

**INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) FOR
EMPOWERING THE POOR COMMUNITY IN
MANDALA MEKAR VILLAGE, TASIKMALAYA, INDONESIA**

MASTER THESIS

A thesis submitted in partial fulfilment of the requirements for

The Master Degree from University of Groningen and

The Master Degree from Institut Teknologi Bandung

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**Department of Regional and City Planning
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Bandung Institute of Technology**



2013

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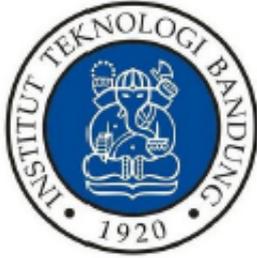
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Abstract

INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) FOR EMPOWERING THE POOR COMMUNITY IN MANDALA MEKAR VILLAGE, TASIKMALAYA, INDONESIA

By

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This study evaluates the role of ICT to the poor community in Mandalamekar, Tasikmalaya, Indonesia with Livelihood Framework from Ducomte works. The use of the Livelihood framework has been as an analytical tool and an overview to guide development policy. Survey conducted by phone interview to get the opinion of Mandalamekar villager about their vulnerability factor, capital asset, the role of ICT to improve their livelihood. The information also gained from village's website and blog.

Keyword: Poverty, Livelihood Framework, ICT

Guideline for Using Thesis

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Acknowledgement

Initially, I would like to acknowledge my supervisor, Dr. Justin Beaumont from University of Groningen and Hastu Prabatmodjo, P.hD from Institut Teknologi Bandung, whose guidance, inspiration, and encouragement have enabled me to complete this thesis. Their support has helped make this journey a challenging and exciting process.

I would also like to thank all the participants in this study who made time to speak with me, who willing shared their personal thoughts, feelings and experiences. Lastly, special thanks for my family and friends who supported and shared the unforgettable moments together during my study in Bandung and The Netherlands.

Lidya

Bandung, 2013

LIST OF CONTENTS

Abstract	i
Guideline for Using Thesis	ii
Acknowledgement	iii
List of Contents	iv
List of Tables	vi
List of Figures	vi
Abbreviations	vi

Chapter 1 INTRODUCTION

1.1. Background.....	1
1.2. Research Problems.....	2
1.3. Research Objectives and Questions.....	3
1.4. Research Methodology.....	3
1.5. Structure of the Thesis.....	5

Chapter 2 THEORETICAL FRAMEWORK

2.1. Introduction.....	7
2.2. Poverty Concept.....	7
2.3. Definition of ICT.....	9
2.4. ICT and Development.....	11
2.5. Livelihood Approach.....	14
2.6 Livelihood Framework.....	15
2.6.1 Vulnerability Context.....	16
2.6.2 Livelihood Asset.....	16
2.6.3 Livelihood Structure and Process.....	19
2.6.4 Livelihood Strategies and Outcomes.....	20
2.7. ICT and Poverty reduction in livelihood framework.....	21
2.8. ICT in livelihood framework and planning theory.....	22

Chapter 3 RESEARCH METHODOLOGY

3.1. Introduction.....	25
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3.2. Qualitative Research.....	25
3.3. Case Study Methods.....	26
3.4. Methodology for gathering data.....	27
3.5. Framework for data analyse.....	28

Chapter 4 ICT AND LIVELIHOOD FRAMEWORK IN MANDALAMEKAR VILLAGE

4.1. Introduction.....	30
4.2. Mandalamekar Profile.....	30
4.3 Vulnerability Context in Mandalamekar.....	32
4.4. Livelihood Asset in Mandalamekar.....	34
4.5. Structures and Processes.....	36
4.6. Strategies and Outcomes.....	37
4.7. The table of questions.....	37

Chapter 5 Study Case Analysis

5.1. Introduction.....	38
5.2. ICT handling the Livelihood Framework.....	38

Chapter 6 CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusions.....	45
6.2. Reflections.....	46
6.3. Recommendations.....	46
List of Bibliographies	48

LIST OF TABLES

Table 3.5	The steps of data analysis
Table 4.7	Table of questions

LIST OF FIGURES

Figure 1.1	Research Framework
Figure 2.6	Livelihood Framework
Figure 2.7	ICT and Livelihood Framewor

ABBREVIATIONS

ICT	Information and Communication Technology
ITU	International Telecommunication Union
UNDP	United Nations Development Programme
WSIS	World Summit on the Information Society
MDGS	Millenniums Development Goals
OECD	Organisation for Economic Co-operation and Development
DFID	Department for International Development
SLA	Sustainable Livelihood Approach

Chapter 1

Introduction

1. Background

Thoughts about the use of Information and Communication Technology (ICT) in development become popular worldwide when the World Bank issued a publication of the World Development Report on Knowledge for Development in 1998 which stated the importance of information to improve the quality of human life (WorldBank, The Complete World Development Report Online 1998). Since then, many international initiatives have been established to utilise ICT for development on a global scale. It also included an international summit on the Information Society organized by The International Telecommunication Union (ITU) in 2003 and the second event in 2005. These initiatives aimed to build partnerships between civil society, public and private sectors to apply ICT for development (Kala 2011). In order to explain the relation between ICT and development, (Adeya 2002) uses some literatures stating that ICT well delivers information about health, gender, education, agriculture, culture and government. Based on that finding, some world organisations see the chance to use ICT to reduce poverty in developing countries by providing information about health, education and others.

The role of ICTs in reducing poverty and fostering sustainable development has been the subject of debates and experimentations in the international community. On the one hand, the difficulty of the poor to fulfil their basic needs made some scholars uncertain whether ICT should be a priority for the development in a developing country. On the other hand, some have suggested that these technologies offer a great hope for the developing countries and have probability to reduce the information gap between the rich and the poor by international action.

Most studies conclude that access to ICT should not be seen as an end in itself, because successful access of ICT remains progress towards reaching the international development targets rather than the spread of technology or bridging the digital divide. However, (Phil Mark 2002) believes that addressing the information and communication needs of the poor and creating information for the rich societies are an essential part of the efforts to tackle poverty. ICT has great potentials as tools to increase information flows and empower poor people.

Therefore, this thesis explores the role of ICT in the poverty reduction in Mandalamekar Village, Tasikmalaya, using the livelihood framework developed by (Duncombe 2006). Mandalamekar is taken as a sample of the case because of several reasons. First, since 2007 Mandalamekar has initiated to use the community radio to support the reforestation in their village. Then in 2009 and 2010 they have been trying to use web blogs and websites in order to share information about the village condition. Second, most of the households in the village fall into the poverty criteria in Indonesia. Third, the village is located in a remote rural area and lacks of infrastructure. Therefore, it is interesting to study the role of ICT at Mandalamekar with all factors attached to the village.

2. Research Problems

Nowadays the concept of poverty is very wide. It is not only about low income or consumption but also the accessibility to get information. The poor are often faced with difficulty to access the information. Most of the difficulty is because they do not have any skills and ability to master the technology. The discourse that is developed at this time is that providing easy access to communication and information for the poor will help them to improve the quality of their life or well-being. It is indicated in the current study that shows the relationship between ICT and the economic growth of a country that has a positive correlation. It means that ICT development has a chain reaction impact to the increasing rate of the economic growth. Although this number will be different between each

country, the understanding of ICT development will positively and definitely contribute to the economic growth. This is reinforced by the results of the World Bank studies in 120 countries that see the impact of ICT- internet, fixed and mobile telephone services- on their economic growth between 1980 and 2006 using growth econometric analysis methods (WorldBank 2009).

The rapid progress of ICT development provided research objects for scholars. Efficiency in all things, interacting and obtaining information have to be enjoyed by the wider community. In developed countries ICT has been a basic need for any community. Unfortunately in the developing countries it is less possible for the average community. Most of ICT facilities can only be enjoyed by urban communities with adequate infrastructure, while rural communities cannot evenly receive the benefits of ICT. This fact raises a question of how ICT plays the role in rural areas of the developing countries, especially among the poor in the rural area with minimal infrastructure and whether the ICT give benefits to their daily lives. Since there are limited studies that address this topic in Indonesia, this thesis investigates the role of ICT among the poor community in the rural area. Hence, in the case of poverty and ICT in Mandalamekar Village, Tasikmalaya, Indonesia, the comprehensive analysis about how and to what extent the ICT play a role in order to improve people live quality was performed.

3. Research Objectives and Question

This thesis has an objective to examine the ICT role in the poor community in the rural are of Mandalamekar, Tasikmalaya, Indonesia. Due to its objective this thesis has two questions;

1. What is the barrier of ICT application in a rural area
2. How and to what extent the ICT application impact the poor in the rural area

The expected result of this can be used as a starting point for the poverty alleviation policy in rural areas with the involvement of poor community as the object of the development.

4. Research Methodology

The study of information and communication technology for empowering the poor community in Mandalamekar Village, Tasikmalaya, Indonesia is a qualitative research that was conducted through the case study methodology. The Duncombe (2006) ICT and livelihood framework were utilized in order to show and analyze the role of ICT to improve the livelihood factors in Mandalamekar.

The data were collected through phone interview to get the poor's opinion in the livelihood framework, from the village's blog and website. The research framework of this study is provided in the figure 1.1, and the further explanation of the methodology conducted in this research is provided in the Chapter 3.

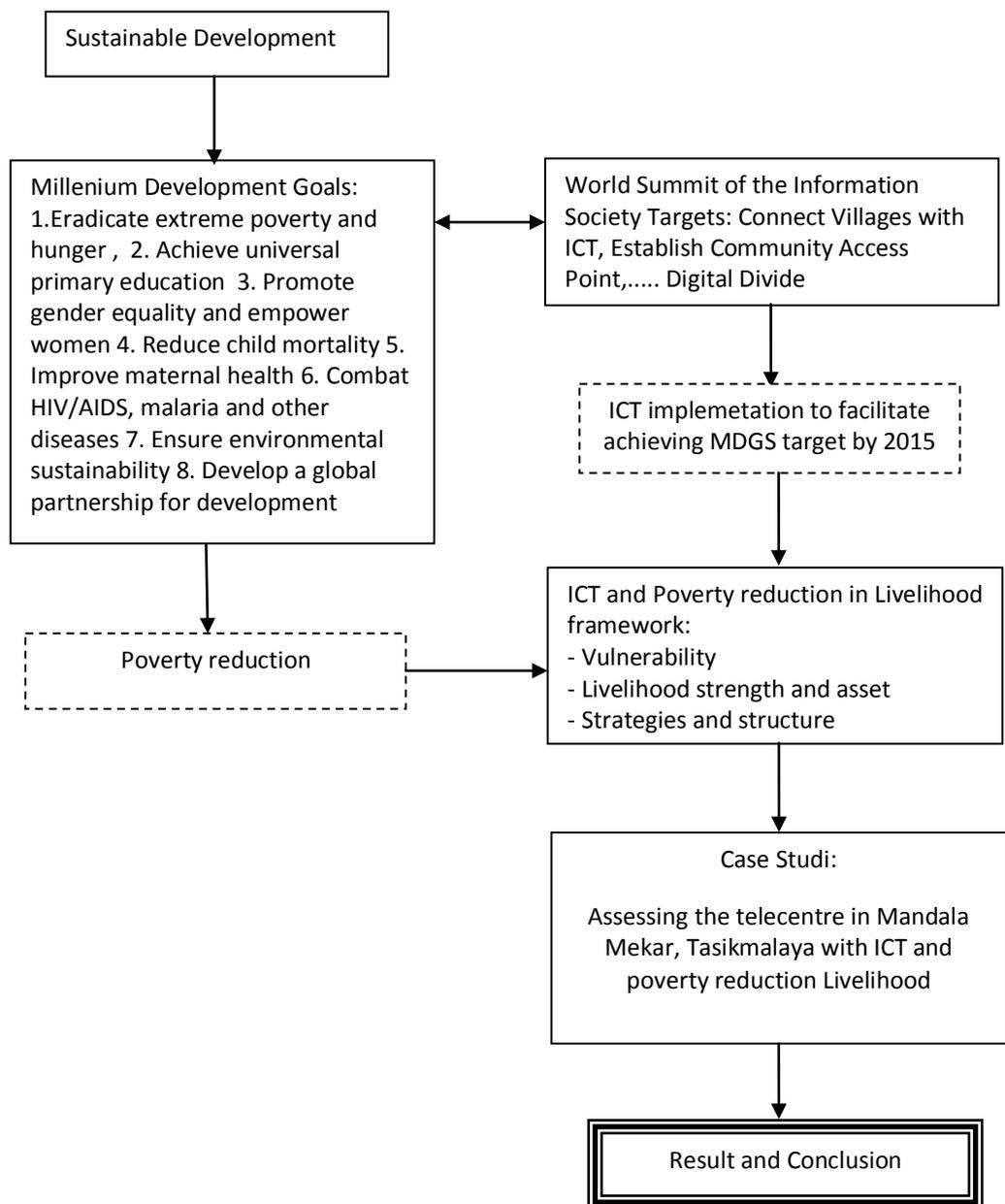


Figure 1.1 Research Framework

5. Thesis Structure

This thesis will consist of six chapters. Apart from chapter one that has been presented, the content of the other chapters can be described as follows:

Chapter 2: THEORETICAL REVIEW

The chapter explores theories used within the thesis with a focus on poverty concepts, poverty in livelihood framework and the ICT roles in the livelihood framework. This discussion is expected to be the basis for the analysis of the ICT impact on Mandalamekar Village.

Chapter 3: RESEARCH METHODOLOGY

This chapter explains the methodology applied in this research and provides data/information from websites, internet sources and phone interviews with the village authority. The empirical tool for the data analysis is mainly adopted from (Duncombe 2006) works on asses ICT role for poor community.

Chapter 4: ICT and LIVELIHOOD FRAMEWORK IN MANDALAMEKAR VILLAGE

In this chapter, an overview of the findings of the study cases is given according to the sequences using the livelihood of ICT and poverty in Duncombe work.

Chapter 5 STUDY CASE ANALYSIS

This chapter explores the vulnerability content, the livelihood assets and how ICT helps improve the quality of life at Mandalamekar. The discussion also describes how ICT influences the planning process and development progress in the village.

Chapter 6 CONCLUSIONS AND RECOMMENDATIONS

The last chapter provides conclusions of this thesis, reflections and extracts of some recommendations for policy and further study.

Chapter 2

Theoretical Framework

2.1 Introduction

This chapter is divided into eight sections, including this introduction. Section 2.2 defines the poverty concept and it shifts over time. Section 2.3 defines the ICT concept in general and how the term ICT is used in literature studies. It also gives the description about what kind of tools is included in the term ICT. Section 2.4 tells about ICT and development and its impact to the community in some countries. Section 2.5 and 2.6 explain the livelihood frameworks that were usually used to assess the poverty condition. Section 2.7 explains how ICT factor roles in order to improve the livelihood component. Section 2.8 tells about the connection between ICT and the livelihood framework as well as the planning theory.

2.2 Poverty Concept

Various concepts of poverty have been presented by academicians, researchers, and authors using some criteria such as consumption, income, and basic needs for living. For example, the poor people have been investigated as using their own production and informal sector activities with unclear profit rather than earning formal income (P.Glewwe and Gaag 1988). Moreover, Coudounel and Hentschel (2000) explored the poor people when their personal income or consumption does not achieve (exceed???) a specific “poverty line”.

Lipton and Ravallion explained the consumption of goods and services as a superior poverty indicator, as it presents a more stable indicator over time than income. A bundle of goods deemed necessary for meeting basic needs was identified, consisting of food expenditure and modest expenditure on non-foods in the 1960s. In the beginning of the 1970s, the definition of poverty has been expanded using the concept of basic needs. The qualitative indicators such as ill-being, poor nutrition,

shelter, clothing and access to health services were included to the satisfaction of these basic needs (Lipton and Ravallion 1995).

In the late 1970s, Amartya Sen introduced the concept of 'capabilities' to replace the basic needs concept. This concept concerned not only the material well-being but opportunities also. The acceptance of Sen's concept leads to a definition of poverty that is concerned not only with material well-being, but also with opportunities, what people can or cannot do (capabilities) as well as what they are or are not doing (functions). By using this understanding of poverty, the United Nations Development Programme (UNDP) suggested to develop the Human Development Index as an alternative in the measurement of poverty. Through this index, there are three dimensions that can be measured from the human deprivation such as life expectancy, adult literacy and access to health services and safe water, as well as percentage of underweight under-fives (Bourguignoni and Chakravarty 2003).

In 1995, the World Social Summit Programme of Action discussed the expanding concept of poverty into some characteristics such as the basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information. In addition, they are not only depended on income, but also on access to social services (UN 1995). Furthermore, Narayan et al. (2000) introduced the multi dimensional concept into poverty by using five variables as follow:

1. Income gap; it is about the differences of economic assets distribution and income between populations or individuals.
2. Lack of assets; assets include a variety of physical and intangible things like land, infrastructure, services and cash. Limited or no access to assets leads to a low level of productivity, missed opportunities, weak health and a low level of skills.
3. Vulnerability; it refers to external shocks, as well as internal conflicts. It includes the risk of being subjected to physical violence because of low social status, gender or ethnic identity. Poor people are more likely to be affected by economy-wide shocks and health and nature-

related risks. In this context, information can not only prevent exposure to risks but, in case of disasters, it might also help to get aid to the people more efficiently.

4. Powerlessness; it means that poor people often have a voice or bargaining power in economic and political processes.

5. Social exclusion; social exclusion has its roots in, and includes, marginalisation, isolation, alienation, humiliation. It may be aggravated by the deprivation of social capital, i.e. dislocated networks of trust and co-operation.

Since getting access of information is one of criteria for defining poverty, there is a fact that the poor people have the difficulties to get the information because they do not have much money and time. For example, in the developing countries, women must walk and need two hours to have the water or collect the wood for supporting their daily life, thus they do not have much time to get information from media and other sources. In this case (Wresch 1996) argue they are excluded from information. Through this example, lack of information makes the poor more difficult to come out from poverty and, instead, make them trapped inside. Therefore, some believe that providing an access to obtain information would help them to empower themselves.

2.3 Definition of ICT

The abbreviation of Information and Communications Technology into ICT was popularized by Dennis Stevenson in UK national curriculum report for school in 1997 (Foldoc 2010). In his the report, ICT refers to information technology (IT) to emphasize the role of unified (tele)communications, the integration of telecommunications with computers, as along with the necessary software, middleware, storage and audio-visual systems that enable users to create, access, store, transmit and manipulate information. ICT refers to all the technology used to handle telecommunications, broadcast media, intelligent building management systems, audiovisual processing and transmission systems, and network-

based control and monitoring functions. At present, the term ICT is generally used and usually refers to the integration of information and telecommunication technology sectors involving their convergence with the media technology sector based on common digital technology. ICT includes all types of telecommunication and broadcasting systems and services (wire line, wireless, mobile, satellite), computer hardware, software, networks and services, content producing and managing multimedia systems, Internet technologies, services and applications, machine-to-machine applications, etc (Sallai 2012).

Although ICT is often considered an extended synonym for information technology (IT), its scope is broader. ICT has been used to describe the convergence of several technologies and the use of common transmission lines carrying very diverse data and communication types and formats. Converging technologies show ICT include the merging of audiovisual, telephone and computer networks through a common cabling system. Internet service providers (ISP) commonly provide Internet, phone and television services to homes and businesses through a single optical cable. However, the elimination of the telephone networks has provided huge economic incentives to implement this convergence, which eliminates many of the costs associated with cabling, signal distribution, user installation, servicing and maintenance costs. Now that definition has expanded to include unified communication technologies and more. ICT refers to the integration of telecommunications, computers, middleware and the data systems that support, store and transmit UC communications between systems (Janssen 2010). ICT is also being associated with the convergence of audio visual and telephone networks with data systems through a single media link. ICT refers to Information technology, but today is used more in the context of the integration of communications technologies and data technologies. ICT becomes another way to say IT.

2.4 ICT and development

In December 2003, the World Summit on the Information Society (WSIS) adopted a Plan of Action for promoting the development of information and communication technology (ICT) (WSIS 2003). The plan includes 10 targets for ICT connectivity to be achieved by 2015. Based on international agreement development goals, including those in the Millennium Declaration, which are premised on international cooperation, indicative targets may serve as global references for improving connectivity and access in the use of ICTs in promoting the objectives of the Plan of Action, to be achieved by 2015. These targets are taken into account in the establishment of the national targets, considering the different national circumstances, they are to connect villages with ICTs and establish community access points; to connect universities, colleges, secondary schools, and primary schools with ICTs; to connect scientific and research centres with ICTs; to connect public libraries, cultural centres, museums, post offices, and archives with ICTs; to connect health centres and hospitals with ICTs; to connect all local and central government departments and establish website and e-mail addresses; to adapt all primary and secondary school curricula to meet the challenges of the Information Society, taking into account national circumstances; to ensure that all of the world's population has access to television and radio services; to encourage the development of content and to put in place technical conditions in order to facilitate the presence and use of all world languages on the Internet; to ensure that more than half the world's inhabitants have access to ICTs within their reach.

These targets are the first globally agreed for measuring ICT development and in line with the UN Millenniums Development Goals (MDGS). They also look beyond the traditional telecommunications sector by including connectivity in government, schools, and hospitals (WSIS 2003). Governments, multilateral organizations, researchers, and others may find it useful to evaluate progress toward the WSIS targets. These

targets provide benchmarks that governments can incorporate into e-strategies to measure their own progress and that of other countries. Development plans and poverty reduction strategies can include the WSIS targets to set standards in relevant areas. There is evidence that ICT applications are contributing to progress in critical development areas such as health and education. Furthermore, the role of ICT in combating poverty has been debatable in the international community. Some believe that ICT can support developing countries development. They believe the growing of these technologies must be narrowed by concerted international action while others think the basic needs of the poor is more important than ICT in the developing countries. However, Mansell & Wehn (1998) express the view that there is little to be gained from access to global or local resources if the skills to select, interpret and apply the information are absent or poorly developed through the population. Consequently, they suggest it is important for poor countries to develop models for 'access' and 'information content' because the capacity to generate and share information about local resources is as important as access to distant digital information.

In recent years, a causal relationship between telecommunications infrastructure and economic output was identified using data from the 21 Organisation for Economic Co-operation and Development (OECD) countries. This relationship has been found by (Torero and Braun 2005) for mobile telephony and data from 113 countries over a 20-year period which showed that a 1 per cent increase in the telecommunications penetration rate leads to a 0.03 per cent increase in gross domestic product (GDP). This positive correlation between ICT and economic growth extends to the developing world through direct expenditure on ICT infrastructure and services, as well as through its economic multipliers. Mobile network suppliers are estimated to have invested more than 90 billion dollars in Africa, and in some countries they are now the most profitable enterprises as well as significant generators of employment. Telecommunication revenue and expenditures presently contribute an

average of 7 per cent of the GDP in many African economies, while investment in communications has reached about 5 per cent of the total investment spending on the continent. The expansion of ICT has globally given impacts through their components and manufacture. Gold, tantalum, tin, and tungsten are used in the manufacture of mobile phones and other ICT devices, while cobalt is an important component used in the batteries to power them. Zambia and the Democratic Republic of Congo supply the raw material used for more than half of the world's lithium-ion rechargeable batteries.

ICT can also have broader developmental impact and are powerful tools for empowerment and income generation, as well as for increasing access to education and other social services. Mobile telephones have been found to assist businesses in the informal economy by helping them attract additional business, and a well-known example of mobile phone usage among fishers in the state of Kerala, India, has shown the benefits to both producers and consumers through improved information and better functioning markets (Jensen, 2007). Other studies go further to point out that the role of ICTs is not limited to promoting growth, but also includes non-income dimensions of development, such as empowerment and security including opportunities for e-governance and improved accountability.

The evidences have indicated that one of the causes of poverty in developing country is due to the poor communication technology infrastructures which consequences limited access to information. The scarcity of information has also become a factor in restricting economic advancement for the developing countries (Tan Shiang-Yen 2012).

2.5 Livelihood Approach

In 1992 Robert Chambers and Gordon Conway proposed the definition of a sustainable rural livelihood that applied at the household level:

“A livelihood 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 stress 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”.

In the late 1990s, Department for International Development (DFID) adopting the sustainable livelihoods approach and revise it with minor changes. The new definition become: “A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks maintain or enhance its capabilities and assets, while not undermining the natural resource base”.

Livelihoods approaches are a way of thinking about the objectives, scope and priorities for the development. They place people and their priorities at the centre of the development. They focus poverty reduction interventions on empowering the poor to build on their own opportunities, supporting their access to assets, and developing an enabling policy and institutional environment. Livelihoods approaches are based on a conceptual framework to aid analysis of the factors affecting peoples' livelihoods, including:

- The priorities that people define as their desired livelihood outcomes

- Their access to social, human, physical, financial and natural capital or assets, and their ability to put these to productive use
- The different strategies they adopt (and how they use their assets) in pursuit of their priorities
- The policies, institutions and processes that shape their access to assets and opportunities
- The context in which they live, and factors affecting vulnerability to shocks and stresses.

2.6 Livelihood Framework

The livelihoods framework is a tool to improve our understanding of livelihoods, particularly the livelihoods of the poor. It presents the main factors that affect people's livelihoods, and typical relationships between these. It can be used in both planning new development activities and assessing the contribution to livelihood sustainability made by existing activities (Haidar 2009). The livelihood framework consist of four part, which are, contextual analysis of vulnerability, livelihood assets, livelihood structures and process and livelihood strategies and outcome.

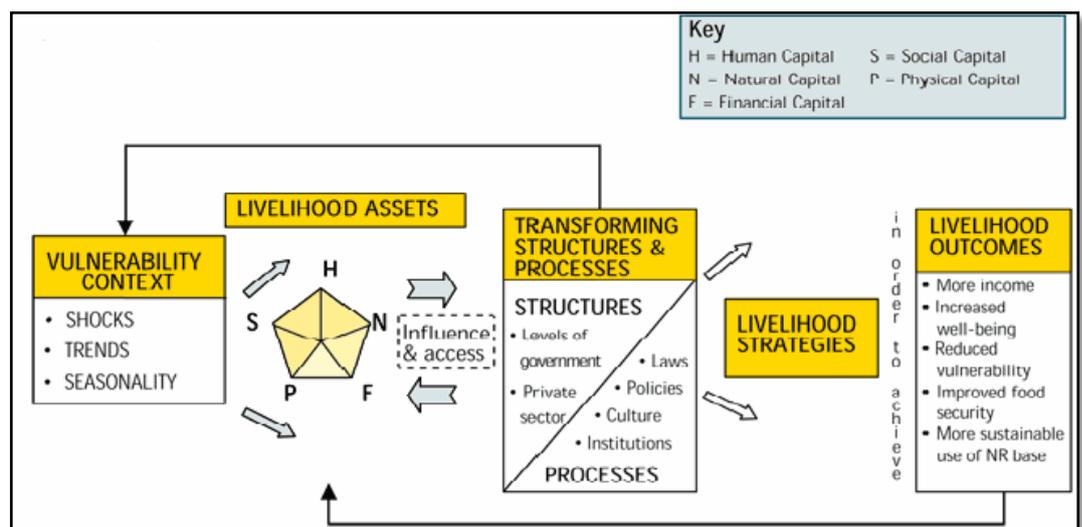


Figure 2.6 Livelihood Framework (DFID 1999)

2.6.1 Vulnerability Context

The vulnerability context comprises trends, shocks and seasonality. The examples of trends are economic trends, resource trends; the examples of shocks are conflict, economic shocks, health shocks and natural shocks and the examples of seasonality are seasonal fluctuations in prices, production, health, employment opportunities. All of these factors may affect people's assets straightly. These factors also influence the way how people find the valuable livelihood strategies for them. Haidar (2009) explains that shocks can damage assets directly or push people to discard their strategies to overcome the shock itself, for instant selling off livestock to pay for medical care. It should be note that not all trends give bad impact or increased vulnerability, such as new technologies, medical advances or positive economic trends can help improve people's livelihoods.

2.6.2 Livelihood Asset

The core of livelihoods approaches is about people and their access to assets. In the original DFID framework, 5 categories of assets or capitals are identified, although subsequent adaptations have added others, such as political capital (power and capacity to influence decisions). The original 5 categories are:

- Human capital: skills, knowledge, health and ability to work

DFID (1999) defines human capital as people skills, knowledge, ability to labour and good health that allows people to search for different livelihood strategies and reach their livelihood objectives. At the household level it varies according to household size, skill levels, leadership potential, health status, etc. and appears to be a decisive factor, besides being intrinsically valuable, in order to make use of any other type of assets. Therefore, changes in human capital have to be seen not only as isolated effects, but as well as a supportive factor for the other assets.

- Social capital: social resources, including informal networks, membership of formalized groups and relationships of trust that facilitate co-operation.

The social capital means the social resources where people are needed to find their livelihood outcomes. The networks and connectedness in daily life increase people's trust and ability to cooperate in more formalised groups and their systems of rules, norms and sanctions. The social capital is often classified by birth, age, gender or caste and may even differ within a household and has a correlation to the development progress. It could give positive impact or restrict the development. Social capital is associated to public goods through the mutual trust and obligations it poses onto the community (Kollmair and Gamper 2002).

- Natural capital: natural resources such as land, soil, water, forests and fisheries

Natural capital is the term used for the natural resource stocks from which resource flows and services (such as land, water, forests, air quality, erosion protection, biodiversity degree and rate of change, etc.) useful for livelihoods are derived. Natural resources is importance for people who depend their livelihoods from natural resource-based activities. The activities utilize the natural resources is often become a problem for the poor. Therefore the livelihood framework explore the correlation between natural capital and the vulnerability and many of harmful shocks for the livelihoods are natural processes that destroy natural capital (e.g. fires, floods, earthquakes) (Kollmair and Gamper 2002).

- Physical capital: basic infrastructure, such as roads, water & sanitation, schools, ICT; and producer goods, including tools and equipment

Physical capital consist of 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 and Gamper (2002) explains that

physical capital can influence the sustainability of a livelihood system to gain better living condition. For instant, irrigation facilities help farmer to collect water efficiently, good road simplify people to bring their crop in time.

- Financial capital: financial resources including savings, credit, and income from employment, trade and remittances

Financial capital refers to financial resources that people use to achieve their livelihood objectives and it consist the important availability of cash that allows people to make different livelihood strategies. Two main sources of financial capital can be identified:

1. Available stocks consist of cash, bank deposits or liquid assets such as livestock and jewellery, not having liabilities attached.
2. Regular inflows of money comprising labour income, pensions, or other transfers from the state, and remittances, which are mostly dependent on others and need to be reliable.

Among the five categories of assets, financial capital is flexible because can be used for various purposes and can be changed into other types of capital or it can be used for direct achievement of livelihood outcomes. Unfortunately, financial capital is difficult to fulfil by the poor. It makes other capitals important to fill in the financial capital (Kollmair and Gamper 2002).

Furthermore Haidar (2009) defines that assets can be damaged or form as a result of the trends, shocks and seasonal changes in the vulnerability context where people live. Policies, institutions and processes can have a great influence on access to assets, producing them, determining access, and affecting rates of asset accumulation. Logically, more assets will increase the chance to have better livelihood options to gain their aims and reduce poverty.

2.6.3 Livelihood Structure and Process

The institutions, organisations, policies and legislation will change the structure and process that form the livelihoods in the framework. Their function cannot be exaggerated. They work at all levels, from the household to the international scope, and in all aspects, from the most private to the most public (DFID 1999). In addition, (Haidar 2009) explains that the elements in the framework encompass the complex social, economic and political context that connected with:

- Social relations: when gender, ethnicity, culture, history, religion and kinship influence the livelihoods of different groups in a community.
- Social and political organization: decision making processes, civic bodies, social rules and norms, democracy, leadership, power and authority, rent seeking behaviour
- Governance: the form and quality of government systems together with structure, power, efficiency and effectiveness, rights and representation
- Service delivery: the effectiveness and responsiveness of state and private sector agencies engaged in delivery of services such as education, health, water and sanitation
- Resource access institutions: the social norms, customs and behaviours (or ‘rules of the game’) that limit people’s access to resources
- Policy and policy processes: the processes by which policy and legislation is determined and implemented and their effects on people’s livelihoods

Kollmair and Gamper (2002) also explains the changes of structures and processes have main position in the framework and give influence directly to the vulnerability context. The processes will set up how structures and individual operate and interact each other when the structures were transforming. The policies, legislation and institutions

have important process for livelihoods because they may encourage people to make choices; they may be responsible for access to assets or they may enable stakeholders to transform and replace one type of asset with another.

2.6.4 Livelihood Strategies and Outcomes

Haidar (2009) defines livelihood strategies as the method to do to reach their planning as livelihood goals. They include productive activities, investment strategies and reproductive choices. How to run the strategies is a continuous process where people combine their activities to fulfil the change of needs. For example, in farming households, activities are not necessarily confined to agriculture but often include non-farm activities in order to diversify income and meet household needs. A major influence on people's choice of livelihood strategies is their access to assets and the policies, institutions and processes that affect their ability to use these assets to achieve positive livelihood outcomes. When considering livelihood strategies and issues connected to the Sustainable Livelihood Approach (SLA) in general, it is important to recognise that people compete (for jobs, markets, natural resources, etc.), which makes it difficult for everyone to achieve simultaneous improvements in their livelihoods. The poor are themselves a very heterogeneous group, placing different priorities in a finite and therefore highly disputed environment.

Livelihood outcomes are the target what people want to gain as a result of carry on their livelihood strategies, such as more income (e.g. cash), increased well-being (e.g. non material goods, like self-esteem, health status, access to services, sense of inclusion), reduced vulnerability (e.g. better resilience through increase in asset status), improved food security (e.g. increase in financial capital in order to buy food) and a more sustainable use of natural resources (e.g. appropriate property rights). Outcomes help people to understand the 'output' of the current configuration of factors in the livelihood framework. The framework show

what motivates stakeholders to act as they do and what their priorities are (Kollmair and Gamper 2002).

2.7 ICT and poverty reduction in livelihood framework

The livelihoods approaches have modified in many senses represent a flexible and evolving framework. In this case (Duncombe 2006) tries to use ICT as tools or information to manage the elements contained within the livelihood framework to achieve desired results. Therefore Duncombe divides the ICT function into two parts, namely:

1. An analytical role that focuses on accessing and assessing empirical evidence (both quantitative and qualitative) to understand livelihoods by researchers, project/program planners, policy makers, and the poor themselves.
2. A functional role that focuses on action, the manner in which information is used in livelihood strategies (by the poor themselves and via the structures and processes that impinge on the lives of the poor) to create favourable livelihood outcomes.

Both analytical and functional roles of information can be considered by breaking down the livelihoods framework into four constituent parts: contextual analysis of vulnerability; livelihood strengths or assets; levels of analysis according to structures and processes; and livelihood strategies and outcomes.

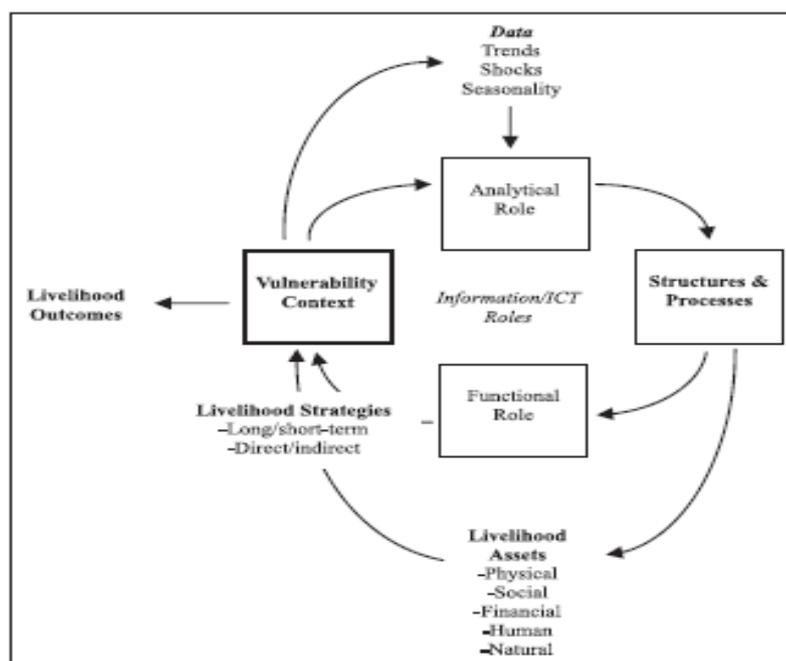


Figure 2.7 ICT and livelihood framework (Duncombe 2006)

2.8 ICT in livelihood framework and planning theory

In their guidelines (DFID 1999) has outlined that livelihood framework develops using participatory approaches. In this framework, the community are actively encouraged to define the strengths, weaknesses and strategies that they can possibly take to get out of poverty. This was confirmed by the opinion of (Rydin and Pennington 2000) that citizen involving in participatory approaches will result in an appropriate policy to the community. However, it needs the strong bond of social capital to assure the success of public involvement, while (Fisher 2000) explained as well that participatory planning can be implemented when the community have basic components such strong social capital bonds, equity, openness, accountability, transparency and trust. The role of policy entrepreneurs as (Huitema and Meijerink 2010) believe is also important to implement the new policy in the community. Moreover (Olsson, et al. 2006) and (Purdue 2001) argue that leadership and trust also play an important part in the interaction of the social community. The bottom-up approach is used to

identify the planning needs by accommodate input from community. In this case the role of the community is not only as an object or user but also as planners, though with different capacities. Planners or governments are seeking to obtain citizen input, and legislators, including a participatory requirement in state programs. The decision to engage in or require citizen's participation must be followed by a detailed identification of the desired objectives.

The bottom up approach in planning is suitable with the framework characteristics because it puts people as the centre of the development. This planning model can accommodate the flexibility when dealing with social problems and human interests because they start at the local level and up to the state level. Furthermore, (NCJP n.d.) explains in their article that communities and local governments manage the community-based planning process. Local participants identify necessary services, gaps in delivery, and the specific public safety problems to be addressed. The communities also develop and implement action plans to address these identified problems and innovative measures. Community led planning is essential because often the best insights to problems come at the local level, rather than the state or national level.

By contrast, top down planning approach has been characterized by technical rational perspectives and objective oriented. Planning is carried out in a centralistic way. Planner or government create the possibility to incorporate changes into planning as a result of new information or experiences. Thus, planning is considered as a scientific-technical process without any involvement of the public. The rational planning model is the process of realizing a problem, establishing and evaluating planning criteria, creating alternatives, implementing alternatives, and monitoring progress of the alternatives. It is used in designing neighbourhoods, cities, and regions (Hall 2008).

However, the complexity of poverty problems is difficult to solve with purely bottom-up or top down approaches. In recent years, the combinations of both approaches are implemented with the advantages of

top-down strategy development with bottom-up advice and local information input for unit planning. All of these components are taken into account in the livelihood framework.

Chapter 3

Research Methodology

3.1. Introduction

This chapter discusses research methodology implemented in this research. Since this research observes poverty as a social problem and how the poor community define their strength and weakness and the strategies to cope with the problem, qualitative research is applied to this research. It begins by explaining the research framework based on the literature study and optimize the use of secondary data obtained from Mandalamekar's blog and website. It uses case study method to address the research questions and use the Duncombe (2006) framework analysis which assesses the ICT role in the livelihood framework. Some research findings are, therefore displayed in a narrative approach of social research. This chapter is divided in three sections. Section 3.2 is about the qualitative research overall. Section 3.3 explains the case study methods and section 3.4 explains the methodology for gathering data. Lastly section 3.5 focuses on framework for data analysis.

3.2. Qualitative Research

Qualitative researchers study things in their natural settings, attempting to make sense of, or to interpret, phenomena in terms of the meanings people bring to them (Denzin and Lincoln 1994). Qualitative research is intended to penetrate to the deeper significance that the subject of the research ascribes to the topic being researched. It involves an interpretive, naturalistic approach to its subject matter and gives priority to what the data contribute to important research questions or existing information. Qualitative research encompasses a range of philosophies, research designs and specific techniques including in-depth qualitative interviews; participant and non-participant observation; focus groups;

document analyses; and a number of other methods of data collection (Qualitative Research, Defining and Designing n.d.)

Given this range of data types, there are also diverse methodological and theoretical approaches to study design and data analysis such as phenomenology; ethnography; grounded theory; action research; case studies; and a number of others. Theory and the researchers' perspective also play a key role in qualitative data analysis and in the bases on which generalisations to other contexts may be made.

3.3. Case Study Method

(Yin 2009) explains that a qualitative case study examines a phenomenon within its real-life context. Data are collected on or about a single individual, group, or event. In some cases, several cases or events may be studied. The primary purpose of a case study is to understand something that is unique to the case. Knowledge from the study is then used to be applied to other cases and contexts. Qualitative case study methods often involve several in-depth interviews over a period of time with each case. Interviews explore the unique aspects of the case in great details, more so than would be typical for a phenomenological interview.

In addition, the book of qualitative research argues that the implications of a case study approach for qualitative data collection and analysis are several. The participants or cases should be selected for their unique properties (Qualitative Research, Defining and Designing n.d.) Because it is the case's special attributes that are of interest, sample sizes are generally small, usually one to several cases. Inquiry in these types of studies focuses largely on their defining case features and the differences they exhibit from other individuals/events in the larger population. The overall idea is to test what makes them so different and why. Often, knowledge gained from case studies is applied to a larger population.

In this case, with the combination of interviews with some villagers and the information from village's website, this research tries to

find out the role of ICT in its strength, weakness and strategy for poor community at Mandalamekar. The finding will be based on livelihood framework.

3.4. Methodology for Gathering Data

The research assesses the study case based on the livelihood framework that consists of vulnerability context, livelihood asset, process, strategies and outcome. The ICT application will be applied to each livelihood component. The implication is described in the narrative approach of social sciences. The data or information was collected from the village blog with link address <http://mandalamekar.wordpress.com>, village website address link <http://mandalamekar.desa.id>, some village's video documentation uploaded on You Tube and phone interviews with the village authority and some villagers.

Phone interviews were conducted in order to collect the poor farmers' opinion in Mandalamekar to describe the vulnerability factor in their village, their capital asset, their strategies to deal with the vulnerable factor and to explain the role of ICT in improving their livelihood factors. It is an important step as the requirement for livelihood framework.

This method was chosen because it provided quick ways to find information, limitation of time research and research budget. Even though internet is easy, fast and cheap in gathering information, there are some drawbacks that should be considered when selecting this method. Neuman (2000) argues there is no quality control to the information on the internet. It may be of poor quality, highly biased and gives false information. Furthermore, sorting out the sources on the internet can be very difficult and time consuming. Different keywords and search engines can produce very different results. Moreover, the internet source can be difficult to document. After one conducts a search on the Internet and notes the address link to recite the web pages location, it may not be at the same address link in the following months. The computer file could be removed

to another address link. This means it may not be possible to easily check someone's web references, verify the quotation in a document or go back to original materials and read them for ideas.

There are some ways that can be done to minimize the drawbacks of gathering data from the internet. First, the researcher has to be careful with the validity of the information. Once a person finds the material, the real work is to distinguish trash from really valuable information. Second, try to use multiple search engines and various keywords (Neuman 2000). In addition, I tried to cross check the data from the websites with trustworthy institutions and recorded the conversation when I made the phone calls for interviewing the source persons.

3.5 Framework for Data Analysis

There are three steps in analysing the data. First, identifying the main components of livelihood framework in Mandalamekar, such as what the vulnerability factor in the village is, what the livelihood asset is, the livelihood strategies and their outcomes. Second, analysing the shortage for each livelihood component that is the finding in the first step and then trying to develop the idea on how to overcome the problems. This is an important step in the research because the analysis will develop based on these components. Third, interpreting the implicit information from the village's blog, website and video documentation. This step is aimed to find the impact of ICT to village's livelihood which is mentioned in the research objectives. Moreover, I tried to elaborate the ICT livelihood framework and its implication to the village planning and development process. A brief description of each step can be seen on table 3.5.

No	Analysis Data Step	Objective
1.	Identify livelihood components by interviewing some poor farmers and the village authority to define by themselves.	to sort and describe the information from the internet to fulfil the livelihood framework
2.	Analyse the livelihood shortage	to overcome the shortage with ICT as a tool and translate it into the process and strategies
3.	Interpret the implicit information from the blog, website and video documentation	<ul style="list-style-type: none"> ▪ to find ICT impact to village's livelihood in order to answer the research objectives and questions. ▪ to link the objective with the planning and development process

Table 3.5 The steps of data analysis

Chapter 4

ICT and Livelihood Framework in Mandalamekar Villages

4.1 Introduction

This chapter describes the finding information from phone interviews with ten respondents in Mandalamekar. Several questions were raised to Mandalamekar villagers to get their opinion about the vulnerability factor, the strength and weakness of their capital assets, their strategies to cope with the vulnerability and the weakness and their appraisal to the benefit of ICT to improve their livelihood components. This interview is important to fulfil the livelihood framework requirement that puts people as the centre of the the development. Community involvement is the core of livelihood framework based on DFID guideline (DFID 1999). This chapter is divided into six sections, including this introduction as the first. Section 4.2 gives the overview about the study case. Section 4.3 explores the vulnerability context in Mandalamekar Village and its causes. Section 4.4 presents the livelihood asset and ICT role for each aspect. This sub-chapter is divided into five parts, which are human capital, financial capital, social capital, physical capital and natural capital. Section 4.5 describes the structure and process in the ICT and livelihood framework. Section 4.6 explains the strategies and outcomes from the ICT and livelihood framework.

4.2 Mandalamekar Profile

Mandalamekar village is a hilly region in South of Tasikmalaya District. Precisely, this village belongs to the Jatiwaras's sub - district territory, Tasikmalaya Regency, West Java Province. This village is characterized by it geographical location on the slopes of hills, composed of four Kedusunan (sub – village) with an area of 719 hectares. The composition of the village consists of 78 ha Protected Forest, 58 ha village treasury (18 ha of agricultural land leased to village's community and 40

ha are Karang Soak forest) and the rest utilized as farming land and residential.

The population of Mandalamekar is 3191 inhabitants with 860 of households, which consist of 1653 men and 1519 women. Most of the villagers work in agriculture and small business sectors and the rest work in other sectors. The village is still included into the category of lagging villages, almost 40% of households fall below poverty line (Mandalamekar 2013). Poor infrastructure, lack of facilities for public education and inadequate health services for rural communities might increase villager susceptibility. The road and power lines access in the village are not good. The villagers bear the expensive cost for transportation to bring their product to city centres. Reducing the difficulty of roads, the villagers provide inadequate infrastructure by them selves without government's assistance. The poor quality of the road becomes the reason that the village does not have any power grid until the end of 1990's (Mandalamekar, Desa Mandalamekar 2009). Previously, the villagers utilized wood and other natural materials as energy sources.

The educational facilities available at the village is only for primary level. People have to walk about 7 - 10 km to reach the nearest junior high school and they have to move to the nearest town to continue their education until senior high school levels. Therefore, the school participation rate is low in the village; 85% population of Mandalamekar do not continue their study after completing junior high school. However, only some people are able to provide the appropriate level of education. Meanwhile, the health services are not much different from the education condition. The village does not have any doctors and appropriate mass health centre. The community relies on the village's midwives for all health problems (Mandalamekar, Desa Mandalamekar 2009).

Lack of resource is the main issue in Mandalamekar. The easiest way earns income by exploit the wood forest become timber. Massive deforestation by villager caused damage to land in Mandalamekar

surrounding area. When part of a forest is removed, the trees no longer hold the water. The water content in soil and groundwater reduces significantly makes the farming land hard to be planted. Dry soil and limited water resource for farming makes every farmer try to dominate the water resource and leads conflict among people in the village. The difficulties make people reluctant to farm. They prefer to migrate to the nearest towns to find another job. The consequence to the village is shortage of productive age population. Most of the population in Mandalamekar consists of elderly and children. Moreover, the deforestation also reduces soil cohesion, so that erosion, flood and landslides occur and pose threats to people living nearby. It makes the living condition in the village worse. Poor living conditions require the villagers to overcome the difficulties regarding infrastructure, social and economy independently.

4.3 Vulnerability Context in Mandalamekar

This section presents the understanding of the vulnerability of the livelihoods based on the poor community of Mandalamekar Village, Tasikmalaya, West Java. The term of vulnerability was initiated by (DFID 1999) for the Sustainable Livelihoods framework which is a model for understanding the many interrelated causes of poverty and how to alleviate poverty. The vulnerability factors were asked to the villagers according to their own experiences. Strategies of the villagers to cope with those factors were also asked. Finally, the villagers were asked about the role of ICT due to the reduction of the vulnerability factor that they defined.

Vulnerability context is defined as the set of factors related to shocks, trends and seasonality issues that can have a great impact on people's livelihoods. Most people feel powerless to deal with these factors, for example human health shocks, technological trends, and seasonality of prices (DFID 1999). Once a factor has been identified as important, one can assess its relative importance compared to other factors, how widely applicable it is, what its effect on livelihoods is, and

whether people have developed any way of coping with it. Analysing vulnerability context is important as it enables the identification of areas or resources at risk, and the threats posed by the diminution or loss of such resources that can threaten future sustainable development (Berry et al 2006).

Based on phone interviews with some villagers, they identified the vulnerable factors in Mandalamekar are the bad road infrastructure and deforestation. Lack of road infrastructure makes it difficult for the village to connect to the region outside and to get information. It leads to the difficulty in accessing the higher education and health service centre. Moreover, the farmers and small business entrepreneurs have to bear the expensive transportation cost when they sell their crop or products to other regions. Furthermore the forest degradation leads to loss of biodiversity, lack of fresh water resource, loss of soil fertility, raise unproductive land grass and landslide every rainy season. The villagers concluded that these factors have made them lag behind in economy and human resource quality compared to other regions.

Coping Strategies

Dealing with bad road infrastructure, the villagers explain that they try to build the road infrastructure by themselves. However, because they do not have enough capital, skill, technical tools and experts for building adequate road infrastructures, they suggest that government's involvement is important to support their village in the long term development. For short term strategies, some farmers made working group to cater their needs in farming. It covers the capital to provide the seed, the fertilizer and the transportation cost when selling their crops. Furthermore, dealing with forest degradation, the villagers have set up an environmental organisation that conducts the reforestation action in Mandalamekar.

ICT roles in coping strategies

When they asked about how ICT (community radio and village website) influenced the coping strategies, most of them, nine out of ten, explained in a positive way. They convinced how efficient the community radio and village's website to share the information among them and transfer the knowledge with other people outside their region.

4.4 Livelihood Asset

This section presents the five types of assets evaluation, namely, human, financial, social, physical and natural capital. The villagers defined the strength of their capital as social and natural capital, while their weakness is human resources, financial and physical capital. Livelihood framework ensures comprehensive facts and problems related to five livelihood components and their ability to access them (DFID 1999).

The strength of social and natural capital

Social relation among villagers in Mandalamekar village is very strong in order to advance their village; the community work together to run the village programs. Some informal network was built to improve the village condition, such as Mitra Alam Munggaran that has taken the responsibility for reforestation in Mandalamekar, while other social networks try to reduce transportation cost when selling agriculture crop every harvest time.

Since Mandalamekar is an agriculture village, the natural asset has an important position in the community. The sustainability of the forest supports the continuity of the community's life in Mandalamekar. The presence of forest ensures fresh water resource for agriculture and keeps soil fertility. It also avoids people from landslide when rainy season comes, because tree's root maintains soil cohesion. Moreover, the combination of waterfall and beautiful coral cave at Karang Soak protected forest can serve as tourism destination.

ICT roles to maintain the social and natural capital

The respondents state that community radio has made them attach to each other although they do not often meet. Discussing the same topic interest and the chance to interact with other in the community radio program make the villagers feel as one whole community. Furthermore, to promote the natural capital, the respondents feel the benefit by using the village website. They witnessed visitors come to their village to see the waterfall and the cave after reading and seeing the pictures on their village's website. The respondents feel optimistic that the village's goals as tourism destination in the future can be achieved faster.

The weakness of human, financial and physical capital

One of the weaknesses of Mandalamekar Village is the low quality of human resources. This is due to the education level provided in the village, which is only until junior high school. It needs more expenditure to continue education to higher levels because the participants have to reach the nearest town. Furthermore, less job opportunity in the village makes young people move out of the region. This led to the population composition in the village that mostly consists of children and the elderly.

Funding is one of the important production factors in agriculture. However, in its business operations, not all farmers have sufficient capital. Accessibility of farmers to the capital resources is still very limited. Thus, it is common that lack of capital becomes an obstacle for farmers in managing and developing their farms. Rural economic institutions are not well developed, a consequence of the limited access to sources of financing. In addition, the information gap among farmers lead to low accessibility to agribusiness capital, technology, capacity building, market information, and so forth (Nurmanaf 2007).

Coping Strategies

In the financial sector, the villagers are trying to develop the cooperation. However, this effort meets the barrier in collecting the initial capital. They have been trying to propose the funding aid through the government financial program, but it is still far from success. Most of the respondents think that formal education is important to improve the human resources quality. Hence the government's involvement is important in providing schools and teachers. The same opinion about physical sector is also expressed by the respondents.

ICT roles to improve human, financial and physical capital

Using ICT to transfer the knowledge has considered important by the community. The respondents say that the villagers get a lot of offers from organisations and institutions to enhance their skills for certain knowledge, for instance, the open sources training to develop computer software and latest farming knowledge.

The villagers also get help from organisations or institutions outside the region to build the basic infrastructure in their village; for example, Telkomsel, the telecommunication company, offered to build base transceiver station (BTS) in the village. BTS gives benefit to Mandalamekar community. They can communicate and access information through the internet connection easier than before.

4.5 Structures and Process

The village structure to implement the ICT application consists of strong networking for social capital. The process comes from the village community and then the rural government/authority, and finally the local government. Participatory planning is a process which presents a possibility for various public stakeholder groups to participate in

sustainable development strategic planning and its implementation process.

4.6 Strategies and Outcomes

Strategic plan helps create management and planning systems of the village development, based on the principles of sustainable development, democracy and market economy, and to assist for more rational use of limited resources of village budgets and for better coordination and implementation of programs in various sectors.

4.7 The table of questions

Question
What are the vulnerability factors in Mandalamekar?
How do you cope with the vulnerability factors?
What is ICT's role in reducing the vulnerability factors?
What are the strength of livelihood assets in Mandalamekar?
What are the weakness of livelihood assets in Mandalamekar?
What is ICT's role in improving the livelihood asset in Mandalamekar?

Table 4.7 Table of questions

Chapter 5

Study Case Analysis

5.1 Introduction

This chapter explores how Mandalamekar community utilize ICT to improve their life and the implication to the planning and development process in the village. The analysis develops based on the livelihood components and continues as a whole story line.

5.2 ICT handling the Livelihood Framework

Poor communities in Mandalamekar are isolated by distance, bad road conditions and inadequate transport. These conditions make people difficult to bring their products or crops and themselves to the market, to work place, health centres, and to send children to schools, access public services and get information about many events and influence decisions. Difficulty in getting the crops to the market is a recurrent concern. In Mandalamekar, truck drivers are charged with high costs because of the bad road. As a consequence, much of the food crop is locked up on farms, leading to postharvest losses. Travel to clinics or hospitals for treatment especially in emergencies, is another common concern. The Head of Village explained it cost a lot to take sick people in the community to the hospital. Sometimes, for emergency case like bleeding due to childbirth, the sick people can die before they reach the hospital. Health personnel often avoid the remote village because of absence of basic infrastructure. Moreover, people state how lack of road infrastructure and communication limit them, making it more difficult to find jobs, negotiate for better prices for their produce, access services such as credit or social assistance (Mandalamekar, Desa Mandalamekar 2009).

Low levels of education and lacks of information make people less concerned about environmental issues. Many of them cut down the trees to

earn an income. Negative impacts such as land degradation and shortage of water resources to support their agriculture are not in their attention. In order to overcome these problems, Yana Noviadi and some village youth conducted reforestation action in 2002. Yana forms the village environmental organisation named Mitra Alam Munggaran to facilitate the reforestation activities (Mandalamekar, Desa Mandalamekar 2009). Initially, the villagers doubted the action would be successful, because the grass lands are very wide and seriously damaged. However, after five years, the villagers started to get advantage from the restoration. They are enjoying plentiful of water supply that can be used for agriculture and household activities. In 2007, to support the reforestation, Yana in that time was elected as the head of village tried to use community radio (AirPutihFoundation 2012). The radio was intended to promote reforestation benefits to the community. They convinced people that improving the quality of natural environment and managing its sustainability are the key to self-sufficient and prosperity. They made people believe that land and natural resources are valuable assets. Through the community radio, Yana share the information and programs related to the reforestation and farming. Furthermore, the information broadcast through the community radio is not limited to reforestation sector anymore. It has grown into information on the rural development, agriculture, forestry, education, government, business opportunities, health, traditional culture and entertainment (Mandalamekar, Desa Mandalamekar 2009). This is possible to happen because the radio is managed by the village's community and they designed radio programs according to the villagers' needs. The development of the radio program has been triggered by The Annual Community Radio Meeting held in Mandalamekar in February 2011. Knowledge transformation that occurs in the event makes people eager to broadcast materials with good quality. Together with Community Based Information Network Institution (CRI), the villagers developed community journalism spirit and broadcasting program in Sundanese language.

At present the community radio has been a part of the villagers' life. The radio delivers the information for rural communities and makes people convenient in communications. Cheap technology, broad coverage area, performed in local language and less skills needed to operate the community radio have made the villagers interested in exploring the benefits further. They have been aware that radio, an old ICT, is important to deliver the information supporting the village development. This fact is in line with reports of the poor by (Narayan, Chambers, et al. 2000) that the poor think radio is important to improve their livelihood quality. In addition, (Greenberg 2005) finds in his study that community radio can be an effective tool in community building, particularly for those who live in rural and sparsely populated areas. It has also been proven effective for disseminating information about livelihoods (in this case: reforestation, farming, social community bounding, market prices for crop), healthcare, education and potential disasters. There are cases where radio is used primarily for information dissemination applications, but is funded primarily through personal announcements such as birth and death notices.

After successfully introducing the benefits of radio to Mandalamekar villagers, Yana came up with another media to promote his village. The publication of the village's condition is an important factor to attract the government's attention or other institutions based. In 2008 Yana made leaflets containing information about the village and its potential. He distributed the leaflets to government institutions and organisations outside the region. However, because the production cost was high and considered less effective, Yana discontinued leaflets production and looked for other media with affordable cost.

In 2009 Yana tried a new form of publication. Together with Irman Meiladi, one of villagers who has experiences as a journalist, they developed the village's blog on the free web blog (AirPutihFoundation 2012). The development of weblog is very unusual. At that time there was no internet connection in the village and Yana did not know how to access the internet, while Irwan still worked in West Papua. As a consequence,

Yana went to an internet cafe in Tasikmalaya city centre every week to send news via email to Irman. For the first time Yana asked the internet cafe attendant to send the email and then over time he learned to send an email by himself. Afterwards, Irman updated the village's blog from West Papua based on Yana's emails.

The village weblog contains the information about the village's activities, its development programs and barrier and village's goals. Since it was launched for the first time in June 2009, Mandalamekar has received so many responses. As a result for the news posted on the village blog, Mandalamekar has been visited by Seacology, a nonprofit environmental conservation organization in USA. This organisation observed the conservation programs carried out by the village's community. Therefore, based on their visits, Seacology gave an award to Mandalamekar for their commitment to forest conservation (Seacology 2011). The prize from Seacology was used to build the infrastructure of the village such as sport and community hall (Mandalamekar, Desa Mandalamekar 2009). Moreover, some responses came from the local government, environmental organisation, community radio network, educational institution and information society institutions. Many of them came to Mandalamekar after they read the articles in the village's web blog. The village got the priority in the local government planning. In the same way, many institutions offer to transfer knowledge, financial funding and skill training improvement for the villagers.

In addition to the role of information in helping to improve the villagers' resilience, livelihoods and education, it can address a number of other aspects of poverty. Humans are social creatures and communications in all forms can help foster feelings of well-being and empowerment. Radio, telephone and Internet based communications all have applicable uses. As (Narayan, Chambers, et al. 2000) stated in their report that livelihoods are the core of every definition of poverty, that is the inability to provide food and shelter for one's family. Enhancing livelihood opportunities is a key requirement in relieving poverty. ICT have been

shown to be effective at both enhancing traditional livelihoods and at allowing the creation of new ones. Simple examples of enhancements include providing farmers with crop information and making certificates for timber in the forest production. The Timber Legality Verification System (*Sistem Verifikasi Legalitas Kayu*) is useful for the owner (Mandalamekar, Desa Mandalamekar 2013). In the future, timber can be mortgaged to banks as financial capital and easily sold to the international market. New livelihoods enabled by ICT include web based businesses and telephone access. The income improvements can range from a few percent to very substantial, depending on the specific details.

The combinations of community radio and village web blog have brought many opportunities to the village. Mandalamekar was offered by CRI for training the open source computer software at the community radio meeting in Cirebon, March 2011. Since then the village's web blog has its own portal and moved to a new domain with open source website basis. Being acquainted with the open source operating system makes some youth in Mandalamekar think of making a computer operating system using the local language, i.e. Sundanese. It means to open up opportunities for people who want to master the computer but do not understand English, which is generally used in the computer operating systems. They named the Sundanese operating system with Gethux Siga Ruyuk and it has been implemented for the village information system. They have the intention to make Mandalamekar a pilot village to apply open source software and called this action as Mandalamekar Go Open Source (MGOS) (Mandalamekar, Desa Mandalamekar 2011). In the future, together with CRI they will conduct ICT training for Mandalamekar residents regularly. In this case, ICT succeeds in making improvement on human resource quality which is included as a livelihood asset in Mandalamekar.

Since the launch of the web blog, Mandalamekar has attracted more attention from the local government. For instances, the village received assistance for making road in some locations and the

development of village's health centres obtained at the end of 2009. The most exciting is, at the end of 2012, one of the private telecommunication companies decided to set up a Base Transceiver Station in Mandalamekar as their social responsibility to the community. These facilities are important for the rural communities in supporting communication and providing an access to the internet connection.

Lack of access and infrastructure does not limit Mandalamekar achievement to improve their quality of life. With ICT as a tool, the villagers strengthen their livelihood and open up for new opportunities. The village's success cannot be separated from Yana. Relying on (Huitema and Meijerink 2010) theory, Yana rolled as an agent of change that has brought the new idea to the village. In this case, Yana exploits the window of opportunity for his village by introducing new technology to support the village's development. Yana is known to have a good reputation, good networking with the community and serves the village as the Head of village. Therefore, his idea was accepted easily by the community. Observing several cases (Olsson, et al. 2006) argues that leadership is a critical element in preparing the system for change. In this way, he provided leadership functions such as connecting key individuals, developing and communicating a vision, and engaging with others to establish direction. He aligned, motivated, and inspired people to invest in an alternative approach and built broad supports for change. The leadership includes trust building, sense making, managing conflict, linking key individuals and initiating partnerships among actor groups, compiling and generating knowledge, developing and communicating vision, mobilizing broad support for change, and gaining and maintaining the momentum needed to navigate the transitions and institutionalize new approaches. In addition, (Purdue 2001) believes leaders play an important role in managing partnerships in the community/organization. Meanwhile, trust relationships in term of social capital consist of communal social capital, in which their relations with the constituents, and collaborative social capital, in which their ability in conducting regeneration

partnerships. Effectiveness of trust relationships depends very much on accumulation of social capital. These relationships which are occurring in many forms of organization such as community, neighbourhood and so on, and tied by different structures could be well maintained on the hand of their leaders.

The strength of social capital in the Mandalamekar village makes participatory planning in Mandalamekar possible. It was claimed by (Rydin and Pennington 2000) that social capital is important in the participatory approach especially when managing environmental planning. As (Fisher 2000) explain in his book, the participatory planning process can be implemented when the community have basic components such strong social capital bonds, equity, openness, accountability, transparency and trust. This planning model focuses on the communication process to compromise on social values in both directions in order to have a reciprocal relationship between the planners and the community. The bottom-up approach is used to identify the planning needs by accommodating input from the community. In this case, the role of the community serves not only as an object or user but also as planners, although with different capacities. Such models assume that people are able and can be empowered with certain ways of learning. Besides that, the community also have the right to determine their participation to determine the kind of planning that they receive. This planning process is likely to succeed because it comes from the villagers who knows what they need. What is more, the participatory planning process in Mandalamekar leads to good governance term even though it happens in the smallest scope, which is a village. The transparency criteria in the participatory planning and good governance term can be realized by using ICT. The planning and development process can be monitored by anyone from village website and village information system.

Chapter 6

Conclusion and Recommendation

6.1 Conclusion

Since the livelihood approach focuses on people and their needs, the use of ICTs here is much more diversified, representing the widely varying needs of poor people. The key is to determine the crucial information needs that have a significant impact on the quality of the lives of the poor. Therefore, local content is the basis of this strategy. ICT provides the opportunity to raise the value of local knowledge and accelerate the development progress. This opportunity is important to reduce the poverty rate. ICT penetration in Mandalamekar also increases the transparency of the rural governmental decision making. This allows citizens to understand how and why the rural government is making certain decisions. It is also a way to assure the government members accountable for what they planned. It can improve mutual understanding and trust between the poor, rural government and local government.

The success story of ICT access empowering the poor community in Mandalamekar cannot be separated from the social capital and the leadership actor. The roles of these two factors make this case unique. Total involvement of the community makes the planning and development process run very well. yet, what happened in this case may not be similar with that in another place because of the various influence factors.

Although still in the early stages, the application of ICT in empowering the poor, these studies serve as an evidence that ICT is bringing benefits to the poor. However, the success story in Mandalamekar needs further research in order to analyze whether it is due to the application of the bottom-up approach rather than top down approach.

6.2 Reflection

The result in this study is slightly different from Duncombe's works, the ICT was not proven as acceleration tool for poverty reduction. In Duncombe's paper, the ICT access was provided by the local government to the poor community, so the policy applied here is more top-down approach. In comparison, in Mandalamekar case, the ICT access was sought by the community in order to find the way to reduce their vulnerability. Here the policy applied is bottom-up approach. Moreover, the community's involvement makes the planning process in Mandalamekar shift into participatory planning, which leads to good governance and encourages democracy process. However, although ICT enhances the human resource knowledge in Mandalamekar, it does not improve the formal education yet. In the future, the lack of road infrastructure should encourage people in Mandalamekar to do the distance learning to fulfil their needs for formal education. Furthermore, the difference of livelihood asset and vulnerability in other cases may lead to another result. There are so many variables that are hard to apply in general rules. Direct research surveys to the field will minimize information bias.

The drawback of the research that ideally develop by participatory research such as Focus Group Discussion in the field. However in this research, the survey is only held through phone interviews and collecting data from the village's website. There are possibilities of misinterpretation about the concept and the answer from the respondents.

The findings in this research can be made a starting point to develop the policy to overcome the poverty problem in the rural area.

6.3 Recommendation

The role of ICT is important to accelerate the development in the rural area. Within the livelihood framework, ICT has a positive correlation to enhance the rural livelihood. It shown by the vilagers opinion who were interviewed by phone during the research. However, it should be noted by

the decision maker that the ICT potential to support rural development has to be provided with adequate infrastructure. It is important to see that knowledge gap is caused by the uneven distribution of technical knowledge and information access that leads to making it a lagging area.

ICTs offer huge potential in support of improved education and training and need to be harnessed to build long term decision making capacity in rural areas. ICTs can also support improved provision of short-term information required by the rural poor for livelihood strategies. Being far from the centre of the government means the village could manage their rural services based on allocation fund from government by themselves. However, since there is no regulation to organize this demand, it is important to set the policy with the new law. In addition, to make the poor participate effectively, it requires more and better information about their rights and roles, responsibilities, structure and services of institutions supposedly designed to benefit them. ICTs offer considerable potentials to increase the benefits and reduce the opportunity costs of participation.

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