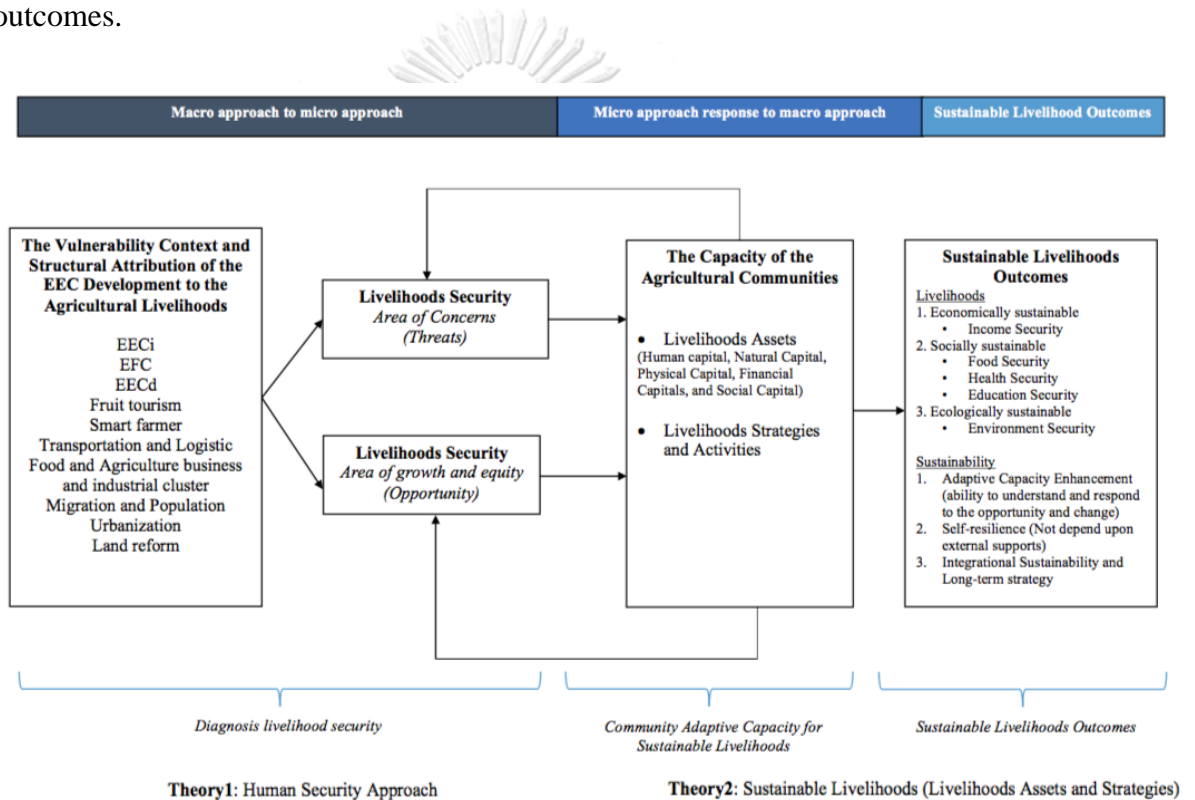
(ability to understand and respond to the opportunity and change) 2.) Self-resilience (Not depend upon external supports) and 3.) Integrational Sustainability and Long-term strategy



## CHAPTER III RESEARCH METHODOLOGY

### 3.1 Research Design and Conceptual Framework

The thesis will first diagnose the impact of the EEC development projects impact to agricultural livelihood by applying the Human Security Approach to access the profile of threats and opportunities. By assessment of the capacity will utilize the Sustainable Livelihood Approach which comprise of community asset, livelihoods strategy, and activity. These components provide capacity to achieve livelihoods outcomes.



#### 3.1.1 Diagnosis of livelihood security: Human Security Approach

According to the literature review, to measure livelihoods security contains diverse methods. Quandt (2008) states that to set up the livelihood intervention will depend on the scope of the study, context and stakeholder assessments. Based on the literature review on the impact of the Eastern Economic Corridor, the project is potentially impacting the community’s livelihoods by two main constraints which are income and well-being. Towards these two constraints profound insecurity at the

human level, the concept of “**Human Security Approach**” will be applied to assess the implication of the EEC to livelihood security. The thesis has modified into a more specific context of community capacity by including education security as the component of intervention. The human security framework will contain four dimensions which are economic security, health security, education security, and environmental security. By using Human Security Approach to perceive the profile of risks and opportunities will show ‘the context’ that lead the community to take the action for the purpose of resilience and development through the community collective action.

### 3.1.2 Adaptive Capacity: Sustainable Livelihood Approach (SLA)

“**Sustainable Livelihood Approach**” (SLA) will be applied to observe community adaptive capacity on how community design the solution plan towards the common challenge and opportunity. *The assets-based approach* will facilitate to perceive the key dimensions of asset pentagon that allow the community to utilize in their strategy and implementation.

### 3.1.3 Sustainable Livelihood Outcome

The outcome of community strategic plan and activity will produce the dimension of sustainable livelihoods. The goal of livelihood is mostly referred to poverty reduction. However, to reduce the poverty is unable to perceive only economic deprivation. It is because poverty relates to multi-dimension for example environmental degradation impact to productivity especially for agriculture community. The expected sustainable livelihood outcomes have organized to following features.

#### **1. Livelihoods**

**1.1. Economically sustainable** (Income Security)

**1.2. Socially sustainable** (Food Security, Health Security, Education Security, Community Security, Political Security)

**1.3. Ecologically sustainable** (Environment Security).

The “sustainability” become the ultimate goal of the sustainable livelihoods, the adaptive capacity enhancement, commitment and continuous is required as the means for sustainability.

## **2. Sustainability**

- 1. Adaptive Capacity Enhancement** (ability to understand and respond to the opportunity and change)
- 2. Self-resilience** (Not depend upon external supports)
- 3. Integrational Sustainability and Long-term strategy**

## **3.2 Qualitative Research**

This research was based on a qualitative design. Qualitative study is not concerned with measuring or standardizing data (Flick, 2011) but about seeking significance from the point of view of participants (Bryman, 2004). Based on the nature of the research problem which seeks to explain the livelihoods context in the Eastern Economic Corridor, the qualitative research method would provide in-depth understanding and better expose the nuanced textual context, accounts of people’s experience, perception, social norms and culture. With the qualitative approach would allow the research to generate the data that derives from an emphasis on word rather than qualification.

Qualitative methods with open-ended questions allow informants answer the questions in their word rather than forcing them to choose from fixed answers. The open-end question does give an information richness and possible to provide diverse information. The different issue may bring during the interview session. These information is the open-gate that allow research to probe base on how and why question in timely manners. The open-ended question provides the flexibility in probing of informants’ answers.

In addition, qualitative research methods do not depend on sample sizes as quantitative methods. A case study can provide significant results with a small sample group. The semi-structured interview with a set of pre-determined questions will be conducted during the primary data collection process. The pre-determined set of question will navigate both interviewees and informants in the leading direction to serve the purpose of research questions.

### **3.3 Case study Approach**

A case study is a method that is used to investigate a particular phenomenon within a real-life context, often with a very specific purpose (Pickard, 2007). This case study is distinct from other research studies because of the focus of attention. In this study, it focuses on a fruit farm community case of the Eastern Economic Corridor sites and not the whole population of the sites. The approach provides the empirical inquiry based on perception and experience of agriculture livelihoods who living in the boundary system of the EEC site. However, the case study approach is not actually the case itself but the case can be used for investigation (Pickard, 2007).

### **3.4 Data Collection**

#### **3.4.1 Literature Data**

The thesis will utilize a secondary data from academic papers, government official reports such as the Eastern Economic Corridor Office of Thailand, office of agriculture, ministry of public health, ministry of Natural Resources and Environment, Bank of Thailand, Thailand board of investment, provincial and district office of the three designed provinces. Along with law and policies reviews will comprehend the impact of the Eastern Economic Corridor and agricultural sector and community. The literature source from a news article, civil society, and individual experts will broaden the perspective of the role of program implementation in a socio-economic perspective. The academic paper will be scrutinized to the theory and approach while the cross-country case study from the academic paper will allow the research to examine the cause and effect of urbanization, special economic zones, industrial economy, and human and community security.



### 3.4.2 Primary data collection

**Semi-structured interviews** to the subgroup of the local agriculture community will be conducted to perceive the subjective experience of the impact of the EEC to livelihood security, livelihood status, self-resilience, and government's protection policy. Along the interview question, it will consist of the question on the opportunity of projects that provide or limit community development. The interview will conduct the questions through the community project management framework to explore innovation instigated by a particular community and to perceive how they respond to the challenge and available opportunity. It will allow the study to obtain information on the limitation of livelihood adaptive capacity for instance assets pentagon, community strategy, organization style, and uncontrolled factors. These qualitative reviews are the key features to understand the factors and coefficients that constrain the capacity of the agricultural community to perform their adaptive capacity. It will lead to understand of which instruments were adopted by the community to manage with capacity constraints. Following the primary data collection, the interviewer will embrace the concept of empathize which allow to understand people through engagement and conversation. It becomes an evidence-based analysis to support the argument and hypothesis of this research. Throughout the fieldwork study will facilitate to frame the research analysis and enhance the argument through the context, culture, and value of the target community.

The structure of the interview question will first consist of the question the opportunity and challenge of development projects under the EEC initiative that provide opportunity or limit livelihoods of the agricultural communities. Originating in quantitative data from the interview will simplify to obtain the linkage between the impact of the EEC (Context) to livelihood and community assets. Human Security Approach (HSA) will be used to develop the question to be the key intervention for livelihoods security which are economic security, food security, health security, education security, environmental security, community security, and political security. Down to the line, the impact of the EEC will be categorized into a positive impact

which provides an enabling environment for the community to develop and negative impact which obliges the community to resilience or improve their environment.

The second part of the interview will be assessing the community adaptive capacity by using the sustainable livelihood approach which include assets pentagon and livelihood strategy to perceive the factors of adaptive capacity and activity for adaptation towards the socio-economic transformation of the EEC.

### **3.5 Unit of Analysis**

The unit of analysis is the entity to analyze in the study. The unit of analyze can be at individual, households, community, or town (Engel & Schutt, 2005). In this study decide to use the community collective development group as it was perceived that the collective group can become the agent-oriented development who organized local household to take the development initiative. The community collective development group does not mean that all the community members, or so-called villagers, must join the group but to whom have the common goal which provide the reason of joining. The group can manifest the shared characters among members. The common goal lead people to initiate the strategies and activities. By working towards the common goal, the process and course of implementation create the dynamic which allow research to access the capacity and result of their development.

### **3.6 Sampling**

Sampling can be classified generally based on probability and non-probability. For qualitative study, non-probability is used to represent critical phenomenon. The purposive sampling is frequently used in non-probability sampling. This strategic approach endeavors to establish a correspondence between the research question and the sample (Bryman, 2004). The approach focuses on criteria to select the informants rather than numbers of informants. Hence, the purposive sampling techniques is appropriate to serve the research question and data requirement. Moreover, the purposive sampling allows to select the sample size based on resources and time available as well as the objective of research question. The approach is determined on

the basis of theoretical saturation which is when the new points of data collection have no longer bring additional insight to research question (Mack et.al., 2005)

Under the purposive sampling, the technique on snowball sampling will be employed in this study. This technique is known as chain referral sampling, is a subset of purposive sampling. In this method, an informant is asked to recommend someone else who could potentially participate in and contribute rich information to the study (Mack et al., 2005).

### **3.7 Determinant on Research Location**

Several of development policy of agricultural sectors in the Eastern Economic Corridor are promoted in type of fruit. It can be observed the main development scheme on the Eastern Fruit Corridor (EFC) which work in parallel with the industrializing economy. The research is setting the criteria for the research site is based on following determinants. Firstly, the agricultural community must be organized as the collective development group as the result of the unit of analysis of this study is “the community”. Secondly, the community shall be located in the EEC designated province and nearby the physical infrastructure under the EEC development scheme for example airport, port, high-speed train, and industrial area in order to perceive the relations of the range development project to livelihoods security and opportunity. Thirdly, in conjunction with the main promotion of agriculture export is fruit, type of plants is key consideration to perceive the relation of development project and the livelihood of agricultural communities. Moreover, the Eastern Fruit Corridor (EFC) which focus on fruit farm become the key development policy diver under the EEC initiative.

### **3.8 Respondents**

The total 30 semi-structured interviews were conducted. This included 22 people from two agricultural communities in Noen Pra Sub-District (14 people from Krok Yai Cha Community and 8 people from Khod Hin Community). The 22 interviews conducted in the community included 10 interviews with women and 12 with men, three community respondents were aged 18-30, none of respondents were

aged 31-50, and 19 people were aged above 50-year-old. The research also conducted the interview with the governmental agents which include 2 officers from Social Welfare Division of Map Ta Phut Multiplicity, One officer from Community Development Department, Ministry of Interior, One Officer from Rayong Provincial Agricultural Extension Office, One Officer from Muaeng Rayong District Agricultural Extension Office, and One officer from Noen Prah Sub-District Agricultural Extension Office. Moreover, the data and information also collected from the private sectors. Two representatives of Community Partnership Association (CPA) or in Thai, Puan Chum Chon association. This association has been founded by group of industrial entrepreneurs, aims to enhance community well-being and eco-industrial town.

### **3.9 Ethnic Issue**

This research will be conducted under ethical considerations for academic purposes. Participation in the interview will ensure voluntary participation, privacy and confidentiality of the respondents. Participants will be informed, and their consent will be taken for interviews. In case the restricted question or unwillingness to answer will be respectful under their decision. The use of voice and video recording, and photo taken will be taken with their permission.

## **CHAPTER IV**

### **CASE STUDY CONTEXT**

#### **4.1 Introduction**

Under the criteria on the type of the agricultural farm, the research decided to conduct in the two fruit farms-based community development, located in Map Ta Phut Complex area. Both communities are located in Noen Prah Sub-District, Muang District, Rayong. Two agricultural communities are Krok Yai Cha community and Khod Hin Community. Both agricultural communities are the strategic location that relates to the scope of research and well apply the case study to research questions. The location is surrendered by industrial estates, at the heart of Map Ta Phut Complex center. Its location is the strategic location where nearby variety of physical infrastructure development, provided to support the development of the EEC initiative for example highway no. 3, motorway, U-Tapao Airport and deep-sea port, Map Ta Phut. In the nearest future, the high-speed train project connecting 3 airports (Don Mueang, Suvarnabhumi, U-Tapao) will be constructed.

This section will provide background information on both Rayong Province and the agricultural communities. The information will include geographical location, economic and social settings. This information will provide fundamental understanding on livelihoods assets. Moreover, the context will outline on the background of the community development allow to comprehend social and cultural factors contributing to establish the community enterprise.

#### **4.2 Rayong Province**

Rayong have been pioneer in the industrial development since 1997 after found the natural gas at the gulf of Thailand. Rayong is strategic locations for economic development because the location is not far from Bangkok, the capital city of Thailand. The city is on the east coast of the gulf of Thailand have found the potential to develop the port and, later Au Ta Pao airport. Throughout this strategic location, it provided the potential to develop into the Special Economic Zone. Rayong province

are diverse and rich of culture. The province is also well-known on fruit products for instance durian, Rambutan, Pine apple, Mango teens, mango and langsat.

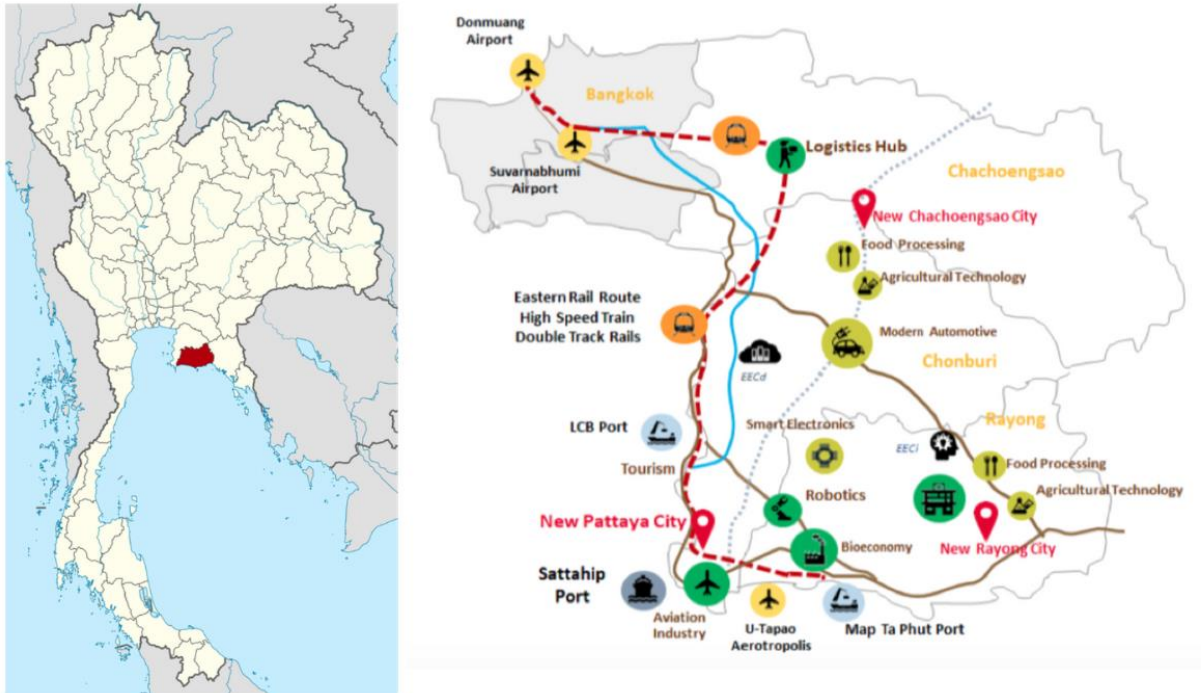


Figure 4.1 Focused Projects and Investment Plan of Thailand's Eastern Economic Corridor  
(Sangsubhan, 2020)

The total population in Rayong are approximately 717,000 people which include 49.15 percent of males and 50.85 percent of female in 2017. Rayong Provincial Public Health Office reports that the number of elder populations were increasing in last 3 years.

However, the number of people in the province is higher than the indicated statistics due to relocation of labour, both domestic and international migrants. The population trends have significantly correlated to the growth of industrial development (Department of Labour, Rayong, 2019). The latent population in Rayong are accounted up to 400,379 people in 2019 (Rayong Provincial Statistic Office, 2019).

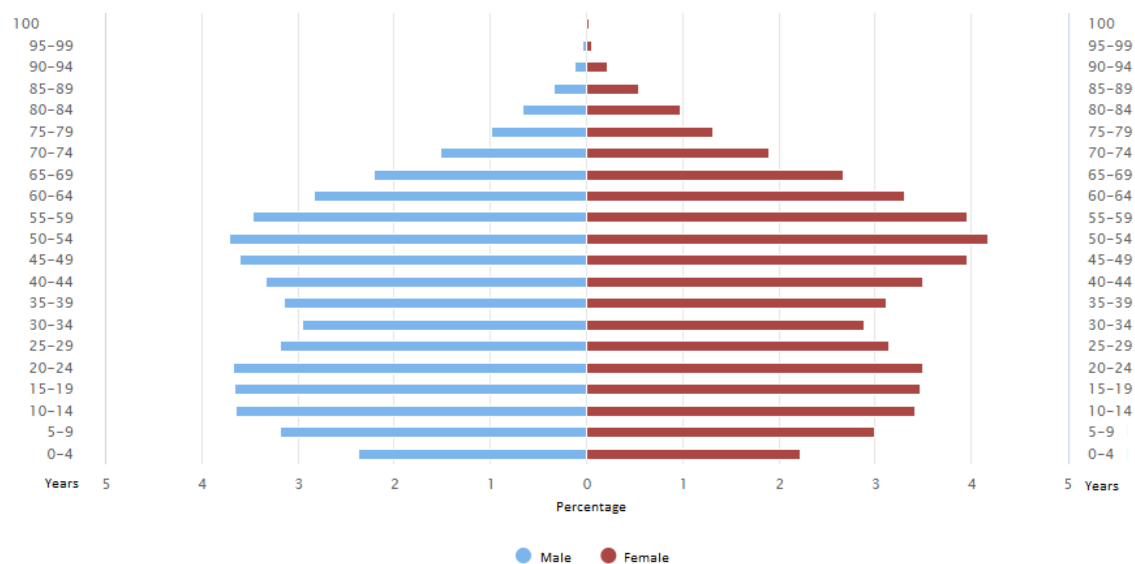


Figure 4.2: Population Pyramid in Rayong (2020)

The province is ranked the highest of GPP (Gross Provincial Product) in Thailand. At the end of 2019, the total GPP of Rayong is approximately 984,000 Million Bath in 2017 or 6.4 percent of country's GDP. The non-agricultural sector is the highest shared in the GPP value, significantly the manufacturing sector which accounted up to 80 percent of total GPP in Rayong. While, agricultural sector has 3 percent of GPP contribution. The total land of Rayong is 1,945,075 Rai, while become the agricultural land up to 1,310,937 Rai, with 37,566 of the agricultural households.

	(Million Baht)							
	2011	2012	2013	2014	2015	2016r	2017r	2018p
<b>Agriculture</b>	33,706	25,198	21,559	21,059	17,849	18,392	22,342	18,967
<i>Agriculture</i>	33,706	25,198	21,559	21,059	17,849	18,392	22,342	18,967
Agriculture, forestry and fishing	33,706	25,198	21,559	21,059	17,849	18,392	22,342	18,967
<b>Non-Agriculture</b>	730,235	815,933	860,511	872,692	847,837	877,959	967,866	1,026,730
<b>Industrial</b>	617,845	690,679	729,625	734,344	701,483	721,115	796,083	841,152
Mining and quarrying	274,982	344,663	348,070	345,208	281,945	248,718	255,652	281,800
Manufacturing	285,586	298,420	335,753	337,416	371,984	413,495	464,253	473,613
Electricity, gas, steam and air conditioning supply	55,475	45,606	43,589	49,540	45,242	56,536	73,696	83,220
Water supply; sewerage, waste management and remediation activities	1,803	1,990	2,212	2,180	2,313	2,366	2,482	2,519
<b>Services</b>	112,390	125,254	130,887	138,347	146,354	156,844	171,783	185,578
Construction	5,440	4,664	6,673	5,786	7,820	7,614	6,910	7,555
Wholesale and retail trade and repair of motor vehicles	51,433	48,203	52,057	54,498	60,101	66,064	75,628	80,646
Transportation and storage	13,979	14,439	13,857	14,950	14,674	17,843	19,075	22,765
Accommodation and food service activities	1,974	2,377	2,540	2,565	2,945	3,208	3,581	4,176
Information and communication	869	1,221	1,228	1,268	1,535	1,392	1,528	1,702
Financial and insurance activities	5,417	6,694	7,743	9,836	10,423	10,905	11,446	12,037
Real estate activities	3,579	3,790	3,515	4,777	5,309	5,400	5,989	6,416
Professional, scientific and technical activities	13,644	26,564	26,243	25,822	24,478	23,676	25,864	26,247
Administrative and support service activities	3,157	2,684	2,740	3,080	3,478	3,966	4,340	5,203
Public administration and defence; compulsory social security	6,069	7,084	6,758	7,183	7,126	7,755	8,037	8,967
Education	3,193	3,317	3,450	3,730	3,602	3,588	3,693	3,571
Human health activities	1,952	2,280	2,108	2,610	2,735	2,923	3,049	3,550
Arts, entertainment and recreation	267	366	357	461	275	337	425	448
Other service activities	1,417	1,570	1,619	1,782	1,853	2,174	2,217	2,295
<b>Gross provincial product (GPP)</b>	<b>763,941</b>	<b>841,131</b>	<b>882,070</b>	<b>893,751</b>	<b>865,686</b>	<b>896,352</b>	<b>990,208</b>	<b>1,045,697</b>
<b>GPP Per capita (Baht)</b>	<b>913,223</b>	<b>986,186</b>	<b>1,014,694</b>	<b>1,009,109</b>	<b>959,678</b>	<b>972,955</b>	<b>1,038,355</b>	<b>1,067,449</b>
<b>Population (1,000 persons)</b>	<b>837</b>	<b>853</b>	<b>869</b>	<b>886</b>	<b>902</b>	<b>921</b>	<b>954</b>	<b>980</b>

Table 4.1: Rayong's Gross Provincial Product at current market prices (NESCD, 2019)

Rayong is one of tourism destination in Thailand. The number of tourists is continuously growing. Apart from beach and natural attraction, the agrotourism and community-based tourism are also become the new destination, as a part of development scheme. The increasing of tourism in both domestic and international tourists would increase the opportunity in undertaking the fruit tourism.



### 4.3 Study area: Krok Yai Cha Community Khod Hin Community

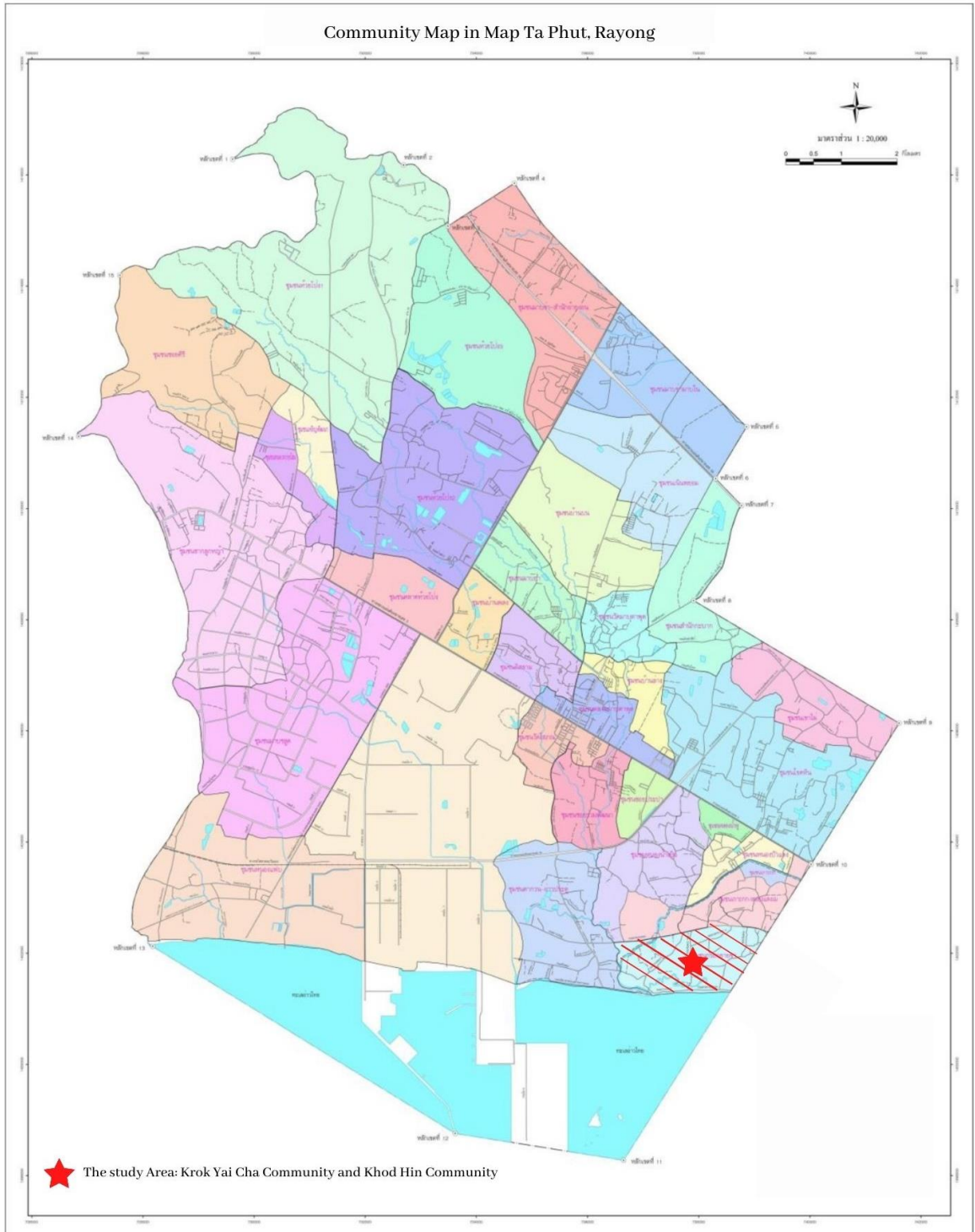


Figure 4.3 Research Location (Source: EECO)

#### 4.3.1 Krok Yai Cha Community

The Krok Yai Cha community is located in the southern part of Rayong, in Noen Prah Sub-district, Mueng district, Rayong. The community's location is surrendered by the industrial plants in the area called Map Ta Phut complex. The area is the pioneer of industrial development since the previous policy of the Eastern Seaboard. However, the livelihoods of this community still represent the character of the agriculture-based economy.

##### *4.3.1.1 Geographical strategic locations*

The geographical area is mostly flat but full of up and down areas (Map Ta Phut Municipality, 2020). The slopes are up to down from the side of the gulf of Thailand. As the geological character, the community faces the drainage flood challenge during the Mid of May to the end of October when Southwesterly wind brings the rain to the area. The location of the community is close to the sea. As a result, the soil of this community has a different character from most agricultural farms in Rayong which shows its character as a sandy soil. Apart from soil that is important for agricultural practices, water is also a vital factor that influences the farm productivity. The closest water source is Nam Hu irrigation canal. However, the canal does not flow through the community which is far from the community location approximately 2 kilometers.

##### *4.3.1.2 Economic Setting*

Rayong has been a pioneer in industrial development for 30 years. The province ranks the highest Growth Provincial products (GPP) per capita in Thailand (NESDB, 2019). The decreasing number of agricultural land and agricultural households show a significant relation whether the result of its decrease came from the factors such as low returns in agriculture, labour shift to other sectors, and ecological challenge or in consequence of an increasing number of the industrial sectors and urbanization. The result of development brings people from other area to settle in this community. People in Krok Yai Cha Community, therefore are increasing number of population who work in non-farm sectors, significantly in the

industrial sectors. Large number of people in the community have own business for example local restaurant, coffee café and resort. The actual local people are mostly work in agricultural sectors for over 80 years. The mango and jujube fruit farm are two key characters of household farming. The agricultural livelihoods still remain significantly in the area, while the spatial and economic have been transforming.

#### *4.3.1.3 Social Setting*

Krok Yai Cha Community consists of 2,481 households with 3,951 people in total populations. The population can be categorized based on the gender by birth to 1,993 of males and 1,958 of females (Rayong health promotion hospital civil registration, July 2019) The health care services for this community is provided by Kok Koh health promotion center which is the closest 1 kilometer to this community. Another health care service is HRH Princess Maha Chakri Sirindhorn Memorial Hospital Siam Grand Palace, Rayong. The hospital is the public hospital provided the 200-bed capacity. Moreover, private hospital, Mongkut Rayong Hospital, also provides their availability of the 100-bed capacity to health care service. The distance of these two hospitals to the Krok Yai Cha community are 13 and 12 kilometers respectively. The educational institution at Map Ta Phut Multiplicity is provided from kindergarten to secondary school. There are Map Ta Phut technical college and Rayong Polytechnical college are available in the Multicity area. However, the education at university level is not available in this sub- district, but up to two public universities are available in Mueng Rayong district.

#### *4.3.1.4 Agricultural livelihoods*

The community has had their livelihoods in the agricultural sectors since 1938. In the past people of this community worked for the rice farm. The locations of their rice farms are far from this community location approximately 3-4 kilometers, where today that area was transformed to the industrial estate site. The land expropriation from the first phase of the industrial economic development, the Eastern Seaboard impacted people in this community. People lose their rice farm. Unfortunately, they still have the remaining land which are their home or the site research of this study.

The condition of this community on land possession allows the community to transform part of their house to farm for gaining the income by continuing the agriculture sector. In the past, this area was existing of the jujube farm concentration. It led people who lost their land to shift their crop from rice to jujube. However, the jujube farm faced the challenge of the low prices with high investment. As a consequence, people change their type of their farm again to mango farm. The mango farms started in the 1987s and since then the mango farm became their livelihood character.

By the agricultural innovation of grafting technique, people can graft the local mango tree which does not serve the market demands to other accession to meet the demands. However, there remain 3 jujube farms in the community. The social relations among the members of this community is the kinship who occupy the farm land in this village. However, the impact of development led to the increased population. The migration of both domestic and international migrants has moved into this sub- district including to Krok Yai Cha Community. The increasing population and housing estate affect the people who work in farms to change their farm practices, especially the farm that is close to the new housing estate. The farm practice has changed in terms of requirement to seek the appropriate time for conducting the chemical pest control. Becoming the urbanism lifestyle, people lost their social relations and connection among the local neighborhoods. Some areas of this community have transformed to other types of land usage but up to 10 households portray their livelihood working in mango and jujube farm. The agriculture sector is still continuing their identical livelihoods.

In 2018, the Social Welfare Division of Map Ta Phut Multiplicity visited the community. The division found the potential for collaboration with this community in livelihoods and well-being development. With the character of local practice and actual livelihoods of Rayong province on fruit farms that surrendered by the industrial estate, the Krok Yai Cha community started to collaborate with the Social Welfare Division's officer to frame the plan for community development and agricultural livelihoods sustainability.

### 4.3.2 Khod Hin Community

Khod hin community is also located in Noen Prah Sub-District. The physical facilities of the Eastern Economic Corridor development shared the similar character with the previous community for the reason that two communities are away from each other only 4 kilometers from each other's.

#### *4.3.2.1 Geographical strategic locations*

The location of Khod Hin Community is not located near the sea as Krok Yai Cha Community. The character of natural resource and environment are different in their character and way of living. Khod Hin-Khao Pai Road are the main road of this community. The road was cut through only few farms. This road is connected to the highway No.3 (Sukhumvit). From the high way to the community is about 5 kilometers.

Its location is positioned in the center of industrial estate. As this consequence, there are increasing number of housing estates and new residents who seek the employment opportunity in the area. The locations become the vulnerability of this community. The wind direction brings the chemical air pollution from the industrial estate to the community. The location would become the vulnerability on the health security.

#### *4.3.2.2 Economic Setting*

As the consequence of economic development provide the employment opportunity, the increasing of population and relocation of people from other area have been increasing in this community. People in the community are work in both non-agriculture and agricultural sectors. Owing to increasing of land price, people who are in agricultural sectors tend to sell their agriculture land and invest in another sector. Moreover, the available of non-farm employment opportunity also cause the livelihoods transformation of Khod Hin agricultural community which the next generation of farm household prefer to work in non-farm sectors. Therefore, the economic setting in this community is declining in agricultural based profession.

#### *4.3.2.3 Social Settings*

Khod Hin Community consists of 885 households. The total number of populations is 1,068 people include 528 of females and 540 of males (Rayong health promotion hospital civil registration, July 2019). The nearest health care services provided in this community is Khod Hin health promotion center. Similar to previous community on the medium and large hospitals. There are available of both public and private hospitals where the community can visit such as HRH Princess Maha Chakri Sirindhorn Memorial Hospital Siam Grand Palace, Rayong and Mongkut Rayong Hospital. The schools are available in the area as similar as Krok Yai Cha Community. The nearest school of this community is Wat Khod Hin School.

#### *4.3.2.4 Agricultural livelihoods*

Most of member in agricultural development group were born and lived in the community. The livelihoods in agriculture sector of the current generation were transformed from the previous generation. Intergeneration sustainability of agricultural sector take the form of inheritance of assets and/or skills. The previous generation passes agricultural land and tools of trade to the currents generation who are aged between 50-60 years old. On the other hands, agricultural livelihoods are their character of their livelihoods since they were at the young age. People have start to work in agricultural sector for gaining household income since they were young. The skills and knowledges on fruit farm were transmitted from their parent through family apprenticeship.

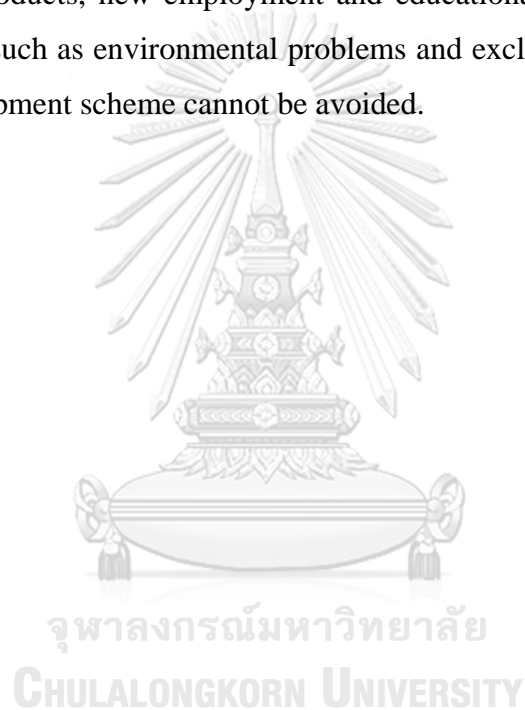
Most of the farms in this community is mixed-fruit farming. The main fruit commodities include mango teens, langsat, rambutan, mango and durian. Based on market price of fruit, durian become the significant fruit which the price highly increases in the market. Therefore, currently, people have increase the production capacity of durian. By doing the mixed fruit farm, people can guarantee income. Mix of several fruit types share the risk probability from uncertainty of the commodities' prices and farm productions.

People were interested in organic farm very long time ago. This topic was shared among farm neighbors who shared the similar economy and livelihoods character. Before becoming the organic farm group, fruit gardeners had experienced the new way of farm practices towards organic farming individually. These experiences was transfer to farm neighborhoods in the form of knowledge and information. However, fruit farmer still faced the pest resistant which can damage their crops. Consequently, it forces the fruit farmer to ensure their productivity at the priory manner by using the chemical pesticides. Moreover, the bio-products investment still depend from other sources. Therefore, the cost and benefit analysis was not yet present the positive benefit to organic farm income.

By the end of 2016, major business in the area conducted their Corporate Social Responsibility. The company went to survey in the local community to perceive the potential collaboration. Khod Hin Community is one of the community who become the partnership with private sectors in community development. The significant character of the Khod Hin community on fruit farm, while surrendered with urban transformation, industrial estate and power plants. The community shared their current development on organic farm and challenge that they were facing with the private sectors such as uncertain and ineffective on resource use in farm activity. Both community and private company saw the potential on collaboration. At the mid of 2017, the training program on organic farming was provided by private donors. The company donor hired the external experts on community development and organic farming. The training program covered 3 years from 2017-2019. The first year of training program, fruit gardeners learned on making their own bio-fertilizer and bio-pesticide control by using the available of local resources. Also, the community had a chance to go on field study with another community who also works in organic farming. At the ends of the training program, all the farm members obtained the Good Agricultural Productions (GAP) and Organic Agriculture Certification Thailand (ACT). This project shows the horizontal relationship between private-community partnerships in community development.

#### 4.4 Chapter Summary

The chapter had provided the information over social and economic setting of Rayong. The background of two community enterprise which are “Biodiversity-based community enterprise” in Krok Yai Cha community and “Organic Farm Community Enterprise” in Khod Hin Community illustrate the key character on agriculture based profession of fruit farm. Being a Special Economic Zone normally increase of population and generate the benefit for local communities in term of job and income for local people. In addition, it can stimulate new infrastructure, services, businesses and products, new employment and educational opportunities. However, negative impacts such as environmental problems and exclusion of local people from the core of development scheme cannot be avoided.





## CHAPTER V

### FINDINGS

#### 5.1 The Vulnerabilities Context

Country has a range of economic and political systems governing the allocation and flow of resources, including centrally-planned and market-based economies. The Eastern Economic Corridor of Thailand also attempts to allocate the resource and opportunity for balancing the development outcome, especially for the underrepresented sectors. The agricultural sector is considered that has the incompatible character of the current development scheme of the EEC initiative. Towards range of policies for example the Fruit Eastern Corridor, promotion of Fruit Tourism and Smart farmers have recently established to harmonize the development in the area, elatedly a dual-economy. In assessing impacts and outcomes, the case studies examined self-subjective and objective assessments of vulnerability as potential factors affecting their livelihoods. In this part, the policy for agricultural development would not be the only the factors impact local livelihoods but the multi-dimension of macro phenomenon from the development for instance range of infrastructures, urbanization, migrations, and the role of technology are potentially creating the implication to livelihood. Four keys livelihoods security interventions; health, education, income and environment comprehend to identify insecurities impact from external exposure to the livelihoods of the agricultural communities.

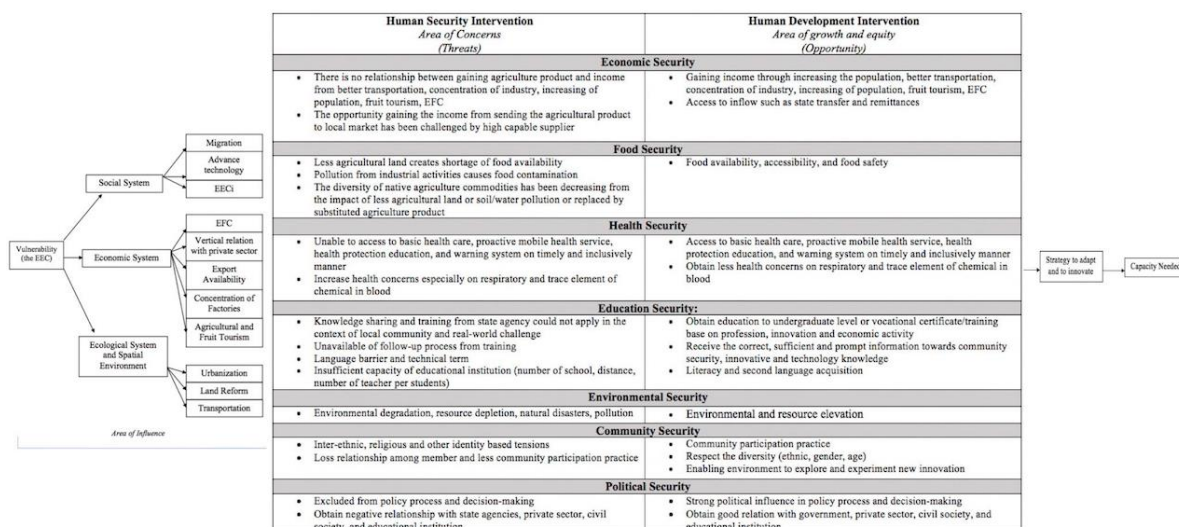


Figure 5.1: A framework of Human Security Intervention for assessing context of risk and opportunity  
Adapted from Ali and Pernia (2003) and the UNDP Human Development Report of 1994

### 5.1.1 Economic Dimension

Income poverty is part of vulnerability. Not approaching a consistent income frustrates a person's capacity to accomplish a means of living for example buying food or access to education. The macro phenomenon of structural and process transformation in the Eastern Economic Corridor would infatuate the change of social and economic condition, in which it can either provide people opportunity to gain economic status and well-being or vice versa. The condition of vulnerability context in socio-economic transformation can direct the pattern of access and command of resources for farm production, or activity for income growth for agricultural sectors (Bobbington, 1999; Ellis, 1998; Scoone, 1998 - cited in Rutten et al., 2008). Vulnerability in economic condition refers to the absence or insufficiency of financial assets which can restrict people in pursuing livelihoods.

The revenue of agricultural sectors can be earned from two sources of income farm revenue and off-farm revenue. Firstly, the farms revenue is gained from operation of a farm or agricultural business. Another source of agriculture households-based profession's revenue can be referred to Adato and Meinzen-Dick (2003). They indicate that farmers can engage their economic activity with the non-agricultural sector. The household possibly consists of family members who are off-

farm workers. At the same time, full-time farm workers can also gain revenue from off-farm economic activity. However, revenue is not equal to the income. The revenue is total amount of income generated by the sale of goods or services. While income is consumption and saving opportunity gained by an entity within a specified timeframe. It is generally expressed in monetary terms (Barr, 2004). Net income which provide the opportunity for saving can be a trade-off by cost of farm production, equipment, and household spending. In the field of poverty of the agriculture sector regards on financial dimension are mostly concerned on level and stability of income.

#### *5.1.1.1 Area of development and equity*

##### Farm Revenue

#### *Krok Yai Cha Community: Two-time growth of farm revenue*

Farm revenue of the mango farms shows that their revenue is two-time growth from the previous five years. The affirmative factor came from increasing population and road infrastructure facilitating the market to the farm. The needs of labour resulting from industrializing economic development provides employment opportunities for the Thai citizens and people from other countries especially, from neighboring countries. It causes the internal and international migrations which lead to increasing the number of populations in the Rayong province.

The Provincial Labor Situation Report 2019, provided by Rayong Provincial Labor Office shows that more than 120 of new factories are registered for business operation in Rayong that year. Those demand for 7,628 labour to function in the economic operation. At the end of 2019, the total number of manufacturing in Rayong are 3,050 plants with 181,809 of employment availability (Rayong Provincial Labor Office, 2019 p.4). Rayong Provincial Statistic Officer reported that non-registered population trends in Rayong was increasing accounted up to 63.27 percent in past ten years (Rayong NSO, 2018).

The evidence present in this study shows that increasing population provides market opportunity and customers for the agriculture sector. In its turn, people can

assure their income based on product distribution capacity. This opportunity allows the fruit gardeners distribute their products in timely manners, before fruits are getting overripe. The information from community states that their current customers are more diverse. Most of the customers are the manufacturing worker. Their farm products have gain recognition though social relations of non-farm labour and their promotion.

The resettlement and relocation of people provide entrepreneurial opportunities for mango farmers. The self-reflection on income opportunity also shows in their strategic location and road infrastructure which bridge the customers to the farm community. People turn their marketing strategy from regular practice by selling the product to middlemen to become their own entrepreneurs by selling their products in front of their farm. As a result, fruit farmers can set the product price independently which led the farm income developed to two-time growth. Moreover, becoming the entrepreneurship can reduce the revenue insecurity from market monopoly which depending on a certain source of buyers.

This strategy works similarly to jujube farm in Krok Yai Cha Community. One of the two Jujube farms also earn benefits from increasing population which allow them to change their distribution channel by becoming farm base market. Apart from the macro phenomenon drive community change economic activity to response but the jujube farmer applied quality and size classification strategy. This strategy allows jujube gardeners gain higher farm income. This strategy was gained from exchange ideas with the mango farm.

*Khod Hin Community: Slightly increasing of farm revenue*

For Khod Hin community is slightly different from Krok Yai Cha Community. Farm members agree that increasing of population brings the customers to their farm. However, the farm income is not undergone a change. Owing to the fact that people still remain the traditional distribution channel though selling the fruit products to the middleman in agricultural business. Fruit traders are long time business partners. They came directly to their farm during fruit season and buy the fruit products at the wholesale price. One aspect illustrated on physical assets of strategic location shows

that could limit community capacity to become the seller and opportunity to set the products in a higher price. Yet, the Khod Hin Community have organized the farmer market occasionally at their community base market. The role of communication technology is perceived by the community as the driving factor that allows them to increase market opportunity.

*Khod Hin Community: Increasing new market opportunities from private partnerships.*

The increase of manufacturing and large-scale business become the partnership opportunity for the community. Underline the community relations concept is that a company accepts its civic responsibility and takes an active interest in the well-being and development of community. Several conglomerated companies/private sectors in the area provide market opportunity for local fruit farms. The private sectors regularly organize the farmer market at the factories. The farmer market at factory project facilitates the market opportunity for local community to sell their products. The present study confirmed the findings about the role of private sector engagement in market opportunity of the agricultural communities.

#### Off-farm revenue

*Krok Yai Cha Community: Increasing opportunity of multiple income source*

Most of the group members are full-time fruit farmers. Currently, two agricultural households gain the second sources of income by starting a small business for example farm resorts and small greengrocery. These businesses are the case examples of the impact of population growth led livelihoods diversification. Prior research by Ellis (2018) defined the livelihoods diversification as a process of rural household develop diverse portfolio of activities for survival and improvement their standard of living. The activities of livelihoods diversification can be undertaken in on-farm, off-farm and non-farm activity (Asmah, 2011). In the case of farm resorts, the owner started their business by transforming part of their mango orchard to a farm resort five years ago. The farm owner perceive that the community has been increasing the number of tourists and visiting workers from company headquarters in Bangkok for example mechanics and engineers. These people stay in the Rayong

province for a short period of time. In consequence, the needs of accommodation services become the opportunity for the mango farm owner to diversify their economic activity from solely farm character to farm resorts. This business positively contributed to the second source of farmer's income during the fruit season and off-season. The success of business as the consequence of socio-economic transformation shows its empirical evidence that farm resorts are expanding their business capacity to serve the market demands. Second case on a small greengrocery shop was recognized the business opportunity from the mass movement and growing of housing estates in the area. This phenomenon impact on increasing of food demands which improve the business opportunity in off-farm sectors.

#### *Increasing employment opportunity and occupation choice*

The economic environment in the Easter Economic Corridor provide enlarge employment opportunity for people in non-agriculture sector. The agricultural household members have right to decide their own livelihoods. The consequence of employment opportunity and occupation choice have presented in both case of communities. People have decided to adopt new occupation into non-agriculture sectors. It is clearly shown in Khod Hin Community that the next generation of agricultural farm have changed their livelihood to non-farm job. Contrary to the findings of Krok Yai Cha Community, the study has not yet found that the next generation of agricultural community group in Krok Yai Cha community have shifted to work in off-farm sectors. Currently, members of agricultural household who graduated with bachelor degree (aged between 18-30 years old) decided to generate their income in agricultural sector. However, it is importance to denote that this phenomenon of livelihoods transformation only presented in this certain period of time. But in spite of that, the result of economic development in the Easter Economic Corridor demonstrate employment opportunity and occupation choice.

#### *5.1.1.2 Area of Concerns*

##### Trade-off between income and spending

Despite agricultural communities have higher opportunity to gain the farm income, however household income would possibly trade off with spending. Several theories

have been proposed to the relationship between macro phenomenon and the impact of cost of living, some focusing on inflation rate would influence in cost of living, others on economic profile of each geographic areas. This is agreeable that those macro phenomena would influence in determination of cost of living in particular countries or cities. Other result was broadly in line to this case study found that agricultural livelihoods required to spend household income on food spending. It is examined in the impact of decreasing of biodiversity for food sources for instance decreasing of local vegetable or decreasing of marine resource

In the past, livelihoods of local communities could a spending from buying foods. The local people were able to access food resources from biodiversity around the community. However, recent urbanization and spatial development impact on the decreasing of biodiversity in the community. Therefore, people relied the food from external source, such as urban market, and transform pattern of household spending.

#### Small farm capacity constraint export opportunity

The study found that the development of the Eastern Economic Corridor contributes in both positive and negative impact to livelihoods. However, some development policies and government services have no significant relationship with livelihood development. The Eastern Fruit Corridor (EFC) is the associated policy for agriculture sector development which will provide the wholesale market for premium quality products, cold storage, and encourage the export capacity of Thai fruit. However, the community has less capacity for the export market due to a small farm and production capacity. The community perceives that the ability to export is not their indicator of successful livelihoods development. It is because their capacity of production in the internal market is suitable for their current production capacity. Even though, the community has prepared themselves by obtaining the Good Agriculture Practice (GAP) in order to respond to the opportunity to sell the quality products at the upcoming wholesale market under EFC initiative. By participating in GAP, the community has no information on the EFC program but the community is encouraged by the local government to obtain the GAP.

### Incoherent opportunity to sell the products to the related industrial cluster for a small agricultural farm

The farms' opportunity to send the agricultural commodities straightway to the industry are no way relate. It is because most of the informants' farm is the small farm type. The farms are lack of production capacity to send to the factory who require the large among of agricultural input factors. The traditional and normal trading channel of the fruit farm is sending to the private agricultural wholesale market (สั่ง in Thai and 廠 in mandarin), middle persons, and fruit merchants. As the small farm, people perceive that the farmers will be the direct person who benefit from the increasing of related industrial clusters of the EEC. The farmers still sell the same prices to those selling channel. To make matter worse farmers were forced to sell as the lowest price. the researcher has further explored additional information base on the opportunity of the farmer to sell more products straight to the Advance Agriculture and Biotechnology Industry, Food Processing Industry, and Biofuel and Biochemical Industry as the aims of the projects. From the secondary data sources found that the fruit processing industries do not increase in the area. The factories and industrial businesses that has been approved to invest in the EEC in past 3 years and upcoming are remain the same type of industries for example chemical industry, heavy industry, automobile industry, shipping industry, and rage of the same first S-Curves (IEAT, 2020).

#### 5.1.2 Health Dimension

Health is considered an important component of the quality of life. It contributes to human capitals that enable people to trail their livelihoods and perform in the overall development. Health security is important dimension of human security. A good health is the essential and instrumental to human survival, livelihood and dignity (Human Security Unit, 2013). The health security recognized the responsibility of governments to protect people from the risks and threats that can adversely affect the quality of life.



Economic Policy during 1985 led Thailand to pursue industrialization as the main mechanism for running economic development. Since, then the industrializing economy has been implemented in the special economic zone or Thailand's Eastern Seaboard. The health dimension has been a long-time challenge for people's security. The Volatile Organic Compounds (VOCs), acid, metal and other chemical stuff as the input substance used in the manufacturing production process shows evidence of its impacts to people's health security during 2007-2011. The Department of Disease Control announced that the volatile organic compounds, acids and metal substances that were present in the air, in the soil and in the water, are extreme and severe conditions causing irritation to the skin, the respiratory system, the blood system, the reproductive system, the nervous system and the muscles, and some are carcinogenic (Department of Disease Control, 2007). The information from Map Ta Phut Hospital shows the favorable evidence that respiratory illnesses are the greatest share among those other common health issues that people have visited at the hospital during 2007-2011. People who live in the surrounding area of the industrial estates have experienced health problems especially on the respiratory system since the beginning of the industrializing economic development period.

The influence of the value-based economy on the twelfth national development plan Section 5, Article 5.7, aims to create economic and social growth in an environmentally friendly way. Clause 5.7.4 stated that promotion of clean production and investing in a green economy would elevate the country to an eco-friendly social and economy. The government tries to encourage the industry cluster entrepreneurs to adapt their systems into a green supply chain and green value chain as well as promoting industry to coexist with the community and eco-industrial town. In this respect, the strategy on green industry and eco industrial towns are promoted by the Industrial Estate Authority of Thailand to encourage the private sector on social responsible practices. The strategy is conceived towards the ISO 26000 certified industry, Global Reporting Initiative (GRI) standard, and Green Industry Certificate (IEAT, annual report 2019) The objective of these strategies aims to trivialize environmental and health insecurity towards green strategy and social responsibility. In addition, the Factory Act B.E. 2535 (1992), Promotion and

Conservation of National Environmental Quality Act, B.E. 2535 (1992), and Public Health Act B.E. 2535 (1992) are regularly enforced in the Eastern Economic Corridor to assure the environment and health security of the people.

*Area of development and equity*

Mobile Healthcare services

Building from the ideas that the green industry would improve the health concerns in the Eastern Economic Corridor, the perception of people in these two communities found that the chemical air pollution is improved than past few years. All informants from two community groups are unanimously reporting on the health situation in the past that

*“In the past, pollution was hazard. People got the impact from chemical smell. It happens almost every day.”*

The two communities have levels of the chemical harmful in the atmosphere differently. The reason repeatedly shows the consequence from their community assets profile on location and wind directions.

Towards the good perception of people on their health situation improvement in recent years. However, the fact is in contrast. The department of pollution control reported that the chemical substance in the air are still endanger. The chemical compound and metal substance create the risks potential on respiratory.

It should still be noted that the health insecurity still remains in the area. The paradigm of human health security recognizes the obligation of governments to shield vital people's health security (Periago, 2012). The activities required to conduct in both proactive and reactive to ensure people's quality of life. In krok Yai Cha Community, the public health officers and community health volunteers provide proactive mobile clinics. This mobile clinic is conducted by a public health officer approximately 2 times per year. The services include general health check-up, examination of benzene derivatives in urine, Trans-Trans muconic acid (Tt-MA), examination of liver and kidney function (Rayong Provincial Public Health yearly

report, 2019). In 2018, 2,200 of the population in Noen Prah Subdistrict received the service from the mobile clinic. The community health volunteers mostly provide the general health education on mosquito lava, malaria prevention and blood pressure check-up service. This preemptive healthcare approach seeks to assess health risk in order to perform early protection of people's health insecurity.

Social issues are traditionally expected to be implemented by the government or public sector. However, the new fashion of partnership in development approach signified the importance role of other sectors or institutions. Private sectors started their role in community development. It also shows the phenomenon in this Special Economic Zone. The health mobile service is provided by the companies that are located around the Kod Hun Community. Towards the tendency of people's health concerns from Non-communication disease (NCDs) such as diabetes and high blood pressure, the private sector provides the service base on this health issue. Moreover, the various projects that are provided by private partnership also include Community Fellowship Nursing Program and basic medical equipment provided to Subdistrict Health Promoting Hospitals. For Khod Hin Community, the community health volunteers conduct similar activity as Krok Yai Cha Community.

In this case study has found that the private sectors also took part in social development and well-being. Business ethnics and partnership in development approach can be illustrated in this case which health service in this area shows the joint responsibility on social protection from both public and private sector.

#### Health accessibility, low cost of medical expense

The financial burden especially of poor households becomes the barrier to access a health care service and social protection. The study of Tantivess and Petcharanon (2016) on community and health cost of pollution in Map Ta Phut industrial estate shows the relation between income and cost of illness. The study found that people require to spend the direct medical care cost as an average of 2,403.96 THB per person per year and indirect costs such as travel expenses to

hospital, account up to 7,078.83 THB per person per year. The study shows that health insecurity comes with a cost burden.

People from two communities are able to access the Universal Health Care Scheme or 30-baht scheme. This policy allows Thai Citizens to access the health care system regardless of the type or severity of the illness, at a cost of 30 Baht (USD1), presumably per visit or per sickness (NaRanong,2016) Extension of coverage to high-cost services, such as renal replacement therapy, cancer therapy and stem-cell transplants, has improved financial protection for patients (Tantivess et al. 2013). Towards this low-cost health care provide opportunity of the vulnerable people of poor household who being excluded from accessing the health care system.

#### *Area of Concerns*

##### Remain health insecurity

The challenge on endangered substances from the manufacturing production process limits the privilege of the local community to obtain a good health and well-being. Moreover, city expansion and traffic could pose harm to people's health issues. As being mention, in the area is remaining the endanger substance in of chemical air pollution.

##### Increase risk of emerging disease

The flow of human capital as the consequence of economic development and employment opportunity increasing the opportunities for the rapid international spread of infectious agents and their vectors. Labor influx and new disease though commercial port channels increase the risk of an emerging disease for instance Middle East respiratory syndrome (MARS), Avian Flu epidemic, and Zika virus. At the recent year in 2020, COVID-19 outbreak addresses the endanger people's health cross the geographical boundaries.

##### Borden insecurity to mental health and psychological adversity

Mental health security is also part of health security. According to the Section 3 of National Health Act states that “**health**” means the state of human being which is

perfect in physical, mental, spiritual, and social aspects, all of which are holistic in balance. The information from the community found that people have been facing impact from industrial activity on air pollution, chemical air contamination as well as the explosion. The anxiety of the community caused by insecurity of safety especially the community where adjacent around Map Ta Phut Industrial Estate. This insecurity remains as a threats of community well-being.

Another point of view, the cultural transformation especially from rural to modern society is considered to be one of the reasons of psychological disorder (Caracci G, Mezzich JE 2001). However, stress that caused by transition from rural culture to urban culture cannot be denied as one of the factors leading to stress-related problems.

Treat the symptom rather than the cause

Even the mobile health care services are provided as the preemptive intervention by both public and private sectors, we cannot ignore the fact that the health cries from the industrializing economy continue to remain. Local people and people who live in the area for any particular reason are the key people who bear the burden in both health risks and related cost on health treatment. Even though, this research also acknowledges the fact that the health insecurity issues would also derived from other factors for example consumption behavior or risks associate of agricultural works. On the ground that this section aims to assess the external factors of development in the industrializing economic zone, therefore the issues of risks associated with industrialization in the area are important to be accentuated.

### 5.1.3 Education Dimension

Successful adaptation required **knowledge and information** of future change. The knowledge involves skills and competencies. Those can be acquired by human capital from birth to death (OECD,2001). The acquisition of knowledge and skill was gained from formal and nonformal education for instance, formal education, training based profession, learning with family, daily living, and civic participation (Jones et.al, 2017).

This section will analyze the impact of the Eastern Economic Corridor and range of agricultural development policy such as smart farmers, the Eastern Fruit Corridor, and fruit tourism strategy to the education dimension of the agricultural community. The impact of increasing population may contest the formal education accessibility, school quality and school capacity in which consideration through the number of teachers per students. Moreover, unaffordable education would be caused from the poverty trap and territories struggling (Roleman, 1997; World Bank, 2001; Wang et al., 2011b; Chung and Mason, 2012). Towards the range of related policies and industrially focused growth strategy that aims to increase the production capacity, market and export opportunity of the agricultural sector, It required information transfer and policy acknowledgement. The strength of such an approach is that people can obtain knowledge and information of future changes, knowledge about adaptation options, the ability to assess options, and the capacity to implement suitable interventions (Frankhauser and Tol, 1997). Therefore, education is an important determinant of adaptive capacity, with obvious links with the institutional context and the governance of knowledge (Jones, 2010).

#### *Area of development and Equity*

##### *Accessibility to the formal education*

The educational accessibility of these two communities found that both communities are available of schools in the area. In Noen Prah sub-district, there are 3 kindergarten schools, 5 kindergarten-elementary schools, 2 kindergarten-secondary schools, 2 secondary schools. There are Map Ta Phut technical college and Rayong Polytechnical college are available in the Multicity area. The education at university level is not available in this sub-district but up to two public universities are available in Mueng Rayong district, King Mongkut's University of Technology North Bangkok.

The territorial challenge and deprivation of transportation infrastructure could constraint capacity of people to access schools. The result of this study found that people have scarcely concerns on transport to the schools based on good road condition and available of the school nearest to the community area. Coherently,

financial burden could challenge the ability to access school, especially for poor household. The state welfare of the 15-years free education policy scheme supports the tuition fee for 15 years for the student in governmental schools. The scheme tried to decrease the inequality based on socio-economic circumstances. The 15-year free education scheme provides 5 free things which are tuition fees, a learning activity charge, uniforms, text books, equipment, and text books(MOE,2020).

The community development fund has been provided by Electricity Generating Authority of Thailand (EGAT), the electricity industry, other related private sector to give scholarships to youth in the area.

Increase opportunity to gain external source of knowledge and information from diverse partner

The case study was located in the concentration of large companies. These companies obtain advanced technology, financial capacity and specialized knowledge in their industrial sector. Two communities have an opportunity to gain the different context of knowledge by establishing social relations with private sectors. It can explain this social education in both cases of the agricultural community.

Firstly, Krok Yai Cha Community exchange the knowledge and technical practice on water ground construction from several key partners such as governmental agencies, private sector, and academic institution. Secondly, Khod Hin Community advanced their knowledge on organic farm and local products development from the training support of the private sector and external experts.

#### *Area of Concerns*

Asymmetry of policy recognition and change in macro-economy

Several key scholars who work in the field of sustainable livelihoods highlights the role of information and knowledge of the future change. This ability is the attribute to achieve sustainable livelihoods outcome. However, the findings show that many informants did not understand on how their activities from the livelihoods strategic plan engage to macro phenomenon of market and government's policy. The

result examines in the context of encouraging farmers to obtain the Good Agriculture Practice (GAP). Both communities were encouraged to obtain the GAP from both public and private sectors. However, only few people have perceived can perceive the benefits from obtaining the GAP or Q-GAP to export opportunity and sell the commodities at high stand of product prices.

The asymmetry of policy recognition and information were also appeared in Smart Farmer Projects. Both community has scarcity of clear picture on how smart farmer have worked. This evident have clearly shown in Krok Yai Cha community where only 2 people have heard about this project. In contrast, Khod Hin Community had opportunity to share project information with private sectors. This finding confirmed on the lack of policy recognition and change in macro-economy would limit capacity of community to access available of opportunity to greater their income and enhance well-being. Simultaneously, deprivation of understanding on the range of existing opportunity and objective of strategic plan create the risks on activity abandons.

#### 5.1.4 Environmental Dimension

##### *Area of development and Equity*

The Eastern Economic Corridor, an investment areas and industrially active, arouse negative connotations associated with changes in the natural environment of local community. The experience of the previous phase of industrial development led Thailand to improve the implementation by seeking for the prevention and protection mechanism to ensure health security of the people in the area. The eco-industrial town and green economy become projects that would alleviant the challenge of environment. Government provide the incentive on tax exemption for the industrial sectors who obtain the green industrial certification. In 2009, both communities case study was declared to be the pollution control zone.



### *Area of Concerns*

#### A declining of natural resource

Whilst there is much rhetoric around the extent and rates of resource decline, it is clear that the agricultural communities in the Eastern Economic Corridor are faced with growing shortage of one or more of the natural resources they require. The causes of resource decline vary from place to place and for different resource types, and hence it is difficult to identify generic issues and possible interventions (Andrew et. al., 2003). For example, in Krok Yai Cha Community people previously used their local vegetable and plants to make a food. However, the local biodiversity is declining. In addition, the new construction of commercial port also impacts to the decreasing of the marine resource.

When resource decline becomes acute, it has a negative impact on livelihoods. The decline in natural food resources are seen as a result of growing commercial demand from the type of urban market. In other words, the livelihoods have transformed from a natural resource based to commercialization, which highlight the decline in local power in local resource management institutions (Mander, 1998).

#### Environmental Degradation

Two communities perceive the same perspective and experience that after raining, their plants are injurious. The contamination of rain is a major vulnerability of the agricultural community in terms of environmental insecurity, health insecurity, food insecurity, and income insecurity. It is the most dangerous time, during the young flower and young fruit period. The contamination of rain damages the future source of their income. Fruit farmers can gain the household income for the whole year only one or two times which is seasonal fruit and non-seasonal fruit. Deblossoming and damaging fruit creates economic insecurity which consequently could lead to poverty.

Regarding on soil quality, the community has been supported by the sub-district agriculture extension office. The improvement process will be provided in the section of adaptive strategies and activities. The water issue was states by both communities

that in past two years, the water resources was significantly decrease. The possible reason is lack of rain. People consume the water from their own wells for farm activity. Moreover, the new pest insect, namely thrips and oriental fruit fly. The farmers believed that the arid weather and climate change bring these insects. Those causes from the natural and environmental degradation play the significant role on the various dimensions livelihood insecurities.



<b>Human Security Intervention</b> <i>Area of Concerns</i> <i>(Threats)</i>	<b>Human Development Intervention</b> <i>Area of growth and equity</i> <i>(Opportunity)</i>
<b>Economic Security</b>	
<ul style="list-style-type: none"> <li>• Trade-off between income and cost of living</li> <li>• Small farm capacity constraint export opportunity</li> <li>• Related industrial cluster of the EEC development would not provide the opportunity for a small farm to send the fruit products directly to the factories based on farm production capacity</li> <li>• Available of private whole sale market in the area would challenge the government development plan on fruit wholesale market under the EFC</li> </ul>	<ul style="list-style-type: none"> <li>• Gaining farm income through increasing the population and better transportation,</li> <li>• Private partnerships support the market opportunity such as farmer market event at factory</li> <li>• The current development allow the agricultural sector to diversify their livelihoods into off-farm sector, resulting in increasing opportunity to gain the multiple source of income.</li> <li>• The industrial development provided employment opportunity an occupation choice of non-agricultural sector</li> </ul>
<b>Food Security</b>	
<ul style="list-style-type: none"> <li>• Urbanization create the decrease native natural food source, creates shortage of food availability</li> <li>• Pollution from industrial activities causes food contamination</li> </ul>	<ul style="list-style-type: none"> <li>• Food accessibility from the available urban market</li> </ul>
<b>Health Security</b>	
<ul style="list-style-type: none"> <li>• Increase health concerns especially on respiratory and trace element of chemical in blood from the manufacturing activity and urbanization</li> <li>• The flow of human capital (international and domestic migrants) increase the risks on emerging disease</li> <li>• The social transformation impact to physiological insecurity</li> </ul>	<ul style="list-style-type: none"> <li>• Available of proactive mobile health care service and health protection education</li> <li>• Available of warning system from the manufacturing</li> <li>• Access to low cost of health care expense (Universal Healthcare - 30 baht scheme)</li> </ul>
<b>Education Security:</b>	
<ul style="list-style-type: none"> <li>• Asymmetry of policy recognition and change in macro-economy</li> </ul>	<ul style="list-style-type: none"> <li>• Accessibility to the formal education</li> <li>• Increase opportunity to gain external source of knowledge and information from diverse partner</li> </ul>
<b>Environmental Security</b>	
<ul style="list-style-type: none"> <li>• Environmental degradation, natural resource depletion, drought, chemical rain contamination, and pollution together</li> </ul>	<ul style="list-style-type: none"> <li>• Eco-Industrial town project</li> </ul>

Table 5.1: **Summary of the impact of the EEC to agricultural livelihoods**

## 5.2 Livelihoods Assets

In the event of insecurity or opportunity from structural attribution, both open the key message for the community to gain well-being status. In favor of reaching the well-being goal, capacity is represented as the positive attribute to both community

resilience and community development. The objective of community development highlights the role of human agency, rights, and capacity to prepare to cope with challenges and improve their well-being (Tanner et al.,2015). It requires “the capacity” to move the goal of well-being to become a reality. *The assets-based approach* will facilitate to perceive the key dimensions of asset pentagon that allow the community to generate strategies and implementations to achieve the sustainable livelihood outcome.

Agricultural community capacities are affected by internal characters of livelihoods assets. Five key capital include human capital, natural capital, infrastructure capital, financial capitals and social capitals. Previous studies have emphasized on the constraints of livelihoods assets can restrict the degree of well-being and livelihoods security.

#### 5.2.1 Human Capitals

Human capital represents the skill, knowledge, ability to labour and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives (Department for International Development, 1999b, p.7). The financial capital, in terms of gaining productivity and farm income, is strongly dependent on adequate human capital. In turn, human capital is highly dependent on adequate nutrition, health care, safe environmental conditions, and education (Farrington et al., 2002, p.20).

Human capital is constituted by the quantity and quality of labour available. At household level, therefore the quantity of labour determined by household size and number of enable workers. The quality can be referred to the economic value of a worker's experience, education, skills, and health condition that contribute to productivity of labour and capacity to manage the community development activity.

The character of human capitals of these two community case studies relied on the farm worker based on self-labour and family members. People did not hire external sources of labour for the full-time worker. It is because the fruit farms require the worker only during the fruit season which maximum only one to two times of a yearly

basis, in case that farm decides to do the off-fruit season. The fruit season covers three months, from May to July. The farm owner hired external labour occasionally for small farm task for example grass mowing and fruit cultivation.

*5.2.1.1 Education and knowledge (Level of education, literacy, second language acquisition)*

Measuring the human capitals based on formal education, the research found that the enabling workers have completed the secondary education account to 90 percent. These persons are age between 40 to 70 years old. For Krok Yai Cha Community, the farm owners are aged between 60-80 years old. These people considered that their physical condition is not well functioning to work in the farm. Currently, the farm owners passed the agricultural lands and tools to their children who age between 30-60 years old. These age groups of people become the current farm workers who are graduated at upper secondary school level. None of them graduated at a higher level of education. One aspect which illustrates the level of education is that the educational promotion depends on parent's perceptions and attitudes. The first generation wants their children to continue work in the agricultural sector of the fruit farm. They perceive that a higher level of education is not necessary, especially for females. It can be exemplified by the children of the first generation in Krok Yai Cha state that

*“After I finished junior high school, I was uncertain about higher education. My dad did not give any suggestions to pursue a higher level of education. He perceived that I am a female and do not need for any higher of education. Moreover, my relatives in this area stop school at the same level as mine.”*

However, this second generation perceived that education is very important. The personal benefits of education mean greater opportunity for employment and a higher salary. They support their children to obtain higher education. Moreover, they allow their children to decide their own interests and field of study in which refer to a choice of livelihoods. The result shows that the children in this community who are at a certain age graduated at undergraduate level or obtain a bachelor degree.

*“I think education is very important. Education can provide the opportunity to work in the field that they are interested in. At the same time, a higher level of education provides better job opportunities with high income. I tried my best to invest in the children’s education. Currently, one of my children are pursuing a master's degree abroad”*

The consequence shows that the third generation from Krok yai Cha Community had graduated at undergraduate level but the field of agriculture is not related to agriculture. All of them decided to come back in the community and work in fruit farm.

While, Khod Hin Community, the current farm worker are 50-60 years old. They are graduated at secondary school level. Their children who are above 25 years old have graduated at undergraduate level. However, none of them engage in the agricultural sector and group activity. However, people hope that their children will obtain the territorial education level. However, they perceive that the education is also depends on the children effort as well.

Based on the interview, people agreed that the increase of agricultural productivity is the result of experience. In response, farmer knowledge and informal learning networks have been compensating for knowledge gaps in the formal agricultural knowledge system. The significance of the knowledge exchange learns among group members and neighborhoods. At the same time, the farm knowledge has been passed through the family generation and self-experience.

Literacy is very important capacity of people. People can access the information and run all development activities from the literacy. People in the group are literate. The second language acquisition is still low based on speaking, reading, and writing. However, people considered that the second language is significantly important.

Yet, the spatial and temporal dynamics of national policies oriented towards poverty alleviation in agriculture, human development and productivity of agriculture are not well understood, especially as to how they affect livelihoods and well-being of the agricultural communities. The range of agricultural extension program namely, the Eastern Fruit Corridor, Smart Farmer, and Community Fruit Tourism are limited by state and program to transfer and communicate the information of the policy.

*“I don’t know what Smart Farmer is.”*

And

*“I never heard about the Eastern Fruit Corridor. For Smart Farmer, I am not sure. Does a Smart farmer mean farm that uses advanced technology? I have heard about it but I lack information about what technology should apply for my farm. Since I afraid that new technology will not be appropriated in terms of technology investment and profit returns.”*

It clearly shows that information and policy understanding of agricultural community is low. Policy communication is very important for these target people. The reason is because without information about development policy that would impact their livelihood, it could constrain ability of agricultural community to perceive their opportunity, impacted risks, and strategy to cope with or access to. Without policy communication, the policy will remain as a concept, without development impact.

#### *5.2.1.2 Health*

After perceiving the impact of industrialization economic development in the Eastern Economic Corridor found that the risks impact of the health security is still concerned. People from Krok Yai Cha Community have health issues which mostly are the non-communicable diseases for instance, hypertension, dyslipidemia, diabetes mellitus, and osteoarthritis of the knee. These symptoms are mostly shown in the

elderly group. Farmers who age above 70 years old found their health is not well functioning. They are unable to work hard and conduct the same practice of farm work. This proves that health issues on aging correlate to income security of farmers which refer to ability to work and generate income. However, the elderly group has assured household income security by passing the farm work to their children who live at the same house or nearby.

Another case from Krok Yai Cha that can be examined is the correlation between health and capacity for livelihoods is the accident cause disability.

*“5 years ago, I had a car accident. Then, I become people with disability. Previously, I was the key person who worked for a mango farm. After I become a person with a disability, my wife needs to be in charge of farm work for gaining household income. Last two years, my son has graduated with a bachelor's degree and he came back and continue the family business by becoming a full-time farmer.*

An additional example reveals income security relates to aging and lack of human resources. It has been reported by the person who has no children.

*“Because I relied on farm labour from self-labour, the reason is that the external source of labour is expensive. The regulation in Thailand must pay 300 THB as minimum wage. I am able to effort this cost as I have a small jujube farm and low cost of this product. I am not married and have no children. I try to save my money for my future when I am getting older which I may be unable to work.*

For Khod Hin Community, the farmer ages have some non-communicable diseases. Even though, they still found that it is not the barrier for them to gain income from farm work. Since aging has the potential to determine the ability of people to pursue livelihoods. The research has further examined the perception of their future livelihoods in the agriculture sector of this community. It shall be noted that the character of this agricultural community is different from Krok Yai Cha Community in which Krok Yai Cha Community where agricultural livelihoods can continue as the result of the next generation deciding to work in this sector. However, the character of Khod Hin Community is evidence that the children work in another



sector. The social dimension on the shortage of human capitals in agricultural labour is influenced by a current economic development. By this dimension, it could transform the pattern of agricultural livelihoods.

*“I have three kids, all of them are working in the private sector. Two of them are working with a large private company in Rayong. I am gladful that they are living and working not far from their home. Regards on health security, I am also aware of my health that could impact on the ability to work. Actually, I deeply hope that my children can continue what I work. However, I still found that it depends on their choices. In case I am unable to work for the fruit farm based on health and aging issues, I am possibly to sell my land and stay with my children. Anyhow, currently, I can't predict the future but that could be a plan”*

People living in the study area have quick access to health services. The community medical unit is nearer than a hospital. It takes around 10 minutes to reach there. People prefer to visit the community health care unit rather than the hospital if the symptom is not serious. They perceived that it is more convenient and less time spent in waiting for a medical service than at hospitals. To ensure access to public health thoroughly, the mobile clinic and home visit are conducted in Krok Yai Cha. In contrast Khod Hin Community is rarely conducted by the public sector but the mobile health clinic is provided by the private sector for one to two times per year. The low cost of medical expense charge is very low or free of charge in Thailand. People can assure their ability to access the health insurance under the “Universal Coverage Health

### 5.2.2 Natural Capitals

In the agricultural community, the natural capital is the basic livelihood assets for farm activities (Yizengaw et.al. 2015). In the study area, almost all household income depends on agricultural productions. Therefore, land and biological resources such as water and soil minerals as well as environmental conditions can determine the livelihoods of local farm households.

### 5.2.2.1 Land Endowment

Land tenure plays a vital role in reducing the vulnerabilities to risks and providing the basic needs for livelihoods. People are able to generate income from the land in both farm and off-farm activity. Moreover, the land based livelihoods can generate the livelihoods from diversity of ecological resources for example food production and other basic needs such as shelter, medicine, and water. Additionally, land-owning and ability to access diverse ecological resources can ensure the livelihoods options in the event of environmental and socio-economic disaster. The evaluation of monetary income could overlook to take into consideration all the non-monetary goods that agricultural households obtain from land (Andrew et al., 2003). By land entitlements, people would save the cost of land rent which is considered as part of the production cost. Moreover, people have full rights over their land to deal with or to use it to the exclusion of others. It would prevent the insecurity from the request for the return of land during the production of crop period, as a result of leasehold agreement.

In this case study, all the informants own the land property under the freehold title deed. People have full right over the land. The overall average private land size of the sample respondents is 4-8 Rai (6,400-12,800 Square meters). The land is passed as an inheritance from generation to generation.

Number of studies investigate the relationship between farm size and livelihood diversification. At the same time, farm size relates to the household income. The study of agriculture livelihood in Ethiopia by Yizengaw et.al. (2015) analyse that the farm size could influence the livelihoods outcome and choice to engage in non/off-farm livelihoods strategies. The study has shown that the farm households who have large mean land size are dependent on agriculture alone whereas farm households with small farm size are more engaged in non-farm livelihoods diversification strategy. It indicated the supportive argument is that the small farm size could not support the household food and another financial requirement and hence force them to look to alternative sources of income. However, this case study did not show the correlation between farm size and livelihoods

diversification to off-farm activity. The findings appear choice to diversify the livelihoods based on individual decisions.

#### *5.2.2.2 Environmental Condition*

The ecological conditions are the state of the ecological system which include living organisms in a particular area and nonliving components, such as air, water, and mineral soil (daily, 1997). It is considered an important factor of people in the agriculture sector who earn all part of livelihoods to rely on environmental and ecological conditions.

In terms of water resources, the only available source of water of Krok yai Cha is the Nam Hu irrigation canal. However, this canal did not flow through the fruit farm of Krok Yai Cha and 3 kilometers far in distance. Even the community is close to the largest water source which is the sea. However, salty water is unpractically utilized in farm productivity. It can explain that people did not rely on those available sources of water. However, several farms decide to excavate a pit for supporting farm productivity. Therefore, rainwater is the water source of farm productivity. Similar to Khod Hin Community, the closest natural water resources is 4 kilometer far. However, people did not access this source of water as a result of distance. Each farm is available of their own farm wells.

Giving a lack of other permanent water sources, farm ponds have become a source of farm productivity use. The fruit farmers of both communities relied on the water source from the rainwater. However, in the past five years people are facing water scarcity as a result of climate causes water evaporation and droughts. However, the rainwater gives direct feedback to the vulnerability. Informants consider the chemical contamination of rain would create risks for their farm productivity. The information from the communities state that they still found unhealthy practice from the factory which they release the chemical emission n before raining. Two communities perceive the same perspective and experience that after raining, the fruit plants got damaged. It can prove after raining, the mango leaves are sear and cause damage to young flowers. Thus, the trees are unable to provide the fruit. The risks of

absent output of fruit production have a direct impact on income security since the fruit farmers only received a maximum of two times income per year during the fruit season and off-season. As a result, the chemical contamination of rain leads to income insecurity of the farmer.

The arid weather brings the thrips which is the most dangerous insect for mango and other fruit (Maneerat, 2007). The thrips destroy the young flower and young leaves which could impact farm production capacity.

### *5.2.2.3 Significant natural capital characters in the local*

#### **Krok Yai Cha Community:**

Based on natural capitals of two communities, the study found that each community has a different natural capitals profile. The natural capitals contributed to local livelihoods in several perspectives. In Krok Yai Cha Community, the geographic area is sandy soil due to the location being close to the sea. The mango from sandy soil growing becomes a significant character of this community. According to the information from the community, the mango has a sweet test and find-granted texture which is different from the mango around this area. This significance of natural character strengthens recognition of the market and customers. Fruit farmers in Krok Yai Cha believe that the taste and uniqueness of the mango is a result from the character of the sand.

In addition, the current mango tree which is considered as the commercial plants for this community, in the past, this tree are the wild mango trees of forest resources. It signifies the natural capital profile of the community allowed to transform to financial assets. People use agricultural innovation by grafting the wild tree with different types of mango varieties which selected based on market demands.

By being close to the sea only 1-2 km., livelihoods of Krok Yai Cha community are supported by marine resources. The krill which look like a small shrimp has been produced to the krill paste for making food. The krill paste also allows people to gain income by selling as local products. Anyhow, the information

from the community has reported that the krill paste is decreasing in the past few years.

#### Khod Hin Community:

Whilst, Khod Hin Community is far from the sea. People are not habitually using the marine resource in their livelihoods. However, the natural resources from the native plants, for example lemongrass, galangal, and other local plants are a significant part of their livelihoods. In the past, people used these plants which grow naturally in the community area for making medicine for example relief digestion, essential oil for topical skin disease treatment and antidote. The fruit plants such as mangosteens, rambutan, and langsung were part of livelihoods and income sources since their former generation.

#### 5.2.3 Physical Capitals

Physical capital comprises the basic infrastructure and producer goods needed to support livelihoods, such as affordable transport, secure shelter and buildings, adequate water supply and sanitation, clean, affordable energy and access to information (Kollmair & Gamper, 2007). Today's era of globalization, the technological innovation have play a vital role in the derived of physical capitals to livelihoods aspect of information and knowledge flow and modern business. In particular of this study, physical capitals also refer to the range of public infrastructures that support the economic development of the Eastern Economic Corridor. Thus, the physical capitals for analysing under this study include port, airport, high speed train, road, highway, and motorway, other logistic and transportation Facility (bus, train, private and public transport service, shipping company). These range of physical capitals are potentially become the factors of adaptive capacity for greater income and well-being for the agricultural community.

##### *5.2.3.1 Road Infrastructure*

Road infrastructure presents as an important factor for the agricultural communities in this urban area. It facilitates more market opportunities which connect

the customers to their farm. The road condition in both communities is a very good condition.

Krok Yai Cha Road is the minor road where people preferred to use when the main road (Sukhumvit road) is traffic. Krok Yai Cha Community is located in the middle where it connects industrial areas and residential areas. Therefore, the Krok Yai Cha Road is crowded during the day. The customers brought by road infrastructure included the workers in the industrial estates who pass this road regularly in the morning and evening and the casual customers. This physical capital strengthens fruit farmer power to set the price of fruit products higher than the previous practice. Previously, the fruits were sold to the middle fruit trader or sent to the wholesale market at the wholesale price. By the road infrastructure and concentration of customers, fruit farmers in this community decide to become their own entrepreneurship by selling their products in front of their farm house. Becoming sellers, their fruits products are allowed to set the price as the normal market price. Fruit farmers can gain a higher farm income from this physical capital.

Khod Hin Community also obtains good road infrastructure. However, the road is only crowded only two times which is in the morning and in the afternoon. People found that the road is beneficial for them in terms of transportation. However, the farmers in this community did not yet decide to change their market strategy to sell the fruit products in front of their farm. People mostly gain the new customers from the residents in the village. The information from the community still found that road infrastructure is the opportunity to bring the customers to their farm products.

#### *5.2.3.2 Infrastructure support export opportunity under the Eastern Fruit Corridor (EFC)*

Several physical infrastructures in the Eastern Economic Corridor are planned to facilitate the Eastern Fruit Corridor (EFC) for example port, airport, and high-speed train. Under the project, the government plans to establish the wholesale market in which the fruit farmers can sell their products to this market. The project is considered to reduce the challenge on oversupply during fruit season. The fruits are recognized as

short time-preserved goods. Therefore, the government will also facilitate the cold warehouse for storing the fruit before export. Port and airport perceived to become the physical capitals to fruit export opportunity.

However, people did not perceive that these ranges of physical infrastructures would directly support them for export opportunities or transport their fruit products to other provinces. In addition, the policy might be well applied for small farm households.

The first argument suggests that people are concerned about their supply capacity. They perceived that the fruit export would require large quantities. People also concern that the program contracts may require them to supply the products the whole year. However, their farm capacity can provide a small supplied capacity and only one or two times during fruit and off-fruit season.

*“It is an interesting program, I am also interested in exporting my products. However, I am uncertain that the wholesale market might require a large quantity of fruit supply. Moreover, if the program contract required the farmer to send a certain amount of the fruit and require the products all over the year, based on our capacity and nature of fruit production, I think we may be unable to join the program.”*

In addition, people are also concerned about the focal person who responds for this project and their rights to join.

*“The program is quite interesting. Anyhow, I am not sure how the program will choose the farm participants. We are concerned that the criteria for joining will be selected based on favoritism. Since, we have been experienced negative impact of patronage system during <sup>รับซื้อ</sup> local authority.*

Secondly, the buying price becomes the key determinant of farmers to join the program. The information from the communities point out that if the buying price is less than the current of what they get, that would not be perceived as a better opportunity. On the other hand, the programme will contribute a positive impact when fruit farmers can sell at EFC wholesale market at the export-grade price.

Thirdly, people agree that the cold warehouse can contribute to the positive impact for the fruit farm in Rayong. This capital can prevent the vulnerability of oversupply during the fruit season which leads to the low price of these products. Yet, the regulation from the policy side is still uncertain of the right or authority of which groups or individuals can access this physical facility. By lacking information, the agricultural communities could limit their capacity to perceive the opportunity from this project.

At the final point, the opportunity to sell the products across the province through high-speed trains might not be the best logistic choice. It is because of the nature of customer buying behavior that it has changed. Most of the customers prefer the convenient way to receive the products. The customers prefer to send the products directly to their house. Therefore, the high-speed trains could be beneficial when the customer's order in large shipments. Today's farmers have sending the fruit products to the customers through the private logistic company. However, people still widely agree that the high-speed train would become transportation facilities of the people in Rayong.

#### *5.2.3.3 Information and Communication Technology*

Technological innovations for example, telephone, internet and social media become an integrative part of people's life, market and society. Technology connects the information, knowledge, and ideas exchange. The internet has allowed small farm business instant access to knowledge and information to improve farm practice and productivity. The informants report that they use the internet from their mobile phone to access the new innovation for their farm practice. The new information allows them to experiment and find the suitable method for their activity. The fact shows that all of Khod Hin Community group members' access to mobile phones with the internet. Whilst, 95 percent of community development group members in Krok Yai Cha can access mobile phones with the internet services. The result shows that the elderly farmers are the majority of people who do not access the internet.



Moreover, social media allows them to conduct the marketing and reach the new customers at very low cost. Each farm member of Krok Yai Cha community decided to create the farm page on the social media platform to create the recognition of the market and reach a new target of customers. Whilst, Khod Hin Community have established farm page and website under the title of community enterprise.

The practice of economic activity of the small farm has expanded to conduct in the technological platform. The customers can order the products from telecommunication and social media, while mobile banking application facilitates the transaction between buyer and farmers. Besides, people perceive that the internet and messenger applications connect members in the community as well as governmental officers.

*“Our group connects to each other through the community group chat in messenger application. It is convenient for us to share the information and arrange the meetings”.* (Krok Yai Cha Community)

And

*“We created the group chat via the instant messenger application. This group includes the governmental officers from sub-district agricultural extension offices. When there is new information related to us, the officer will inform us on this platform”.* (Khod Hin Community)

This reflects that access to technological innovation enhances rural farm households' information on both farm and off-farm diversification opportunities. At the same time, it improves better communication between people and public agents.

#### 5.2.4 Financial Capitals

Financial capitals can be considered as one of the important assets. Income plays a significant role in vulnerability and poverty level of individuals (Krantz, 2001). In this study area, the main indicator of financial capitals are farm production income, off-farm and non-farm income, credit and saving.

The farm income from the fruit production is the most significant source of financial income of the community case studies. One aspect which illustrates the difference of income gap between farm households identifies an interesting viewpoint on type of farm products. Comparing the farm income per Rai (1 rai is 1,600 sq.m.) among different types of productions found that the durian farm is the highest profit returns.

Additionally, household income will be dependent on the decision of the farm owner to whether additionally work for the off-fruit season. During the off-farm season, the commodities prices will be higher than fruit season. However, the off-farm production requires more cost of production on plant growth regulators and other fertilizer spending.

The net income of agriculture depends on the cost of production and household spending. The study reveal that the cost of production is most invested in chemical fertilizers and pesticides as well as the agriculture tool such as paper for fruit protection especially for mango. Farmers are facing the high price of fertilizer and other agricultural substances to maintain their productivity. The information from the mango farm in Krok Yai Cha states that the mango farm is difficult to avoid using pesticide. It is because the pest becomes the key challenge for the farm. The bio agricultural stuff is less effective to deal with the challenge.

The role of financial capitals in community development projects under the community enterprise indicates that financial capitals have a less significant role. The financial for running the community enterprise gains from the share of each member. However, the shares are based on people's choice and financial capacity.

Some of the financial support was also contributed by the government and private sector. The case of the groundwater bank in Krok Yai Cha is supported by the private sector who facilitate the machine operation in the area. Similarly, the machines for producing community products in Khod Hin community enterprise are supported by the private sector.

Admittedly, the financial capitals remain a significant role of self-reliance of the group. It is considered that self-reliance is the key capacity for sustainability. Self-reliance refer to the need for people to improve their condition using local initiatives and resources in their own hands (Fonchingong & Fonjong, 2002, p.198) The fundamental principle behind creating self-reliant of small-scale farmers entails that an intervention should seek to build capacity among farmers in five key assets areas to overcome challenges and access to the opportunity.

Financial independence of the members would endorse the community capacity for development. It allows the community to experience the new method for well-being enhancement and creating innovation. However, the small scale of community development groups faces the challenge of the high cost of advanced technology, machines, and tools. The advance technology in farm practice and production is still difficult for people to decide to invest in. It is because of the uncertainty of technology effectiveness, the risks of investment and profit returns.

#### 5.2.5 Social Capitals

Social Capitals are those relationships with other people that are used to make in building a livelihood (Molelu, 2014). Coleman (1988) stated that the social is one of the capitals, which is productive, making it possible to achieve a particular livelihoods goal. The existing of social capital correlate to ability of the community to access, make, and use other type of assets and resource (Krishna, 2002; Pretty, 2003). Putnam (1993) defines social capitals as a social organization, such as networks, norms, and trust, that foster coordination and cooperation among community members, enabling them to act collectively for mutual benefits. Woolcock (2001), Woolcock and Sweetser (2002) and Pretty (2003) distinguished the social capitals into three dimensions which is bounding, bridging and linking. The three social capitals dimensions are useful to explain social capitals of a community which diversely links the social interaction of micro-macro levels. In other words, it modestly explains the social relation and interaction within community group and with external associations.

### 5.2.5.1 Bounding social capital

**Bounding social capital** is formed by strong ties for instance, based on kinship, ethnicity or neighborhoods, among relatively homogenous individual within the same community (Marin, 2015). By and large, the similar objective is manifested homogenous group to build social cohesion for making a livelihood and improve well-being. Members of Krok Yai Cha Community enterprise present kinships characteristic in their social relations. The majority of the members are relatives. Although, there are also other group members who are not in the same kinships. However, people claim that they have known each other for over fifty years. Therefore, social relations are very close. Similar to Khod Hin Community, three significant families are members of the group. There are members who have moved from other provinces to this village nearly 30 years ago. People perceive that group members have strong tie to each other.

*“The group members are the kinship. Our family members are married but most of their spouses are moved to live in this community and work in the mango farm.”*

*(Krok Yai Cha Community)*

*“I am not the relative of the majority of the group members but my family lives here for a long time as the same period as (Family Name of majority of the people). I was born here and am familiar with the neighbor for nearly 40 years. We knew each other for a long time. When there are religious ceremonies, we often meet at the temple. We live in a harmonious way. When there are a community ceremony or activity, I can help with my labour”* (Krok Yai Cha Community)

And

*“Our members are relatives. I think there are three main families that are part of the group. Because people have been living here for a long time and our farm houses are close, when anyone needs help for their farm, we always come to help each other”*

*(Khod Hin Community)*

*“I came from Chachoengsao, a nearby province. I moved here over 30 years ago. My family has a background in agriculture. So, I start my livelihood here as a fruit farmer. I do not feel that I am outsiders because we are familiar to each other. We always come to help others in the farm work if they need any help. For example, I usually went to help them on the farm water system”. (Khod Hin Community)*

Consequently, the close relationship and trust among community members develop greatly in person of who have grown-up in the community or been living in the community for long period of time to get familiar with their neighbor. People perceived that their social cohesions are develop though communication and conducts the local customs and religious ceremony. Underline the communication factor lead to social cohesions, the study found that people are close to each other influence by duration of living in the community and socio-cultural identity. The information from the community states that they did rarely communicate with new villagers who recently move into village as a consequence of available of works in the Eastern Economic Corridor. Moreover, social and economic transformation as the consequence of the Eastern Economic Corridor develop estranged relation of the local people. People indicate that before the groups was established it was perceived that people have less communication.

Another point on social cohesion among group members emphasis the similar character of profession. This similar profession profile allows people to communicate in same topic to each other for example exchange the flow of information on good practice in farm or suggestion on new market opportunity.

*“I think the development develop us into urbanism and modern living lifestyle. People had less communication and meet each other less often than previous. Previously, we walked to other people house and exchange the casual topic of daily life, happiness and suffering. But the development brings the social change. There are new people moved in and some local people moved out. Social relations of community members are estrangement. Against this background, the community enterprise allows us meet and communicate to each other more often.”*

The close social bounding term of kinship or long period of neighborhoods is also signified in term of conflict management. People want to maintain a good relationship within family and their long-time neighborhoods. The interaction between them, therefore are presented in the way of compromising and avoid the conflict by follow or agree with another opinions or ideas. As the result of openness to different opinions apparently allows group member to experience the new methods, tools and practices. This encouragement to explore the different way of practices would allow members to generate innovations.

*“We do exchange information on our farm practices. The innovation on grafting technique of the mango tree, I gained it from my neighbors, a mango orchard next to mine.”*

*“I always discussed my challenge on farm activity to my farm neighborhoods for example, fruit pest and the substance to deal with them. I received some suggestions and I applied to my orchard”*

*“Our group seems to agree to what others said. If someone make an idea for example to arrange meetings, group activities or any issues required supports. Then, we talk to each other informal in persons or communicate in the group message. In the case that some members are unable to attend the activity such as group meeting, we inform the meetings information in the group message. We understand other people’s duties and their availability. If, the tourist group booked to visit the community farm but during that time, most of people are unavailable. Then, we deny the tourist group. It is because we do this activity as a collective action with participation of all the farms members.” (Krok Yai Cha Community)*

*“Our group seems to agree to what others said. Base on your interview question about the conflicts, I would say that we never have disputes or market competition. we know each other for a long time. Our relationships are friends and neighborhoods.”*

*(Khod Hin Community)*

#### 5.2.5.2 Bridging social capital

**Bridging social capital** describes the capacity of groups to make links with others that may have different views (Pretty, 2003). Base on similar in profession fabricate the common goal of livelihoods. It organizes people to join the community collective actions. Even though, the rational actor theory explains that the decisions of individuals to join the collective action will be based on the rationality, experiences, and self- interests (Blumer,1995). People from these two communities have different explanations to join this community collective action but it can content that the insurgent consciousness towards common challenges and opportunities for development are grounded on decision to participate the group activities upon the common goals and objectives. The social capitals in community organization is accumulate to fulfill the different aims in term of maximizing individuals' interests (Westlund and Adam 2010).

At the different viewpoints on emphasizing the goal at group level, two communities have some insignificantly different objective. However, the shared character of the community goal is highly justified based on their identity of profession. To illustrate this point, advancing the effective of resource management and capacity to adopt sustainable farm productivity are denoted the homogenous goal of these two community enterprises. Still and all, the community groups have also broadened strategies to other security areas, including social relations and community security.

Bridging social capital also expand the character of people from different sector or different in the business profile. The shared interests, perceptions, and goal of development would link this type of social capitals to join the collaboration. In this case study of Krok Yai Cha Community found that restaurant business area become the partners of the development group. The agricultural farm members and other local businesses perceive the opportunity for community development by to joining in community fruit tourism. People have created the community tourism map which pin the significant place for tourist visiting. The diversity of partnership would support the each other's capacity by facilitating resource exchange and resource combination.

It can be exemplified that both farm and restaurant business shared the market and customers.

### *5.2.5.3 Linking social capital*

**Linking social capital** describes the ability of groups to engage with external agencies, either to influence their policies or access to useful resources and information (Woodlock, 2002; Pretty, 2003). Woodlock (2002) explained that this type of social relation is weak but it mostly happened in the formal relationship forms. In some respects, linking social capital is about power of negotiation. In spite of that, some scholars extend the definition of linking social capital to cross-scale interaction and pipeline to external resource and information (Cash et.al., 2016; Aldrich, 2002).

- ❖ **Governmental Institution:** People in Krok Yai Cha have a very good and companionship relationship with the government officer especially the officer from Social Welfare Division, Map Ta Phut Multiplicity. The officers have been knowing the people in the community since the development group has been found. They become the key actor who encourage local people to become the key actor to generate the resolution for uplifting the livelihoods well-being. The officers aware their role of influence. They work with community towards the participatory development as they believe in community-drive resolution and community led development. Several keys of support such as arrange the meetings, training, and provide the information are contribute to the group. The aims of this public agents also want people to srntenthen their skills towards the change of structure and system in the Eastern Economic Corridor. Moreover, the public agents also support or become the middle person who bridge other partnership in collaboration of community development such as private sector and academic institution. However, we found less role of the agricultural extension officer in both community. Even though, the agricultural officer can provide the instance massage and information though telecommunication technology.



- ❖ Private partnership: The relationship of private-community partnership is different between communities. Khod Hin Community have a horizontal relationship which private sector has proactive come and connect directly to the community. While, Krok Yai Cha Community, most of the connection will pass through the governmental organization. The bridging social capitals of private sector such as academic institution; university and officer, and their business partners were linked to the community in supportive knowledge material.
- ❖ Academic institution: The academic institution is mostly involve with university, experts, and professor. Some key specific issue required science and academic knowledge. The study found that the academic institution can collaborate with community by two ways. Firstly, the academic institution conducts the research on particular interests. Second, their relationship with community was bridged by being partnership with government institution or private sector.

This analysis found the evidence for the benefit of member diversity which can enhance the capacity among each member. At the same time, the different in background, knowledge acquirement, and specialize in different field are contributing of knowledge exchange. The structural dimension of social capital which is referred to the social networks or social interactions among key partners can be used to access specific resources or facilitate transaction. UNIVERSITY

### **5.3 Livelihoods Strategy**

By self-reflection on the interrelated impact of the industrializing economic development in the Eastern Economic Corridor found that the impact shows both positive and negative contribution. The insurgent context of macro phenomenon on range of socio-economic transformation for instance, new market opportunity, climate variability, policy driver of the state intervention in the Eastern Economic Corridor open the key statement for communities to cope with the challenge, access to the opportunity or abandon.

Community development group underlines the key process where community members come together to take collective action and generate solutions to common problems. Using the key assets of community which are financial, physical, natural, human, and social capitals combine these capitals to create livelihoods and be able to enlarge their asset base through livelihoods strategy and interactions with other actors and institutions (Chambers and Conway, 1992; Carney, 1998; Scoones, 1998; Johansson, 2015).

### 5.3.1 Biodiversity-based community enterprise, Krok Yai Cha

<p><b>Krok Yai Cha Community</b> (Labeling this community as “1”)</p>	<p><b>Internal Strength</b></p> <ul style="list-style-type: none"> <li>• Human Capital Strengthens (HCS1)</li> <li>• Natural Capital Strengthens (NCS1)</li> <li>• Physical Capital Strengthens (PCS1)</li> <li>• Financial Capital Strengthens (FCS1)</li> <li>• Social Capital Strengthens (SCS1)</li> </ul>	<p><b>Internal Weakness</b></p> <ul style="list-style-type: none"> <li>• Human Capital Weakness (HCW1)</li> <li>• Natural Capital Weakness (NCW1)</li> <li>• Physical Capital Weakness (PCW1)</li> <li>• Financial Capital Weakness (FCW1)</li> <li>• Social Capital Weakness (SCW1)</li> </ul>
<p><b>External Opportunities</b></p>	<p><b>External Opportunities:</b> Opportunity to sale the products at the export price though wholesale market under EFC  <b>Internal Strength:</b> HCS1, NCS1, FCS1, and SCS1  <b>Livelihoods strategy:</b> Obtaining the GAP</p>	<p><b>External Opportunities:</b> Opportunity to sale the products at the export price though wholesale market under EFC  <b>Internal Weakness:</b> small capacity of production  <b>Livelihood Strategy:</b> -</p>
	<p><b>External Opportunities:</b> Increasing number of urban population and tourists  <b>Internal Strength:</b> PCS1  <b>Livelihood strategy:</b></p>	<p><b>External Opportunities:</b> Available of technology in farm production and product development  <b>Internal Weakness:</b> HCW1,</p>

	<p>Community fruit tourism. Livelihood diversification. Entrepreneurship strategy.</p>	<p>FCW1 <b>Livelihood Strategy:</b> Partnerships and network strategy</p>
	<p><b>External Opportunities:</b> Increasing of employment opportunity and occupation choice <b>Internal Strength:</b> <b>Livelihood Strategy:</b> Investing in children's educations</p>	<p><b>External Opportunities:</b> Increasing of foreign tourist <b>Internal Weakness:</b> HCW1 <b>Livelihood Strategy:</b> -</p>
<b>External Threats</b>	<p><b>External Threats:</b> Climate change and contamination of rain and drought <b>Internal Strength:</b> HCS1, SCS1, FCS1, NCF1 <b>Livelihood Strategy:</b> Community ground water bank.</p>	<p><b>External Threats:</b> Environment associated health risks <b>Internal Weakness:</b> SCW1 (Weak political position) <b>Livelihood Strategy:</b> -</p>
	<p><b>External Threats:</b> Market price uncertainty of fruit commodities. Environmental conditions, urbanization on declining in natural resource-based livelihood, and raising cost of living <b>Internal Strength:</b> HCS1, NCF1, FCS1 <b>Livelihood Strategy:</b> Multiple cropping strategy</p>	<p><b>External Threats:</b> Distance from agricultural knowledge center. Lack of policy communication <b>Internal Weakness:</b> SCW1 (Weak political position), PCW1, HCW1 <b>Livelihood Strategy:</b> -</p>
	<p><b>External Threats:</b> Rapid change in macro economy and movement of information Urbanization and socio-cultural change. <b>Internal Strength:</b> HCS1, PCS, SCS1 <b>Livelihood Strategy:</b> Community Collective Development</p>	

Table 5.2: Biodiversity-based community enterprise, Krok Yai Cha Community

### *5.3.1.1 Acquirement of Good Agricultural Practices (GAP) strategy*

The existing of physical infrastructure and economic environment in the Easter Economic Corridor would provide the export opportunity for the agricultural sectors. However, the export opportunity of agricultural commodities would be influenced by international market regulation on food safety and sustainable supply chain management. The growing presence of international standard on environmental and health attention required certificate of Good Agricultural Practices (GAP) as an import and export standard requirement. Even though, the domestic market also upsurges of consumer behavior trends on food hygiene. Thailand has developed Thai GAP standard to improve farmers' competitiveness in the global market (Salakpetch, 2007). The GAP, therefore aims at increasing the supply of safe and high quality of food by promoting the sustainable crop production and use less pesticide (Schreinemacher et.al. 2012).

However, people in the community have less aware on how this mainstream phenomenon would impact their opportunity to export or sell their products in the domestic market (HCW1). By collaboration with the local government under livelihoods development activities of the community institution broaden the perception of farm members towards market competitive capacity (SCS1). The group activity is implemented as the collective actions. The farm members encouraged each other to acquire the GAP certificate, which resulting in transformation of farm practice (SCS1). Under the GAP scheme require quality farm management system to prevent, eliminate or minimize physical, chemical and biological hazard and produce a safety fruits. The standard consists of eight key elements for instance safety of water use, site safety and sanitation, use of agrochemicals, product storage, data records, and pest-free products (Yadanar, 2019).

Throughout this community strategy on good farm practice will not only positively contribute to environment and consumer's health dimensions but it will also enhance in human capitals knowledge and skill on farm practices. The result of

GAP standard requirement especially data record requirement allow community to exchange information and data required for farm efficiency, effectiveness, and profits estimation. This community activity is organized learning and exchanging information on farm practice among each member. It can be exemplified in the case that farm members exchange on how and what data they put in the record. Some fruit gardeners neglect to insert self-labour cost as part of the input cost. Therefore, the farm profits are not precisely calculated. At the sort of thing, the flow of information and knowledge exchange of collective development allow community to adjust their plan and generate strategy on farm productivity more proficiency.

#### *5.3.1.2 Livelihoods diversification and change of economic activity*

**Community Fruit Tourism:** Instead of focusing on doing the farm work, people expand the livelihoods strategy to tourism. Speaking of which tourism, the community had linked it to their livelihoods where agriculture is the main profession by doing community fruit tourism. The community is still doing the mango farm as the typical practice but using their orchard as the place for people to visit (PCS1). The community fruit tourism was initiated by participatory development. Members of the group are the key part of initiative designed for this project with facilitated of government officer of the Social Welfare Division of Map Ta Phut Multiplicity who empower and contribute the ideas (SCS1). The local agricultural communities decided in which strategy that can enhance their livelihoods of agriculture in the different development environment in the Eastern Economic Corridor. Therefore, community fruit tourism is potential strategy which also shows the correspondence to the state development policy of fruit tourism.

Grassroots innovation identifies the institutional perspective that each participant contributes of inputs both ideas and household capitals in the design and implement of the development projects (Tuft et. Al, 2009). The strategy can interpret their concerns or their needs to benefit of their lives. In additions, the grassroots innovation enabling community to design the most appropriate strategy based on their character and assets profile.

The design of service significantly illustrates the collective actions strategy. To give illustrate of collective actions strategy, when the tourist groups has booked to visit the community fruit farm, community members will arrange the meetings to perceive the availability of each member and distributing of work. At the same time, they will provide the equal opportunity for each farm member to welcome the tourist group. The chosen farm will agree upon the willingness of the farm owner and consensus agreement of the members. In the case that there are tourist group, farm members will not work individually, but all the farm members will come to work as the collective action. The duty of each member is not assigned as a certain duty. The group aims that people can practice in every duty from guide tour, cooking to marketing. This strategy does not only create the sustainability of the group as the result of the risk of lack of human resource, but this strategy will allow people to practice unfamiliar skills which would help people on capacity building.

One of the strength factors of this community is culture, history and local practices. The study found the influence of commodification of culture play the crucial role in the strategic plan. The culture capital is referred to the local foods, the local fruit products, and local living. To further understand the role of culture capital, it can demonstrate on the food and catering services. The foods are made from local biological resource for example local vegetable or the krills paste. They tell the story, culture and way of living though these services and products.

Moreover, special character of natural capital, considerably mango from the sandy soil (NCS1). These factors become the key identity which make the community difference since most of the place in Map Ta Phut complex become urban living. The identity on mango on sandy soil. It can be recognized that community identity can apply as tourism and marketing strategy.

Above all, the diversity of partnerships who are outside the group become the key contribution to this strategy. It can observe though the bridging social capital or the social relationships of exchange which contrast social identity associate between

each other with shared interests or goals. (Pelling et. al., 005). In this case study, the café and seafood restaurant incorporate to the project of community fruit tourism. Agricultural community members and restaurant in the area come to gather to create the community tourism map. The map is pinned all the farm members in the area, tourist attraction and restaurants partners. Thus, it also covers the locations of farms and restaurant members. It is result in mutual benefits and supports. The diversity of members will share the market and customers. Moreover, farms have the opportunity to put the products at the restaurant. At the same time, the restaurant has gained marketing benefits towards government and partnership support marketing. The diversity of members also contributes to a wider perspective on generating the solution or development plan as the result of different backgrounds, knowledge, and experience.

By remaining what livelihoods is, people give some perception that it can contribute to psychological security from the consequence of the socio-culture transformation. Towards the tourism strategy, it becomes the opportunity to gain the second source of income.

#### *5.3.1.3 Livelihoods Diversification:*

Similar influenced context of resettlement, population growth and transformation to business area. Some farmers decide to diversify their livelihoods to off-farm work. In this case study, the research can investigate that the study group did not utterly move into other sectors but branch out to off-farm source of income. To illustrate this strategy, some mango farmers have expanded their business to farm-stay resorts. The community gain the livelihoods diversification strategy from the physical capital of location (PCS1) and financial capital (FCS1). The community location is near the beach where there are already existing tourists. The highway and the location in the middle of Map Ta Phut industrial area where connect between cities also endorse the capacity of this community to diverse their livelihoods from solely farm based livelihoods to off-farm business sectors. Therefore, people can gain two ways of income. It can also guarantee the financial security from the risks of unpredictable of farm productivity.

#### *5.3.1.4 Entrepreneurial strategy:*

**Community Green Market and Farmer Market:** Not only the macro phenomenon of the increasing of international and domestic urban migrant in the Eastern Economic Corridor but the road infrastructure and location repeatedly show the beneficial assets which allow agricultural community to change their economic strategic plan (PCS1). In the past, farm members are relied their market from only one source which are the middle man or fruit traders. By selling the fruit products to this traditional market channel, people can only gain the farm revenue at the wholesale-price which almost two-time lower than market retail price. Linking the benefit of economic development context and livelihoods capitals of spatial factor, the farmers turn their market strategy to become the entrepreneurship and sell their fruit products in front of their farm. Henceforth, farmers can set the products higher than typical practices.

#### *5.3.1.5 Natural Resource-Based Strategy*

**Multiple cropping strategy:** Uncertainty of farm production can produce the risks of the agricultural livelihoods. The uncertainty of production can be turned out from the natural and environmental condition. Water shortage, drought, climate change, and natural disaster are some key vulnerability of people in agriculture sectors. Moreover, the declining of natural food resource of the community for example marine resource and local plants affect the way of household consumption. Environmental condition, declining of natural food resource, spatial development and development of urban market increase financial spending and access to food though the market rather than self-sufficiency characteristic.

The benefit of resource-rich of agricultural household is the available of farm land (PCS1 and NCS1) and experience and knowledge on farming (HCS1). These livelihoods assets create the impact on the strategy choice of the fruit farmer towards multiple cropping strategy. The study shows that the mango and jujube remain the key commercial products. However, households decide to grow the vegetable and other plants for their source of food. The growing of other crops is also associated



household spending and food self-reliance. People can save cost of buying the food product at the urban market. The informants report that the multiple cropping strategy also allow them to gain the second source of incomes. The surplus of productions will be sold to vegetable vendor. Some of the surplus are also provided to the neighborhoods. In consequence, the multiple cropping strategy is potentially to guarantee food security, decrease cost of consumption, increase income, and build social relations.

**Community ground water bank:** Another livelihoods strategy that establish to deal to natural resource and environmental condition is community ground water bank. Climate change and drought posed the threat to water shortage in past few years. The concerns of the fruit farmers arose on their future security of farm production. By the social capitals of connection with local administration officer who mutually contribute to the community development projects, members of community group do easily express their concerns and seek for solutions.

The external factor of environmental condition is merely one part of the vulnerability. However, the geographical location of Krok Yai Cha community contributes as another side of vulnerability. The geographical setting of Krok Yai Cha is drainage basin land form. Local people always face the challenge of drainage flooding. It can observe at the type of their housing that was built on stilts (Figure....) which are designed to be elevated to prevent the flooding. Moreover, the sloped land is up to down from the coastal to the community. The coastal is only 300-800 meters far from the community. The raise of sea level take place during the mid of May to the end of October, the period of monsoon season. Therefore, during the times period are the most vulnerable period of flood crisis.

The fruit gardeners in this community have believed that the sandy soil profile can serve the water to drain effectively. However, this assumption is misinterpreted (HCW1). By a good connection with the local government and communications on the livelihoods risks, the public officers try to support on the solution (SCA1). The connection of governmental agents and educational institution, essentially university

brings the scientific facts on the character of land area and suggest of solution. The assessment found that the deeper ground layers are a medium-coarse to coarse sand which is an unconfined aquifer. In consequence, the water will not drain through the soil but swamp over the coarse soil surface.

Owing to the challenge on water shortage and flooding probability, the suggested solution from the academic institution is groundwater bank. Members of the community development group, therefore, collect and analyze the knowledge and information on groundwater bank for water harvesting and storage. Their decisions go towards the groundwater bank strategy. Exclusively, community capacity on technical operation and construction obviously hindered the outcome of implementation.

The connection between local administration and private sectors recurrently influence their role in this community strategy. Under the Corporate Social Responsibility, the private conglomerate in the industrial area decide to support the community project by providing technical knowledge and financial for implementation. The private sector has their business background on underground resource notable, petroleum industry. Therefore, the available of human resource who specialize in the field of this underground natural resources and machine are useful for this development activity. In the course of implementation this project, the flow of knowledge and information are exchanged among local people, private and public agents.

## 5.3.2 Organic Farm Community Enterprise, Khod Hin Community

<p><b>Khod Hin Community</b> (Labeling this community as “2”)</p>	<p><b>Internal Strength</b></p> <ul style="list-style-type: none"> <li>• Human Capital Strengthens (HCS2)</li> <li>• Natural Capital Strengthens (NCS2)</li> <li>• Physical Capital Strengthens (PCS2)</li> <li>• Financial Capital Strengthens (FCS2)</li> <li>• Social Capital Strengthens (SCS2)</li> </ul>	<p><b>Internal Weakness</b></p> <ul style="list-style-type: none"> <li>• Human Capital Weakness (HCW2)</li> <li>• Natural Capital Weakness(NCW2)</li> <li>• Physical Capital Weakness (PCW2)</li> <li>• Financial Capital Weakness(FCW2)</li> <li>• Social Capital Weakness (SCW2)</li> </ul>
<p><b>External Opportunities</b></p>	<p><b>External Opportunities:</b> International and domestic market trends on hygiene food and food safety Export opportunity under EFC project Provincial agriculture development scheme on GAP <b>Internal Strength:</b> <b>Livelihood strategy:</b> Organic farming and GAP acquirement</p>	<p><b>External Opportunities:</b> Available of technology on product development <b>Internal Weakness:</b> HCW2, FCW2 <b>Livelihood Strategy:</b> Partnerships and network strategy</p>
	<p><b>External Opportunities:</b> Increasing of employment opportunity and occupation choice Attractive of land price <b>Internal Strength:</b> HCS2 <b>Livelihood Strategy:</b> Livelihoods transformation to non-farm jobs</p>	
<p><b>External Threats</b></p>	<p><b>External Threats:</b> growing of residential estate and urban residents in the community Government Gazette on banning pesticide and hazardous substance in agricultural sector</p>	<p><b>External Threats:</b> Environment associated health risks <b>Internal Weakness:</b> SCW2 (Weak political position) <b>Livelihood Strategy:</b> -</p>

	Environment associated health risks <b>Internal Strength:</b> HCS2, SCS2, FCS2, NCF2 <b>Livelihood Strategy:</b> Organic farming practice	
	<b>External Threats:</b> <b>Internal Strength:</b> HCS2, NCF2, FCS2, SCS2 <b>Livelihood Strategy:</b> Entrepreneurship and marketing strategy	
	<b>External Threats:</b> Low price of the existing of fruit products <b>Internal Strength:</b> HCS2, NCS2, PCS2, FCS2, SCS2 <b>Livelihoods strategy:</b> Local products development strategy Mixed-Cropping Agriculture strategy	

Table 5.3: Organic Farm Community Enterprise, Khod Hin Community

### 5.3.2.1 Transformation of farm practices to organic farm

The contextual factors of the Eastern Fruit Economic Corridor and the Provincial Agricultural Extension Plan on high quality product and food safety influenced Khod Hin Community to transform their agricultural practice towards the organic farm. It also shows the similar impacted factor on livelihoods of agricultural sector, compared to Krok Yai Cha Community. Equally relevant to this issue, the vulnerability of Khod Hin Community is significantly influenced by the spatial development which change the area characteristics of the community to the urban residential area.

The available of employment opportunity in the Eastern Economic Corridor led people to relocate into the areas. The increasing of population required for the basic needs of housing. Subsequently, the number of housing estate enormously

increase. This community is one of the other community that was affected by population growth and resettlement (The argument is supported by another site research on the impact of socio-economic development of the EEC on agriculture livelihoods in Banchang sub-district, case of cassava and fruit farm). The strategic location of Khod Hin Community where located in the center of business and industrial area (PCS2) found to become the potential location for residential area development by the real estate investors and companies. The land price is progressively high, not only in the community but in several parts in Rayong. As a consequence of attractive of land price, it stimulates the local people to sell their land and move to another area. The information from community member shows that the agricultural land in the area is decreasing. Several neighborhoods and some member of agricultural development group decide to sell their agricultural land area. While, the agricultural land and forest decrease, the spatial area has been developed to housing estate. However, new villagers predominantly work in non-farm sectors. The residential areas where are very close to the farm which prohibit the actual agricultural practice. Fruit farmers concerns that their farm activity on agricultural chemicals and pesticide application will be reported and create the conflicts with other people who recently move to the area. Therefore, they decide to gradually adjust the farm practice to chemical free. This idea is codified from communication among community farm members (HCS2 and SCS1). People exchange the information and seek a new technique to improve farm management. The electronic media and technological information provide the fast transfer of knowledge and products idea in supporting the need for adaptation (PCS2).

It cannot be denied that the economic development of the Eastern Economic Corridor increases the multinational companies and big business in the area. The role of private sector in social development are increasingly recognized as an inclusive partner in development. Corporate Social Responsibility (CSR) is aligned their business strategies with local development activity (McWilliams et.al., 2006). Private companies in the EEC proactively access to the community. The companies were first conducting the survey on demands of the community. Similar to Khod Hin Community, the surveys were conducted. It was shown the demand in this community

on organic farming development. Community was supported the livelihoods development activity by the private company. Training program, financial, materials and physical infrastructure are some key example of private sector's contribution.

The first aspects to point out this livelihoods development initiative is a readymade program which is designed by the donor, significantly on training program. The training program on organic farming was begun in 2017. The company hired the external specialists to become the program manager and take the responsibility from the whole training program to GAP certificate facilitation. The training including making the bio-fertilizer, bio-pesticide, other bio-extract, local product development, technological skills development for Smart Farmer, and marketing.

The second aspects of the project significantly related to local natural resources based strategy. It can be observed that the bio-products in agro farming are made from the local biological resources for example waterkanon, galangal, Siam weed, and wild cumin to make bio-fertilizer and other bio products, used on farm system. Natural capital and social capital offer the appropriate extension that facilitate community to organic farm conversion.

To abruptly change from agrochemical to chemical free are challenge for the community in several aspects. It can be pointed out that it creates uncertainty of farmer on effectiveness of bio- and profit returns.

Hodges (1981) state that in the modern agriculture use of chemicals are to maximize productivity. The effective of agrochemicals were guaranteed on its effectiveness in term of insect control and plant fertilizer. The declining in land area suitable for agriculture and the deterioration of soil quality in cultivated land have result in increase of chemical fertilizer (Anuluxtipun et.al., 2006). In the same way, the challenge of pest resistance required for larger and endanger of chemicals pesticide application. The chemical substance would contaminate in the soil and water. Thereby, it can pose the negative impact on both people and environmental

health. Even though, the agro-chemical application model is still popular across diverse crops to maximize the productivity.

People finds that it is difficult for them to change their behavior to organic farm at the beginning. The reason is the uncertain of bio-x effectiveness. Before changing to chemical-free farm as today, the challenge on pest resistant required the farm to be used higher concentration of chemical pesticide. People perceived that no way of bio-substance will be effective comparing to chemicals. Moreover, shifting from traditional practice to organic farm require a new cost and benefit calculation. Uncertainty on both effectiveness and cost issues constraints people's ability to go towards the organic farming innovations (HCW2).

In this study found that the collective actions and partnership are the key contribution to fill the challenge gap of uncertainty in innovation. Firstly, the ideas of organic farm were founded by insurgence consciousness of particular individual in community towards the opportunity or influencing of external threat. This process required community leadership to bring the awaken and establish the group work (Blumer,1995). Throughout idea exchange and assimilation are profound knowledge and information to human capitals. The decisions of the agricultural practice transformation of this group shows the important of trust and collective actions being the key driver for behavior changes. Moreover, the external actors also play a crucial role on knowledge transformation and material supports. Therefore, the decision to change behavior to sustainable production and organic farming have been took into actions.

Communities' concerns on the effective of bio-farm products and cost issue has been extinguished though experiments of the collective development group. Throughout the experiment, the effective formula of bio-fertilizer and bio-pesticide were developed with cost and benefit weight. The process of experiment of products development will only create the innovation but also enhance farmers' performance in budget management.

### 5.3.2.2 *Natural Resource-Based Strategy*

**Bio Product usage in organic farming system:** That being a case of spatial transformation, government promotion on good agricultural practice under EFC program, and the government gazette on banning chemical pesticide influence the way of the existing farm management. The sustainable production and alternative practice on organic farm become the key strategy for the community to response to macro phenomenon of socio-economic transformation.

The sustainable production underlined for enhancing productivity for future generations through the use of locally available resource such as bio-fertilizers (Dima and Odero,1997). The natural capitals of this local community such as waterkanon, galangal, Siam weed, and wild cumin are the input to make bio-fertilizer and soil enhancer in the farm activity. The soil enhancer and range of agriculture bio organic products also become the business opportunity of the fruit farmers to sell for other people outside the community members. However, people did not yet pursue this business strategy as their main development plan. It is because the production capacity.

By this case study, we can perceive that using the natural resource-based strategy for making their own products in farm system would reduce the cost of production and enhance the capacity on self-reliance.

**Local Products Development:** The local plants such as lemongrass, waterkanon, galangal, Siam weed, and wild cumin have been used for traditional medicine. People perceived that the local wisdom on traditional medicine has a potential to develop into the local product development. The products such as herbal mosquito spray, herbal massage oil, herbal drinks were developed by using the local plants. These products are also become the economic strategy that allow community to gain the second source of income under community enterprise.



### 5.3.2.3 *Entrepreneurship and marketing strategy*

The location of the community may not fully provide the opportunity to sell the agricultural products in front of their farm and the higher price of commodities, compared to Krok Yai Cha Community (PCW2). However, the opportunity for fruit farmer to gain a higher price of products at the retail price is promoted by the event market that organized by the companies in the area. Corporate Social Responsibility approach (CSR) is conducted by private sector individually. The group of private sectors and industrial entrepreneurs are also found Community Partnership Association (CPA) or in Thai, Puan Chum Chon association. This association has been founded by group of industrial entrepreneurs, aims to enhance community well-being and eco-industrial town.

The farmer market event is a part of other activity of the association and their members. The farmer market is conducted with the aims to provide the alternative market platform of farmer to sell their farm products in the industrial estate site. This community also joined in this event. By becoming the partnership with the private sectors, the local products for example herbal drink were gained the customer from the business sectors in the area.

Even the physical capitals on the location of this community is still not yet utilized for becoming the own entrepreneurship. Yet, the Kod Hin Community have organized the farmer market occasionally at their community enterprise center (PCS2). Moreover, the role of technology and social media platform is increasing gain the recognition in business development.

## **5.4 Livelihoods Outcome**

The group was encouraged by the local government, Map Ta Phut municipality office, to establish the community enterprise and work towards livelihood development. Collaboration between community and local government has conducted the participatory development to generate an idea and strategy for development. This collective development group becomes the platform for the people

to exchange the knowledge on farm productivity and quality of production. The information from the interviews points out that this collective action allows people to speak and understand each other more. In other words, collective actions are the mechanism for capacity building and conflict management. Diverse of strategy are cover the insecurity issue regarding on health, education, income, and environment security.

### **5.5 Chapter Summary**

The development brings the change in all dimension of social, economic, culture and environment in the developmental site. The agricultural communities decide to work towards resource management and capacity advancement to adopt sustainable farm productivity. These strategies become the intervention to access and response to macro phenomenon - vulnerability context, and structural and process transformation. The study found that one particular macro attribution can generate diverse impacts to agricultural livelihoods at the same point of times. It can be exemplified in the case of demographic growth and resettlement improve the market opportunity. At the similar attribution of population growth and urbanization limit the regular farm activity markedly, the chemical pest control. The organic farm and good agricultural practices, therefore become/useful the strategic choice that can alleviate risks of social conflict and access to the range of opportunities. Moreover, sustainable farm productivity strategy also responds to the export opportunity and opportunity to sell farm products at the high-quality price under the Eastern Fruit Corridor. The consequence of current development does not only influence farm activity but it also allows the agricultural household to diversify livelihoods to another income source of off-farm income such as a farm resort business. At a higher degree of influences, the development scheme would provide the employment opportunity in non-farm sector. The livelihoods of agricultural households can entirely transform to another economic sector.

The agricultural communities use the livelihoods assets to create the solution for enhanced well-being and respond to economic and social transformation

opportunities. The diversity of the members in terms of age, gender and sectors become the key attribution for community development strengthened. The members are required to have the same goals and interests which can lead to collaboration. In this case study shows the character of shared economy, similarity of agricultural-based profession, kindships and long-period of living in the community area, collectively are the essential character of social attributes that bring people together and form the collective actions. Health is the key factor of human capitals. The study shows that increasing of age would impact capacity to pursue the livelihoods in this case of agricultural farm. The knowledge on farm practice and organic farm was gain from the informal source of communication and information exchange among people in the group. Moreover, the knowledge training supported by become partners with other sectors. Diversity of partnership would allow the community to access and exchange the resource which will strengthen the capacity for undertaking the community development projects.

The natural based development strategy shared the key character of strategic plan in both communities. Available of livelihoods assets influence on livelihoods strategy and choices. It clearly shows in these two community case studies that even the similar impact of macro phenomenon of socio-economic changes in the Eastern Economic Corridor, community have delivered different livelihoods strategy which influence by the existing livelihoods assets. Not only the level of assets that provides opportunity for community to undertake the livelihoods strategy but the diversity of mixed capitals also influence the community capacity.

One particular livelihoods strategy lead to diverse aspects of livelihoods outcome. The strategies had served in responding to economic and environmental security. Among other livelihoods securities, people found that by becoming the member of collective development group contributes positive impact to their physiological security, strengthening and sustaining members' relationship, and created the self-esteems in agricultural based profession.

## CHAPTER VI

### DISCUSSION AND CONCLUSION

#### 6.1 Introduction

In the event of socio-economic transformation as a result of the Eastern Economic Corridor development in Thailand allows this study to examine the role of change agents in sustainable livelihoods development. Two agricultural communities in the industrial estate area of Eastern Economic Corridor in Thailand became the thematic example on community collective development in responding to the challenge and opportunity from the EEC project. The sustainable livelihoods approach was applied to observe community capacity on how community design the solution plan towards the common challenge and opportunity. *The assets-based approach* had facilitated to perceive the key dimensions of asset pentagon that allow the community to utilize in their strategy and implementation.

In the previous section allow the research to understand the role of development agents. The community use available of livelihoods assets to generate strategy and activity for overcome the challenge and access to the available opportunity in the Eastern Economic Corridor.

However, the livelihood perspective of local development that local development schemes are mostly lack of engagement with the big shifts in the state of the global market and microscale approach engagement which led community or local incompatible with real world challenges (Scoone, 2009). This section can provide key samples based on site research on how this grassroots innovation has the possibility to encounter the mainstream and make the recognition by using a grassroots innovation framework. At the same time, grassroots innovation is an outstanding contribution to sustainability especially on the environmental sustainability (Pansera and Sarker, 2016).

The study also find the role of diverse partnership in different sectors would also contribute and strengthening capacity of the community and their activity on

sustainable livelihoods. The partnership for inclusive development, therefor will be discussed in this section.

## **6.2 Grassroots innovation**

Grassroots innovative movement is the idea that opens the space of local knowledge and communities to lead in the framing of a collaborative innovation activity (Gupta et al., 2003). Grassroots innovation generates the bottom-up innovation from local material, skill, and knowledge to seek development and social justice (Heeks et.al, 2014). The community would bring the challenge of social issues which may be disregarded from the mainstream. At the same time, the community can become the source for sustainable development regarding environmental sustainability. By using the local livelihood capitals allow the community to work through the process of frugal innovation in order to gain the market recognition from the mainstream.

### **6.2.1 Socially- driven Solution**

By self-recognition towards challenge and goal for development, the unpopular issue may not be taken by the mainstream but it will be brought in the surface by locals since they know the best what is matter for people (Seyfang and Smith, 2007). In the case of the challenge on natural degradation and water shortage were also brought the issues into a discussion. The challenge creates cross industry innovative development. It led several partnerships across the sectors to jointly generate the solution and develop into implementation.

### **6.2.2 Sustainability-driven innovation**

The dimensions of membership, influence, reinforcement and shared emotional connection of community contains to make the community different (McMillan and Chavis, 1986). These senses of livelihood will extendedly concern regards to the common resource and environment. At this result, it will lead the community to

produce a sustainability- driven solution. In this case, community generate livelihoods strategy base on organic farm and sustainable farm practice.

Towards the community concerns on environmental degradation, food safety and the influence of policy on high quality of products (GAP), community tries to find the solution on how to use less agrochemical for growing their fruit. The community has shared the knowledge on doing the bio-extract by using the existing local biodiversity and natural resources. By doing their own bio-extract would save the cost of production and guarantee health security of the people in the long term. The group has been working on bio-extract and aims for the same efficiency as the agrochemical. The development pathway is the lead of the innovation in the agro farm sectors.

### 6.2.3 Frugal Innovation

The design of local innovation is quite unique. Some innovations may meet the needs of a small community but may not meet the large-scale application. Thereby, grassroots innovation has a low capacity to influence things. However, this should not become an enemy of sustainability (Gupta,2009) because the niche is the source of innovation. It would take time to transform the niche to mainstream but it does not mean that it is impossible. To influence the mainstream, the community does conceivably work through a novel organizational arrangement and lifestyle practice (Satorra and Paunov, 2017). Frugal innovation, referred to George et al. (2012) defines frugal innovation as innovative that uses the low cost of production to produce the high-quality products. In other words, the products or services should be simple but cheap (Pansera and Sarkar, 2016). In this case of community development, the group is using the livelihoods assets which are available in the community to generate the solution for gaining income and respond to the economic opportunity. The available livelihoods assets for example culture of the community, farm and current plantation. One of the examples is when people use their identity, culture and local practice to become the marketing for tourism. Another example is people have used the local plants to develop their local products such as mango candied products, herbal drink, lemongrass mosquito protection spray, and bio-fertilizer. Community

has linked this community innovation to the pathway for accessing the mainstream market. We can perceive that the range of local products are able to sell in the current market. Currently, the communities are developing this product by listening to customer needs for example packaging and taste. The livelihoods and culture are also perceived as different characters from mainstream trends of services and products. Therefore, these different characters are potential to become another product and service choices in the mainstream market.

### **6.3 Synergies between Inclusive Innovation, Partnership and Capacity Building**

Most early studies as well as current work focus on inclusive innovation as a key intervention for reduce inequality and provide the opportunity of unrepresented group, gaining inclusive development. The strengthen notion of inclusive innovation, provided by Glennie and Klingler-Vidra (2019) define the inclusive innovation as *“the pursuit of innovation that has social aims and local context at its heart”*. One can consider of it as either or both more inclusive approach to innovation, or a more innovative approach to driving social inclusion.

At the policy viewpoint, the government has initiated the agricultural development policy which work in parallel with the industrializing economic development in the Eastern Economic Corridor. The Eastern Fruit Corridor, Smart Farmer, and community fruit tourism are some key promotion scheme of the agricultural sectors. These range of the policy is considered as part of inclusive approach to innovation. The encouragement on good agricultural practices allow people to generate innovative strategy to enhance the collective well-being, which in both community case studies took place in the collective actions form.

Inclusive Innovation also underlined the role of diversity of partnership in engaging of inclusive development. The development Eastern Economic Corridor brings different organizations, institution, and sector especially private sectors in this Special Economic Zone. The economic environment with multinational companies and conglomerate shows batter vision on how private sector who may be out of

discussion on social development join the community development activity. The result of intention towards green industry and eco-industrial town can illustrate as innovation for collective well-being. The inclusive development approach of private sector is mostly taken in the corporate Social Responsibility (CSR). Technological innovation in business operation, financial and material support, and human capitals and specialist become a contributive factor to local development.

The role of partnerships in community development can be perceived at quadruple helix innovation framework. This framework is believed that it has been employed in inclusive economy of the Eastern Economic Corridor (Eastern Economic Corridor of Innovation, 2020). The quadruple helix innovation framework examines the network relationships among industry, government, academic institution and civil society or users. The model can be seen as an enhancement of the triple helix perspective that also include the role of civil society, or in other word a local people or community development group. Moreover, the relationship of social capital among each key partner are interconnect. It can link and brings diversity of partnership to work collaboratively in community development.

The result of inclusive innovation and partnership create the cross industrial innovation. The collaboration among partners also becomes the platform for ideas and knowledge exchange which lead to innovation for development. In other words, it can become the human capital's development and capacity building intervention.

#### **6.4 Sustainability**

The risks of sustainability dimensions of the community can identify in both structural attribution and personal attribution. To precisely perceive at personal attribution, a coherent with research objective, can be observe at the relationship between capacity deprivation and risk of sustainability. A livelihood is sustainable when can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets (Chambers and Conweys, 1991) In the sustainable livelihoods framework, livelihoods assets/capitals play the central role in the character of



capacity. The deprivation of assets would lead to the risk of livelihoods to achieve the sustainability.

The evidence present in this study has shown that the community have generated strategy and carried several activities to prevent, overcome, and cope with the challenge, as well as prepare and access to the existing opportunity from socio-economic development in the Eastern Economic Corridor. However, some key challenge on assets deprivation remain the risks of livelihoods to pursue their aspiration of well-being.

The first point I wish to draw based on the case study is that the communities have less power to influence or to order other sector business and/or activities. This is presented in the case of rain contamination which directly affects to the livelihoods of the agricultural community. In the shared environment/economy between local business sector and major business sector in industrialization, the risks from one's create are interconnected. The community can only influence this issue through the group discussion with the private sectors. In spite of everything, the last decision for improvement will depends on the risk creator side. The study may positively assume that the private sector in the area can only achieve this best technology base on their capacity. The second point is that the current technology for production may be at its best in this current period of time. Therefore, both provided arguments can confirm that the livelihoods of agricultural communities are difficult to achieve the sustainable livelihoods, while the risks and stress still remain.

Advance technology is believed that it can enhance farm productivity and product development. Smart farmer also suggests that technology would become the solution to gain effectiveness and efficiency of farm management. However, the study found that the local community face the challenge to experience the new technology based on two reasons. Firstly, high cost of advance technology is constrained by financial capacity. Secondly, uncertain of technology effectiveness and profits returns from investment constraints the ability to experience the technological innovation. The benefit from concentration of private partnership in the area have fulfill this

capacity gap of the community to experience advance technology in local products development. However, self-reliance by not depending on the external supports is considered to be part of capacity to achieve the sustainable livelihoods. However, the provided reason on both financial capital deprivation and uncertain of effectiveness and risks limit community to advance capacity in advanced technology.

## 6.5 Recommendation

At all event, this study acknowledges that it is unable to compare the strategy effectiveness or the result of livelihoods outcomes between these two-community's, dues to the fact that different challenges, resources profile, purpose and perception for development. However, the study can enhance understanding of the similar challenges and benefit contributions from socio-economic transformation in the EEC initiative to small farms and their livelihoods. Two community case studies may not be the case itself but to some degree, these case studies can portray the actual context of opportunities and capabilities of small farms in accessing the current economic and social activities of the industrializing economic development of the Eastern Economic Corridor.

The communities have responded to the macro phenomenon of market trends, development policy of the EFC on good agricultural practice, and urbanization by transforming from traditional farm practice towards the sustainable farm practice and organic farm. This strategy can contribute to livelihoods security in several dimensions which include food security, health security, and environmental security. This strategy does not only create positive livelihood outcomes to farm community itself but the positive consequence also extent to customers and people in nationwide. However, this thesis remain unclear on how this strategy would benefit to farmers income and poverty reduction.

The first argument explains that the cost of production between organic farm and chemical farm are not significantly different. One limitation of this research may be the case study did not show the evident, in which probably available in another

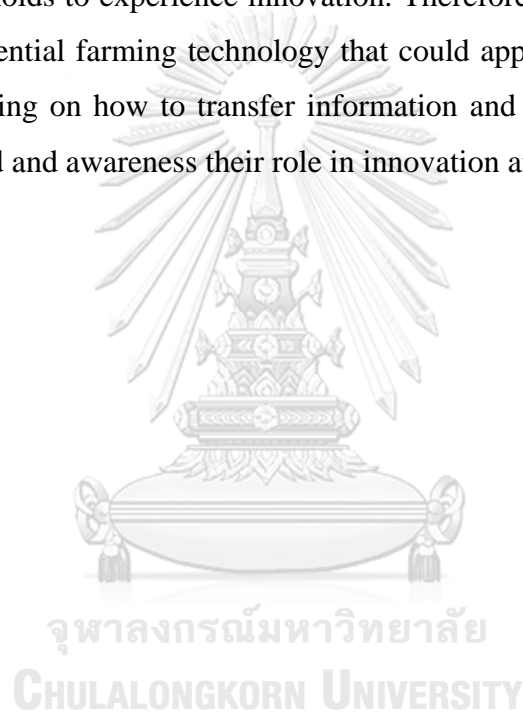
community. Secondly, the policy encouragement on good farm practice under the EFC initiative would allow community to export their products by selling at the wholesale market. However, there are uncollateralized of crops prices to sell at the premium standard of products. The risks of development scheme failure have a high chance to happen as long as the buying price is not attractive. The empirical evidences show that the private wholesale markets are available in the area. Fruit farmers already had trade partners which already provide export opportunity. Lastly, GAP certification of this case study remains a constraint opportunity to sell at a higher price in domestic markets. The study demonstrated that all the farm household who obtain the GAP, Q- GAP and organic agriculture certification remain sell at the regular price. The only way that allow fruit gardeners to sell at a higher price is by becoming entrepreneur and sell the products by their own.

Underlining from those respective points, the research can provide recommendations according to these followings; Firstly, the promoting market-based incentives that compensate framers for their efforts on organic farming. Secondly, the most important measurement to support the market opportunity of organic products is to bring the customer to them. This can be done at online or offline system. The customers might not awareness or trust on the products, therefore green label or quality certification on the agro products are required.

## **6.6 Future study**

The nature of the objective of study in this thesis aims to access and investigate the capacity of development agents at community level or collective actions unit. However, limitation of this research does not perceive on the agricultural farm who are not the members of development group. The future study would be interesting to compare the capacity between the collective development and individual farm which will allows the research to enrich perspectives on related factors and livelihoods outcome. By working towards this topic of future study would strengthen the supportive arguments on role of collective development group in achieving the sustainable livelihoods.

Another point to make is the role of technology in farming is not clear-cut case, especially on a small farm. It can be understandable that a small farm may not require to depend on advance technology because the farm management could be conducted based on labour force of human capitals. To transform the agricultural practice from traditional practice to smart farm would become the challenge for a small farm. It is because lack of knowledge, livelihoods assets and capability deprivation, and lack of confident to new technology would narrow the opportunity of small farm households to experience innovation. Therefore, to further research I plan to explore the potential farming technology that could apply to a small farm system, along with retrieving on how to transfer information and encourage the agricultural farm to understand and awareness their role in innovation and inclusive development.



### Appendix A: Community Respondents

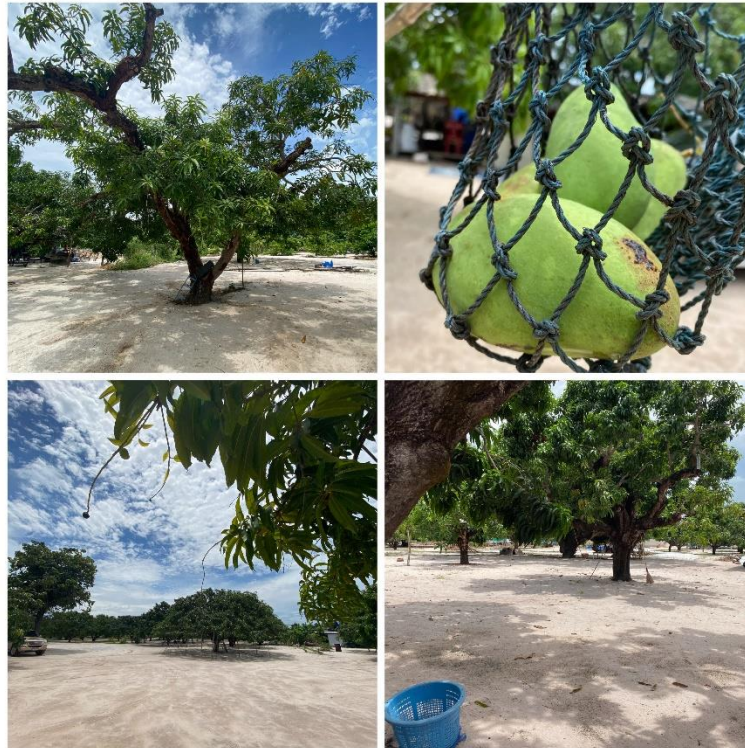
Community	Occupation	Gender	Age
Krok Yai Cha Community	Mango Famer	Male	74
	Mango Famer	Male	82
	Mango Famer	Female	55
	Mango Famer	Female	45
	Mango Famer	Male	48
	Mango Famer mango	Female	48
	Student	Female	24
	Mango Farmer	Male	28
	-	Male	59
	Mango Farmer	Female	58
	Mango Farmer	Male	26
	Owner of coffee shop and restaurant	Female	48
	Jujube Farmer	Female	54
	Jujube Farmer	Female	57
Khod Hin Community	Mixed-fruit farm owner	Female	58
	Mixed-fruit farm owner	Male	59
	Mixed-fruit farm owner	Male	60
	Mixed-fruit farm owner	Male	57
	Mango Farmer	Male	65
	Mango Farmer	Female	67
	Business owner	Female	56
	Employee in the energy company	Male	58
Social Welfare Division, Map Ta Phut Multiplicity	Officer	Female	30
	Officer	Female	32
Rayong Provincial Agricultural Extension Office	Officer	Female	37
Community Development Department, Ministry of Interior	Officer	Female	40
Muaeng Rayong District Agricultural Extension Office	Officer	Female	60
Noen Prah Sub-	Officer	Male	36

District Agricultural Extension Office			
Community Partnership Association (CPA)	Manager	Male	43
	Officer	Female	31



## Appendix B: Photos of the Research

Krok Yai Cha Community: Biodiversity-based community enterprise  
 The character of mango farm in Krok Yai Cha is sandy soil. This outstanding  
 character found that made the product significant



The fruit farmers have their own water sources at their farm. Recently, the challenge  
 on water shortage have brought the collaboration among government and private  
 sector on community water ground bank



People have responded from the opportunity of increasing of population in the area and the location where the Krok Yai Cha Road was cut though their farm house. The picture also shows the fruit processing local products.



Community fruit tourism become the strategy for community development. Community tourist map, locate in front of every farm members and restaurant partners. In this activity is significantly contribute by diversity of partners. The community tourism map was supported by Private sector and Social Welfare Division, Map Ta Phut Multiplicity





The encouragement among members and government officer led the community to join the fruit competition for the first time. Community are at the second runner. At this event, the farmer feel proud which would create self-esteem to them.



The mango community in Krok Yqai Cha use their available resource for example mango leaves and left mango to make the bio-fertilizer.



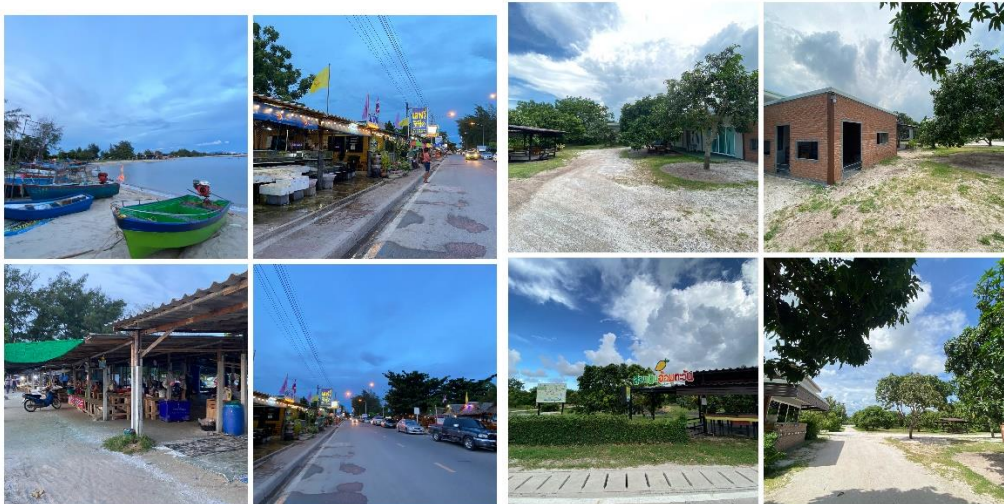
Both government and private sector also provide the market for fruit farm community to sell their products at the private worksite



Mixed crops for food-reliance. People also have the opportunity to sell their plants to the urban markets and sometime they give to the neighborhood.

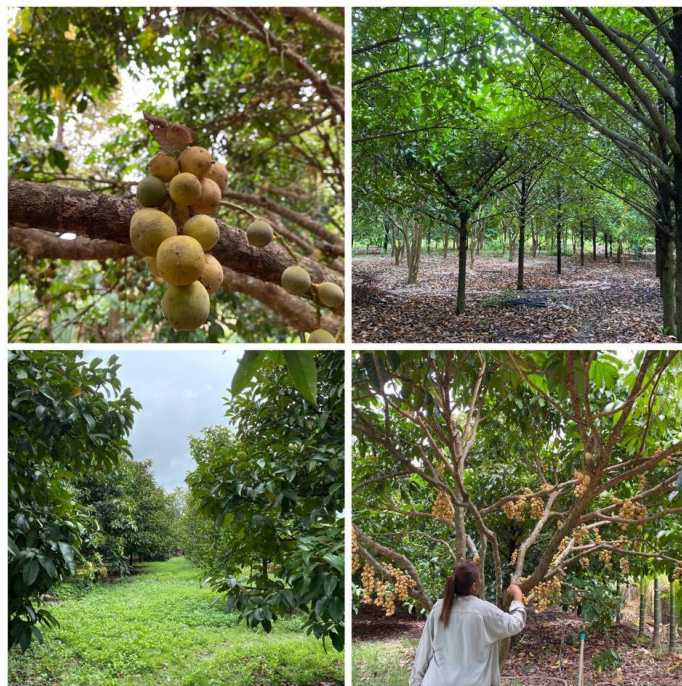


Being close to the sea and increasing of tourist become the opportunity for farmer to diversify their livelihoods in off-farm income



### Khod Hin Organic Farm Community Enterprise

Langsat is in their fruit season when on site visit.



The farm community's member is mostly the mixed-farm



The farm members organized the farmer market at their communities enterprise occasionally



People use their exiting natural resource to develop to community local products and bio fertilizer and another bio-substance use in farm management





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