

**Awareness and Acceptance of Natural Capital Accounting Among
Professionals in Mongolia**

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CERTIFICATION PAGE

I, KHURELBAATAR Undral (Student ID 52115622) hereby declare that the contents of this Master's Thesis are original and true, and have not been submitted at any other university or educational institution for the award of degree or diploma.
All the information derived from other published or unpublished sources has been cited and acknowledged appropriately.

KHURELBAATAR, Undral
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SUMMARY

Research background/the problem:

Environmental Problems. The world is exposed to a variety of environmental problems that can lead to a loss of natural resources. The loss of natural resources is mainly caused by the failure to identify the real value of the natural capital and not fully reflecting it in policy and decision-making. According to a definition by Conservation International, natural capital is “the stock of renewable and non-renewable natural resources (e.g., plants, animals, air, water, soils, minerals) that combine to provide benefits to people” (Velde, 2016). The research is concentrated on Mongolia’s case. The Mongolian economy is heavily dependent on natural capital such as mining and agriculture. In addition, the country is facing a major environmental problem of air pollution due to burning of coal.

Inaction. Even though the air pollution and other environmental problems have been going on for many years in Mongolia, the country has not taken any significant action towards improving the environmental issues yet.

Lacking Globally Agreed and Used Economic Measurement Other than GDP. Many economists have agreed that gross domestic product (GDP) is not an accurate measure of a country’s development. “To date, only one measure has been proclaimed GDP’s equal: natural capital” (Gleeson-White, 2015, p. 49). According to World Bank, since the third United Nations Conference on Sustainable Development, “70 countries have supported a communiqué that calls on governments, the UN system, international financial institutions and other international organizations to strengthen the implementation of natural capital accounting (NCA)” (World Bank, 2016).

The purpose of the study: The methodology of natural capital accounting (NCA) is still at its early stage in development and currently no research has been done on NCA implementation in Mongolia yet. This research aims to contribute to the literature about development and implementation of NCA in Mongolia. As prior to action there needs to be awareness of the problem and of possible solution, this research is intended to firstly study the new methodology of NCA, secondly, find out recent studies and actions taken towards implementation of NCA globally, and lastly, to find out the degree of awareness of NCA methodology among professionals in Mongolia, method of increasing awareness of it, current practices Mongolian organizations implementing towards sustainable development, and future contribution possibilities to implement it, so that it can provide some insights for future studies as well as promote real-time implementation of remedial action.

Research questions covered in this study are:

1. Do professionals in Mongolia have knowledge on the new methodology of NCA?
2. How can professionals contribute to increase in awareness of NCA and to implement it?
3. What are some difficulties and opportunities for professionals in relation to the implementation of NCA?
4. What should be the main entity or organization to work for the implementation of NCA?

Methodology: Both primary and secondary data were used in this research. Data collection and qualitative analysis were conducted based on the secondary literature review to determine and improve interview questions and gather information. To accurately obtain information, analyze the current state of awareness and acceptance of natural capital accounting among professionals in different industries in Mongolia, and find out the possible

future development of it, a qualitative research approach is used for this research with semi-structured interviews. The research took place in Mongolia in 2017.

Findings and conclusion: More than half of the respondents have not heard about natural capital accounting methodology. To increase awareness and knowledge of NCA, professionals should continue increasing their knowledge on NCA themselves and at the same time provide training for professionals and initiate NCA implementation actions in Mongolia as well as contribute to it. While there are many difficulties in implementing it including the lack of expertise and policy in this area, there are a lot of opportunities at the country and at the international level. Most of the respondents agreed that the main entity for the implementation of NCA are the government agencies especially the National Statistical Office of Mongolia.

CHAPTER 1: INTRODUCTION

1.1 The Problem

Mother Nature provides all living and non-living things with extraordinary resources to use and exist along with in this world. Humans are part of nature and are dependent on natural resources. Nature provides humans with natural resources that make human life possible such as food and water, energy for heat and electricity, materials for construction, clothing, and for many other products.

However, the world is exposed to a variety of distractions, incidents, and disasters such as shrinking rivers, drought, and expansion of deserts, wildfire, coral reef destruction, extinction of wildlife, and global pollution. Most of these natural disasters are caused by human-related activities, which are triggered by and lead to climate change (Merchant, 2014). The natural resources that societies are dependent on are in significant danger of overexploitation and excessive use. Due to the rapid increase in world's population, growing consumption of resource in countries, fast industrialization in developing countries, and economic growth, demand for natural resources and negative impact on the environment continues increasing. These are significant issues and yet preventable. If the world continues this way, in the future, with increasing population, hazardous human-related activities, and with its failure-prone technologies, the earth's ecology will continue being affected greatly (Merchant, 2014). With the increase in world's population and the growing use of natural resources, the world's natural capital is being lost rapidly. "We are already 'drowning down' on 50% more natural capital a year than the earthf can replenish - and the rate of depletion is

accelerating" (Chartered Institute of Management Accountants et al., 2014).

Natural capital is a significant part of the economy and of life, however, it is taken for granted as ecosystem resources and services are mostly available freely. However, continuance of natural capital loss can lead to further destruction of nature and bring tangible social and economic costs. The loss of natural resources is mainly caused by the failure to identify the real value of the natural capital and not fully reflecting it in policy and decision-making of government, businesses, and consumers.

Natural capital provides many services that make human life possible. The services include food and drink people consume, materials used for construction, medicines, fuel, and also, it includes services that are less noticeable such as climate regulation, protection from a flooding of forests, and pollination of crops by insects (World Forum on Natural Capital, 2015). The complete values of these natural capital services have not been fully taken into account in markets and therefore, their contribution to businesses, organizations and to an economy as a whole are not recorded and are not fully included in decision and policy making.

The question arises from the environmental issues happening around us is whether growth is desirable. While zero growth in society is not desirable due to increase in consumption because of increase in population which can result to decline in standard of living, author Dieter Helm explains in his book that it is the unsustainable growth that is causing the problem (Helm, 2016, p. 37). As defined in Brundtland Commission's report "Sustainable development is a development that meets the needs of the present without compromising the ability of future generation to meet their own needs" (Brundtland, 1987). The term sustainability has been discussed and actions towards sustainable development have

been continued being taken by many people, organizations, and countries around the world. However, there is still a wide room to improve and the environmental problems must be realized by everyone in this world and significant actions shall be taken. “The goals of economic and social development must be defined in terms of sustainability in all countries - developed or developing, market-oriented or centrally planned” (Brundtland, 1987).

While existence and growth of all of the countries in this world are dependent on the natural resources, developments in some countries are much more heavily dependent on it than others. “In the 21st century, the mining sector has been shown to make important contributions to development in many low and middle-income countries” (McMahon & Moreira, 2014). Mongolia is one of them and this research is concentrated on the Mongolian case. Mongolia is a landlocked country located in between Russia and China, with an economy that is heavily dependent on natural capital such as mining and agriculture. “Mongolia’s minerals sector has been the main driver of the country’s rapid economic growth: it currently accounts for 18.6 percent of GDP and approximately 80 percent of exports. In recent years, the sector has been responsible for over 70 percent of new foreign direct investment (FDI) into Mongolia. It is also increasingly important to the state budget, accounting for approximately 30 percent of government revenues.” (Ch.Otgochuluu, 2016)

As can be seen from the numbers, in the short term the income from natural resources can contribute positively to the economy of the country. However, in the long term, its effect should be considered, whether the development is really sustainable. While GDP is still a widely used measure of economic health, many economists have agreed that GDP is not an accurate measure of a country’s development. “Gross domestic product, the leading economic measurement, is outdated and misleading...It’s like grading a corporation based on

one day's cash flow and forgetting to depreciate assets and other costs" (J.Stiglitz, Nobel prize, economics as cited in WAVES, 2012). GDP measures the amount of goods and services a country produced over a given period. While it indicates the output in each period of time, it tells neither about the long-term income of a country nor about a country's economic wellbeing. GDP does not consider the wealth behind the income. For example, Mongolia has a large copper reserve. A large amount of copper ore is extracted and exported to different countries, from which its sales contribute to GDP of the economy. However, copper is a non-renewable natural resource with a finite amount in nature. While GDP increases with sales of copper ore, the depletion of copper from the country's mineral reserve is not shown in GDP. When determining a company's financial situation, the balance sheet including its assets and liabilities should be examined. A country's balance sheet would include assets including human and social capital such as education, knowledge and skills, manufactured capital such as buildings and roads, and also most importantly natural capital. In addition, on the other side of balance sheet, there will be liability including depletion of natural resources due to mining, forestry, and agriculture. Economic measures such GDP does not provide the same information as a balance sheet.

"To date, only one measure has been proclaimed GDP's equal: natural capital" (Gleeson-White, 2015, p. 49). The third United Nations (UN) Conference on Sustainable Development was held in 2012 in Rio de Janeiro, where the Heads of State and Government, non-government organizations (NGOs), private sector companies, and many high-level representatives gathered together to discuss about environmental issues and sustainable development, to provide solutions, and to decide for future actions (United Nations, 2012). According to World Bank, since this conference "70 countries have supported a communiqué

that calls on governments, the UN system, international financial institutions and other international organizations to strengthen the implementation of natural capital accounting (NCA)” (World Bank, 2016).

Every single business depends on nature directly or indirectly. However, up until now companies have been largely focused on optimizing their financial capital. Today CEO, CFOs realize how strongly they are depending on benefits from nature. The survival and success of businesses will depend on whether the business have considered and put natural capital as primary consideration of business strategy. Valuing and investing in it can bring a positive return that will be well worth it in the long-run.

Natural capital accounting (NCA) is an approach to address the problem of natural resource loss by measuring and valuing the natural resource and its flow through the economy, which improves accountability of natural capital that can result in better decision making for long-term sustainable development. NCA can also measure the long-term cost to the economy from the reduction of natural resources. This approach can also be utilized to assess the value of the ecosystem services and the reciprocal costs to that ecosystem, although this part of NCA is still experimental (Goodrich, 2016).

1.2 The Research Objectives

The methodology of natural capital accounting is still in its early stage of development and currently no research has been done on NCA implementation in Mongolia. This research aims to contribute in the literature about development and implementation of NCA in Mongolia. Prior to action there needs to be awareness of the problem and of possible solutions, this research is intended to firstly, study the new methodology of NCA, secondly, find out recent studies and actions taken towards implementation of NCA globally, and lastly,

to find out the degree of awareness of NCA methodology among professionals in Mongolia, method of increasing awareness of it, difficulties and opportunities in implementing it, current practices Mongolian organizations are implementing towards sustainable development, and future contribution possibilities to implement it, so that it can provide some insights for future studies as well as promote real-time implementation action.

1.3 The Research Questions

Research Question 1: Do professionals in Mongolia have knowledge on the new methodology of natural capital accounting (NCA)?

Research Question 2: How can professionals contribute to increase in awareness of NCA and to implement it?

Research Question 3: What are some difficulties and opportunities for professionals in relation to the implementation of NCA?

Research Question 4: What should be the main entity or organization to work for the implementation of NCA?

1.4 The Motivation Behind This Study

The initial understanding of natural capital accounting (NCA) was obtained by the author through a book called ‘Natural Capital: Valuing the Planet’ by Dieter Helm. This study was inspired by the observation of real life problems happening around the world and understanding of a possible solution to those problems, which is the implementation of NCA methodology to national and corporations’ accounts. The motivations behind this study can be divided into main three sections such as environmental problems; inaction and lacking globally agreed and used economic measurement other than GDP.

1.4.1 Environmental Problems

For the past decade, the world has been experiencing different environmental problems. For the country of Mongolia, almost half of the total population lives in the capital city Ulaanbaatar. Many citizens of the capital city live in ‘Ger¹ district’. In Ger district, people mostly live in yurts or houses and burn coal for staying warm in -40 Celsius cold winter and for cooking. The amount of air pollution has been rising throughout the years because of burning more coal. According to the National Agency of Meteorology and Environmental Monitoring of Mongolia, “Levels of particulate matter in the air have risen to almost 80 times the recommended safety level set by the World Health Organization -- and five times worse than Beijing during the past week’s bout with the worst smog of the year” (Kohn, 2016). In addition, a documentary ‘Before the Flood’ with Leonardo DeCaprio, which was released in 2016, demonstrates how climate change is happening and affecting our environment now, how human beings knowingly doing it, and what can people do to prevent the diminishing of endangered species, natural resources and native communities around the world.

1.4.2 Inaction

Even though the air pollution problem has been going on for many years in Mongolia, the country has not taken yet any significant action to reduce the air pollution level that will last over a long period of time. In January 2017, around seven thousand people have protested the government against air pollution and one of the Protestants said: “The policies our government is pursuing are pretty piecemeal, I would say” (South China Morning Post,

¹ Ger – traditional living place, portable round tent used by nomads.

2017). Not only the issue of air pollution, but there are many other environmental problems that need to be solved immediately, but have not been fully considered and resolved.

1.4.3 Lacking Globally Agreed and Used Economic Measurement Other than GDP

As it was mentioned in Part 1.1 of this paper, gross domestic product (GDP) is a widely used measurement, but a misleading economic measurement to use in the 21st century. “What we measure affects what we do; and if our measurements are flawed, decisions may be distorted” (Stiglitz, Sen, & Fitoussi, 2009). Misuse of measurements can lead to a wrong decision making. While GDP measures the flow of goods and services in an economy, it does not measure economic well-being. “GDP is not inherently bad—it measures what it measures. Rather it is being misused as an indicator of something it doesn’t measure and was never intended to measure” (Costanza, Hart, Posner, & Talberth, 2009). Economies need measurements that encourage sustainable development which improves human development goals while sustaining natural capital.

1.5 Thesis Organization

This thesis is divided into five main chapters. Chapter 1 provides an overall background of the problem and a general introduction to the research study. Chapter 2 contains a review of the literature on current understanding of natural capital and natural capital accounting (NCA), examples of NCA initiatives, uses of NCA by countries and companies, and the role of the professionals in the development of NCA. Chapter 3 includes analysis of the implementation of the UN Statistical Commission of the System for Environmental and Economic Accounts (SEEA) in Mongolia, analysis of the Environmental Protection Law of Mongolia, and analysis of environmental accounting in International Financial Reporting Standards (IFRS). Chapter 4 describes the methodology used in this

research including research setting, participants, measurement instruments, research procedure, data analysis, and limitation. Chapter 5 presents the findings. Chapter 6 contains the discussion of the research, conclusion, and recommendations.

CHAPTER 2: LITERATURE REVIEW

This chapter includes literature relevant to the research questions. The literature on the environment is multidisciplinary. The chapter starts with an explanation of natural capital and natural capital accounting and its purpose. In addition, it provides with examples of practices of countries and companies' that are in process of implementing natural capital accounting (NCA) and, discusses the roles of professionals in the implementation of NCA.

2.1 Natural Capital

A definition of Natural Capital is varied across different articles, academic journals, reports, and books. Natural capital is defined as “those elements of nature which either directly provide benefits or underpin human wellbeing” (Natural Capital Committee, 2013) also, it is defined as “stock of renewable and non-renewable resources (e.g. plants, animals, air, water, soils, and minerals) that combine to yield a flow of benefits to people” (Natural Capital Coalition).



Figure 1. Natural Capital (Natural Capital Coalition, 2017)

As stated in a report by Farley (2012), the term ‘Natural Capital’ has first been used by a British Economist E. F. Schumacher in his book ‘Small Is Beautiful’, published in 1973.

In the book, the author stated that most of the capital consists of natural capital and that economists tend to consider natural capital depletion as an income. E. F. Schumacher mentioned in his book about two types of natural capital including fossil fuels which were used up rapidly and natural capital that can be restored by them. Even though the author did not mention specifically the term natural capital in his book, during that time other researchers such as Herman Daly and Nicholas Georgescu-Roegen were also emphasizing and talking about the significance of ecosystem service to human well-being, about how natural capital cannot be substituted by other things in production, and that limited supply of the natural resources can affect negatively to economic growth (Farley, 2012).

Humans obtain a variety of services from natural capital, of which some services can be easily seen while other services are not recognized often. The major four classifications of natural capital services are described by World Wildlife Fund in the Figure 1 and the services are provisioning such as production of food and timber, regulating such as forest providing services of a protection from flood and water purification, supporting such as crop pollination and cultural services such as spiritual services (WWF, Global Footprint Network, and ZSL, 2012).

The benefits that people obtain from ecosystems

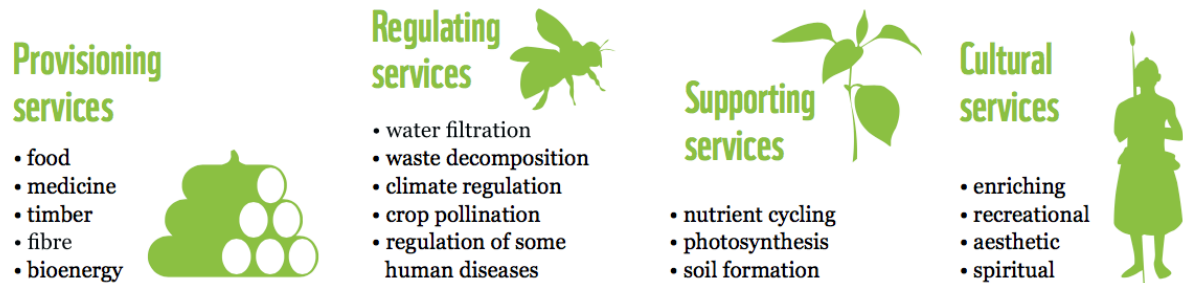


Figure 2. The Benefits that People Obtain from Ecosystems
(WWF, Global Footprint Network, and ZSL, 2012)

2.2 Natural Capital Accounting (NCA)

2.2.1 Background

As explained in Chapter 1, natural capital accounting (NCA) is an approach to address the problem of natural resource loss by measuring and valuing the natural resource and its flow through the economy, which improves accountability of natural capital that can result in better decision-making for long-term sustainable development (Goodrich, 2016).

The main purpose of NCA methodology is to protect world's natural capital and to promote sustainable development through making better decisions towards sustainable development based on measuring and valuing natural capital. The ideology of NCA is to incorporate natural capital into national and corporate accounts, which can help everyone to make better decisions. According to Trucost, to achieve it, governments can reflect the cost for natural capital depletion, environmental issues and their impacts into decision-making as well as ensure better policies, so that natural resources are used more efficiently and their true value is optimized towards sustainable development strategy. Whereas, businesses by

using financial and natural capital measurements, can understand more clearly their dependence on natural resource, determine their pollution impact on nature, and make decisions that can contribute to the more sustainable economy (Trucost Plc., 2013). NCA places a monetary value on natural resources, environmental impacts by companies' operations, and their dependency on natural resources, therefore, it could act as a measurement tool to reflect environmental matters into businesses' financial reports and can impact the decision making.

According to the World Bank, natural capital accounts can produce comprehensive statistics to have a tool for better management and policy making in the economy. For example, natural capital accounts can include accounts such as the use of water and energy in a certain area and the amount of pollution produced in that area, to make a green growth scheme. With a use of land and water accounts, the countries that are willing to increase their hydropower capacity, can find out the land value and determine the best way to accomplish it (World Bank, 2016).

2.2.2 Framework

This new methodology of NCA is currently in its early stage of development. According to World Bank, the concept of NCA has been known for more than thirty years. However, significant action towards implementation of it was initiated in 2012 by the UN Statistical Commission of the System for Environmental and Economic Accounts (SEEA). There are also several other initiatives that are supporting countries and companies towards implementation of NCA such as WAVES by World Bank, TEEB global initiative, and Natural Capital Coalition. Not only international organizations but also countries such as UK,

Australia, Canada, Japan, Norway and France and companies such as Coca Cola, are working and experimenting on the implementation of NCA.

Table 1 below shows some of the major initiatives towards sustainable development and NCA.

Table 1. Major Initiatives

Year	Initiative	Description
1987	United Nations	Brundtland Report on Sustainable Development
1992	United Nations	Rio Earth Summit
1993	United Nations	Published environmental accounting guidelines
2000	UN Secretary-General Kofi Annan	Millennium Ecosystem Assessment
2007	TEEB	Using structured approach of valuation to account the “values of biodiversity and ecosystem services into decision-making at all levels” (TEEB)
2010	WAVES	“Aims to support sustainable development by ensuring that natural resources are used in development planning and national economic accounts” (World Bank, 2016)
2012	United Nations	Rio+20 Forum
2012	SEEA - UN	As described below

SEEA

“SEEA Central Framework is a multipurpose conceptual framework for understanding the interactions between the economy and the environment, and for describing stocks and changes in stocks of environmental assets. It puts statistics on the environment and its relationship to the economy at the core of official statistics (United Nations, 2014).”

The framework provides statistical information on the relation between environment and economic, including influence and contribution of an economy on the environment. The SEEA Central Framework has specific and detailed measurement information for accounts

such as “water, minerals, energy, timber, fish, soil, land and ecosystems, pollution and waste, production, consumption, and accumulation.” These accounts are also combined in the framework to provide extensive information. The framework was created to be applicable to all countries, even if the countries have different economic development, structure, and environment (United Nations, 2014). Over thirty countries including developing countries have already started implementing the framework and now a lot of them want to develop and use NCA beyond the SEEA framework such as natural resources that are difficult to measure and are not traded (World Bank, 2016).

WAVES

Wealth Accounting and Valuation of Ecosystem Services (WAVES) partnership established by the World Bank to develop natural capital accounting. It supports countries preparing to implement Natural Capital Accounting based on the SEEA. By 2017, WAVES is helping in implementing NCA in eight countries including Botswana, Colombia, Costa Rica, Guatemala, Indonesia, Madagascar, the Philippines and Rwanda (WAVES).

2.2.3 Natural Capital Accounting – country practices

“Natural capital accounting helps policymakers understand the dependence of economic development on natural resources, both for supplying materials and services as well as for absorbing waste and pollution” (Conservation International).

The report ‘Beyond GDP’ by WAVES provides with some examples of countries that are using NCA and including it in their decision making.

Norway Case

Norway has energy and air emission accounts, which it uses for policy planning and decision-making. This helps the economy to separate the correlation between economic growth and its energy consumption. Even though between 2000 and 2010, the country's gross national income increased by fifty percent, the country's greenhouse gas emissions has remained the same throughout these years.

Philippine's Case

The Philippine's had high growth in the 1960s, which mostly came from the natural resources use. This has impacted negatively on natural resource including loss of forests, fisheries, upland soils, and air pollution in major cities. Even though the country has taken important actions towards natural protection such as improvement on natural resource management in communities, a larger scale action was needed. WAVES has been working with the government of Philippines to create a data base on natural resource use. This can help move towards better decision and policy making for the most impacted economic sectors by using the natural capital accounts. In addition, not only creating data but also working with environmental specialists, social analysts and other professionals to find the best possible solution for achieving economic growth that benefits both local citizens and indigenous populations while sustaining natural capital. In 2008, environmental accounts encouraged the court to command cleaning around the area of Manila Bay to prevent from causing diseases and other health issues, reduce losses from export of fishes, and protect mangroves. With this order and using the environmental accounts, the country also put fees

for some national park entries, which resulted in increasing income from these fees (WAVES, 2012). “Natural capital accounting will help governments like the Philippines achieve a delicate balance between their economies, ecology and environment” (World Forum on Natural Capital, 2015).

2.2.4 Natural Capital Accounting – business practices

Almost all businesses strive to create more value, be more efficient and make better decisions. Including natural capital into decision making can help businesses understand significant risks and opportunities businesses have or will face in the future. There are many businesses that are in process of implementing NCA in their reporting and below is given examples of two companies.

Coca-Cola Case

According to the report ‘Natural Capital Accounting’ by Coca-Cola and Dekstatt consulting, in 2007 the Coca-Cola Company (TCCC) set a target to protect water sources they obtain water from in bottling around the world, reduce its water use, return clean water to ecology, and restore all its product related water by 2020. In 2015 the company announced that it is close to achieving its target 5 years earlier. This project not only restores clean water and increases the amount of it in nature, but it also can help in restoring the services ecosystem water provide such for drinking, sanitation, food production, agriculture, transport, electricity generation, and culture and recreation. The company is planning to quantify and measure the broader value of this ecosystem service benefits so that they can decide future investment in more beneficial interventions. The company is committed to

continuing working on Natural Capital Accounting for water replenishment projects (Denkstatt and Coca-Cola Company, 2016).

Dow Chemical Company

According to Neil Hawkins, Vice President of Sustainability and Environment, Health & Safety for The Dow Chemical Company (as cited in WAVES), the company wanted to find out more about its impacts and dependencies on ecosystems, “make better decisions for nature and at the same time add economic value to the company." The Dow Chemical Company has started collaborating with The Nature Conservancy two years ago. The scientists of the companies are collaborating and working together to identify company’s dependence on natural capital, to include and to take into consideration the nature into the company’s business goals, decisions, and strategies. Hawkins said that through this the company was able to find examples of already-instituted green infrastructure from which the company reduced its cost significantly (WAVES, 2012).

2.3 Role of Professionals in Development of Natural Capital Accounting

The previous sections of this chapter introduced the concept of natural capital and natural capital accounting. Now a question arises on how professionals can help in increasing awareness and contribute to the implementation of NCA and what are the challenges and opportunities professional are facing and may face towards implementing it.

A study was done in collaboration of ACCA, Fauna and Flora International and KPMG, to understand more about the materiality, application of it to provide information for the disclosure and for the management, and the scope of natural capital consideration it

reflects. The study was conducted through a survey of more than two hundred accountancy professionals, interviews with management of eight large companies, a survey on corporate report disclosures of 40 organizations in specific sectors, and in-depth research in relevant literature. The study has found out that there are several barriers to companies' effective determination of risk and opportunity exposure on biodiversity and ecosystem services. The barriers include lack of awareness and understanding among accountancy and business professionals of ecosystem services, ecosystem issues and impacts on business performance, lack of skills and experience on ecosystem service issues, lack of internationally accepted methodology and accounting principles on biodiversity and ecosystem services issues, and concern for potential additional cost or increased regulation from measuring and valuing impacts and dependence on biodiversity and ecosystem services (ACCA, Fauna & Flora International and KPMG , 2012).

A report prepared by Chartered Institute of Management Accountants (CIMA), in collaboration with Ernst & Young (EY), the International Federation of Accountants (IFAC) and the Natural Capital Coalition (NCC), stated that accounting and finance professionals play an important part in implementing NCA in their organizations and ensuring natural capital considerations are included in decision making, risk management, and reporting. The report encourages professionals to act and contribute towards natural capital accounting implementation. "Fayez Choudhury, the CEO, IFAC, said: Sustainable economies depend on sustainable organizations. Accounting for natural capital must be something the accountancy profession increases its focus on to help organizations respond to the risk posed by climate change and environmental externalities that affect organizational, market, and

societal sustainability” (CIMA, 2014). The report points out a number of ways professionals can participate in this change such as raising natural capital as a strategic issue, determining natural capital issues in their organization, identifying ways to reflect effects from natural capital and organization’s dependency on it into decision making and reporting at all levels throughout the organization so that the organization can take appropriate actions towards it, and examine the methodologies and contribute to development of the NCA methodology. Professionals can also collaborate more with suppliers to better understand the impact of the organization on ecosystems, report significant natural capital issues to management and external stakeholders, develop relevant skills for NCA and collaborate with specialists in this rapidly changing area, and establish connections with organizations working on the development of NCA and contribute to it with the views (Rapacioli, Lang, Osborn, & Gould, 2014).

CHAPTER 3: ANALYSIS

The chapter includes an analysis of SEEA implementation in Mongolia, the Environmental Protection Law of Mongolia, and analysis of IFRS and IAS on environmental reporting.

3.1 Analysis of the SEEA Implementation in Mongolia

As mentioned in Chapter 2, Natural Capital Accounting (NCA) is in its early stage of development and significant action towards implementation of it was in 2012 the UN Statistical Commission of the System for Environmental and Economic Accounts (SEEA). From the framework, a country usually selects the accounts to use based on the circumstances such as environmental issues the country is having (United Nations, 2014).

According to Asian Development Bank (ADB) Report, the government of Mongolia has approved the National Program for Development of Official Statistics, which was planned to be implemented over 2011-2015. The program included data collection and generation, estimation, and analysis of environmental-economic accounts necessary to achieve sustainable development. The government has decided to apply the System of Environmental-Economic Accounting (SEEA) which was recommended by the United Nations to all countries, to improve monitoring and measuring the application of the country's green growth policy. Therefore, in January 2015, the National Statistical Office (NSO) of Mongolia asked Asian Development Bank (ADB) for a technical assistance to generate the information of material flow, energy, and environmental tax accounts under the framework of the SEEA. The technical support can help implementing the government's

National Program for Development of Official Statistics which is planned to proceed over 2016-2020. In 2014, the government adopted the green economy concept through its Green Growth Policy to promote sustainable development of the country, poverty reduction and improve the quality of life. Some of the challenges Mongolia is currently facing include poverty, income inequality, an economy based mainly on natural resource, outdated technology, inefficient use of natural resources, and exposure to climate change. By promoting and spreading awareness of green economy and sustainability, the country is aiming to pursue a sustainable economy (ADB, 2017).

3.2 Environmental Protection Law of Mongolia

The Section 1 of Article 7 states that Natural resource and environmental impact evaluations shall be done with a goal to conserving the nature, aiming and implementing actions that are intended to sustain the natural environment, and regulate natural resources use (Environmental Protection Law of Mongolia of 1995, 2017).

Section 3 of Article 8 states that the central State administrative body in co-operation with state organizations as well as other relevant organizations with consideration of natural resources' value set an economic value for natural resources (Environmental Protection Law of Mongolia of 1995, 2017).

Article 9 points out that the individual or organization requesting the environmental assessment shall be responsible for the payment of it and individuals, businesses and organizations implementing certain projects, programs, or contracts shall be in accordance with the requirements set by the impact assessment (Environmental Protection Law of Mongolia of 1995, 2017).

3.3 IFRS and IAS

International Financial Reporting Standards (IFRS) and International Accounting Standards (IAS) are set of international accounting standards that tell how each transaction should be reported in the financial statements. It provides with a standardized way to show financial performance of an organization (IFRS). Most countries require publicly-traded companies to prepare financial reports according to the standards.

Some issues related to biodiversity and ecosystem services are included in IFRS and IAS. Particularly, they are included in financial accounts when biodiversity and ecosystem services are financially measurable. IAS includes standards such as IAS 36 Impairment of assets IAS 38 Intangible assets and IAS 41 Agriculture and IFRS includes standards such as IFRS 6 Exploration for and Evaluation of Mineral Resources and IFRS 3 business combinations, which can be affected by issues from biodiversity and ecosystem services in some industries and sectors. In practice, many significant risks and opportunities are not measured, very difficult to value, and are therefore excluded from the accounts.

A paper by Minga Negash examined whether IFRS can be used as a method for observing and monitoring the activities associated with the environment of global mining and oil companies and monitoring environmental degradation. The study included an examination of the International Accounting Standards Board (IASB) standards to determine environment-related standards and notes. In addition, the study selected 3 international companies that operate in a sector that is directly related to the environment. The study analyzed specifically their financial reports, sustainability reports, and other necessary reports. Lastly, the study analyzed if there is any possibility to make a standardized separate environmental statement that can be audited. The study has found out that the sustainability

reports prepared by the companies were not sufficient enough and they had both information and propaganda. Information regarding how much the companies contributed for rehabilitation and restoration of the environment were not included in the reports. “The social and sustainability reports that were studied do not have standard formats, and the GRI guidelines appear to be inadequate. The financial statements though claim to comply with IFRS specific standards such as IFRS 6 (early adoption), IFRIC 5, IAS 37, IAS 27, IAS 8 and IFRS 8 they did not enable firms to disclose key environmental information” (Negash, 2009). Therefore, two options are proposed in this paper. The first option the study recommends is to have a standard requirement for a new separate environmental statement including assets and liabilities and the other choice is to clearly set the least amount of required details on environmental stock and flows that the current financial statements must contain (Negash, 2009).

CHAPTER 4: METHODOLOGY

Chapter 4 explores the methodology portion of this research including research setting, participants, measurement instruments, research procedure, data analysis, and limitation.

4.1 Introduction

Both primary and secondary data were used in this research. Data collection and qualitative analysis were conducted based on the secondary literature review to determine and improve interview questions and gather information. In addition, to accurately obtain information, analyze the current state of awareness and acceptance of natural capital accounting among professionals in different industries in Mongolia, and find out the possible future development of it, a qualitative research approach has been used for this research with semi-structured interviews. The purpose of a semi-structured interview is to find out an answer to a particular research question while also allow participants to contribute with new ideas and information to the topic of research (Galletta, 2013).

4.2 Secondary Literature Review

Blaxter (as cited in Jupp, 2006) define literature review as “a critical summary and assessment of the range of existing materials dealing with knowledge and understanding in a given field...Its purpose is to locate the research project, to form its context or background, and to provide insights into previous work”. In this research, a vast variety of journals, books, web articles, reports, papers, and internet sources have been collected for the secondary data of this research. For chapter 2 the literature review, secondary data including information on natural capital, natural capital accounting, the framework, studies on the role of professionals

in the development of natural capital accounting, and analysis of IFRS, implementation of SEEA and environmental protection law of Mongolia were used and analyzed.

4.3 Semi-structured Interview

4.3.1 Data Collection

The data in the research were gathered using in-person interviews. “Interviews are guided question-answer conversations or an inter-change of views between two persons conversing about a theme of mutual interest” (Tracy, 2013). Prior to the interview, each respondent has been informed by either email or phone conversation that the main purpose of the interview was for a research to find about the degree of awareness of the new methodology of natural capital accounting (NCA) and difficulties and opportunities towards implementing it. The interviews were done in individual basis with the participants at each participant’s office. Each interview was tape-recorded for precision and lasted in an average of 20 minutes. As there was a high expectation that most of the interviewees might have never heard about NCA, a brief five-minute explanation about the methodology was given after finding of respondents’ knowledge of NCA based on the first question.

4.3.2 Setting

This research took place in the capital city of Mongolia, in Ulaanbaatar city where most of the companies in Mongolia are located. All interviewees were interviewed in person, individual basis at the meeting room of each interviewee’s work office. The interviews were conducted during February and March of 2017.

4.3.3 Participants

To conduct the interviews, the researcher used purposive sampling technique as a sampling procedure. “In a purposive sample, the researcher selects individuals who are considered representative because they meet certain criteria for the study” (Bui, 2014, p. 143). The participants were chosen based on the researcher’s judgment based on the following criteria:

- Companies in the accounting industry;
- Organizations that provide services related to environmental sustainability;
- Companies whose main business is dependent on natural resources;
- Financial institutions that invest in environmentally sustainable businesses and organizations.

In addition, participants were restricted based on the participants’ willingness to participate in the research.

Table 2. Interviewees

Respondent Number	Position of the Interviewee	Organization	Sector
Corporate sector			
Respondent 1	Financial Analyst	Mongolia Copper Corporation LLC	Asset management, mining
Respondent 2	Chief Accountant	Oyu Tolgoi LLC	Mining
Respondent 3	Accountant	Shangri-La Hotel	Hotel
Accountancy and finance sector			
Respondent 4	Director	TDBM	Banking and financial service
Respondent 5	Director	TDBM	Banking and financial service
Respondent 6	Supervising Senior Auditor	KPMG	Accounting and auditing
Respondent 7	Senior Auditor	KPMG	Accounting and auditing

Environmental consulting sector			
Respondent 8	Director	Natural Sustainable LLC	Consulting
Respondent 9	Executive Director	Sustainability East Asia LLC	Community and environment, training, and occupational health and safety services
Respondent 10	Founder and BOD	Green Building Council	Green and sustainable construction

4.3.4 Interview Question Formulation

The semi-structured interview consisted of eight main common questions to ask from each interviewee and during the discussion, the researcher added more questions based on the interview process specifically based on the interviewee’s work sector, experience, and perceived knowledge. The very first question ‘have you ever heard about term Natural Capital Accounting’ was the only direct and closed question with yes or no answer. Other questions used in the interviews were open-ended questions. Interview questions were organized into main four parts including a background knowledge of each interviewee on NCA, development of the methodology, difficulties and opportunities towards implementation of it, and current practices each interviewee’s organization is implementing towards sustainable development specifically towards natural capital protection.

4.3.5 Data Analysis

The researcher classified and organized the gathered data based on the research questions and the subject matter. Each specific interview questions corresponded to the research questions. The Deductive approach is used in analyzing the data by using the research questions to group the data and then look for similarities and differences among them.

The research findings were analyzed and organized to answer the research questions in following parts:

- Awareness of Natural Capital Accounting
- Increasing awareness of NCA among professionals
- The main entity or organization for the implementation of NCA
- Difficulties and opportunities for professionals in relation to the implementation of NCA
- Significance of NCA
- Current practices companies are implementing towards sustainable development.

4.3.6 Limitation

The research had a number of limitations that affected it and these will be reviewed during the assessment of the findings and conclusions. Firstly, the size of the sample was limited to the location where interviews have taken place and the number of qualified interviewees within the location. Secondly, due to the lack of time, some of the interviews had to be canceled. Thirdly, because possible interview candidates are located sparsely, reaching more interviewees is limited by the costs of transportation to reach them. Lastly, although each participant had been explained the research, the problem of social desirability, which is the tendency for the respondents to provide the most socially-acceptable response to a question, should be taken into account for this research..

CHAPTER 5: FINDINGS

Based on the analysis of the interviews as described in the methodology portion, this chapter presents the findings of our research.

Awareness of Natural Capital Accounting.

In the first question, interviewees were asked whether they have heard previously about Natural Capital Accounting (NCA). This was the only closed question in the interview. The study shows that two out of ten interviewees have heard about this methodology previously. This may be explained as even though the concept of NCA have been around for around 30 years, actual actions towards making it applicable has just started a few years ago and NCA is still in its experimental stage. Respondent 10 explained that natural capital consists of assets including minerals, soil, air, water, and other natural assets that are essential for human life. She explained natural capital accounting as a calculation and measurement of stock and flow of natural capital in a certain ecosystem, region or country. Natural capital and natural capital accounting (NCA) are recorded in physical and monetary measures. As NCA is a relatively new methodology and has not been used in most of the countries around the world, the researcher had a high expectation that most of the respondents might have never heard about it. Therefore, the researcher had prepared one-page brief explanation both in English and Mongolian languages about what natural capital and NCA are and provided it to each participant in the beginning of the interview. After the first question and after finding of respondents' knowledge of NCA, a brief five-minute explanation about the methodology was given to the eight respondents who have not heard about it before in order to proceed

with the next questions.

Increasing the awareness of NCA among professionals.

The interviewees were asked about possible ways to distribute knowledge on NCA and increase awareness among professionals. Respondent 10 pointed out that to increase awareness and knowledge of NCA, it will be effective firstly to have a training for professionals explaining what natural capital, natural resource, and ecosystem are and secondly, to hold a training about NCA, economic and social significance and benefits of implementing it. She suggested that professionals themselves firstly should obtain a full understanding and knowledge of the methodology through different methods such as self-learning, reading, participating in international conferences on environment and related discussions, and attending lectures, secondly, share the knowledge professionals have gained with others, thirdly, initiate NCA implementation actions in Mongolia, and lastly, contribute to the implementation of it. In addition, professionals can increase the knowledge and information about benefits of implementing it in the society through different methods of information distribution such as training, media, and lectures. Another respondent pointed out that in order for a new methodology or initiations to be implemented initially these things require an understanding of its benefit to be communicated. The best way to increase awareness is by giving people examples on how NCA benefited other countries. Few other respondents said that people should talk more about it in events, news, conferences and more frequently. Respondent 2 said that in 2017, the Mongolian Institute of Certified Public Accountants held an open discussion on SEEA, introducing it to professionals. She said that this type of event can be an effective first step towards NCA application and should be done

in more frequent basis. In addition, to provide information, increase awareness among professionals and obtain long-term positive results, the knowledge distribution should also include the younger generation including providing classes on NCA in universities and also providing classes on what ecosystem is and how humans should protect nature in high schools.

The main entity or organization for the implementation of NCA.

The interviewees were asked about the individual, entity, or organization that should initiate and play a major part in the implementation of NCA. Most of the respondents said that at a macro level, government, especially the ministry of finance and other governmental agencies including the national statistical office of Mongolia, should play the main role in implementing NCA. In a micro level implementation, the government can gather information from companies and organizations and help them to implement NCA in their firms. One respondent pointed out that an ideal way should be at the government policy level and this kind of initiatives should be driven by policy makers and implemented at a government level. However, unfortunately, the capacity to do that at the government level currently might not exist in Mongolia. The normal way these things tend to happen in Mongolia is through the assistance of external government or donors who helps to develop some capability and that program is linked and funded. An example of it would be the SEEA implementation in Mongolia, which is in process of implementation by National Statistical Office of Mongolia with the technical assistance of Asian Development Bank (ADB). Few other respondents said that Mongolian Institute of Certified Public Accountants has a major role in the implementation of NCA as accountants themselves might not initiate this kind of work. We

note that if the framework can be standardized and included in IFRS, then consulting companies, as well as auditing companies could play important roles.

Difficulties and opportunities for professionals in relation to the implementation of NCA.

Regarding difficulties in implementing NCA at a national level, Respondent 10 stated that Mongolia doesn't have enough expertise in this area. In addition, there is neither a standard nor specific policy on it. Even though in 1987 and 1992, there were international initiatives on natural capital accounts, the concept of NCA is still relatively new and there have not been enough done at the international level. There are a lot of opportunities for the implementation at the country level as well as at an international level. Standardization of the methodology and policy should be done firstly and in addition, training and increasing the number of professionals who have sufficient knowledge of it are very important. Regarding implementing NCA at the corporate level, in Mongolia, the companies face a lot of challenges to overcome in order to survive in the market and remain profitable. Unless NCA is required by the law of Mongolia, by IFRS or unless it can bring a positive economic return in the short-term, companies do not tend to initiate these types of projects.

The significance of NCA.

Almost all respondents agreed that implementation of NCA is a significant topic as it is directly related to Mongolia's sustainable development. Most of the natural resources have a tendency of becoming nonrenewable and in the long-run, it is an issue related with the existence of all living beings on the planet including humans. In addition, measuring and valuing natural capital is very important as it means generating information and based on this information, correct decisions can be made. Only with available data and information, can

effective future decisions and actions can be made. Another responded said that it is not necessary to put an economic value on natural assets, but there are some benefits to being able to as a decision-making tool. It should not be the only reason for things should be done because the economic value is somewhat arbitrary and it is never going to be an exact science and it is not market driven. There are difficulties and danger in valuing in commercial market value and it has to be different. For example, in Mongolia, the value of good air quality is worth putting some commercial value on, so that the cost of staying in the polluted area could be understood in terms of increased hospital admissions, impacts on human health, and impacts on quality of life. If these can be valued and understood, then the true cost of air pollution could be better understood and that could drive decision making so that by comparing the mitigating costs, priorities based on that cost can be distinguished. “Making sure that the damage from pollution is reflected in prices such that the costs of the damage are internalized in decisions made by governments, companies, and individuals through pollution taxes (and subsidies to activities with positive externalities) is part of the policy toolbox” (Helm, 2016, p. 128)

Current practices companies are implementing towards the sustainable development.

As each company’s operation is different from each other and operates in different sectors, their contribution towards sustainable development of the economy is different. In this part, brief examples of companies’ contribution will be described. Respondent 10 introduced about Green Building Council. The Green Building Council operates with a purpose of contributing to the development of Mongolia’s resource-saving and health friendly construction. In other words, the organization itself is established and operates

towards more sustainable development. In addition, respondent 4 pointed out some of the things her employer the bank practices in their operation. Prior to 2017, all banks in Mongolia used to shred all the expired plastic bank cards. In 2017 the bank initiated an action to collect all the cards from banks and recycle them. In addition, prior to 2017, the bank used to print out all customers' loan information on a paper and hand it to each responsible person. In this situation, a minimum of five copies would have printed for a review and approval from different people. In 2017, the bank transitioned to an online loan approval system where each loan is reviewed through the system and approved. This has reduced the use of paper significantly. In addition, in 2013, all banks in Mongolia have supported the Sustainable Financing program and agreed to implement it. Through this program, since 2015, based on Sustainable Financing program principles and four sectors' (including mining, construction, agriculture and processing) guidelines all banks have started valuing environmental and social risks prior to providing any investment or financing and refusing to finance operations that cause significant negative implications.

CHAPTER 6: DISCUSSION AND CONCLUSIONS

6.1 Introduction

The world is facing a number of environmental challenges, which most of them are caused by human-related activities. The main reason that individuals, companies, and nations are still making the wrong decisions towards environmental matters is mainly due to the failure to identify the real value of the natural capital and not fully reflecting it in policy and decision-making. In addition, globally agreed and used economic measurement other than GDP is lacking and many economists have agreed that GDP is not an accurate measure of a country's development. There is a methodology of natural capital accounting (NCA) that has been known for more than thirty years, but significant actions towards implementing it have started just recently by initiatives such as World Bank, United Nations, TEEB, Natural Capital Coalition, by some companies and some governments. This new methodology of NCA is currently in its early stage of development. The main purpose of NCA methodology is to protect world's natural capital and to promote sustainable development through making better decisions towards sustainable development based on measuring and valuing natural capital. Seventy countries have supported the call for governments, UN, global financial institutions and other international organizations for the implementation of natural NCA (World Bank, 2016). The research is concentrated on Mongolia's case.

A number of studies have stated that accounting and finance professionals play an important part in implementing NCA in their organizations and ensuring natural capital considerations are included in decision making, risk management, and reporting.

The purpose of this research was to firstly study the new methodology of NCA and secondly, to find out the degree of awareness of NCA methodology among professionals in Mongolia, method of increasing awareness of it, current practices Mongolian organizations implementing towards sustainable development, and future contribution possibilities to implement it, so that it can provide some insights for future studies as well as promote real-time implementation action.

6.2 Discussion

The findings show that the methodology of natural capital accounting including environmental valuation is still relatively new among professionals in Mongolia. Due to lack of awareness and knowledge of ecosystem services, skills and expertise on this area, lack of internationally accepted methodology and accounting principles on biodiversity and ecosystem services issues, no major actions towards NCA have been done. The findings of the study give suggestion on implementing natural capital accounting in Mongolia which are (a) in the short-term, professionals can contribute in increasing awareness through organizing discussions, participating in international conferences on improving their knowledge on it, and providing seminars and knowledge sharing trainings. Sharing knowledge and experiences in a frequent basis and intensively can encourage in improving existing systems and the implementation action. (b) In the long-term, in order for this methodology to be applicable and feasible, government should play initiating role. The government first should use the currently available data in creating environmental data, continue learning from examples of other countries, and collaborate with expertise and companies that are specifically working on the implementation of it such as WAVES and TEEB. The findings also confirm the significance of the methodology and show the need for NCA implementation

specifically need for major initiatives and actions towards implementation of it.

6.3 Conclusion

The topic of environmental sustainability and sustainable development has been in the center of discussions. Recently, many organizations, companies, and nations have been actively making decisions towards sustainable development. However, the earth's ecosystem is still facing major issues and most of them are caused by human-related activities. After the 2012 United Nations Conference, seventy countries have supported the call for the development and implementation of natural capital accounting. Many initiatives by international organizations, businesses and countries are working and trying the implementation of it. Implementing natural capital accounting (NCA) is important especially in developing countries as the economy of most of the developing countries are heavily dependent on natural resources and it includes Mongolia. It can be concluded that at present, the NCA methodology have not been talked at all in Mongolia and there is no or very little understanding of it among professionals. Even though in many developing countries the methodology has been started being developed partially, the reason of no action has been taken yet in Mongolia is due to lack of expertise in this area in the country. Ideally, at macro level government agencies, especially the national statistical office of Mongolia should be the key player in the implementation and initiation of it. Unfortunately, the capacity to do that in government level currently might not exist in Mongolia and therefore, assistance of external government or donor who can help to develop the capability and funding might be needed. There is, however, a major step towards the development of NCA in the country is in progress of implementation, which is SEEA framework by United Nations. Currently, with technical assistance from Asian Development Bank (ADB), the Government of Mongolia's

National Statistical Office is working on developing the government's National Program for Development of Official Statistics. As it can be seen from the literature and interviews, natural capital and natural capital accounting are highly significant not only to the economy of each country or each business but in the long-term, the implementation of NCA is directly linked to the existence of living beings and survival of the ecosystem.

In order to overcome the issues of spreading the awareness of NCA and implementing it, not only at government level and not only accountants, but collaboration and contribution of professionals from all industries and at all levels are needed.

6.4 Recommendation for Action

This research has pointed out some of the key challenges in the initial development of NCA in Mongolia. Following is the recommendation for actions towards increasing awareness of NCA and implementing tangible actions.

In the short-term, the best way to spread the information and knowledge of NCA is through trainings, conferences, discussions, media, and lectures in universities. People who already have knowledge of it should as much as they can talk about it with other professionals. Organizations like Mongolian Institute of Certified Public Accountants (MoniCPA) have a great capability to communicate with a large of the accounting professionals. These organizations should also play significant role in spreading the knowledge and hold regular discussions with academic scholars and accounting professionals. Also, individuals with interest in contributing to NCA implementation, should firstly gain more knowledge and experience through different ways such as participating in international conferences and be a part of implementing group in other countries.

To implement NCA in macro level, the government of Mongolia should take actions

that can influence in the long-term. The government should collaborate with international organizations and initiatives such as WAVES by World Bank that are working towards NCA implementation.

“The greatest threat to our planet is the belief that someone else will save it.” Robert Swan

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