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SUSTAINABLE LAND MANAGEMENT IN KINGDOM OF CAMBODIA

សាស្ត្រាចារ្យណែនាំគោល ៖ បណ្ឌិត ម៉ៅ ភណ្ណា

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CHAPTER ONE

INTRODUCTION

1.1. RESEARCH BACKGROUND

Land is the repository of memory and keeps traces of the past in the absence of a strong written tradition. It is perceived as an open book from which anyone can read and learn about local history: place names, old roads, legends and stories attached to places. For local people, bulldozing the landscape is seen as erasing their history, and disturbing social organisations and traditions. In addition, land is a very essential element of nature on which all living things directly or indirectly depends on. Human being depends on land to produce basic necessities which include food, clothing and shelter. Moreover, land is the principal resource of human beings in general and agrarian society in particular.

In Cambodia--as in many other countries--land is an extremely important economic resource and asset. Land is livelihood. But equally, land is valued as an emblem of rootedness, belonging and stability, and is widely regarded as the very basis of social organisation in the country. In fact for most Cambodians, land is considered to be the foundation of society and life. A family's attachment to its piece of land has particular significance in a society that over the past hundred years has hurtled through successive periods of civil conflict, war, massive displacement, forced collectivisation and genocide, and finally into an unregulated, capitalist, market economy.

Today, at least a third of Cambodia's peoples—rural and urban--are being systematically alienated from their lands, homes and livelihoods. In many instances communities are losing lands and access to natural resources because of economic and demographic pressures. But equally, people are being dispossessed from their lands by those with political power and money. This is made possible by a combination of factors: economic opportunism by the country's elites and their external allies and their impunity from legal action; ambiguous land laws; a judicial system that is hostage to political and financial power and unable to protect the rights of citizens; short-sighted economic development plans that seek to usher in private capital at any cost, and; shocking apathy by bilateral and multilateral donors and creditors.

1.2. PROBLEM STATEMENT

Cambodia has a total territory of 18.1 million hectares of which at least 6.5 million hectares is considered arable. Over 80 % the country's population lives in rural areas and depends on land, forests, rivers and other natural resources for its livelihood. Subsistence agriculture, fisheries and foraging in surrounding forests and woodlands are the main sources of food, employment and income for Cambodia's rural communities. Typically, a rural family would have a small plot of land for its house and small parcels of land around the village (from 1-3 hectares) for cultivating rice. Cambodia's terrain allows for both sedentary and shifting (swidden) cultivation; whatever the mode of cultivation, rural communities rely greatly on surrounding woodlands, forests and water bodies for food and non-timber forest products for household use and income. Loss of agricultural land and/or loss of access to natural resources directly translate into hunger, cash-poverty, poor health

and destitution for rural communities. The poorest in any village are usually those without land and in fact, not having agricultural land or the means to purchase land can be considered a reliable indicator of poverty in Cambodia.[1]

Land ownership in Cambodia has historically been tied to land use. For hundreds of years and up till the mid twentieth century, land was acquired "by the plough" although it theoretically belonged to the country's ruling sovereign power. The value of land lay in its use and cultivation was accepted as a form of ownership.[2] As recently as up to the 1960-s, population density in much of rural Cambodia was low and there was an abundance of land compared to population size. Agricultural production was largely small-holder and labour-intensive, with possibilities to expand land under cultivation as family size grew. In the 1960-s, it was estimated that 73 % of Cambodia's territory was covered with forests and rural communities could clear forests as needed to bring more land under cultivation without significant ecological impacts. Land was not traded, there were no formalised land markets and those who actually used the land also defined ownership and control.[3] The most common pattern of establishing ownership was by clearing forests and using the cleared land for agriculture.

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[1] See for instance, *Making the Poor More Visible, Landlessness and Development Research Report.* Where has all the Land Gone, Volume 4; Robin Biddulph. Oxfam GB Cambodia Land Study Project. September 2000

[2] *Land concessions for economic purposes in Cambodia, A human rights perspective.* United Nations Cambodia Office of the High Commissioner for Human Rights. November 2004.

[3] *Social Assessment of Land in Cambodia, A Field Study.* So Sovannarith, Real Sopheap, Uch Utey, Sy Rathmony, Brett Ballard, Sarthi Acharya. Cambodia Development Research Institute, Phnom Penh, July 2001.

Attempts by French colonists (1800-s to 1930) and the post colonial government (1953-1975) to introduce formal private property ownership regimes were only partially successful in the rice growing plains and not at all successful in upland and forest areas. One reason for this may be that both colonial and post colonial governments sought to collect taxes from those with formal land titles; given that peasants already had few means of production and lived literally from season to season, such taxes placed additional and heavy financial burdens on them. Another reason may be that in areas where shifting cultivation was practiced (generally more remote and distant from administrative centres) land administrators found it difficult to keep track of which family "owned" which parcel of land. Even today, privatised property regimes stand in stark contrast to traditional land use and ownership practices in both, shifting and extensive cultivation systems in Cambodia and elsewhere.

The above situation started to change rapidly with the advent of the civil war in the 1960-s and 1970-s, the take over of the country by the Khmer Rouge (KR) from1975-1979, and modernisation and population growth from the 1980-s on. As fighting intensified in the countryside during the late 1960-s and 1970-s, thousands of rural people abandoned their lands and sought refuge in Phnom Penh, the nation's capital. When the KR took full control of the country in 1975, they moved majority of the country's population into rural agricultural production camps, uprooted rural communities from their traditional lands, expropriated all property, destroyed most land

records and collectivised all the lands.[4] Both during and after the KR period, a large number of people fled to refugee camps in Thailand or sought asylum overseas.

After the ouster of the Khmer Rouge in 1979, rural communities returned to their villages and resumed farming on whatever lands were available, but all land was still considered state property. In many areas, farmers were organised into small state led collectives (called krom samaki and different in nature from the KR labour camps) and households were allocated residential use rights based on actual occupation. Those who spent the KR years in refugee camps along the Thai-Cambodian border also started to return in the 1980-s, many to their original villages of birth, looking for agricultural lands to start life anew. Recognition of private property (i.e., ownership of land by families and individuals) began again in the mid 1980-s and was formally introduced in 1989 after the departure of Vietnamese troops.[5] In 1989, the Government of the State of Cambodia (SOC) started to allocate agricultural land to rural communities and established ownership rights for residential land up to 2000 square metres and possession rights for cultivated land of less than

[4] The Khmer Rouge (KR) period witnessed possibly the largest population displacement in human history. Millions of Cambodians were forced to move to labour camps in the Cambodian countryside as part of the KR's plans to build an 'agrarian utopia.

[5] *Social Assessment of Land in Cambodia, A Field Study.* So Sovannarith, Real Sopheap, Uch utey, Sy Rathmony, Brett Ballard, Sarthi Acharya. Cambodia Development Research Institute, Phnom Penh, July 2001.

five hectares.[6] Although pre-1975 land claims by returnees were not recognised, policy analysts generally agree that land distribution in rural areas during that period was relatively equal.

In the 1990-s, Cambodia was catapulted into a free market economy, private property regimes started to define land use and ownership, and an unregulated land market started to burgeon. The Constitution that the new Royal Kingdom of Cambodia (RCG) adopted in 1993 provided for legal private and public (state) state ownership of land, and a Land law introduced in 1992 extended private property rights to Cambodian citizens. Through this law, people could apply for land certificates to confirm occupancy and use rights in rural areas and for ownership rights for dwellings in Phnom Penh. From 1989-94, the Department of Cadastre was a part of the Ministry of Agriculture. The provincial and district offices of the Department of Cadastre carried out the cadastral work and the provincial Governor was the final authority to issue land certificates[7] for both agricultural and residential land. During 1995-98, the Department of Cadastre was moved to the Council of Ministers; the final authority for issuing land certificate was shifted from the Provincial Governor to the Director of the Department of Cadastre. In 1998, the Department of Cadastre (now referred to as the General Department of Cadastre and Geography) was again moved, this time to the newly established Ministry of Land Management, Urban Planning and Construction

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[6] *Land tenure database development in Cambodia.* Brett M. Ballard, Acting Research Director, Cambodia Development Resource Institute, 2006. Phnom Penh, Cambodia. http://www.fao.org/docrep/009/a0306t/A0306T08.htm.

[7] The Government issued over 4 millions certificates, with 10-20% overlap of ownership, according to H.E. Lim Hor, Deputy General Director of General Department of Cadastre and Geography, 7 February 2007.

(MLMUPC). One of the main tasks of this Ministry is to undertake a comprehensive survey, mapping and registration of all land in Cambodia.[8]

Also in the 1990-s, the RCG introduced a number of private investment incentives through an economic reform agenda to promote economic and social development. Agricultural development was claimed as a priority with the aim of ensuring food security, providing raw materials for industry, increasing exports and creating employment. During this time, the RCG also started to grant economic concessions on forest and state lands to private companies, it also outside existing laws and served to dispossess rural communities from farm and forest lands.

Cambodia is currently faced with a number of environmental concerns resulting, directly or indirectly, from human activities and, in particular, prompted by rapid population growth, inappropriate land use and increased livestock population pressure. These works have mainly focused on the nature of land degradation, and soil and water conservation done by government and nongovernmental organization. The government also concentrated on the potential of land management practices on crop yield and it lacks comprehensive assessments and evidence based analyses regarding the tangible economic and environmental changes brought by the different land management practices. However, as far as the investigator´s knowledge is concerned, there is information a gap on the issue of what factors affecting decision of land management practices

[8] Mao Vanna and Srin Davy, AIMAD Land Titling Pilot Project: *Research on Post clearance land titling 2007*

and contribution of land management to household both economically and environmentally in the study area. Therefore, this study was conducted to address this gab in general in the study area and to add some information to the present literatures.

1.3. RESEARCH QUESTIONS

Research questions involve the research translation of "sustainable" into the need for inquiry. The research problem defined above leads to the following research questions:

(i) What factors contribute to the sustainable land management in Cambodia?

(ii) How does each factor influence sustainable land management in Cambodia?

(iii) What actions do the institutional's decision should take in order to be more sustainable land management in Cambodia?

1.4. RESEARCH OBJECTIVES

A research objective is to find out the factors influence sustainable land management in Cambodia. In solving the research factors and answering the questions mentioned previously, this research has the following objectives:

(i) To investigate the factors contributing to the sustainable land management in Cambodia

(ii) to assess how each factor influence sustainable land management in Cambodia

(iii) to provide suggestion and recommendations to government and donors related to sustainable land management in Cambodia

1.5. SCOPE AND LIMITATIONS

There are number of limitations related to this thesis. These are related to both the methodology and the primary research question. In respect to the research question, this thesis is primarily interested in land management in Cambodia or outside land management contex... Second, this research is focused land management result from 2008 to 2010 as sustainable land managment measurement. Then, only regression analysis was used to analyze data in this research. Finally, it is difficult to gain reliable facts from a literature review regarding the current status of land management in Cambodia, for there is little research undertaken related to this field, and most research, especially the research conducted by local researchers, specific discussions regarding the methodological limitations of this thesis are detailed in chapter four. This includes a thorough discussion of the unit of analysis and its limitations.

1.6. SIGNIFICANCE OF THE STUDY

This study provided relevant and concurrent information on current land management of the five provinces; therefore it is used as bench mark for other researchers who are interested to make another study around the topic.

Furthermore, it is useful for the government body and interested sectors of this issue by providing overview of the current land management of the study area in order to take actions to solve land management related problem.

1.7. ORGANIZATION OF THE RESEARCH

In terms of structure, the thesis has six chapters. The thesis begins by defining the research problem and questions.

Chapter One: Introduction, it covers the research background, problem statement, research questions, research objective, and scope of limitation, significance of the research and organization of the research.

Chapter Two: Literature Review, it covers the

Chapter Three: research methodology, it covers the consists of research model and eleven hypotheses put forward for testing and discusses aspects of the research methodology including research design, data collection and data analysis methods, and hypothesis testing to support the model.

Chapter Four: It covers the characteristics of respondents, descriptive statistics, and exploratory factor analysis and reliability test and measurement model.

Chapter Five: It covers discussion of the research finding

Finally, Chapter Six: It covers conclusion and recommendation.

CHAPTER TWO

LITERATURE REVIEW

2.1. DEFINITION

Why Land Management?

Land is a requisite resource for humans as a living space, source of sustenance and production, location for activities, and subject of natural wonder. Land tenure has also long been associated with status, wealth, and social security (Oskam and Feng 2008). However, human-caused land use and transformation to produce goods and services substantially alter the structure and functioning of ecosystems globally (Vitousek *et al.* 1997; Harte 2001; Foley *et al.* 2005; Barnosky *et al.* 2012; European Commission 2012; Nkonya *et al.* 2012).

Despite widespread acknowledgement, decades of academic focus, and evolving regulations, the global phenomenon of cumulative effects on ecosystems has gone largely unchecked, playing out through incremental impacts of human activities and infrastructure on landscapes, biodiversity, wildlife habitat, water quality, ecosystem services, recreational opportunities, and areas of spiritual significance (Hurni 1997; Harte 2001; MEA 2005; Polasky *et al.* 2008; Huitric *et al.* 2009; WWF 2012). Many key environmental threats to humanity (e.g., crossing thresholds for climate change, loss of biodiversity, and disruption of nitrogen and phosphorus cycles (Rockström *et al.* 2009)) are caused or exacerbated by land use practices that destroy or degrade habitat and ecosystem processes on the local and global scales (Nkonya

et al. 2012). Amidst such unrelenting development pressure, the principal dilemma for land stewardship, then, is one of managing land uses in balance with the conservation of ecological services and biodiversity at all levels (Polasky *et al.* 2008; Gardner *et al.* 2013). Such management requires consideration of ecological limits on economic systems and activities associated with growth (Smyth and Dumanski 1995; Hurni 1997; Meadows *et al.* 2004; Foley *et al.* 2005); therefore, understanding sustainable land use first requires a brief exploration regarding the premise of sustainability.

Framing Sustainability

At its heart, sustainability represents the persistence of necessary and desired features, functions, and characteristics of people, their communities and organizations, and the surrounding ecosystems for an indefinite time period, without disproportionately prioritizing human or ecosystem well-being at the expense of the other (Hardi and Zdan 1997). Building on notions of humanity′s inherent connection to nature, emphasized by such seminal thinkers as Henry David Thoreau, Ralph Waldo Emerson, John Muir, and Aldo Leopold, and the emergent environmental protection ethos that found its foothold in the 1960s, the concept of sustainability has evolved to promote preservation of ecological function with balanced consideration of economy and social equity in response to ever- increasing and complex social-environmental dilemmas (Meadows *et al.* 2004; Edwards 2005; Brown *et al.* 2010). Mickwitz (2003) observes that such environmental dilemmas are characterized by complexity, uncertainty, long time frames, widespread and/or geographically remote areas of influence, cumulative and confounded rather than discrete cause-

and-effect impacts, unequal distribution of impacts on varying societal groups, largely scientific formulation, and stakeholders with conflicting objectives and differing belief systems. The seemingly intractable mix of factors creates what have been coined 'wicked' problems that defy complete definition, lack end-state or true-false solutions, and result in value-based, un-testable resolutions reliant on political judgements invariably linked to other issues (Rittel and Webber 1973; Nie 2003; Brown *et al.* 2010). As such, management for sustainability requires ongoing normative definition of acceptable outcomes followed by political decision making toward defined goals.

2.2. CONCEPTS OF SUSTAINABLE LAND MANAGEMENT

The set of operating values for any social context invariably shift over time and vary across communities and locations (Hardi and Zdan 1997). Therefore, as a normative concept, sustainability must be framed within defined contexts and values to have constructive meaning (Smyth and Dumanski 1995; Mog 2004; Oskam and Feng 2008; Bond *et al.* 2012). Several principles permeate sustainability discourse (Farrell and Hart 1998; Pannell and Schilizzi 1999; Pope *et al.* 2004; Gibson *et al.* 2005; Kemp *et al.* 2005; Bosselmann *et al.* 2008; Gibson 2013)

However, these idealistic principles, as espoused in many of the seminal sustainability treatises (e.g., IUCN *et al.* 1980; WCED 1987; IUCN *et al.* 1991; UNCED 1992; ECC 2000), present profound philosophical challenges including the utilitarian versus intrinsic value of nature (Owens 1994; Pannell and Schilizzi 1999), and the definition and validity of intergenerational rights and

fairness (Norton 1982; Toman 1994). In addition, the capitalism-socialism nexus produces tension between the entrenched economic growth model and the notions of social equity and ecological stewardship (Bosselmann *et al.* 2008; Dresner 2008). Therefore, despite well-developed rhetoric regarding sustainability, the concept has been difficult to define and operationalize, being equated to such ideals as truth and justice – desired, but not readily captured by objective definitions and practical courses of action (Robinson 1993; Schaller 1993; Owens 1994; Toman 1994; Pannell and Schilizzi 1999; Gibson *et al.* 2005; Bell and Morse 2008; Bosselmann 2008; Owens and Cowell 2011). Governments, organizations, and corporations have embraced the term over recent decades, but rarely accompanied the commitment with commensurate or measurable shifts in behaviour (Gibson *et al.* 2005; Bosselmann 2008; Gibson 2013).

This dissonance has fostered adherence to 'weak' sustainability, demonstrated often as environmental concerns being given more profile and consideration in resource use decision processes, but always balanced against the benefits of economic development (Owens 1994). This perspective promotes institutionally 'safe' approaches to sustainability, while marginalizing approaches that threaten established norms or power structures (Owens and Cowell 2011). This has also been referred to as a 'competing objectives' view of sustainability (Farrell and Hart 1998). In contrast, 'strong' sustainability is grounded in the holism and interconnectedness of ecological rationality (Bartlett 1986), and places principled priority on environmental capacities that, depending on the context, may impose some ultimate constraints on economic activity (Owens 1994; Lafferty and Hovden 2003; Neumayer 2010). With a strong sustainability view, not all forms

of natural capital (in the genre of ecological economics) are substitutable – some are irreplaceable and essential to human survival and cannot be rationally traded-off for other considerations (Owens 1994; Ekins and Medhurst 2006; Dresner 2008; Neumayer 2010; Bond and Morrison-Saunders 2013). This has also been referred to as a 'critical limits' view of sustainability (Farrell and Hart 1998).

With respect to land management, strong sustainability is most poignantly articulated in Aldo Leopold's 'The Land Ethic' within his seminal work *A Sand County Almanac* (Leopold 1949, 203-204):

> *"All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts. His instincts prompt him to compete for his place in that community, but his ethics prompt him also to co-operate (perhaps in order that there may be a place to compete for). The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land….A land ethic of course cannot prevent the alteration, management, and use of these 'resources' but it does affirm their right to continued existence, and, at least in spots, their continued existence in a natural state."*

However, Leopold (1949) also observes that land use ethics are governed largely by economic self-interest, entailing privileges but not necessarily obligations, a trend that is still apparent today. As Gibson (2013) proffers, the global trend toward weak sustainability is not surprising given the deeply entrenched power and authority structures of authoritative institutions that are conditioned to maintain the drivers of conventional economic growth and distribution of benefits, and are consequently ill-equipped and disinclined to respect ecological limits or promote equitable sufficiency. Action by conventional decision-making institutions toward sustainability tends to reflect tenacious adherence to what have borne out to be conventional yet flawed assumptions: that overall well-being is improved through economic growth based on exploitation of energy and material resources; that trickling down of economic wealth will eliminate poverty; that economic motives and technological innovation will produce substitutes for all degraded or depleted resources; and that impact mitigation will protect valued ecological and socio-cultural qualities (Gibson 2013). These assumptions demonstrate that the pursuit of strong sustainability ultimately requires fundamental transformation in not only the practices that produce unsustainable ecological degradation, but also in the ways of thinking, planning, evaluating, deciding, and acting within authoritative institutions.

From the weak-versus-strong tension emerged the compromising concept of 'sustainable development', which seeks to modify the kind of growth strategies that are pursued rather than challenge the notion of growth directly (Lélé 1991; Dresner 2008). While much analysis and discourse has ensued to conceptualize and rationalize how development can be economically,

socially, and ecologically sustainable (Munasinghe *et al.* 2001; Westra *et al.* 2008; Neumayer 2010), environmentalists have claimed it is a contradictory concept that perpetuates economic development at the cost of natural and social well-being (Dresner 2008). Others have presented sustainable development as a 'fuzzy' policy-framing concept that can initiate discourse toward some general goals without knowing precise outcomes (Persson 2013). Still others view sustainable development as an integrationist concept that attempts to infuse environmental considerations into economic development and economic demands into environmental protection (Biermann *et al.* 2009).

Notwithstanding ongoing theoretical and philosophical deliberations, sustainability is considered here as a noble concept fundamentally rooted in humanity conducting itself within limits that enable ecological systems to exist and function adequately into the future (Meadows *et al.* 2004; Westra *et al.* 2008). More specifically relevant to land management research, sustainability can be conceptualized as a measure of the likelihood that land use will remain physically, ecologically, economically, and socially suited to a particular location for a defined and relevant time period (Smyth and Dumanski 1995). Furthermore, since the 1990s, there has been increased application of the concept of sustainable land management (SLM), especially as it pertains to sustaining ecosystem services and livelihoods, and preventing land degradation associated with agriculture and fibre production (Dumanski 1997; Hurni 1997; The World Bank 2006; Perkins *et al.* 2011). For the purposes of this research, SLM is more generally considered as a system of policies, institutional arrangements, planning processes, and practices applied to

integrate ecological, socio-economic, and political principles in the management of land to achieve intra- and intergenerational equity of land values and services (adapted from Hurni 1997).

2.3. THE CURRENT ISSUES RELATED TO LAND

The change of the property market is a positive sign of national economy. Some people both in urban and rural areas have enjoyed the benefits of selling some pieces of their lands when land prices are rising and they are able to improve their family's livelihood to a certain extent. With the fluctuation of land market, negative activities of encroaching movement over state forest land, reserved land for public interest, vacant and unused land have taken place all over the country by opportunists and some of the influential figures.

In rural areas, forest land, national park land, unused reserved land of the state were occupied by some of those powerful, influencial, and wealthy persons who colluded with each other by clearing forest, taking state land as their own property, or buying up pieces of lands cleared by people encroachers at lower prices with the intention to freeze them for speculation, or hire poor people to clear the forest for land occupation. Apart from this some poor people take the opportunity to expand their occupation on forest boudary or moving to new locations and continue to clear forest to get land.

Some poor people in rural areas after selling out their lands by various reasons they migrate for seasonal or permanent work in cities, urban areas. Some of them moved on the live on puclic state land or on vacant private land. This is one of the root case of land conflict when the state or

the land owner needs land for development or for public interests. Claims for rights over temporary settlements in cities or in public areas are becoming more active when land prices in cities are higher, and the situation became worst when there were not proper solutions or lack of broad participation from stakeholders, and espeically when there are interferences from some NGOs or unfair groups. Also, there are extremists and opportunists with intend to reap the benefits from these conflicts leading to social and national complexities.

Many of state lands have not yet been identified and boundary poles have not been clearly demarcated together with insufficient management measures, land encroachment by all means have become even faster, especially from those influencial figures as well as from the rich. On the other hand, the management of state land and natural resources by competent institutions and all levels of local authorities who are responsible for land managment are not smooth over how land is supposed to be managed and over implementation.

Land use planning has been delayed, epsecially the development of guidelines, legal norms for implementation. This has led to the loss of order/discipline in city expansion, urbanization, and changes the use of land types at will. This in turn has made the arrangements of physical infrastructure system in some urban areas exposed to big consequences, such as the structuring of communications network, green spacr of public park, the loss of drainage reservoirs, the loss of lands with agricultural potentials.etc.

2.3. LEGAL FRAMEWORK FOR LAND MANAGEMENT

The Constitution of the Kingdom of Cambodia under the Chapter of Economy, Article 58 natably cites ″State property notably comprises land, mineral resources, mountains, sea, underwater, continental shelf, coastline, airspace, islands, rivers, canals, streams, lakes, forests, natural resources, economic and cultural centers, bases for national defense and other facilities determined as State property. The control, use and management of State properties shall be determined by law.″While Article 59 specifies that "The State shall protect the environment and balance of abundant natural resources and establish a precise plan of management of land, water, climate, air, geology, ecological system, mines, energy, petrol and gas, rocks and sand, gems, forests and forest by-products, wildlife, fish and aquatic resources.″

Concerning the rights and duties of the Cambodian citizens, Article 44 of the Constitution stipulates that "All persons, individually or collectively, shall have the right to ownership. Onlyphysical or legal person of Khmer nationality shall the right to own land. Legal private ownership shall be protected by the law. (Whereby) possessions of any person shall be only withdrawn unless it is required for public interest as provided for under law and shall require fair and just compensation in advance.″

The 2001 Land Law which is totally based on the Constitution and the change of ownership regime and the actual situation of land tenure. Article 6 of the Land Law specified that "Only legal possession can lead to ownership. The State may also provide to natural persons or legal entities of Khmer nationality ownership over immovable property belonging to the State within the strict

limits set forth in this law.″ In terms of Acquisition of Ownership, this law stated that "Possession of immovable property which was recognized since 1989 may constitute a right in rem over immovable property and lead to the acquisition of ownership by the holder, in accordance with the conditions set by this law.″ Article 38 says "In order to transform into ownership of immovable property, the possession shall be unambiguous, non-violent, notorious to public, continuous and in good faith.″ In brief, a legal possession which can transform into ownership shall be a possession which conforms to the five abovementioned conditions and occurred prior to the effective date of the 2001 land law on a piece of land which is not partial to state public land and have stayed there for five years.

Article 226 of the Land Law states "Ownership of immovable property shall be guaranteed by the State. For that purpose, the Cadastral Administration under the supervision of the Ministry of Land Management, Urban Planning and Construction shall have the competence to identify properties, establish cadastral index maps, issue ownership titles, register lands and inform all persons as to the status of a parcel of land in relation with its nature, size, owner and any relevant encumbrances over such parcel.″

This Law also mentions the procurement of ownership about public and private ownership, types and forms of ownership, most of which states the details and are included in the Civil Code 2007.

Properties that are considered as public properties of the State or of public legal entities, Article 15 of the Land Law has divided them into 7 categories, namely:

- Any property that shows their existence naturally

- Any property that is subject to special development for common interest

- Any property that is made available for public use either in its natural state or after development

- Any property that is put into use for public service

- Any property that constitutes a natural reserve protected territory by law

- Archeological. Cultural and historical patrimonies

- Immovable properties being royal properties that are not private properties of the royal family. Royal immovable properties are managed by the King under throne.

Moreover, Article 4 of the Sub-decree No. 118 on the Management of State Land additionally specifies State Public Properties as other lands having their nature to serving public interests and those lands that have already been identified by legal basis.

Article 16 of the Land Law says "State public property is inalienable and ownership of those properties is not subject to prescription…However, it can be subject of authorization to temporarily, precariously occupy or use and revocable if failed to fulfill tax obligations, except it is authorized under Chapter 3 of the Law. These authorizations cannot be transformed into ownership or rights in rem for the benefit of the holder. When State public properties lose their public interest use, they can be listed as State private properties by the Law on Transferring of State public property to state private property."

Concerning state private property and public legal entities, Article 17 of the Law clearly specifies that they can be subject of sale, exchange, distribution or transfer of rights as determined by law. Such property may be leased out and it may be the subject of any contract made properly according to the law. However, vacant lands of the State private domain may be distributed to persons demonstrating need for land for social purposes in accordance with conditions set forth by sub-decree.

Cambodia's Land Law 2001 is the main law that ensures protection of private land ownership rights recognised and protected under the 1993 Constitution. Ownership of land includes the rights to: Use and enjoy the land. For example, moving onto the land to live, building a house or shelter for animals, and growing crops. Stop other people from entering or using the land. Examples include building a fence to keep others out, informing neighbours that they are not permitted to plant crops on land that you leave empty and stopping people from constructing anything on your land. Transfer the land to others. For example, a landowner can sell land to someone, give land as a gift, exchange land for something else, and leave land to someone upon death.

The 2001 Land Law divided land into three classifications: i) State property, ii) Private property and iii) Collective property. The 2001 Land Law sought to ensure an equitable and efficient land management system. However, implementation of the Law has proven challenging as there are a number of sub-decrees and policies that guide its implementation and a number of other laws and regulations that exist alongside the Law, creating complications to implementation of the Land Law. Sub-decrees and Prakas may be drafted by individual or joint

ministries, and their implementation may require coordination across concerned ministries. Horizontal inter- ministerial coordination can be particularly challenging, and may act as an obstacle to implementation of legal instruments if no appropriate and adequate technical and/or financial support is in place.

Civil Code is a basic law sets forth the general principles governing legal relations in civil matters and shall apply to property related matters and family relations. The Civil Code was adopted in 2007 and became effective in December of 2012. Therefore, the section concerning the rights and obligations of individuals pertaining to immovable property as stated in 2001 Land Law shall follow the substance that is detailed in the Civil Code. Nevertheless, the two laws preserve the definition of immovable property management that had been applied so far by requiring immovable registration be registered in the Land Register Book.

Land Management or Administration in Cambodia shall comply with the system of land registration in the Land Register Book at the Cadastral Administration of the Ministry of Land Management, Urban Planning and Construction. This system is unlike those implementing in some countries that apply recording system in which the creation, transfer and alteration of real rights shall take effect in accordance with agreements between the parties concerned without having to register in the Land Register Book . Hence, even though Article133 of the Civil Code specifies that the Creation, transfer and alteration of real right shall take effect in accordance with those agreed upon between the parties. However, Article 135 of the law cited that Notwithstanding Article 133 (Creation, transfer, and alteration of real right by agreement) and 134 (Conditions for the

Establishment, the Transfer, and the Alteration of Real Right with Agreement), the transfer of ownership over an immovable with agreement is not effective if failed to register in compliance with the provisions of other laws and ordinances regarding registration.

In general, the 2007 Civil Code has written in details Real Rights, Ownership, Ownership Acquisition, Undividable Ownership, Half-right, tenure, Permanent lease Right, Usufruct, Right to Use, Servitude Right, and obligations related to the right use,…etc. within which these chapters are drawn from 2001 Land Law.

So far, RGC has issued the Sub-decrees on SLC, ELC, and Contract-based Farming. However, the implementation of these Sub-decrees has not been smooth and not being carried out in depth, especially the establishment of partnership between large-scale farms, agricultural enterprises, and those farmers who hold small and medium sizes of land, or between ELC and SLC. With regard to land distribution for economic goal, RGC has determined in granting economic concession to be implemented on the basis of tiger skin, i.e. to take out villages and rice fields/chamkar of the people in ELC area. With reference to the Notification # 1117, dated September 01, 2011 which is an outcome of the Cabinet Meeting on September 26, 2011 decided to mandate CDC, MAFF, and MOE to strictly monitor the implementation of those companies who have obtained Economic Concessions on Agricultural and Agro-Industrial sectors from RGC, and not to bother people´s land where their villages exist long time ago, that is to implement the principle of tiger skin. On the other hand, before granting ELC to any companies, actual field visits is a must, and if there are affected people who are living in a proper village, the land must be cut [from ELC] and ceded to them as

SLC, and also to set aside another 10% to meet people´s increasing needs in the future. For those companies who fail to implement the principle of tiger skin and to spark into conflicts with the people, the authorization issued earlier to them shall be revoked. This would provide large benefits to concessionaires to build partnership with local people, in ensuring harmonization over investment process, in the supply of labor to their farms, access to new cultivation techniques, to enhance the quality and quantity of agricultural production, to complement one another in crop processing, and to promote farmers´ livelihoods. The key points of the process of granting ELC that RGC is expecting is to build trust between concessionaires and local people which is very often people mistrust or because of the provocation of perception which is contradicting to ELC policy, abuses from concessionaires when they clear the land before specific boundary demarcation, or they level village land, or the land where people occupy and have been using for so long ago. Therefore, the dissemination of ELC policy to reach down to the people, the negotiation with local people, transparent investments, and the involvement in monitoring from local authorities are the critical factors to be looked at. Also, local authorities must also take part in preventing on time land encroachment in the concessional area, or preventing any activities which would impact on investment process of concessionaires.

For socio-economic development that is starting from the agricultural sector, true partnership between small and medium land holders with large-scale farms or agricultural enterprises where the state has to act as coordinating body in providing transparent and effective guidelines. This is the implementation of the principle of Public-Private Partnership (PPP). Granting ELC without

affecting people´s land and to follow the principle of tiger skin is an ideal option for implementing partnership between public and private sectors which has to be bonded through contracts either through verbal or written contracts, such as contract farming between farmers and the owners of large-scale farms. Besides the implementation of ELC under to principle of tiger skin, there are many other options to be considered with regard to partnership between public and private sectors, such as reserving the land that is the subject of ELC to offer as SLC, to sign contract farming between small or medium land holding famers residing next to or close by large farms with large-scale farms or with agricultural enterprises, establishing new development programs to serve agro-industrial sector linking with land granting to landless families, etc.

The implementation of contract farming would contribute to skill strengthening of farmers both the production skill and product management skill. Contract farming is a form of trade which includes small-scale farmers into the value chain of large companies or farms. This, in turn, would create a win-win relationship by help improving the supply chain which may cut costs of supply, ensure quality supply, and farmers could also obtain new cultivation techniques, and could improve the quality of their crops through the utilization of new seeds, fertilizers, and techniques to attain the goals of information dissemination of certain positive experiences in various regions worldwide on large plantation over long-term period, such as rubber, black pepper, coffee, tea, silkworm culture, and especially seasonal cereals for family-based farmers for examples, corm, bean, cassava, sesame, etc. Apart from cultivation that is based on contract farming, there is a need to also promote animal husbandry, aquaculture in order to connect the relationship between

investors to farmers, producers, processors. In the context of Cambodian farmers where the majority practice traditional cultivation or customary animal raising with limited market knowledge, it is necessary to encourage them to bond into agricultural groups, associations, or communities to access to information about terms and conditions of contract farming on new techniques and methodologies over cultivation, animal raising, or to obtain and distribute better crop seeds as well as good animal species, and aquatic varieties plus the management and facilitation of production, ensuring the quantity and quality of agricultural crops and competitiveness to respond to domestic consumptions and export. The experience of implementation of contract farming in some neighboring countries should be tested in various arable areas or places for animal raising that are favorable with lowest risks involved, and with participation of all concerned institutions for experimentation purposes and to expand successful practices. In the initial step, a place within an area of ELC and local people who could be a good example should be chosenfor further replication in other concessional areas.

According to the Cambodian Constitution, all Cambodians, women and men equally, have the right to own property, and ownership of land must be protected by law[9].The most relevant laws and regulations relating to land tenure and land use are[10]: The Land Law of 2001, The Forestry Law of 2002, Sub-decree No.48 (2002) on the Sporadic Registration System, Sub-decree No.46 (2002) on the Cadastral Index Map and Land Register, Sub-decree No.19 (2003) on Social Land

[9] The Constitution of the Kingdom of Cambodia 1993, Article 44: All persons, individually or collectively, shall have the right to ownership.

Concessions, Sub-decree No.118 (2005) on State Land Management, Sub-decree No.146 (2005) on Economic Land Concessions, Sub-decree No.53 (2005) on Permanent Forest Estates Demarcation, Classification and Land Registration Procedures, Sub-decree No. 26 (2008) on Procedures for Granting Permit for Tree Planting on State Land, Sub-decree No. 79 (2003) on Community Forestry Management, Sub-decree No. 72 (2009) on Commune Land Use Planning (CLUP), Other laws and royal decrees on natural protected areas and natural resources management.

Sub-decree No. 19 on Social Land Concessions: In 2003, the RGC passed Sub-decree 19 on Social Land Concessions (SLC).[11] Sub-decree 19 provides mechanisms for land that is classified as State public property after mine clearance[12] to be re-designated and allocated as State private property, though these are now obsolete.[13] Social Land Concessions aim to reduce poverty by providing landless or land poor families with farm land, or to foster economic growth through Economic Land Concessions. Sub-decree 19 includes special provisions for granting land to demobilised soldiers, single or disabled-headed households, and to families displaced by residential resettlement. However, it does not provide detailed procedures for dealing with these special cases.

[11] A Social Land Concession refers to a legal mechanism to transfer private state land for social purposes to the poor who lack land for residential and/or family farming purposes; Royal Government of Cambodia, Sub-decree 19 on Social Land Concessions

[12] Article 9 of Sub-decree 70 on Socio-Economic Management of Mine Clearance Operations, October 2004

[13] Provincial Land Use and Allocation Committees are not active and have been replaced by Provincial State Land Management Committees under Sub- decree 118 (Nhean 2010. See also Boramy, Sareth. "State Land Distribution for the Poor: State Land Identification, Mapping, Classification and Registration," MLMUPC, 2008)

Households occupying land awarded through SLC provisions are eligible to apply for land ownership certificates after meeting the condition of having resided on the land. This confers full and definite ownership of the concerned land parcel. However, in practice the Government has awarded few SLC allocations due in part to challenges relating to classification of State Land as Public or Private State Land under Sub-decree 118. The other obstacle to SLC allocation relates to political attempts to classify forest land managed by the MAFF/FA as Public State Land based on political interpretation of the 2002 Forestry Law and the 2001 Land Law provisions (but not necessarily based on legislative intent). Sub-decree 19 also requires a high level of horizontal integration between ministries, making it particularly challenging to implement (Oberndorf, 2006). State private property, though these are now obsolete. Social Land Concessions aim to reduce poverty by providing landless or land poor families with farm land, or to foster economic growth through Economic Land Concessions. Sub-decree 19 includes special provisions for granting land to demobilised soldiers, single or disabled-headed households, and to families displaced by residential resettlement. However, it does not provide detailed procedures for dealing with these special cases.

2.4. LAND MANAGEMENT PROGRAM

The LMAP in Cambodia was first approved in 2002, with the goal of improving land security for the poor by setting up a system to register land and issue titles in the country. Through this, the government also hoped to stimulate economic development, reduce poverty, and improve environmental management. The project was first approved for five years with an end date

of December 2007, which was then extended to December 2009. However, the project was suspended for almost a year in 2006 due to procurement issues.

It had three main goals:

- "Development of national policies, the regulatory framework, and institutions for land administration
- "Issuance and registration of titles in urban and rural areas
- "Establishment of an efficient and transparent land administration system.˝

The project included the creation of the Cadastral Commission – under Article 47 of the 2001 Land Law – to deal with all cases involving unregistered land except for those with inheritance or contractual issues.

There was a lot of mismanagement in the implementation of land management initiatives, which caused significant disruption and finally the break-up of the partnership between the implementing parties. There was also very limited positive impact:

- By the end of September 2009, the Cadastral Commission had completed 1,879 cases out of 5,293 received (35 percent). Another 1,772 cases (33 percent) were dismissed, withdrawn or appealed, and 1,692 (32 percent) were pending.
- In 2011, 42 percent of all rural households in Cambodia were either "land poor" (owning less than 0.5 hectares) or landless (owning no agricultural land at all).

- The World Bank's own review revealed significant issues. "The Bank's Inspection Panel found that the Bank's failures contributed to the forced eviction of some 20,000 people living around Phnom Penh's Boeung Kak Lake. Residents were wrongly denied the right to register their land ownership under the USD28.8 million Bank-financed land titling project, shortly before the government leased the area to a private developer and began a campaign of intimidation to force more than 4,000 affected families to sell their property at a fraction of its market value."
- The implementation of the measures was not homogeneous, leaving a lot of vulnerable households "arbitrarily" excluded from the titling process, and with no opportunity to formalise their land rights.
- Similarly, land titling was less successful in urban areas of project provinces where land disputes are more common.

The key local stakeholders were the Government of Cambodia and the Ministry of Land Management, Urban Planning and Construction (MLMUPC), which was the implementing agency for the project, while the World Bank and several foreign nations contributed to the project's funding. Donors, principally the Bank and the Cambodian government, were engaged in the implementation, while on the ground there were a range of civil society organisations (CSOs) and community leaders involved in the day-to-day project execution.

The World Bank's preparatory document clearly stated that there was an intention to include local stakeholders. "During the process of classifying land and demarcating boundaries, all stakeholders will participate in a process of public consultation to ensure general agreement with decisions. During systematic adjudication, NGOs with specialised training in participation will work closely with villagers, explaining the process, producing village land files, and ensuring that all members of the community who are eligible benefit from land titling." However, a later review stated that participation was limited in reality. "The Council on Land Policy worked closely with donors to develop laws and policies but was less effective in the dialogue on state lands, contributing to weak performance of the Land Management component."

Political support and engagement regarding the LMAP project was strong at first, but weakened considerably during implementation, leading to widespread criticism. "Government showed a high level of commitment during project preparation, making the necessary arrangements for implementation and appointing suitably qualified staff in a timely manner. But government performance during implementation showed various shortcomings."

The complexity of the project within a weak political and administrative infrastructure significantly challenged the success of the project. The World Bank was critical of the Cambodian government's participation, citing widespread corruption and a lack of preparation. "The Project Appraisal Document (PAD) highlighted the freewheeling and corrupt attitude of government agencies towards equitable land rights exercised through the rule of law. It may be that the

government´s 'commitment' was a necessary but not sufficient condition for the project to prosper. There were and remain powerful vested interests for which a well-functioning system of land administration and an efficient use of natural resources for the benefit of the population as a whole represent serious obstacles to private gain and, as a result, certain economic and political agents have not acted in a manner consistent with the 'public good' nature of the project.˝

Local villagers were satisfied neither with the government's nor the World Bank's efforts on the project. The government already had a weak reputation in the country, especially regarding its management of resources. ˝In Cambodia, faith in local authorities is particularly low in communities which depend heavily upon access to and management of natural resources such as forests and fishing waters, where rent-seeking and corruption work to the benefit of richer, better connected households and against the poor.˝

On an investigation by a Bank inspection panel in 2009, villagers said that "the programme was ineffective in the face of a marked increase of forced evictions and failed to grant tenure rights to vulnerable residents. More than 4,000 families are facing eviction from the lake to make way for a 133-hectare development project.˝ Similarly, villagers were dissatisfied with the bank's supervision of the LMAP.

The LMAP's goals were clearly defined at the outset, with no changes in the design of the project or in the implementation arrangements. It was initially designed to be implemented in ten provinces and one municipality, with five main objectives:

- Development of a land policy and s regulatory framework, which included the development of capacity of the Secretariat of the Council of Land Policy, the formulation of key policies for land administration and management, as well as the development and drafting of legal instruments and the dissemination of policies, laws, rules and regulations
- Institutional development of the MLMUPC at all levels, including project management, a land management and administration education programme, and a private land surveying industry
- Land titling programme and development of a land registration system, with information dissemination and community participation, a systematic and a sporadic land titling programme, and a modern land registration system
- Strengthening mechanisms for dispute resolution, which included strengthening the National Cadastral Commission, strengthening the provincial Cadastral Commissions, and legal assistance for the disadvantaged
- Land Management, which had three broad areas of focus – the clarification of procedures for land classification, the procurement of aerial photography and satellite imagery, and the preparation of land classification maps at the provincial level.

No formal revision was made of any of the project's components. However, the last component was a late addition and was only partially implemented.

While planning the project, the World Bank took into account lessons from past operations in Cambodia as well as projects in the land management sector. The design of the project was primarily based on two pilot projects, the Land Management Pilot Project led by the German Technical Cooperation Agency (GTZ) and the Cambodian Cadastral Project led by the Finnish surveying company, FINNMAP. Lessons from these pilots were then integrated before the LMAP was launched.

The GTZ-led Land Management Pilot Project started in 1995, the FINNMAP-led Cambodian Cadastral Project in 1997. "As the LMAP evolved into a multi-donor supported project, these two pilot projects were merged into it, providing a wealth of practical information and experience to inform both the design and implementation of the LMAP.˝

In 2001, three multi-donor missions – including representatives of the International Development Association and the governments of Finland and Germany – reviewed the work of the preparation team and the consultants. There was a "pre-implementation" phase from October 2001 to June 2002 to set up the operational structure for the LMAP, supported by technical assistance as the two pilot projects continued and merged into the LMAP.

The LMAP was a complex project with a weak administrative and legal infrastructure, which made it a high-risk and difficult initiative, despite the funding that was channelled into it by several actors.

From the financial perspective, the initiative lacked sufficient funding support from either the national government or international donors – "the World Bank (pledging USD28.83 million), GTZ (USD3.5 million in technical assistance), and the Government of Finland (USD3.5 million in technical assistance). The Canadian International Development Agency joined the project in 2004 committing more than CAD10 million in both funding and technical assistance through to 2012." The Government of Cambodia also pledged funds to the amount of USD3 million.

From the legal perspective, there was no legal clarity on the management of land legislation and allocation. "During the selection of communes to be targeted by the project and the land adjudication process itself, some areas were *de jure* or *de facto* declared by authorities to be State land. In some cases these claims to land by the State were inconsistent with legal definitions of State property. Contrary private claims were effectively barred after the State laid claim to the areas in question, regardless of the legitimacy of the State's right to those lands. Families residing in these areas were exposed to accusations of being illegal squatters on State property and their vulnerability to forced eviction was exacerbated."

Later on, The Inspection Panel, created by the World Bank in 1993, analysed the risk elements of this project in relation to the Bank's objectives. The Panel acknowledged that "[while the bank has an important development role in financing high-risk operations,] the LMAP experience shows the danger of responding to risks by creating an excessively complicated project. The Panel found that new components were added during the preparation process at the expense

of clarity on how the different parts were supposed to be functionally interconnected, and without due consideration of the feasibility of the total approach.″

The management of the LMAP project was initially well structured, but it faced challenges to its role as it progressed. These were due to the project's supervisors' failure to disseminate information and give the project visibility.

The main implementation agency was the MLMUPC. A project management office (PMO) was established within the MLMUPC to coordinate project activities, with a project manager heading the technical committee, which comprised the general directors of the various departments that were involved in implementing the project. The PMO was responsible for project planning, coordination, monitoring, accounting, financial management and procurement.

The PMO was considered to have worked effectively, managed staff well, and conducted the necessary training. However, it made limited use of information to track progress and project weaknesses. For example, it failed to use the Cadastral database, and thus missed the opportunity to identify districts where progress was slow and closer management was needed.

The late implementation of the Monitoring and Evaluation (M&E) system meant that there was very little real-time information on what was happening on the ground. The World Bank argued that the project needed an online management information system, a socioeconomic research agenda to examine impact – given the complex Key Performance Indicators (KPIs) – and a

thorough process of communication with CSOs, none of which was properly achieved. Similarly, the Council on Land Policy was meant to review progress and assist in resolving policy issues that could affect the project's implementation and to work closely with donors to develop the initial policies. However, it was less effective in the local dialogue on state lands, which resulted in weak performance on the Land Management component.

The Cambodian government's supervision and infrastructure also suffered from various shortcomings during implementation. "The legal covenants of the credit agreement were only partly complied with. Financial management was unsatisfactory, particularly with regard to irregular incentive payments for land registration teams. There were instances of mis-procurement that led to the suspension of disbursements following findings of fraud and corruption.˝

Although the project had specific objectives set up at the beginning, the M&E methodology was not implemented accordingly, failing to provide visibility and control over progress. There were comprehensive KPIs envisioned for the Project Development Objectives. They even included KPIs linked to second-order objectives: reduction in conflict over land; greater agricultural productivity; increased access to credit; and an increase in investment in the property sector. However, when the Project Appraisal Document was prepared, it gave no guidance on M&E. "Indicators were poorly specified, no targets were set, and not enough provision was made for baseline and follow-up surveys (...) As late as June 2005, supervision missions expressed

concern about the lack of an M&E framework. An M&E manual was not prepared until December 2006.″

The M&E system did not start to function properly until mid-2008, which was already six months after the original termination date. "Baseline surveys were carried out late and follow-up was inadequate. The panel evaluation envisaged at appraisal (involving treatment and control groups) was not carried out.″

There were various shortcomings in implementation, particularly with regard to irregular incentive payments to the land registration teams. In 2004-05, investigations involving the Region, the Bank's Integrity Vice-Presidency and the government uncovered evidence of corruption, collusion and fraudulent practices in seven Bank-financed projects, including the LMAP.

There were important disagreements between the World Bank and the Cambodian government during the latter stages of the project, which led to a termination of the partnership. According to available testimonies by local stakeholders: ″The World Bank told us that when they asked the government to register us through the LMAP project, the government told them not to interfere in Cambodian politics (...) Everything was stuck when the government stopped working with the World Bank on this project.″ Similarly, villagers were not involved in some of the key elements of the project's preparation, although they were meant to be. ″Residents were not adequately involved in the titling process, and they did not have access to a fair and independent dispute resolution mechanism regarding their claims.″

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1. KEY FACTOR FOR SUSTAINABLE LAND MANAGEMENT

Managing for sustainability involves making challenging decisions incorporating uncertainty, complexity, biophysical constraints, and conflicting human values and interests (Dietz *et al.* 2003). The pursuit of balance amongst these factors is increasingly conceptualized within the context of managing complex social-ecological systems. Such systems comprise interacting and interdependent physical, biological, and social components forming dynamic arrangements within which humans depend on resources and services provided by ecosystems, and human activities concurrently influence ecosystem dynamics (Anderies *et al.* 2004; Palmer *et al.* 2004; Waltner-Toews *et al.* 2008; Chapin *et al.* 2009; Huitric *et al.* 2009; Ostrom 2009). All humanly used resources, such as land, are embedded within complex, social-ecological systems (Ostrom 2009); therefore, I was able to derive a general set of constituent factors for SLM through comparison of selected constructs developed to conceptualize the governance, management, and administration of sustainable resource use (i.e., Ostrom 1990, 2000; IUCN *et al.* 1991; Smyth and Dumanski 1993, 1995; Costanza *et al.* 1998; Jänicke 2002; Dietz *et al.* 2003; Steudler 2004; OECD 2009a; UNDP 2011). The results of this comparative analysis are presented in Appendix A. I then organized the emergent SLM factors into interrelated themes that collectively influence organizational capacity for SLM: land use planning, land administration, information management, and continual improvement, all embedded within and influenced by the governance rationality.

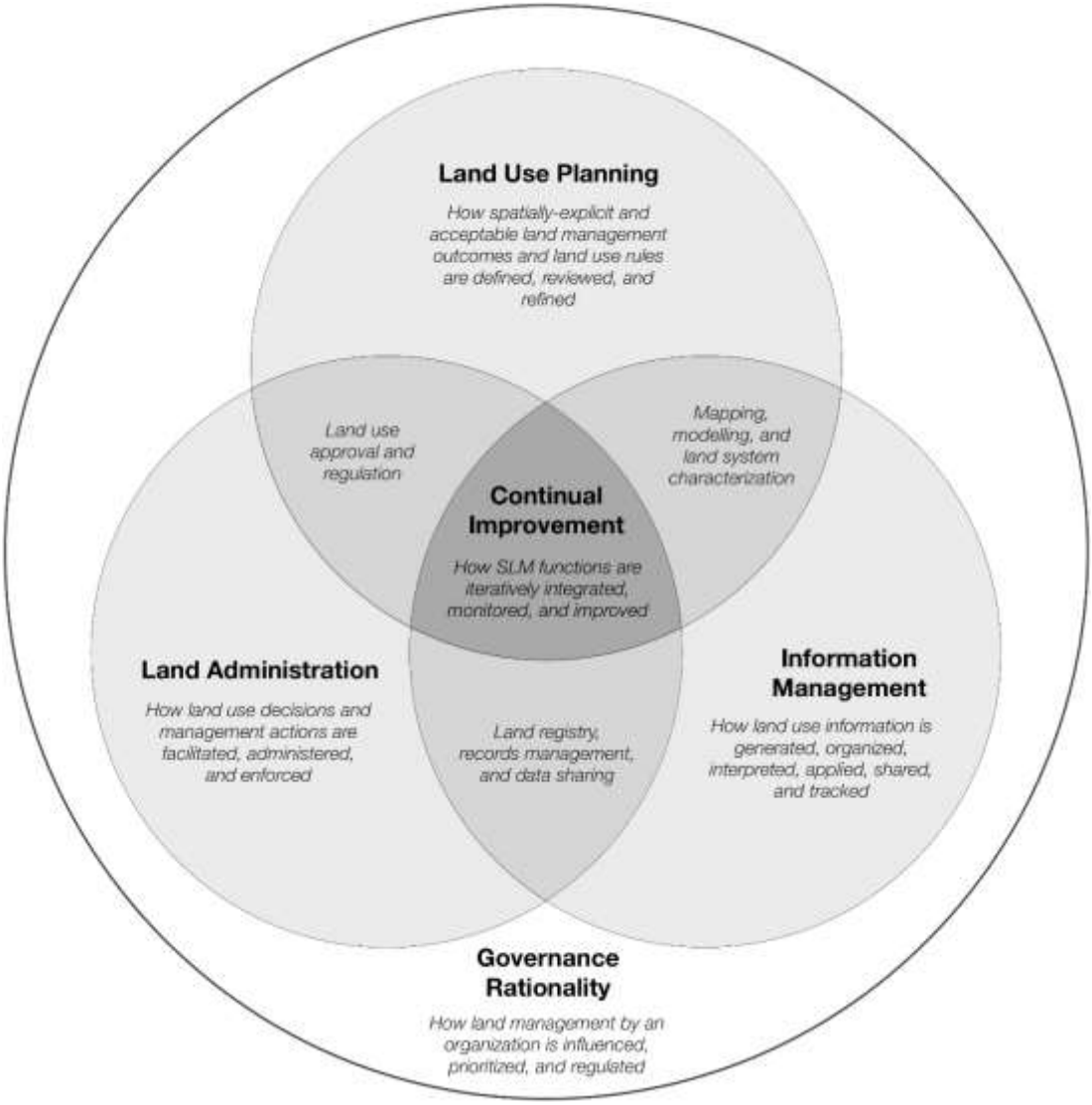


Figure 3.1: Sustainable land management themes

Viewed in this manner, it is evident that SLM is a complex endeavour that necessarily draws on multiple disciplines and domains of knowledge. It is, therefore, understandably beyond the scope of this research to fully explain all the nuances of knowledge that inform SLM; however, the following sections present key theory for each of the SLM factors as the basis for the design of a relationship among the construct for SLM.

3.2. RELATIONSHIP AMONG THE CONSTRUCT

3.2.1. Relationship between Governance Rationality factor (GRF) and the sustainable land management (SLM)

The governance rationality theme encompasses how land management by an organization is influenced, prioritized, and regulated. Effective management capacity for sustainability is fundamentally embedded within the governance rationality (or enabling environment (UNDP 2011)) for a defined social-ecological system. Environmental leadership, identified as one of the four core factors influencing capacity for environmental sustainability (UNDP 2011), is reflected through the dominant governance rationality, and incorporates factors such as high-level political commitment, formalized intent followed by resourced actions, supportive legal and policy frameworks, and democratic and good governance principles.

Increasing interest in improving the manner of governing, along with the influences of globalization, critical reflection on the role of public-private relationships for advancing societal aims, and recognition of sustainability as a cross-cutting normative goal have stimulated a myriad of governance definitions and applications (Eckerberg and Joas 2004; Van Kersbergen and Van Waarden 2004; de Loë 2009). Governance has emerged as a contrasting political authority model to the notion of 'government' or the state (Skogstad 2003; Bosselmann *et al.* 2008; de Loë 2009; Buizer *et al.* 2011), while also essentially encapsulating what the government does (Healey 2006; Paavola 2007). While 'governing' is the purposeful act to steer, guide, control, and manage society, 'governance' provides the mode of social coordination, and involves the formation and

application of objectives, standards, and rules, decision-making procedures, and other social and institutional arrangements (e.g., negotiation processes, resource allocation functions, compliance monitoring and sanctioning, and conflict resolution processes) through which decisions are coordinated and implemented (Kemp *et al.* 2005; Bosselmann *et al.* 2008; Oskam and Feng 2008). Although 'environmental' and 'sustainability' governance are used somewhat interchangeably (de Loë 2009; Griffin 2010; Joss 2010), environmental governance generally refers to the processes, mechanisms, and organizations through which political actors influence environmental actions and outcomes (Lemos and Agrawal 2006). Sustainability governance, however, is more encompassing in that environmental considerations are now viewed as inseparable from larger societal dilemmas, and sustainability requires concurrent and integrated consideration of the social, economic, and environmental pillars of policy making (Bosselmann *et al.* 2008; Huitric *et al.* 2009; Ostrom 2009; Griffin 2010).

Additional scholarly review of the philosophical and multidisciplinary complexities of governance is covered in depth elsewhere (e.g., Van Kersbergen and Van Waarden 2004; Kemp *et al.* 2005; Bosselmann *et al.* 2008). The following sections elaborate on six key factors of sustainability governance that influence SLM: (1) democratic good governance; (2) public interest; (3) sustainability ethic and limits; (4) leadership and commitment; (5) strategic sustainability assessment; (6) the legal framework; and (7) the policy framework. Hence, we propose:

H1: Governance Rationality factor positively leads to the sustainable land management

3.2.2. Relationship between Land Use Planning Factors (LPF) and the sustainable land management (SLM)

The land use planning theme for SLM encompasses the processes required to define, review, and refine spatially-explicit and acceptable land use outcomes and rules through planning processes that integrate civic engagement, public policy influence, and varied forms of information (e.g., social, ecological, scientific/technical, economic) (Burby 2003; Ostrom 2009; Parkins 2011). Attaining and maintaining sustainability requires clear and explicit translation of the general commitment to sustainability into a workable set of practical land use rules, decision support processes, institutional arrangements, and adaptive implementation methods (Gibson *et al.* 2005; Williams *et al.* 2009; Maris and Béchet 2010; Williams and Brown 2012).

The greater discipline of planning theory and practice has a rich history and body of knowledge (for selected reviews see Forester 1989; Fainstein 2000; Randolph 2004; Healey 2006; Harper and Stein 2006; Innes and Booher 2010). Generically, however, planning involves setting objectives, gathering and analyzing information, and formulating and evaluating alternative policies, projects, or designs to meet objectives for a desired future (Forester 1989; Randolph 2004; Harper and Stein 2006). The primary land management function is to produce a wise, enduring, and broadly supported land management plan through an integrated planning process. The following sections elaborate on two broad aspects of the SLM planning process: (1) land system characterization, and (2) the planning framework. Hence, we propose:

H2: Land Use Planning Factor positively leads to the sustainable land management

3.2.3. Relationship between Land Administration Factors (LAF) and the sustainable land management (SLM)

The land administration theme for SLM encompasses the realms of how land use decisions and management actions are facilitated, administered, and enforced. Most commonly, land administration refers to the organizational structures, functions, and processes involved in tracking, regulating, and disseminating information about the ownership, value, and use of land and its associated resources (ECE 1996). This includes several aspects: land registration; determining land use rights and allocations; cadastral surveying and mapping; managing infrastructure and utilities; controlling approvals for the development, zoning, and use of land; collecting and accounting for revenue from land (e.g., sale, taxation, land use fees); resolving conflicts related to ownership and use of land; and compiling and organizing detailed documentation on land, its attributes, use, and associated legal and administrative transactions (e.g., purchase, disposal, change of title, etc.) (ECE 1996; Steudler 2004; Zakout *et al.* 2006; Burns and Dalrymple 2008). Land administration provides the administrative framework for defining the property rights and obligations of individuals and organizations for use of land and natural resources (Bromley 1992), implementing land-related policies, strategies, and plans (Williamson *et al.* 2010), and enforcing land use decisions and management actions (Burns and Dalrymple 2008).Hence, we propose:

H3: Land Administration factor positively leads to the sustainable land management

3.2.4. Relationship between Information Management Factors (LAF) and the sustainable land management (SLM)

The information management theme encompasses the realms of how information is generated, organized, interpreted, applied, shared, and tracked for SLM. Information can be considered a fundamental currency in sustainability management, and challenges can emerge over a lack of information, misinformation, differing views on what information is relevant, and the legitimacy of how information is collected and interpreted (McKinney and Harmon 2004). The UNDP (2011) identified the ability to effectively generate, manage, use, and communicate information as one of the four core factors that most influence capacity for environmental sustainability.

To appropriately apply knowledge for sustainability management it is helpful to understand how system theorists have distinguished such terms as 'knowledge' and 'information'. In their conception, Gharajedaghi and Ackoff (1984) consider 'information' as descriptive, and to be contained in the answers to descriptive questions (e.g., what, which, who, how many, how much, when, where?). Knowledge, however, is instructive and is conveyed through 'how-to' questions. The height of the hierarchy is 'understanding', which is explanatory, and is reflected in 'why' questions. Gharajedaghi and Ackoff (1984) argue that without achieving understanding one can treat effects and suppress symptoms, but not control causes.

Ackoff (1989) subsequently augmented this hierarchy to add 'data' at the lowest level, and 'wisdom' at the top to illustrate the full transition from isolated datum elements through to evaluated understanding of larger interconnections. In his sequence, data represents a fact, statement, or

observation without inherent relationship to other things. Information then embodies data that has been processed to imbue descriptive and relational meaning. Knowledge still applies information to be instructive and articulate predictive patterns, and understanding provides an appreciation of why patterns exist. The addition of wisdom represents application of normative insight and moral/ethical judgement to produce evaluated understanding and capacity for informed visioning and design. A refined sequence was later suggested by Bellinger *et al.* (2004) where the concept of 'understanding', rather than being a separate level in the sequence, is considered the currency of transition from one level to the next (i.e., understanding of observations, relationships, patterns, and principles increases as one moves from data toward wisdom).

Reflecting on such hierarchies of meaning, it is evident that knowledge of a system is produced through processes of learning, re-framing, and building contextual awareness on the basis of information, which is derived from recognizing patterns in data (individual system observations). Through synthesis of knowledge, wisdom embodies the greatest of understanding of a system and promotes enlightened planning and decision making. All forms of understanding in the hierarchy are relevant and applicable to SLM. Hence, we propose:

H4: Information Management factor positively leads to the sustainable land management

3.2.5. Relationship between Continual Improvement Factors (CIF) and the sustainable land management (SLM)

Successful organizations are designed for adaptation. Rigid rules and processes will likely produce failure or sub-optimal results because they place too much confidence in the current state

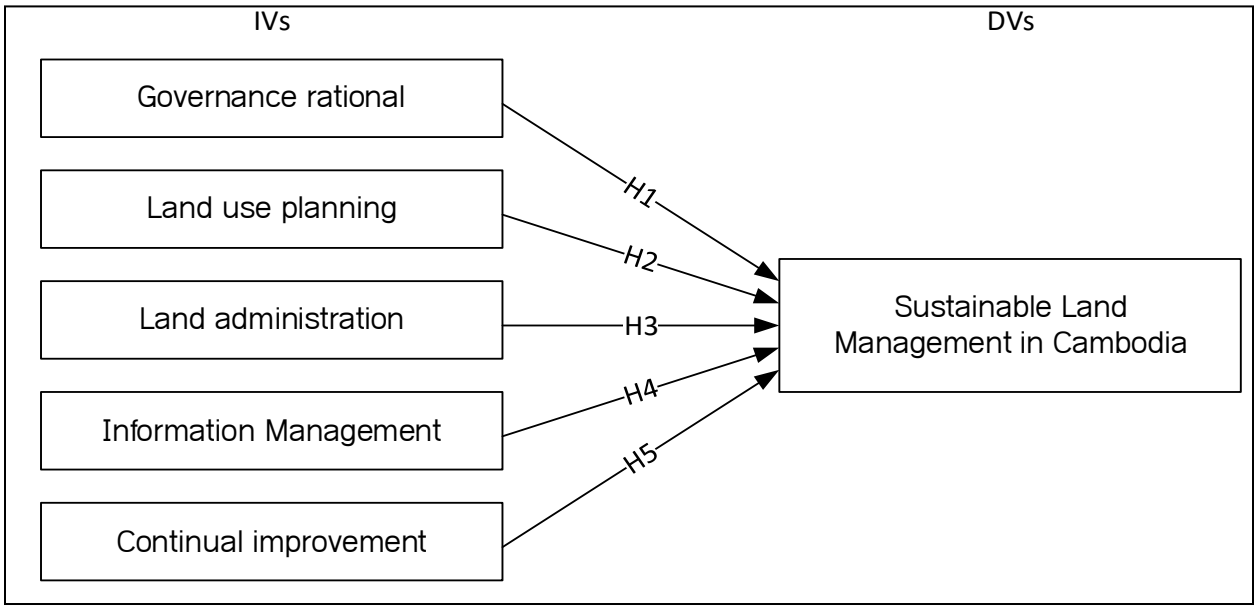
of knowledge (Dietz *et al.* 2003). The continual improvement theme encompasses the organizational structures and processes that enable iterative monitoring, evaluation, and ongoing improvement of SLM functions through testing assumptions, learning, and modifying policy, planning, and management behaviour to reflect new understandings. Continual improvement refers generically to the notion of the learning organization that manifests in public and private organizations through such constructs as total quality management (e.g., quality management systems), and, most notably for environmental resource conservation, adaptive management frameworks (Senge 1990; Stankey *et al.* 2005; Williams and Brown 2012). Adaptive management is also identified as a key component of establishing capacity to monitor, evaluate, report, and learn from environmental sustainability initiatives (UNDP 2011).

In adaptive management, information from the past provides feedback to inform future actions in a cyclical process that has been succinctly described as systematically and purposefully learning while doing (Walters and Holling 1990; Stem *et al.* 2005; Hockings *et al.* 2006). As observed by Lee (1993), if properly applied, this experimental approach offers ongoing production of reliable knowledge in contrast to the slow and sporadic knowledge gleaned from unexamined error. Adaptive management frames policy instruments as experiments designed to reveal processes and outcomes that build or sustain resilience of an SLM system (Folke *et al.* 2002). As well, precautionary decision making requires that acceptable levels of risk are determined and adaptation processes applied to manage the potential for worst case scenarios (Pope *et al.* 2004). The information from adaptive monitoring and assessment can inform organizational change at multiple

levels including management of on-the-ground impacts and practices, compliance with rules, performance of administrative structures and functions, land system management planning, and strategic policy analysis and assessment. Hence, we propose:

H5: Continual Improvement factor positively leads to the sustainable land management

Conceptual Model framework



3.3. INSTRUMENTATION

3.3.1. Governance rationality

A literature review of numerous research articles was conducted to explore questionnaire items used to measure the dimensions of Governance rationality factor construct. Eight questionnaires are used to measure Governance rationality factor (Bilec-Sullivan, 2007). Each item is measured on a five-point Likert scale (1= strongly disagree; 5= strongly agree). The questionnaire items are listed as the following:

1) Democratic good governance

2) Public interest

3) Sustainability ethic and limits

4) Leadership and commitment

5) Strategic sustainability assessment

6) Results-based management

7) Legal framework

8) Policy framework

3.3.2. Land use planning Factors Measurement

Three questionnaires are used to measure Land use planning factor. Each item is measured on a five-point Likert scale (1= strongly disagree; 5= strongly agree). The questionnaire items are listed as the following:

1) Land system characterization

2) Planning framework

3) Stakeholder involvement and outreach

3.3.3. Land administration Factors Measurement

Three questionnaires are used to measure land administration factor (Bilec-Sullivan, 2007). Each item is measured on a five-point Likert scale (1= strongly disagree; 5= strongly agree). The questionnaire items are listed as the followings:

1) Institutional arrangements

2) Conflict resolution

3) Compliance assurance and enforcement

3.3.4. Information management factor Measurement

One questionnaires from (Bilec-Sullivan, 2007) are used to measure information management factor. Each item is measured on a five-point Likert scale (1= strongly disagree; 5= strongly agree). The questionnaire items are listed as the following:

1) Information accessibility

3.3.5. Continual improvement factor Measurement

Three questionnaires are used to measure continual improvement factor (Bilec-Sullivan, 2007). Each item is measured on a five-point Likert scale (1= strongly disagree; 5= strongly agree). The questionnaire items are listed as the followings:

1) Land status monitoring

2) Performance assessment and reporting

3) Policy analysis

3.4. THE RESEARCH SITES

Phnom Penh, Kandal, Kampong Cham, Battambang, Banteay Meanchey and Siem Reap provinces are suitable research sites for this study because of these provinces are most land use province in Cambodia.

3.5. DATA COLLECTION PROCEDURE

…….. respondents of Ministry of Land Management Urban Planning and Construction (MLMUPC) and Department of Land Management Urban Planning and Construction (DMLMUPC) will be subject for completing questionnaires. The respondents are selected by the formula calculating samples, the sample was followed by the Yamane Taro formula in 1967 and 1973, with a 90 percent confidence level and a 10 percent bias.

The formula calculates samples

$$n = \frac{N}{1 + N(e)^2}$$

Where n: is the number to be recruited in the MLMUPC and DMLMUPC for interview

N: Total number of staff in MLMUPC and DMLMUPC

e: An acceptable margin for evaluation

Location	Unit	Staff	Section	Remarks
Phnom Penh	MLMUPC			
Kandal	DMLMUPC			
Banteay Meanchey	DMLMUPC			
Battambang	DMLMUPC			
Kampong Cham	DMLMUPC			
Siem Reap	DMLMUPC			
	Total			

3.6. THE DATA ANALYSIS

In order to test the hypotheses proposed in this study, SPSS 16.0 and AMOS 16.0 are employed to analyze the collected data. The data analysis methods are explained in details as the following:

3.6.1. The Descriptive Statistic Analysis

We analyze the descriptive statistics to explain the main characteristics of a collection of data in quantitative terms. To gain a deep understanding of the features of each variable, descriptive statistics analysis is used to illustrate the means, standard deviation, and rank of the characteristics of respondents such as gender, age, marital status, and the construct variables including the Governance rational factor, the land use planning factor, the land administration factor, information management and the continual improvement factors.

3.6.2. The Exploratory Factor Analysis and Reliability Test

To verify the dimensionality and reliability of the research constructs of this study, we conduct several purification processes such as exploratory factor analysis, correlation analysis, and internal consistency analysis (Cronbach´s alpha). First, exploratory factor analysis (EFA) is employed to identify the dimensionality of each research construct, to select questionnaire items with high factor loading, and to compare these selected items with items suggested theoretically. EFA is good for detecting "misfit" variables. Generally, an EFA prepares the variables to be used for cleaner structural equations modeling (Hair et al., 2010). In order to identify the dimensionality and

reliability of the research constructs, it is necessary to conduct the measurement items′ purification procedure using EFA analysis, which consists of the Factor Loading, Eigen value, cumulative explained variance, and communality of the factors being extracted from the measurement items.

To identify the internal consistency and reliability of the construct measurement, we conduct item-to-total correlation and internal consistency analysis (Cronbach′sα). Factor analysis is used to identify the dimensionality of the construct and to select questionnaire items with the principle component extraction method. Any of the Factor Loadings which is less than 0.5 is deleted until every of the existing factor with factor loading is equal or larger than 0.5. More than two factors may be extracted and the difference between the largest factor loading and second largest factor loading in term of absolute value should be equal or larger than 0.3. In addition, the communality should be equal or larger than 0.5. Any item which doesn′t meet the above criteria is deleted. Latent roots (Eigen values) and other criteria were used to determine the number of dimensions to be extracted from the principal Component Factor Analysis. The selected criteria are Factor Loading≧0.5, Eigen value≧1, accumulatively explained variance ≧ 0.5, item-to-total correlation ≧ 5, and coefficient alpha (α) ≧ 0.7 (Hair et al., 2010).

3.6.3. The Confirmatory Factor Analysis (CFA)

Confirmatory Factor Analysis (CFA), which is also used within the Structural Equations Modeling (SEM), is the most common method used to evaluate construct validity. Construct validity is a more broadly applied form to measure validity than content validity and criterion validity.

CFA is used to test the relationship between observed indicators and latent constructs and to assess the convergent validity of the measurement model. CFA procedures have two other factor models such as first-order factor model and second-order factor model. Second-order factor model was adopted to examine all the research constructs and test the fit of the overall model. To satisfy the criteria of CFA as suggested byJöroskog and Sörborn (1996) andHair et al. (2010), generally the ratios (χ^2:d.f.) of chi-square goodness-of-fit to degree of freedom should be on the order of 3:1, root mean squared error of approximation (RMSEA) is less than 0.50, comparative fit index (CFI) and non-norm fit index (NNFI) exceed 0.90, all standardized loading need to exceed 0.50, and each indicator t-value exceeds 1.96 ($p<0.001$).

CFI = the comparative fit index (CFI; Bentler, 1990) is given by:

$$\mathrm{NFI} = \boldsymbol{\Delta}_1 = 1 - \frac{\hat{C}}{\hat{C}_b} = 1 - \frac{\hat{F}}{\hat{F}_b}$$

Where C, is the discrepancy, d is the degree of freedom, NCP is the noncentrality parameter estimate for the model being evaluated, and C_b, is the discrepancy and d_b is degrees of freedom and the noncentrality parameter estimate for the baseline model.

NFI = normed fit index (NFI) or Δ_1 in the notation of Bollen (1989b) can be written:

$$\mathrm{NFI} = \boldsymbol{\Delta}_1 = 1 - \frac{\hat{C}}{\hat{C}_b} = 1 - \frac{\hat{F}}{\hat{F}_b}$$

Where C = nF is the minimum discrepancy of the model being evaluated and Cb = nFb is the minimum discrepancy of the baseline model.

3.6.4. The Structural Equations Modeling (SEM)

Finally, Structural Equations Modeling (SEM) is used to the relationship among the constructs. SEM is a family of statistical models that seeks to explain the relationships among multiple variables. SEM is used to combine perspectives of multiple regressions and factor analysis to assess a series of interrelated dependence relationships at the same time through a multivariate technique. SEM's characteristics derive from two basic components: the measurement model permits the researchers to take several variables for a single independent or dependent variables and the structural model explains the related independent to dependent variables. Compared to other statistical techniques, SEM has higher ascendancy because it has the capability to assess multiple and interrelated dependency relationships. It can also exhibit unobserved concepts or latent variables in those relationships and explain the measurement error in the business process of assessment. More specifically, SEM is the only multivariate technique that allows the simultaneous estimations of multiple equations. These equations represent the way constructs relate to measured indicator items as well as the way constructs are related to one another. Thus, when SEM techniques are used to test a structural theory, it is the equivalent of performing factor analysis and regression analysis in one step. Therefore, SEM has become an extremely popular technique to test a theory in the social sciences based on these key advantages. (Hair et al., 2010).

The correspondences of the actual or observed covariance or correlation matrix are measured through the method of goodness-of-fit. Goodness-of-fit tests can determine whether the model can be either accepted or rejected. There are three types of the goodness-of-fit measurements: absolute fit, incremental fit and parsimonious fit (Hair et al., 2010). Absolute fit measures can test the overall model fit and no need to do any adjustment for the degree of over-fitting. Incremental fit measures can compare the research model to some model which was specified by researcher. Parsimonious fit measures can offer a comparison between models that have different estimated coefficients. The purpose is to determine the amount of fit achieved by each estimated coefficient. This study followed the principles offered by Bagozzi and Yi (1988) by which to evaluate the goodness-of-fit of the research model through overall model fit. Table 3-2 presents the goodness-of-fit indices with corresponding guidelines that are used as the criteria for SEM analysis.

By adopting SEM, this study tests the relationships between demining factor, donor factor and government factor and demining success. Cheung and Lau (2008) suggest that SEM has several advantages over the hierarchical regression approach to mediational analyses. First, SEM provides a better statistical tool to investigate latent variables with multiple indicators. Second, the measurement errors in the model can be controlled for when relationships among variables are examined, thus avoiding effects. Third, SEM approach allows for the analysis of a more complicated model. Finally, SEM depicts a clear model that helps ensure that all relevant paths can be included and tested, without omitting any (Baron & Kenny, 1986). The AMOS 16.0 version package software is used to perform SEM in order to verify the interrelationships in the whole research concept.