

AWARENESS OF SUSTAINABLE DEVELOPMENT:
WHY DID THE SAEMANGEUM TIDELAND RECLAMATION PROJECT LEAD TO
THE FIRST NATIONAL CONTROVERSY OVER SUSTAINABLE DEVELOPMENT
IN SOUTH KOREA?

A Thesis

by

IN HUCK CHOI

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

August 2006

Major Subject: Anthropology

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Approved by:

Chair of Committee, Cynthia Werner
Committee Members, Norbert Dannhaeuser
Paul D. Almeida
Head of Department, David L. Carlson

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ABSTRACT

Awareness of Sustainable Development:
Why Did the Saemangeum Tideland Reclamation Project Lead to the First National
Controversy over Sustainable Development in South Korea?

(August 2006)

In Huck Choi, B.S., Seoul National University
Chair of Advisory Committee: Dr. Cynthia Werner

In this thesis, a list of aspects or characteristics of sustainable development awareness in a society was made from a literature review of the history of sustainable development, theories and practices on sustainable development, and sustainable development in anthropology. An historical review of tideland reclamation in Korea and key informant interviews about the Saemangeum Tideland Reclamation Project were conducted. It was an effort to show that the Saemangeum Project became the first national controversy over sustainable development in South Korea by applying the list of aspects or characteristics of sustainable development awareness. This study was carried out in an attempt to seek a way of studying sustainable development from an anthropological point of view. The results of this study indicated that the majority of aspects or characteristics of sustainable development awareness had emerged in the early and middle 1990s when the Saemangeum Project became a national controversy over the environment versus development. Broadening the research area of sustainable development by focusing on a human behavior, awareness, is the main contribution of this study to the anthropological study of development. The thesis concludes with the possibility of a comparative study between countries where mud-flats are a significant natural resource to deepen understanding sustainable development.

DEDICATION

To Edward Choi, who shall have to live in the world that I will leave

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INTRODUCTION

THE SAEMANGEUM TIDELAND RECLAMATION PROJECT IN KOREA

Korea is famous for its vast area of mudflat along its western coast. Fluctuating along with regions and the cycle of ebb and flow, the difference of sea level between the tidal cycles in some places is more than 10 meters, which has created a enormous area of tidal flat between the low limit and the high limit of tidal range for last several millennia since the rise of sea level set the current boundary of land. Considering the fact that rice-agriculture has been one single major staple supply economy for most the history of Korea, it is no wonder that there have been many land reclamation projects which can convert seemingly useless mudflat area to precious agricultural land. Saemangeum Tideland Reclamation Project (if translated, 'New Millions of Rice Harvest' project) is the latest and the largest among the tidal embankment projects for land reclamation. The first stage of the project (the construction of 33km long sea dikes and two sluice gates) was finished on April 21, 2006, which leaves the second stage of the project (the development of the reclaimed land by the first stage); as a result, 28,300 hectares of land and 11,800 hectares of freshwater lake will be created (Korea Agricultural & Rural Infrastructure Corporation (KARICO) 2004).¹

Even though there have been many other similar tidal embankment projects of South Korea in the past, Saemangeum project brought about for the first time a big national controversy over development versus environment issues. The controversy has delayed the project seriously and has increased the construction costs. The project is still under construction after 8 years from the original planned completion time. Although the

This thesis follows the style of *Annual Review of Anthropology*.

¹ The Saemangeum Project began in 1991. The original plan for the first stage (dykes and sluice gates) was the completion by 1998.

project itself continues after a number of social conflicts exemplified by many protests and counter-protests by local people and environmental social movement organizations, its influence on the discourses of development and environment has entirely changed the aspects of discussion of local development projects in Korea. Now, whenever a new development project is proposed, the same controversies over development versus environment inevitably arise. Why did the Saemangeum project receive so much attention while other similar projects were carried out without serious discussion about these issues? Is it because the project itself is different from previous projects? Or is it because Korean society has changed in recent years? If the latter is true, what are the social or cultural changes that have affected the project? To what extent are these factors different from those during other projects? And what has brought about that changes?

If we could say that the awareness of sustainable development concept arises when the tension between development-oriented values and environment-oriented values clash, isn't it possible to find a mechanism of such awareness of sustainable development by focusing on the change of social and cultural factors during the Saemangeum project? In other words, can the project be the most relevant example that shows why and under what conditions people in a country become aware of sustainable development issues?

SUSTAINABLE DEVELOPMENT

“... development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland Commission 1987).

If one searches the above somewhat long phrase through the Internet, he or she would meet a torrent of more than 58,000 results that contain the exactly quoted phrase.² The

² A search conducted on March 31, 2006 through Google web search by using the following link produced 'about 58,500' results:
<http://www.google.co.kr/search?hl=en&q=%22development+that+meets+the+needs+of+the+present+with+out+compromising+the+ability+of+future+generations+to+meet+their+own+needs%22>

biggest summit that had ever been held in human history - United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992 (referred to as either UNCED, the Rio Conference, or the Earth Summit) - was dwarfed only by another world summit - United Nations World Summit on Sustainable Development in Johannesburg in 2002 (the WSSD) -, both of which explicitly targeted on 'Sustainable Development' and focused on the implementation of it.³ Moreover, as a means of implementation of the concept, the United Nations General Assembly proclaimed the Decade of Education for Sustainable Development for the period 2005 – 2014.⁴ Not only that, hundreds of international or regional influential institutions or organizations are active, claiming that they are true advocate of the concept, while many scientists become more and more aware of the necessity of an entirely new research arena characterized as fully multidisciplinary, what some scholars call, 'sustainability science' (Kates et al 2001); certainly, these phenomena around the concept 'sustainable development' are not an exaggeration even if they are called a revolution (Edwards 2005).

However, in spite of the almost unanimous support for the lexical meaning of sustainability, there is not a single definition of sustainable development, nor a single way to implement sustainable development. Drawing up an elaborate list of definitions of sustainable development (e.g., Murcott 1997) is making the concept not so much clearer but vaguer or more ambiguous; consequently, one might arrive at a methodologically practical conclusion that, as Sutton (2004, emphasis in original) reasonably points out,

³ In all, 178 nations sent some 7,000 delegates to Rio and the meeting was covered by nearly 9,000 journalists. Over 1,400 NGOs were represented at the conference and an estimated 20,000 environmentalists and representatives of women's, youth, indigenous peoples, business, labor, religious, and other independent groups attended the Global Forum, the parallel NGO forum in Rio (Weiss 1998, p. 187). The Johannesburg Conference was attended by 9,101 delegates from 191 governments and 8227 representatives of major groups including NGOs as well as 4,012 media representatives (Hens & Nath 2005).

⁴ The Johannesburg Summit proposed the Decade of Education for Sustainable Development and the United Nations General Assembly in its 57th Session in December 2002, proclaimed the Decade of Education for Sustainable Development (United Nations General Assembly 2004).

“the key question needs to be not ‘what is the correct definition?’ but ‘what do we *want* sustainability to mean?’”.

This vagueness/ambiguity or difficulty of defining of sustainable development, nevertheless, does not weaken the importance and urgency of pursuing it. On the contrary, almost every level of contemporary human society - from a community to a local region, to a nation or state, and to the world - has been equipped with institutional structures to promote sustainable development.⁵ It is highly possible that the concept of sustainable development is an example of what a philosopher W. B. Gallie (1956) describes as ‘*essentially contested concepts*’, “the proper use of which inevitably involves endless disputes about their proper use on the part of their users”.⁶ Then, the controversies over and difficulties in sustainable development can be regarded as a positive sign of the progress in its implementation or achievement.

Although debates over sustainable development as an essentially contested concept are theoretically valuable, anthropological perspectives look for more practical aspects of sustainable development discussion. In other words, the fundamental characteristics of anthropology - its emphasis on ethnographic methodology - lead anthropologists to the

⁵ Representative debates or controversies such as ‘weak sustainability’ versus ‘strong sustainability’ or Environmental Kuznets’ Curves (EKC) debate will be analyzed briefly in the following sections.

As a result of the Rio Conference in 1992, most government now has a governmental organization or program to put sustainable development into practice within existing Ministry/agency or as a new organization, for example, Sustainable Development Partnerships within U.S. Department of State, the Sustainable Development Unit (SDU) within U.K. Department for Environment, Food and Rural Affairs, and Presidential Commission on Sustainable Development in South Korea. Many local governments and NGOs also have their own sustainable development related organization such as Sustainable Seattle (<http://www.sustainableseattle.org>) and Sihwa Sustainable Development Council (<http://www.sihwa-sd.com>).

⁶ Gallie (1956) provides democracy, art, and the Christian tradition as examples of essentially contested concepts. He suggests seven conditions to classify a concept as an essentially contested one: being appraisive, being used both aggressively and defensively, its achievement’s being of an internally complex character, the variously describable character of its achievement, persistent vagueness of its achievement, the derivation of any such concept from an original exemplar whose authority is acknowledged by all the contestant users of the concept, and the probability or plausibility, in appropriate senses of these terms, of the claim that the continuous competition for acknowledgement as between the contestant users of the concept, enables the original exemplar’s achievement to be sustained and/or developed in optimum fashion. It is possible and an interesting subject to test sustainable development according to these seven criteria, however, that is beyond the scope of this thesis.

positions where they are in the forefront of the real sustainability issues/problems and are requested to provide the real solutions to the problems by their host communities, clients, and themselves. This thesis is an effort of preparation for dealing with such issues/problems in terms of anthropological views.

RESEARCH QUESTION

As it will be briefly sketched out in the next chapter, the concept of sustainable development is vague and problematic if intended to be used as a concrete theoretical concept in order to solve the real problems of the development projects like the Saemangeum project. However, the other way around, the analysis of real development projects, especially such a controversial one as the Saemangeum project, can help clarify the concept of sustainable development. As most scholars consider sustainable development as a sub-discourse of environmental discussions (e.g., Dryzek 2005) or as a sub-agenda of development discussions (e.g., Willis 2005), the first nation-wide controversy of environment versus development over the Saemangeum project in Korea will be considerably pertinent for understanding.

The central research question is,

Why did the Saemangeum Tideland Reclamation Project lead to the first national controversy over sustainable development in South Korea?

The purpose of this thesis is an attempt to answer the above question by listing up the aspects or characteristics of sustainable development issues through literature review (history, theories, and practices of sustainable development, case studies, and related literature in anthropology) and then, by applying those aspects or characteristics to South Korea centering around the Saemangeum Project through material review and key informants interviews.

METHODOLOGY

RESEARCH PROCEDURES

To answer the research question, this thesis follows the next procedures. First, a set of indicators that reflect the aspects or characteristics of sustainable development will be gathered through a literature review. Next, the tideland reclamation history of Korea will be reviewed based on the indicators from the first step. Last, the Saemangeum Tideland Reclamation Project will be discussed with the result of key informant interviews to show the emergence of the indicators during the Project.

1) Making a List of Aspects or Characteristics of Sustainability-Issues-Aware Community (or Society)

There is an important assumption when the conditions of the awareness of a concept like ‘sustainable development’ are to be set as the target of a research. At least in the level of discussion or discourse among people in the country, there should be significantly discernable trends or characteristics of the society and culture when the people become aware of the concept or the concept-related issues. This present author assumes the existence of such trends or characteristics and tries to find them through the literature review. A few examples of such characteristics can be: appearance of the voice for the rights of future generations in terms of the environment and development; advancement of environmental discussions beyond the level of anti-pollution campaigns; and the popularization of the debates on the relationships between the environment and economic growth. Making a list of the aspects or characteristics of sustainable development awareness in this step is mainly carried out by a literature review, which will encompass:

- The History of Mainstream Sustainable Development
- Theories and Practices on Sustainable Development
 - 1) Analytical/Theoretical Issues on Sustainable Development
 - 2) Operationalization of Sustainable Development
 - 3) Other Approaches on Sustainable Development
- Sustainable Development and Anthropology
 - 1) Past and Contemporary Case Studies on Sustainable Development
 - 2) Anthropology and Challenges from Sustainable Development

As a result of the literature review, procedure 1) will produce a list - '*the LISDA*' - of the aspects or characteristics of sustainable development awareness in a society.

2) Review of the Tideland Reclamation History of Korea

Based on the assumption that Korean society after the launch of the Saemangeum Project shows significant or at least discernable differences from that before the project in terms of the aspects or characteristics which are output of the first step (the LISDA), this second stage surveys briefly the history of tideland reclamation in Korea before the Saemangeum Project. The Chosun Dynasty (1392-1910), the Japanese colonial period (1910-1945), and the Republic of Korea before the Saemangeum Project (1945-1990) will be dealt with centering around tideland reclamation.⁷ Not all the items in the LISDA that resulted from the first procedure appear only after the launch of the Saemangeum Project. As a matter of fact, several aspects or characteristics of sustainable development awareness can be observed in the review of the tideland reclamation history in Korea before the Saemangeum Project. However, this does not obscure the uniqueness of the Saemangeum Project as the first national controversy holder over sustainable development

⁷ Tideland reclamation is thought to have existed before the Chosun Dynasty. However, this thesis will begin the review of the tideland reclamation history in Korea from the Chosun Dynasty by following the analysis of Y. H. Park and Oh (2004) - they argue that the demand of new land during the 15th century was the primary force to the real emergence of tideland reclamation in Korean peninsula.

issues; to the contrary, the review of this step will provide the chance to see how advanced the scale and extent of sustainable development discourses of the Saemangeum Project are, in comparison with the previous tideland reclamation cases in Korea.

3) Review of the Saemangeum Tideland Reclamation Project

To reconstruct the appearance of a sudden and explosive controversy over sustainable development during the 1990s in South Korea, this third step reviews the Saemangeum Project in the chronological order, and discusses findings from key informant interviews. On the one hand, primary issues in the debates on the Saemangeum Project between the advocate groups and the opponent groups and the relationship between the global sustainable development discourses and the development of environmental movement organizations in South Korea in the 1990s will be described. This chronological description will also include the uniqueness of sustainable development discussions in South Korea resulted from the historical constraints of the former periods that are reviewed in the second stage. On the other hand, the result of the key informant interviews will be used for supporting the chronological description as a form of narration. The narrations especially cover the peak period of the controversy over the Saemangeum Project in 1998-2003.

KEY INFORMANTS INTERVIEWS

Questions Used in the Interviews

A total of nine questions were prepared for the interviews. The main question is ‘what do you think are the social and cultural factors that have shaped the Saemangeum project as the most controversial one in Korean history?’ Additionally, the question, ‘what is your opinion about sustainable development centering around the Saemangeum project?’ is explicitly related to the research question of this thesis. However, not all the nine questions were given to all the interviewees in a strict order. The order of the questions

was flexible according to the reaction of each interviewee. Several additional questions were improvised during the interviews based on the situation. The list of questions used in the key informant interviews can be found in Appendix B.

Selection of the Interviewees and Methods

1) Total number of interviewees - thirteen

Among the original target of 15 interviewees who were asked, four of them didn't reply to or refused the interview and two interviewees were added on the spot while visiting two environmental movement organizations.

2) Selection criteria

Interviewees were selected for this project if they fit one of the following criteria: 1) governmental officers in charge of the Saemangeum project, 2) environmental movement activists who have deeply participated the project related activities, and 3) researchers who has conducted the Saemangeum project related areas.

3) Composition of the interviewees

The composition of the three groups by the selection criteria is as follows:

1) From governmental officers who were in charge of the project or are now responsible for it - four. Two of them work in central governmental departments that are in charge of planning and carrying out the Saemangeum Project and one is a member of the construction field control organization for the Saemangeum Project. The last person is a researcher of a government funded institution and he is a member of a research team on tideland reclamation.

2) From environmental movement organizations - five. Two of them participate in a representative nation-wide environmental movement organization and two other interviewees are members of a local branch of that organization. The remaining one interviewee is a local environmental

activist in a Jeollabuk-do (North Jeolla province) based environmental group.

3) *From professional researchers - four.* Three interviewees are professors who conducted or are conducting the Saemangeum project related researches. The remaining one is an individual researcher who is mainly interested in the environmental issues in South Korea.

From their point of view on the Saemangeum Project, the thirteen interviewees can be classified into a pro-Saemangeum group, an anti-Saemangeum group, and a neutral group. Refer to the Appendix B for a brief introduction of each interviewee and their pseudonyms.⁸

4) Methods

The interviewees were recruited by personal contacts through e-mail and phone calls during November and December in 2005. The interviews were conducted from December 27, 2005 to January 13, 2006 and the locations were the interviewees' working places: Seoul, Suwon in Gyeonggi-do (Gyeonggi province), and Kimje and Jeonju in Jeollabuk-do (North Jeolla province). It took one to three hours to conduct each semi-structured interview based on prepared questions. However, many ad-hoc questions were improvised during the interviews.

⁸ Henceforth, for reasons of confidentiality, the interviewees' names are pseudonyms.

HISTORY, THEORIES, AND PRACTICES ON SUSTAINABLE DEVELOPMENT

THE HISTORY OF MAINSTREAM SUSTAINABLE DEVELOPMENT

The abrupt collapse of the Easter Island's gigantic stone statue civilization, evidenced by the pollen analysis (Flenley & Bahn 2002), hints that the concept of sustainable development is not confined within the modern context in which the term 'sustainable development' was coined and is explicitly used.⁹ Rather, the concept would be more correctly appraised if its intrinsic aspects could be said to have always been main interests of human beings throughout the history even if the term did not exist.

Aside from historical or archaeological views, the process of establishment of environment-related laws (Bass et al 2001) or the dynamics of environmental social movements in 1960s and 1970s (e.g., Stearns & Almeida 2004) shows that the origin of sustainable development concept can be traced back to far before the birth of the term. However, if the genealogy of mainstream sustainable development is studied, a history from the 1972 UN Conference on the Human Environment (also known as the Stockholm Conference) to the 1992 UN Conference on Environment and Development and to the 2002 United Nations World Summit on Sustainable Development in Johannesburg should be the main object of the study

Appendix A shows selected milestones related to sustainable development issues according to the level of UN, South Korea, and a specific development project region in South Korea - Saemangeum region. Underlined events in the first column 'UN' are the key steps toward ultimately the WSSD 2002. The main events that have shaped the mainstream sustainable development definitions/political agenda/action plans until now - the output of WSSD 2002 - are summarized in Figure 1. Although the periodization of

⁹ The case of Easter Island for the study of sustainable development will be dealt with in sustainable development and anthropology chapter in this thesis.

sustainable development history differs between scholars, the analysis of this thesis focuses on three UN conferences: the Stockholm Conference, the Rio Conference, and the Johannesburg Conference, which gives four periods, i.e. pre-Stockholm era, from Stockholm to Rio, Rio to Johannesburg, and post-Johannesburg era.¹⁰

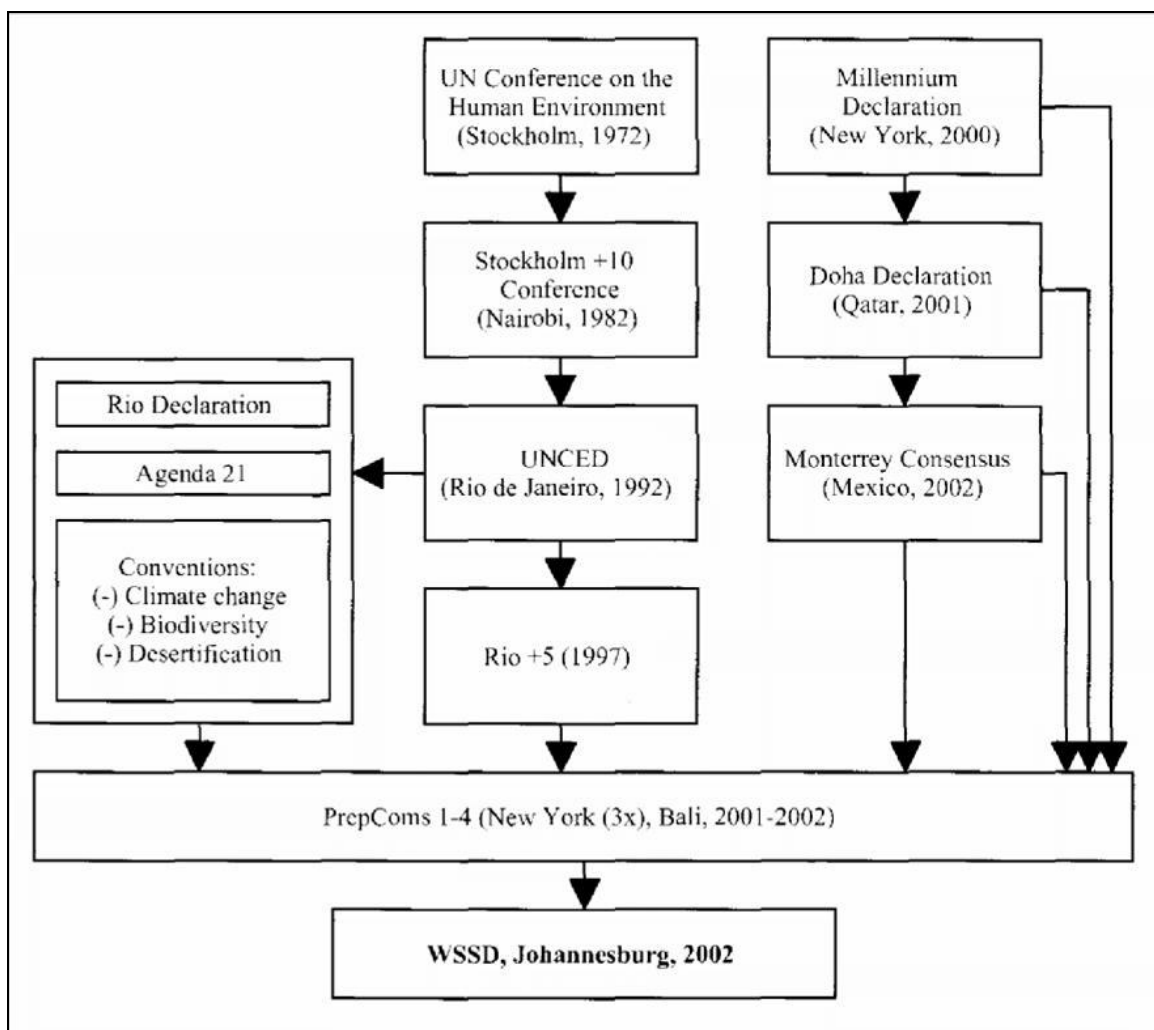


Figure 1 Main sources for WSSD [from Hens & Nath (2005).]

¹⁰ Some scholars, for example, Mebratu (1998) prefers to divide periods based on WCED (1987), also known as the Brundtland Commission, which leads to pre- and post-WCED eras.

1) Pre-Stockholm (~ 1972)

Weiss (1998, p. 170) summarizes the first 70 years of twentieth century, the road to Stockholm, as an onset of new era of bilateral or multilateral treaties for treating transboundary environmental matters and a time of extreme pollutions. For example, the Treaty for the Preservation and Protection of Fur Seals (1911, a convention between Russia, UK, Japan, and US), the Convention on Certain Questions Relating to the Law on Watercourses (1929, between Sweden and Norway), the Convention to Regulate the Hydro Electric Development and the International Section of the River Duno (1927, between Spain and Portugal), and the General Convention Relating to the Development of Hydraulic Power Affecting More than One States (1923) were established. As for typical environmental pollutions, “[w]hite-collar workers in Pittsburgh would change their shirts at midday because they would be gray with soot”, “Ohio's Cuyahoga River actually caught fire on June 22, 1969”, and “Birds dying from pesticide poisoning were common sights in suburbs” (Weiss 1998). To address these severe impacts of industrialization, many industrialized countries enacted national environmental laws (e.g., the National Environmental Protection Act, 1969 in U.S.) and established environmental institutions (e.g., Environmental Protection Agency, 1970 in U.S.) through 1960s and 1970s.

These two trends - the bi-/multi-lateral environmental treaties and the national environmental laws enactment -, however, were confined only to the North.¹¹ The concerns and interests of the South about the environmental issues before and around the Stockholm Conference were totally different from those of the North, even though the South also would follow the similar road later by enacting the environmental laws and

¹¹ The terms, the North and the South, which can be used interchangeably with the developed (or industrialized) countries and the developing countries can be problematic when they are compared with other similar terms like the First or Third World, the Less Developed countries (LDCs). For, not all the countries of the North are located at the Northern hemisphere, nor those of the South are necessarily located at the Southern hemisphere. In this thesis, the North /the South or the industrialized/developing countries will be used interchangeably.

institutionalizing the environmental agencies (for instance, as in Appendix A, South Korea established a solid environmental agency along with new and upgraded environmental laws in 1990s, twenty years later than the U.S. did).¹² The countries of the South were more concerned with their economic growth and were worrying about the negative impacts of the 1972 Stockholm Conference, believing that “harmonizing environmental standards through global environmental agreements would slow their development and unreasonably limit their economic growth to respond to problems caused predominantly by the insatiable consumption of the North” (Weiss 1998). Therefore, leveraging the fact that the South in 1960s already had the privilege of numerical superiority in the UN General Assembly, six months prior to the Stockholm Conference, the developing countries passed a UN General Assembly resolution on development and environment specifically aimed at influencing the output of the Conference by emphasizing that “global concerns over environmental protection should not interfere with their development agenda and that environmental policy should be left to the individual [s]tates” (Weiss 1998).

There are several important points in the analysis of the pre-Stockholm era, which are related to sustainable development. First, the existence or experience of environmental degradation or pollution during industrialization was not a direct condition of the emergence of sustainable development as it is used currently. Although severe pollution disasters such as the Great Smog of 1952 in London killed thousands of people, they hardly seem the causal events to form the concept of sustainable development. The necessary conditions of sustainable development issues, as will be shown in following sections, are composed of more complex factors. On the other hand, unlike the common assumption that environmental concern is linked to the industrialization and its consequences, as Mebratu (1998) points out, hazards of pollution, deforestation, land

¹² Of course, South Korea is now one of the members of OECD, which is regarded as the circle of industrialized countries and whether South Korea was among the South two or three decades ago is controversial. However, considering the fact that the issues of North/South clash became salient after the end of the Cold War, South Korea in 1960s and 1970s was comparable to one of the South.

degradation, and chemical food adulteration have persisted for most of human existence and “there is a growing consensus among environmental archaeologists that numerous ancient societies, including the Babylonian Empire, may have collapsed because of environmental degradation.” Second, political and diplomatic aspect was crucial to the rise of sustainable development concept. As mentioned already, the substantial backdrop of the Stockholm Conference was not so much the naïve awareness of the global environmental issues but the suspicious tension between the North and the South over controlling the development paths of the South through neo-colonial rules camouflaged by the sacred environmental standards. This characteristics - sustainable development as a politics or a diplomacy - has continuously weaved the concept’s birth and development, which has determined the output of the subsequent conferences.

2) The Stockholm Conference (1972)

Held during the middle of the Cold War and boycotted by the Soviet Bloc after East Germany was denied an invitation, the Stockholm Conference was one of the most successful UN Conferences ever held up to that time (Weiss 1998).¹³ It had three major products: the Action Plan for the Human Environment; the United Nations Environment Program (UNEP) and the related Environment Fund; and the Stockholm Declaration on the Human Environment (see Appendix C).

The Action Plan launched a global environment assessment program (Earthwatch) and had a major impact on the development of subsequent international environmental agreements like the International Whaling Commission (IWC)’s adoption of a ten year moratorium on commercial whaling, the Convention on the International Trade in Endangered Species, the Bonn Convention on Migrating Species, and the Law of the Sea Convention (Weiss 1998, p. 174). The second output, UNEP was created at Stockholm and it is still the primary organization with general authority over environmental issues.

¹³ Representatives from 113 countries attended, although only India and the host country Sweden were represented by their head of state.

In terms of sustainable development, the Stockholm Declaration is assessed as laying the groundwork for the subsequent acceptance of the concept, being “a visionary statement, particularly when compared with the Rio Declaration that would come twenty years later” (Weiss 1998, p. 176).¹⁴ Emphasizing rational planning for reconciling conflict between the needs of development and the need to protect and improve the environment, placing the primary responsibility for environmental protection on national and local government, but addressing areas where international cooperation was important, the Stockholm Declaration tried evidently to harmonize both the North and the South.¹⁵

3) From Stockholm to Rio (1972 ~ 1992)

As shown in Appendix A, under the facilitation by UNEP, a series of conventions and protocols were established throughout the 1970s and 1980s, such as ranging from addressing conventional or “first generation” environmental issues to addressing “second generation” ones involving more complex and global scales such as the ozone layer, oceans, transboundary movements of pollutants, climate change and biological diversity.¹⁶ However, although all this treaty-making efforts displayed the successful spread of international environmental awareness, their ad-hoc quality, consisting of separate negotiations and different facilitators was problematic. This led observers - especially the secretariat of UN - to pursue a systematic order for an emerging field that

¹⁴ For example, the Stockholm Declaration proclaimed that “...To defend and improve the human environment for present and future generations ...” in the preamble and “...bears a solemn responsibility to protect and improve the environment for present and future generations” in Principle 1 (UNEP 1972).

¹⁵ Ibid., in Principle 14 (emphasis on rational planning for reconciling conflict between the needs of development and the need to protect and improve the environment), 7 (the primary responsibility for environmental protection by national and local government), and 9, 10, 11, 12, 20, 24, 25, 26 (importance of international cooperation).

¹⁶ According to Weiss (1998, p. 179), these conventions were negotiated not only under UNEP but also under other arms of the UN system like UNESCO or NGOs such as the International Union for the Conservation of Nature (IUCN). As the examples for the ‘first generation’ issues, air or water pollution, protection of endangered species, cultural and natural heritage, wildlife and their habitats can be included.

combined global environmental issues with development impetus; finally, they seemed to find what they hoped - the concept of “sustainable development”.

Since the Stockholm Conference, the term sustainable development, if not as the exact phrase, had been discussed among academics (Weiss 1998) and it was mainly part of the environmentalist lexicon (Dryzek 2005, p. 148). For example, “[t]he concept was explored as an alternative to mainstream interpretations of development as economic growth” (Dryzek 2005). As Mebratu (1998) says, this exploration emerged as a form of appropriate technologies and intermediate technologies and some experts believe that they are “the immediate precursor to the concept of sustainable development”. At last, when the concept was born as its exact form in 1980 with the publication of the International Union for the Conservation of Nature’s *World Conservation Strategy*, this environmentalist-oriented usage was evident;

*The aim of the World Conservation Strategy is to achieve the three main objectives of living resource conservation: **to maintain essential ecological processes and life-support systems, ... to preserve genetic diversity, ... to ensure the sustainable utilization of species and ecosystems** by summarizing **the main requirements for sustainable development**, ... (International Union for the Conservation of Nature (ICUN) 1980, Executive Summary, emphasis in original).*

Moreover, one of the unique characteristics of sustainable development concept - intergenerational equity - was also considered;

Conservation’s concern for maintenance and sustainability is a rational response to the nature of living resources (renewability + destructibility) and also an ethical imperative, expressed in the belief that “**we have not inherited the earth from our parents, we have borrowed it from our children**”. (International Union for the Conservation of Nature (ICUN) 1980, Section 1, emphasis added)

The meaning of sustainable development, however, began to change, partly because of the realization of the matter of disorganized environmental conventions by the secretariat of UN, but also because, as Pearce, Markandya, and Barbier (1989) point to, “the World Conservation Strategy did not succeed in integrating economics with environment”. As a result of the efforts for integrating the status quo (economic concerns), the real transformation into the contemporary discourse of sustainable development was accomplished when the report, *Our Common Future*, was published in 1987 by the World Commission on Environment and Development (WCED, also known as the Brundtland Commission) which had been created by the UN resolution in 1983 in order to address the global problems of environment and development (UN General Assembly 1983). The definition of the report (quoted in Introduction), by its clever sense of politics and “its brilliant ambiguity” (Weiss 1998) made possible nearly universal acceptance of it among every sector of international society and publication of the report marked one of the most prominent milestones of sustainable development history.¹⁷

Why and how did the sustainable development definition by WCED become a worldwide buzzword? Although the report still remains an important milestone in the UN’s efforts to address global environmental problems and it did catalogue many interrelated environmental problems, the secret of its success was not in its emphasis on the ‘environment’ half but in reassuring the other half - economic growth; in other words, “[b]y linking environmental protection and poverty alleviation to economic growth, the Report ... diffused much of the resistance that would otherwise have come from the world’s political leaders” (Weiss 1998). In addition, it also attracted the academic world by demonstrating “most convincingly that anthropogenic environmental problems are fundamentally interdisciplinary” (Hens & Nath 2005), which stimulates multidisciplinary

¹⁷ This ambiguity can be described as ‘brilliant’; on the one hand, it produced a proliferation of attempts to define the concept in many different ways, and on the other hand, the ambiguity of the concept could invite even seemingly irreconcilable parties to the same table. For example, the advocates for an end of economic growth such as Meadows and colleagues in *the Limits to Growth* and the supporters for the perpetuation of economic growth like the World Business Council for Sustainable Development, both the two groups argued that their ideologies were on the right track to sustainable development.

debate and research as well as “leaves unresolved a number of problems for anthropologists” (Stone 2003).

4) The Rio Conference (1992)

Under the auspices of the heritage from the Stockholm Conference, under the guidance of the enthusiastically accepted endowment from the Brundtland Commission, and relieved of the burden laden with the Cold War, the Earth Summit in Rio was held to focus explicitly on sustainable development and generated “excitement, enthusiasm, and high expectation” (Hens & Nath 2005). As Hens and Nath (2005) summarizes, two main issues prevailed in the Conference: the “[l]ink between environment and development” and “[p]ractical interpretation of the rather theoretical concept of SD, seeking to balance the modalities of environmental protection with social and economic concerns.”¹⁸ As a result of addressing the issues, the Summit produced these outputs (Hens & Nath 2005; Weiss 1998):

- The Rio Declaration on Environment and Development: 27 principles
- Agenda 21: an 800-page “blueprint” for sustainable development in the 21st century
- Two binding conventions: the Biodiversity Convention and the Climate Change Convention
- A set of non-binding forestry principles

¹⁸ These two issues are different. Originally, sustainable development concept was developed as a way to harmonize (economic) development and environmental issues: the link between environment and development. Later, several simple models have been used to facilitate the comprehension of sustainable development and the so-called ‘three pillar’ or ‘three circle model’, which interprets sustainable development as a sum of three basic aspects of human society (i.e. social, environmental, and economical), was one of the popular models (Keiner 2005). ‘Seeking to balance the modalities of environmental protection with social and economic concerns’ implies the realization that sustainable development not only means the development-environment relationship but it also means the importance of the human (social) aspect.

- Agreements to develop subsequent legal instruments on the Convention to Combat Desertification, a Convention on Straddling Fish Stocks, and on Land-Based Sources of Marine Pollution
- An agreement to create the Commission on Sustainable Development (as known as CSD or UNCSD) to monitor implementation of the Rio Agreements and Agenda 21.

Aside from the evaluation at the point about the next Conference (the Johannesburg Conference in 2002) that “[i]ndeed, most of the environmental problems have been exacerbating since Rio to make the global environment less sustainable today than it was ten years ago” (Hens & Nath 2005, p. xxvi), however, the Rio Conference itself staggered by the clash between the North and the South. As Table 1 shows clearly, it was conspicuous that the North was reluctant to listen to the global inequality problem, unsustainable consumption in the industrialized countries, debt relief, and open market for the South, while the South suspected that the intention of emphasizing the climate change, forest conservation, and biodiversity by the North would be to shift the responsibility of the North for the global environmental crises onto the South by raising issues such as population growth.¹⁹ Although the Rio Declaration seems to show the victory of the South (see Table 1), the actual profits were marginal; for example, the two subsequently established conventions (the conventions on climate change and

¹⁹ As for the negotiation process of the population growth and Northern consumption issues, Cohen (1993) gives a very interesting and vivid description of the Rio Conference. The original draft official document (Agenda 21) included a chapter entitled “Demographic Dynamics and Sustainability”, which contains “... including universal access to family planning services and the provision of safe contraceptives”. The South tried to rewrite or delete the population section with leverage over the North (especially US) on the consumption side of the equation but only to be in a stand-off. This stalemate was eventually resolved in favor of the South by the Vatican (the delegation representing the Vatican acts as a government entity in the UN context), which resulted in the shrinking of the population section as a sub-chapter content phrased “demographic trends and factors” into the Chapter titled “Global Action for Women Towards Sustainable and Equitable Development” without explicit terms like ‘family planning services’ or ‘contraceptives’.

biodiversity) and a set of non-binding principles (forest conservation) reflected correctly the concerns of the North.

Table 1 Comparison of the North and the South in the Rio Conference

	North	South	North & South
Main Interest	- environment - intergenerational equity	- development - intragenerational equity	- eradicating poverty - peace for environment
environment	- climate change - forest conservation - biodiversity - population growth	- fresh water, food security - Northern responsibility for global environmental issues, curbing consumption - desertification - sovereign right of individual government over resources & environmental issues	- global partnership - scientific/technological cooperation - compensation for the victims of pollution and other environmental damage - prevention of the relocation/transfer of hazardous substances - precautionary approach - polluter bears the cost - environmental impact assessment (EIS) - notification/cooperation on natural disasters/emergencies/transboundary environmental effect
development	- public participation	- funding for Southern cooperation - debt relief - open access to Northern market	- women/the youth's role in sustainable development - importance of indigenous communities - protection of people under oppression
Declaration Principles	10	2, 6, 7, 11, 12	1, 3, 4, 5, 7, 8, 9, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27

Needless to say, funding was a still more controversial issue at Rio. The South conceded from the position of requesting “new and additional funding” - \$70 billion to be precise - to achieve sustainable development on top of the existing \$55 billion official development assistance (ODA). Instead, they compromised to reaffirm the developed countries’ commitment to meet the 0.7 % of GNP in development assistance by 2000,

(which had been already agreed by the North). However, the industrialized nations resisted by not committing to a specific date for reaching it (Weiss 1998, p. 188). As an inevitable result, the implementation of sustainable development projects and policies in the ten years since Rio was disappointing.²⁰ Another problem could be the isolation of the only superpower - the United States - on virtually every major issue, which seems to have made a negative impact on the implementation of sustainable development since Rio.

In sum, whilst the progress towards sustainable development was substantial in terms of its “blueprint” (as a form of Agenda 21), the Earth Summit reconfirmed the almost irreconcilable discrepancy between the North and the South about how to implement it; for example, as Elliot (1999, p. 177) succinctly points out, “[w]hilst the Northern countries focused on the conservation of the ‘sinks’ (i.e. the tropical rainforests, largely), those countries of the South wanted the causes of climate change to be tackled”. If we could evaluate the Rio Conference according to Dryzek’s (2005, p. 160) suggestion - “[t]he success or failure of sustainable development rests on dissemination and acceptance of the discourse at a variety of levels, followed by action on and experimentation with its tenets” -, it was a huge success in terms of the former but it was a helpless negligence in terms of the latter.

5) From Rio to Johannesburg (1992 ~ 2002)

During the ten years between Rio and Johannesburg, besides the major milestones towards the WSSD shown in Figure 1, there were many other international conferences for implementing the Conventions established at Rio.²¹ These conventions have been far

²⁰ Despite intense and protracted discussion in Rio, no satisfactory agreement was reached on how to finance the implementation of Agenda 21, which resulted in a serious shortage of resources to finance SD projects and policies. The EU barely reached its target 0.33 % of its GDP for development cooperation (only the Netherlands, Luxemburg, and Scandinavian countries met or exceeded the official target of 0.7 % of GDP for development assistance), while the largest donor - the USA - provided only 0.12% (Hens & Nath 2005).

²¹ According to Hens and Nath (2005), the implementation of the Conventions has been a laborious process: for the Convention on Climate Change, Berlin in 1995, Geneva in 1996, Kyoto in 1997 (opened as ‘the Kyoto Protocol’, 84 countries signed this year), and to monitor and control the Kyoto agreements,

from meeting the targets and even further from improving global environmental conditions.²² While there was some progress with regard to Agenda 21 issues such as slower population growth, reduced mortality rate, improved health, wider access to education, and strengthened role of women, many other indicators such as pollution of air, water, and soil, resource consumption, poverty, and north-south income disparity have worsened (Hens & Nath 2005). As Hens and Nath (2005) point to, “since Rio much greater progress has been made world-wide in environmental institution-building than in actually protecting the environment or pursuing effective policies for SD”.²³

Different from two other prerequisites to the WSSD - the Millennium Declaration in 2000 and the Monterrey Consensus in 2002 (see Figure 1) -, the Doha Declaration (Doha, Qatar, in November 2001) has unexpected connotations with regard to sustainable development.²⁴ As in Table 1 the Rio Conference portrayed, since the Stockholm

Buenos Aires in 1998, Bonn in 1999, the Hague and Marrakech in 2001; for the Convention on Biological Diversity, Nassau in 1994, Jakarta in 1995, Buenos Aires in 1996, Bratislava in 1998, Nairobi in 2000, the Hague in 2002, adopted as ‘the Cartagena Protocol on Biosafety (Cartagena, Columbia, 22-24 February, 1999).

Especially as to the Kyoto Protocol, the protocol entered into force on February 16, 2005 and 162 countries signed until now (as of Feb. 2006). The conditions for entry into force is 55 parties and at least 55% CO₂ 1990 emissions by UNFCCC Annex I parties. The United States of America (USA), although a signatory to the protocol, has neither ratified nor withdrawn from the protocol. The signature alone is mostly symbolic, as the protocol is non-binding over the United States unless ratified. Data source is Wikipedia (2006g).

²² Hens and Nath (2005) provide data that “it is noted in passing that during 1990 and 2000 global carbon emissions grew by an average of 9.1%” and “Earth’s forests have been disappearing at a rate of 14.6 million hectare annually, while the proportion of coral reef loss due to human activities has increased from 10% in 1992 to 27% in 2000”.

²³ This successful institution-building process for sustainable development was the phenomena not only the level of UN or international bodies, but also the level of states and local governments. According to Elliot (1999, p. 91), “[a]ll national governments represented at the Earth Summit committed themselves to the principles of action contained in the Agenda 21 document” and “[i]n the first three years after Rio, 74 countries submitted the Commission on Sustainable Development national reports on their activities undertaken to meet the objectives set out in Agenda 21”. Many of the commitments in Agenda 21 require enactment at the local level - ‘Local Agenda 21’, which are also emerging even within developing countries (Ibid, p. 91).

²⁴ If the success of the WCED and Rio could be said as interweaving poverty reduction in developing countries with the issue of integrating environment and development, the Millennium Development Goals (MDGs) would be meaningful in that, ‘poverty reduction’ was established separately as a goal of sustainable development by setting up concrete quantitative targets of extent and time. For detailed information of the eight MDGs, see (United Nations 2000) and (Wikipedia 2006i).

Conference, the North had pursued the ‘environment’ part of sustainable development, whereas the South’s tenacious claim had been laid on the ‘development’ share of the concept. However, since around the mid-1990s, particularly since the inception of the World Trade Organization (WTO) in 1995, the North and the South have seemed to swap their positions with each other completely. Third World scholars, as in Doyle (1998)’s argument, began to criticize the sustainable development concept and the implementation processes of Agenda 21 as promoting “the Enlightenment goals of progress through economic growth and industrialization at all costs” and as advancing “the globalization of radical liberation market systems”. This abrupt shift was mainly because, even though the stated aim of the WTO is to stimulate economic growth by promoting free trade and hence to make people's lives more prosperous, many believe that free trade is not the right way to make people's lives more prosperous. Instead, they believe it grants the rich the means to become richer through the loss of the general population (Wikipedia 2006p). The Doha Round (World Trade Organization 2001) aimed at addressing this inequity of distributing benefits of increasing international trade with a focus on making trade fairer for developing countries.²⁵

Before the change driven by the globalization controversies around the world, a variety of parties hitherto only passive in molding sustainable development into the

As already made clear in the Rio Conference, the most controversial issue to implement sustainable development has been its funding. While preparing for the WSSD, as a strategy, it was decided that the proceedings of the WSSD should not be allowed to be hampered by dispute or acrimony over discussions on finance (Hens & Nath 2005, p. 11). As a result, the Monterrey Consensus was adopted by Heads of State and Government on 22 March 2002 at the United Nations International Conference on Financing for Development in Monterrey, Mexico (Wikipedia 2006k). Owing to these commitments, “only very limited discussions took place at Johannesburg on finance needed for implementing SD” (Hens & Nath 2005).²⁵ The Doha Round, however, continues to prove the difficulty in negotiating between the rich, developed countries, and the developing countries. The Doha round began in Doha, Qatar, and negotiations have subsequently continued in: Cancún (Mexico in 2003); Geneva (Switzerland in 2004); Paris (France in 2005); and Hong Kong (in 2005). The Conferences have been staggering, sometimes collapsing (e.g. in Cancún, the talks collapsed after four days during which the members could not agree on farm subsidies and access to markets), and often clashing with the protestors (e.g. as many as 2000 protestors demonstrated outside the Hong Kong Convention and Exhibition Centre, the location of the talks and clashes with the police left at least 116 people injured, including 56 officers), the last one of which (the Hong Kong Conference) gives fresh impetus for negotiators to try to finish a comprehensive set of global free trade rules by the end of 2006 (Wikipedia 2006b).

environment versus development dichotomy had begun to lay claim to the concept since the early 1990s.²⁶ First, once believed to be incompatible with sustainable development, the business world made a nice comeback after suffering from stigmatized phases of ‘the prevention of pollution in the 1970s and measures to encourage self-regulation in the 1980s’ by incorporating “sustainability into business practices in 1990s” (Redclift 2005, p. 216).²⁷ Nevertheless, though they were rearmed with a new ideal, ‘green capitalism’, decorated with ‘green consumerism’, ‘ecological modernization’ (e.g., ‘industrial ecology’ or ‘life cycle assessment’), or the pursuit of environmental standards and/or product certification, business circles have been criticized for sheer market-oriented approaches. For example, as Redclift (2005, p. 217) acknowledges, the US-based companies’ attempt to export higher environmental standards or to spread good practice in environmental governance is “linked with the disadvantaging of Third World companies on global markets”. Simply speaking, as the Business Council for Sustainable Development (BCSD) manifests explicitly, “the main goal of business must remain economic growth” (Schmidheiny 1992, p. xxii).

Second, while several million dollar projects to analyze and clarify sustainable development in the 1990s were scarcely successful (Dryzek 2005, p. 146), sustainable development as a research theme came into full bloom in and across many disciplines.²⁸ Among them, Lafferty and Meadowcroft (2000, pp. 14-22) present a brief review of social sciences’ research trends on sustainable development succinctly. Debate among economists focused on understanding sustainability in terms of welfare functions, income

²⁶ The business world (mainly from the North), academic circles (not confined to economics), and new participants (e.g. WTO or the Internet) are the parties.

²⁷ Although many business leaders who participated in the BCSD were among the Third World such as Egypt, Chile, Nigeria, Kenya, Malaysia, Thailand, Bolivia, India, and Argentina, it does not seem that the BCSD reflects equally or fairly the interest of both the North and the South. Its work lacks the consideration of the inequality between the North and the South (see Schmidheiny 1992).

²⁸ Dryzek (2005, p. 146) presents two such projects. In the early 1990s, the Transportation Research Board of the United States National Academy of Sciences spent a million dollars trying to come up with a definition but only to fail. By 1996, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) sponsored a project to clarify the meaning of the concept but it was difficult.

flows and capital accounts; on determining how the concept might be measured and/or reconciled with techniques of environmental valuation; and on deciding whether it adds something substantive to the structure of economic theory. Geographers were interested in the issues of scale and spatial disposition and in the implications of sustainable development for land-use planning, and for urban and transport policies, followed by political scientists who focused on disputes over different interpretation of sustainability, and on the scale and character of the social transformations sustainable development might to be understood to entail; on what governments and other actors are already doing in the name of sustainable development; and on local attempts to engage with Agenda 21 (LA 21).

Third, not only existing parties mentioned above, but also new, innovative, or hardly imaginable actors or entities came on stage within the last two decades through the enlargement and reconstitution of the global system; for instance, institutions such as the WTO, the Human Genome Project, and the Internet are now integral to the global system, none of which were in existence in 1987 when the classic definition of sustainable development was born by the WCED (Redclift 2005). Moreover, the complex interaction between existing and new players has produced new types of discourses like globalization, environmental security, and the relationship between sustainable development and science or justice, which is already thought to be constructed as ‘post-sustainability’ discourse (Redclift 2005).

By the time of the World Summit on Sustainable Development (WSSD) in 2002, with the change of the position to sustainable development by the North and the South, and with the appearance of new actors and discourses, the great success of institution-building processes from Rio to Johannesburg with regard to sustainable development was shadowed only by the fact that most of the environmental problems have worsened.

6) The WSSD and Post-WSSD (2002 ~)

With the rich inheritance of the past twenty year global-level institutional efforts, symbolized especially by the 'blueprint' or the 'bible' for sustainable development - Agenda 21 at Rio - and with the almost unanimous support by governments, NGOs, international institutions, the business world, and academic circles, the Johannesburg Conference should have been an unquestionable success. Obviously, there was some progress in certain areas. For example, by introducing a new kind of partnership (Type II partnerships), which will invite a new model of policy advice characterized by wider societal participation instead of the current one dominated by business, industry, and labor unions, Johannesburg can be said to have been a milestone in democratizing the approach to sustainable development (Hens & Nath 2005, p. 32).²⁹ Nonetheless, the aftermath of 9/11, the impending War on Iraq, and US President Bush's decision not to attend the summit overshadowed the WSSD. As symbolized by the lukewarm ambience of the WSSD (Hens & Nath 2005) and by the failure to ratify the Kyoto Protocol,"[i]n many ways, Rio+10 was a disappointment" (Murray 2006, p. 342).³⁰

²⁹ 'Type II partnerships' is one of the WSSD specific terminology. During the PrepComs (the Summit Preparatory Committees; like the Rio Conference, the WSSD was also preceded by four preparatory meetings, what is called, the PrepComs, which dealt with the process of setting the Conferences' agenda and determining their main themes) to prepare the WSSD, there were general terminology in order to describe the role of "partnership" between different actors (local, national and global governmental institutions; NGOs; the private sector; community organizations; etc.). These are: Type I actions and Type II partnerships. Type I actions are divided into "Type 1A" - dealt with in the proposed WSSD Political Declaration - and "Type 1B" - to be addressed in the Johannesburg Programme of Action. Type II partnerships are defined as a "series of implementation partnerships and commitments involving many stakeholders. ... These would help to translate the multilaterally negotiated and agreed outcomes into concrete actions by interested governments, international organizations and major groups" but little has so far been done to elaborate the workings of such partnerships, or about how to sustain them after the WSSD. All information came from Hens and Nath (2005, p. 26).

Currently the registration of the partnership and statistics of the registration are managed by UN Division of Sustainable Development. As of May 27, 2006, 322 type II partnerships are registered (United Nations Division for Sustainable Development 2006).

³⁰ According to Murray (2006, p. 342), "many saw Bush's decision not to attend the summit as a significant snub in terms of the international consensus which it was hoped was evolving" and "[i]n the long term the current administration's environmental stance is likely to be judged as the most backward-looking and self-interested in the history of the USA.

According to Hens and Nath (2005, pp. 15-28), the three major outputs of the Johannesburg are as following:

1. The Johannesburg Declaration on Sustainable Development. This is a political document that clarifies the Johannesburg vision of sustainable development and to pave the way for new negotiations (United Nations 2002a, see Appendix D)
2. Plan of Implementation of the WSSD (JPI). This is the core document of the WSSD that holds a list of actions, some with quantified targets, to be implemented to realize the Agenda 21 objectives set out in Rio (United Nations 2002b)
3. Type II partnerships. This is a proposal for developing new type of frameworks that allow civil society to make its contribution to the implementation of sustainable development

It is not difficult in comparison with Agenda 21 at Rio to realize the “lack of both originality and intellectual rigor” from these outputs (Hens & Nath 2005, p. 32) “with the partial exception of targets and dates for improved access to clean water and sanitation for the world’s poor” (Dryzek 2005, p. 149).

Still the implementation of the WSSD is an on-going process and its evaluation of whether or not it has been on the right track should be reserved for the long-term or next generations’ judgment. However, as Pallemmaerts (2005) points out relevantly, “one cannot escape a strong impression of *déjà vu* when analyzing the ‘outcomes’ of WSSD”. As Table 2 shows, the least consensual areas - globalization and means of implementation (finance and trade) - persist repetitively through the Rio Conference, the ‘Rio+5’ Summit, the Millennium Summit, and the Johannesburg Conference. The history of mainstream sustainable development seems to show that, it is the obstacles to sustainable development or what causes sustainability problems that certainly sustain.

Table 2 Draft plan of implementation as it emerged from PrepCom 4 in Bali. Summary of elements (sub-paragraphs) on which agreement was reached [from Hens & Nath (2005, p. 13).]

Chapter		Fully agreed	
		Number	%
I	Introduction	3	60
II	Poverty	40	89
III	Consumption/Production	53	80
IV	Natural resources	136	88
V	Globalisation	1	7
VI	Health	28	97
VII	Small island developing states (SIDS)	20	87
VIII	Africa	38	80
VIII.bis	Other regions	8	89
IX	Means of implementation		
	Finance	2	11
	Trade	4	15
	Technology-transfer	9	75
	Science	13	72
	Education	15	83
	Capacity building	6	86
	Info/decision-making	13	72
X	Institutional framework	70	68
Total		459	75

THEORIES AND PRACTICES ON SUSTAINABLE DEVELOPMENT

The history tracked along the line of UN conferences on sustainable development implies that there has existed a huge amount of theoretical debates behind the veil of international politics or diplomacy. The extent and depth of analyses that are needed to uncover the crux of such vast debates are beyond the scope of this study. Instead, the object of this thesis is, as the groundwork to extract useful insights and check points for the aspects of sustainable development or the characteristics of sustainable development issues, to provide a brief survey of literature focusing on four different research areas. First, analytical or theoretical studies of sustainable development according to historical

debates. Second, studies of how to establish a practical operational policies based on good indicators for sustainable development. Third, other research tendencies on sustainable development such as qualitative analysis, media coverage, and public opinion surveys. Fourth, archaeological/historical and contemporary case studies to find empirical evidences for sustainable development issues. Among them, this section is concerned with the first three areas.³¹ Mainly economists and ecologists participated in all these approaches while anthropologists or archaeologists showed limited interest in the last area. However, first three approaches provide unavoidable prerequisites for understanding the cultural context which determines the conditions of the onset of sustainability awareness in a community or state.

1) Analytical/Theoretical Issues on Sustainable Development

There have been proposed a number of definitions of sustainable development so far.³² The important aspect of the flood of various sustainable development definitions should be understood; definitions of sustainable development basically reflect the position of the scholars who participate in a series of debates in the theoretical progress in sustainable development discussion history.

As far as the definition of sustainable development is concerned, the definition of the Brundtland Commission, by emphasizing the importance of both intra-generational and inter-generational equity when people meet their needs - which is intuitively agreeable - but also by choosing simple ambiguity which obscures underlying complexities and contradictions, has brought about confusions over 'needs' that still characterize sustainable development discussions (Redclift 2005). Redclift (2005, p. 213) shows clearly these confusions by pointing to three problems: first, it is unlikely (as the definition implies) that the needs of future generations will be the same as those of the

³¹ The fourth area - review of case studies will be dealt with in the following separate chapter titled "Sustainable Development and Anthropology"

³² Among these, Pearce, Markandya, and Barbier (1989, pp. 173-85) provides 24 early definitions through 1980 - 1989. Murcott (1997) gives a list of 57 definitions from 1979 to 1997.

present generation; second, how needs are defined in different cultures and how can it be decided which course of action is more sustainable in a culture?; third, mainstream debate about sustainable development has been under the control of the rather exclusive system of knowledge favoured by the dominant science paradigm.

There is another debate on the definition of sustainable development. In a semantic sense, the concept of sustainable development “links what is to be sustained and what is to be developed” (National Research Council (U.S.). Policy Division. Board on Sustainable Development. 2000, p. 25). Even though there exist a variety of ideas about ‘what is to be developed’, there has been more controversies over ‘what is to be sustained’.³³ This is not because the matter of ‘what is to be developed’ is easier than that of ‘what is to be sustained’ but because, while the former is about ‘what people willingly want to change and they can do’, the latter is about ‘what people do not willingly want to change but they should do’. Economically speaking, the two common answers to ‘what is to be sustained’ are: 1) the natural resources; 2) present (or future) levels of production (or consumption).³⁴ First, as to ‘the natural resources’, Redclift (2005, p. 214) points out pertinently that the problem lies in distributional issues rather than in sustaining such ‘critical natural capital’. For, “natural capital, ‘critical’ or not, is usually owned by individuals, groups, or corporate interests” (Redclift 2005). This is important especially to anthropologists because “[t]he defense of common property resources in the face of relentless market pressures has been the source of considerable political struggle”

³³ For example, US National Research Council, Policy Division, Board on Sustainable Development (2000, p. 24) suggests three distinct elements for ‘what is to be developed’ - people (child survival, life expectancy, education, equity, and equal opportunity), economy (wealth, productive sectors, and consumption), and society (institutions, social capital, states, and regions). See Table 3.

³⁴ The most common answer to the question ‘what is to be sustained?’ would be ‘Nature’ or ‘Environment’. However, as Table 3 shows, the spectrum of the answers is more diverse; for instance, aside from nature or environment as life support systems, there are also “parallel demands to sustain cultural diversity, including livelihoods, groups, and places that constitute distinctive and threatened communities (Kates et al 2005). In addition, the matter of how to interpret ‘Nature’ or ‘Environment’ is deeply related with eco-centric (valuing nature for its intrinsic value) versus anthropocentric (valuing nature for its utility for human beings) ethical debates.

The natural resources are also known as ‘the natural stock of resources’ or ‘critical natural capital’.

(Redclift 2005), which has been always among main interests in anthropological researches (e.g., the description of struggling to defend their traditional land stewardship by the Cree in Northeastern Canada (Niezen 1998) or the story of Ok Tedi Mine in the mountains of Papua New Guinea (Townsend 2000)). Second, with regard to ‘sustaining the present (or future) levels of production (or consumption), attention should be paid to beyond the debate on ‘broadening the basis of consumption according to the growth of population’ versus ‘down-sizing or shifting the patterns of consumption. Because the production of most goods and services today is inherently unsustainable’, one should pay more serious attention to understanding and visualizing the patterns of everyday behavior or underlying commitments through which we enlarge our choices and reduce those of others (Redclift 2005). Again, this is a critical research area for anthropology because methods and tools provided by the discipline are particularly useful for answering the related questions such as “whether, or how, environmental costs are passed on from one group of people to another, both within societies and between them” (Redclift 2005). For instance, Kottak (2006a) provides an ethnographic study on how cleaner environment of the First World depends on the transfer of pollutants through the form of development in the Third World by multinational corporations (MNCs).³⁵

³⁵ In his well-known ethnographic study on Arembepe, a little community in Brazil - *Assault on Paradise*, Kottak (2006a) describes the local people’s ignorance of pollution by a MNC’s factory (Tibras, a titanium dioxide factory owned by a German-Brazilian corporation) because they think the factory makes a contribution to the economic growth in the community.

Table 3 Taxonomy of sustainable development goals [from Parris & Kates(2003).]

What is to be sustained	What is to be developed
Nature	People
Earth	Child survival
Biodiversity	Life expectancy
Ecosystems	Education
	Equity
	Equal opportunity
Life support	Economy
Ecosystem services	Wealth
Resources	Productive sectors
Environment	Consumption
Community	Society
Cultures	Institutions
Groups	Social capital
Places	States
	Regions

Moving on to the matter of linking ‘what is to be sustained’ with ‘what is to be developed’ invites one to a broader but more classic type of debate on the relationships between the natural resources (environment) and economic growth by human activities. This type of debate, also known as the Cassandra/Cornucopian debate (O'Neill 2001), has bifurcated the primary participants in sustainable development discussions. Cassandras, survivalists, doomsayers, pessimists, catastrophists, neo-Malthusians or environmentalists, ecologists are on the one side, and cornucopians, prometheans, optimists, panglossians, exemptionists or free-market economists are on the other side. For example, Meadows, Meadows, and Randers (1992) provide a definition of sustainability based on their Cassandra point of view. These ‘survivalists’ argue that there exists a limit for the capacity of the Earth to support life, especially human life and “humanity seemed to be

heading for the limits at an ever-increasing pace” (Dryzek 2005). On the other hand, prometheans believe that human ingenuity and technologies are boundless and overcome any problems including environmental problems. As Dryzek (2005, p. 51) points out, even though they do not claim that nature is limitlessly bountiful, they “do portray a Santa Claus natural environment at key junctures”. Recently, more refined type of this debate has appeared; generally referred to as “Environmental Kuznets’ Curves” (EKC) debate, many scholars take part in this on-going debate on complementarity between economic growth and the environment (Burgess & Barbier 2001). Originally, EKC was derived from “Kuznets Curve”, which was devised by and named after Simon Kuznets who first observed the relationship between income distribution (specifically inequality) and economic growth (specifically, per capita income) as shown in Figure 2 (Borghesi 2002).³⁶ At the beginning of the 1990s, while analyzing statistical correlations between per capita income and environmental deterioration, some researchers observed that the curves corresponding to these correlations typically go up and then down (see Figure 3) exactly like the Kuznets Curve (Vercelli 2006). Although there is hardly ever agreement among different studies and its very existence is doubtful (Borghesi 2002), the more serious aspect of the debate on the existence of the EKC in terms of sustainable development is its influence on policies. As Borghesi (2002) warns, “a misdirected growth policy based on acritical faith in the EKC could have large and potentially irreversible effects” on the environment.³⁷ There is another hidden layer in this type of

³⁶ According to Vercelli (2006), although early studies seemed to confirm that Kuznets hypothesis, but since the 1980s empirical support for it has steadily weakened.

³⁷ For example, Lomborg (2001) argues that, after showing some selected pollutants (particles such as smoke and soot, SO₂, O₃, lead, Nitrogen oxides like NO, NO₂, NO_x, and CO; i.e. mainly air pollutants) have decreased or have followed EKC - especially SO₂ and particles - during the past century in the industrialized countries, the same development will eventually happen in the Third World in the future. Even though he says by quoting the World Bank, “The key is not to produce less, but to produce differently” (Lomborg 2001, p. 177), he sounds like recommending economic-growth-priority policies to the developing countries by emphasizing “without growth it is not possible to support environmental protection” (Lomborg 2001). In the first place, a few air pollutants cannot represent “environmental degradation” which the EKC originally tried to depict in comparison with per capita income growth. However, in terms of development policy, the more crucial flaw of these scholars (who believes the

debate; in fact, as Redclift (2005, p. 215) explains, the above debates (survivalists vs. prometheans and the EKC) are within the economics-centered inheritance from the past, which confines sustainable development issues only under the reign of economic assumptions (scarce resources and technological benefits), economic subsystems, economic values, and economic languages.³⁸

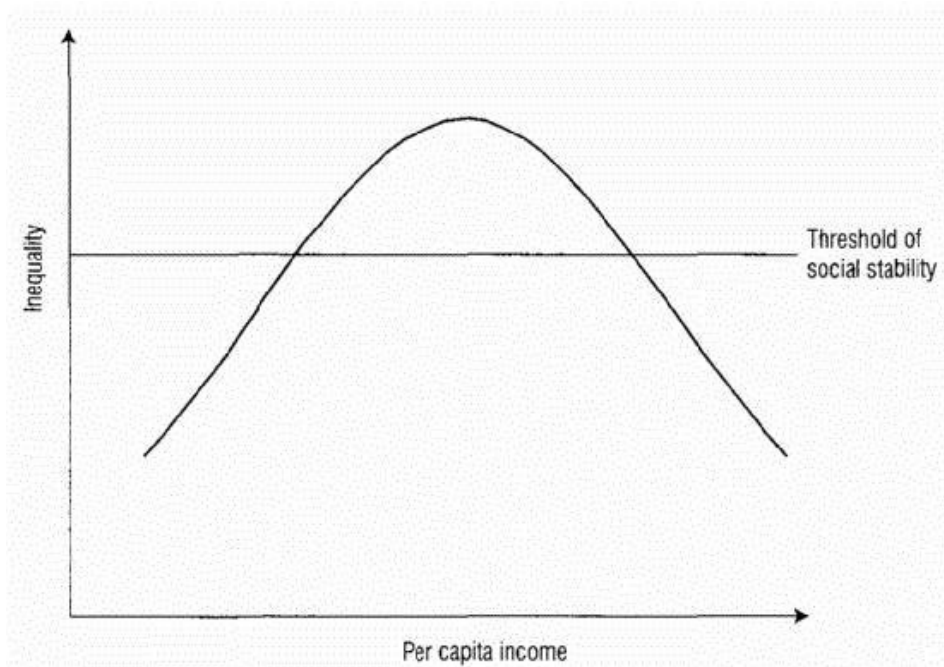


Figure 2 Kuznets Curve [from Basili, Franzini, & Vercelli (2006).]

existence of the EKC) is, Dryzek (2005, p. 69) points out pertinently, they ignore or do not realize the ‘phenomenon of displacement’, which means that improvement on one indicator in one place may mask deterioration in another because environmental affairs are complex and interdependent.. According to Dryzek (2005), there are three types of ‘displacements’: displacement across space, displacement across the media, and displacement across time. All the three displacement phenomena can take place between and within the North and the South.

³⁸ According to Redclift (2005, p. 215), the role of technology was principally that of raising output from scarce resources. In addition, one of the benefits of economic growth in a capitalist economy lay in legitimizing those who could overcome the obstacles to more spending and create more wealth. This assumption (scarce resources - technology - more spending & more wealth) sits with sustainability in the industrial North today. However, it is clear that much wealth is created in ways that undermining sustainability.

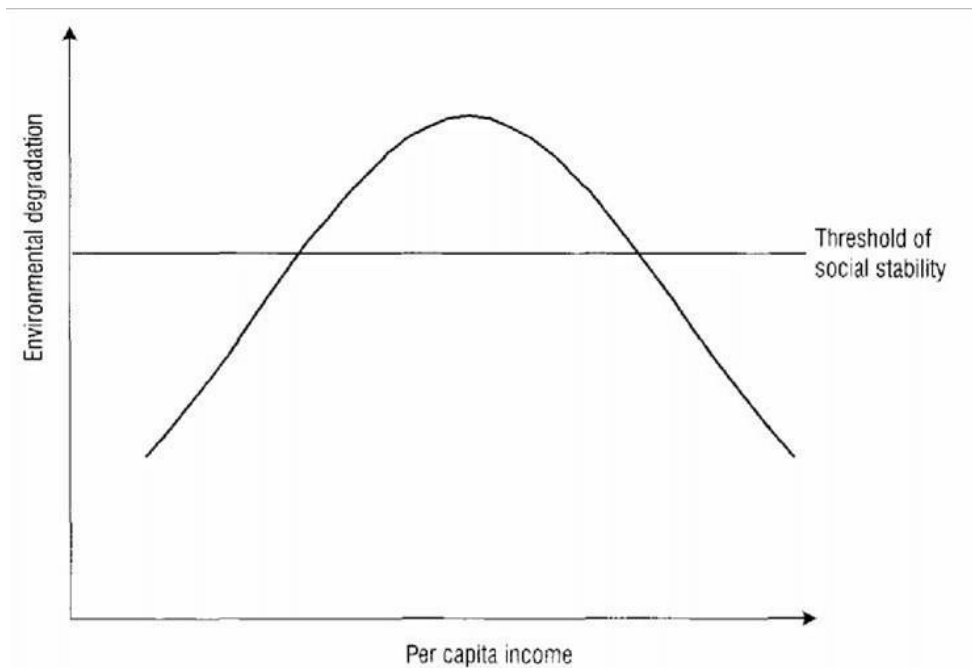


Figure 3 Environmental Kuznets Curve (EKC) [from Basili, Franzini, & Vercelli (2006).]

The second type of debate on the relationship between the environment and economic growth, deals with the relationships between natural capital and other forms of capital created by technology and innovation. Also known as weak and strong sustainable development, the extreme perspectives treat natural capital respectively as completely substitutable by other forms of physical or human capital (weak sustainable development) or as non-substitutable due to its intrinsic values which are irrecoverable (strong sustainable development). As Williams and Millington (2004) enumerate, weak sustainable development adopts an anthropocentric (human-centered) view on the relationship between people and nature, which is composed of three strands: the perception that people are separate from nature; the idea that nature is a 'resource' to be used for the benefit of people; and the view that humans have the right to dominate nature. On the other hand, strong sustainable development employs bio-centric egalitarianism, which requests radical alteration of our demand towards nature as well as our view of economic progress and development (Williams & Millington 2004). Applying weak

sustainable development to a real case study is given by Gowdy and McDaniel (1999), who show the Republic Nauru can be regarded as sustainable in terms of weak sustainable development in spite of the devastation of its environment.³⁹ This type of debate has gone further to the controversy over the role of endogenous system (public and private sectors that invest in human capital) in a long-term economic growth; for instance, ‘Endogenous Growth Theory’ argues that technical innovation within an economy (even a low-income and resource dependent developing country) should be possible, leading to substituting human and physical capital for a declining natural capital base in order to sustain economic opportunities and welfare indefinitely, provided that policy distortions, political instability, and institutional failures can be overcome (Pearce & Barbier 2000).⁴⁰ However, while seemingly supporting the weak sustainability view, endogenous growth theory shows not so much that resource dependency ought not to be an absolute barrier to low-income resource dependent economies (by endogenous innovations) as that how important the role of social systems in enhancing sustainability is.⁴¹ Even though the scale and the unit of analysis are usually different, innovation and its role in sustainable development is also an important issue in anthropology; for example, Stone (2003) presents the role of innovation as a central issue to an anthropological sustainability.⁴²

Although there are many other types of theoretical debates with regard to sustainable development, this section will close by mentioning one more debate on an once-

³⁹ The case study about Nauru will be discussed in ‘Sustainable Development and Anthropology’ section later in this thesis.

⁴⁰ According to Pearce and Barbier (2000, p. 32), essentially, endogenous growth theory has resulted from a vigorous debate about the role of technological innovation in long-term economic growth. A key feature of this model is that technological innovation - the development of new technological ideas or designs - is endogenously determined by private and public sector choices within the economic system.

⁴¹ Overcoming policy distortions, political instability, and institutional failures, that is exactly the central role of a well integrated social system.

⁴² Aside from innovation, Stone (2003) provides two other issues (although they are not exhausting list) central to sustainable development in terms of anthropological studies: persistence and responses to stress and shocks.

enshrined principle of sustainable development: the ‘precautionary principle’.⁴³ This principle means that if the consequences of an action are unknown, but are judged to have some potential for major or irreversible negative consequences, then it is better to avoid that action (Wikipedia 2006m). At first sight, it is not easy to understand why the JPI (Johannesburg Plan of Implementation for Sustainable Development) failed to include the Precautionary Principle, which had been adopted as one of the most important sustainable development principles in the Rio Declaration.⁴⁴ For, at least in the public health area, the power of this canon of ‘decide in favor of safety’ (the precautionary principle) “is undeniable: which legislators would publicly refuse to do all they could to guard the lives of their constituents?” (Wildavsky 1995, p. 8). The reason why this principle has engendered endless controversy in spite of its seemingly widespread political support is

⁴³ According to Wikipedia (Wikipedia 2006m), the precautionary principle is a phrase first used in English circa 1988.

The principle can alternately be applied in an active sense, through the concept of "preventative anticipation", or a willingness to take action in advance of scientific proof of evidence of the need for the proposed action on the grounds that further delay will prove ultimately most costly to society and nature, and, in the longer term, selfish and unfair to future generations. In practice the principle is most often applied in the context of the impact of human civilization or new technology on the environment, as the environment is a complex system where the consequences of some kinds of actions are often unpredictable (Wikipedia 2006m).

However, in the context of sustainable development, the precautionary principle goes beyond the aim of conventional environmental risk management that seeks to prevent damage to the environment once the risk of that damage is known or proved - that is better called *prevention* (Harding 2006). The original declaration of precautionary principle in the Rio Conference is as following:

In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation (United Nations General Assembly 1992, Principle 15).

⁴⁴ Hens and Nath (2005, p. 5) mention other notably still-valid Rio principles - the equity principle and the principle of subsidiarity as well as the precautionary principle. There are two principles that could not be reached to agreement of inclusion in the Johannesburg Conference, which had been among the 27 principles of the Rio Declaration: the Precautionary Principle (Principle 15), the Principle of Common but Differentiated Responsibility and the Ecosystems Approach (Principle 7) (Bachus 2005, p. 334).

partly because ‘precautionary’ decisions can be interpreted as veiled forms of trade protectionism but mainly because its adoption as a policy tool is extremely variable (Foster et al 2000).⁴⁵ Wildavsky (1995) rejects the precautionary principle completely based on the cultural theory of risk perception.⁴⁶ However, it seems more balanced position to let the precautionary principle be enshrined in international law and be destined to remain a permanent fixture in environmental and health protection, supplemented by providing guidelines to use it appropriately (Foster et al 2000).

2) Operationalization of Sustainable Development

Many practitioners of sustainable development concept already realized the importance of operationalization of the concept even before coining the term (e.g., Meadows and Club of Rome (1972) give visions for the operationalizing sustainability). The establishment of Agenda 21 after the Rio Conference entailed many visions or principles for sustainable development implementation; for example, new taxation

⁴⁵ Recent examples of this type of trade protectionism are disputes resulting from "precautionary" decisions to ban American and Canadian beef (because of the use of growth hormones) and to delay approving genetically engineered crops for sale in European markets (Foster et al 2000).

According to Foster, Vecchia, and Repacholi (2000), “[o]ne legal analysis identified 14 different formulations of the principle in treaties and nontreaty declarations”.

⁴⁶ Wildavsky (1995, p. 440) summarizes the ‘cultural theory of risk perception’ while opposing the precautionary principle as following;

With anthropologist Mary Douglas I wrote a book on risk perception called *Risk and Culture*, whose thesis is that individuals choose what to fear to support their way of life. Insofar as perception of the dangers of modern technology are concerned, the lead against technology is taken by people of egalitarian beliefs who wish to weaken corporate capitalism as the source of the inequalities they abhor. When Karl Dake and I tested a variety of theories (knowledge of danger, risk-averse personalities, and so on), the cultural thesis won hands down. Hierarchists fear social deviance, individualists fear regulation, and egalitarians fear technology.

Interestingly enough, the same logic - relied on, as anthropologist Liebow (2002) says, “insights offered by a number of scholars who argue that our views of what constitute environmental hazards worth worrying about are situated in a more encompassing scheme of social organization and value orientations” - is used by anthropologists, to advocate the ‘precautionary’ approach by lay people when they perceive environmental risk in ethnographic level; for example, Ervin (2005) provides applied anthropologists’ works on overcoming the dichotomy between the public and the experts group.

policies (Brown 2003), practical assessment of current global crisis (Lomborg 2004), and planet-wide cooperation (Sachs 2005).

However, one crucial prerequisite operationalizing sustainable development concept must be kept in mind. How appropriately can the current status of the environment be measured? This question is the matter of indicators of sustainability and there have been many proposals of such indicators; a few of them include ‘ecological overshoot’ (Wackernagel et al 2002), ‘World Development Indicator’ (World Bank 2003), a state-level indicator (Zoeteman 2001), and a thorough systematic set of indicators (Meadows, 1998). An empirical study by Hanley et al. (1999) shows well that different indicators lead to different policies. Contrary to the earlier trend - from valuing the environment to measuring sustainable development by economic approaches (e.g., Pearce and Barbier (2000, pp. 51-101) provide various methods like measuring wealth, modifying GDP, genuine saving, technological change, social capital) versus measuring sustainable development by ecological approaches (again by Pearce and Barbier (2000, pp. 102-29), the examples are: biodiversity indicators, species richness and extinction, resilience of ecosystems, and ecological carrying capacity) -, recent trend shows the tendency of more comprehensiveness by aggregating and/or integrating multiple indicators. One representative collection of contemporary sustainability indicators is the *Compendium of Sustainable Development Indicator Initiatives* (International Institute for Sustainable Development (IISD) 2006) which lists over 680 sustainable development indicator efforts.⁴⁷

⁴⁷ As of April 15, 2006, the web site shows 684 initiatives. Each initiative can be composed of various sets of indicators. For example, an initiative, ‘Human Development Report 1998: Consumption for Human Development (Human Development Index - HDI)’ comprises life expectancy at birth, adult literacy rate, gross enrolment ratio for schools, and GDP per capita.

Table 4 Characterizing and measuring sustainable development [Adapted from Parris & Kates (2003).]

Indicator initiative	Number of indicators	Implicit or explicit definition?	What is to be sustained?	What is to be developed?	For how long?
Commission on Sustainable Development ^a	58	Implicit, but informed by Agenda 21	Climate, clean air, land productivity, ocean productivity, fresh water, and biodiversity	Equity, health, education, housing, security, stabilized population	Sporadic references to 2015
Consultative Group on Sustainable Development Indicators ^b	46	Same as above	Same as above	Same as above	Not stated; uses data for 1990 and 2000
Wellbeing Index ^c	88	Explicit	"A condition in which the ecosystem maintains its diversity and quality—and thus its capacity to support people and the rest of life—and its potential to adapt to change and provide a wide range of choices and opportunities for the future"	"A condition in which all members of society are able to determine and meet their needs and have a large range of choices to meet their potential"	Not stated; uses most recent data as of 2001 and includes some indicators of recent change (such as inflation and deforestation)
Environmental Sustainability Index ^d	68	Explicit	"Vital environmental systems are maintained at healthy levels, and to the extent to which levels are improving rather than deteriorating" [and] "levels of anthropogenic stress are low enough to engender no demonstrable harm to its environmental systems."	Resilience to environmental disturbances ("People and social systems are not vulnerable (in the way of basic needs such as health and nutrition) to environmental disturbances; becoming less vulnerable is a sign that a society is on a track to greater sustainability"); "institutions and underlying social patterns of skills, attitudes, and networks that foster effective responses to environmental challenges"; and cooperation among countries "to manage common environmental problems"	Not stated; uses most recent data as of 2002 and includes some indicators of recent change (such as deforestation) or predicted change (such as population in 2025)
Genuine Progress Indicator ^e	26	Explicit	Clean air, land, and water	Economic performance, families, and security	Not stated; computed annually from 1950–2000

Parris and Kates (2003), through a review of twelve selected indicators (see Table 4) among over 680 such efforts, suggest four types of core questions to assess the sustainability indicators - the state of practice for characterizing and measuring sustainable development: 1) 'how is sustainable development defined in the indicator or set of indicators?' - definition; 2) 'why do they even bother to characterize and measure sustainable development?' - purpose or objective; 3) 'how are goals, indicators, and

targets selected?’ - salience, credibility, and legitimacy; 4) ‘how are indicators constructed?’ - methodology.⁴⁸

First, how is sustainable development defined? The result of the review draws three conclusions about this question: i) an extraordinarily broad list of items, ii) few efforts about the time frame and, if any, a clear bias toward the present, and iii) mainly deductive, or top-down approach.⁴⁹ Already mentioned in the history section, it is not surprising to such diversity, considering the ambiguity of sustainable development itself. The next result (a clear bias toward the present) seems not so much an unconscious opposition to the intergenerational equity principle of the Brundtland Commission’s definition of sustainable development, but a manifestation of the quantitative aspect of indicator building. The last point reveals that, in the first place, a definition or a set of principles of sustainable development are reached to a consensus through negotiation between stakeholders before these definitions drive their choice of indicators.

⁴⁸ Table 4 includes: United Nations Commission on Sustainable Development (CSD), Consultative Group on Sustainable Development Indicators, Wellbeing Index, Environmental Sustainability Index, Global Scenario Group, Ecological Footprint, Genuine Progress Indicator, U.S. Interagency Working Group on Sustainable Development Indicators, Costa Rica System of Indicators for Sustainable Development, Boston Indicators Project, State Failure Task Force, Global Reporting Initiative. The representativeness of their sample is important. According to their explanation;

We selected our sample of a dozen efforts to characterize and measure sustainable development to be both representative of the field as a whole and to illustrate the diversity of approaches to definition, motivation, process, and technical methodology. We explicitly wished to include efforts ranging from global to national to local scales; governmental to nongovernmental sponsorship; and frameworks that focus on administrative units (e.g., countries) to frameworks that focus on specific actors (e.g., corporations). We did not consider efforts that primarily characterized themselves as state of the environment reports (32, 33). Pragmatic considerations also limited our pool of candidates to those efforts for which we could readily acquire sufficient documentation and background information to support our review. As a result, our sample over represents global scale and U.S.-based efforts. (Parris & Kates 2003, p. 562)

If not an exhausting review of all of the over 680 indicator initiatives, their work is seminal in this rare research area - the study of sustainable development indicator itself.

⁴⁹ There are three exceptions to this strong tendency of focusing on the present or the very short time: the UN Commission on Sustainable Development (15-25 years), the Global Scenario Group (through 2050), and the Ecological Footprint (longer time scale) (Parris & Kates 2003).

Second (purpose or objective) and third (salience, credibility, and legitimacy) questions are closely related. For, as in any assessment circumstance, four major recognized purposes why a group characterize and measure sustainable development - decision making and management, advocacy, participation and consensus building, and research and analysis - can be pursued only by setting up goals, indicators, and targets accordingly. The process and methods with which these goals, indicators, and targets are set up are characterized by three attributes - salience, credibility, and legitimacy.⁵⁰ Parris and Kates (2003, p. 573, emphasis in original) explain these three attributes as following;

Salience refers to relevance of the measurement system to decision makers, *credibility* refers to the scientific and technical adequacy of the measurement system, and *legitimacy* refers to the perception that the production of the measurement system is respectful of stakeholders' divergent values and beliefs, unbiased, and fair in its treatment of opposing views and interests.

The result of the review by Parris and Kates (2003) shows the inchoate political naïveté among sustainable development indicators community in terms of these three attributes; in other words, “[t]he contrast between the dominant stated goal, to inform decision making, and the relatively weak efforts to ensure salience, credibility, and legitimacy is striking” (p. 577).

Last, the review of the methodologies to construct specific indicators displays that, the selection of key methodological elements (i.e. choice of data and its availability, spatial and temporal scale, selection of indicators, and the aggregation of indicators) is determined by the intended audience of each indicator initiative. Moreover, even though

⁵⁰ Parris and Kates (2003, p. 573, emphasis in original) explain these three attributes as following;

Salience refers to relevance of the measurement system to decision makers, *credibility* refers to the scientific and technical adequacy of the measurement system, and *legitimacy* refers to the perception that the production of the measurement system is respectful of stakeholders' divergent values and beliefs, unbiased, and fair in its treatment of opposing views and interests

the same set of basic indicators are used, according to the unit of analysis (i.e. associating, aggregating, and/or linking the indicators differently), the conclusions could be substantially different.

No matter how intensive or thorough a theoretical analysis of sustainable development may be, it is useless without practical implementation of the result of the analysis. In this regard, the area of sustainable development indicator building is crucial but is only in its inception stage. While the essential aspect of building indicators is quantitative, as the current trend of searching for comprehensive set of sustainable development indicators reveals, methodologically qualitative needs call for a central role that anthropology can play in this area.

3) Other Approaches to Sustainable Development

Some oppose the spread of sustainable development itself, regarding sustainable development and Agenda 21 as the 'secular bible of global free market'. Doyle (1998), for example, points out that the world-wide implementation of sustainable development concept can be co-opted by the industrialized countries and short-term profit oriented trans-national corporations.

There are also several studies that seek a meta-analysis of other researches of sustainable development; Pezzoli (1997) conducts a transdisciplinary review of sustainable development related literature, Mebratu (1998) presents a comparative review of institutional, ideological, and academic version of sustainable development concept, and Hopwood, Mellor and O'Brien (2005) gives a synthetic view of sustainable development studies by mapping different sustainable development views according to their relative positions in socio-economic equality and degree of being ecology or technology-driven tendency.

In contrast to the proliferation of quantitative approaches to study sustainable development, qualitative efforts are relatively few. An exceptional qualitative work has been done by Jabareen (2004) in order to "draw a knowledge map that increase the

understanding of the complexity of sustainable development” because the existing literature of sustainable development is scattered across different disciplines and is fragmented theoretically. His method is a set of qualitative tactics, what is called ‘metaphor making’, which is an inductive analysis technique comprising four steps: selected literature review, pattern recognition, making metaphors, and construction of the knowledge map (Jabareen 2004, pp. 625-26). By applying metaphor making to sustainable development literature analysis, seven metaphors (each represents a specific and different domain in the map) that construct the knowledge map of ‘sustainable development’ are identified: the ethical domain, the material domain, the social domain, the spatial domain, the political domain, the management domain, and the visionary domain. In summary, the main weakness of this approach lies on the accurate representation of this map. However, considering the fact that one of the main reasons why there are no practical indicator sets that are universally accepted is the confusion of terminology, data, and methods of measurement (Parris & Kates 2003), regarding the knowledge map as a designated abbreviation or address for the vast literature of sustainable development would be a good facility for multidisciplinary cooperation (Jabareen 2004).

Sustainable development reflected in media or in public opinion is another interesting subject of several sustainability scholars. For example, Lewis (2000) shows sustainable development is presented almost exclusively within an economic growth paradigm by examining newspaper articles from 1987 to 1997 and Valenti (2003) sketches the media coverage of the WSSD. Some scholars reveal understanding and perceptions of sustainable development by technological studies teachers (Elshof 2005) or by postgraduate student teachers (Summers et al 2004). However, none of the multinational level surveys measure public attitudes or behaviors toward sustainable development as a holistic concept (Leiserowitz et al 2005). Leiserowitz, Kates, and Parris (2005), nonetheless, by synthesizing and reviewing existing multinational and quasi-global-scale surveys (see Table 5) that have “a diverse range of empirical data related to many of the

subcomponents of sustainable development”, provide an insightful information on public representation of sustainable development.⁵¹ Their study finds that there is general public support for the main tenets of sustainable development but there are many contradictions amid the positive attitudes, and diverse barriers between pro-sustainability attitudes and individual/collective behaviors.⁵² It is interesting that their policy recommendation to overcome these barriers is, at least in the short term, to leverage the values and attitudes already dominant in particular cultures rather than to ask people to adopt new value orientations (Leiserowitz et al 2005, p. 35).

Needless to say, the list of approaches on sustainable development is too long to be articulated in a single study. To list a few more, however, there are a multidisciplinary trial to establish ‘sustainability science’ (Kates et al 2001), some attempts to make ‘sustainable development’ more specific research area such as ‘ecologically sustainable development (ESD)’ (Harding 2006) or ‘the environmental-social interface of sustainable development’ (Lehtonen 2004), and efforts to entail new methodologies (e.g., Singh 2004).

⁵¹ According to Leiserowitz, Kates, and Parris (2005, p. 23), these subcomponents of sustainable development are: development and environment; the driving forces of population, affluence/poverty/consumerism, technology, and entitlement programs; and the gap between attitudes and behavior.

⁵² There are three types of these diverse barriers provided by Leiserowitz, Kates, and Parris (2005, p. 34). First are the direction, strength, and priority of particular attitudes. Second relates to individual capabilities such as the time, money, access, literacy, knowledge, skills, power, or perceived efficacy to translate attitudes into action. Third is structural and includes laws; regulations; perverse subsidies; infrastructure; available technology; social norms and expectations; and the broader social, economic, and political context.

Table 5 Multinational or quasi-global-scale surveys [from Leiserowitz, Kates, & Parris (2005).]

One-time surveys		
Name	Year(s)	Number of countries
Pew Global Attitudes Project	2002	43
Eurobarometer	2002	15
International Social Science Program	2000	25
Health of the Planet	1992	24
Repeated surveys		
GlobeScan International Environmental Monitor	1997–2003	34
World Values Survey	1981–2002	79
Demographic and Health Surveys	1986–2002	17
Organisation for Economic Co-operation and Development	1990–2002	22

SUSTAINABLE DEVELOPMENT AND ANTHROPOLOGY

Past and Contemporary Sustainable Development and Anthropology⁵³

Even though they are not conducted fully in the title of sustainable development, there are some empirical studies of archaeological data related to sustainable development issues. Easter Island and a few Polynesian islands can be very attractive due to their isolation and accumulated archaeological data. Why are the archaeological studies on these islands relevant to sustainable development discussion? First, “the environmental

⁵³ Not all the case studies mentioned in this section have done by anthropologists. For example, many studies on Ester Island or Nauru were done by economists and Diamond may be called correctly a biologist. However, their researches are in part dependent on the existing studies by anthropologists and archaeologists to bolster their arguments; for instance, Brander and Taylor (1998)’s economic extrapolation of the Ester Island collapse during the 13th - 15th centuries is based on the previous pollen analysis by archaeologists.

constraints faced by those societies pose similar risks to contemporary societies, particularly in LDCs (Less Developed Countries), where there are relatively high rates of population growth and great economic dependencies on renewable resources” (Reuveny & Decker 2000, p. 284). Second, archaeology can play an important role of ‘education’ by showing the human choices and actions that led to particular outcomes and consequences on such islands (Kirch 1997, p. 39). Third, these studies provide a useful opportunity to compare between collapse (as in Easter Island) and sustainability (as in Tikopia) of a society in terms of natural resources and populations. Natural resources and population are among primary components of sustainable development discussions.

Archaeological Studies on Easter Island and other Pacific Islands

Brander and Taylor (1998) provide a good mathematical analysis of the collapse of prehistoric population and economy in Easter Island. Their work is considered as the first microeconomic model applied to Easter Island on a mathematical model. It is noticeable that, in their central component of the model – ‘open-access renewable resources’ (as a matter of fact, the interest in this issue - common property ownership - is one of main anthropological themes related to sustainable development) – they tried to address the question ‘why did the people in Easter Island continue to consume the palm trees which had originally been renewable at an exponentially increasing rate until the tree species was extirpated?’ (see Figure 4). Their implicated answer is reflected in the mathematical equations of the model, which assumes that people in Easter Island did not respond to changes in expectations of future prices of resources because of the ‘common property problem’ (Dalton & Coats 2000, p. 496). Moreover, their main questions are very interesting in comparative point of view and closely related to questions about other Polynesian islands’ sustainability issues; “why did environmental degradation lead to population overshooting and decline on Easter Island, but not on the other major islands

of Polynesia?”(Brander & Taylor 1998, p. 122) and why were the 12 so-called ‘mystery island’ in Polynesia once settled but abandoned by the time of European discovery?⁵⁴

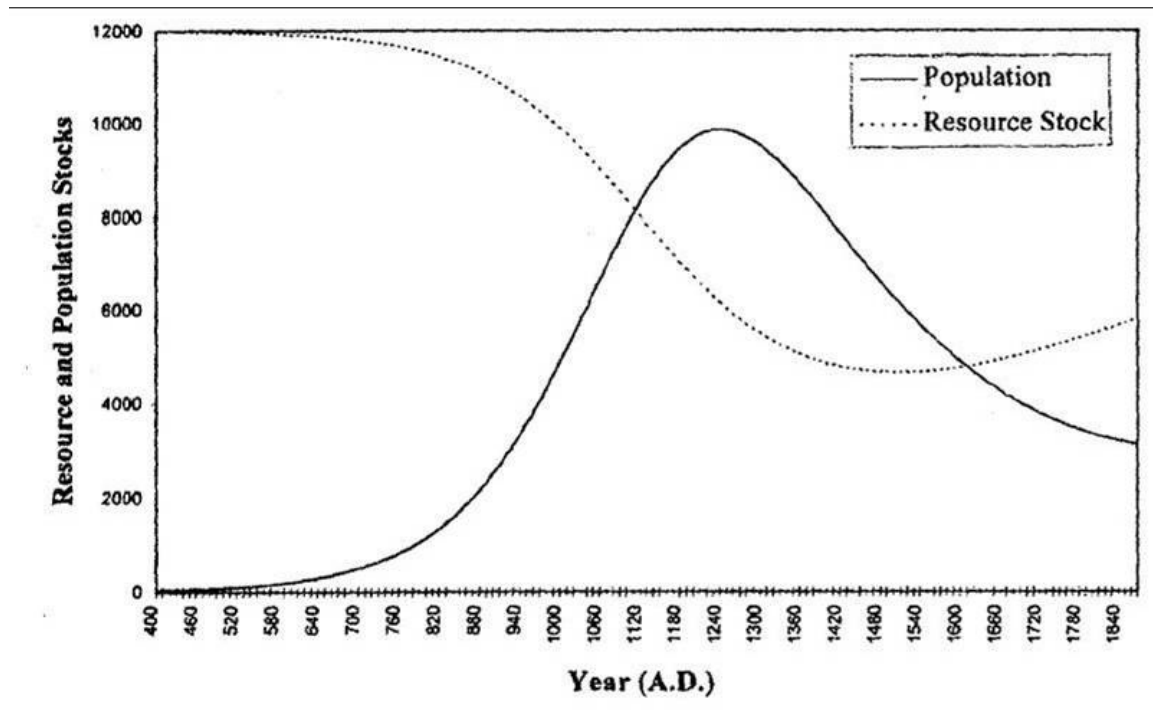


Figure 4 Easter Island base case [from Brander & Taylor (1998, p. 129).]

Similar studies include other mathematical simulations (Reuveny & Dcker, 2000), institutional reform hypothesis (Dalton & Coats, 2000), and a few comparative studies between Easter Island and other Polynesian islands (e.g., Erickson & Gowdy 2000; Kirch 1997; Rolett & Diamond 2004). The studies of prehistoric agriculture in Easter Island (Stevenson et al., 1999) and Moai quarrying (Dumont et al., 1998) can be supplementary to above studies. Among these, a comparative study about two Polynesian islands (Mangaia and Tikopia) was carried By Patrick V. Kirch, which is useful when compared

⁵⁴ According to Diamond (1985, p. 764), there are at least 12 uninhabited islands that had previously been occupied by Polynesians and then abandoned. They include Pitcairn, Handerson, Norfolk, Raoul, Nihoa, Necker, Palmerston, Suwarrow, and several of the Line Islands. However, the composition of the 12 ‘mystery islands’ is different according to the researchers. For example, Bishop Museum (Bishop Museum 1995) includes Baker and Howland Island for the 12 mystery islands.

to the case of Easter Island. Since 1980s, Pacific archaeology has flourished mainly due to the ecological interest (Kirch 1997, p. 30). Contrary to popular opinion that the islanders in Pacific Ocean are peaceful conservators of their island habitats and resources, archaeological researches conducted over the past decades show how dramatically once robust ecosystems can be changed by human settlement; therefore, archaeological studies like Kirch's can shed considerable light on how the sustainability issues were dealt with even when there was no conscious use of sustainability concept. The two islands – Mangaia and Tikopia – show the considerable environmental contrasts. First, while Mangaia has land area of 52 square km, Tikopia only occupies 4.6 square km. Second, in terms of geologic age, Mangaia is several orders of magnitude older than Tikopia, which is critical to the human settlements because the effect of long weathering in Mangaia has made the island poor in phosphorus availability that is a critical factor in soil nutrition whereas Tikopia has been abundant in soil nutrient level (Kirch 1997, p. 32). Third and last contrast is in their marine resources, which also give Tikopia far more fecundity with a highly productive reef ecosystem. The results of reconstruction of ecological histories of the two islands from archaeological data are shown in Figure 5 (Mangaia) and Figure 6 (Tikopia). The point that especially attracts one's attention is the remarkable similarity after beginning of the Polynesians arrival and the noticeable difference of demographic transition after depletion of forest resource. What do these similarities and differences imply about sustainability in terms of cultural characteristics? Why did the two islands' population change differ – one (Mangaia) is overshoot and collapse, whereas the other (Tikopia) is only minor oscillation -, even though both of islands' people transformed the original ecosystems irrecoverably alike? As Kirch (1997, p. 32) claimed, "it was the differing social and cultural responses of Mangaians and Tikopians to these ecological changes – especially their strategies for dealing with population growth and regulation – that is of the greatest anthropological note". One can notice in Figure 6 that there exists a unique element called 'tree crops' in Tikopia by Kirch, which is actually a remarkable system of arboriculture described as 'orchard gardening' by Firth (1963). Virtually the

entire land area for cultivation covered by various economic trees, protecting and shading intensive undercanopy plantings such as aroids, yams, taro, and other crops (Kirch 1997, p. 35). Moreover, according to Firth's elaborate description and diagrams of the Tikopians' garden plan (1963, pp. 343, 52-53), most of the arable land area is roughly equitably distributed among the clans and family members. The arboriculture system of Tikopia can be promoted as a model of sustainability even to the modern agronomy. However, the remarkable achievement of sustainability of Tikopians cost them much sufferings, which mainly include strict and harsh population control mechanisms such as celibacy, prevention of conception by the method of *coitus interruptus*, abortion, infanticide, sea-voyaging, and war (Firth 1963, pp. 373-74). Considering the common Polynesian traditions, these cultural adaptations in regard to population control wouldn't have cost as much as the institutional rearrangements suggested by Dalton and Coats (2000). Nevertheless, there still remains one fundamental question. In spite of more fertilized soil and productive marine resources, "why did Tikopia not follow the more familiar courses of Easter Island and Mangaia, with population growth outstripping resources, leading to severe degradation of the environment?" (Kirch 1997, p. 36). Kirch's conclusion is somewhat vague and speculative; the important factor is 'scale', both geographic and social. One can walk around the entire coast line of Tikopia in half-a-day or less. Everyone knows each other literally face to face in Tikopia, while Mangaia, though by no means a large island, is just big enough that its valleys can each encompass a social world (Kirch 1997, p. 38). Needless to say in Easter Island, which is three times the size of Mangaia, the 'oneness' of mentality such as in Tikopia could not be developed.

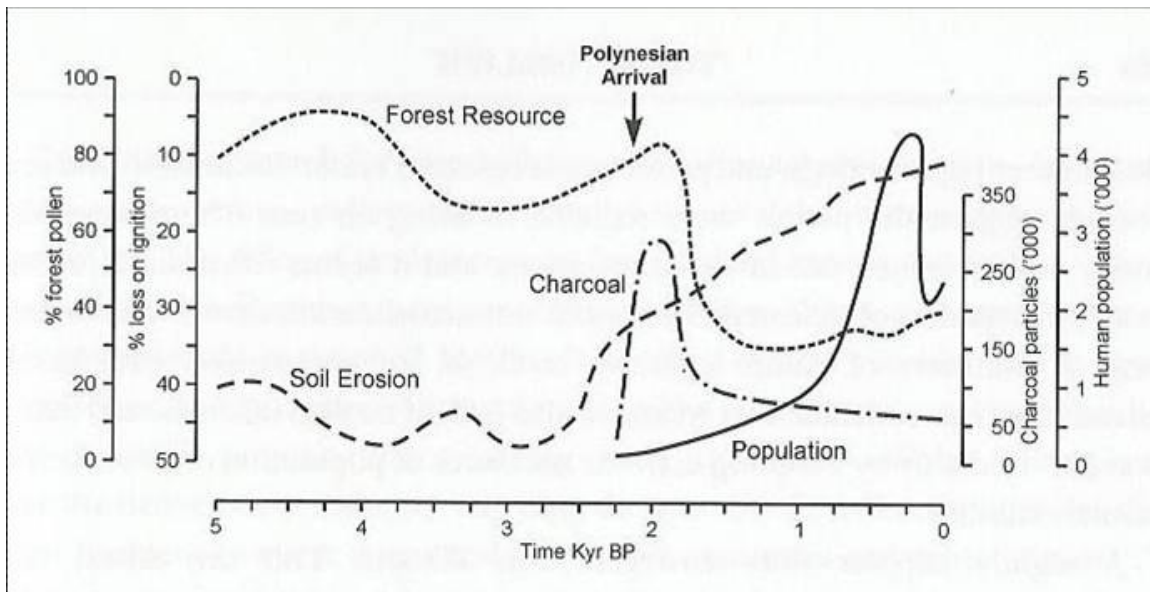


Figure 5 A diagrammatic model of some of the main signals of environmental change on Mangaia over the past 5,000 years [from Kirch (1997, p. 35).]

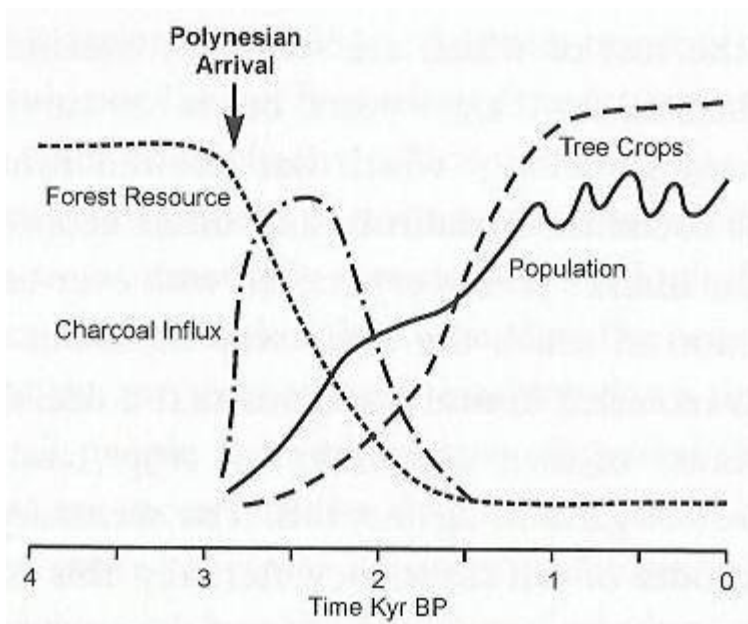


Figure 6 A diagrammatic model of some of the main signals of environmental change on Tikopia over the past 3,000 years [from Kirch (1997, p. 38).]

As it will be discussed in the section about the study of indigenous peoples by anthropologists, the relationship between natural resource management and institution of common property ownership is one of the central areas to which anthropology can contribute significantly regarding sustainable development. Moreover, these studies on Polynesian pre-industrial islands are unique in that they provide rare opportunity to compare the past and the present practices in terms of property ownerships and also can supply researchers with diachronic approaches, which is important as “the third stage of ecological anthropology” (Orlove 2006).

One of the latest researches on sustainability of Easter Island is a statistical analysis by Rolett and Diamond (2004). Deforestation and forest replacement are major concerns for them; “how can one determine which environmental factors predispose towards deforestation and which towards replacement of native trees with useful introduced tree species?” (Rolett & Diamond 2004, p. 443). To address their main question, four types of statistical analysis are conducted to relate two outcome variables (deforestation and replacement) to nine independent variables (rainfall, elevation, area, volcanic ash fallout, Asian dust transport, makatea terrain, latitude, age, and isolation) for the data set of 81 sites on 69 Pacific islands from Yap in the west to Easter Island in the east, and from Hawaii in the north to New Zealand in the south.

The results of the analysis can be summarized as follows:

Positive correlations with deforestation and/or forest replacement:

latitude (negative correlation with replacement), age, isolation

Negative correlations with deforestation and/or forest replacement:

rainfall, elevation, area, volcanic ash fallout (tephra), Asian dust transport, makatea terrain

Of the 69 islands, Easter Island has:

- the lowest tephra
- the lowest dust fallout
- the second greatest isolation
- the third highest latitude
- no makaeta
- relatively low
- relatively small
- relatively dry

Consequently, Easter Island has the third highest deforestation score, exceeded only by Necker and Nihoa, which also ended up completely deforested. The conclusion of the statistical analysis of 69 Pacific islands is that, “Easter’s collapse was not because its people were especially improvident but because they faced one of the Pacific’s most fragile environments” (Rolett & Diamond 2004, p. 445).

However, it would be too hasty to regard the statistical result as a determinate explanation for the unsustainability of Easter Island. First, the result comes from only environmental variables. In fact, Rolett and Diamond (2004) also suggested the importance of social differences among the islands from the residual analysis. Second, the initial deforestation conditions are dependent upon only the uncertain records of the early European contacts. Third, the seemingly worst environmental condition except two of Easter Island only reflects a relative rank among 69 Pacific islands which are likely to have more favorable conditions for the human settlement than any other regions in the world.

In summary, these studies show that the sustainability of Easter Island collapsed due to erodable renewable resources (trees) and delayed response by the society, slow-growing resource base, absence of institutional reformation, too big geographic or social scale to be ‘one’, and environmental factors such as rainfall, elevation, area, volcanic ash fallout, Asian dust transport, makatea terrain, latitude, age, and isolation.

However, historical analysis study to find the causes of failed sustainability in societies has hardly been conducted. Tainter (1998)'s study of collapses of complex societies and Diamond's works (1997, 2005) can be listed among the rare studies. On the other hand, contemporary case studies are ample, especially in the context of a number of economic development projects aided by UN, World Bank, or other international institutes (Slocombe, 1993). The analysis of Nauru (Gowdy & McDaniel, 1999) is an example of theoretical application of sustainable development concept.

The Republic of Nauru, formerly known as Pleasant Island, is an island republic in the South Pacific Ocean. It is one of the world's smallest independent countries both in terms of population and land area (according to Wikipedia (2006), 13,048 of population in 2005 and total 21 km²). Nauru can be actually regarded as a big phosphate rock (as a raised atoll). Natural fresh water resources are limited; therefore, islanders are mostly dependent on a desalination plant. Intensive phosphate mining during the past 90 years has left the central 90% of island a wasteland. However, phosphate production has declined since 1989 as demand has fallen and as the mining cost of extracting remaining phosphate increases, which makes it less competitive. Although GDP per capita (estimated \$5,000 (Wikipedia 2006)) from the earning of mining has been the highest in the Third World, the waste of the huge earnings from mining due to mismanagement and corruption in the 1990s makes the future of Nauru uncertain. Gowdy and McDaniel (1999) claim that Nauru case "shows clearly that applying the weak sustainability criteria is consistent with a situation of near complete environmental devastation". At least the case of Nauru seems to give more credential to the strong sustainability than the weak sustainability.

Contemporary Studies on Sustainable Development by Anthropologists

Since the time of Cornell University's Viscos Project in Peru in the 1950s, there has been an ongoing family dispute between academic anthropologists and development anthropologists over labeling development anthropology as the discipline's 'evil twin'

(2002, p. 299). Despite this, “[d]evelopment, both for impoverished American communities and through U.S.-sponsored international aid programs, has been a major focus for some university-based anthropologists” in U.S. anthropology (Ervin 2005, p. 22) and it has been always in the center of involvements by anthropologists in Australia, China, Mexico, Central America, and British anthropology (pp. 26-28). Anthropological involvement in many development projects shows the complex aspects of sustainable development. Issues about indigenous peoples, their relationship with development projects, and especially their customary practices or institutions for property ownership are typical anthropological subject (Berkes et al 2006; Brosius 2006; Maybury-Lewis 2006; Nazarea 2006; Sawyer 2006). Some anthropologists participated as a key player in planning a national level sustainable development project (e.g., Bozzoli 2000) while others contributed to sustainable development issues indirectly based on their own ethnographic studies. For example, Brosius (2006) helped interpret indigenous knowledge properly by criticizing the way of representations of indigenous knowledge by environmentalists. Ferguson and Lohmann (2006) point to the inevitable failure of politically created and mediated development by revealing the fact that “government development projects cause social as well as environmental problems”. Some anthropologists show conflicts between environmental conservation and ethnoecology by demonstrating “how protected area models both contradict and complement local ideas of land management” (Haenn 2006, p. 203; Haenn & Wilk 2006). Kottak (2004) points out the importance of the balance between environment and development by comparing an overdose of environmentalism example with developmentalism-dominated case and Wilk (Wilk 2006) focuses on the global consumer culture as the central sustainable development issue by disclosing the long inevitable chains of connections between what is consumed and the natural environment on the strength of political ecology.

Theoretically speaking, considering the broad scope of implementing or operationalizing sustainable development exemplified by hundreds of sustainability indicators sets for Seattle, upper Austria, New Zealand, or other global regions which

encompass almost all aspects of people's life (Bossel 1999), it is hardly possible to detach anthropological works from sustainable development just as anthropology cannot escape from humanity. However, the contribution to sustainable development by anthropology is not confined to case studies or ethnographic byproducts. On the contrary, most of fundamental theoretical issues on sustainable development are within the discipline's main analytical traditions.

Challenges from Sustainable Development and Anthropology

To begin with, regarding the definition of sustainable development, especially about the 'needs' complexities or contradictions (see p. 33) in the Brundtland Commission's well-known definition, anthropology is theoretically and empirically well positioned to deal with the questions which have been ignored in mainstream sustainable development discussions such as 'how are needs defined in different cultures and how can it be decided which course of action is more sustainable in a culture?' Intensive ethnographic studies help anthropologists to be able to depict vividly what are the needs of peoples (whom anthropologists study) and go further to compare different peoples' different needs if an anthropologist conducted field works in multiple areas. For example, Kottak (2004, p. 501) shows clearly how "the interaction of global processes with the ecological and social characteristics of particular places [e.g., Arembepe⁵⁵, Ivato⁵⁶] and of sectors [e.g., fisheries, agriculture, herding]" shapes differently and uniquely the needs of local peoples; Stone (2003) reveals the trends by anthropologists of calling for "more fine-grained and local definitions of sustainability" - sustainable livelihood⁵⁷ - which share a

⁵⁵ Arembepe is an Atlantic coastal community in the state of Bahia, Brazil. See Kottak (2006a) for detailed field work processes and results.

⁵⁶ Ivato is a Betsileo village in the south-central highlands of Madagascar. See Kottak (2004) for brief explanation of his field works here.

⁵⁷ Stone (2003) introduces 'sustainable livelihood' as following;

A livelihood comprises the capabilities (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope

common focus on “the central role of social systems enhancing sustainability”; and Gupta (2006) even argues that the imminent needs of the desperate South makes them “export sustainability⁵⁸” to the North in order to meet the needs of their present.

As to ‘poverty’ issues that emerged as a central subject of discourses in mainstream sustainable development history since Rio, anthropologists’ contribution is also unique and critical. For example, while describing his fieldwork among Kekchi Maya swidden farmers in southern Belize, Wilk (2006) argues that the process of poverty awareness may not be the intermediate phenomenon before achieving sustainable development but a backward degradation from once sustainable community to unsustainable one by the influence of the North’s discourses on industrialization, development, consumer culture, or environmentalism. As Wilk (2006) states,

Perhaps the most fundamental cultural change I have seen among Kekchi people has been that as commodities have become a larger part of their lives, they have come to believe themselves to be *poor*. In 1979, ... Most Kekchi has no sense that they lacked basic necessities or lived an inferior lifestyle. Twenty years later, it is common to hear Kekchi people state in public that “we Indians are poor because ...” ... it is said people accepting, even rhetorically, a foreign definition of poverty measured in cash and consumer goods, because this definition implicitly devalues Kekchi culture and self-reliance (pp. 424-25, emphasis in original).

However, this line of analysis should not be regarded as advocating the classical anthropological arrogance of pursuing purity of ‘my tribe’. At the same time, as Stone

with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base (cited in Scoones 1998)

⁵⁸ Gupta (2006, p. 304) explains this phenomenon of ‘exporting sustainability’ as following;

Developing countries export sustainability while industrialized countries import it at the cost of the former. This discounts the future of the South and passes on the immediate costs of environmental degradation onto the world’s poor living on the margins of their environment (cited in Kothari & Kothari 1993)

(2003, p. 95) warns, anthropologists “must remember that [their] sustainable, environmentally friendly systems that have persisted from the past may merely be overseeing the chronic reproduction of a poverty class”.

The area of the relationships between the environment and human beings (or their culture/society) or how to link ‘what is to be sustained’ with ‘what is to be developed’ has always been among the main research topics of anthropology. What is called ‘ecological anthropology’ or ‘environmental anthropology’ has significantly contributed to maturing of sustainable development concept and refining its issues and matters. Recognized weaknesses of these ecological approaches - as Moran (2006) summarizes, reification of the ecosystem⁵⁹, the calorific obsession⁶⁰, ignoring historical factors⁶¹, the role of individuals⁶², problems of boundary definition⁶³, and level and scale shifting⁶⁴ -

⁵⁹ This is the tendency of some authors who try to reify the ecosystem and to transform the concept into an entity having organic characteristics, which is similar to earlier ‘superorganic’ approaches in anthropology (Moran 2006). According to Moran (2006, p. 19), ‘when an ecosystem is viewed as an organic entity, it is assigned properties such as self-regulation, maximization of energy through-flow, and having “strategies for survival”’. Few anthropologists would accept the third notion - ‘having strategies’ but the first notion - ‘self-regulation’ is still problematic because it distracts us from more fundamental concerns about ecosystems.

⁶⁰ This notion of ‘calorific obsession’ criticizes the tendency that “[m]any young scientists took great pains to measure energy flow through ecosystems under the assumption that energy was the only measurable common denominator that structured ecosystems and that could serve to define their function” (Moran 2006, p. 19)

⁶¹ This is one of the most common criticisms against ecological approaches. It means the rarity of more diachronic ecological studies.

⁶² “Ecosystem approaches have tended to focus on the population and neglected the decision-making activities of individuals” (Moran 2006, p. 21).

⁶³ This is a well-known weakness of ecosystem approaches. Investigators may set boundaries arbitrarily after considering good reasons like whether the exchanges within the system are greater than those outside but the problem of the existence of ultimate assumption that ‘ecosystem equilibrium’, ‘ideal climax’, or ‘homeostasis’ exists still remains (Moran 2006; Townsend 2000).

⁶⁴ This is about the tendency of shifting levels of analysis both within a researcher’s study and between disciplines. For example, most scientists understand one level of analysis in terms of others and biologists and anthropologists deal with systems of very different scales in space and time by using the same tools of analysis - ecosystem (Moran 2006, p. 23)

have been tried to overcome by, for instance, ‘the new ecological anthropology’⁶⁵, approach by Kottak (2006b) and ‘the political ecology’⁶⁶.

Not only do discipline’s methods and tools challenge anthropology, but sustainable development itself also tests anthropologists. Although “[i]n many ways the concept of sustainability would see to be an anthropologically friendly one by extending measures of development beyond purely economic criteria and incorporating goals, not only of environmental protection, but of social equity” (Stone 2003), the indispensable integration of globalization and sustainable development can challenge anthropologists. An anthropologist expresses this anticipation as following;

Beset by these age-old problems of defining scales, measurements, and boundaries - is it the global or the local system or some incoherent combination of both - anthropologists may well decide to leave the practitioners of sustainable development to struggle with the concept without [them], as [they] largely did with earlier research slogans like “global environmental change”. These earlier versions of sustainability may well have been too global for many anthropologists. The future of the planet may have little to do with particular people and their quality of life at particular times. Still, [anthropologists’] models of sustainability cannot arbitrarily place boundaries on “local systems” and overlook important aspects of broader systems in which [their] local people operate (Stone 2003, p. 94).

Then, what is needed to deal with sustainable development and globalization embedded in it by anthropologists? As Stone (2003, p. 94) asks, ‘are anthropologists trying to preserve traditional values and institutions because “anthropology’s traditional attention to the close observation of particular lives in particular places has an enduring

⁶⁵ According to Kottak (2006b), the new ecological anthropology adopts a series of high-tech research methods (e.g., satellite imagery, GIS, and other computer software) as well as ‘linkage methodology’ which is multilevel, multisite, and multitime approach.

⁶⁶ Two major theoretical thrusts have most influenced the formation of political ecology - political economy and ecological analysis (Greenberg & Park 1994). Political ecology significantly expands much ecological analysis by assuming that natural environments or ecosystems are in large part social constructs (Stonich & DeWalt 2006, p. 284) or by taking into account other societies as part of the environment (Townsend 2000, p. 51).

importance” (Kottak 2004, p. 503)? Or “can [they] contribute a more dynamic view” (Stone 2003, p. 96)? Fortunately, these do not seem mutually exclusive positions. Considering the role by environmental anthropologists as major players in sustainable development among applied anthropology (and among the whole discipline), a great deal of interest in these sustainable development related new directions by anthropologists shows that anthropology has been and will be a major player in as well as a key contributor to sustainable development both theoretically and practically.

FINDINGS FROM THE LITERATURE REVIEW: THE ASPECTS OR CHARACTERISTICS OF SUSTAINABLE DEVELOPMENT AWARENESS

From the review of sustainable development history, theories/practices on it, and the various approaches to it by anthropology, a list for the aspects or characteristics of sustainable development awareness - List of Indicators for Sustainable Development Awareness (LISDA) - can be developed as following:

List of Indicators for Sustainable Development Awareness (LISDA)⁶⁷

- a) Appearance of the voice for the rights of future generations in terms of the environment and development
- b) Advancement of environmental discussions beyond the level of anti-pollution campaigns (mainly by the appearance of advanced environmental movement organizations armed with a new environmental ethics)
- c) Popularization of the debates on the relationships between the environment and economic growth

⁶⁷ the LISDA was composed by this author. The study on the aspects or phenomena that appear when a community or society becomes aware of sustainable development issues is yet new in sustainable development research areas.

- d) Appearance of governmental or non-governmental organizations which incorporate sustainable development concept into their core slogan or charter directly or indirectly
- e) The community-level salient event/change that introduces SD related debate/discussion, collectively by majority of members of the community
- f) Influx of global environmental agreements or environmentalism, which catalyzes debate on economic growth versus environmental preservation
- g) Emergence of environmental or environment-tangled-with-development issues as a central determinant in national or local politics
- h) Transboundary phenomena regardless of scales or levels - i.e. the emergence of transnational environmental issues, trans-provincial environmental issues within a country, or trans-community issues within a region
- i) Emergence of taking initiatives about environmental protection by the actors who caused environmental problems
- j) Appearance of new governance in implementing development agenda, for example, by NGOs, public participants, etc.
- k) Emergence of the new perspective which interprets environmental problems as distribution or inequality matters
- l) Appearance of extreme and innovative reactions to environmental problems by non-affected parties such as religious organizations
- m) Appearance of new actors who interpret differently the property ownership relations which, until that time, have been only determined by traditional regulations/laws/customs AND they actively participate in the transformation of the property ownership relations
- n) Appearance of request for fundamental change/transform of the primary form of subsistence

- o) Local-type of globalization (broad meaning) occurs: community loses ability to be self-sufficient
- p) Appearance of unprecedented trend of multidisciplinary studies in academic circles
- q) Awareness of reaching a boundary or limit (e.g., carrying capacity) in terms of erodable renewable resources and a slow-growing resource base
- r) Awareness of the existing institution's inability⁶⁸ to cope with rapid changes brought by⁶⁹
 - r-1) 'damage that people inadvertently inflict on their environment' and/or
 - r-2) 'climate change' and/or
 - r-3) 'hostile neighbors or decreased support by friendly neighbors' and/or
 - r-4) 'competitive resorting to non-subsistent belief' such as Moai construction in Easter Island

These candidate aspects or characteristics of sustainability-issues-aware community (or society) seem arbitrary or solely dependent on investigators, and they do bear scrutiny by more rigorous and diverse studies; even so, let this study conclude by an inchoate effort to sort out these factors as following:

1. Internal factors (boundary-reaching phenomena):

⁶⁸ This 'inability' is mainly integrated with common property ownership to natural resources.

⁶⁹ Among these factors, four factors - 'damage that people inadvertently inflict on their environment', 'climate change', 'hostile neighbors', and 'decreased support by friendly neighbors' came from Diamond's (2005) five set of factors how and why societies, if once prospered, collapsed. The last factor that he presents is 'society's responses to its problems'.

Awareness of sustainability, consciously or un/sub-consciously, originates from internal causes; for example, q), r-1), or r-4) are obviously internal.

2. External factors (trans-boundary phenomena):

Awareness of sustainability, spontaneously or forcefully, results from external forces or influences; for instance, f), h), or r-3) can be classified in this definition.

Many factors, nevertheless, are not certain about to which of the two they are to belong, not only because of their own ambiguity of origins but also because of the difficulty in reaching a consensus on how to define 'boundaries'; however, it does not seem an oversimplification to conclude that, the past, pre-industrial communities/societies' awareness of sustainability can be mainly explained by internal factors except the factor r-3) as exemplified in Polynesian islands (see the previous past case studies section) or early civilizations like Mesopotamia, the Maya, or the Hohokam (e.g., Redman 2006), while contemporary flood of sustainable development or sustainability awareness should be regarded as caused mainly by external factors.

Moreover, the above factors, i.e., aspects or characteristics of sustainable development aware community (or society) cannot be the exhaustive list. The results of more contemporary (in particular, from the developing countries) case studies should be added. More attention should be paid to not so much the recent developing projects as the historical context. For, as the Saemangeum Project will reveal, a contemporary development project can have a long historical background that has shaped the project as it is. Another concern is that the factors in the LISDA are not categorical criteria that divide a society into before and after sustainable development awareness. Some factors (especially internal factors) may appear long before other factors emerge. However, that does not mean that such factors (that appear before the contemporary sustainable development issues emerge) are not relevant as an indicator of sustainable development

awareness. Rather, the distribution of some factors may reflect the uniqueness of the society or community.

Somehow, the LISDA can be used as a starting point to review a community or society to show whether it becomes aware of sustainable development. South Korea in the middle of the controversy over the Saemangeum Tideland Reclamation Project should be a promising case for an application of the LISDA, considering the project's salient position in economic development history in South Korea. Next two stages of this thesis - the history of tideland reclamation in Korea and the Saemangeum Project - will review the change and development of Korean society in terms of tideland reclamation with the factors in the LISDA. That will show why the Saemangeum Project is at the very instant when people in (South) Korea became aware of sustainable development and how the project is intertwined with the diverse processes of the awareness.

THE HISTORY OF TIDELAND RECLAMATION IN KOREA

BACKGROUND: KOREA AND TIDELAND

Korea, South Korea and Saemangeum

To disambiguate its usage, it is clearer to use Korea only as a geographical area located on the Korean Peninsula in Northeast Asia and as a civilization or past dynasty after which the place - Korea - was historically named. The Political division - South Korea (also as known as Republic of Korea (ROK)) and North Korea (Democratic People's Republic of Korea (DPRK)) - caused by the distorted independence process from Japanese colonization due to two Cold War superpowers -, singled out the peninsula as the only ideologically divided region in the world since the reunification of Germany in 1990.⁷⁰ (see Figure 7) While North Korea has recently become notorious for its designation as one of the 'axis of evil', South Korea is famous for its amazing economic growth for the last four decades symbolized by one of the representatives of 'the East Asian Miracles' (World Bank 1993).⁷¹ The area of 98,480 km² in South Korea is similar in size to that of Iceland, Hungary, or Portugal and its population of about 48 million raises it as the third most densely populated country in the world.⁷² Given that 70% of South Korea's land is mountainous and only 30% of primarily its west and south lowlands have a agricultural potential and are utilized as croplands or residential areas, the pressure on and pursuit of land by people in South Korea can be regarded as the most demanding around the world.

⁷⁰ See Figure 8.

⁷¹ The term "axis of evil" was used by United States President George W. Bush in his State of the Union Address on January 29, 2002 to describe "regimes that sponsor terror". Bush named Iraq, Iran, and North Korea in his speech (Wikipedia 2006a).

⁷² The population density of South Korea is 492/km² (Wikipedia 2006o), which is ranked 12th; however, if excluding city-states or small island nations such as Monaco or Malta, it is the third behind Bangladesh (1,002/km²) and Republic of China (Taiwan, 640/km²).



Figure 7 Korean Peninsula and the two Koreas [from Perry-Castañeda Library Map Collection in the University of Texas at Austin]

Korea used to be an agrarian state prior to the rapid industrialization since the 1960s. Rice farming has always been the single source of the main staple - boiled rice - almost since 6,000-3,500 BP when it was first introduced from China across the Yellow Sea.⁷³ Although presently there is no accurate data for the actual population of Korea in its history before the first modern census in 1925, it is estimated that about 14 million people lived in during the mid-Chosun dynasty (16-17th centuries).⁷⁴ Records of the Chosun dynasty (1392-1910) show that the area of arable land on the Korean peninsula has changed very little over the last several hundred years.⁷⁵ Historically, the southwestern region of the peninsula - Jeolla-do (Jeolla province) - has been the food basket of Korea. Since the current (Korea's) border line was delimited in the middle of the 15th century, Jeolla-do has been famous for its fertile land and it was the center of the exploitation of Japanese imperialism for food provision during the Second Sino-Japanese War (1931-1945, from 1941 as part of World War II) and the Pacific War (1937-1945). The core plain of Jeolla-do is the Honam plain, which now appertains to Jeollabuk-do (North Jeolla).⁷⁶ Honam plain is the only region in Korea where people can see the horizon,

⁷³ According to Ahn (2006), rice farming began in the area of Han River (now Seoul) about 4,000 BC by radiocarbon dating for a Korean Neolithic period remaining in Amsa-dong and it spread to the whole country by about 1,500 BC.

⁷⁴ It is estimated about 13 millions in late 19th century and it was 19 million when the first census was conducted in 1925 (Wikipedia 2006q).

⁷⁵ According to 'The Annals of the Chosun Dynasty', the arable land area was about 170 million 'Kyeul' (about 0.0215 km², estimation by this author through conversion tables available through the Internet and the unit of arable land - Kyeul - area did not mean the exact area but was determined by the quality of the crop land) before Japanese invasion of Korea in 1592, but reduced to about 54 million Kyeul after the invasion. Therefore the area was 3.6 - 1.2 million hectare. However, considering the unregistered crop lands, the area of crop land is guessed about the same as the current crop land area (3.7 million hectare in 2004) throughout the dynasty.

⁷⁶ As the current administrative districts, Jeolla-do is the region that comprises both Jeollabuk-do (North Jeolla) and Jeollanam-do (South Jeolla), see Figure 9. Honam is a region coinciding with the former Jeolla Province in what is now South Korea. Today, the term refers to North and South Jeolla Provinces and the self-governing city of Gwangju. The name "Honam" is used in the names of the Honam railway line and Honam Expressway, which are major transportation corridors connecting Seoul and Daejeon to the Honam region (Wikipedia 2006f). Jeollabuk-do is particularly suitable for rice farming. Not only is its area of crop land (mainly owing to the Honam plain) large, but also the ratio of paddy fields versus dry fields - 75% in 1999 - is higher than any other provinces in South Korea (Moon 2000, p. 240), see Figure 10.

which is the basin of two rivers - Mangyeonggang (Mangyeong River) and Dongjingang (Dongjin River).⁷⁷

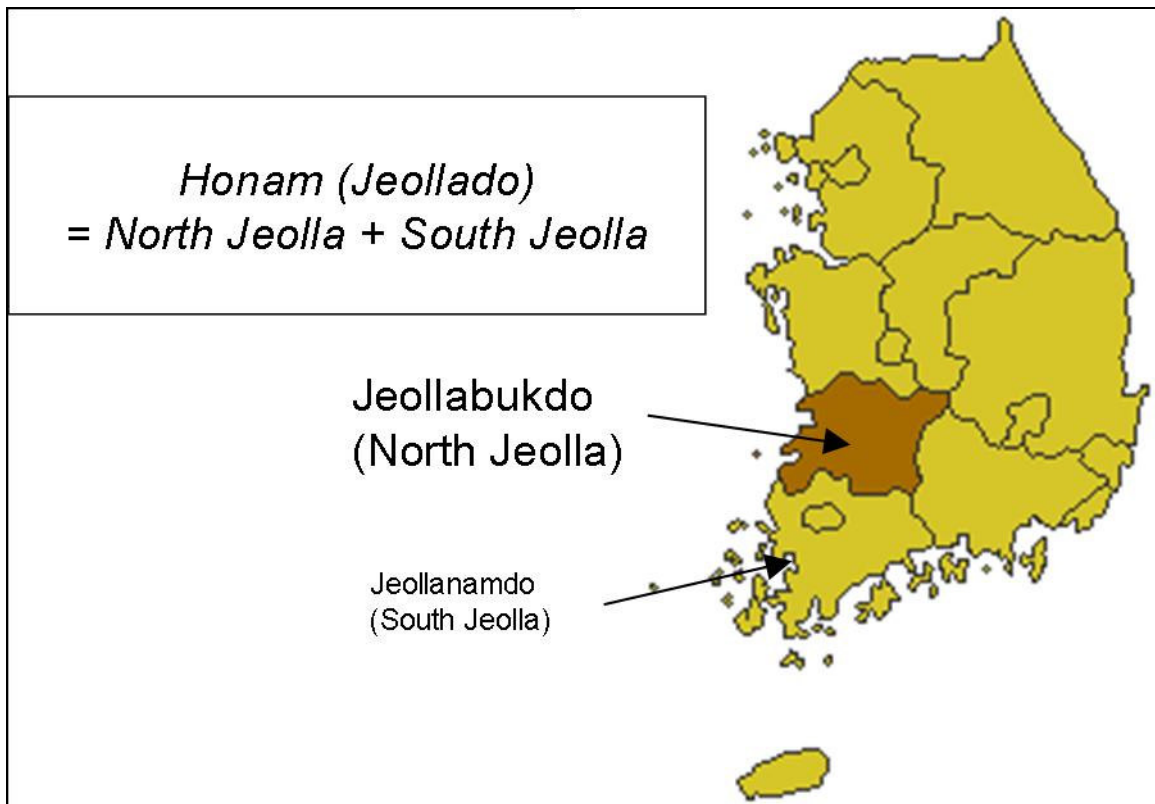


Figure 8 Location of Jeollabuk-do and Honam region (North Jeolla)

⁷⁷ See Figure 10. Jeollabuk-do is particularly suitable for rice farming. Not only is its area of crop land (mainly owing to the Honam plain) large, but also the ratio of paddy fields versus dry fields - 75% in 1999 - is higher than any other provinces in South Korea (Moon 2000, p. 240).

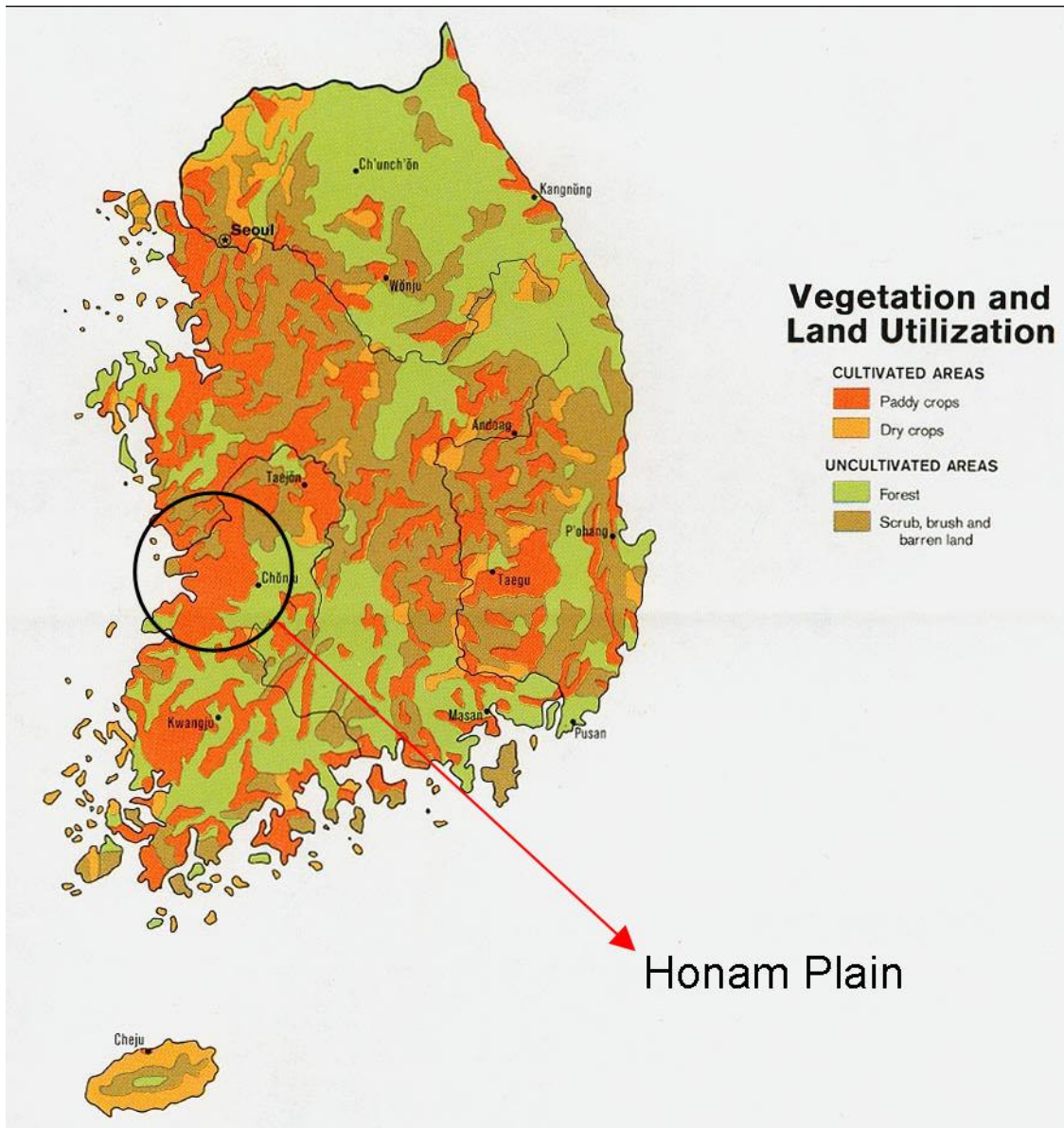


Figure 9 Distribution of land use in South Korea and the location of the Honam Plain [from Perry-Castañeda Library Map Collection in the University of Texas at Austin.]

The Saemangeum area is located on the coastline along the two rivers' estuaries (see Figure 10). Figure 10 shows the exact Saemangeum area by defining clearly the dykes that outline the Saemangeum Tideland Reclamation Project area from the ocean, collaborating with the coastline starting at the points where the dykes meet lands. All the

dykes needed to block the seawater were completed on April 21, 2006 and the flow of seawater will be permitted through two sluice gates until a detailed plan of reclamation is fixed. Ultimately the internal lake (what is known as ‘Saemangeum Lake’) will become a freshwater lake and the vast mudflat areas will turn into dry land. The literary meaning of ‘Saemangeum’ (새만금; 새 (new) + 만금(萬金; an immense sum of money)) is ‘a new land that promises to produce an immense sum of money’, which reflects the traditional perception of the large plain by Korean people.⁷⁸

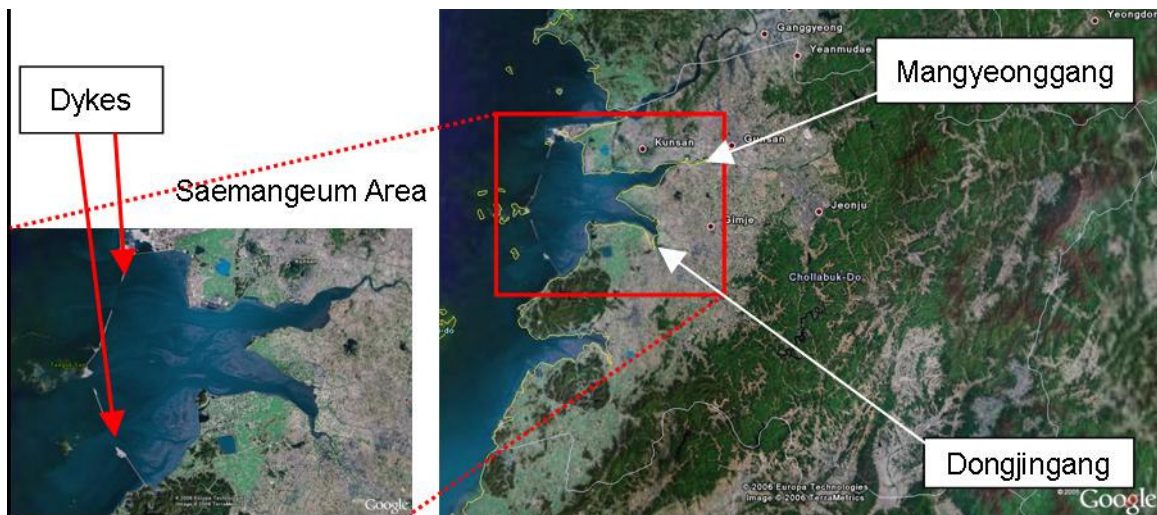


Figure 10 Jeollabuk-do (North Jeolla) detailed map and the Saemangeum area [from Google Map.]

However, why is this - the Saemangeum area, which is plainly the sea even though it is shallow - needed now, (to be accurate, in 1991) to reclaim an extra 401 km² area of land for agriculture? It will cost several billion dollars. In addition, South Korea has achieved self-sufficiency in terms of rice and Korean people know very well that their country has no competitive advantages in agricultural products in the world market. Considering the two elements of sustainable development - ‘what is to be developed’ and ‘what is to be sustained’, is the Project heading towards sustainable development? There

⁷⁸ Throughout the Chosun dynasty and still by many people in Korea, the catch phrase ‘농자천하지대본 (農者天下之大本; agriculture is the foundation of a nation) is a well-known repetitive axiom.

is only one salient natural resource in Saemangeum area that should be sustained as well as developed: mud-flats or tideland.

Tideland (mud-flats) in Korea

Although Korea, especially South Korea is now famous for its rapid economic growth, a high quality consumer-electronic appliance producer, car and shipbuilding industrial leader and international semiconductor industry leaders, little attention is given to the fact that Korea has one of the largest tideland-areas in the world. Tideland or mud-flats that occur on western and southern coastlines of the Korean peninsula is an important form of complex ecosystems and a major form of world wetland classifications. Mitsch and Gosselink (2000) classify world wetland ecosystems into coastal wetland ecosystems and inland wetland ecosystems. According to their classification, coastal wetland ecosystems are comprised of 'tidal salt marshes' (in middle and high latitudes), 'mangrove swamps' (in subtropical and tropical regions), and 'tidal freshwater marshes'; among these, tidelands in Korea belongs to 'tidal salt marshes' (Mitsch & Gosselink 2000, p. 263, see Figure 11). The area of the tideland (5,400 km²) on the Korean peninsula can be compared to that of the coast of the North Sea in Europe (8,293 km²) and the area of the portion in South Korea (2,393 km²) is almost the same as that of the Netherlands (2,585 km²) (Korean Tidalflat Information System 2006).

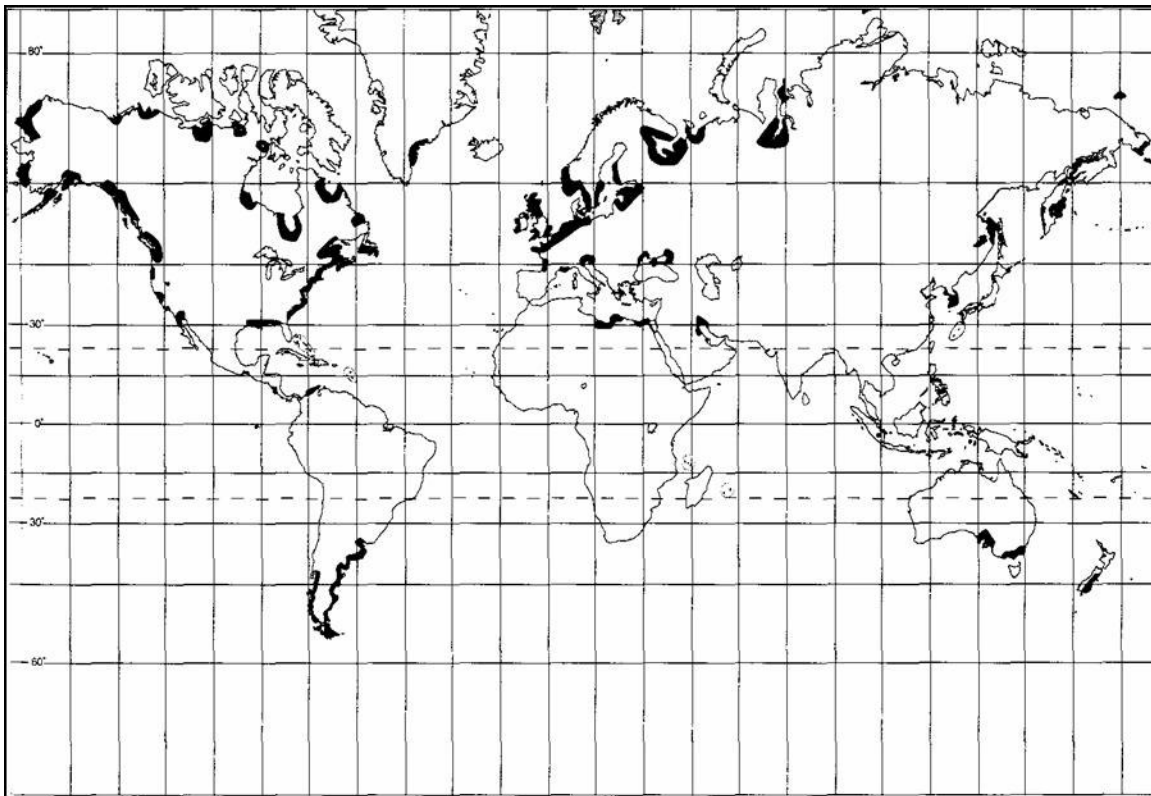


Figure 11 Tidal salt marshes world distribution map [from Mitsch & Gosselink (2000, p. 263).]

Mitsch and Gosselink (2000, p. 265) present three geomorphologic factors that determine the development and extent of salt marsh wetlands: intertidal zone, gentle shoreline slope, and adequate protection from wave and storm energy. Regarding these three factors, the western and west part of the southern coastline show ideal condition for tidal mud-flat development. First, as shown in Figure 12, the western coastline of Korea displays a typical macro-tidal regime. Second, the West Sea (Yellow Sea) is mostly part of an extremely-gentle-slope continental shelf like the North Sea in Europe, which produced a vast area of tideland by the rising of sea level during the Quaternary period.⁷⁹

⁷⁹ As shown in Figure 14, during the Last Glacial Maximum (LGM), Korean peninsula was not a peninsula and was connected with China and Japan. Although scholars do not agree about the speed and fluctuation of the rise of sea level after the end of the ice age in the West Sea, for the last about three thousand years (the period when rice farming spread throughout the Korean peninsula), the sea level around Korean

(see Figure 13) Third, different from typical tidal marshes in the North Sea or US eastern coast which are protected by barrier islands, most of the tideland in Korea is developed towards the open sea without protection but a complicated Rias coast provides many protected bays and estuaries along with several river systems that run from the east to the west or south; as a result, these bays and estuaries adequately protect tidelands from storms and waves so that they can support extensive salt marshes (Jeon 2005, p. 6; Mitsch & Gosselink 2000, p. 267, see Figure 14).

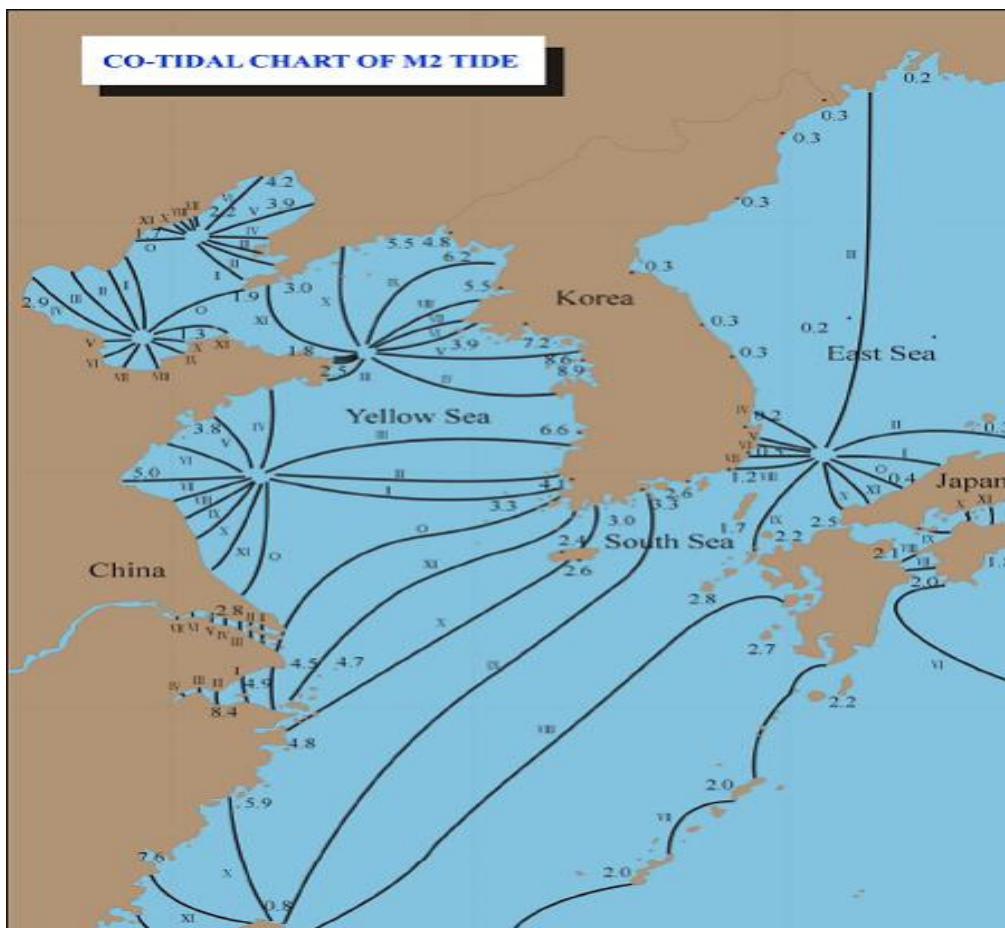


Figure 12 Differences between high tide and low tide around Korean Peninsula [from Jeon (2005, p. 7).]

peninsula has kept relatively steady state within $-2 \sim +2$ meter variation compared with the current sea level (Park & Oh 2004).

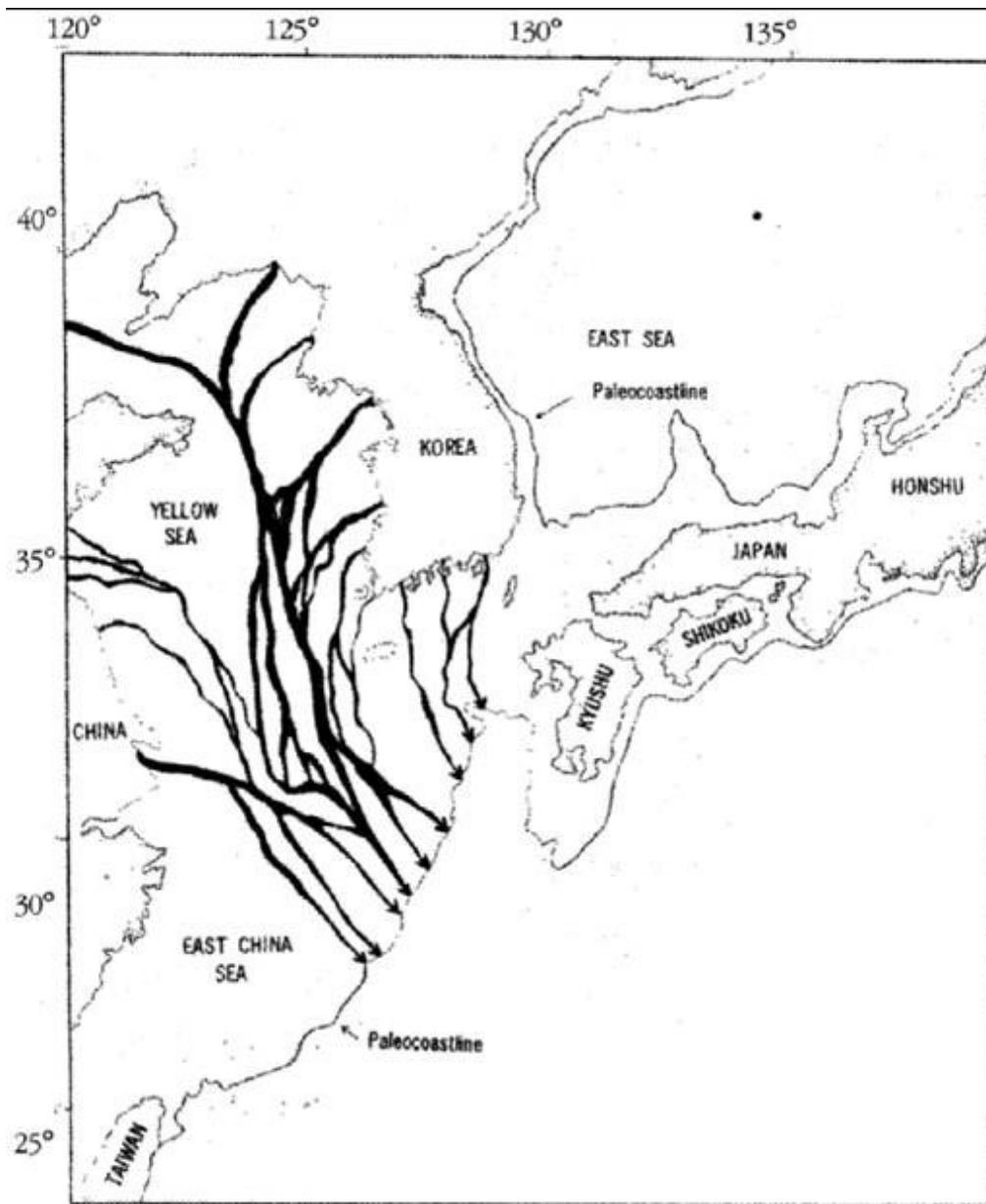


Figure 13 The coastline during the Quaternary period [from Park & Oh (2004, p. 16).]

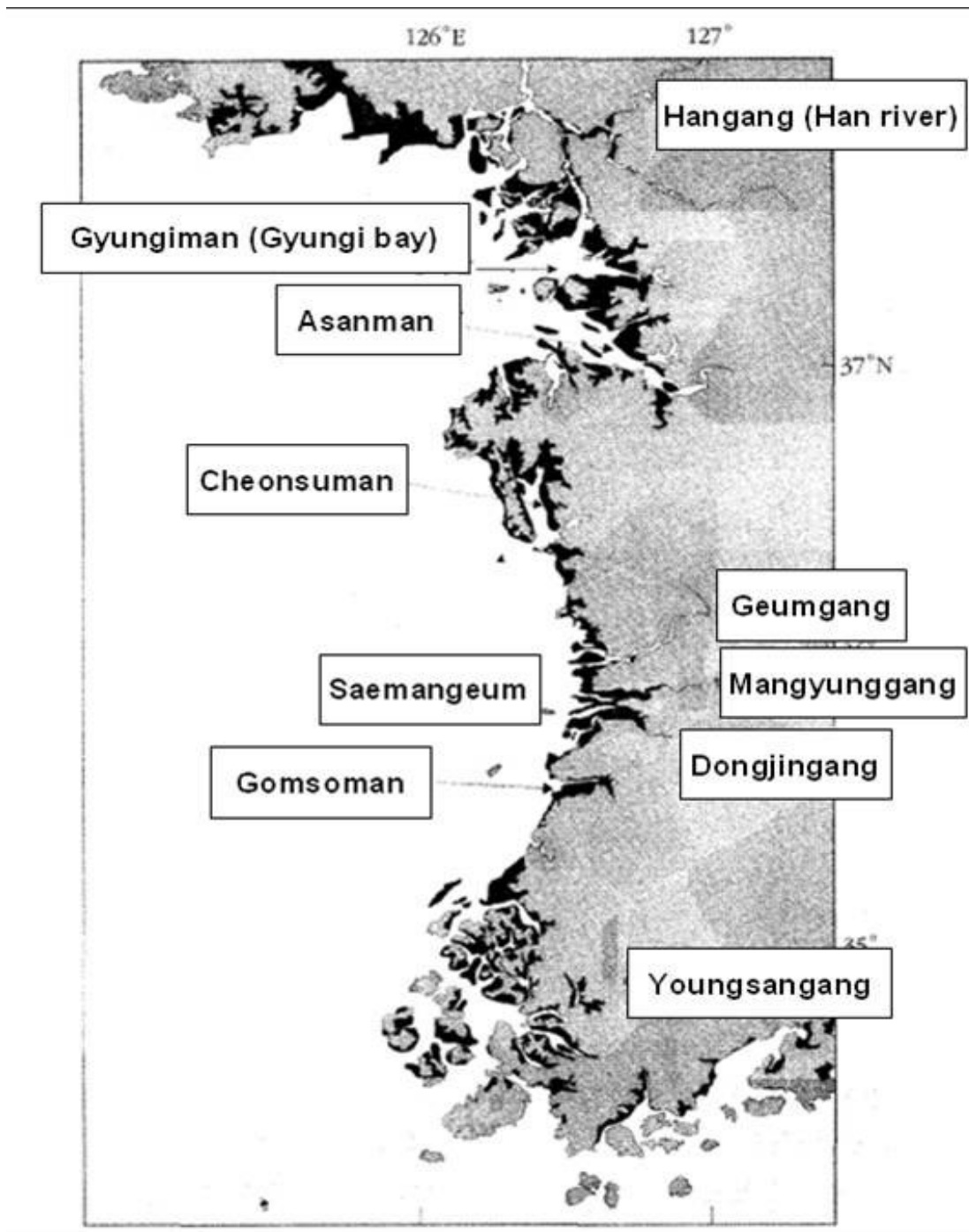


Figure 14 Distribution of tideland in the western and southwestern coast [from Park & Oh (2004, p. 23).]

HISTORY OF TIDELAND RECLAMATION IN KOREA BEFORE 1945

Land Reclamation in Korean Peninsula before 1910

The lexical meaning of ‘land reclamation’ was the “practice of converting land deemed unproductive into arable land by such methods as irrigation , drainage , flood control, altering the texture and mineral and organic content of soil . . . , and checking erosion” (The Columbia Encyclopedia 2006). However, the current environmental discourse has changed its meaning into a more diversified one which entails two distinct practices; one is the same as the above definition and the other is “the process of cleaning up a site that has sustained environmental degradation, such as strip mining” (Wikipedia 2006h). Land reclamations on the Korean peninsula have always been the first definition and most of them have been tideland reclamations (Moon 2000, p. 102).

Aside from the favorable conditions for the development of mud-flats, Korea has ideal conditions such as a high indentation ratio of coastline, a number of islands which enable dykes to connect with ease, the existence of many hills/hillocks that provide rocks, gravel, stones, and sand easily as well as economically, and effortless byproducts (freshwater lakes) during the construction of embankments which can maximize the benefit of reclamation projects; as a result, it is supposed that small scale tideland reclamations were possible as early as 100 B.C. (Moon 2000, p. 103).

The first documentary record of tideland reclamation can be traced back to the Koryo dynasty in 1235 A.D.; however, reclamation for increased food production really had begun during the Chosun dynasty from the late 15th century (Moon 2000; Park & Oh 2004). Figure 15 shows the representative tideland reclamation sites during the 15th - 16th centuries in the Chosun dynasty. As motives for tideland reclamations during the Chosun dynasty, Park and Oh (2004, p. 35) suggest two factors: rapid population growth and development of local markets. After recovery from the aftermath of the Japanese invasion of Korea in 1592, as shown in Figure 16, reclamation efforts during the 17th - 19th centuries were diversified regionally as well as technologically (Park & Oh 2004, p. 52).

It is evident that the area of paddy fields reached its carrying capacity in the 16th century when tideland reclamations began in earnest. Within two hundred years since the founding of Chosun dynasty, the population almost tripled from 5.5 million in 1392 to 14 million in 1592 (Kwon & Shin 1977). Except the warfare period between the Japanese invasion of Korea in 1592 and the Chinese invasion in 1636 (during these two war periods, it is estimated that the population decreased by 4 million) and the successive recovery period (1654-1693, for this 40 year period, the most marked growth of the



Figure 15 Representative tideland reclamation sites in the first half of Chosun Dynasty [from Park & Oh (2004, p. 43).]



Figure 16 Representative tideland reclamation sites in the second half of Chosun Dynasty [from Park & Oh (2004, p. 54).]

population was observed), the population of the Korean peninsula kept a steady gentle increase to about 17 - 18 million in 1900 (Kwon & Shin 1977). A typical description of agricultural development for supporting such increases in population during the Chosun dynasty during 17th - 19th centuries by economic historians introduces three major factors for the agricultural productivity growth in this period: *reclamation* (broad meaning, mainly by irrigation through dams or barrages), introduction of *new crops* (for example, corn, potato, and sweet potato; they spread through the 17th-18th centuries), and innovation in *agricultural technologies* (for instance, rice transplantation - this made possible double cropping like summer-rice/winter-barley crop system), advanced planting

systems like crop rotation, and development of fertilization for intensive farming) (e.g., Ko & Lee 2000; Lee 1985; Lee 1996). Among these developments, tideland reclamations were the only activities of transforming ownerless tideland to private-ownership property; therefore, people in diverse social classes participated in such reclamations (Park & Oh 2004, p. 36). In addition, even though small scale tideland reclamations were carried out by the local residential people, the majority of cases were conducted by the remote power holders such as the privileged (the royal family, its relatives and in-laws, and high-ranking officials), landlords, and commercial magnates (Park & Oh 2004, p. 53).

The tideland reclamation cases in the Chosun dynasty show that, if most of the cases could be regarded as a response to sustainability issues at that time, the major element of sustainable development of those days was not the environment (rapid environmental change or degradation) but a matter of distribution in terms of both ‘benefit’ (by the form of new rice paddies) and ‘cost’ (by the form of forced labor mobilization for reclamation and cultivation). Although several environmental problems such as the change of tidal currents by simplifying the coastline, ground sinking, and more frequent storms are supposed to have happened, it is reasonable to think that they were ignorable compared to the contemporary environmental problems caused by large scale development projects (Park & Oh 2004, p. 75).⁸⁰ On the other hand, the problem of unequal cost and benefit was serious. For example, Park and Oh (2004, p. 72) quote vividly the sufferings of farmers who were compulsorily mobilized for tideland reclamations from *the Annals of the Chosun Dynasty*:

... many commoners drowned beneath violent waves because of the flagrant superintendence while constructing dykes ... after reclamation, residential people near the location were forced into cultivating the land as a peasant laborer ... though they claim that such tenancy on half-and-half shares does for the good of the commoners; in fact, it is a robbery.

⁸⁰ Remaining documentary records do present many disasters like storms and their damages in Chosun dynasty but there is no evidence of casual relationship between tideland reclamation and increase of (natural) disasters (Park & Oh 2004).

Therefore, the commoners who lived near dykes ran away and the evil influence of forced tenancy reached remote villages. Moreover, people in those villages also ran away, ruining the hundred-year-built settlements; as a result, resentment of the commoners of the two villages has seated deeply (translated to English by this author).

Considering the fact that, in many cases, the owners of the new land from reclamations lived in the political center - Seoul or Gyeonggi-do (Gyeonggi province), the similarity of socio-economic aspects in the Chosun dynasty at that times with those of contemporary global debates on North versus South or Center-Periphery is remarkable. Even if a catastrophic tidal storm (which is tremendously magnified by the lack of former tideland which served as a buffer zone) had destroyed a coastal region, the victims would not have been the privileged who benefited from the reclamation but the commoners, the fishermen, or the forced tenants who had to live near the coastline.

Land Reclamation during the Japanese Colonization Period (1910-1945)

Table 6 shows the result of tideland reclamation during the period of the Japanese occupation. The reclaimed area during this period - about 40,000 hectare - is almost comparable to that of the current Saemangeum Project and takes 35% of the total reclaimed area during 1917-2001 (see Tables 6, 7 and 8). Considering the technological differential between that period and the present industrialized South Korea, the Japanese efforts to reclaim tideland into farmland were enormous and intensive. According to Jeong (2001), Imperial Japan, facing the fierce competition between the world Powers, tried to secure grain and keep the price of it low in its domestic market and as a means, invested heavily in agriculture in colonies - Taiwan and Korea. For example, the area of crop land in Korea increased from 4.5 million hectare (1915) to 4.9 million hectare (1935) and the real agriculture production amount soared more than 45% during the same

period (1915-1935) (Jeong 2001).⁸¹ This increase was possible through ‘the Program for Multiplication of Rice Produced’⁸², during 1920-1934 and through Japanese monopoly companies like ‘the Land Improvement Corporation’⁸³, and ‘the Oriental Colonization Corporation’⁸⁴. However, in spite of the increase of agricultural production, especially rice, many people in Korea bordered on starvation because the (Japanese) Government of Korea exported more than the amount increased.⁸⁵ Moreover, Kang (1994, p. 10) reveals that, facing the risk of flood or severe storms in the reclaimed areas, the Oriental Colonization Corporation handed over the right of cultivation in such areas to Korean tenants and let them improve the land while they should confront expected disasters - flood or storms.

In particular, the institutional/legal processes of tideland reclamation by the Japanese Government of Korea have influenced the subsequent reclamation projects in South Korea since 1945; for example, the Public Waters Reclamation Act enacted in 1920 was the foundation of the law with the same title enacted in 1962 in South Korea, which governs the procedures and rights of tideland reclamation (Moon 2000, p. 110). As for the reclamation process itself during the Japanese colonization period, Seon (1998) shows a good example of how a non-governmental tideland reclamation project was carried out and how its ownership was established among the people who participated in the project.

⁸¹ By a simple calculation based on Table 6, the contribution of tideland reclamation to the total cropland increase was almost 10%.

⁸² 産米増殖計畵 (산미증식계획). See Doosan Encyclopedia (2006a).

⁸³ 土地改良株式會社 (토지개량주식회사)

⁸⁴ 東洋拓殖株式會社 (동양척식주식회사). Interestingly, the name of this corporation shows exactly what the Japanese imperialism wanted in Korea. The Chinese characters mean that, while 東洋 is oriental and 株式會社 is a joint-stock corporation, 拓 means (tideland) reclamation and 殖 is migration (of unemployed Japanese people). This company played a similar role in Korea to that of East India Company in India.

⁸⁵ Jeong (2001, p. 336) presents that, from 1912 to 1937, the export of rice from Korea to Japan increased from 8.3% of total rice production to 48.8%; as a result, average total food consumption per capita of Korean people decreased at 20% rate and as to rice, the consumption dropped to a half.

Table 6 Result of tideland reclamation in Korea during the Japanese Occupation (1917-1938) [from Korea Agriculture on Reclaimed Lands (2003).]

Result of Tideland Reclamation in Korea during the Japanese Occupation (1917-1938)				
Scale	# of Areas	Reclamation Area (hectare)	Extension of Embankment per hectare	cf
~ 50ha	88	3,535	6.98	Record of 1941
50 ~ 100ha	38	3,674	5.88	
100 ~ 200ha	19	3,708	3.79	
200 ~ 500ha	23	9,758	2.37	
500 ~ 1000ha	2	1,531	0.66	
1000ha ~	8	18,671	2.31	
Sum	178	40,877	3.12	

Table 7 Actual result of tideland reclamation since 1945 (South Korea) [from Korea Agriculture on Reclaimed Lands (2003).]

Term	Sum		Governmental		Non-governmental	
	# of location	Area (ha)	# of location	Area (ha)	# of location	Area (ha)
'46 ~ '60	177	6,329	39	3,777	138	2,552
'61 ~ '69	1,136	16,945	58	7,364	1,078	9,581
'70 ~ '79	233	19,372	50	8,245	183	11,127
'80 ~ '89	63	9,307	25	5,266	38	4,041
'90 ~ '97	16	22,043	11	9,155	5	12,888
'98 ~ '01	3	1,774	3	1,774	-	-
Sum	1,628	75,770	186	35,581	1,442	40,189

Table 8 Distribution of targets for tideland reclamation (South Korea) [from Korea Agriculture on Reclaimed Lands (2003).]

Classification	Total Target Area	Completion by 2001	Under Construction in 2002	Planned
Sum	156,865	75,770	60,021	21,074
Governmental	116,676	35,581	60,021	21,074
- Large Scale	55,665	14,865	40,800	-
- Small Scale (Southwestern Coast)	61,011	20,716	19,221	21,074
Non-governmental	40,189	40,189	-	-
Unit:hectare				

Environmental impacts from the intensive tideland reclamations during the Japanese occupation have not been assessed. However, aside from the influence on the environment, it is evident that boundary-reaching phenomenon in Japan in terms of food demand (factor 'q') in the the LISDA), its transboundary propagation to Korea by the Japanese Imperialism (factor 'h)'), and the appearance of new property ownership relation by the Public Waters Reclamation Act (factor 'm)'). Although not directly related to the tideland reclamation, another important factor that should be considered is factor 'o)' - a kind of globalization or becoming dependent on external resources for local subsistence; for example, to support the high rate of agricultural production growth, due to the promotional efforts of the colony government the use of chemical fertilizer was popularized by the promotion of the colony government for the first time in the history of Korea (Jeong 2001, p. 329). In other words, people on the Korean peninsula had entered an era where sustainable agricultural production would be impossible without external resources - the chemical fertilizer.⁸⁶

⁸⁶ This is not a phenomenon confined to Korea. Now 1% of the world's energy supply is consumed in the manufacturing of that fertilizer and fertilizer is responsible for sustaining 40% of the Earth's population

CONTEMPORARY HISTORY OF KOREA AND TIDELAND RECLAMATION

It is not easy to review the history of South Korea since 1945 and there is no consensus about how to interpret the dynamic aspects and rapid changes of political, economical, social, and cultural practices and structures. Nevertheless, it is indispensable to survey, at least briefly, the contemporary history of Korea. Since the period of Japanese occupation, tideland reclamation has not been an isolated phenomenon for a small coastal village any more but has become an event that can be hardly understood without considering more transboundary aspects of the village and the changes of a broader scope of analyses such as region, nation, and even the world; at the same time, it has become such a tangled phenomenon as cannot be fathomed by one or two disciplines' perspectives like a pure economic view or a pure environmental movement's view. However, it is far beyond the scope and capability of this study to review the contemporary political, economical, social, or cultural history of Korea in detail. This thesis will only give a brief sketch of it in chronological order.

Periodization is another controversial issue but here, without dealing with the matter, let the thesis use a typical periodization method according to the political and economic transformation of Korea as follows:

Post-war Recovery Period (1953-1960)⁸⁷

Industrialization Period by the Park Government (1961-1980)

Continued Industrialization and Democratization Period (1981-1991)⁸⁸

(Wikipedia 2006e). Urea fertilizer - one of the most important chemical fertilizer - needs oil for its production and the cost of oil occupies 85% of its production cost (Song 1984). Korea must import 100% oil.

⁸⁷ Most of literatures on economic development in Korea (South Korea) begin their analysis at the end of Korean War in 1953. Even though there were important political and economic changes such as the law for land reform in 1949, it is not unreasonable to think that Korean economic development policies started after the war.

⁸⁸ Many scholars regard the political change in 1987 ignited by the democratization struggles as a watershed in Korean contemporary history. In this thesis, however, considering the continuity of economic

Economic Liberalization and Globalization Period (1992-1997)⁸⁹

IMF and Post-IMF Period (1998-)⁹⁰

This section will deal with the first three periods from 1953 to 1991. The next two periods will be covered in the subsequent section with the story of the Saemangeum Project which was embarked on in 1991.

Post-war Recovery Period (1953-1960)

The economy of Korea in the 1950s was, simply speaking, was that of a ‘US economic aid dependent’ economy. While food and relief supplies constituted most of the US aid before the Korean War, US assistance included raw materials and capital goods for industrial use after the war (Cho 1994, p. 13). Although there have been many articles arguing that US aid did not contribute significantly to Korean economic development due to its short-term objective of economic stabilization, it is fair to concede that US aid tided the country over and made possible many important investments which formed the basis for the rapid economic growth in the 1960s (Cho 1994, p. 14). However, as Kim (1996b, pp. 8-9) points out, the stabilization programs confined the Korean government’s development policies to ‘import substitution strategy’, which led to windfall profits of a selected group of industrialists specializing in producing consumer goods by utilizing allocated US aid raw materials; ultimately, this “was the genesis of Korea’s now massive, diversified business groups, the *chaebol*” (Chung & Kirkby 2002, p. 54).

trends throughout the 1980s, the emergence of Kim Young Sam government in 1992 is used for the periodization. This classification reflects the continuity of tideland reclamation policy more correctly, too.

⁸⁹ Economic liberalization (for example, opening of the domestic markets and financial reform) and the entry to the globalized economy of the world was not necessarily a particular phenomenon in this period; as a matter of fact, they had been a long process since the early 1980s. However, the direct consequence or disaster - the financial crisis in 1997 - may justify the use of these terms to describe this period.

⁹⁰ Facing the possibility of a moratorium December in 1997, the Korean government asked a relief loan from IMF (\$1.95 billion), IBRD (\$7billion), and ADB (\$3.7 billion) to escape the crisis. Korea paid back the loan by August in 2001, more than three years earlier than expected at the outset (Doosan Encyclopedia 2006b). In Korea, this period from 1997-2001 is usually called the ‘IMF era’.

Therefore, due to the lack of investment, there were not many new tideland reclamation projects during this period except small scale ones and maintenance of the existing facilities.⁹¹ Whereas intensive tideland reclamation had been caused by the rice exploitation policy during the Japanese occupation, US aid as a form of surplus agricultural products weakened the motivation of tideland reclamation in terms of both necessity and investment in the 1950s. However, once entered into a transboundary status, the fate of tideland became determinable not by the people who lived nearby, nor by the central or local government, but by the flow of international trade, investment, and/or aid.⁹² Though this phenomenon became evident in the next period in Korea (1960s), it was a natural result of the change of US aid in the late 1950s. Declining in GNP growth in the late 1950s (7.7% in 1957, 5.2% in 1958, 3.9% in 1959, and 1.9% in 1960) “reflected the demise of the easy import-substitution stage and the simultaneous falling away of American aid (Chung & Kirkby 2002, p. 54). Decrease of US aid could be interpreted as an urgent demand for the government’s capability to handle the impending economic crisis but the corrupted and ineffectual Lee government lost its hegemony owing to the failure of economic growth, collapsing at last by the widespread labor and civil unrest and student-led demonstrations of April 19, 1960; however, regardless of its inability or policy failure, the Korean government already had realized the economic importance of tideland reclamation and had sought another route of international aid to develop the reclamation projects in 1959 - the UN Special Fund (Korea Agriculture on Reclaimed Lands 1988; Um 1978).⁹³ The technical and capital aid by the UN Special Fund played a major role in the boom of tideland reclamation projects in the 1960s.

⁹¹ According to Moon (2000, p. 109), there had been about 4,000 ~ 6,000 hectare reclamation in 177 regions by 1960 since 1945.

⁹² Mainly across the border between Japan and Korea in the colonization period and substantially influenced by the US policies and US domestic status (such as agricultural surplus) after the Korean War, the demand for new cropland has become determinable by both domestic and international factors.

⁹³ The Special Fund was set up in 1959. Combined with the Expanded Program of Technical Assistant (EPTA) by the UN General Assembly in 1965, the Special Fund became a famous international development support organization - the UN Development Program (UNDP) (Um 1978).

Industrialization Period by the Park Government (1961-1980)

Park Chung-Hee (1917-1979) took political power by a bloodless military coup on May 16, 1961. Although the coup was largely welcomed by a general populace exhausted by political chaos, he and his regime faced seemingly insoluble economic hardships. Moreover, taking power by a military coup ultimately burdened the new regime with the need to establish legitimacy, which was thought to be possible only by economic development. At the same time, US aid was diminishing and the Park regime took over a country whose economic status let its depressed people regard the Philippines as a far more advanced developing country. However, the Park regime achieved unprecedented economic growth within two decades, which Minns (2006) calls a spectacular success and is dubbed a ‘miracle’ by the World Bank. ‘An average annual growth rate of GNP of about 10% between 1965 and 1980 laid the foundations for this spectacular success’, with Korean GNP multiplying 20 times, per capita GNP increasing 16 times and per capita consumption rising 12 times (Minns 2006, p. 118).

How can this rare and spectacular transformation be explained? Kim (2002c, pp. 154-57) enumerates representative theories and studies: rapid capital mobilization and accumulation, continuous introduction of new products by innovation through learning-by-doing, late industrialization model, and “Confucian Capitalism”. Minns (2006, p. 119) emphasizes the importance of state intervention in the economy. Others devalue the economic growth by ascribing it to the exploitation of farmers and labor workers or the favorable international economic environment. No matter what theories or models may be advanced, it is evident that the idea that ‘economic growth could justify anything’ already pervaded the whole country in the early 1960s.

Next, by what concrete apparatuses was the rapid economic growth possible? According to Cho Soon (1994, pp. 31-32), who served as Deputy Prime Minister of the Republic of Korea (1988-90) and as Governor of the Bank of Korea, there were five sets of basic principles for development strategies in the Park government: economic development through industrialization; economic development under government control

and leadership; private ownership and management by the government's complement and replacement of decision-making, inducing foreign capital flow; and growth in higher priority with the imbalances in income distribution and unevenness in industrial development across geographical regions. Based on these principles, the Park regime carried out four 'five-year economic development plans' by the centralized control of the Economic Planning Board (EPB, established in 1963), betting on two ambitious transformations of the economic policy - import-substitution to export-oriented and lightweight industry to heavy chemical industry.

Combination of a dense population, rooted developmentalism, and an authoritarian state that had leadership and innovative strategies for the realization of the aspiration brought about an inevitable byproduct - environmental devastation.⁹⁴ As a matter of course, the beginning of the environmental degradation might not be confined to this period. However, the real environmental problems began to emerge during the rapid industrialization period led by the Park government (in the late 1960s) and worsened and spread along with the pursuit of heavy and chemical industry in the 1970s (Chung & Kirkby 2002, p. 143). For example, as shown in Table 9, the beginning of operation of a heavy and chemical industrial complex in Ulsan (in the Southwestern coast of South Korea) resulted in such severe air pollution that blighted rice and other agricultural products near the area. Not only that, the transformed agricultural mode of production deteriorated internal rural areas. As Chung and Kirkby (2002, pp. 185-86) describes pertinently, the necessity of increasing output was heightened by indebtedness to purchase the volume of chemical input, trapping Korea's farmers in a vicious cycle of 'agrochemical debt'. The 1961 to 1964 period alone saw a 320% increase in pesticide use,

⁹⁴ Many scholars and democratization activists in the 1980s call the Park regime (1961-1979) 'development dictatorship'. Moreover, connected with military authoritarianism, the education during the two decades produced majority of people in South Korea who believe that (economic) development can be justified at the expense of other values such as democracy or human rights. These historical contexts comprise a rooted developmentalism in South Korea.

and toxic mercury-based products constituted 76% of the total, which brought about the famous *minamata* illness around 1965 (Chung & Kirkby 2002, pp. 185-86).⁹⁵

Table 9 Decline in fruit production in the Ulsan area, 1961-70 [from Chung & Kirkby (2002, p.180).]

<i>Year</i>	<i>Production per unit area (kg/pyeong)</i>	<i>Percentage (%)</i>	<i>Number of manufacturing plants producing significant air pollution</i>
1961	6.72	111.8	0
1962	6.62	106.9	0
1963	6.19	100.0	1
1964	6.14	99.2	1
1966	6.06	97.9	2
1968	4.12	66.6	5
1970	2.91	47.0	7

Under the politically authoritative power, the lack of environmental awareness is not surprising. For example, Yang (1978) evaluates the National Report on the Environment submitted to the Stockholm Conference in 1972 by the government of South Korea as a vacuous and ignorant work full of wrong or omitted words. Although some student groups for environmental problems in terms of technology did exist, it was ubiquitous to perceive environmental degradation as unavoidable and endurable byproduct of economic growth. Only the direct victims of the serious pollution couldn't endure. As Chung and Kirkby (2002, p. 195) put it, the environmental movement in this period can be characterized as 'pollution victim centered collective activism'.⁹⁶ However, the weakness of local environmental groups meant that the big business-government nexus was able to marginalize them or simply pacify them with minor compensation deals

⁹⁵ According to Wikipedia (Wikipedia 2006j), minamata disease is a neurological syndrome caused by severe mercury poisoning. Symptoms include birth defects, ataxia, sensory disturbance in the hands and feet, damage to vision and hearing, weakness, and in extreme cases, paralysis and death. Because it was brought about by industrial pollution caused by the Chisso Corporation, it is now sometimes called Chisso-Minamata Disease in Japan. It is one of the Four Big Pollution Diseases of Japan.

⁹⁶ This type of environmental activism, in fact, dates back to 1966, with the anti-air-pollution demonstrations against the development of Pusan's oil-fired-power station (Chung & Kirkby 2002, p. 195).

(Chung & Kirkby 2002, p. 195). The environmental policies of the Korean government existed but they were only a nominal enactment of the Pollution Prevention Act (1963) and the Environmental Preservation Act (1977). They were far from the substantial actions for the conservation of environment and the improvement of the quality of people's lives.

Priority for economic growth made no exception for ecosystem vitality in the mud-flats. As Table 7 shows, tideland reclamation during this period overwhelms that of other periods in terms of the number of projects in both governmental and non-governmental domains (also see Figure 17 and Figure 18). Compared to the subsequent projects in the 1980s and 1990s, large scale tideland reclamation projects during this period have two distinct characteristics. First, most of the governmental large scale tideland reclamation projects during the Park regime were carried out by loans from international development organizations and programs such as UNDP.⁹⁷ For instance, Dongjingang (Gyehwado) Tideland Reclamation Project was aided by Japan's OECF (Overseas Economic Cooperation Fund) and Pyungtaek District which includes Namyang Embankment Project and Asan Embankment Project was conducted through the IBRD (International Bank for Reconstruction and Development) loan and the WFP (UN World Food Programme) grant of food (Korea Agriculture on Reclaimed Lands 1988).⁹⁸ As shown in Table 10 and Table 11, tideland reclamation projects in the 1980s and 1990s were made possible mainly by the domestic capital accumulation. Second, the objective of the earlier projects was primarily devoted to create new paddy fields, whereas successors in the

⁹⁷ For detailed roles and achievements by the UNDP and its coordination of other UN related agencies in South Korea during this period, see Um (1978).

⁹⁸ Japan has three government institutions involved in disbursing foreign aid: the Japan International Cooperation Agency (JICA), the Overseas Economic Cooperation Fund (OECF), and the Japan Export-Import Bank (Exim Bank). JICA is responsible for technical cooperation; the OECF is responsible for soft loans; and the Exim Bank has not only a trade-financing role but also has become increasingly involved in lending for aid programs. The Exim Bank, for example, was the government agency chosen to carry out US\$10 billion in cofinancing with the World Bank and the International Monetary Fund (IMF) in the 1989 Brady Plan for partial relief of Mexico's international debt (Wikipedia 2006d).

1980s and 1990s became diversified and were more likely to connect with industry complexes (see Table 10 and Table 11).

Table 10 Large-scale tideland reclamation projects in South Korea (63-80) [Adapted from Moon (2000, p. 111).]

Project	Unit	Donjingang (Gyewha)	Pyungtaek		Sapgyochen	Youngsan- gang II
			Namyang	Asan		an estuary dam
Location		CB Buan	K Hwasung	K Hwasung	ChN Asan	CN Youngam
Period		63-67	71-73	70-73	76-79	78-82
Total Area	hectare	3,968	3,650	3,197	2,594	10,830
Reclaimed Land Area	hectare	2,500	2,285	397	989	5,500
Area of Basin	hectare	12,700	20,900	163,400	163,950	347,000
Total Water Storage	ha-m	-	3,100	12,300	8,426	25,320
Effective Water Storage	ha-m	-	1,800	8,300	6,279	18,100
Length of Dyke	m	12,810	2,060	2,564	3,360	8,630
Aid Programs or Loans		OECF (for reclaimed land development)	IBRD, WFP	IBRD, WFP	OECF	IBRD
Use	-	R	R	R	R	R, WRM
Industrial Area	y/n	n	- (outside)	-	-	- (outside)
	Legend:	WRM R	Water Resource Management Rice Field CB Chollabukdo (North Cholla) K Kyunggido ChB Chungcheongbukdo (North Chungcheong) ChN Chungcheongnamdo (South Chungcheong) CN Chollanamdo (South Cholla)			

Table 11 Large-scale tideland reclamation projects in South Korea (81-06) [Adapted from Moon (2000, p. 111).]

Project	Unit	Daeho	Keumgang estuary dam	Siwha	Youngsangang III		Hongbo		Saeman-geum
					Youngam	Keumho	Hongsung	Boryung	
Location		ChN	CB	K	CN	CN	ChN	ChN	CB
		Dangjin	Gunsan	Hwasung	Youngam	Haenam	Hongsung	Boryung	Buan
Period		81-85	83-90	87-95	88-93	89-96	91-01	91-00	91-06
Total Area	hectare	7,648	3,650	17,300	12,816	7,433	512	1,134	40,100
Reclaimed Land Area	hectare	3,700	-	11,421	7,960	4,540	-	-	28,300
Area of Basin	hectare	27,900	982,800	47,650	35,500	18,400	7,860	14,180	331,900
Total Water Storage	ha-m	12,200	13,800	34,233	24,460	13,310	1,109	2,410	53,542
Effective Water Storage	ha-m	4,646	12,200	19,148	15,300	7,550	1,062	2,137	35,472
Length of Dyke	m	7,800	1,841	12,676	2,219	2,120	1,856	1,082	33,000
Aid Programs or Loans		OECF	-	-	OECF	-	-	-	-
Use	-	R	WRM, R	-	R, WRM	R, WRM	WRM	WRM	R, WRM
Industrial Area	y/n	y	(outside)	y	-	-	n	n	(planned)
	Legend:	WRM Water Resource Management R Rice Field CB Chollabukdo (North Cholla) K Kyungido ChB Chungcheongbukdo (North Chungcheong) ChN Chungcheongnamdo (South Chungcheong) CN Chollanamdo (South Cholla)							

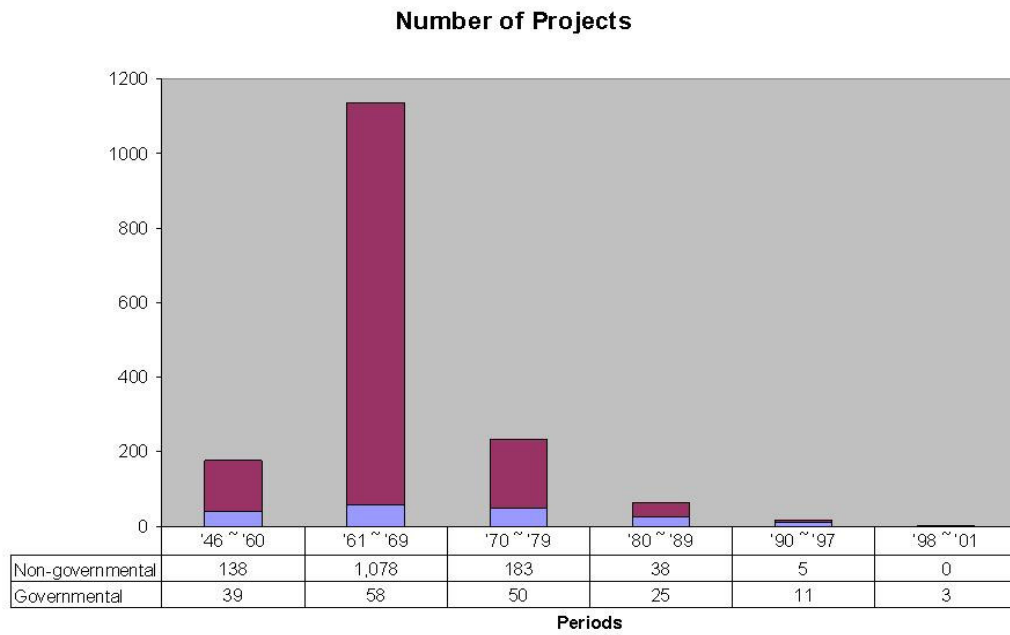


Figure 17 Number of the tideland reclamation projects in South Korea since 1945

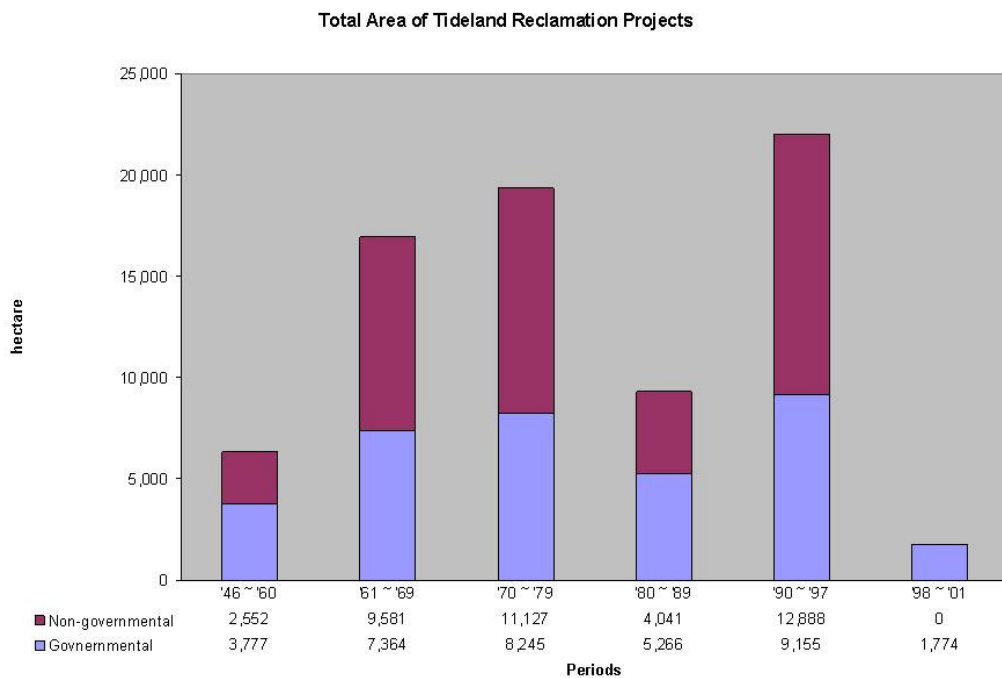


Figure 18 Total area of the reclaimed land by tideland projects in South Korea since 1945

Related to the Saemangeum Project, Dongjingang Estuary Reclamation Project (also known as Gyehwado Reclamation Project) should be paid attention to. As the precursor of the Saemangeum Project, its planning and development were very similar to the Saemangeum Project. Most of all, its location is exactly in the same area as the Saemangeum Project (see Figure 19). Except its size and amount of investment, political decision to proceed with the plan of the project and objections to the project by the majority of EPB's members, media and the General Assembly - all these phenomena resembled those of the almost thirty years earlier controversy over the Saemangeum (Moon, 2000, pp. 154-155).⁹⁹ Aside from the project itself, the context of the economic development oriented atmosphere at that time weaved various development-related problems together within the project. During the 1st five-year economic development plan (1962-1966), the government embarked on the construction of Seomjingang Dam in order to produce electric-power, which inevitably generated involuntary migrations for more than 2,700 household. The requirement of the land for the resettlement of these households made the government strive to undertake the Gyehwado Project in spite of various objections. However, even though the two dykes had been completed in 1968, the real settlement by the establishment of basic living infrastructure such as housing or roads was possible in 1979 because converting the reclaimed land into a freshwater paddy field took longer time than expected and fraudulent work for housing made a considerable portion of the migrant people refuse to move in (Moon 2000, pp. 161-62). Not only that, the migrant people who already had suffered from a long life of wandering around the country for more than ten years had to endure another hardship when they finally settled in the new cropland. Although testing cultivation of rice began in 1977, owing to the remaining salt in the land, lack of needed agricultural water, and

⁹⁹ The Saemangeum Project has shown no problems at least in the area of construction technologies. However, in the case of Gyehwado Project, no one could be sure that the project would be completed without even a dump truck, much less a digging machine. A Dutch service company which had the most advanced technologies at that time (NEDECO) in the area of tideland reclamations visited three times for investigation and submitted a feasibility report that concluded the impossibility of construction (Moon 2000, p. 154).

inexperience of cultivation in the newly reclaimed tideland, economically viable production of rice was not made possible until 1983.

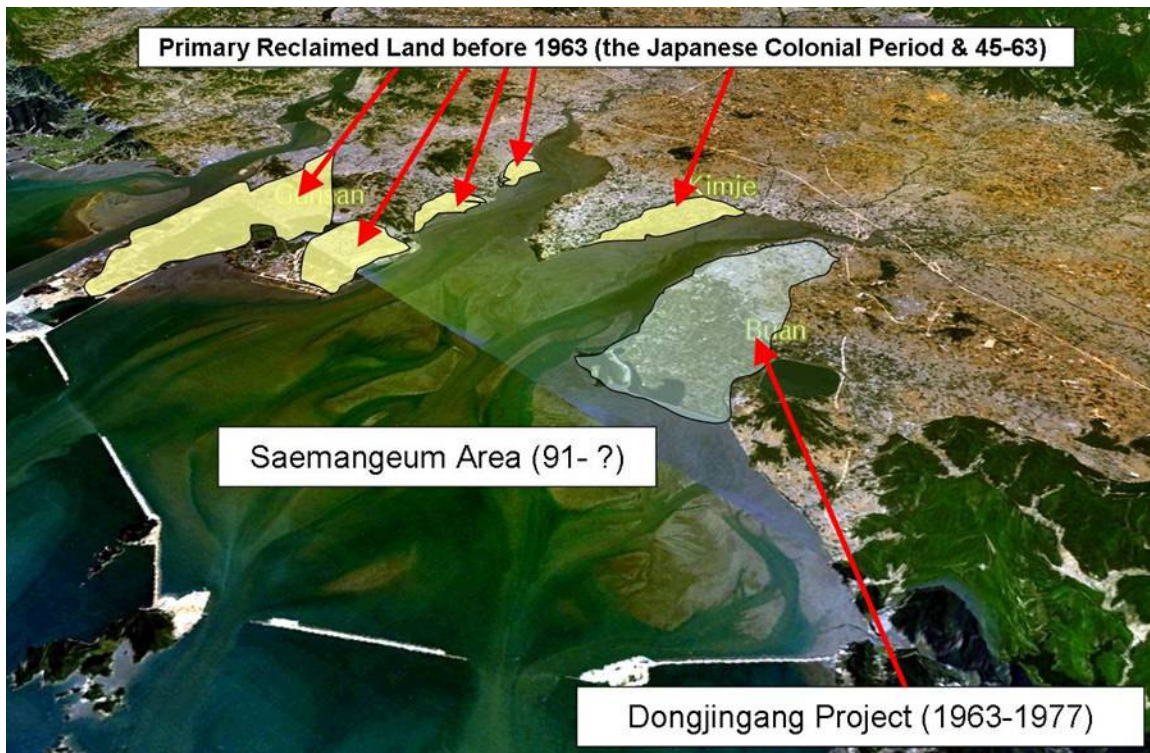


Figure 19 Multiple reclamations in the Saemangeum area

An anthropologist points out three problems of the Gyehwado Reclamation Project (Hahm 2004). First, the construction went on for too long. Twenty years passed from the onset of the project until there was a productive paddy field. Though it had begun in the 1960s when the food shortage was serious, it was not completed until the 1980s when the food shortage was not a problem any more in the Korean economy. A project that aimed at solving the difficulty of obtaining food did not much contribute to the original goal. Second, the hardships or suffering of Seomjingang Dam migrant people were not considered at all by the government. Not only was economic loss experienced but also emotional disturbances that sometimes led to the dissolution of a family. Tired from more

than ten years of waiting for their resettlement, many households sold their right of migration to others. Third, the economic and social transformation of the former fishing villages around the project area - Donji, Changbuk, and Gyehwado (Gyehwa Island) - was disregarded by the government plan. Hahm (2004) suggests three reasons why the influence of the Gyehwado Project should be investigated for understanding the Saemangeum Project, too. First, the basic motive of the Saemangeum Project is the same as that of the Gyehwado Project.¹⁰⁰ In other words, the ocean and the mud-flats are wasteland or worthless space in the agriculture centered perspective. Second, the fishermen in the project area experienced a contrary phenomenon that the fishing industry became more prosperous despite the great loss of fishing grounds. The change of economic structure in South Korea transformed the consumption pattern of food. As the aquaculture industry and distribution industry developed, the consumption of seafood soared up while cereal centered consumption stagnated or even declined. As a result, since the 1970s, the income from the fishery surpassed the agricultural income in terms of general national trends.¹⁰¹ Last, observing the gradual change of the coastal ecosystem after completion of the dykes in 1968, the fishermen become sensitive to the environmental change. Although it was not the recognizable pollutions that devastated the fishing grounds, realizing that the economic and ecological changes caused by the reclamation could influence their lives significantly, the local people's perception of the tideland reclamation altered substantially.

Evident indices of the improvement of the standard of living such as GDP or GDP per capita in South Korea during the 1960s and 1970s seem to prove the effectiveness as well as the justification of the so-called 'condensed economic growth' or 'hyper growth'.

¹⁰⁰ According to the original plan for the Saemangeum Project in 1988, it is evident that the project aimed at reclaiming agricultural land. Despite the controversy over the usage of the reclaimed land in the 1990s and 2000s, the official objective of the project is still to create land for agriculture. It is expected that the plan for the internal development of the reclaimed area (which will be released in the middle of 2006) will determine the use of the land.

¹⁰¹ Therefore, in terms of opportunity cost, the economic loss of the fishermen in the Gyehwado Project area increased unfortunately as the mud-flats around Donji, Changbuk, and Gyehwado disappeared (Hahm 2004).

However, such macroeconomic indicators belie the underlying harsh and drastic transformation of Korean society. While the education system which had already reached almost 100 percent of the rate of primary school enrollment in the early 1960s spread the myth of growth and produced cheap but efficient labor forces for the competitive export oriented industrialization, South Korea went through a thorough structural transition: advanced industrial structure (from an agricultural country to a heavy industry oriented country, see Tables 12 and 13), urbanization (see Table 14), and inequality deepening.¹⁰² In addition, for the first time in its history, South Korea decided to depend on external resources (in the form of importing food, fuel for housing, and other natural resources) for subsistence at the expense of self sufficiency of food. Therefore, the traditional primary resource in Korea - paddy fields - would be no more the object of primary investment of labor or capital. This tendency was clear in the area of tideland reclamation. As shown in the Table 11, the tideland reclamation projects in the next periods (after 1980) would not aim at only securing crop land.

However, this fundamental transformation in South Korea during the 1960s and 1970s did not lead to the instant awareness of sustainable development in the form of global discussion reviewed in the previous chapter for sustainable development history.

¹⁰² Compulsory primary education was implemented in South Korea as early as 1949, and by the early 1960s the rate of primary school enrollment reached 100 percent. Enrollment in secondary school (middle and high school) rose at a rapid rate during the 1960s and 1970s. By 1980, middle school enrollment had reached 94 percent and high school enrollment, 85 percent. College and university education also boomed, particularly after 1975 - from 9 percent in 1975 to 16 percent in 1980 (Lau 1990, pp. 67-68).

According to Kim (2002c, pp. 153-54), not only inter-class inequality (in terms of Gini coefficient, from 0.3439 in 1965 to 0.3891 in 1980) but also the inequality between rural and urban area and the inequality between regions significantly worsened in this period.

Table 12 Industry shares of GDP at current prices (percentages) [from Cho (1994, p. 22).]

Industry	1953-61	1962-66	1967-71	1972-76	1977-81	1982-86	1987-91
Agriculture, forestry, and fishing	40.4	39.6	27.8	24.7	17.7	12.9	9.4
Mining and manufacturing	14.4	18.7	22.0	27.3	30.4	31.6	30.6
Manufacturing only	12.7	16.8	20.5	26.1	29.1	30.5	30.0
Construction, electricity, gas, and water	4.0	4.5	6.6	5.8	9.4	10.4	13.8
Other services	41.2	37.2	43.6	42.2	42.5	45.1	46.2

Table 13 Composition of exports, South Korea, 1971-92 (percentages) [from Cho (1994, p. 146).]

Year	Manufactured goods		Nonmanufactured goods
	Light industry	Heavy industry	
1971	72.1	14.2	13.7
1972	66.6	21.3	12.1
1973	63.4	23.8	12.8
1974	54.1	32.5	13.4
1975	57.4	25.0	17.6
1976	59.0	29.2	11.8
1977	53.6	32.2	14.2
1978	54.5	34.7	10.8
1979	51.4	38.5	10.1
1980	49.4	41.5	9.1
1981	49.4	41.6	9.0
1982	45.0	46.9	8.1
1983	41.1	50.6	8.3
1984	39.5	52.5	8.0
1985	38.6	53.4	8.0
1986	44.0	48.4	7.6
1987	43.8	49.1	7.1
1988	41.8	52.1	6.1
1989	42.0	52.2	5.8
1990	41.1	53.6	5.3
1991	37.8	56.1	6.1
1992	32.4	60.4	7.2

Table 14 Urbanization and industrialization, South Korea [from Chung & Kirkby (2002, p. 252).]

<i>Year</i>	<i>Urbanisation level (A)</i>	<i>Industrialisation level (B)</i>	<i>Difference (A-B)</i>
1966	42.1	42.1	0.0
1970	49.8	49.6	0.2
1980	66.7	66.0	0.7
1985	73.8	75.1	-1.3

Especially, as appeared in the case of the Gyehwado Tideland Reclamation Project, the realization that the indispensable environmental changes caused by development could result in a series of serious impacts on their lives even though there wasn't any recognizable pollution, degradation did not reach the point of controversy over or debate on the environment versus economic growth.¹⁰³ Why not? There can be many explanations: necessity of pursuing economic growth in the ideological structure competition with North Korea, repression of environmental issues just like the repression of labor movements by the authoritarian government, and the status of being under hypnosis by the continuous reproduction of developmentalism through the education system. One thing that is apparent is that, to see the full fledged aspect of sustainable development thinking, at least as a form of factor 'b)' - beyond anti-pollution level environmental consciousness - or 'c)' - the environment versus development debates - needed another ten to fifteen year domestic transformation in South Korea along with the influx of mature global sustainable development discussions in the late 1980s and early 1990s.

¹⁰³ This realization by the fishermen in the Gyehwado Project area is introduced by Hahm (2004). After the completion of the dykes for the Gyehwado Project, the change of the ecosystem in that area (such as the limitation of the flow of sea water and freshwater by the operation of sluice gates) resulted in the decrease of fishing stock, which eventually drove the fishermen to adapt different economic conditions for subsistence.

Continued Industrialization and Democratization Period (1981-1991)

Triggered by the assassination of President Park in 1979, South Korea faced a political crisis by the emerging new military authority - the Chun Doo-Hwan regime (1980-1988): the crisis of legitimacy of the new government. The simultaneous second oil crisis in 1979 brought about a minus GDP growth (-3.7 percent in 1980) for the first time since the beginning of Korea's four five-year economic development plans.

The Chun government (1980-87) aimed at the same goal as that of the Park regime twenty years ago: overcoming the crisis of legitimacy through the recovery of economy and growth. At this time, economic stabilization and liberalization were the representative policy slogans. Consistent economic policies combined by the favorable international trade environment during the middle and late 1980s - the so-called 'three lows' (low oil prices, a weak US dollar, and low international interest rate) - made possible the average annual economic growth rates of 9.8 percent during the fourth five-year economic plan (1982-86) and 10.0 percent during the fifth five-year economic plan (1987-91) (Cho 1994, pp. 49-51). Two things are interesting with regard to the macroeconomic policies and indicators during this period. First, according to Han (2000), in the early 1980s, for adopting an effective economic policy, there was a sharp competition among the governmental ministries and departments between the state centered developmentalists and neo-liberalists. President Chun strongly advocated the latter, which not only presented a guideline of economic policy in South Korea in the 1980s and 1990s but also influenced the pattern of supplementing human capital and the consciousness of bureaucracy (Han 2000). Overseas doctoral degree acquirers had numbered only 1,457 in 1970 but the number of acquirers increased rapidly to 4,836 in 1980 and 14,429 in 1990 (Dong & Yoon 2006). Among them, more than half (more than two thirds in economics and business administration) studied in US universities. Regardless of the relevancy of the argument whether neo-liberalism greatly influenced Korean economy or not, it is indisputable that there existed an enormous amount of

influx of new ideas and perspectives to interpret economic phenomena during the 1980s (see Figure 20).¹⁰⁴

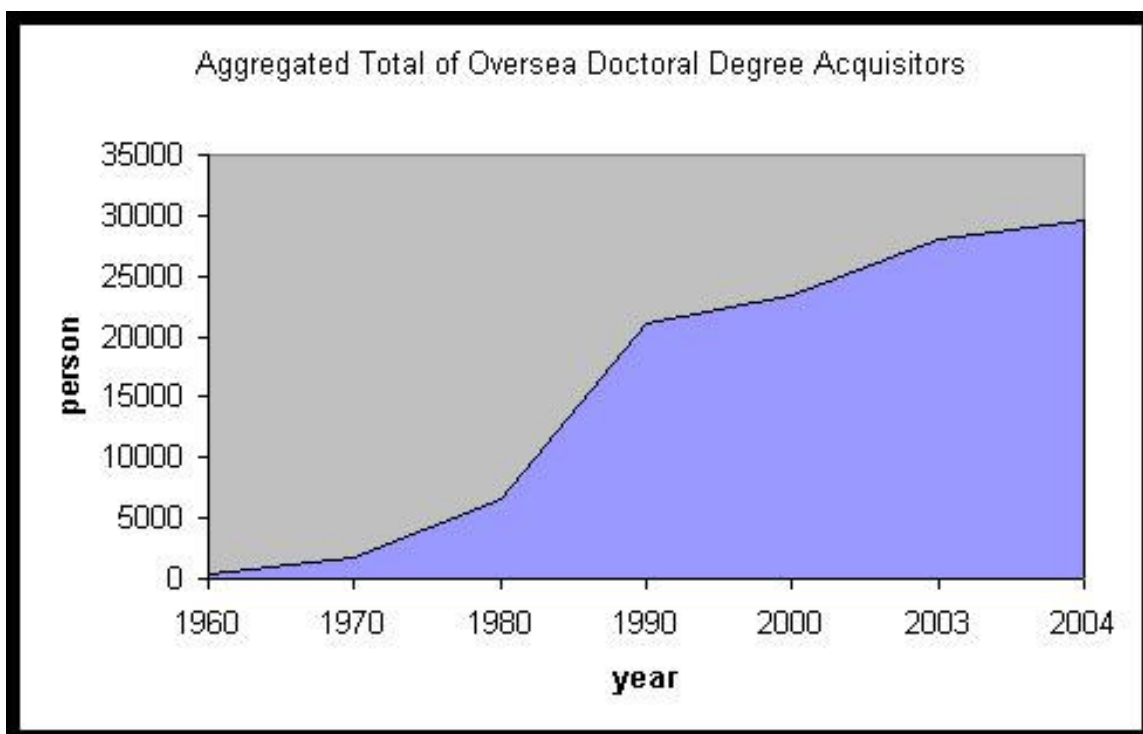


Figure 20 Aggregated total of overseas doctoral degree acquisitors [Adapted from Korean Educational Development Institute (KEDI) (2006).]

Second, Korean overseas construction made a great contribution to ameliorating the chronic deficit of the balance of the payments in South Korea. As Figure 21 shows, the chronic deficit in the balance of trade since the beginning of the five-year economic development plan in the 1960s worsened precipitously in the late 1970s by the second oil crisis and continued to threaten the Korean economy till the middle 1980s. Ironically, the oil crisis itself also gave an opportunity to Korean construction companies. As seen in Figure 22, the explosion of construction demand by the boom of the oil dollar in the late

¹⁰⁴ This influx of professionals who received overseas education would play a major role in shaping the discourses of environment versus development in the 1990s and onward. Also see footnote 129.

1970s to the early 1980s raised the overseas construction industry as a main means of supplementing the deficit of balance of the payments during this period. Park (1994, pp. 128-29) shows that the portion of the overseas construction industry occupied almost 5 percent of GNP in the early 1980s - 4.6% in 1980, 6.1% in 1981, and 3.8% in 1982. However, the rapid decrease of the demand in the Middle East since 1984 led to the swift shrinking of the industry - only 0.3% of GNP of Korea in 1990 (Park 1994, p. 129). Aside from the decrease of the balance improvement effect by the industry, there happened a matter of high rate of suspension of the heavy vehicles. The number of heavy vehicles for overseas construction that had reached the peak of 56,000 in 1985 dropped to 24,419 in 1990 and that the rate of operation was below 50 percent (see Table 15). This becomes one of the reasons why environmentalists allegedly claim that the Saemangeum Project as well as other large scale tideland reclamation projects concentrated on the period of the late 1980s and early 1990s was the result of lobbying by giant construction companies.¹⁰⁵

¹⁰⁵ For example, see Pulkod Pyunghwa Yeonkuso (2004, p. 19). In addition, two - Jae Sool Han and Myung Joo Ahn - out of five environmentalism oriented interviewees of the total thirteen interviews that were conducted by this author point to the necessity of utilizing such stoppage construction vehicles. However, the utilization of the stoppage vehicles and facilities from the overseas construction and re-employment support for the overseas construction laborers seem to have been serious matters much earlier. For example, Park (1989, p. 69) argues that the permission of participating in the large scale tideland projects to the private companies in 1978 was because of the two reasons - utilization of the vehicles and laborers.

Table 15 Status of heavy vehicles retained by Korean overseas construction companies (Nov. 1990)
[from Park (1994, p.120).]

Status of Heavy Vehicles Retained by Korean Oversea Construction Companies (Nov. 1990)			
Region	# of retained vehicles	# of stoppage	Rate of stoppage (%)
Middle East	19,388	11,320	58.4
Saudi Arabia	5,984	3,758	62.8
Libya	5,956	2,263	37.8
Africa	559	275	49.2
Southeastern Asia	4,295	2,524	58.8
Others	227	13	5.7
Sum	24,419	14,132	57.9

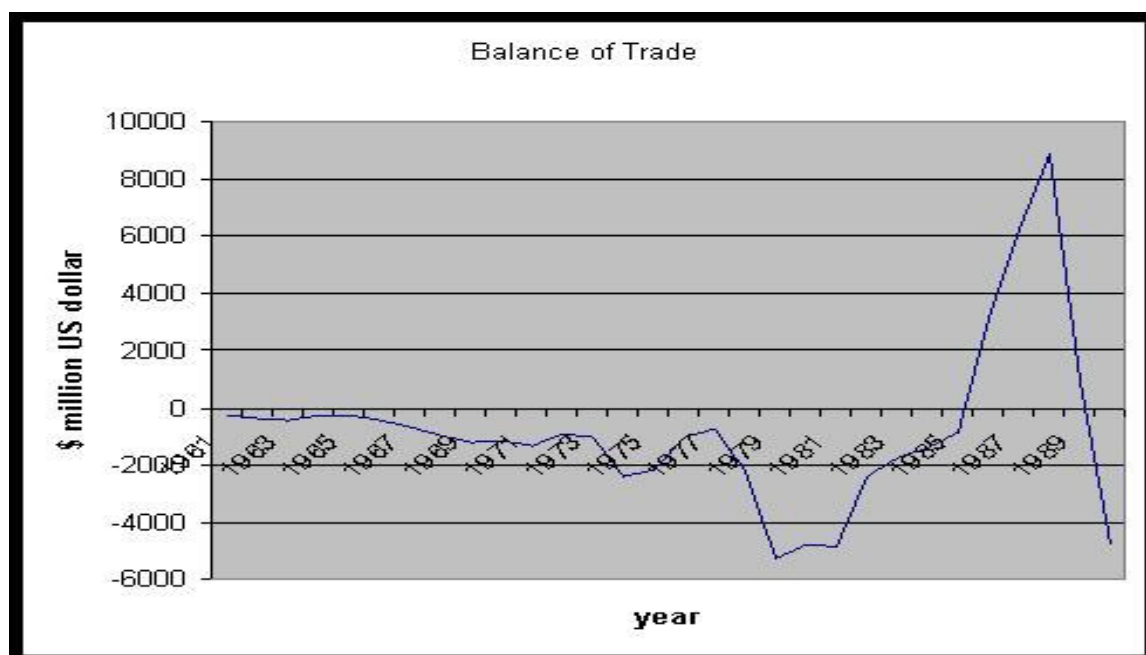


Figure 21 Balance of trade, South Korea (1961-1990) [Adapted from Korea International Trade Association (KITA) (2004).]

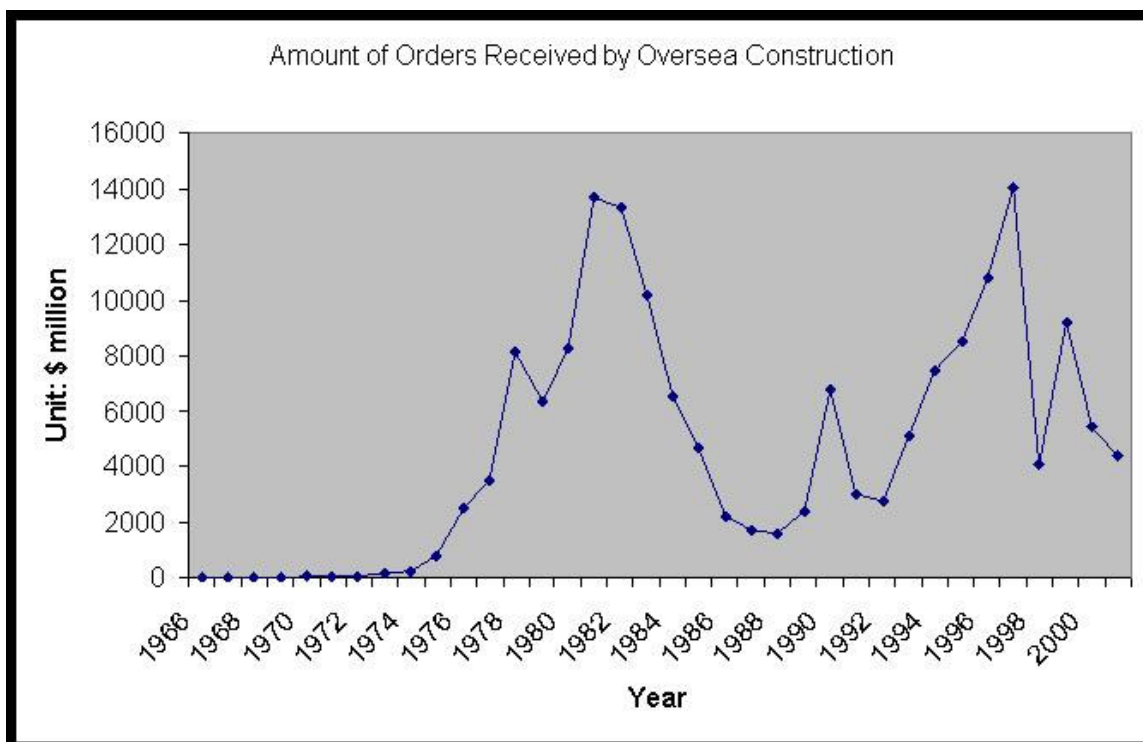


Figure 22 Amount of orders received by overseas construction (1966-2000) [Adapted from Kim (1997).]

South Korea seems to have achieved its democratization by the first democratic election in 1987. Although the democratization symbolized by the 6.29 Announcement was evaluated as successful with the ‘People Power Revolution’ of the Philippines in 1986, the transition from hard-as-nails authoritarianism was costly and bloody.¹⁰⁶ The

¹⁰⁶ This announcement was made by Roh Tae-woo, the sixth president of South Korea (1988–1993). Roh was hand-picked by the ex-general Chun Doo-hwan (presidency in 1980-1988) to succeed him as president, triggering large pro-democracy rallies in Seoul and other cities in 1987. In response, Roh announced on June 29th that he agreed to hold democratic presidential elections. This announcement is called 6.29 Announcement, making Roh a viable candidate for the next election. Opposition supporters, in pronounced regional voting, split their vote between two candidates—future presidents Kim Young-sam and Kim Dae-jung, making Roh the first elected president of the post-military rule era. This event (6.29 Announcement) can be regarded as one of the most remarkable events of the Korea’s democratization process (Wikipedia 2006n).

After the assassination of Park by Kim Jae-kyu in 1979, a vocal civil society emerged that led to strong protests against authoritarian rule. Composed primarily of university students and labor unions, protests reached a climax after Major General Chun Doo-hwan’s 1979 Coup d’état of December Twelfth and declaration of martial law. On May 18, 1980, a confrontation broke out in the city of Gwangju between

analysis of the political democratization history of Korea is beyond the scope of this thesis. But one important consequence shaped by the political transition in the 1980s that was tightly coupled with the further industrialization processes in South Korea during the 1980s should be pointed out: ‘*regional rivalries*’.¹⁰⁷ The transformation of industrial structure, urbanization, and inequality in development that had been already witnessed by the adoption of unbalanced growth theory and the strategy of development of growth pole in the prior period (1960s - 70s) deepened in this period. Contrary to the intention of the government, the concentration of economic power in the Seoul- Gyeonggi region and the Southeastern region centered around Pusan and Taegu prevailed against the spread effect of economic development in the growth poles. For example, almost all of the new company headquarters selected the two regions mentioned (see Figure 23) and Gangwondo and Honam (Chollanamdo and Chollabukdo) regions have been averted by the primary spatial development projects (see Figure 24). However, even though this phenomenon of regional inequality should have been recognized earlier, complaints and demand for correction were not mobilized until the political leaders took abusive advantage of the regional rivalries as one of the critical means to win elections.¹⁰⁸ The sense of alienation from the economic development by the people in Chollabukdo (or broadly speaking, the Honam region - Chollado) became a tenacious reason why the

students of Chonnam National University protesting against the closure of their university and armed forces and they resisted brutal suppression of military force that lasted nine days until May 27. Immediate estimates of the civilian death toll ranged from a few dozen to 2000, with a later full investigation by the civilian government finding 207 deaths (this is so-called Gwangju Massacre). Public outrage over the killings consolidated nationwide support for democracy, paving the road for the first democratic elections in 1987 (Wikipedia 2006c).

¹⁰⁷ It is also called ‘regional animosity’ or ‘inter-regional antagonism’.

¹⁰⁸ Dramatic result of the three presidential elections - the first democratic presidential election in 1987 and two subsequent elections in 1992 and 1997 - was determined by the dynamics of regional voting patterns mainly based on the rivalry between Southwestern Honam (Chollanamdo and Chollabukdo) region and Southeastern Youngnam (Gyungasangnamdo and Gyungasangbukdo) region. The win by Roh Tae-woo in 1987 is considered as the result of the split of the Opposition party (Kim Young-sam based on the Youngnam region and Kim Dae-jung based on the Honam region). The win by Kim Young-sam in 1992 can be interpreted as the result of combining the Youngnam region with other regions against the Honam whereas the win by Kim Dae-jung in 1987 was considered as the result of consolidation of the Honam and other regions against the Youngnam region.

people in the province have pursued the Saemangeum Project despite all the controversies over the project.

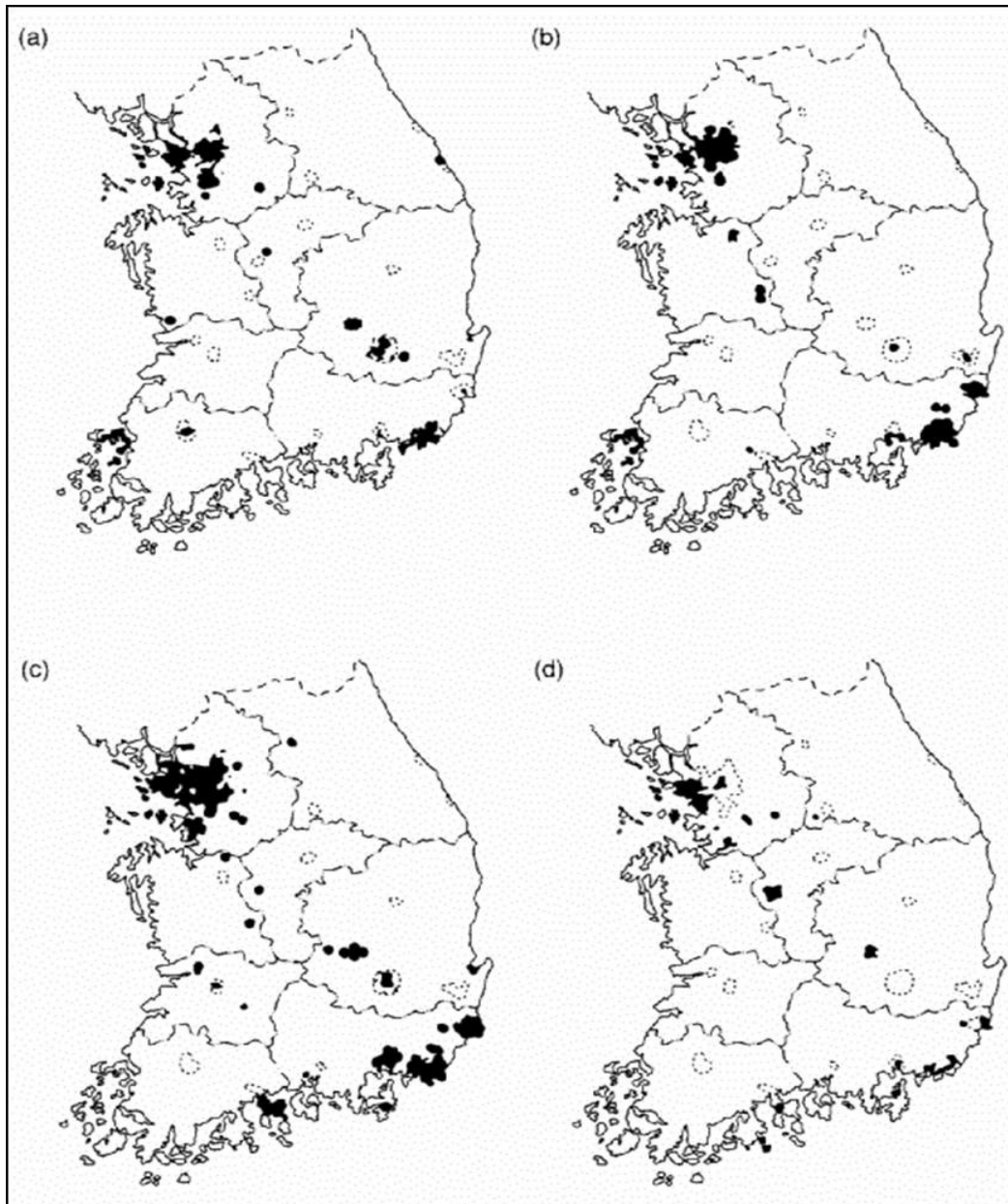


Figure 23 Locations of new company HQs, successive periods, 1950s-80s.
 Note: (a) Before 1960; (b) 1960-69; (c) 1970-79; (d) 1980-84
 [from Chung & Kirkby (2002, p. 114).]

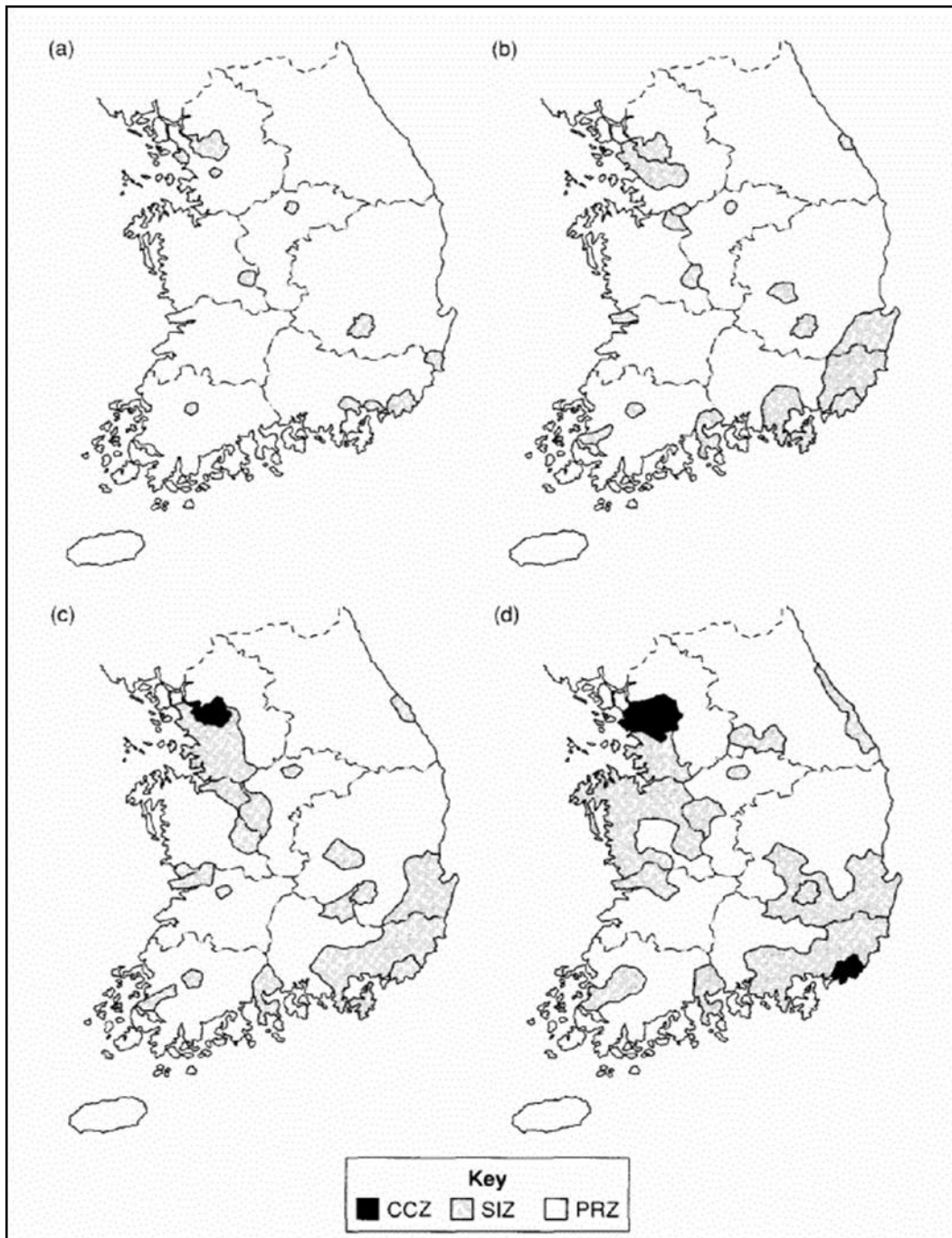


Figure 24 Historical development of space in Korea.

Note 1: (a) 1962-70; (b) 1970-79; (c) 1980-87; (d) 1988-97

Note 2: CCZ = Core consumption zone, SIZ = Semi-peripheral industrial zone, PRZ = Peripheral rural zone

[from Chung & Kirkby (2002, p. 138).]

Spatial inequality of continued investment in productive infrastructure also effected dramatic changes to the natural environment (Chung & Kirkby 2002, p. 145). Chung and Kirkby (2002, p. 145) summarize particularly distinctive characteristics of such changes by pointing out two areas: water resource management and power generation. Water supply fell short of demand in the late 1980s in spite of huge investments throughout the economic growth period since 1961. Particularly, water demand in the industrial sector with the combination of the efforts to look for cheap land price areas led the government to pursue large industrial estate development along the Western coastal areas. Shallow waters unsuitable for deep water ports made large land reclamation projects in the West coast region essential before the huge petrochemical industrial complexes in Daesan, Asan, Sihwa, and Daebul (Chung & Kirkby 2002, p. 148).¹⁰⁹ The Saemangeum Project that was launched in 1991 can be regarded as the finale of this series of comprehensive agriculture and industry development projects. Needless to say, this type of large scale infrastructure projects, especially water resource management projects by tideland reclamation seriously changed and damaged natural ecosystems over the extensive areas. The other area - power generation - shows a new and advanced perception about environmental issues that developed during this period. As shown in Table 16, due to more than a ten fold increase of electricity consumption during the 1970-89 period and the corresponding construction of many coal and oil-fired plants, it goes without saying that power generation seriously contributed to air pollution. However, the main problem came from the successful transformation of the power generation structure. Because of intensive investment in the 1970s and 1980s, South Korea became one of the highest levels of nuclear dependence in the world by 1989 (Lee & So 1999, p. 97). Awakened by

¹⁰⁹ Daesan industrial complex is located at the reclaimed land by the Daeho Embankment Project (1981-85, see Table 11). Sihwa industrial complex is located at the reclaimed area by the Sihwa Tideland Reclamation Project (1987-95, see Table 11). Daebul industrial complex is located at the reclaimed area by the Youngsangang III Project (the industrial complex construction was 1989-96 and the Youngsangang Project was 88-93, see Table 11).

the external shock of the disastrous Chernobyl incident in 1986, heightened risk perception itself became a justifiable cause of environmental movements.

Table 16 Electricity production and consumption by source, 1970-89 (unit: 100 million Kwh) [from Chung & Kirkby (2002, p. 145).]

<i>Year</i>	<i>Electricity production</i>				<i>Electricity consumption</i>				
	<i>Hydro</i>	<i>Fossil fuel</i>	<i>Nuclear</i>	<i>Total</i>	<i>Manu- facturing</i>	<i>Domestic</i>	<i>Service</i>	<i>Other</i>	<i>Total</i>
1970	12.2	79.5	—	91.7	49.8	8.0	9.1	10.5	77.4
(%)	(13.3)	(86.7)	(0.0)	(100)	(64.3)	(10.3)	(11.8)	(13.8)	(100.0)
1980	19.8	317.8	34.8	372.4	220.3	53.2	33.3	20.5	327.3
(%)	(5.3)	(85.3)	(9.8)	(100)	(67.4)	(16.3)	(10.2)	(6.1)	(100.0)
1989	45.6	425.5	473.7	944.7	500.5	151.8	115.8	36	821.9
(%)	(4.8)	(45.0)	(50.2)	(100)	(60.9)	(18.5)	(14.1)	(6.5)	(100.0)

In sum, political transition (democratization process) and the intensification of environmental degradation through spatially unequal development set the background of the birth and rapid growth of environmental movements of South Korea in the 1980s. Lee and So (1999, p. 102) succinctly summarize the Korean environmental movement in the 1980s as ‘anti-pollution’ for the first half of the 1980s and ‘anti-nuclear’ for the second half of the decade. Since the first organized environmental movement group, the Korea Pollution Research Institute (KPRI) was founded in 1982, environmental movements in South Korea had expanded dramatically both quantitatively and qualitatively throughout the 1980s (Lee & So 1999).¹¹⁰ There are several distinct traits in the development of

¹¹⁰ The successful activism by KPRI, exemplified by the resounding report of the fieldwork at the Onsan Industrial Complex in 1985 which revealed a shocking fact that the site of non-iron heavy metal industries had caused a Korean version of Japan’s well-known ‘Itai-itai illness’ to more than five hundred Onsan residents and ultimately forced the government to evacuate and resettle about forty thousand citizen, was the trigger that brought about the subsequent establishment of many environmental movement organizations. For example, if only name representative nation-wide groups, the Korea Anti-Pollution Movement Council (KAPMC, founded in 1984), the Korea Anti-Pollution Civilian Movement Council

Korean environmental movement during the period. First, environmental movements were considered and pursued as a branch or means of anti-systemic democratization movements. The democratization movement was not simply the root of environmental movements; environmental movements in Korea in the 1980s were equal to democratization movements (Lee & So 1999, p. 109). Lee and So (1999) explain that, even though there are no apparent connections or organized ties between student movements and the environmental movement, an indirect linkage between the two exists in the sense that the former played a crucial role of human resource pool for the latter and many environmental movement leaders today are former democratization activists.¹¹¹ Second, the recognition of environmental issues and even the terminology were confined to the limited area of pollution. “Movement groups used the term ‘anti-pollution’ rather than ‘environmental protection’ and “[t]heir slogans and goals were the ‘elimination of pollution’ or ‘anti-pollution,’ rather than protection of the environment or control of the environmental crisis” (Lee & So 1999, p. 96). Third, although the participant base had expanded to include citizens in the late 1980s and early 1990s, the ideological inclination of the Korean environmental movements in the 1980s was towards the political left. For example, the Korea Anti-Pollution Movement Association (KAMPA, founded in 1988)’s ideology was clearly oriented toward leftist environmentalism, urging environmental justice and the abolition of the monopoly capitalist system (Ku 2004, p. 191). It was not until the formation of the successor of KAMPA - Korea Federation for Environmental Movements (KFEM) in 1993 that environmental movement groups could escape from the image of leftist activism by softening their tone and modifying their strategy (Lee & So 1999, pp. 109-10).

(KAPCMC, founded in 1986), and the Korea Anti-Pollution Movement Association (KAPMA, founded in 1988) were successively founded; in addition, since the late 1980s, the local environmental groups blossomed around the country (for detailed information, refer to Ku 2004; Lee & So 1999).

¹¹¹ Student movements in Korea have a long and prestigious history. They overthrew the authoritarian Lee regime in 1960 and were also responsible for the fatal pressure on Park regime and its collapse. They continued to resist the pseudo-civilian government by the Chun regime and finally won the victory of 6.29 Announcement in 1987 with the coalition of labor movements and newly emerged middle class. Nobody denies the critical role in the democratization process in South Korea.

Aside from the change of objectives of tideland reclamation by the development of industrial complexes in the Western coastline during the 1980s, Figure 17 (see also Table 7) and Figure 18 hint two things with regard to tideland reclamation during this period. On the one hand, the rapid drop of the number of non-governmental reclamation in the 1980s reflects the depletion of the available tideland for the small and medium size reclamation that is possible by local village-level investment, labor, or technologies.¹¹² On the other hand, the fact that the total area of reclamation completed after 1990 (about 63,000 hectare) is bigger than that of reclamation completed during 1945 to 1990 (about 52,000 hectare) reveals that the tideland reclamation projects in the 1980s and 1990s required much more capital and technologies, which would have been impossible in the previous periods.¹¹³ Along with the adaptation of the tideland reclamation projects in accordance with new economic demand and available technologies, if not salient, new views on the effectiveness of tideland reclamation began to emerge in the late 1980s. For example, K. S. Lee (1988) raises the issue of secondary cost of tideland reclamation, criticizing the conventional benefit-cost analysis which is confined its content of analysis of the direct and primary costs and benefits associated with an investment project. However, the fundamental and traditional perception of priority for the sacred crop land was still firm. Nobody was concerned about the conversion of ‘waste’ mud-flats to the precious crop land or industrial land. Why not? In spite of the democratization and the spread of the environmental movements, tidal salt marshes didn’t emerge as a critical element that Korean people perceived as the precious environment yet. Simply speaking, no one didn’t have to know ‘mud-flats’ to interact with others even as an environmentalist.

¹¹² However, two giant construction companies (Hyundai Construction and Donga Construction) which had been the beneficiaries of the oversea construction boom in the late 1970s and early 1980s also participated in the large scale tideland reclamation projects in this period for the first time as private companies. Hyundai completed its Seosan A, B district project in 1995 and Donga completed the Kimpo district project in 1991, which explains the rapid increase in terms of area of non-governmental reclamation.

¹¹³ Most of the reclamation projects completed in the 1990s were undertaken during the 1980s. The trend of goals and perception about tideland reclamation projects in the 1980s are reflected in the statistics of the 1990s. This 63,000 hectare includes the anticipated area of 40,100 hectare by the Saemangeum Project.

As for sustainable development, the factors of the LISDA which had been uncovered in the analyses of the history until the previous periods (~1980) - h), m), o), q), and n) - became intensified. For example, the boom and recession of the construction industry in the Middle East played a partial role in undertaking the large scale reclamation projects in South Korea during the 1980s (factor h)). The change of power generation shows another level of dependence of its necessary resources on transnational sources (factor o)). In addition, the emergence of neo-liberalism-oriented decision makers and huge influx of human resources educated overseas in this period seemed a good preparation for the appearance of factor f) - *influx of global environmental agreements or environmentalism, which catalyzes debate on economic growth versus environmental preservation*. Factor 'r-1)' - *awareness of the existing institution's inability to cope with rapid changes brought by damages that people inflict on their environment* - was emerging as shown by the rapid expansion of environmental movement organizations in the late 1980s. However, as the campaigns during the period by the Korean environmental movements displayed (not 'environmental protection' but 'anti-pollution'), factor b) and c) - beyond anti-pollution level environmental consciousness and the environment versus development debates - were still not the main agenda of discussion even in the environmental movement groups. Embarked on in 1991, the Saemangeum Tideland Reclamation Project seemed to play a role of catalyst for sustainable development coincidentally based on the background setup by all the transformation processes in South Korea during the condensed economic growth period.

THE SAEMANGEUM TIDELAND RECLAMATION PROJECT

In spite of the emergence and success of the real environmental movements such as anti-nuclear movements in the late 1980s and early 1990s, the last of the series of large-scale comprehensive agriculture and industry development projects embarked on since the 1970s - the Saemangeum Tideland Reclamation Project - began in November 28, 1991 without any sign of apparent objections or worries. Celebrated by almost all national or local political leaders including President Rho Tae-woo, the press delivered great compliments to the project by describing it as the world's-longest dyke, historic project for creating a huge area of new land for agriculture and industries, and the base for a new central port of the era of the Yellow Sea (Kim 1991; The Hankyoreh 1991).¹¹⁴ Primary construction work includes four dykes (total length of them - 33.2 km) and two sluice gates (see Figure 25). The scale of those works is so large that the actual size of the project cannot be recognized easily by the people who have lived in a small country where no one can see the horizon (Hong 2004, p. 49).¹¹⁵ The aerial photo or the satellite images can help one imagine the size and recognize the extent of changes by the huge project (see Figures 26 and 27). As shown in Figure 28, the dykes are massive structures that required for their construction immense amounts of sand, gravel, and stone.¹¹⁶ Figure 29 shows one of the effects of the dyke construction; as a result of supplying gravel and stones for the dykes, an entire stony mountain (86 m height and an area of 20 hectare) disappeared in addition to the enormous sand dredging in the Western offshore regions. Each door of the sluice gates is comparable to a five-story building (30m width and 15m

¹¹⁴ It is said that the total length of the dykes is 0.5 km longer than the Zuider Zee dyke in the Netherlands (Moon 2000, p. 33).

¹¹⁵ In Korea, due to the mountainous terrain (about 70%), it is not possible to see the horizon. It is expected that, if the Saemangeum Project is completed and produces a new plain land, people can see the horizon in the reclaimed area.

¹¹⁶ According to Moon (2000, p. 37), the necessary amount of gravel and stones was 31 million tons and 42 million ton sand was needed. The total volume of the dykes reaches 73 million m³ and that is comparable to 4.86 million 15-ton trucks.

height) and weighs 500 tons. Eight pairs of such doors in the Sinsi sluice gate and ten pairs of doors in the Garyuck sluice gate were constructed (see Figure 30 - compare the cars beside the doors with the door size). The original plan approved in 1991 was to create a fresh water lake (11,800 hectare area) for water resource management and development and reclaimed land for agriculture (28,300 hectare area). For the construction of the four dykes, two sluice gates, and compensation for the fishermen from 1991 to 2006, total 2,160 billion won was invested (Korea Agricultural & Rural Infrastructure Corporation (KARICO) 2005).¹¹⁷

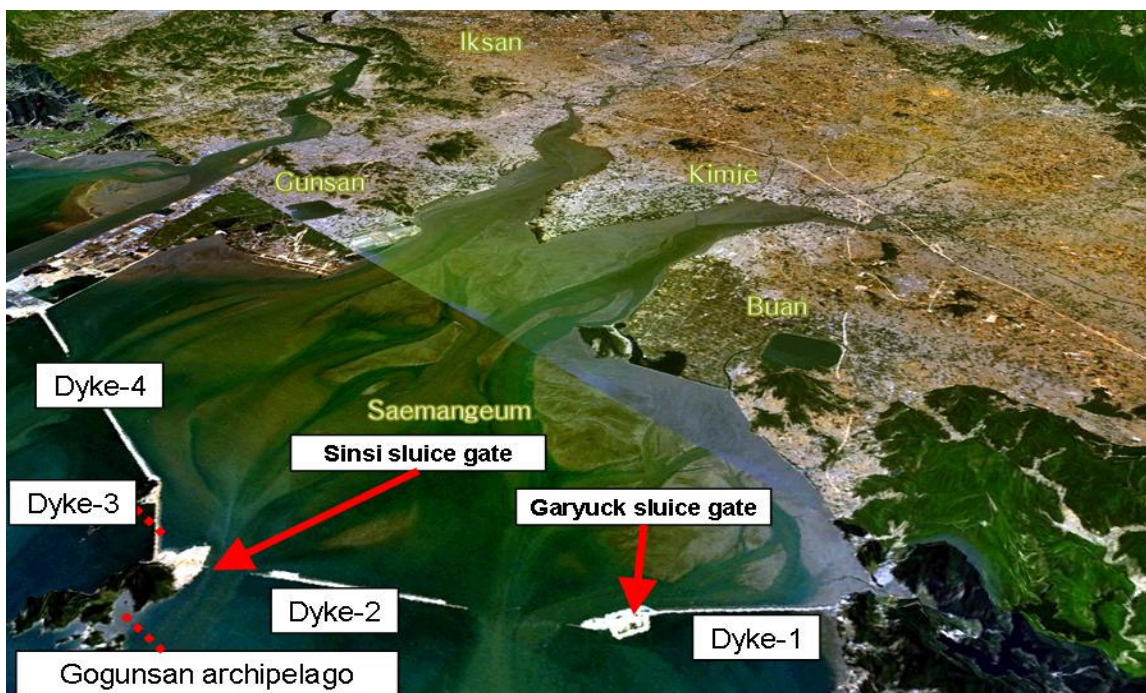


Figure 25 Primary construction works for the Saemangeum Project

¹¹⁷ Due to the change of the exchange rate of the construction period, it is not clear to calculate the cost of construction in dollar. Provided that the exchange rate was 1,000 Won per 1 dollar, the cost of the first stage of the project would be about \$ 2 billion. This includes 46 billion Won (about \$ 500 million) to compensate for the fishermen (Korea Agricultural & Rural Infrastructure Corporation (KARICO) 2005). According to Moon KM (2000, p. 91), a total of 12,566 cases of compensation were completed by the end of 1999. Among these cases, the compensation for the registered fishery was the biggest (58%) in terms of amount and that of shellfish gathering by a bare hand was the biggest in terms of number (54%).

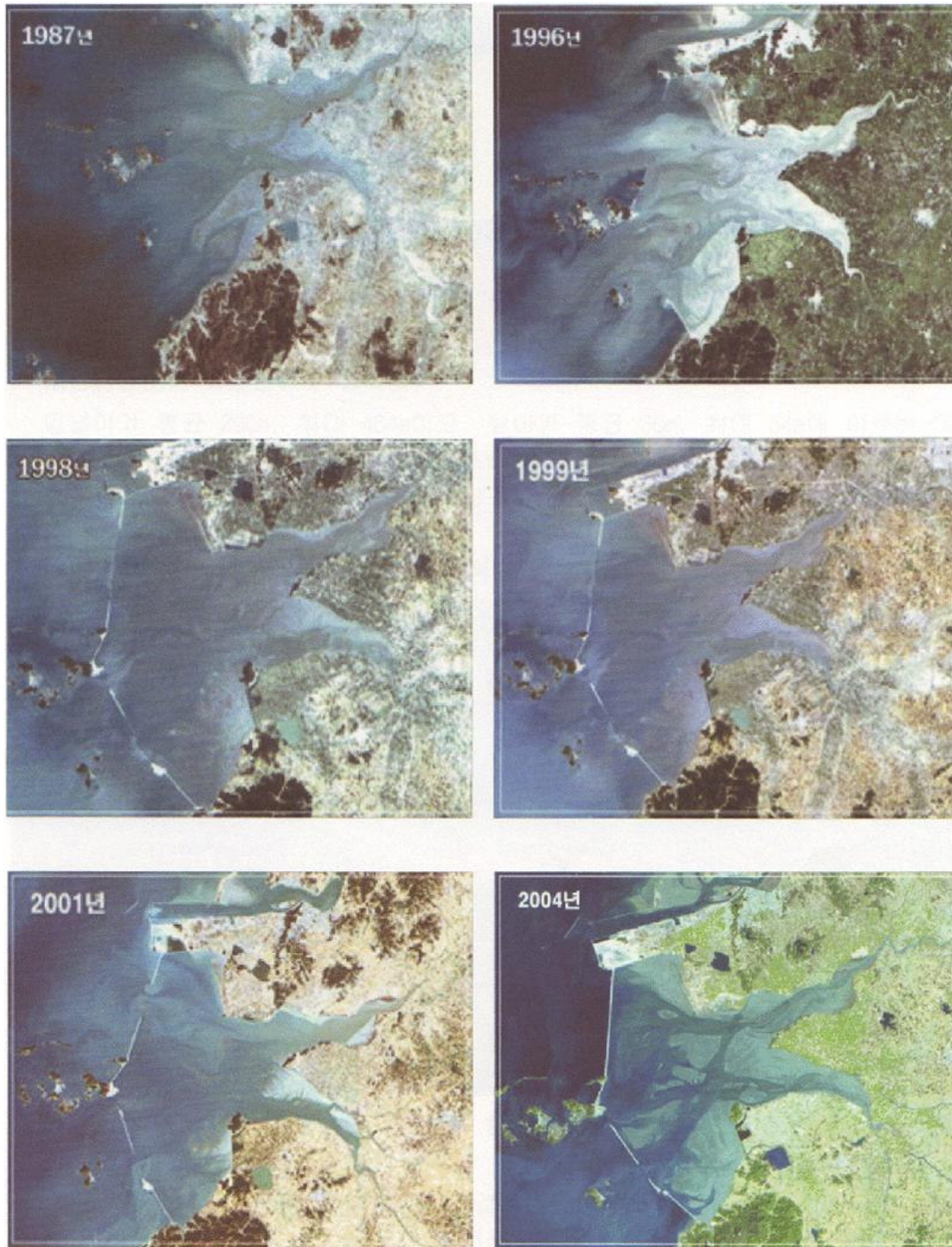


Figure 26 Satellite pictures of the Saemangeum area, 1987-2004 [from KARICO (2005).]



Figure 27 An aerial photo of the all construction works in the Saemangeum Project [from KARICO (2005).]

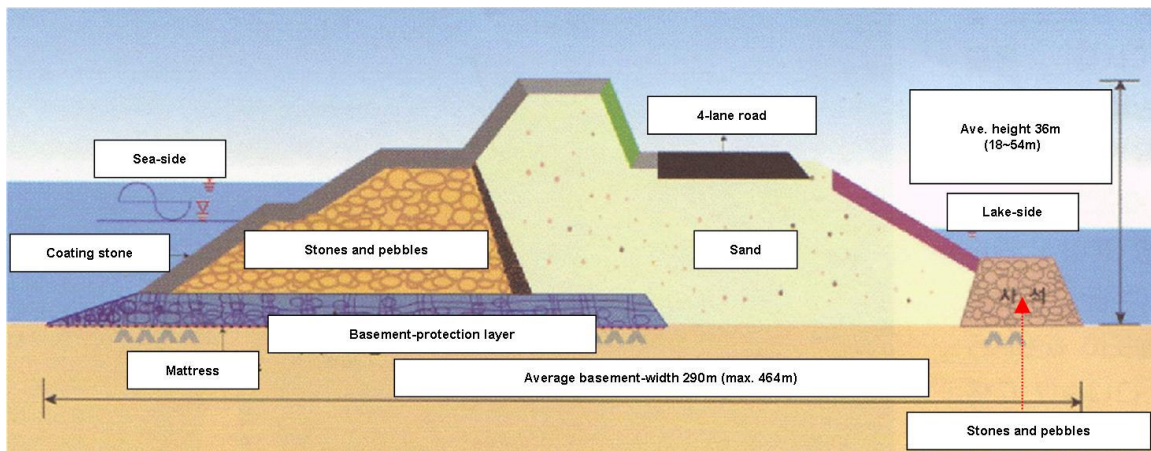


Figure 28 The standard cross-sectional view of the dyke in the Saemangeum Project [from KARICO (2005).]



Figure 29 The view of the place where Haechangsan (Haechang Mountain) was located before the Saemangeum Project [from KARICO (2005).]

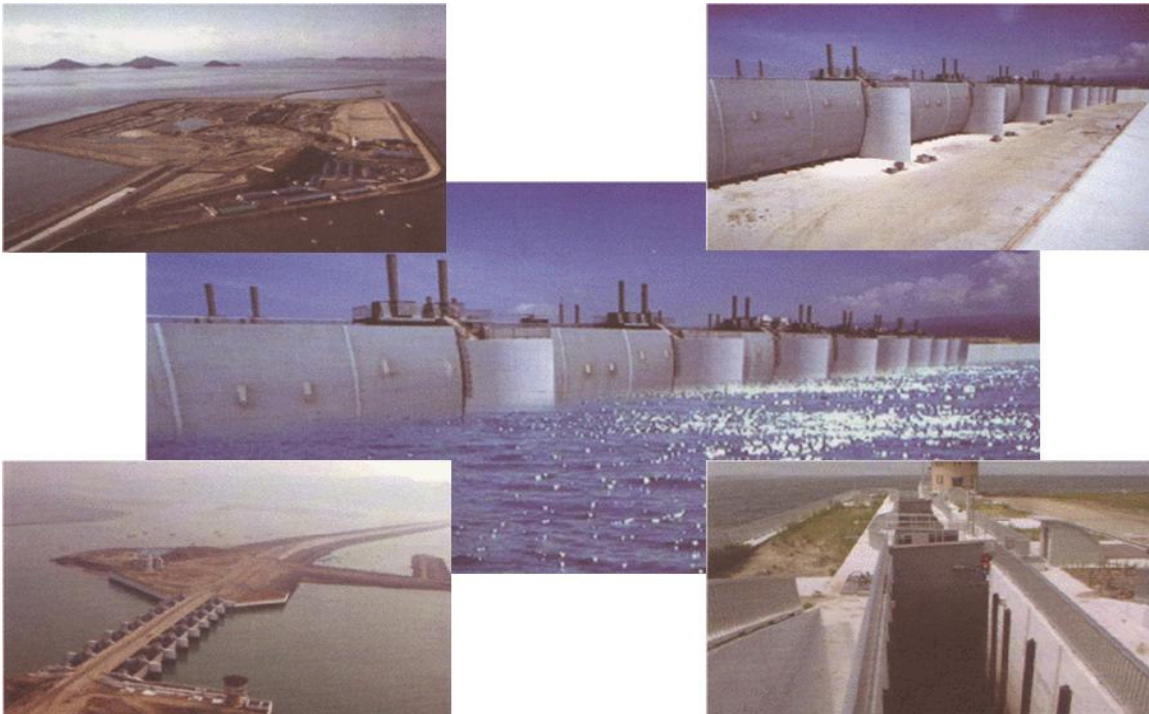


Figure 30 The sluice gates in the Saemangeum Project [from KARICO (2005).]

Originally, the Saemangeum Project was planned to be completed by 1998 for the embankment construction (dykes and sluice gates) and by 2004 for the internal development through investing 1,300 billion won (The Hankyoreh 1991).¹¹⁸ However, the completion of the sea dykes has been delayed until 2006 and the government has not firmly established a plan for the internal development. What happened in the Saemangeum area during the past fifteen years? How could such a large scale national development plan begin without a fixed plan or goal about its use even 15 years after its beginning and completion of its primary structures? In the wake of the controversial periods of the project, this section will review the project according to the following periodization:

The Latent Period (1991-1995)

Recognition of the Problem (1996-1997)

The Front of the Development versus Conservation (1998-2003)

The Pursuit of a Judicial Settlement (2004-2006)

As Moon (2000) describes, the Saemangeum Project has been ‘the front of the development vs. conservation’ or ‘the West Sea war of the development vs. conservation’. On the peak of the battle in 1998-2003, people in South Korea could witness what they had never imagined to happen in the previous condensed growth era (1961-1990).¹¹⁹ Especially for the description of this stage (1998-2003), the narration of interviewees will be used with the introduction of other studies on the project.

¹¹⁸ 820 billion won for the embankment and 480 billion won for the internal development. However, as of April, 2006, more than 2,160 billion won was spent and no one knows how much it will cost or the internal development. One research on the internal development estimates the cost as 13,500 billion won (about \$13.5 billion) (Moon 2000, p. 199).

¹¹⁹ The cancellation or delay of several national development projects including the Saemangeum Project and the Dongang Dam Project occurred by the environmental movements. The sacred development ideology gave way to the value of the environment or life.

STAGE-1: THE LATENT PERIOD (1991-1995)

Although people in South Korea enjoyed their first democratic presidential election in 1987, the real completion of the democratization of South Korea is thought to be achieved in 1992 by the election of Kim Young-sam as president.¹²⁰ He was the country's first civilian president in 30 years. H. Lee (1998) evaluates the appearance of the Kim government as the bankruptcy declaration of the authoritarian capitalist development state. Another important improvement towards democracy was seen in the early 1990s: local self-governance. The elections for lower level local governments in 1991 opened an advance level of democracy in South Korea, which was succeeded by the upper level local governments in 1995. However, one of the unique characteristics of Korean politics - regional rivalries - became apparent.¹²¹ The efforts to cope with this political and social ill became among the main issues of politics, too. This aspect of Korean society - regional rivalries and its remedial efforts - becomes one of the main forces that weave the complex problem of the Saemangeum.

Economically, the first half of the 1990s of South Korea can be described as the pursuit of joining the Organization for Economic Co-operation and Development (OECD) in order to expand the international trade market base (Kim 2002a). According to C. S. Kim (2002a), the government of South Korea tried to deal with the economic issues that occurred during the condensed economic growth period such as opening the capital market, financial liberalization, opening the industries for foreign investment, labor laws, environmental laws related with the Framework Convention on Climate Change, and maintaining the position of a developing country.¹²² Of course, this was the

¹²⁰ The presidential election in 1987 was the first democratic election since 1961.

¹²¹ See footnote 108.

¹²² Framework Convention on Climate Change (UNFCCC or FCCC) is an international environmental treaty produced at the Rio Conference in 1992. The treaty aimed at reducing emissions of greenhouse gas in order to combat global warming. See the Rio Conference in the history of mainstream sustainable development chapter (p. 17). The Korean government dealt with this Convention by integrating with the issue of the position of a developing country. The negotiation resulted in the concession in the areas of the

next level of efforts to transform the Korean economy by participating proactively in globalization; however, the financial crisis in 1997 forced South Korea to accelerate its economic liberalization processes faster than the Korean government had intended to during the negotiation period for joining the OECD.¹²³ One example of the tendency towards the crisis in 1997 in the 1990s is the increase of the debt and debt-equity ratio of the chaebols caused by the removal of state controls through the liberalization policies of the Korean government (Minns 2006, p. 179).

As discussed in the section of the 1980s, the formation of the Korea Federation for Environmental Movements (KFEM) in 1993 expanded the environmental movement in Korea to the general citizen by softening their strategy. By the end of 1994, its membership reached about 13,000 and as of December 1996, it numbered 25,000 (Lee & So 1999, p. 110). Another big national environmental organization - Green Korea United (GKU) was formed in 1994 and has been playing a major role in Korean environmental movement history with KFEM.¹²⁴ However, even before the formation of the two big national environmental organizations, the early 1990s was already showing the power of the environmental awareness in policy making processes as in the anti-nuclear movements in Anmyondo (1990), Uljin and Kulupdo (1994), in the Nakdonggang River Phenol Contamination Incident (1991), and in the anti-Dongang Dam Campaign (1991-2000) (Ku 2004; Lee & So 1999). Not only that, the participation in the environmental movements by religious groups also expanded in the early 1990s (Moon 1994).¹²⁵ The

customs, subsidy, and intellectual property rights by Korean government and the OECD's consent of South Korea as a developing country level status for the agriculture and the Climate Convention. (Kim 2002a).

¹²³ South Korea joined the OECD in December, 1996 and exactly one year later it entered the IMF era in December, 1997.

¹²⁴ Several environmental movement organization that had established in 1991 united as 'Baedal Noksaek Yeonhap (Baedal Green United) in 1994, which renamed itself in 1996.

¹²⁵ According to Wikipedia (Wikipedia 2006o), about 46% of South Korean citizens profess to follow no particular religion. Of the remainder, Christians account for 27.3% of the population and Buddhists 25.3%. As shown in the 'samboilbae' protest in the anti-Saemangeum Project, the major religious environmental groups are Catholic, Protestant, and Buddhist.

participation by religious environmental groups became important later in the Saemangeum controversies.

The environmental policy of the government in the early 1990s also shows an important improvement. To strengthen the legislative framework for environmental conservation, the old 1977 Environment Preservation Act was replaced by a new set of six environmental statutes.¹²⁶ Moreover, in 1994, the Office of Environment was elevated to full ministerial level as the Ministry of Environment (MoE). However, in spite of these new improvement, the structural limitation in the sense of enforcement (while national government regulates pollution control only, local governments have the authority for enforcement) weakened the effectiveness of environmental policies (see Table 17).

Table 17 Non-compliance to environmental impact assessment, 1992 [from Chung & Kirkby (2002, p. 209).]

<i>Developers</i>	<i>No. of developments</i>	<i>No. of non-complying developments</i>	<i>Percentage of non-compliance with EIA</i>
Public agencies	201	148	73.6
Office of Railways	5	5	100.0
Local government agencies	116	87	75.0
Land Development Corporation	41	35	85.4
Road Corporation/Housing Corporation	10	8	80.0
Other	29	13	44.8
Private sector	81	56	69.1
Total	282	204	72.4

¹²⁶ These statutes include the Environmental Policy Foundation Act, the Air Environment Preservation Act, the Water environment Preservation Act, the Noise and Vibration Control Act, the Hazardous Chemical Substances Control Act, and the Environment Pollution Damage Dispute Co-ordination Act (Chung & Kirkby 2002, p. 197).

The influx of world-historic context in this period is apparent. Especially the 1992 Rio Conference played a critical role in broadening Korea's environmental movements not only in terms of their concerns but also in terms of the emergence of the cooperation between environmental groups and the business sector (Lee & So 1999, p. 107). Korean environmental groups came to realize the global nature of environmental problems beyond their attention on domestic environmental issues and the preparation period for Rio provided the environmental groups with the opportunity to share their interests with the business sector.¹²⁷ The interviews also show some examples. One interviewee in this study says that he participated in both the Rio Conference in 1992 and the WSSD in 2002 (Ja Kwon Koo). With regard to the receptive atmosphere of such global environmental discourses at that time, another interviewee (Sung Kwang Choi) argues that in the late 1980s the overseas doctoral degree acquirers began to rush in, which contributed significantly to the formation of the environmental issues and the Saemangeum issues in the middle of the 1990s.¹²⁸

Nevertheless, the Saemangeum Project progressed without any obstacles even from the environmental groups.¹²⁹ In July 1994, Dyke-1 and 2 were completed and the Saemangeum Museum opened in August 1995. Another large scale tideland reclamation project - the Sihwa Project (embarked on in 1987) - was completed in 1994 and fresh water storing for the Sihwa Lake started. A few scientists, especially specialists in sea ecology or environment, already warned of an environmental disaster in 1992-93 (Kim 1992; Shin 1993).¹³⁰ However, the voice of warning was covered by the development

¹²⁷ Concretely, Y.-s. F. Lee and So (1999, p. 107) show that the business sector not only sponsored some of the NGOs' activities but also covered the travel expenses of NGO representatives to Rio.

¹²⁸ Interestingly, he (the interviewee, Sung Kwang Choi) enumerated several leading figures who supported the value of the mud-flats, who had returned to Korea. Those whom he mentioned are natural scientists and they have helped Korean people recognize the value of mud-flats through their lectures, appearance in media, and active participation in environmental organizations.

¹²⁹ The biggest problem was the cost. Unexpected difficulties in constructing dykes in a rather deep water, expansion of the compensation for the fishermen, and budget control by the planning department of the government increased the cost of construction and delayed the project.

¹³⁰ However, these scientists expressed only individual opinions. Their voice was adopted as the basis for the anti-Saemangeum Project in the late 1990s.

illusion of the local people and was only an academic concern. An interviewee tells a story of the Sihwa region at that time where local people were looking forward to the profit of development,

The project began in 1987 and was completed in 1994. Until then, there had been no recognition of the value of mud-flats. ... People believed that the central government was justified in carrying out [development] policies and projects and they also expected that they would gain much benefit from the development profit. ... Many thought each household would own two cars. ... They exchanged sea with the compensation. ... Even specialists couldn't expect the disaster. ... (Jae Hyung Lee).

STAGE-2: RECOGNITION OF THE PROBLEM (1996-1997)

The Sihwa District Tideland Reclamation Project started in 1987. The objective of the project was expansion of the land, creation of an industrial complex and cities, creation of crop land, and securing water resource. The project was a typical tideland reclamation project much like those that had been carried out throughout the 1980s (see Table 11); in particular, by leveraging the geographic advantage of the location near Seoul, the focus was on the migration and distribution effect of the factories and population of the National Capital region (Moon 2000, p. 290, see Figure 31). However, around May 1996, within two years of beginning to store freshwater, the Sihwa freshwater lake turned into a dead lake. The 500 million dollar water resource management project resulted in the first vivid environmental disaster that Korean people had ever experienced - the quality of water as measured by the COD (Chemical Oxygen Demand) was insufficient for even industrial use (below 10mg/l) that requires special water-filtering processes, much less for agricultural use (Moon 2000, p. 292).¹³¹ Environmental groups who conducted a field study revealed the fact that COD reached 35 mg/l. Environmental scientists argued that

¹³¹ The total investment for the project was 495 billion won (Moon 2000, p. 291).

the basement of the lake was heavily polluted by heavy metals and there was no life in a third to a half of the bottom soil of the lake (Moon 2000, p. 292).



Figure 31 The locations of the Sihwa Project and the Saemangeum Project

K. M. Moon (2000, p. 292) summarizes the reasons why the Sihwa Lake became a dead lake. First, the plan of creating fresh water itself was not feasible. It was a mistake

to expect a clean lake since the lake was intended to store wastewater from the adjacent city (Ansan) and industrial complex (Banweol).¹³² Without a great river that could self-purify water, the streams flowing to the Sihwa Lake were no more than sewers. Second, the expansion of the environmental basic facilities such as a wastewater treatment facility or municipal sewage treatment plants could not meet the increase of the polluters in this area. Compared to the beginning of the project, population of the area increased five times, factories in operation 2.5 times, and the number of livestock multiplied four times. Although the environmental impact assessment (EIA) for the project recommended actions that could block or reduce the pollutants before the completion of the dykes, it was ignored. The countermeasures that were taken by the government were simple but irresponsible - to release the polluted water into the sea. Despite the strong opposition of the environmental movement organizations including KFEM, the Korea Water Resources Corporation (KWRC) released wastewater on June 29 and 30, 1996. The government announced the countermeasure for water quality improvement of the Sihwa Lake on July 5, 1996 by pouring money comparable to the construction cost. However, as the extent of the pollution worsened in March 1997, the government tentatively held fast for the plan of freshwater lake and decided to open the sluice gates. In the end, the government canceled the fresh water lake plan completely in January 2001 and manages the lake as a seawater lake (Hong 2004, p. 123).¹³³

¹³² See Figure 32.

¹³³ After the decision to open the sluice gates in 1997, the quality of water in Sihwa Lake has improved. However, ultimate limitation of the current structure of the lake - semi-closed by the dyke - provides a major obstacle to the restoration. Visit the web site of the Council for Sustainable Development in Sihwa Region, <http://www-sihwa-sd.com/> for detailed information.

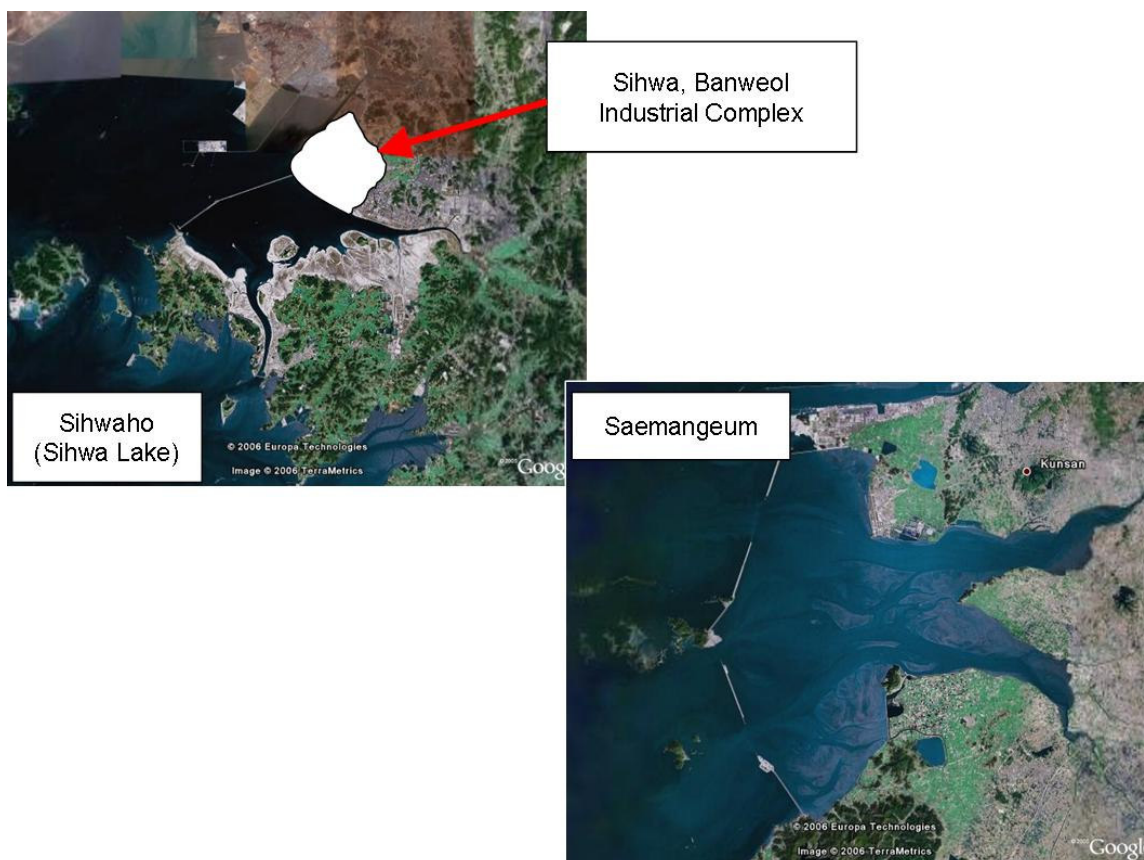


Figure 32 The Sihwa Lake and the (expected) Saemangeum Lake

Note: the scales of the two maps are the same

Needless to say, the Sihwaho incident raised awareness about the pollution issues for all the man-made freshwater lakes that had been and would be constructed around the country. The Saemangeum Project under construction was not an exception. The warning about the Saemangeum as the second Sihwa Lake sprouted up from research institutes as well as environmental movement groups (Kim 1996a; The Chosun Ilbo 1996). Whether the (planned) Saemangeum freshwater lake was similar to the Sihwa Lake in terms of the possibility of pollution and, if so, whether it would be possible to prevent a disaster by proper countermeasures without cancellation of the project itself became the core point of the long-lasting controversies over water quality of the Saemangeum between the development oriented groups and the environmentalists. The perplexed government

officials hurried to investigate the Saemangeum area by mobilizing scientists and tried to persuade people to believe that the Saemangeum project would not be like the Sihwa project by announcing various countermeasures addressing the pollution issues. As shown in Table 18, even though the basic characteristics of the two lakes are similar, the Saemangeum has more favorable conditions than the Sihwa Lake such as the ratio of the area of lake to the area of basin, distribution pattern of the polluters, and the amount of industrial sewage.

Table 18 The comparison between Sihwa Lake and (expected) Saemangeum Lake [Adapted from Moon (2000), Hong (2004).]

Comparison		Sihwa Lake	Saemangeum Lake
Location		Kyunggi-do Hwasung	Chollabukdo Buan
Construction		1987-1994 (completion)	1991-2013 (anticipation)
Area of Reclamation (hectare)		17,300	40,100
Area of Reclaimed Land (hectare)		11,421	28,300
Area of Fresh Water Lake (hectare)		6,100	11,800
Area of Basin (Km ²)		477	3,319
Total Storage Capacity (10 ⁶ m ³)		342	535
Available Storage Capacity (10 ⁶ m ³)		192	355
Ratio of the Area of Lake to the Area of Basin		7.8	28.1
Distribution of the Polluters		Barweol Industrial Complex along the lake	Scattered in a broad area
Amount of the Wastewater	Total Wastewater	439,000 ton/day	563,800 ton/day
	- Residential sewage:	216,000 ton/day	485,000 ton/day
	- Industrial sewage:	221,000 ton/day	74,300 ton/day
	- Livestock sewage:	2,000 ton/day	4,500 ton/day

As a result of the active gesture for efforts to mitigate the anticipated pollution, environmentalists continued to raise the issue, but didn't succeed in gaining popular

support. On the contrary, a sense of alienation by the people in Chollabukdo that their region had fallen behind during the past thirty year economic growth period made them pursue the Saemangeum Project as the only opportunity to catch up with other regions. The main concerns of the Chollabukdo people in 1996-97 were not so much a worry for the second Sihwa Lake incident but how to entice an industrial complex, the Hyundai iron manufacture, or the Asia regional factory of Dow Corning in the Saemangeum area (Choi 1996; Lim 1996; Moon 2000).¹³⁴ However, the vivid experience of a large scale environmental disaster in the Sihwa project was a clear advance notice of the controversy over the Saemangeum during the next stage. A variety of activities with regard to the Saemangeum Project began to spread not only over environmentalists but also over developmentalists as well as diverse groups of neutral professionals. The background setup during the early 1990s (domestic awareness and global influx of the environmental way of thought, on-going economic development pursuit, and political/economic liberalization) and the apparent emergence of representative actors during the Sihwa Lake incident in 1996-97 (the government and its research institutes, the NGOs centering around the environmental movement organizations like KFEM and GKU, and the local Chollabukdo people) made the real Saemangeum controversy only a matter of time.

¹³⁴ Even though the original plan approved by the National Assembly in 1991 for the Saemangeum project was to reclaim agricultural land, the local government of Chollabukdo and people in the region have always been trying to change the plan into a more comprehensive one that contains a new international port and industrial complex. The Hundai group, the biggest chaebol in Korea at that time tried to make inroads into the iron manufacture industry. As a result of the financial crisis in the late 1997, Hyundai gave up the new big investment.

Dow Corning is a multinational corporation headquartered in Midland, Michigan, USA. Dow Corning specializes in silicon-based technology and innovation, offering more than 7,000 products and services (Wikipedia 2006g). The new governor of Chollabukdo at that time - Yoo Jong-geun - held an investment enticement round of Chollabukdo in February 1996. A vice president of Dow Corning attended the round and expressed an interest in placing their third Asia regional factory in the Saemangeum area, which could amount to 2.8 billion dollars. However, the effort of the governor failed after all.

STAGE-3: THE FRONT OF THE DEVELOPMENT VERSUS CONSERVATION

(1998-2003)

The environment changes. The matter is whether the change is positive or negative. In case of the Saemangeum, mud-flats will change into paddy field. Seawater will turn into fresh water. It is important to harmonize the environmental change with [sustainable] development. ... the CEO of the Korea Agricultural & Rural Infrastructure Corporation (KARICO) changed his car into a LPG car. He has suffered from the environmentalists (Jong Ki Yoon).¹³⁵

...However, noble value recognition [self-awareness of respect for life and environmental values] is growing in our society. It is a blessing - this is 'Saemangeum'. ... the mud-flats have their own [intrinsic] value. ... (Jae Sool Han).

...Saemangeum - the only remaining estuary tideland in Korea. Can we develop after killing such a myriad of lives there? ... (Ja Kwon Koo).

From the interviews, it was clear that most of the interviewees could understand broad spectrum of environmental versus developmental discourses. Although individuals had different views on the environment and its values, they became reasonable and flexible enough to understand and respect (at least as a communication partner) different views. Apparently, environmental discussions beyond the anti-pollution level advanced and the environmental arguments armed with new ethics; for example, the environmental ethics based on the belief that nature or the environment has intrinsic values (as shown in the quotation of Jae Sool Han) and the belief that life itself should be respected regardless of the form (as shown in the quotation of Ja Kwon Koo). This full-fledged emergence of factor b) in the LISDA was possible at the expense of the mud-flats in the Saemangeum area.

¹³⁵ KARICO was renamed as Korea Rural Community & Agriculture Corporation (KRC) in December 2005.

For the year of 1998, the Saemangeum Project was fulminated in a countless debates. With the inheritance of the financial crisis in December 1997, the new Kim Dae-jung regime's presidential transition committee decided to re-investigate three previous government projects in January 1998 - the Kyungbu high-speed railway project, the Sihwa Project, and the Saemangeum Project. The Chollabukdo branch of the KFEM - the Chunbuk-KFEM - instantly welcomed the decision and re-ignited the environmental issue that had been dwarfed by development ideology. KFEM, GKU, the Citizen's Coalition for Economic Justice (the CCEJ), and other NGOs advanced the issue to the level of cancellation of the project and a number of anti-Saemangeum conferences/conventions and sign-ins for the cancellation followed. Decisively, the result of the inspection by the Board of Audit and Inspection reported on September supported the claims of the anti-Saemangeum groups.

Surprisingly, Yoo Jong-geun, the governor of Chollabukdo who had been one of the strongest supporters of the Saemangeum Project, suggested a citizen-government joint investigation team in January 1999 to extensively review the Saemangeum Project, which was interpreted as a signal that even cancellation was possible according to the result of the investigation team.¹³⁶ As a result, the Citizen-Government Joint Investigation Team to Assess the Environmental Impact of the Saemangeum Project (the JIT) was formed in May 1999. The construction of the Project was deferred for the investigation period. Experts recommended by the government, Chollabukdo, and NGOs conducted research for over a year in three divided sections: water quality, environmental impact, and economic feasibility.¹³⁷ However, due to different philosophical, theoretical, and methodological approaches by each of the experts, and a dispute over transparency there

¹³⁶ The suggestion by the governor Yoo seemed exaggerated or distorted by the interpretation of the media. Considering his career as a economics professor in a state university of USA, his suggestion should be interpreted not so much as a change of his mind to the environmental side, but as an effort to give the Saemangeum Project a justification to proceed based on the Joint Investigation Team.

¹³⁷ The joint investigation team was composed of 30 experts: 10 experts recommended by the government and Chollabukdo, 10 recommended by the NGOs, and 10 governmental officers from the related departments.

were no conclusive results (Ku 2004, p. 202).¹³⁸ In particular, the failure to reach a consensus in the economic feasibility analysis section was critical, which crippled the operation of the JIT (Ku 2004, p. 202). In spite of the postponement of the final report, the opponents and the advocates couldn't reach an agreeable conclusion. The chief of the JIT submitted a final report without conclusion to the government in August 2000. This fruitless result of the JIT seemed to heap fuel to the fire of the Saemangeum controversy. Severe confrontations and conflicts between the two groups continued until May 2001, "generating debates organized by the Presidential Commission on Sustainable Development (PCSD), heated media reports, and the religious Saemangeum Eco-Peace Movement" (Ku 2004, p. 202).

Finally, in May 2001, the central government made clear its position to continue with the Saemangeum project with a seemingly more environmentally friendly plan - a sequential development plan which meant that, while developing the Dongjingang area first, the development of the Mangyunggang area (which suffered from low water quality) would be delayed until the water quality improved. As a result, the construction resumed. In response, the coalition of opposition groups - the Korean People's Alliance for the Life of Saemangeum (KPALS) - displayed resolve to fight to the end. The alliance group also brought the Saemangeum issue to international forums such as the World Summit on Sustainable Development in Johannesburg (WSSD) and the Ramsar Conference in 2002.¹³⁹ The next administration - the Roh Moo-hyun government (it assumed power in February 2003) - decided to continue the Saemangeum Project to the

¹³⁸ Outside verification was blocked by the operation regulations. The members of the joint investigation team were not allowed to reveal the results without the review of a plenary session and the consent of the chair of the team (Moon 2000, p. 192).

¹³⁹ The alliance took its departure in March 2001. 21 NGOs including KFEM, GKU, religious groups, and local grassroots environmental groups participated in the alliance. KPALS continued to play a major role in the anti-Saemangeum rally until it renamed itself as the National Conference for the Saemangeum Reconciliation and Mutual-Living in December 2005.

alliance's disappointment.¹⁴⁰ In opposition to the decision, an innovative and self-sacrificing action was taken by a group of religious practitioners. Ku (2004, p. 203) summarizes it briefly,

a Catholic clergyman, a Protestant minister, a Buddhist monk, and a Won-Buddhist monk launched a “three-step-and-a-bow¹⁴¹” (sambo ilbae) march - a Buddhist practice in which one prostrates oneself with every three steps - for the length of 305 km from Saemangeum to Seoul between 28 March and 31 May 2003, under the slogan of ‘Save the living creatures in the Saemangeum tidal flat’. The news of the sacrificial, life-risking march to protect life in Saemangeum touched many people, which helped garner support for the anti-Saemangeum campaign.¹⁴² (see Figure 33)

Around June 2003, opinion polls showed that the majority of Korean citizens were opposed to the Saemangeum Project (Jeong 2003; Kim 2003; The Kyunghyang Newspaper 2003). On top of that, the Seoul Administration Court (SAC) ruled to suspend the project by approving the petition by the NGOs and sustained their assertion that water would be polluted if the dykes were completed (Ku 2004, p. 203). This period, from the JIT in 1999 to the three-step-and-a-bow and to the suspension rule by the SAC in 2003, was the heyday of the anti-Saemangeum campaign. The Korean environmental movements met the high point of their history in this period, too.

¹⁴⁰ This disappointment came from the fact that Roh Moo-hyun, when he had been the minister of the Ministry of Maritime Affairs and Fisheries (MOMAF), had expressed his opinion in favor of the environmentalist groups.

¹⁴¹ See Figure 34.

¹⁴² ‘Samboilbae’ (three-step-and-a-bow) is really life-risking especially when the practitioners use the way of protest for a long time. For example, one of the participants of the Saemangeum samboilbae (a monk, SooKyung, who was a leader of the Buddhist Solidarity for the Environment) fell down and was taken to hospital on the 55th day of the protest. Prostrating oneself in every three steps demands not only the physical strength but also spiritual strength. After the innovative means of protest was practiced by the anti-Saemangeum group, many tried to attract people's interest through the performance of ‘samboilbae’. For example, a female member of the National Assembly performed samboilbae to win in the general election in 2004. She marched for three days and went to the hospital; people admit that her performance garnered support to some extent.



Figure 33 Three-step-and-a-bow (Samboilbae) [from <http://photogame.pe.kr/CHAE/2003/1.html> and <http://www.fulssi.or.kr/jpg.htm>]

However, it is a mistake to follow only the phenomenal events and conclude that the period 1998-2003 was a typical transitory era when coincidentally the environmental discourses were the most popular fashion. Indeed, this period was the Korean sustainable development-making epoch. The following discussion will support this argument by analyzing three different themes: merits and demerits of the environmental movements, unprecedented studies on the Saemangeum Project, and discourses of sustainable development awareness in South Korea.

Merits and Demerits of the Environmental Movements (1998-2003)

Partly because of the change of the Korean dietary practices exemplified by the drop of rice consumption in the 1990s (see Figure 34) and also because of the direct pressure on the tideland development policy by the Sihwaho incident and the NGOs' opposition,

the Korean government announced new policies that changed the fundamental direction of agriculture. To begin with, the Ministry of Agriculture and Forestry (MAF) made an announcement of giving up large scale tideland reclamation projects henceforth.¹⁴³ In the second place, in May 2001, the government announced that the maximizing rice production policy was scrapped in order to solve the problem of a growing stockpile of rice in government warehouse and prepare the expected expansion of rice import in 2004 by opening the market (Nam 2005, p. 43). Moreover, MAF decided to cut back on the area of paddy fields by 130,000 hectare in April 2003 as a solution for the excessive supply problem of rice, the size of which was 3.6 times bigger than the expected reclaimed area of the sum of all the reclamation projects including the Saemangeum Project (Nam 2005, p. 43).¹⁴⁴

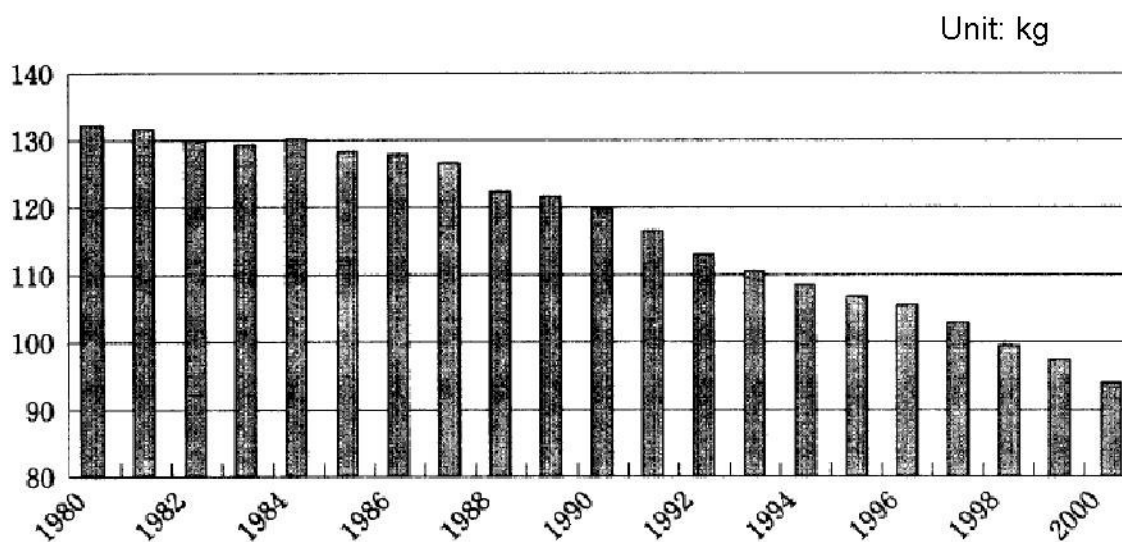


Figure 34 Transition of the rice consumption per capita in South Korea, 1980-2000 [from Lee, Kim, & Ma (2001, p. 208).]

¹⁴³ By the announcement of cancellation of tideland reclamation projects on July 15 1998, the Saemangeum Project became the last remaining reclamation project. The canceled plans on the day include five districts and total 86,390 hectare area of reclaimed land.

¹⁴⁴ The Saemangeum - 28,000 hectare, the Hwaong district - 4,482 hectare, the Sihwa district - 3,700 hectare. Total 36,182 hectare (Nam 2005, p. 43).

The anti-Saemangeum movement also played a melting-pot role in unifying diverse voices in the environmentalist groups into one voice for saving the Saemangeum tideland. Interviewees who are environmentalists evaluate it as follows;

We cannot prescribe which voice is the mainstream voice of the environmental movements. ... various mainstream from deep ecology to ecological pluralism, and to environmental management. ... However, there is a possibility of unification because of the Saemangeum (Eun Sook Kim).

[By the witness of the three-step-and-a-bow, the Saemangeum] became a crucial fountainhead for realizing [the value of life] (Ja Kwon Koo).

Particularly, in the case of the Saemangeum, the [anti-Saemangeum] movement played a major role in the spread of the new recognition of the mud-flats. ... The Saemangeum area is not easily accessible to general citizen. The experience of the mud-flats was rare except by the fishermen. The influence [by the anti-Saemangeum movement] was absolutely crucial (Myung Joo Ahn).

The experience in the anti-Saemangeum movement helped the environmental groups deal with other contemporary national environmental issues, too. For example, the anti-Donggang Dam campaign in 1998-2000 showed a similar pattern of re-investigation of a government project.¹⁴⁵ As the beautiful scenery and the unique ecosystem of the Donggang River had a sizable impact on public opinion, the Kim Dae-jung government allowed the Office of the Prime Minister to form a citizen-government investigation panel to carry out joint research on the dam's construction (Ku 2004, p. 199).¹⁴⁶ Unlike the Saemangeum case, the joint investigation panel reached a consensus of abandoning

¹⁴⁵ To prevent great damage by floods in Yeongwol and Jeongseon, Gangwondo (Gangwon province - Northeastern province of South Korea), the government planned to construct a dam (so-called Donggang Dam or Yeongwol Dam) in 1991. During the early and middle 1990s, the issue was confined to local residents whose properties would be submerged by the construction of dam. In 1998, the issue changed from a local to a national one as KFEM launched the anti-Donggang Dam campaign to protect the natural ecosystem (Ku 2004, p. 199).

¹⁴⁶ The joint investigation panel conducted the research from August 1999 (three months later than the Saemangeum JIT) to May 2000 (three months earlier than the Saemangeum JIT).

the construction of the dam based on the conclusion that the ecosystem of the Donggang area had irreplaceable value and importance. The three month crippling experience in the Saemangeum JIT operation gave a good lesson to the NGOs. An environmentalist interviewee reports an aspect of the lesson;

The Saemangeum JIT started earlier than the Donggang joint investigation panel. [Therefore,] the former could give useful advice and contribution to the latter. In the case of the Saemangeum, because it was the first experience, [the NGOs] didn't know what to do exactly. [The NGOs] were inept at building up [the members of the JIT] and presenting prerequisites. KARICO (the Korea Agricultural & Rural Infrastructure Corporation) took charge of the expense of the research! They were very strict in providing the expense of the JIT members who were recommended by the NGOs. As for the Donggang case, [we] deposited [the expenditure] (Eun Sook Kim).

However, the innovative and sacred action - the three-step-and-a-bow - exercised negative influence on the anti-Saemangeum movement itself, too. Particularly, after a Buddhist nun Jiyul's life-risking hunger protests to keep the high-speed railroad on the Seoul-Busan Line from constructing through mount Cheonseong, even voice of fear arised.¹⁴⁷ Most of the interviewees point to this double-edged sword aspect of the life-risking effort by the religious practitioners;

[Such strategies as life-risking three-step-and-a-bow or hunger strike] can be helpful to a certain extent. But if across the line, there's a negative impact. ... Crossing the limit, support and affection can collapse instantly (Eun Sook Kim).

¹⁴⁷ The nun Jiyul carried out fasting as a solitary protest to protect the ecosystem of the Cheonseonsan (mount Cheonseong) four times: 38 day hunger protest in February to March 2003, 45 day hunger strike in October to November 2003, 58 days in June to August in 2004, and 100 days from October 2004 to February 2005 (The Chosun Ilbo 2005)

While doing the practice [i.e. three-step-and-a-bow], they can evoke people's sympathy. But in the end, they will lose their attractiveness due to the loss of the means for the movement (Ha Hyung Joo).

Those (the extreme means) are what they can show. [There's nothing else] (Young Shin Kim).

In the wake of the activities of the JIT, even though the final report did not contain any conclusion about whether the Saemangeum Project should be carried out or not, the advocates of the project were entitled to use the report as a justification, if nominal, for the resumption of the project. The anti-Saemangeum group's strategy that was dependent on event-based campaigns was a weakness, too. Ultimately, the fundamental limit of the NGOs' capability (that came from the lack of experts and research funds) led to the failure in persuading the people in Chollabukdo and in proving the objective value of mud-flats.

Unprecedented Studies on the Saemangeum Project

Above all, many existing and new research institutes and individuals began studies focusing on the Saemangeum Project or related themes.¹⁴⁸ Many of these studies concentrated on the environmental impact studies such as water quality (or its improvement methods) and the change of the coastal and ocean ecosystem. For example, the Saemangeum Environmental Research Center (SERC) was founded by the researchers of oceanography, environmentology, chemistry, chemical engineering, and material science. Let this section review briefly the existing studies on the Saemangeum Project by focusing on the central issues: economic feasibility of the Saemangeum

¹⁴⁸ For example, in the Rural Research Institute (RRI) of the Korea Rural Community & Agriculture Corporation, Saemangeum Research Group was established in the middle 1990s. The Korea Ocean Research & Development Institute opened Saemangeum Environmental Research Center in 2002 and the Korea Environment Institute (KEI) has also been doing major researches for the Saemangeum Project. Honam Agricultural Research Institute opened the Society of Agricultural Research on Reclaimed Lands in 2002. As a representative new institute, the Saemangeum Environmental Research Center (SERC) was founded in 1999 as a result of the program, Regional Research Center (RRC) sponsored by the Ministry of Commerce, Industry and Energy (MCIE) in 1999.

Project, people in the Saemangeum area, and emergence of new governance. First, as to one of the hottest controversies over the Saemangeum Project - the economic feasibility debate -, the advocates' side and the opponents' side show an irreconcilable chasm even by experts from the same discipline. J. H. Lim (2000) argues that even one of the fourteen¹⁴⁹ expected benefits of the Saemangeum Project - 'national land expansion effect' - can reach 8.4 ~ 14.1 trillion won (about 8 ~ 14 \$ billion). The experts in opposition groups not only criticize the result of the B/C analysis but they also raise the issue of distortion of the academic methods for supporting the project (e.g., Lee et al 2001; Lee 2001).¹⁵⁰ An additional issue is how to evaluate the economic value of mud-flats; not surprisingly, the gap between the two groups the assessment of the values of mud-flats and paddy field is also far from the possibility of reaching an agreement. According to the service ordering organizations, research institutes produced different but favorable result to the ordering organization. For example, the Korea Ocean Research & Development Institute provides the result that mud-flats is 3.3 times more valuable than the paddy field based on a foreign research on the value of ecosystem services and natural capital (Costanza et al 1997). Several studies by the project advocate group show that the value of paddy field is 1.4 ~ 2.64 times higher than that of mud-flats (for example, see Hong 2004, p. 106). Second, several social science researchers and anthropologists have focused on a mostly ignored theme - the impact on the people who have been living in the Saemangeum area. For example, Hahm (2004) describes the matter of local identity, the change of fishermen's consciousness by the ecological crisis, and the confusion between ecological ethics and the right to live. Jeon (2004) tries to apply the

¹⁴⁹ These 14 benefits were adopted for the analysis of the economic feasibility in the JIT by the advocate's side. Although the JIT didn't conclude the feasibility of the project, the feasibility analysis based on these 14 benefits has been broadly used to persuade people into believing that the project is economically feasible. Naturally, they were severely criticized by many economists as well as the environmentalist groups.

¹⁵⁰ J. K. Lee (2001, p. 60) says, "the benefit-cost analysis in the Evaluation Report of Environmental Impact of Saemangeum Project' [the result of the JIT] is, in a word, a representative example of distorted evaluation. I even feel sorrow at the current actuality in which a large scale public project costing several trillion won is justified by such a coarse and poor feasibility analysis".

methods of visual anthropology to reveal the Saemangeum discourses among the Gyehwado area local people.¹⁵¹ Yoon (2004) also uses eco-feministic approach to describe the Gyehwado women who are losing their base of living from the Saemangeum Project. S. Y. Kim (2004) provides an interesting explanation for the aspects of the environmental conflicts centering around the Saemangeum Project through applying cultural theory by Mary Douglas.¹⁵² Third, there are several works that reflect the advancement of the new governance in pursuing state-level development projects. M. S. Kim (2002b) suggests ‘deliberative decision-making’ based on discussion and consensus to pursue national development projects and Nam (2005) describes the role of NGOs shown in the Saemangeum Project as an advanced governance model. There are various other approaches to analyze the Saemangeum controversies, too. To name a couple, there is a study of media framing of the Saemangeum Project (Kang 2002) and a legal analysis of the project (Jeon 2003).

Discourses of Sustainable Development Awareness in South Korea

Most of the interviewees show that global level sustainable development discussions already became part of the discourses of the Saemangeum Project. For example;

[We] should look at sustainable development based on the low growth and equality of growth. ... [We] should consider ‘development’ from the

¹⁵¹ The product from the result of his research is a text for the anthropological film that he titled as ‘Let Them Speak’. Although he says that he made a film based on the study on the Saemangeum Project and Gyehwado people, it does not seem directly related to his thesis (Jeon 2004).

¹⁵² S. Y. Kim (2004) uses four ways of life (hierarchy, individualism, egalitarianism, fatalism) based on the two basic factors (Grid and Group) comprising sociality in order to analyze the major actors in the Saemangeum discourses. He uses also another category of analysis - experts and lay people - to distinguish participants of the discourses. As a result, he presents five major actors in the Saemangeum debates: (1) development-friendly expert groups, (2) conservation-friendly expert groups, (3) development-friendly government organizations (Ministry of Agriculture and Forestry, Junbuk regional government) and developer (Korea Agriculture and Rural Infrastructure Corporation), (4) more environment-friendly environment-movement groups and religious movement groups, and (5) isolated fishers near Saemangeum area. One of his findings is that, group (1) and (3) behave under the influence of hierarchy and individualism, group (2) and (4) behave under egalitarianism, and group (5) behaves under individualism as well as strong fatalism.

viewpoint of the limit of growth, focusing on the environment. (Ja Kwon Koo)

[We] should change the indicators. It is a contradiction that even destruction contributes to GNP. A sustainable development indicator should be developed. (Ja Kwon Koo)

[There are] sustainable developments for developing countries, developed countries, and the countries in the middle of the two like Korea. Nobody discusses sustainable development for countries like Korea. We should [independently] build [the discussions] ... Korea is in a third level of the developed countries [in terms of material affluence] - development should be permitted until the level of two thirds. For this, Saemangeum is a very important resource (Sung Kwang Choi)

The problem in Germany and the Netherlands [in terms of the tideland policies] is to prohibit fishermen from doing anything. The story of the fishermen is blocked. When German fishermen had a workshop with those in the Saemangeum, both of the two groups voiced unanimously; let us survive! ... [With regard to sustainable development] the two regions [Germany and Korea] - both are wrong, though one emphasizes the environment and the other focuses on development. ... Humans [local people or indigenous people] should be the first! (Young Jin Seong)

In the past, information was centralized. Discussions were concentrated on a few environmental organizations. The circumstances where information can be shared have become possible since the middle 1990s. Now, [we are in] information-sharing environment through the Internet. [As a result, sustainable development becomes popular] (Eun Sook Kim).

There are also unique characteristics of sustainable development discussions in the Saemangeum. Respect for the blind aspiration for the project by the Chollabukdo people can be singled out among them. It seems there is an aftermath of the past several decades' experience of the spatially unequal economic growth policy. It can be also interpreted as a side effect of the deep-rooted regional rivalries. Even when the public opinion polls showed that the anti-Saemangeum atmosphere overwhelmed the whole country; the majority of the provincial people believed that the Saemangeum area should be

developed as comprehensive industrial complex (Moon 2000, p. 228). An interviewee says, “[The Saemangeum Project] must be carried out for satisfying the expectation of the Chollabukdo. ... In that sense, the voice of the Chollabukdo should be much louder than the sum of the other regions” (Sung Kwang Choi).

STAGE-4: THE PURSUIT OF A JUDICIAL SETTLEMENT (2004-2006)

However, the heyday of the anti-Saemangeum campaign didn't last so long. Six months later from the suspension rule by the SAC, the Seoul High Court (SHC) ruled on January 29, 2004, to continue construction, based on the MAF's appeal. The government and anti-Saemangeum NGOs repeated proceedings and arguments and went through with judicial steps to the end. Whereas the NGOs partially won in the court of first instance on February 2005, the SHC and the Supreme Court ruled in favor of the government on December 2005 and March 2006, respectively. It seems that the Saemangeum controversy has lost its attractiveness as an urgent issue during the tedious judicial procedures.

DISCUSSION AND CONCLUSION

CONTRIBUTION AND FUTURE STUDIES

The List of Indicators for Sustainable Development Awareness (LISDA) was useful in showing a historical path of sustainable development in a specific society - South Korea. An interesting question is about the applicability of the LISDA. How does the development of sustainability awareness in South Korea compare to other countries? Did it develop first in most industrialized countries, and then expand to developing countries like South Korea? In addition, in relation to these questions, does development of sustainability awareness in other countries follow along the same path as shown in the case of South Korea? In spite of the seemingly infinite efforts that are needed to answer these questions, there is a possibility of making a comparative study feasible as a manageable one.

The possibility comes from the utility of tideland as a main unit of analysis. Although tidal salt marshes are distributed throughout the world (see Figure 11), their utilization for reclamation has been confined to a few societies such as the Netherlands, South Korea, and Japan. About 550,000 hectares of land have been reclaimed in the Netherlands for agricultural and residential purposes during the past seven centuries (Goemans & Visser 1987, p. 98). The Isahaya Bay Land Reclamation Project in Kyushu, Japan is remarkably similar to the Saemangeum Project in South Korea.¹⁵³ Except for the fact that the size of the Saemangeum project is about ten times larger than that of the Isahaya Project, many aspects of the two projects - the biggest land reclamation projects in each country, the controversy over the environment, and judicial settlement for the completion of the dykes

¹⁵³ The Isahaya Bay Land Reclamation Project began in 1989 and its first stage (dyke construction) was completed in 1999. It consists of a 7-km dike through coastal waters, turning what was Japan's largest tideland into reclaimed farmland. (Park 2002)

- are comparable (Park 2002). S. C. Park (2002, p. 55) introduces an interesting remark of a representative environmental activist in the anti-Isahaya Project about the relationship between the three countries' tideland reclamation histories. The Japanese activist quotes the Netherlands prime minister who visited Japan and said, “[Japan during the Isahaya Project period is] the same as that of the Netherlands twenty years ago. [But,] the restoration will cost several times more [than in the Netherlands]”. The activist is also certain that the Isahaya Project served as a model for the Saemangeum Project (Park 2002, p. 55). Therefore, the comparative study on sustainable development awareness based on tideland reclamation between the three countries not only can be a feasible way to answer the above questions but also can be a good opportunity to expand the utility of the LISDA.

Aside from the utility of the LISDA, this study contributes to the anthropological study of development by introducing a new approach to sustainable development in the discipline, too. As discussed in this thesis, the period of 2005-2014 is the Decade of Education for Sustainable Development proclaimed by the UN and several studies on the perception of sustainable development were already conducted.¹⁵⁴ However, those efforts and studies are to promote public awareness of sustainable development. The study on the aspects or characteristics of sustainable development awareness itself does not seem to have been conducted yet.¹⁵⁵ Considering the unique features of the anthropological study such as ethnography, the indirect approaches to sustainable development as in this thesis - behavioral responses to sustainable development issues (for example, awareness) - can help anthropology contribute to the multidisciplinary sustainable development studies as a major player.

However, there remain many areas to be improved in this study, too. First, most importantly, there is no direct coverage of the local people who have lived in the Saemangeum area. Like several other existing studies on the Saemangeum Project, this

¹⁵⁴ See page 3 and footnote 4. Also see page 48.

¹⁵⁵ Searching for “sustainable development AND awareness” in several representative academic online databases - such as Web of Science, WorldCat, or Google Scholar - shows such educational or promotional tendency well whereas the approach like this thesis is hardly be found, as of June 13, 2006.

thesis also focuses only on the mainstream debates framed by the government, NGOs, and nationwide media.¹⁵⁶ The aspects of sustainable development awareness in terms of the local people's perspective should have been addressed. Second, although the development of environmental movements in South Korea was one of the most important factors in framing the Saemangeum controversies, the thesis didn't pay enough attention to the social movement aspects of the controversies. Sustainable development as an element of the framing processes in South Korean environmental movements during the Saemangeum Project needs to be addressed. Third, as to the LISDA, the factors in the list need to be refined further. Classification - such as internal factors and external factors as in the 'Findings from the Literature Review' section - is a way to refine them. Other ways may include prioritizing in terms of significance and giving a chronological order according to the emerging sequences.

THE SAEMANGEUM PROJECT: THE BAROMETER OF SUSTAINABLE DEVELOPMENT IN SOUTH KOREA

In spite of the completion of the first stage (the construction of dykes and sluice gates), the controversy over the Saemangeum Project is far from coming to an end. It is possible that different types of debates are opened about the usage of the expected new reclaimed land. The anticipated changes of the ecosystem in the Saemangeum area, which will be the indispensable result from the transformation of a 401 km² area of sea water and mud-flats into a freshwater lake and reclaimed land, can be another source of controversy over the environmental disaster. In addition, the current coalition for the anti-Saemangeum campaign - the National Conference for the Saemangeum Reconciliation and Mutual-Living - shows a strong will to continue the campaign in a different focusing point from

¹⁵⁶ This phenomenon of alienation of the local people in the Saemangeum area during the national controversy period over the project is mentioned in several studies; for example, see Hahm (2004), S. Y. Kim (2004), or N. Kang (2002).

that before the completion of the first dyke/slucice gate construction stage. For example, an environmentalist interviewee says,

[We] expect that water [stored in the new freshwater lake] will become foul in two or three years. [Look at] the examples of Sihwa lake and Hwaong Lake. [We will raise] a social issue. [For that, we are] now monitoring [the environmental status around the area]. And [we are] making a list of the persons who pursued [the project]. [We will] press hard for responsibility. The Saemangeum [Project] is different from other tideland reclamation projects. Restoration [project should be conducted]. Although [restoration is a] deplorable thing, if that is our level, [we] should take actions accordingly (Eun Sook Kim).

The government has also developed a series of organizational and operational means to cope with environmental versus developmental issues during the period of the Saemangeum controversy. The Republic of Korea submitted its National Sustainable Development Strategies (NSDS) to the UN Division for Sustainable Development in 1996.

All the upper level local governments in Korea established Local Agenda 21 (LA21) by the end of 1999 (Yoon 2000, p. 14). Moreover, the Presidential Commission on Sustainable Development (PCSD) was established in 2000 in order to establish a national strategy and policy for sustainable development.

With these trends of the environmental groups and the government, an interesting cooperation between a local government and the NGOs in the region provides a possible expectation about the future of the Saemangeum. In response to the strong opposition by the local people against the government's internal development plan for the reclaimed land of the Sihwa Project in 2003, the Ministry of Construction and Transportation agreed with the NGOs to form a citizen-government joint council - the Council for Sustainable Development in the Sihwa Region - for discussing the restoration or

development plans.¹⁵⁷ The council was established in 2004 and is planned to continue to the end of 2008 (The Council for Sustainable Development in Sihwa Region 2005).

In spite of the unclear future of the Saemangeum area, however, it is clear what the Saemangeum Project brought about in Korean society: the awareness of sustainable development. As shown in Figure 35, most of factors in the LISDA became apparent around the heyday of the anti-Saemangeum campaign period. In sum, the application of the factors in the LISDA to South Korea can be summarized as follows:

A.D.	1400-	1500-1900	1900-	1950-	1960-	1970-	1980-	1990-	1998-	2003-						
Factor of the LISDA								Rio Conference	Anti-Saemangeum Campaign began							
a																
b																
c																
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Legend: <table style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 10px; background-color: #ffffcc;"></td> <td>Historical assumption</td> </tr> <tr> <td style="width: 20px; height: 10px; background-color: #ffff00;"></td> <td>Weak appearance</td> </tr> <tr> <td style="width: 20px; height: 10px; background-color: #ff0000;"></td> <td>Evident appearance</td> </tr> </table>												Historical assumption		Weak appearance		Evident appearance
	Historical assumption															
	Weak appearance															
	Evident appearance															

Figure 35 Emergence of the factors in the LISDA, South Korea

¹⁵⁷ An environmentalist interviewee informs me about the three conditions that the NGOs requested the government to accept for the formation of the council. The three conditions are: accepting the experts who criticize the governmental departments; the way of operation based on discussion to the end with patience, not based on 'decision by majority'; and opening to the public all the processes and results of the council (Jae Hyung Lee).

Application of the LISDA to South Korea

a) Appearance of the voice for the rights of future generations in terms of the environment and development;

Intergenerational equity concept as in sustainable development discussions seems to have been imported to South Korea, especially from the Rio Conference. The meaning of interviewees' mention of next/future generations does not fully imply the intergenerational equity, but only to a certain degree. For example, "[For the development of the reclaimed land in the Saemangeum area,] let's not establish a master plan. It is not our work, but it should be a decision by next generations" (Eun Ho Choi), or "The Saemangeum Project continues. To stop in the middle is another environmental/economic loss. [The Saemangeum Project] should be done for the inheritance of future generations" (Young Soo Cho).

b) Advancement of environmental discussions beyond the level of anti-pollution campaigns (mainly by the appearance of advanced environmental movement organizations armed with a new environmental ethics);

The tendency of focusing on 'life' itself is one of the representative characteristics of the environmental movement groups in South Korea since the middle 1990s. From the interviews, "... However, noble value recognition [self-awareness of respect for life and environmental values] is growing in our society. It is a blessing - this is 'Saemangeum'. ... the mud-flats have their own [intrinsic] value. ..." (Jae Sool Han), "...Saemangeum - the only remaining estuary tideland in Korea. Can we develop after killing such a myriad of lives there? ..." (Ja Kwon Koo), or "[By the witness of the three-step-and-a-bow, the Saemangeum] became a crucial fountainhead for realizing [the value of life]" (Ja Kwon Koo).

c) Popularization of the debates on the relationships between the environment and economic growth;

From the anti-pollution level environmental movements to the recognition of value in nature itself as a motive for environmental movements - that phenomena began to appear in the early 1990s. Through several anti-development campaigns (e.g., as in the Sihwa Project, the Donggang Dam Project, and the Saemangeum Project), the Korean environmental movement organizations have broadened their views to a diverse spectrum of ideologies such as deep ecology, eco-feminism, or environmental management.

d) Appearance of governmental or non-governmental organizations which incorporate sustainable development concept into their core slogan or charter directly or indirectly;

From the anti-pollution level environmental movements to the recognition of value in nature itself as a motive for environmental movements - that phenomena began to appear in the early 1990s. Through several anti-development campaigns (e.g., as in the Sihwa Project, the Donggang Dam Project, and the Saemangeum Project), the Korean environmental movement organizations have broadened their views to a diverse spectrum of ideologies such as deep ecology, eco-feminism, or environmental management.

e) The community-level salient event/change that introduces SD related debate/discussion, collectively by majority of members of the community;

The Sihwa Project area (Southern Kyunggi province) and the Saemangeum area (North Jeolla province) have developed into hot debates on the environment and development between the government and the NGOs, between the local people and the NGOs, and between the government and the local people.

f) Influx of global environmental agreements or environmentalism, which catalyzes debate on economic growth versus environmental preservation;

As in the content of the thesis, the preparation of the Rio Conference in 1992 contributed greatly to the globalization of environmental discourses in South Korea.

g) Emergence of environmental or environment-tangled-with-development issues as a central determinant in national or local politics;

As in the description of the thesis, many large scale governmental development projects have been delayed, suspended, and even canceled due to the issues related to the environment versus development controversy since the middle 1990s.

h) Transboundary phenomena regardless of scales or levels - i.e. the emergence of transnational environmental issues, trans-provincial environmental issues within a country, or trans-community issues within a region;

The Saemangeum controversy has not only been a local (Jeollabukdo or North Jeolla) environmental issue but it also has an apparently been a national-level one. In addition, since 1992, most of environmentalists have used global environmental issues to persuade the public in many campaigns.

i) Emergence of taking initiatives about environmental protection by the actors who caused environmental problems;

The government has emphasized the environment-friendly ways of economic development in its projects since the anti-Donggang dam and the anti-Saemangeum campaigns. Also, as shown in the case of the Korea Business Council for Sustainable Development, most of corporations claim that they are the advocate and protector for the environment.

j) Appearance of new governance in implementing development agenda, for example, by NGOs, public participants, etc;

As in the Council for Sustainable Development in Sihwa Region in the Sihwa Project area, many NGOs not only influence policies but they also participate actively in the projects. Especially since the saturation of the Internet in the early 2000s, even (presidential) elections have been influenced by the new governance.

k) Emergence of the new perspective which interprets environmental problems as distribution or inequality matters;

Not yet evident.

l) Appearance of extreme and innovative reactions to environmental problems by non-affected parties such as religious organizations;

The Three-step-and-a-bow demonstration in the anti-Saemangeum campaign and the 100 day hunger protest against the high-speed railroad on the Seoul-Busan Line that is being constructed through mount Cheonseong are the representative examples.

m) Appearance of new actors who interpret differently the property ownership relations which, until that time, have been only determined by traditional regulations/laws/customs AND they actively participate in the transformation of the property ownership relations;

Large scale tideland reclamation can be regarded as the conversion of a common property (tideland) into a private property (paddy field). The Public Waters Reclamation Act enacted in 1920 was the foundation of the law with the same title enacted in 1962 in South Korea, which had the same effect as similar state regulation in the Chosun Dynasty.

n) Appearance of request for fundamental change/transformation of the primary form of subsistence;

As for the local peopless, the Gyehwado reclamation project, the Sihwa Project, and the Saemangeum Project, representing the indigenous people (usually the fishermen), even though they are compensated, should abandon their traditional subsistence means and find new means. In terms

of the state, South Korea was transformed from a country of agriculture (especially rice) based subsistence to trade (export-oriented and heavy and chemical industry based) based subsistence during the 1960s - 1970s.

o) Local-type of globalization (broad meaning) occurs: community loses ability to be self-sufficient;

Already during the Japanese colonial period, Korean rice cultivation began to depend on (chemical) fertilizer and pesticide and this tendency has deepened. Since the 1960s, South Korea has given up the policy of food self-sufficiency and has pursued industrialization that has been made possible only by international trade.

p) Appearance of unprecedented trend of multidisciplinary studies in academic circles;

As shown in the Saemangeum Project description in the content, many studies in a variety of disciplines have been carried out for the project and the area.

q) Awareness of reaching a boundary or limit (e.g., carrying capacity) in terms of erodable renewable resources and a slow-growing resource base;

As described in the content, one of the reasons why tideland reclamation really began in the 15-16th centuries in the Chosun Dynasty is the demand for new paddy fields due to increase in population.

r-1) Awareness of the existing institution's inability to cope with rapid changes brought by damage that people inadvertently inflict on their environment;

The emergence of environmental movements in the late 1980s and early 1990s shows that people began to realize that the laws/regulations or the government could not deal with the environmental issues effectively and efficiently.

r-2) Awareness of the existing institution's inability to cope with rapid changes brought by climate change;

By the import of the global discourse of climate change, this type of awareness begins to appear. But there is not a concrete example yet.

r-3) Awareness of the existing institution's inability to cope with rapid changes brought by hostile neighbors or decreased support by friendly neighbors;

Not apparent.

r-4) Awareness of the existing institution's inability to cope with rapid changes brought by competitive resorting to non-subsistent belief' such as Moai construction in Easter Island;

Not apparent.

Of course, the Saemangeum Project cannot be the only reason why South Korea in the late 1990s witnessed the fierce controversy over the environment versus development. The Saemangeum Project might be just coincidently in the right place at the right time. However, if sustainable development is not so much a matter of theoretical discourse as a matter of real practices, the Saemangeum Project is a live specimen. The birth and past development of the specimen were determined by only a developmentalists' view but the future development of it won't be pursued without considering both the of environment and development, both nature and humans, and both mud-flats and rice field/factory site. The progress of and debates on the Saemangeum Project will be a barometer of sustainable development in South Korea.

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APPENDIX A

Table A.1 Sustainable Development - Historical Milestones

year	The World	South Korea	Saemangeum Region
1965		Effectuation of the Pollution Prevention Law (PPL)	
1971	Convention on Wetlands of International Importance (Ramsa Convention)		Devise of an antecedent plan of the Saemangeum Saemangeum Tideland Reclamation Project
1972	<u>United Nations Conference on the Human Environment, Stockholm</u>		
	UNESCO Convention on the Protection of World Cultural and Natural Heritage		
	First report of the Club of Rome		
1973	Convention on International Trade in Endangered Species and Flora and Fauna (CITES)		
1976	Convention on the Protection of the Mediterranean Sea Against Pollution		
1977		Promulgation of the Environmental Preservation Law (EPL)	
1978	The Governing Council of UNEP adopts principles of conduct in the field of the environment for the guidance of states for the conservation and harmonious utilisation of natural resources shared by two or more states		

Table A.1 Continued

year	The World	South Korea	Saemangeum Region
1979	Convention on the Conservation of Migratory Species of Wild Animals	Establishment of the Environment Administration (EA) in government	
	The Geneva Convention on Long-Range Transboundary Air Pollution		
	First World Climate Conference, Geneva		
1980	UNEP, in collaboration with IUCN and WWF, launches the World Conservation Strategy, considered the first comprehensive policy statement on the link between conservation and sustainable development		
1981	Convention on Cooperation for the Protection and Development of the Marine and Coastal Environment of the West and Central African Region	Adoption of Environmental Impact Assessment System	
	Convention on the Protection of the Marine Environment and Coastal Area of the South-East Pacific		
1982	<u>Stockholm C-10 Conference organized by UNEP in Nairobi</u>	Establishment of the Pollution Research Institute	
	Regional Convention on the Conservation of the Red Sea and Gulf of Aden Environment		
1983	Convention on the Protection and Development of the Marine Environment of the Wider Caribbean Region		

Table A.1 Continued

year	The World	South Korea	Saemangeum Region
1985	Vienna Convention on the Protection of the Ozone Layer		
	Convention on the Protection, Management and Development of the Marine and Coastal Environment of the East African Region		
	Convention on the Protection of Natural Resources and Environment of the South Pacific Region		
1987	Montreal Protocol on Substances that deplete the Ozone Layer		
	<u>The Report, Our Common Future, published by the World Commission on Environment and Development</u>		
1988	The World Meteorological Organization (WMO) and UNEP establish the Intergovernmental Panel on Climate Change (IPCC)	Establishment of the Korean Anti-Pollution Movement Association	
1989	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal		Environment Impact Assessment conducted for Saemangeum Tideland Reclamation Project
			Final basic plan for Saemangeum Tideland Reclamation Project established
1990		The Environment Administration (EA) upgraded to Ministry of Environment (MOE)	

Table A.1 Continued

year	The World	South Korea	Saemangeum Region
1991	Establishment of the Global Environment Facility (GEF) with UNEP, UNDP and the World Bank as partners		Start of Saemangeum Tideland Reclamation Project
1992	<u>United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro</u>		
	Convention on the Protection of the Black Sea Against Pollution		
	Framework Convention on Climate Change		
	Convention on Biological Diversity		
1993		Establishment of the Korean Federation for Environmental Movement (KFEM)	
1994	United Nations Convention to Combat Desertification (in those countries experiencing serious drought and/or desertification, particularly Africa)		Dyke-1 and 2 completed
		Establishment of Green Korea United (GKU)	
1996		Submission of National Sustainable Development Strategies (NSDS) of Korea to UN Commission on Sustainable Development (UNCSD)	Discharge polluted water from the Sihwa Lake
1997	The Kyoto Protocol, adopted by 122 nations		Financial Crisis in South Korea: IMF era in Korea

Table A.1 Continued

year	The World	South Korea	Saemangeum Region
1999			Two year (1999-2000) NGO-government Joint Investigation
2000	<u>We the Peoples: the Role of the United Nations in the 21st Century: Millennium Report of the UN Secretary-General</u>	Establishment of Presidential Commission on Sustainable Development (PCSD)	
	The Cartagena Protocol on Biosafety implements a precautionary approach to trade in genetically altered crops and organisms		
2001	The Stockholm Convention on Persistent Organic Pollutants requiring complete phase-out of nine persistent, toxic pesticides and limiting the usage of several other chemicals		
	<u>Fourth Ministerial meeting of the WTO-Doha Declaration</u>		
2002	<u>International Conference on Financing for Development: Monterrey Consensus</u>		
	<u>United Nations World Summit on Sustainable Development in Johannesburg</u>		

APPENDIX B

KEY INFORMANTS INTERVIEWS

Interview Questions

1. (Main Question) What do you think are the social and cultural factors that have shaped the Saemangeum project as the most controversial one in Korean history?

- Improvised questions during the interviews related to this main question

1-1. What do you think is the most salient characteristics of the Saemangeum project compared with other tidal embankment projects?

1-2. What do you think is the most important factor(s) in decision-making of large development projects like the Saemangeum project?

1-3. What do you think was the most significant factor(s) in conducting the Saemangeum project?

1-4. What do you think would have happened if different people such as the Japanese lived in Korea about the Saemangeum project?

2. What is your opinion about sustainable development centering around the Saemangeum project?

3. Do you think that the Saemangeum project should have been undertaken in the beginning?

4. What is your opinion about the future water quality of newly constructed Saemangeum freshwater lake?

5. What is your opinion about the plan for the second stage of the Saemangeum project after the completion of the construction of 33km long sea dikes and two sluice gates?

6. What is your evaluation/opinion on the past activities by environmental movement organizations for the Saemangeum project?

7. Do you think that there will be another large tidal embankment projects like the Saemangeum project in Korea in the near future?

8. What do you think about tidal embankment projects in North Korea after unification?
9. What do you think about the special situation of Jeollabuk-do?

Aside from above questions, this present author asked interviewee-specific questions such as the explanation of the organization that he or she has worked for, the activities/outcome conducted by the interviewee and/or the organization, and general environmental movement related opinions.

Table B.1 The Brief Introduction of the Interviewees

Pseudonym	Sex	Age	Organization	Classification	Introduction
Sung Kwang Choi	M	40s	PR	P	An individual researcher who has degrees in biology and environmentology. He has conducted environment-related researches for a long time. He also participated in several public organizations for the Saemangeum Project.
Eun Ho Choi	M	50s	PR	P	A professor who leads a Saemangeum-related research institute. That institute has conducted many studies on the environmental impact and pollution in the Saemangeum area.
Jong Ki Yoon	M	40s	GO	P	An officer in a central governmental department that is responsible for the planning and budget allocations for the government projects like the Saemangeum Project
Ha Hyung Joo	M	30s	GO	P	An officer in a government financed institution that is in charge of carrying out the government projects such as tideland reclamation.
Young Shin Kim	M	50s	GO	P	A researcher in a government funded institution that mainly conduct agriculture related research projects. He is a member of a research group that is mainly interested in agriculture in reclaimed land.
Young Soo Cho	M	30s	GO	P	A supervisory employee in a branch of a government financed institution that is responsible for the control of the construction in the Saemangeum Project
Jae Hyung Lee	M	30s	EMO	A	A full-time activist who is a member of a regional branch of a representative nationwide environmental movement organization in South Korea. He participates in activities related to the Sihwaho Project issues.
Jae Sool Han	M	30s	EMO	A	A full-time activist who is a member of a regional branch of a representative nationwide environmental movement organization in South Korea. He participates in activities related to the Sihwaho Project issues.

APPENDIX C

The Stockholm Declaration on the Human Environment

The United Nations Conference on the Human Environment, having met at Stockholm from 5 to 16 June 1972, having considered the need for a common outlook and for common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment,

Proclaims that:

1. Man is both creature and moulder of his environment, which gives him physical sustenance and affords him the opportunity for intellectual, moral, social and spiritual growth. In the long and tortuous evolution of the human race on this planet a stage has been reached when, through the rapid acceleration of science and technology, man has acquired the power to transform his environment in countless ways and on an unprecedented scale. Both aspects of man's environment, the natural and the man-made, are essential to his well-being and to the enjoyment of basic human rights the right to life itself.

2. The protection and improvement of the human environment is a major issue which affects the well-being of peoples and economic development throughout the world; it is the urgent desire of the peoples of the whole world and the duty of all Governments.

3. Man has constantly to sum up experience and go on discovering, inventing, creating and advancing. In our time, man's capability to transform his surroundings, if used wisely, can bring to all peoples the benefits of development and the opportunity to enhance the quality of life. Wrongly or heedlessly applied, the same power can do incalculable harm to human beings and the human environment. We see around us growing evidence of man-made harm in many regions of the earth: dangerous levels of pollution in water, air, earth and living beings; major and undesirable disturbances to the ecological balance of the biosphere; destruction and depletion of irreplaceable resources; and gross deficiencies, harmful to the physical, mental and social health of man, in the man-made environment, particularly in the living and working environment.

4. In the developing countries most of the environmental problems are caused by under-development. Millions continue to live far below the minimum levels required for a decent human existence, deprived of adequate food and clothing, shelter and education, health and sanitation. Therefore, the developing countries must direct their efforts to development, bearing in mind their priorities and the need to safeguard and improve the environment. For the same purpose, the industrialized countries should make efforts to reduce the gap themselves and the developing countries. In the industrialized countries, environmental problems are generally related to industrialization and technological development.

5. The natural growth of population continuously presents problems for the preservation of the environment, and adequate policies and measures should be adopted, as appropriate, to face these problems. Of all things in the world, people are the most precious. It is the people that propel social progress, create social wealth, develop science and technology and, through their hard work, continuously transform the human environment. Along with social progress and the advance of production, science and technology, the capability of man to improve the environment increases with each passing day.

6. A point has been reached in history when we must shape our actions throughout the world with a more prudent care for their environmental consequences. Through ignorance or indifference we can do massive and irreversible harm to the earthly environment on which our life and well being depend. Conversely,

through fuller knowledge and wiser action, we can achieve for ourselves and our posterity a better life in an environment more in keeping with human needs and hopes. There are broad vistas for the enhancement of environmental quality and the creation of a good life. What is needed is an enthusiastic but calm state of mind and intense but orderly work. For the purpose of attaining freedom in the world of nature, man must use knowledge to build, in collaboration with nature, a better environment. To defend and improve the human environment for present and future generations has become an imperative goal for mankind—a goal to be pursued together with, and in harmony with, the established and fundamental goals of peace and of worldwide economic and social development.

7. To achieve this environmental goal will demand the acceptance of responsibility by citizens and communities and by enterprises and institutions at every level, all sharing equitably in common efforts. Individuals in all walks of life as well as organizations in many fields, by their values and the sum of their actions, will shape the world environment of the future. Local and national governments will bear the greatest burden for large-scale environmental policy and action within their jurisdictions. International cooperation is also needed in order to raise resources to support the developing countries in carrying out their responsibilities in this field. A growing class of environmental problems, because they are regional or global in extent or because they affect the common international realm, will require extensive cooperation among nations and action by international organizations in the common interest. The Conference calls upon Governments and peoples to exert common efforts for the preservation and improvement of the human environment, for the benefit of all the people and for their posterity.

Principles

States the common conviction that:

Principle 1

Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations. In this respect, policies promoting or perpetuating apartheid, racial segregation, discrimination, colonial and other forms of oppression and foreign domination stand condemned and must be eliminated.

Principle 2

The natural resources of the earth, including the air, water, land, flora and fauna and especially representative samples of natural ecosystems, must be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate.

Principle 3

The capacity of the earth to produce vital renewable resources must be maintained and, wherever practicable, restored or improved.

Principle 4

Man has a special responsibility to safeguard and wisely manage the heritage of wildlife and its habitat, which are now gravely imperilled by a combination of adverse factors. Nature conservation, including wildlife, must therefore receive importance in planning for economic development.

Principle 5

The non-renewable resources of the earth must be employed in such a way as to guard against the danger of their future exhaustion and to ensure that benefits from such employment are shared by all mankind.

Principle 6

The discharge of toxic substances or of other substances and the release of heat, in such quantities or concentrations as to exceed the capacity of the environment to render them harmless, must be halted in order to ensure that serious or irreversible damage is not inflicted upon ecosystems. The just struggle of the peoples of ill countries against pollution should be supported.

Principle 7

States shall take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.

Principle 8

Economic and social development is essential for ensuring a favorable living and working environment for man and for creating conditions on earth that are necessary for the improvement of the quality of life.

Principle 9

Environmental deficiencies generated by the conditions of under-development and natural disasters pose grave problems and can best be remedied by accelerated development through the transfer of substantial quantities of financial and technological assistance as a supplement to the domestic effort of the developing countries and such timely assistance as may be required.

Principle 10

For the developing countries, stability of prices and adequate earnings for primary commodities and raw materials are essential to environmental management, since economic factors as well as ecological processes must be taken into account.

Principle 11

The environmental policies of all States should enhance and not adversely affect the present or future development potential of developing countries, nor should they hamper the attainment of better living conditions for all, and appropriate steps should be taken by States and international organizations with a view to reaching agreement on meeting the possible national and international economic consequences resulting from the application of environmental measures.

Principle 12

Resources should be made available to preserve and improve the environment, taking into account the circumstances and particular requirements of developing countries and any costs which may emanate- from their incorporating environmental safeguards into their development planning and the need for making available to them, upon their request, additional international technical and financial assistance for this purpose.

Principle 13

In order to achieve a more rational management of resources and thus to improve the environment, States should adopt an integrated and coordinated approach to their development planning so as to ensure that development is compatible with the need to protect and improve environment for the benefit of their population.

Principle 14

Rational planning constitutes an essential tool for reconciling any conflict between the needs of development and the need to protect and improve the environment.

Principle 15

Planning must be applied to human settlements and urbanization with a view to avoiding adverse effects on the environment and obtaining maximum social, economic and environmental benefits for all. In this respect projects which are designed for colonialist and racist domination must be abandoned.

Principle 16

Demographic policies which are without prejudice to basic human rights and which are deemed appropriate by Governments concerned should be applied in those regions where the rate of population growth or excessive population concentrations are likely to have adverse effects on the environment of the human environment and impede development.

Principle 17

Appropriate national institutions must be entrusted with the task of planning, managing or controlling the environmental resources of States with a view to enhancing environmental quality.

Principle 18

Science and technology, as part of their contribution to economic and social development, must be applied to the identification, avoidance and control of environmental risks and the solution of environmental problems and for the common good of mankind.

Principle 19

Education in environmental matters, for the younger generation as well as adults, giving due consideration to the underprivileged, is essential in order to broaden the basis for an enlightened opinion and responsible conduct by individuals, enterprises and communities in protecting and improving the environment in its full human dimension. It is also essential that mass media of communications avoid contributing to the deterioration of the environment, but, on the contrary, disseminates information of an educational nature on the need to protect and improve the environment in order to enable man to develop in every respect.

Principle 20

Scientific research and development in the context of environmental problems, both national and multinational, must be promoted in all countries, especially the developing countries. In this connection, the free flow of up-to-date scientific information and transfer of experience must be supported and assisted, to facilitate the solution of environmental problems; environmental technologies should be made available to developing countries on terms which would encourage their wide dissemination without constituting an economic burden on the developing countries.

Principle 21

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

Principle 22

States shall cooperate to develop further the international law regarding liability and compensation for the victims of pollution and other environmental damage caused by activities within the jurisdiction or control of such States to areas beyond their jurisdiction.

Principle 23

Without prejudice to such criteria as may be agreed upon by the international community, or to standards which will have to be determined nationally, it will be essential in all cases to consider the systems of

values prevailing in each country, and the extent of the applicability of standards which are valid for the most advanced countries but which may be inappropriate and of unwarranted social cost for the developing countries.

Principle 24

International matters concerning the protection and improvement of the environment should be handled in a cooperative spirit by all countries, big and small, on an equal footing. Cooperation through multilateral or bilateral arrangements or other appropriate means is essential to effectively control, prevent, reduce and eliminate adverse environmental effects resulting from activities conducted in all spheres, in such a way that due account is taken of the sovereignty and interests of all States.

Principle 25

States shall ensure that international organizations play a coordinated, efficient and dynamic role for the protection and improvement of the environment.

Principle 26

Man and his environment must be spared the effects of nuclear weapons and all other means of mass destruction. States must strive to reach prompt agreement, in the relevant international organs, on the elimination and complete destruction of such weapons.

APPENDIX D

The Johannesburg Declaration on Sustainable Development

(1) From our origins to the future

1. We, the representatives of the peoples of the world, assembled at the World Summit on Sustainable Development in Johannesburg, South Africa, from 2 to 4 September 2002, reaffirm our commitment to sustainable development.
2. We commit ourselves to building a humane, equitable and caring global society, cognizant of the need for human dignity for all.
3. At the beginning of this Summit, the children of the world spoke to us in a simple yet clear voice that the future belongs to them, and accordingly challenged all of us to ensure that through our actions they will inherit a world free of the indignity and indecency occasioned by poverty, environmental degradation and patterns of unsustainable development.
4. As part of our response to these children, who represent our collective future, all of us, coming from every corner of the world, informed by different life experiences, are united and moved by a deeply felt sense that we urgently need to create a new and brighter world of hope.
5. Accordingly, we assume a collective responsibility to advance and strengthen the interdependent and mutually reinforcing pillars of sustainable development • economic development, social development and environmental protection • at the local, national, regional and global levels.
6. From this continent, the cradle of humanity, we declare, through the Plan of Implementation of the World Summit on Sustainable Development and the present Declaration, our responsibility to one another, to the greater community of life and to our children.
7. Recognizing that humankind is at a crossroads, we have united in a common resolve to make a determined effort to respond positively to the need to produce a practical and visible plan to bring about poverty eradication and human development.

(2) From Stockholm to Rio de Janeiro to Johannesburg

8. Thirty years ago, in Stockholm, we agreed on the urgent need to respond to the problem of environmental deterioration. Ten years ago, at the United Nations Conference on Environment and Development, held in Rio de Janeiro, we agreed that the protection of the environment and social and economic development are fundamental to sustainable development, based on the Rio Principles. To achieve such development, we adopted the global programme entitled Agenda 21 and the Rio Declaration on Environment and Development, to which we reaffirm our commitment. The Rio Conference was a significant milestone that set a new agenda for sustainable development.
9. Between Rio and Johannesburg, the world's nations have met in several major conferences under the auspices of the United Nations, including the International Conference on Financing for Development, as well as the Doha Ministerial Conference. These conferences defined for the world a comprehensive vision for the future of humanity.
10. At the Johannesburg Summit, we have achieved much in bringing together a rich tapestry of peoples and views in a constructive search for a common path towards a world that respects and implements the vision of sustainable development. The Johannesburg Summit has also confirmed that significant progress has been made towards achieving a global consensus and partnership among all the people of our planet.

(3) The challenges we face

11. We recognize that poverty eradication, changing consumption and production patterns and protecting and managing the natural resource base for economic and social development are overarching objectives of and essential requirements for sustainable development.

12. The deep fault line that divides human society between the rich and the poor and the ever-increasing gap between the developed and developing worlds pose a major threat to global prosperity, security and stability.

13. The global environment continues to suffer. Loss of biodiversity continues, fish stocks continue to be depleted, desertification claims more and more fertile land, the adverse effects of climate change are already evident, natural disasters are more frequent and more devastating, and developing countries more vulnerable, and air, water and marine pollution continue to rob millions of a decent life.

14. Globalization has added a new dimension to these challenges. The rapid integration of markets, mobility of capital and significant increases in investment flows around the world have opened new challenges and opportunities for the pursuit of sustainable development. But the benefits and costs of globalization are unevenly distributed, with developing countries facing special difficulties in meeting this challenge.

15. We risk the entrenchment of these global disparities and unless we act in a manner that fundamentally changes their lives the poor of the world may lose confidence in their representatives and the democratic systems to which we remain committed, seeing their representatives as nothing more than sounding brass or tinkling cymbals.

(4) Our commitment to sustainable development

16. We are determined to ensure that our rich diversity, which is our collective strength, will be used for constructive partnership for change and for the achievement of the common goal of sustainable development.

17. Recognizing the importance of building human solidarity, we urge the promotion of dialogue and cooperation among the world's civilizations and peoples, irrespective of race, disabilities, religion, language, culture or tradition.

18. We welcome the focus of the Johannesburg Summit on the indivisibility of human dignity and are resolved, through decisions on targets, timetables and partnerships, to speedily increase access to such basic requirements as clean water, sanitation, adequate shelter, energy, health care, food security and the protection of biodiversity. At the same time, we will work together to help one another gain access to financial resources, benefit from the opening of markets, ensure capacity-building, use modern technology to bring about development and make sure that there is technology transfer, human resource development, education and training to banish underdevelopment forever.

19. We reaffirm our pledge to place particular focus on, and give priority attention to, the fight against the worldwide conditions that pose severe threats to the sustainable development of our people, which include: chronic hunger; malnutrition; foreign occupation; armed conflict; illicit drug problems; organized crime; corruption; natural disasters; illicit arms trafficking; trafficking in persons; terrorism; intolerance and incitement to racial, ethnic, religious and other hatreds; xenophobia; and endemic, communicable and chronic diseases, in particular HIV/AIDS, malaria and tuberculosis.

20. We are committed to ensuring that women's empowerment, emancipation and gender equality are integrated in all the activities encompassed within Agenda 21, the Millennium development goals and the Plan of Implementation of the Summit.

21. We recognize the reality that global society has the means and is endowed with the resources to address the challenges of poverty eradication and sustainable development confronting all humanity. Together, we will take extra steps to ensure that these available resources are used to the benefit of humanity.

22. In this regard, to contribute to the achievement of our development goals and targets, we urge developed countries that have not done so to make concrete efforts reach the internationally agreed levels of official development assistance.

23. We welcome and support the emergence of stronger regional groupings and alliances, such as the New Partnership for Africa's Development, to promote regional cooperation, improved international cooperation and sustainable development.

24. We shall continue to pay special attention to the developmental needs of small island developing States and the least developed countries.
25. We reaffirm the vital role of the indigenous peoples in sustainable development.
26. We recognize that sustainable development requires a long-term perspective and broad-based participation in policy formulation, decision-making and implementation at all levels. As social partners, we will continue to work for stable partnerships with all major groups, respecting the independent, important roles of each of them.
27. We agree that in pursuit of its legitimate activities the private sector, including both large and small companies, has a duty to contribute to the evolution of equitable and sustainable communities and societies.
28. We also agree to provide assistance to increase income-generating employment opportunities, taking into account the Declaration on Fundamental Principles and Rights at Work of the International Labour Organization.
29. We agree that there is a need for private sector corporations to enforce corporate accountability, which should take place within a transparent and stable regulatory environment.
30. We undertake to strengthen and improve governance at all levels for the effective implementation of Agenda 21, the Millennium development goals and the Plan of Implementation of the Summit.

(5) Multilateralism is the future

31. To achieve our goals of sustainable development, we need more effective, democratic and accountable international and multilateral institutions.
32. We reaffirm our commitment to the principles and purposes of the Charter of the United Nations and international law, as well as to the strengthening of multilateralism. We support the leadership role of the United Nations as the most universal and representative organization in the world, which is best placed to promote sustainable development.
33. We further commit ourselves to monitor progress at regular intervals towards the achievement of our sustainable development goals and objectives.

(6) Making it happen

34. We are in agreement that this must be an inclusive process, involving all the major groups and Governments that participated in the historic Johannesburg Summit.
35. We commit ourselves to act together, united by a common determination to save our planet, promote human development and achieve universal prosperity and peace.
36. We commit ourselves to the Plan of Implementation of the World Summit on Sustainable Development and to expediting the achievement of the time-bound, socio-economic and environmental targets contained therein.
37. From the African continent, the cradle of humankind, we solemnly pledge to the peoples of the world and the generations that will surely inherit this Earth that we are determined to ensure that our collective hope for sustainable development is realized.

VITA

Name: In Huck Choi

Address: 200 C Winter Park, College Station, TX 77840

Email Address: tamucarp@gmail.com

Education: B.S., Engineering, Seoul National University, 1996
M.A., Anthropology, Texas A&M University, 2006

Work Experience: IBM Korea, 1996-2003