DISSERTATION

JUSTICE, DEMOCRACY AND THE SITING OF NUCLEAR WASTE REPOSITORIES: THE BUAN AND GYUNGJU CASES OF SOUTH KOREA

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ABSTRACT

JUSTICE, DEMOCRACY AND THE SITING OF NUCLEAR WASTE REPOSITORIES: THE BUAN AND GYUNGJU CASES OF SOUTH KOREA

Siting a radioactive waste repository in a nation is one of the most controversial environmental issues to date. During the last two decades, the Korean government has failed to site a repository in the face of vehement opposition from the potential host sites. The repeated failures of the Korean government's siting policy are due to the fact that it relied on the DAD (Decide, Announce and Defend) siting policy emphasizing the technical and economic criteria while neglecting the demands from the local communities to participate in the decision making process.

As a consequence, the Korean government discarded the conventional DAD policy to adopt the VA (Voluntary Approach), which is based on participatory democracy. In 2005, this change in the siting policy took effect resulting in the competitive referenda to host the repository in four cities, in which Gyungju City won the competition.

Three requirements for the VA siting policy are safety, compensation and the democratic procedure. No doubt that safety and compensation are the minimum requirements for any siting policy. However, the Korean cases prove that the democratic procedure is a more crucial factor over safety and compensation in order to obtain the local community's acceptance of the facility.

The most basic assumption of the VA is that the host communities should not be sacrificed to serve the interests of the rest of the country. Therefore, the siting is feasible only when it can benefit both the host communities and the rest of the country together. In this respect,

the democratic procedure in the VA must include the concepts of justice, which takes into account the long-term effects of the siting on the host communities.

Hence, the Korean cases will be analyzed in terms of whether the ideal conceptions of justice and democracy are practiced in the siting process. In particular, the "Buan Conflict" and the "Gyungju Referendum" will be compared and analyzed in detail since they represent the two typical examples of success and failure in the Korean siting policy.

The process leading to the resolution at Gyungju, however, is too flawed to be considered democratic. Also from the perspective of environmental justice, the Gyungju siting has many problems. Nevertheless, even the imperfect democracy practiced in Gyungju achieved significant success since it contained the most essential element of the VA: self-determination by the affected people. Despite its limitation, the Gyungju case illustrates how the VA has the best potential to elicit a social consensus required to solve the nuclear waste siting dilemma.

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It took more time than I had expected to complete this dissertation not only because I have been working in the Incheon City government but also because of the title of "Justice and Democracy," which overwhelmed me with its immense volume and abstractness. To be honest, my original ambition of applying the profound political idea of democracy and justice to solve social conflicts was beyond my capabilities.

It is generally understood that there is a trade-off between freedom and equality. However, freedom and equality are two wheels of a cart which sustains a democratic society. Freedom and equality, or democracy and justice, should go together if they try to maximize their own domains. Unfortunately, these days, the left wheel of economic equality is getting smaller and weaker compared to the right wheel of political freedom and that is why I chose John Rawls's theory of justice as an appropriate public philosophy to apply to solve the siting conflicts.

When I was wandering in the wilderness of justice and democracy, Dr. Bradley Macdonald led the way to find out the exit showing how to focus on the issues that are relevant to my own subject and the right way to organize this dissertation. Without his encouragement and insightful directions, I might have given up this work in disappointment.

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Chapter 1. Introduction

1. 1 From the Buan Conflict to the Gyungju Referendum

Siting a nuclear waste repository in a nation is one of the most controversial environmental issues in the world. Despite continuous efforts, no country has ever successfully devised an effective policy to solve this problem and Korea is no exception to this policy dilemma. During the last two decades, the Korean government has failed to site a repository due to vehement opposition from the potential host sites. Only after the introduction of a voluntary approach did the Korean government begin dialogue with, and gain acceptance from, the local community. It took years for the policymakers to realize that the authoritative top-down approach, which solely relies on technical knowledge, is no longer feasible. Since 1986, when the Korean government began searching for a repository siting, its main strategy was based on secrecy, manipulation and the least amount of compensation as possible. Moreover, the nuclear energy policy was based on a utilitarian philosophy focusing on a cost-benefit analysis. These technical and systematic efforts of the government failed in all siting attempts despite a massive input of time and money.

The decisive turning point is the "Buan Conflict" (2003-2004) in which the Korean government finally realized that the authoritative DAD (Decide, Announce, and Defend) approach had no chance of success. The attempt to site the repository at Wido Island in Buan County resulted in a grand failure. Even with overwhelming physical force, the government could not subdue the local residents' fierce resistance. After the Korean government announced its decision to locate the repository in Buan, the city fell into a state of anarchy for almost a year due to the violent confrontations between riot police and the residents. The Buan residents finally defeated the siting attempt through all-out resistance. During this period of turmoil, the Buan

Conflict, otherwise known as the "Buan Clash" or the "Buan Riot" by the government and national broadcast systems, was considered the hottest news in the nation. However, Korean environmentalists and scholars who supported the residents' resistance often call it the "Buan Struggle" (Sung-Tae Hong, 2004: 222). For them, the resistance, which was resolved by inflicting enormous economic and social costs, symbolizes a victory of the people's democracy as well as the possibility of eco-democracy in Korea (Chul-Kyu Kim, 2005: 42).

The Buan Conflict caused severe social disruption and economic losses to Korean society. Learning from the Buan experience, the Korean government now uses a Voluntary Approach (VA) rather than an authoritative approach for its siting policy. This approach emphasizes citizen participation in addition to the economic incentives. On November 4, 2005, four cities held their referenda simultaneously in order to compete for the opportunity to site the repository. The competition involved finding the most enthusiastic local residents to host the low and medium level radioactive waste (LMLRW) repository in their city. The historic city of Gyungju, which is a one thousand year old capital of the ancient Korean dynasty and a famous tourist attraction, won the competition by a slight margin against the other three cities. Gyungju was congratulated by the central government as the winner to host the LMLRW repository. This success came after more than nine major failed attempts since 1986 to find a site for the repository throughout the country.

Almost all Koreans breathed a sigh of relief at the news of the siting decision at Gyungju because the resolution occurred only one year after the bitter experience at Buan. Upon solving the siting dilemma with the Gyungju referendum, the government and the media celebrated amongst themselves with how the Korean society overcame the selfish "Not In My Back Yard" (NIMBY) syndrome via a democratic solution decided by the people. So far, it

represents a success in democracy and the government's environmental policy in Korea. Upon scrutiny, however, some scholars still question whether the Gyungju referendum truly is a success when analyzed from the procedural and substantive aspects of democracy.

It is ironic that Gyungju residents were united enough to win the referenda to host the radioactive waste repository, particularly given that the Buan residents desperately struggled to defeat a similar siting just one year earlier. The NIMBY facility turned into YIMBY (Yes, In My Backyard) or PIMFY (Please, In My Front Yard) in Korea. How could this happen? Did Gyungju succeed while Buan failed, or vice versa? Or are they both success stories highlighting how communities can decide their own future? What was the difference between these two cases? Can we present the Gyungju case as a desirable model to solve the social conflicts over the nuclear waste sites or NIMBY facilities in general? These questions deserve serious attention since they also highlight fundamental moral conflicts in one's values both politically and socially.

There is no question that the massive economic incentives proposed by the Korean government were the crucial factors that induced the competition among the four cities. However, these same incentives, which were proposed in Buan, failed to garner the same outcomes. What's the difference? Clearly, one of the main reasons that Gyungju residents voted for the referendum is due to the stagnant local economy. Thus, was it really a "voluntary" choice if Gyungju residents felt the need to accept the potential risks of radioactive wastes in order to help their depressed economy? Regardless of whether the siting results are viewed as a success or not, the two contrasting Korean cases provide an opportunity to understand and apply the true concept of democracy and justice in order to solve the dilemma of siting a nuclear waste repository.

1.2 The Voluntary Approach, Democracy and Justice

Twenty years' of repeated failures in the siting policy forced the Korean government to discard the top-down DAD approach and adopt the VA, where the affected local residents make the final decision by comparing the risks and benefits from the siting. Although the Korean government passed an act which guarantees the incentive packages as well as the exclusion of the high-level radioactive wastes from the siting proposal, the most crucial factor that induced these competitive referenda among the four cities was the introduction of a completely voluntary process. This change of siting policy took effect and finally resulted in the Gyungju siting, which was a grand success from the perspective of the Korean government.

The essence of the VA is self-determination of the local residents who are the most affected by the siting decision. In this respect, the VA can be considered as a revival of Athenian democracy, the ideal form of direct democracy. The inevitability of introducing a direct democracy to solve the siting dilemma reveals the incompetence of modern representative democracy to deal with intensive conflicts of interests with controversial social issues. Therefore, there is a possibility that the VA can help solve not only the siting conflicts but also provide an alternative where true democracy, which reflects the genuine needs of people, can be practiced in lieu of the weak present political systems. In this respect, the VA should abide by the democratic ideals as much as possible. Hence, a substantial part of this study is allocated to the analysis of the essential factors that constitute the democratic procedures of the VA.

The core of the VA is participatory decision-making. Therefore, the most important task for the VA is promoting effective public participation in order to reach a social consensus on the siting issue. To make participation meaningful, the general public must have sufficient and

adequate information relating to the siting issue. Participation and open information are required to promote a condition for public deliberation, which is vital to enhance the rationality and legitimacy of decision-making. Without the fundamental belief that discussion or debate in the public area could produce reasonable solutions to social controversy, a democratic approach cannot sustain itself. Therefore, the role of the deliberative process in the VA will be explored in detail.

So far, the VA seems to be the most effective in producing a successful siting. However, this approach generally emphasizes formal procedures rather than substantive outcomes. Most of the definitions of democracy focus on the fairness of a procedure rather than the outcomes. However, a fair procedure is meaningless unless it produces a fair outcome in that it is only a means to attain the desirable end. Procedural democracy, without a fair and equitable outcome, cannot last long since people will realize the contradiction in the long run. Therefore, democratic procedures in the VA must include a conception of justice if it tries to ensure long-term success in the facility siting. In short, democracy and justice must be pursued together to complete the goal of the VA.

In the siting context, a fair outcome means an equitable distribution of the risks and benefits. These days, it becomes increasingly evident that severe economic inequality destroys the basic conditions of democracy, freedom and equality. The concentrated siting of risky facilities due to economic poverty is unfair and thus raises fundamental questions about justice. Although, justice is an extremely controversial concept, it is important to apply this concept to a siting dilemma because people's belief in "fairness" both in procedure and outcome becomes a crucial factor that influences the siting results.

To apply the conceptions of justice to the siting policy, it is necessary to critique utilitarianism which provides the philosophical foundation for the CBA (Cost Benefit Analysis) that has long been used to determine the validity of a public policy. As the siting policy deals with the most fundamental and vital interests of the affected communities, the idea of justice require an alternative policy guideline different form the CBA. In this respect, John Rawls's (1971) conception of justice, which emphasizes protecting the rights of the weakest people in a situation where their vital interests are concerned, can provide an appropriate public philosophy to design a principle guideline with the nuclear waste policy.

In general, the conflicts surrounding nuclear waste repository has been considered a NIMBY reaction, being criticized for neglecting social responsibility. However, such a criticism is losing ground as there have been a growing number of studies that acknowledge the resistance of local residents as a legitimate claim. Evaluating the NIMBY syndrome as people's fundamental rights to protect their vital interests is very important since it provides the essential basis to pursue the VA when dealing with the siting conflicts. Therefore, I will examine whether a NIMBY conflict is a sign of democratic vitality that demonstrates if people still possess the inherent rights to resist an unjustifiable intervention in their life environment. Accordingly, the possibility that the siting conflicts (or NIMBY conflicts in general) could bring about the desirable change in the overall economic and political systems is also discussed.

1.3 The Purpose of the Study

The aim of this dissertation is to critically evaluate the concept of the VA by analyzing the siting experiences of Korea, with the hope of offering a policy alternative to solve future siting practices. It will conclude that the logical and systematic efforts of the DAD approach

failed because it did not consider enough the desire of the host communities to participate in making the siting decision. Hence, the Korean cases will describe the transition from the DAD approach to the gradual introduction of the VA focusing on the increasing power of the host communities. Ultimately, it will be argued that while the VA as currently conceived and practiced in the Korea cases was successful, it was limited in terms of both substantive democratic ideals and just outcomes, both of which are important ingredients of an ideal VA. Thus, on the one hand, this dissertation is concerned with clarifying the ideal normative conditions associated with the VA as well as adding any important empirical analysis of a very successful siting procedure that reflects the current VA.

Empirically, this dissertation on the Korean cases tries to answer the following questions. First, what is the nature of the local residents' resistance to the siting attempt, which was culminated at the "Buan Conflict"? For the Korean government, the Buan case is a complete failure in siting policy and it reveals the inability of the government to manage social conflicts. But, for some scholars or environmentalists in Korea, the Buan case shows the viability of Korean democracy symbolizing the success of eco-democracy. It is important how to define the nature of people's resistance since the correct understanding of the past experiences will help to make both feasible and legitimate siting policies in the future.

In terms of the Korean siting strategies, the VA was the most effective compared to the other approaches. If the Gyungju case can become the typical example of a successful siting that applies the VA in its current form, the success is due to the democratic procedure in which people decide their own future. Even if the Gyungju resolution has too many defects to be called a true democracy as will be explained in the following chapters, it is undeniable that the capacity of the Korean society to solve the controversial social issues in a democratic way enhanced

significantly. Therefore, this study analyzes the factors that constitute the VA and also how to apply these factors to facilitate the siting.

Another question is why the Korean government failed in Buan while succeeding in Gyungju when conditions were almost identical? This dissertation focuses not only on the difference in how the guarantee of incentives and safety measures were provided but also on how the democratic procedures were practiced in both cities. Although there was a considerable difference in the level of compensation and safety in both proposals, the crucial factor that led to the acceptance of the repository was the democratic procedure. Therefore, the democratic factors which contributed to the success of the Gyungju siting are analyzed in comparison with the failed case in Buan.

However, this study concludes that it is premature to judge the success or failure of the Gyungju siting since the long term results of the siting, which includes the safety concerns and economic effects, are yet to be realized. In addition, deferring the decision of including the high-level radioactive waste (HLRW) and concentration of the risky facilities due to economic depression at the Gyungju site should be noted as a limitation. Moreover, the decision and siting did not reflect the ideal conditions of the VA, which I argue led to the clear limitations of the decision as analyzed in a subsequent chapter.

While these will be the main empirical issues, this dissertation also uses these case studies to articulate a normative argument that the VA should reflect a substantive form of democracy. Hence, this research concludes that the VA is not only the most practical and effective policy, but also, if suitably rethought, the most desirable and just form of siting policy. To be presented as a model to solve the siting conflicts, the VA should take the equitable

distribution of risks and benefits into consideration even if it takes more time and cost. Despite the abstractness and controversy inherent in the concept of justice, this study attempts to prove from the analysis of siting practices in Korea that a community's concern for environmental justice determines the acceptance of the repository.

The next chapter deals with the introduction of the VA that resulted from nuclear waste siting dilemmas around the world. The strength and weakness of the VA as well as its three requirements - safety, compensation and democratic procedures - will be discussed. As safety and compensation are the minimum requirements in any siting policy, the essence of the VA lies in its democratic procedures. Therefore, chapter three will expand and analyze the democratic procedures focusing on how the general public could participate effectively in the decision-making process even when it requires specialized knowledge. Accordingly, the strength of the collective deliberation will be used to illustrate and enhance how the capacity of the general public can reach practical policy alternatives. The VA automatically includes a referendum as its integral process in case society fails to reach a decision where upon an important issue becomes too urgent to wait. However, referendums have many problems and can be easily manipulated. Therefore, the required conditions of implementing the referendum must be discussed.

The democratic procedures required in the VA must include the conceptions of justice for the sole reason that the local residents place their trust in the government when they give their consent for the siting proposal. The residents trust that the government will uphold its promise that the siting will eventually yield long-term benefits for the residents. Public trust in their government is related to the conceptions of justice because justice is concerned more about the outcomes of a policy than its procedures. Therefore, chapter four will discuss the issue of environmental justice, focusing on the debated causes of the concentration of risky facilities in

poor communities, which include intentional targeting versus the market mechanism. Even if there is no coercion in accepting the siting proposal, the invitation of risky facilities resulting from economic poverty is also a fundamental issue that needs serious discussion.

Chapter five and chapter six describe the Korean siting cases during the last twenty years focusing on the transition of its siting policies from the old authoritative approaches to the inevitable but gradual introduction of the VA. The Buan conflict and the Gyungju referendum represent two vividly contrasting cases of siting success and failure from the perspective of the Korean government and therefore will be compared and analyzed in detail.

The final chapter will conclude that the success of the Gyungju siting proves that the VA has the only potential to attract the local community's acceptance for the siting proposal. However, it will be argued that the success of the Gyungju siting is limited in the aspect that it has serious flaws in the referendum process in addition to the exclusion of the spent nuclear fuel from the siting proposal. Nevertheless, this study will conclude that there is hope for future siting projects of the HLRW repository if the Korean siting authorities succeed in securing the people's trust. To do so, they have to demonstrate that Gyungju city really is improving in many respects after the acceptance of the LMLRW siting.

Chapter 2 Nuclear Waste Siting and the Voluntary Approach

2. 1 The Failure of the DAD Approach and Transition to the VA

This chapter will describe the difficulty of nuclear waste siting all over the world and the resulting introduction of the VA with some successful cases. Although there is not enough evidence to prove the effectiveness of the VA, it is certain that the VA is superior to the conventional top-down DAD approach which failed during the last three decades despite large investments of money and personnel. Therefore, this chapter will analyze why and how the VA was successful in ameliorating the siting conflicts, focusing on its strength as a siting policy. By providing three factors- safety, compensation and democratic procedure- as essential requirements for the VA, this chapter will start by describing how assessing the risk of nuclear waste siting is immensely difficult, and therefore, siting policy should assume the inherent uncertainty of risk. Under the assumption of the uncertain risk, the only possible way to site the nuclear waste repository can be found by allowing the host communities to compare the uncertain risks with the proposed compensation plan, which leads to a voluntary application to host the repository. Therefore, the essential task in the siting policy is to balance the risks and compensation. Moreover, a successful acceptance of a siting application will not occur unless democratic procedures are in place. Therefore, the democratic procedure will be explored and analyzed in detail in the subsequent chapter.

To this day, no country in the world has succeeded in devising an effective policy to dispose of nuclear waste. The United States, the world leader in using nuclear energy, with the most advanced technology for the disposal of nuclear waste, is still struggling to establish even one site for the disposal of its nuclear waste. The 1979 Three Mile Island accident and the 1986 Chernobyl explosion greatly increased public concern about anything involving nuclear power

(Weingart 2001: 79). Despite scores of siting attempts and the expenditure of several billion dollars since mid-1970, there is only one small radioactive waste disposal facility operating today on new sites in the United States (Gerrard 1994: 25). The US Congress passed the Low-Level Radioactive Waste Policy Act (LLRWA) in 1980 and Nuclear Waste Policy Act (NWPA) in 1982. However, implementation of these acts was a failure by all accounts (Duffy 1997). In 2009, President Barack Obama and Congress removed Yucca Mountain, Nevada as a candidate site for high-level radioactive waste. Given the site was first chosen in 1986, the more than 20 years' efforts to locate a permanent waste site for nuclear waste in Yucca Mountain turns out to be a complete failure.

The difficulty with nuclear waste siting is, of course, not confined to the US. Almost every industrialized country in the world using nuclear energy faces the same dilemma. Robert Vandenbosch (2007) describes the difficulty of nuclear waste siting in industrialized countries. For instance, France, which traditionally had the least public opposition related to the nuclear-related activities, now faces strong opposition to the nuclear waste siting proposal despite offering substantial financial incentives. Moreover, in 2000, the Japanese government passed a law to solicit candidate sites by offering various incentives. But by 2006, no community has volunteered. Germany and Britain also face a similar situation.

The failure of many siting attempts is attributed to the most common top-down DAD approach, which is also called as "New Jersey Model". It relies on the centralized planning process in which a blue ribbon panel, applying largely engineering criteria, identifies a short list of "best sites" and holds hearings on these, decides specific sites, and then, the siting authorities embark on a lengthy, combative, and expensive process to defend its choice and plans (Munton: 11). However, it has been proven that this objective and systematic efforts of the DAD approach

has the least chance to lead to a successful siting. As a consequence, a new approach is practiced in the United States, Canada and in Europe achieving significant results when applied to solve the siting conflicts. This approach is based on a local community's choice to host the potentially risky facility in order to utilize it in its favor. As this approach is based on the democratic choice of local residents who consider all the potential benefits and risks of the facilities, it is called the "Voluntary Approach" (VA).

2.2 The Voluntary Approach and Democratic Choice

2.2.1 The Strength of the Voluntary Approach

There is an increasing number of studies that suggest the VA as the only alternative for the repository siting.[1] The VA deserves attention because this may be the only alternative to provide solutions to the problems of the NIMBY conflict. In *Hazardous Waste Siting and Democratic Choice (1996),* Don Munton describes the concept of the VA:

> "Where most of the other strategies use a prior decision to site in a particular locale, the voluntary approach does not. It assumes that this decision will be made only after invitations have been issued to potential host communities, after the expression of interest by volunteer communities have been considered, after the community have had the opportunity to study the proposal in depth and secure expert advice, and after key provisions of the arrangements for the siting and operation of the facility have been negotiated between its proponents and communities" (20).

Howard Kunreuther explains that the aim of this approach is to convince communities that it will be desirable to house the facility because it is perceived to be acceptably safe and the benefits package is sufficiently attractive to the residents (in Munton: 338). Timothy Sinclair (1991) emphasizes the strength of VA: "An informed, empowered community might choose to accept a facility under some circumstances. If communities knew no facility would be imposed

[1] Refer to the *Hazardous Waste Siting and Democratic Choice (1996),* in which Don Munton edited dozens of proponents for the Voluntary Approach.

on them without their consent, they would be willing to talk about whether facilities can be sited with acceptable safety" (71). Weingart (2001) also describes this process as encouraging full consideration of citizens by empowering the community to actively participate in the facility development process (48).

The fundamental assumption of the VA is that citizens are capable of managing their own problems through a collective decision making processes. Rabe (1994) studies the hazardous waste siting conflicts in Canada and the US and argues that "governments must not only respect and protect the political choices of their citizens but also must encourage and facilitate their participation in every dimension of siting process and ultimate facility operation…" (4). Emphasizing the importance of dialogue and full disclosure of relevant information to enhance community trust and acceptance, he concludes: that the VA has the best potential to solve the siting dilemma (ibid: 7).

Munton introduces many advocates for the VA to siting proposals.[2] The former EPA Administrator William Ruckelhaus also believes that the movement towards a more collaborative, inclusive way of addressing environmental problems may hold the only real hope of solving the gridlock (Weingart: 378). Kunreuther (1993) considers the trust between the developer and host community as a crucial factor that facilitates the siting process. As the aim of the VA is to secure a community's trust in the siting authorities, they argue that the VA holds

[2] Geoffrey Castle and Don Munton attribute the achievements of the VA to its noncoercive, local level democratic process (in Munton: 24). William Gunderson and Peter Harbage conclude that a voluntary process for site selection is far more promising than the DAD approach and warrants further testing and development (ibid: 85); David Leroy ascertains that "open, broad, voluntary public participation by local citizens and local politicians in the siting of controversial facilities is the best way to win that support" (ibid, 133). Morell argues that the VA encourages responsibility and accountability instead of the old-fashioned alternatives of preemption and coercion (ibid: 145).

promise for meeting many key criteria of success (301). The WHO report (1993) also recommended the VA for three reasons. The first is equity; people should have a voice in matters that affect them. The second is economic efficiency; community participation is likely to lead to remedies, including compensation for potential losses that are often overlooked. Third, the VA has been more successful than processes that override local objections (Sloan: 25-26). The strength of the VA is found in its emphasis on participatory democracy during the siting process. Not only the VA approach has an ethical edge over the authoritative DAD approach but also it is achieving significant results in the area of the hazardous waste siting.

2.2.2 Case Studies of the VA

The VA was first employed in the Canadian Province of Alberta, and then in Manitoba and British Columbia, during the 1980s. Two of these Provinces managed to establish facilities, and all three succeeded in securing favorable referenda (Munton: 57). In 1982, the Alberta Special Waste Management Corp selected five finalists based on technical criteria. Referenda then were held in the five towns to ensure that local support existed. In 1984, the town of Swan Hills, community of 2,396 residents, was selected by a 79 percent margin. The facility opened in 1987 and became the most comprehensive waste disposal facility in North America. In 1990, it received local support for quadrupling its capacity (Gerrard 1994: 133). Quebec and Ontario (1993) also adopted this approach and achieved significant results. Rabe (1994) attributes the achievements of this approach in Ontario to four factors: public participation, burden sharing, compensation and protection, and a credible governmental role in the management in LLRW management (139). The Alberta case is the most similar case to the Gyungju case of Korea in the respect that the town of Swan Hills, Alberta was chosen through the competitive referenda with four other communities. Although the competition was not as intense as in Gyungju, and the

population was small, Swan Hills is similar to Gyungju in that both areas were suffering from stagnant local economies.

During 1992, the New Jersey Siting Board and Advisory Committee also adopted this approach. New Jersey's siting policy is built on an open, accessible, and participatory process that would allow key decision makers and potential opponents to be players in the process of policy formation and implementation (Sinclair : 7). The VA was also approved by local voters in Illinois and Kentucky, though they were finally disapproved by the Siting Commission. However, this approach failed in British Columbia because it kept public involvement to a minimum, selecting both the technology and the actual sites almost unilaterally. The communities were not given the technical or financial resources they needed to participate meaningfully in the process (Weingart 2001: 58).

Taking these remarkable achievements of the VA into consideration, there is a strong recommendation in the US to adopt this approach as an official policy to site nuclear waste repository. In early 2012, the Blue Ribbon Commission on America's Nuclear Future[3] made policy recommendations for the nuclear waste disposal siting. It recommended openness, transparency and broad participation as one of the requirements for the siting. To produce a successful siting, it recommended that the siting policy should include the basic principles as below:

> (1) Adaptive: process is flexible and produces decisions that are responsive to new information and new technical, social, or political developments; (2) Staged: key decisions are revisited and modified as necessary along the way rather than being pre-determined in advance; (3) Consent-based: affected communities have an opportunity to decide whether to accept facility siting decisions and retain significant local control;

[3] Nuclear Energy Institute:
(http://www.nei.org/resourcesandstats/documentlibrary/nuclearwastedisposal/reports/blue-ribbon-commission-on-americas-nuclear-future-final-report-to-the-secretary-of-energy-january-2012)

> (4) Transparent: all stakeholders have an opportunity to understand key decisions and engage in the process in a meaningful way; (5) Standards and science-based: the public can have confidence that all facilities meet rigorous, objective, and consistently-applied standards of safety and environmental protection; (6) Governed by partnership arrangements or legally-enforceable agreements with host states, tribes and local communities (Blue Ribbon Commission on America's Nuclear Future: January 2012, V).

Number (5) emphasizes the importance of safety. Number (6) is related to the compensation and the measures to make it trustworthy. More importantly, numbers (1) through (4) underscore the importance of democratic procedures. It remains to be seen whether the US government will adopt these recommendations as an official policy for the nuclear waste disposal.

2.2.3 How Does the VA Work?

One of the most important reasons why the VA can work is the possibility of a change in the people's risk perceptions as Munton described : "There is convincing evidence that people perceive risks as lower, or often more willing to accept risk if the risks are assumed voluntarily"(Munton: 20). For the same reason, people are likely to perceive the risks as more dangerous if it is imposed on them against their will. Therefore, the VA is feasible only when there is at least one community that volunteers to examine the potential risks and benefits of the siting. Ironically, the very reason that the VA can work is that it does not guarantee the successful siting if no community volunteers to consider it. If the VA guarantees the success of siting in any case, then it is contradictory with the very concept of "voluntariness". Regardless of the guarantee of safety and financial compensation, if no community considers volunteering for the siting proposal, then it should be discarded. In that case, the government nuclear energy policy should be revised reflecting people's absolute rejection for the siting proposal. As long as a community's demands are logically consistent, such as rejecting nuclear energy and thus willing

to pay higher energy prices, the government could find other alternatives such as using renewable energy by accepting arguably higher energy prices or sacrificing the economic growth. But, these options also should have to be made by social consensus.

On the other hand, if the local residents are sure that a facility will not be imposed on them unless they genuinely desire it, the possibility for them to consider accepting the siting proposal will be increased because they can compare the risks and benefits without any fear or pressure. In many Korean cases, even the initial attempts of the siting authorities to test the geological suitability of certain locality met with strong resistance. This was due to the local residents' fear that even starting a dialogue with the government or allowing the geological survey to proceed could be used as an excuse to impose the unwanted facility on them. Therefore, to give the absolute veto to local residents in any point during the siting negotiation is vitally important to enhance the possibility of successful siting. As the VA considers the free choice of each community the first priority, the role of the government in the VA is not to induce communities to accept an unwanted facility but to provide relevant and accurate information to help people freely decide about the siting choice. If provision of attractive incentive packages and the best safety is the necessary condition, then the overall introduction of democratic procedures is the sufficient condition for the success of the VA. Therefore, the basic assumption of the VA is that the more democratic procedures are introduced, the more likely the siting attempt will succeed.

2.2.4 The Weakness of the VA

Despite its strength, there is a debate about the effectiveness of the VA. Munton (1996) argues that the voluntary process alone is not sufficient to ensure siting success. As he points out,

some communities may never accept a hazardous waste treatment plant no matter how voluntary a selection process may be (76). Portney (1991) also maintains that there is abundant evidence that the VA does not and will not work in practice. He argues that environmental education programs aimed at changing people's perceptions of the relative risks seem to have little or no effect in reducing public opposition (38). Therefore, he suggests selecting from the existing sites that already have such risky facilities (ibid: 46). However, his argument contradicts the experience in Korea where the government education programs exerted decisive influence on changing the residents' perception on the risk of the facility. Besides, his recommendation goes against the idea of justice, the equitable distribution of the risks and benefits.

As Munton and Portney pointed out, the VA does not guarantee a successful siting in case no community volunteers to consider the acceptance of the siting. However, the main weakness of the VA lies in its overemphasis on the procedural aspect of the "voluntariness," while underestimating the important and substantive issues of the siting outcomes in terms of social equity and environmental justice.

The VA for the siting policy is based on the assumption that siting a nuclear waste repository is possible only when both the host community and the rest of the country can benefit from the siting. Therefore, if the host communities get worse after the siting regardless of the proposed incentives, it is a breach of the initial government's promise that the siting will promote the interests of the host communities in the long run. In addition, the VA does not care about the problem of concentration of risks in a narrow area where the residents are willing to accept more risks for economic reasons. Further, the acceptance of the risks because of poverty raises a question whether it is a truly "voluntary" acceptance. Therefore, to address these problems, it is requisite that the VA has to include the idea of justice.

William Sloan introduces the World Health Organization (WHO) report which stresses not only the advantages of the VA but also its disadvantages: (1) it would be coincidental if volunteering communities also happened to have favorable geology and other physical conditions; (2) equity problems can arise because low income communities may be more prone to volunteering; (3) it is difficult to define the borders of the relevant community, and people just beyond may object; and (4) it is generally assumed that few communities will volunteer (Sloan 1993: 25). This report exactly predicts many problems in the Korean case of Gyungju siting. First, there is still a controversy over the geological condition of the Gyungju site. The construction of a repository was deferred by more than three years because of the fragile rocks which were not discovered in the original geological survey. Second, the main reason for Gyungju residents to accept the repository was the stagnant local economy. Third, the neighboring Uljin City filed a lawsuit to the Constitutional Court accusing the government of excluding the border areas from the incentive programs. Lastly, only four cities applied to host the repository despite the big incentive programs, and they already had nuclear reactors. In addition, the Korean government mostly focused on stirring the competition based on economic incentives rather than explaining the full impact of the siting. It is suspected that the Korean government purposefully hurried to hold the referenda lest the residents should understand the full impact of the siting. It is true that the VA is the more advanced approach in terms of both democracy and feasibility than the conventional top-down approach. However, as the WHO points out, it does not provide any alternative in the case of no community volunteers, which is undoubtedly the most decisive weakness of the VA.

2.2 5 Three Requirements for the VA

According to the literatures that advocate for the VA, the common factors that constitute its elements can be extracted as follows: “acceptably safe and sufficiently attractive” (Kunreuther, in Munton: 338); “empowerment of community” (Weingart: 48); “collective deliberation” and full disclosure of relevant information (Rabe: 4-7); noncoercive, local level democratic process (Geoffrey and Munton, in Munton: 24); people’s perception of the health and environmental risks (Michael Kraft, in Munton: 133); compensation and safety (Rabe, Gunderson and Harbage : 97). Consequently, the main factors that constitute the VA can be boiled down to three: safety, compensation and democratic procedures. The guarantee of safety and compensation becomes the minimum requirement in any siting policy, including the DAD approach. However, there is a decisive difference between the DAD approach and VA in how safety and compensation is provided. In the former, the level of safety and compensation is decided by the siting authorities, while in the latter, it is discussed and negotiated between the host community and the siting authority. Therefore, analysis of how safety and compensation should be dealt with in the VA is imperative. Although safety and compensation are essential factors in the VA, the most critical factor that characterizes the VA is the democratic procedure where the ultimate decision for the siting is decided by the potential host community. Hence, it deserves more attention among the three factors. As all these three factors are indispensable elements of the VA, it is necessary to analyze these factors in detail.

(1) Safety

A. Uncertainty of Risk

The most controversial issue in the nuclear waste siting is the safety of the facility. While the proponents of using nuclear energy are confident with the safety of the nuclear technologies involved, opponents emphasize the uncertainty of science and technology. Nuclear waste disposal facilities do not have a satisfactory safety record since the beginning of efforts to utilize nuclear energy in the post-WWII period. While in the case of the US, disposal of low level radioactive wastes began in the early 1960s with the opening of six facilities, three of these facilities were closed during the 1970s because of leakage and other forms of contamination (Rabe and Harbage, in Munton: 88). Also in the Korean cases, the most controversial issue was whether the site would be safe enough in the short and long-term. To enhance the acceptability of the siting proposal, the Korean government spent a huge amount of money to advertise the safety of the facility while the opponents gathered as much information related to nuclear accidents to warn the general public of the danger of the facility. Although safety is the most essential issue in the nuclear waste siting, there can be no definite answer to this issue. There are numerous arguments which emphasize the inherent limitation of human capability to predict and control the various uncertain risks.

Kristin Shrader-Frechette (1990) provides the most convincing arguments concerning the uncertainty of risk. She maintains that taking a technological risk is unavoidable because of the lack of complete and accurate knowledge. According to her, even the most complete hazard analysis could not provide the accurate probability because it was based on deficient, incomplete and assumption laden data. The uncertainty is further increased by compounded events, sabotage or human error, and weapons proliferations. Accordingly, she warns further that an “objective”

science could help to disguise the exploitative way in which technology is used and to condone a passive acceptance of the status quo (95-96). Even with the same data resulting from the risk assessment, there is a possibility for different conclusions. She refers to the case of the Ford Foundation-Mitre Corporation and the Union of Concerned Scientist (UCS), in which they both agreed on the probability and consequence estimates associated with the risk from commercial nuclear fission, but disagreed in their recommendations on using nuclear energy to generate electricity. While the corporation concluded that it is rational to choose the action with the "expected utility," the UCS recommended avoiding the worst possible consequence of all options (ibid: 100-101). Even regarding past accidents, it is often the case that there is an unbridgeable gap in the statistics. In the case of Chernobyl Disaster of 1986, officials in countries such as France and Russia continue to claim that Chernobyl killed only 31 people and that the explosion and fire had no major health consequences. According to the Ukrainians, however, 125,000 people so far have been killed and more people continue to die. Physicists and medical doctors at the University of California, Berkeley, predict that Chernobyl will cause 475,000 premature cancer deaths and approximately 500,000 premature nonfatal cancers (Shrader-Frechette 2002: 188).

Michael Gerrard maintains that the siting problems of hazardous facilities become more complex when there is long-term uncertainty in the risk factors. The possibility of natural disasters such as an earthquake is one such example (30). He stresses that environmental impact statements and health risk assessments cannot measure the actual risk accurately because the risk assessors have to make subjective judgments from inconclusive data (ibid: 76). Hardy Stevenson (1991) also stresses that there could be no permanent repository because scientists cannot be certain in absolute terms regarding technological and scientific uncertainty (12). According to

him, there is a scientific versus a non-scientific tension in society. Many scientists who lack a historical perspective on their own discipline can exaggerate about "certainty" (ibid: 23). Even the EPA recognizes " that there is no such thing as a 'secure landfill,' because liners will eventually leak, and that landfills may only be viewed as temporary collection facilities or 'controlled releases' into the environment" (Davis and Lester 1988: 18).

In the case of the failed siting attempt in New York State, William Freudenburg (2004: 157-158) argues:

> The fundamental weakness in the risk evaluation is concerned with the way in which the relevant information is considered or excluded from the analysis. Technical approach inherently requires potentially fallible human beings to assign artificially precise weights to factors that are often incommensurable. As there is no such thing as "best scientific combination" of weights, it can become virtually impossible to maintain a credible claim that the chosen process is sufficiently 'scientific' to deserve the support of affected citizens (Freudenburg: 157-158).

There is no doubt that the siting of a nuclear waste repository involves the uncertainty of risk. Thus, the VA starts with the fundamental assumption that there is an inevitable uncertainty in the risk of accepting nuclear waste. In such a situation, the siting authorities cannot force the local communities to accept the potential risk unless they voluntarily undertake it. Therefore, it stands to reason that the final acceptance of risk should be decided by the people who are informed about such a limit. In a situation of uncertain risks, there is much difference between individual choices. Someone would take risks while others are averse to it, even with the same risk-benefit calculation. In an uncertain situation, therefore, the concept of "acceptable risk" can provide the criteria to make a decision on the risky projects.

B. Acceptable Risk and the Precautionary Principle

The concept of "acceptable risk" has been widely used in risk assessment. Many scholars emphasize the subjectivity in risk analysis. For example, John Cohrssen and Vincent Covello (1989) argue that "Risk perceptions are influenced strongly by issues of choice and control. Risks often seem riskier to people if they have not voluntarily agreed to bear them and if they have no control over the source and management of the risks" (9). People's perceptions about risk depend on the familiarity, controllability, and catastrophic potential. An unfamiliar, involuntary risk is perceived as more risky than a familiar, voluntarily accepted one (ibid: 26). John Weingart (2001) also states that people are more scared when they have less control (54).

There is also a tendency that people are influenced more on risk consequence than risk probability. For example, people are usually afraid of flying rather than driving regardless of the accident probability. Shrader-Frechette (1990) argues that reasonable persons are typically more averse to the low-probability/high-consequence situation rather than the high probability/low-consequence situation. Therefore, she claims that societal risk evaluation of potentially catastrophic technologies ought to focus on the accident consequences as well as on their probabilities (95). According to this logic, the risk related to the nuclear accidents must be avoided as much as possible regardless of the risk probability considering the grave consequences of the nuclear accidents as was demonstrated in Chernobyl (1986) or Fukushima (2011).

Acceptability of risk is also influenced by the social atmosphere because every society has a particular perception or emotion on certain risks shared by the general public. Kent Portney (1991) applies cultural relativism to the risk evaluation, arguing that a community's opposition to

facility siting is rooted not in the absolute nature of danger associated with such a facility, but in their cultural relative perceptions of the dangers (110). Gregory McAvoy (1999) also argues that risk perceptions are socially constructed given that individuals make inferences and reach conclusions by giving meaning to uncertain information on the basis of communication with others (98). Hence, it is very difficult to decide the "acceptable" level with risk analysis. In this light, Charles Piller (199) offers a sharp criticism on the concept of acceptable risk. He warns that "The very concept of the acceptable risk can evolve easily to the acceptance of the risk. The risk analysis based on the concept of acceptable risk implies a rejection of value judgments regarding social need, life-style, or community preservation and subtly limits debate" (176).

For this reason, many scholars and environmentalists propose the precautionary principle as an alternative concept to the acceptable risk. If the concept of acceptable risk implies an acceptance of risk if the benefits outweigh the risks, the concept of precautionary principle implies rejection of the risk by recommending the safest choice if the consequences could be grave regardless of its probability. Hence, the precautionary principle is the strongest argument that justifies the objection of using nuclear energy. If the concept of acceptable risk presumes risk-benefit analysis as the guiding principle in making a public policy, precautionary principle rejects risk-benefit calculation especially in a situation of potentially serious risk.

The concept of a precautionary principle was adopted first in Germany in the 1980s as a guiding policy for controversial environmental issues. It specifies that scientific uncertainty is no excuse for inaction on an environmental problem (Dryzek 1996: 139). This principle is also articulated in the UN Programme of Action from Rio in 1992: "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." The London

declaration of 1987 also recommended that "a precautionary approach is necessary… even before a causal link has been established by absolutely clear scientific evidence." The EU Communication on the Precautionary Principle also advocates that "The precautionary principle applies where scientific evidence is insufficient, inconclusive or uncertain and preliminary scientific evaluation indicates that there are reasonable grounds for concern …" (UNESCO 2005: 13).

The precautionary principle calls for the democratic consideration of all possible means to avoid or reduce social and environmental risk. Historically, the public has carried the burden of proving that a certain activity or technology is dangerous, while those undertaking the activity or technology have been given the benefit of doubt that their proposals are safe based on risk assessments conducted by them. Shifting the burden of proof from opponents to proponents of risky activities or technologies is another measure to protect the safety of the public. Accordingly, proponents must clearly demonstrate that their proposal will not cause serious or irreversible harm before they proceed (Johnson: 89-91).

As long as no definite answer concerning the safety of siting is available, this principle provides the most convincing logic to oppose the nuclear waste siting. However, there is no evidence that the precautionary principle is superior to the concept of acceptable risk because some individuals would volunteer to take the risk if they think the probability of an accident is low enough. It depends on each individual's worldview and preferences. Other conditions such as economic situations can also influence a decision. Both the concept of acceptable risk and precautionary principle assumes that there is a certain risk which cannot be predicted or controlled by the best available science and technology. Therefore, it is necessary to compensate for the potential risk that can be caused by the nuclear waste siting regardless of its possibility.

(2) Compensation and Economic Incentives

There can be no question that compensation and economic incentives are the minimum requirements in any siting approach. In general, compensation is a monetary payment for the individuals who can be directly harmed by the siting while incentives are offered to promote the living environment of the community as a whole. Such incentives include providing job opportunities, building schools, roads, parks, etc. Portney (1991) argues that economic theory of compensation starts with the assumption that public opposition stems from a basic imbalance in people's individual benefit-risk calculation. Therefore, he maintains that if personal benefits outweigh the personal costs or risks, they will approve the facilities (26).

When it comes to compensation, what should be considered is not only the potential or actual damage that can be caused by the siting but also the perception of the local residents and the general public of a nation. It appears contradictory to emphasize the safety of the facility while providing enormous incentives and compensation. However, according to Stevenson (1991), there is no contradiction about it when considering the uncertainty of risk and the stigma effect: “First, risk is always uncertain no matter what the possibility may be and second, even if the facility is safe enough for the residents hosting the facility, what matters is the risk perception of the other people of the nation since they can create a negative image. This negative image or ‘stigma effect’ influences the sales of the food produced in the community and the price of the property” (20). No doubt that the stigma effect negatively influences the image of local areas which host the risky facility. In this regard, it is necessary to compare the property price of the host area before and after siting because the effect on property price is actually the most determinant factor that decides the acceptability of the risky facilities for the local residents.

It is ironic that the siting proposal for a LMLRW repository faces more resistance than the construction of new nuclear reactors which are a million times riskier. It is often the case that the host community of the nuclear waste repository has been compensated more than the community which hosted the nuclear reactors. This illustrates how the stigma effect really matters in compensation. According to Roger Kasperson, nuclear power plants are generally regarded more favorably by the public than low level nuclear waste facilities although the former contains much more radioactivity than the latter. Nuclear power plants, regardless of their problems and risks, produce something of value, namely electricity. The wastes sites produce nothing and can never produce anything of value (in Inharber 1998: 177).

In this respect, compensation should cover all damages caused by the siting regardless of their causal relationship. David Morell and Christopher Magorian (1982) also mention the necessity of compensation on the subjective loss. They argue that the objective costs and benefits of a proposal are less important politically than individuals' perceptions of these costs and benefits. The most important damage that can be caused by the siting is decline of the property values**.** Denis Brion (1991) emphasizes the importance of property price when a LULU (Locally Undesirable Land Uses) threatens a neighbor. He claims that " the drop in fair market value of property is not the result of the neighbors asking for less but the result of potential buyers offering less. The perceptions that devalue the neighbors' property are not those of the neighbors, but those of society" (180). Hence, it is noteworthy that there are some cases where siting programs have taken the property price declines into consideration.[4] Unfortunately, this policy

[4] In the case of New Jersey, the Siting Board promised to compensate homeowners for any loss of resale value (Weingart 2001:219). In the Red Lake County case in Canada, a "property value assurance program," was designed to assure the owners to receive fair market value for their property if, for any reason, the facility triggered a decline in property values (Rabe 1994: 114). The Champion International Cooperative, a private firm in the United States

was not adopted in the Korean siting cases including the Gyungju case. In the case of Korea, it is noticeable that the property price of the local areas which held the nuclear power stations during the last two or three decades is conspicuously low compared with the adjacent areas.[5] However, this long-term loss in the property price has never been compensated. No doubt it will negatively influence against the acceptance of the HLRW repository in the future. Therefore, it is necessary for the Korean government to make every effort to prevent the Gyungju's real estate prices from falling after the siting of the LMLRW repository.

Aside from the problem of adequate compensation, there is some skepticism about the effectiveness of the compensation. Barry Rabe (1994) argues that economic strategies failed because they exclusively focused on the attractiveness of compensation packages. Therefore, he emphasizes the importance of extended dialogue and other trust-building measures to prevent compensation from being perceived as bribery (76). Robert Bullard (1994) and Kristin Shrader-Frechette Kristin (1993, 2001, 2002) also criticize compensation for attempting to buy off the opposition. Moreover, Charles Davis and James Lester (1988) argue that "People's perception on the risk of health is so great that virtually no reasonable amount of compensation, by itself, can have much impact." For this reason, they recommend mitigation of risk as a better alternative (60). Howard Kunreuther, Kevin Fitzgerald and Thomas Aarts (1993) also emphasize the importance of mitigation measures. They argue that compensation should be introduced only

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also established a program to protect home owners from falling property prices due to their being located near a proposed industrial landfill (Quah 2002:28).

[5] There are about five local areas which has nuclear power stations in Korea: Younggwang Gun, Kijang Gun (Busan), Wolsung Gun (Gyungju), Wooljin Gun and Wulju (Woolsan) Gun. In most cases, the land price of the gun which has the nuclear power stations is significantly lower than the neighboring guns. For instance, the apartment house price of Younggwang Gun is only 510,000 won/㎡ compared to about 700,000 -100,000 won/㎡ of the seven neighboring Guns. The situation in the other three Guns is about the same.
Naver Real Estate Site
(http://land.naver.com/article/divisionPriceInfo.nhn?rletTypeCd=A01&tradeTypeCd=&hscpTypeCd=A01%3AA03%3AA04&cortarNo=4679000000&articleOrderCode=).

after the affected public is convinced that appropriate mitigation and control measures will be in place so that the risk associated with the facility is considered to be acceptable (302). Herbert Inharber (1998) points out another fundamental problem in compensation by noting that, "Everything can't be measured in money. Damaging a town's social structure, its physical environment or the health of citizens can't be mitigated by cash" (157). Morell and Magorian (1982) also argue that the major problem with high compensation is the tendency it brings to divert attention to financial matters, and thereby induce people to overlook potentially adverse impacts on the environment (174).

Nevertheless, compensation cannot be blamed if it is combined with safety measures and if it is not forced upon the unwilling community. Therefore, it should be regarded as the minimum requirement in any siting approach. A fundamental limitation of any compensation method is that there is no guarantee that it will work in every case, especially when the residents refuse to negotiate over the issue of compensation. In such a case, Morell and Magorian (1982) argue that state-enforced arbitration and the use of state overridden authority is desirable to ensure a final site determination (176). They assert that "although the best means to arrive at a siting decision is negotiation, if the local residents refuse to negotiate then some amount of coercion is inevitable to achieve the goal necessary for the broader community" (ibid: 187). Actually, their suggestion of mixing coercion with the negotiation is the most widely used siting strategy in Korea. However, this strategy is no longer feasible to solve the siting conflicts as it has failed to work with many cases in Korea as well as in other countries. The ineffectiveness of the compensation comes from insufficient compensation, weak effort to mitigate risk and most importantly, lack of procedures for democratic participation. If democratic procedures and risk mitigation are secured, the efficacy of the compensation will be enhanced greatly.

Another important consideration on compensation is that it should be focused more on community packages and economic incentives in order to promote the wellbeing of the broader community rather than only compensating the directly affected areas. The direct compensation has some serious problems. First, it is very difficult to calculate accurate damages that can be caused by the siting. It is also difficult to differentiate the compensation according to the distance from the siting place because there are numerous harmful factors other than the distance. In addition, it is difficult to compensate the border areas even when they are closer to the siting place because the compensation is usually done according to administrative zoning. Second, direct compensation can satisfy only the individuals who live very close to the siting area because they are compensated enough to move to another area. As the government cannot compensate broader areas in such a level due to budget constraints, most of the residents cannot afford to move to other areas. It has been proven in many Korean cases[6] in which the siting attempts failed due to fierce opposition from the uncompensated border areas despite almost complete consent from the directly compensated areas. However, the most important reason to avoid direct compensation is that it cannot prevent the affected areas from becoming stagnated socially and economically in the long run as the residents move to other areas leaving poor families who cannot afford to do so. Therefore, the common characteristics found in most of the successful siting cases are that their compensation policy was focused on promoting the living conditions of local community as a whole rather than compensating small number of individuals. Provision of job opportunities and scholarships, building roads, schools or gymnasiums are examples of such activities.

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[6] For example, the Buan Conflict occurred despite 100% consent from the residents of Wido Island, because the government tried to provide enough compensation only for the Wido residents neglecting the safety concern of the neighboring Buan Gun. Also, in the case of siting attempt in the Gulup Island, the government succeeded in acquiring complete consent from the residents of the Gulup Island. However, the Korean government had to withdraw its plan facing the vehement opposition from the neighboring city of Incheon.

Clarity and consistency of government compensation plans are critical to increase the credibility of the government policy. In this regard, Inharber (1998) argues that "Compensation has to be certain. Vagueness and unfulfilled promises will kill off a compensation system before it begins. For example, both federal and state governments have frequently changed radioactive and hazardous waste policies over the years. This does not inspire confidence among citizens."(160). In many cases of the failed attempts, the government frequently changed its policy on compensation resulting in distrust for the promise offered by the government. The success of the Gyungju siting in Korea also owes decisively to the new legislation which guarantees the consistency of a long-term government compensation plan. No matter how well the safety and compensation is secured in the VA, it is meaningless if the democratic choice of the potential host community is not exercised. Therefore, the requirement of a democratic procedure deserves the highest attention in the VA.

(3) Democratic Procedure

The most critical requirement in the VA is keeping democratic principles throughout the siting process. If safety and compensation is a necessary condition, democratic procedure is a sufficient condition to produce a successful siting. Regardless of a carefully designed safety and compensation plan, a siting policy cannot succeed if the potential host community feels that the procedure leading to the siting decision does not faithfully reflect their opinion. It is true that many siting attempts have failed not because of insufficient compensation or safety problems, but because of a coercive siting process. Therefore, the core of the VA lies in how to introduce and organize democratic procedures in the siting process.

There are four requirements of a democratic procedure that must be met in the VA to nuclear waste siting: first, it starts from the voluntary application. Most of the failures of the past

siting policies came from unfair procedures such as discrimination, targeting, secrecy, bribing, deceiving or threatening by force, etc. In many cases, the residents explode with anger when the government's secret plan, which targeted a certain community, is revealed. Even results from elaborated scientific research to find a suitable siting place becomes distrusted when it starts implicitly targeting certain communities first and verifying its suitableness later. To avoid the suspicion of discrimination, the first step of a democratic procedure should start by considering all potential sites in a nation rather than targeting a certain area, no matter how suitable it looks for the siting.

Secondly, a democratic procedure requires that information related to risk judgment should be provided to all potential host communities. It is often the case that siting authorities try to conceal the risk factors while concentrating all efforts to advertise the safety and benefits of the siting, which further increases distrust in the government. The government can build trust in the local community by providing all information, including the negative, as honestly as possible. The siting authority has to put all its efforts to acquire 'the self-informed consent' from the host community because it is the main criteria used to judge the legitimacy of the siting decision. Providing financial assistance to the opponents of the siting that refute the arguments of the proposal should be considered because it will increase the credibility of the siting authorities in the long run.

Third, all siting procedures and decisions should be made in an open and transparent way. All residents who have stakes in the siting should be given enough opportunity to express their own opinion in a free and open atmosphere. In many failed siting plans, the government tried to experiment with participatory procedures, but most of them were perfunctory to meet the requirement set by the law. As is seen in the Korean cases, siting authorities tried to shorten the

period of public debate for fear of an explosion of public anger with this volatile issue. Therefore, they tend to hasten the referendum to decide the issue as quickly as possible. Such a referendum is likely to degenerate into pseudo-democracy, in which the majority rule is used to deceive or suppress the residents who oppose the siting proposal. Therefore, sufficient time and places to discuss about the siting issues, without any outside pressure, should be provided to the potential host.

After all, the only feasible way for the nuclear waste siting is to attract the host community that volunteers after calculating the risks and benefits. To make this happen, the government should reduce the risk as much as possible. Scientific research to find the best site in the aspect of geological conditions and transportation risks should be completed above all considerations. The second step is to devise a compensation plan which is substantial enough to attract applications from local communities. The last step is to abide by a democratic procedure in which the affected people can make the final decision based on accurate information. Hence, it can be concluded that safety, compensation and democratic procedure are three components of the VA. As safety and compensation are the minimum requirements in any siting approach, the essence and the merit of the VA lie in the democratic procedure. Therefore, it is necessary to explore and analyze the core elements that constitute democratic decision making to make it applicable to the VA. However, democracy is the most controversial and abstract concept to apply in the public policy. Therefore, next chapter will deal with the fundamental issues of democratic theories that are related with applying the VA to solve the siting problems.

Chapter 3. Democratic Theories and Rethinking the Voluntary Approach

3.1 Overview

Given the argument that only the VA could provide a solution to siting conflicts, it is necessary to analyze how it can contribute to both democratic rule and pragmatic solutions to the siting dilemma. This raises a number of interesting issues associated with democratic theory: Can the unorganized general public make a rational decision compared to the decision-making by the group of experts, especially in the highly specialized area of nuclear energy policy? This dissertation will answer "yes" to this question if people are given proper democratic procedures such as open and equal opportunity to participate and deliberate over the issue. Furthermore, the necessity of increasing public participation, especially in the areas where the experts monopolize the decision-making, will be emphasized because defending democracy should be a higher priority than administrative goals.

This chapter deals with the contentious debates concerning the effectiveness of participatory decision-making. There are many arguments that increasing public participation in controversial public policy areas is most likely to create unnecessary conflict and disorder resulting in delay and cost increases. However, there are as many strong arguments, as will be articulated, which advocate the advantage of increasing public participation. The demand for increasing public participation comes not only from the legitimacy of democracy but also from the belief that the general public has enough potential to solve social problems through a genuine deliberative process. Collective deliberation, in this regard, is imperative for the VA because the strength of democracy lies in the efficacy of the self–learning process among the general public. Accordingly, the democratic theories of Amy Gutmann (1996), Iris Young and Christian Hunold

(1998), Genevieve Johnson (2008), and particularly, Jürgen Habermas (1995, 1996) will be referenced in discussion on the strength of deliberative democracy.

No matter how well the deliberative process is practiced, it is inevitable that the final decision should be made by the majority vote or referendum if the society cannot reach a consensus on the issues that are too urgent to defer a decision. Although the majority rule is the most powerful tool to draw a conclusion in a controversial debate, there is a danger that the 'majority tyranny' could prevail. Therefore, the ideal conditions needed to prevent the majority rule from becoming convenient tools to manipulate public opinion will be discussed. It will be also argued how the siting authorities can acquire the 'self-informed consent' from the host communities to prove the validity of a siting decision by the referendum.

The VA starts from recognizing the NIMBY resistance as a legitimate claim of the residents to protect their fundamental rights. Therefore, there is a need to study NIMBYism because it figures a more robust democratic process, and thereby helps to open issues for rethinking the VA. Therefore, this chapter will analyze and evaluate the NIMBY resistance as a driving force of the VA. However, the NIMBY protest also reveals the inadequacies of the political system, especially highlighting the failure of a modern representative democratic system. Hence, the possibility whether the VA could go beyond the NIMBY resistance developing as a force to expand direct democracy in the controversial public policy area will be discussed.

3.2 Participatory Democracy

3.2.1 Who Will Make the Decision?

The success of the VA depends on the effectiveness of participatory decision-making because it cannot survive long by depending only on the legitimacy of democracy. The most

fundamental problem related with the nuclear waste policy is to decide the desirable level of citizen participation. Because the nuclear policy must deal with both complex issues of technology and political feasibility, it stands to reason that the experts in these areas claim they can make the most rational decisions related to this issue. Hence, it is no wonder that governments around the world would not forsake the DAD (Decide, Announce, and Defend) approach while trying to keep citizen participation at the minimum level until they are faced with the nuclear waste stalemate. However, numerous past failures based on this assumption proved that this method is no longer feasible let alone desirable. It becomes increasingly clear that nuclear waste repositories cannot be sited without the consent of the local residents. It also has been proven that the nuclear waste problem goes beyond technical or economic issues facing the life and death struggles in the local communities selected as host sites.

There is sufficient reason why the general public should participate in the decision-making process especially when it is related to social controversies such as nuclear energy policy. First, as was stated in the previous chapter, there is no such a thing as an infallible technology as risk is always uncertain, especially considering the human fallibility. In a situation of uncertain risk, the government cannot impose risk to any community no matter how suitable the place is. In that case, the only possible way is to find a volunteering community which understands the potential risks and benefits of accepting the nuclear waste site. Therefore, giving local residents the opportunity to reject a siting proposal in the event it could harm their vital interests is a requirement not an option.

Secondly, experts in the nuclear energy policy tend to have smaller risk perceptions compared to the general public because they are familiar with the risks. Additionally, it is unrealistic to expect the experts working with controversial technology to forsake the technology

especially when it is connected to their jobs. Therefore, it is natural that experts working in the nuclear industry tend to be overconfident in their technology and will take more risks compared to the general public. The more public policy becomes complex and specialized the more there is a need to expand citizen participation in the controversial policy areas in order to defend the democratic rule. Experts or bureaucrats have a tendency to dominate the public policy-making because they have the inherent tendency to expand their own interests utilizing their knowledge and skills. There is also a possibility that they would engage in corruptions or unethical practices sacrificing the public interests.[7]

It is a generally accepted fact that complex and hierarchical administrative structures are required to manage and control the nuclear industry and technology efficiently. Dryzek (1996) provides the concept of "administrative rationalism," in which the role of expert is vital in social problem solving, which stresses social relationships of hierarchy rather than equality or competition. In such a society, public policy formation is a matter for technical, expert choice in which non-specialists or broader public could not participate (63). Karl Popper (1966) criticizes the closed hierarchical style of this perspective for the reason that relevant human knowledge is too dispersed and fragmentary to be aggregated in the hierarchical systems. He maintains that the solution to the problem lies in liberal democracy which is based not on expertise but free, open, and equal criticism and test of the conjectures of scientists (in Dryzek: 72).

The Critical Theory provides the most comprehensive criticisms concerning the danger of the society dominated by the ruling elites. Herbert Marcuse (1964) stresses that domination of nature is linked to the domination of man by subordinating him to the masters of the apparatus

[7] Bribery cases occur frequently in Korea relating to the supply of parts for the nuclear power stations. In November 2012, notorious bribery cases have broken out, which resulted in the arrest of at least twenty two staffs of the KHNP who received bribes for purchasing fabricated parts for the Younggwang nuclear reactors. Their crimes were revealed by the sudden failures of two or three reactors which have used the fabricated parts. The stopping of these reactors has caused a national emergency situation in the supply of electricity.

(166). According to him, technology is always a historical-social project which reflects the intention of the ruling interests to dominate men and things (Marcuse 1968: 223). Nuclear industry is closely connected to the capitalistic mechanism of investment and profit. In this perspective, Douglas Kellner (1989) criticizes capitalism for producing new forms of imperialism, consumerism, mass culture and social control (5). Accordingly, if we take seriously the aforementioned critics of technological elite rule, we must increase citizen participation in the areas where experts maintain "complexity of issues" as an excuse in order to monopolize the decision making power. However, citizen participation does not necessarily mean participation by the general public. Rather, experts in other areas could provide valuable opinions concerning controversial social issues. In this regard, Johnson (2008) recommends to include experts from the humanities and social sciences in the decision making process in order to elucidate the moral, social, and political dimensions of nuclear waste management (84).

3.2.2 Can Citizens Make a Wise Decision?

The essence of the VA is participatory decision making by the affected local residents. However, the fundamental question is whether the unorganized general public could participate effectively in the decision-making process compared to the organized group of experts. There has long been skepticism concerning the role of citizen participation in the area of complex public policy. In the *Irony of Democracy* (1981), Dye and Ziegler describes the dilemma of participation: "Democracy is the government 'by the people,' but the survival of democracy rests on the shoulders of elites. Elites must govern wisely if government by the people is to survive because the masses of America are apathetic and ill-informed about politics and public policy" (1). Macnair, Calswell, and Pollane (1983) also criticize the federal and state requirement for citizen participation for fostering ineffectiveness and inefficiency calling it "national enigma."

They see citizen participants as "a nuisance and potential threat to program stability (in Luton: 198)." Larry Luton (1996) also argues that it is not easy to attain simultaneously the ideals of efficiency and democracy since the benefits gained by citizen participation will most likely come at some costs in efficiency and community cohesiveness (ibid: 223).

It is noteworthy that even the U.S. EPA report once held a pessimistic view on public participation: "If given too large a substantive role, opponents will probably block all siting attempts. If major local roles in siting were to become wide-spread, this would probably be disastrous for siting" (EPA 1980: 29). Smith and Ingram also object to citizen participation. They point out three common complaints about citizen participation in the US: First, there is too much citizen participation. Second, it is too fragmented and sporadic to produce effective resolutions to enduring policy problems. Third, empowering citizens may lead to the adoption of "the wrong policies" (in Lummis 1996: 194). Portney (1991) likewise has a skeptical view on the role of citizen participation. He argues that greater citizen participation could preclude successful siting and siting becomes harder as more people are involved (65-66). Matheny and Williams are also concerned about that "Public participation becomes a ubiquitous feature wherever conflicts are too intense for the legislature to resolve. The legislature is delegating not only its political authority to the administrative agencies, but also its representative function" (in Davis and Lester 1988: 38).

Despite the negative views on citizen participation, there have been an increasing number of literatures on the legitimacy and effectiveness of citizen participation. Acknowledging the positive role of public participation, Sloan (1993) maintains, "The community that will play host to the facility should be viewed as a resource rather than as adversary: more facilities have been sited successfully with the participation of the community than through authoritative

approaches. Conflict is a potentially positive and creative force. The challenge is to use it positively rather than to let it become a destructive force" (12). Analyzing the US and Canadian NIMBY cases, Rabe (1994) also concludes, "Participatory approach which encourages extensive dialogue before reaching of any essential policy decisions replaced the NIMBY gridlock" (8). Robert Duffy (1997) also argues that the most important development in US nuclear politics during the last several decades is the institutional reforms designed to open up government to greater citizen participation (1).

Although citizen participation can contribute to democratic rule, there is no guarantee that citizens can participate effectively in making a rational decision in complex public policy**.** Not being equipped with sufficient knowledge and information, citizen participation is most likely to cause emotional or violent reactions rather than an orderly process for rational discussion. Besides, there is a danger that certain groups can take advantage of the opportunity to promote their own interests at the expense of the public interests. Therefore, it is necessary to explain how citizen participation can produce a desirable outcome for society. There are many democratic theories which provide the logic for the effectiveness of participatory decision-making.

In *Making Democracy Work* (1993), Putnam proposes the essential preconditions for democracy: active participation of citizens in public affairs; the interaction of citizens as equals; and mutual trust and respect among citizens. He argues that participation creates the social capital or the mutual trust necessary for democratically coordinated activity. His idea of "social capital" provides an important reason to increase citizen participation. Moreover, according to Daniel Press (1994), people become much better citizens, better at problem solving and more apt to take responsibility for their action as personal involvement increase (29). He provides reason

for this: “If the public had sufficient motivation to participate, they could acquire policy-relevant knowledge and begin to think about common interests than merely self-interest” (ibid: 64). Portney (1991) also argues that people become increasingly capable of making decisions which are based on more than short-term self-interest through the process of self-governance (56). Sinclair (1991) also believes that a determined group of people impacted by a siting issue can generate a tremendous amount of information and expertise to support their position with the use of new technology and advanced communication devices,” (292). In *Bringing Society Back In* (2003), Edward Weber describes how the collaborative activities of the citizens could produce an effective GREM (Grass Roots Eco-system Management), demonstrating that democratic accountability could be secured through citizen participation.

Public participation has both negative and positive potential depending on the administrative capacity to embrace and coordinate it into public policy-making. Kraft and Kraut (1988) argue that public involvement programs may become a gamble against public prejudices or an act of faith in the possibilities of public education. Nevertheless, they conclude that active public participation by citizen groups may be the only feasible alternative (in Munton: 78). Despite the risks in increasing public participation, most of the literatures in the siting conflicts emphasize the benefit of public participation. Let alone its efficacy, participatory decision making remains as the only alternative when the representative political system is deadlocked over the urgent issue of nuclear waste. Although, there is a need to increase citizen participation, what is more important than just increasing public participation is how to organize it to produce desirable outcomes.

3.2.3 How to Make Citizens Participate Effectively

To enhance the efficiency of citizen participation, it is necessary to provide citizens with adequate and accurate information relating to the siting. In many cases, the government spends an enormous budget to advertise the safety and attractive incentives, while minimizing or even concealing the negative effects. These practices increase distrust toward the government. If citizens lack the information to examine the essential arguments relating to the siting proposal, they will not trust the information offered by the government. Therefore, the siting authorities should play an active role to provide the necessary information to the potential host communities. In this respect, the US laws such as Freedom of Information Act (1960), and the Community-Right-To-Know Act (1986) are essential to promote information sharing (in Faber 1998: 98). Press (1994) also provides conditions for effective citizen participation: deliberation and political equality, enlightened understanding and high degree of communication between participants (28).

Considering the cost to verify the arguments of siting, substantial financial assistance for the local residents is needed to help hire experts who could work for them. Expenses for local or international travel to gather information should also be provided to the residents if necessary. However, as we will see in the following Korean cases, the government is very eager to pay for the travel costs to foreign countries that can prove the safety of well managed nuclear wastes repositories but never pays expenses for the trips that can negatively influence the siting process. In this respect, it is desirable that such a program as the "Science for Citizens," which was promoted by Senator Edward Kennedy in the late 1970s to fund citizen groups that were challenging decisions about controversial technologies, should be applied in the siting process (Piller 1991: 203).

In many cases of siting conflicts, the siting authorities approach the local residents in order to persuade them with the guarantee of safety and economic incentives. However, local residents are reluctant to participate because they are afraid that the government may target their community and will only approach them to impress the validity of siting rather than engaging in open discussion to solicit the true opinion of local residents. The fear of local residents is further increased by the activities of the anti-nuclear activists who warn about the danger of a nuclear accident. In addition, local residents are concerned about the formidable ability of the government to persuade local residents with information biased towards the positive effects of siting while concealing the negative. Even starting a dialogue or participating in the government forum to discuss the siting proposal is often regarded as cooperating with the government policy.

As a result, blocking public forum becomes the most frequently used strategy of the anti-nuclear activists. Anti-nuclear activists are inclined to use physical violence to prevent the local residents, who are interested in the siting proposal, from participating in the public forum. This situation makes the siting authorities approach the local leaders in secrecy. As the local leaders usually favor the development of the local economy, they become convinced that the nuclear waste siting is a valuable opportunity to regenerate the stagnant local economy. However, this secretive approach invariably fails in all the siting attempts as will be described in the following Korean cases. This policy only causes severe conflicts within the local community and leave enduring scars even after the cancellation of the siting plans. Since people had a long history of deception and manipulation by the government, it is not easy to promote participation in the local community. Therefore, citizen participation should be carefully designed to eliminate fears of manipulation or coercion by the government.

Morell and Magorian (1982) warn about the tokenism in which participation remains just a window-dressing ritual. In such a case, participation is perceived as statistical abstractions such as how many people come to meetings, take brochures home or answer a questionnaire (120). Hence, they warn that the mandated use of participation in many governmental programs make it ritualistic where the purpose is to validate the formal decision-making process rather than to expose errors in the proposal (ibid: 128). To avoid tokenism, it is necessary to pay attention to William Sloan (1993: 57) who emphasizes the need to listen to genuine public opinion by referring to five errors relating to public participation:

> The hard sell: The attempt to sell a decision that has already made. (2) Redefining the public agenda: trying to attract the attention to technical and quantitative issues instead of community and social issue. (3) As the developer approaches the public too late, the public become self-educated and eventually trusts only its version of the facts. (4) Leaning too heavily on the facts: Technical people have a strong belief in the force of "rational decision-making" (5) Fail to tailor the information to the audience: The developer may produce information to the needs of the regulatory agency, not to those of the public.

Another serious threat to participation is the possibility of threat or violence during the siting process. Freedom of speech or freedom of association and meeting are the minimum requirements to promote participation in siting process. In the Korean cases, however, many public forums to discuss the siting proposals were cancelled due to violent activities of the local residents or environmentalists. Even when the forum was held, it was frequently disrupted or abruptly stopped by the verbal abuse or physical violence among the participants. Ironically, it is usually the anti-nuclear activists and those in opposition to the siting plan that utilized physical violence to stop the public discussion. Intimidation or social pressure such as exclusion from the community activities towards neighbors also were frequently used by the anti-nuclear groups. To prevent violence or disorder during the siting process, participation should be carefully planned in accordance with the government plan to accommodate people's demand. Opening the door for

citizen participation without carefully planned schedule can cause conflicts and disorder as will be described in the Korean cases.

3.2.4 The Essence of the VA: Deliberative Democracy

Collective deliberation is the essence of participatory decision-making. Even if an open and participatory process is secured in the siting process, it is of no use unless such a process is organized efficiently to reflect the genuine opinion of the residents of the potential host community. The participation should be organized to enhance the efficiency of the communication between the government and the communities. All residents who have a stake in the siting proposal should have the opportunity to participate effectively in the deliberative process to decide the issues. The strength of the VA is based on the belief in the efficacy of the deliberative process. Democracy, by its nature, assumes conflicts of interests and disagreement among participants. Therefore, the success of a democratic procedure depends on how to harmonize different interests and ideas through a deliberative process. As a deliberative procedure is the essence of the VA, it is necessary to analyze how a deliberative process can produce effective solutions to social controversies, and to lay out the conditions necessary for an ideal version of the VA. There are many scholars who espouse the strength of democracy in the deliberative process, but I will focus on those whom I think can best provide guidance in laying out the conditions of a truly viable VA.

Amy Gutmann (1996) is an adherent of the deliberative democracy, finding the strength of democracy in the deliberative procedure. Importantly, she argues that citizens and their representatives are more likely to take a broader view of issues, and to consider the claims of their fellow citizens more, in a process in which moral arguments are taken seriously than in a process in which assertions of political power prevail (42). For the concern that extending the

domain of deliberation could create even greater conflict than it is intended to resolve, she maintains that it can be addressed by extending the domain of deliberation rather than suppressing it (ibid: 44).

Rabe (1994) also believes in the citizen's potential to engage in collective deliberation and make reasonable decisions about facility siting, claiming that the siting process should begin with democratic discourse which includes consideration of facility need, equitable burden-sharing among communities, alternative waste management technologies and long-term protections (7). He concludes that the collective deliberation process would result in greater consensus and a more promising strategy for waste management because citizens have the ability to evaluate policy options (8).

Johnson (2008) defines the deliberative democracy as a process to find a justificatory agreement among a wide diversity of potentially affected persons through communicative exchanges. She describes that deliberative democracy seeks a mutually justifiable agreement through the processes of inclusive, informed, and well-reasoned deliberation (4). According to her, consensus is not fundamental to the ideal of deliberative democracy since deliberative democracy assumes reasonable disagreement while accommodating and respecting their differences until they reach a provisionally justified agreement (ibid: 81).

Habermas (1995) constructs a comprehensive theory of discourse which is based on the belief in the efficacy of deliberative communication. As deliberative communication is the essence of the VA, his theory of communicative action and discourse ethics deserve special attention and will be central to rethinking the VA. According to Habermas (1995), the effective communication starts not from the basis of universal agreement on norms or general theory of justice but starts from the assumption of reasoned agreement between participants, which he calls

"practical discourse" (viii). According to his discourse ethics, for a norm to be valid, its consequences for the satisfaction of everyone's interests must be acceptable to all as participants. The norm in the practical discourse should be "equally good for everyone" and impartial about the interests of all concerned. If the norm is established, participants would strive to clarify a common interest, whereas in negotiating a compromise they try to strike a balance between conflicting particular interests (ibid: 72).

His concept of discourse ethics is meaningful since it provides the possibility of agreement even in a situation of fundamental conflicts of interests among the participants only if they could agree on the practical norms of communication. He imagines an "ideal speech situation" where participants are willing to strive for agreement in accord with the rules implicit in language. Engaging in communicative action presupposes certain principles, that people are free and equal participants in such discourse (Habermas 1990:136). Therefore, he argues that anyone who participates in argumentation has already accepted these substantive normative conditions as the aim of communicative action is to reach agreement over facts about the world and over norms of social interaction (ibid: 137).

However, establishment of the valid norm or ideal speech situation does not guarantee the agreement if there is a severe conflict of interests between participants. To solve this problem, Habermas (1995) provides the concept of communicative and strategic action. In strategic action, one actor seeks to influence the behavior of another by means of the threat of sanctions. But, in communicative action, one actor seeks rationally to motivate another by relying on the offer contained in his speech act. With communicative action, a speaker can persuade a hearer to accept a speech-act offer by guaranteeing that he will redeem a criticizable validity claim. It creates a binding effect between speaker and hearer that makes the continuation

of their interaction possible (58-59). The possibility of communicative action can be found in the autonomy of inalienable individuals and their embeddedness in an intersubjectively shared web of relations which are internally connected. It is the link that the procedure of discursive decision making takes into account (ibid: 202).

Habermas's concept of the communicative action is useful to understand the negotiation process. However, the problem is how to make communicative action prevail over strategic action especially in a situation of irreconcilable conflicts of interests. Kellner (1989) criticizes Habermas's emphasis on consensus arguing that it could lead to authoritarian manipulation and repression of differences. Therefore, he claims that preservation of individuality and particularity emphasized in the Critical Theory is important to militate against repressive political centralization and authoritarian bureaucratic politics (227). However, Habermas's concept of practical discourse could be understood more as emphasizing the possibility of agreement based on mutually acceptable norms than as forcing an unwanted agreement. His discourse ethics should be accepted as a minimal requirement for any democratic discussion since agreement on discussion norms does not necessarily lead to a forced consensus.

Christian Hunold and Iris Young (1998) also emphasize the effectiveness of discussion which they call "communicative democracy" as a process where citizens discuss a problem together and attempt to persuade one another that the solutions they propose are best, in the sense of most just, most effective, least costly, and so on. They argue that citizens often transform their understanding of the problem and propose solutions through public discussion because public communication makes them take account of the needs and interests of others and may also give them information that can change their perceptions of the problem and alternatives for solving it (87). Their theory of communicative democracy is important because it provides the possibility

of negotiation and compromise by increasing mutual understanding through open communication.

The concepts of "deliberative democracy," "practical discourse," or "communicative democracy" are similar in that they emphasize the strength of deliberation and communication in solving social conflicts. These theories of democracy are based on the optimistic assumption of human nature that individuals will behave in accordance with community responsibility. However, the debate on human nature is perennially a controversial issue. Therefore, if individuals' selfish motives cannot be overcome through the communicative process, the logic of deliberative democracy cannot be sustained. In this perspective, Frank Cunningham (2002) offers a criticism that deliberative democracy underestimates irreconcilable conflicts arguing that "if intractable conflicts are widespread, then there would be few common goods on which people could agree, and the scope of democratic procedures encouraging people to seek consensus would be limited" (166).

Nevertheless, there is a strong possibility that collective deliberation has the potential to improve the conflict situation by clarifying the difference and trying to find mutually agreeable compromises as long as both parties agree on the norms of discourse as Habermas proposed. Therefore, the government should make all efforts to provide the citizens with sufficient opportunities to deliberate the siting issue. If the final decision of the residents is made after thorough deliberation, it should be respected be it acceptance or rejection of the siting proposal. As deliberation is the essence of democracy, participatory processes without deliberation can be degraded as a pseudo-democracy which serves only to justify the decision already made by the authorities.

Despite the strength of deliberative democracy, there is no guarantee that the VA, which is based on deliberative procedures, will provide an effective solution to address the siting problem. There is a possibility that local residents will decide against any discussion relating to the siting plan as is found in many cases in the world where a nuclear waste siting is delayed to the present because it is difficult even to start a dialogue about the proposed siting plan. In the case of Korea, high-level nuclear wastes, which are temporally stored within the nuclear power plants, saturates by the year 2021.[8] Therefore, the Korean society can no longer defer the decision on the siting of the HLRW repository, especially considering the construction period which takes many years.

Around the world, many final decisions relating to nuclear waste siting have been made by the referendum. Indeed, it is becoming increasingly clear that there is no other way but to rely on a referendum as a last resort to solve the siting dilemma. Referendums are not necessary expressions of ideal conditions of deliberative democracy although they are frequently used in the VA. Rather, they can stop consensual practices in case there is an urgent need to make a quick decision. However, if the necessary decision cannot be made despite a substantial deliberative process, a referendum may remain the only alternative. Given that a referendum is most conveniently used in the VA as an ultimate solution for the siting conflict, it is necessary to analyze its strength and weakness. The most important task in the VA is how to accommodate and organize a referendum so that it can contribute to democratic decision-making rather than to degenerate into a disguised democracy.

[8] The temporary storage of the high-level nuclear wastes at the nuclear power stations becomes saturated starting from the Gori (2016), Wolsung (2018), Younggwang (2019) and to Uljin (2021).

3. 3 Referendum and Nuclear Waste Siting

3.3 1 Majority Vote and Minority Rights

Among many environmental conflicts, it is noteworthy that conflicts related with nuclear energy policy have been most frequently resolved through a referendum. Kunreuther concluded that a majority vote has been the most effective way in making a final decision to resolve the siting conflicts (in Munton: 347). Switzerland has a tradition of using referenda for this purpose and has been successful using referenda in finding home for the disposal of municipal wastes. Also in the case of Alberta, Canada, five communities held plebiscites in 1982, and all agreed to having a hazardous waste facility in their backyard (ibid: 348). Referenda to ask the public opinion for using nuclear energy to generate electricity were held in Austria (1978), Sweden(1980, 1995), Switzerland (1979, 1984, 1990), Japan(1996) and Italy (2011), etc.[9] Referenda to decide the nuclear waste siting also were held in Britain (2011) and the Taiwanese government is going to hold the referendum on June 2013.[10] In 2000, the environmentalists in Russia tried to block the government plan to import nuclear wastes from abroad by getting two million signatures needed to force a referendum. Although, the referendum was killed because it came 200,000 short of the required 2 million, it is significant that people felt the nuclear waste issue should be decided by them.[11] In November 2012, the recall of Mayor of Samchuk City, Korea, who tried to host a nuclear power station, was cancelled because the turnout was only 25%, which came up short of the required one third of the electoral. In Korea, direct citizen participation to decide the controversial public policy in the form of referendum is increasing in

[9] Green Peace (http://archive.greenpeace.org/comms/no.nukes/react02b.html.)

[10] Asia Pacific's Sustainable Business Community (http://www.eco-business.com/news/referendums-to-decide-taiwans-nuclear-waste-storage-site/)

[11] Forest.ru (http://www.forest.ru/eng/problems/control/publication27.html)

many areas of social conflicts. Most of these referenda are related to the so-called NIMBY syndrome, especially the conflicts with the nuclear energy policy.[12]

However, there is much possibility that the referendum can be manipulated under the guise of democracy. There is no guarantee that majority rule will be exercised in a manner consistent with the norms of justice. Elaine Spitz (1983) raises a question; "What happens when a majority threatens to destroy the democratic state, for example, by voting into office a dictator or party that abolish majority rule?" (113). Amy Gutmann and Dennis Thompson (1996) warn about the possibility of "majority tyranny"[13] claiming that outcomes of fair procedures are not to be justified unless they respect basic liberties and opportunities (34). Morell and Magorian (1982) also point out the major problems with holding a referendum. They are concerned about the possibility that "the protagonists may oversimplify issues, manipulate voters through misleading claims, or spend a great amount of money on advertising. In addition, the individuals cannot display a degree of preference since the debate is polarized into a yes or no proposition." Hence, they suggest organizing public debate around the question of "how could we modify this proposal to make it acceptable?"(129). Press (1994) is also concerned about the possibility that referenda could be used as tools to shift responsibility and accountability away from elected officials on controversial issues (21). Although majority rule is the most powerful instrument in a democratic decision making, it does not guarantee rational decision-making. Besides, as will be seen in the following Korean cases, referendum can stir animosity among the competing parties.

[12] For instance, Mayor Oh of Seoul resigned after defeating the referendum (Aug. 2011) to expand the free lunch to all school students. Mayor Woo of JeJu Province who tried to host the Naval Base at Jeju Island survived the recall (Aug. 2009) because the turn out rate was short of the required one third of the electorate. Mayor Kim of Hanam City who applied for the crematorium also survived the recall (Sept. 2007) for the same reason. The Hanam residents could defeat the plan while Jeju people are still struggling to cancel the project with slim hope.

[13] Alexis de Tocqueville coined the phrase "Tyranny of the Majority." In the Second Treatise of Civil Government (1690), John Locke also warns, if "a busy head or a turbulent spirit" desires the alteration of the government as please them; it "will be only to their ruin and perdition" (Seliger 1963:567).

Democracy, from its origin, is not the most ideal form of polity as Plato or Aristotle claimed. At best, it is a second best choice or a compromised form of political system that results from practical necessity. Majority rule, despite its effectiveness in resolving controversies, is the most criticized principle in democratic theory. Justifications for a majority rule range from attempts to delineate its role as a necessary part of justice to pragmatic defenses of a necessary evil (Spitz 1984: 149). Robert Maciver (1970) concludes that "decision by the majority is in matters of policy a practical necessity" (142). Thus, majority rule is not based on ethical or moral grounds. Rather, it can be said that it has its philosophical roots in utilitarianism where the final decision is likely to reflect the maximum interests of the majority. Utilitarianism can be employed as an excuse to sacrifice individuals for collective interest as Serge-Christophe Kolm (1996:19) warned. In fact, the core of the siting dilemma is the conflict of interest between the potential host communities and the rest of the country. This occurs because the interests of the residents in the siting location are likely to be sacrificed to serve the majority interests of the broader areas. Therefore, a strategy of holding a majority vote in broader electoral areas rather than confining it to the directly affected area can be used to exploit the vulnerability of the community targeted as a siting location.

Despite its limitations, Spitz (1984) maintains that majority rule has a certain advantage over the decision by a small group of elites. By referring to Aristotle, who claimed that ordinary people can do better than the experts by adding small amounts of wisdom and information, she argues that his claim of majority sovereignty on the grounds of collective wisdom is dependent on the efficacy of discussion (149). Believing in the ability of majority rule to sustain cohesion, maximize rationality, and simultaneously ensure action, she concludes that no other system of eliciting collective choice possesses better credentials (ibid: xiv). Hence, if a

referendum in the VA can be used to take advantage of these strengths of the majority rule, the possibility of a successful siting greatly increases.

Throughout the world, it is becoming apparent that conflicts surrounding nuclear wastes cannot be resolved without citizen participation. As long as there are inevitable uncertainties in the risk relating to nuclear technology, the potential host communities should retain the exclusive rights to accept or reject the siting proposal through a referendum. Therefore, a referendum becomes the last resort not only for the siting authorities but also for the local communities to make their final decision. However, referendum should not be hastily used as a convenient tool to resolve any siting conflict. Given that a majority rule can be employed as a convenient tool to suppress minority rights, resolving conflicts by majority rule is not desirable compared to the consensus based resolution resulting from a deliberative process. Hence, majority rule should be applied in an urgent situation when the society cannot defer its final decision.

Institutional designs to check the majority tyranny in the siting decision is also desirable. For example, the proportional majority such as two- thirds majority or three-fourths majority rather than simple majority is desirable to decide the siting issue because it is related to the vital interests of the affected communities. Creation of an independent committee composed of the experts who can examine the validity of referendum from the perspective of local residents is also recommendable. It is not easy for the government to create such an institution which can oppose its own siting plan. However, such an institution can help not only the potential host communities but also the siting authorities if it succeeds in building trust with the communities.

Majority rule should be applied in a situation of uncertain results where both parties are competing to advance their causes since it is meaningless to exercise a majority vote when

the result of the voting is apparent. Forcing a majority vote in this situation can be suspected as an intention to suppress the minority. In this regard, there have been many examples in the Korean cases where both the pro and anti-nuclear groups were trying to hold a majority vote only when they were confident of winning the referendum. In this case, majority voting is used as a tool to oppress the minority. Therefore, it is necessary to prevent referendum from becoming an oppressive and divisive force during the siting process. As no government can force a community to hold a referendum to decide the issue, the reason to hold the referendum is to ask the opinion of the local residents only in the case that they are sharply divided with the issue of hosting the nuclear waste repository. Governments should not instigate a local referendum unless there is a strong consensus in the local community to decide the matter with a referendum. Hence, the most desirable condition to hold a majority vote is when both parties agree to decide the impending matter with a majority decision. In some case, therefore, the decision to resolve conflicts with a majority vote also must be made by a majority vote.

A referendum is not necessarily included in the VA. Rather, it is desirable if the VA could lead a successful siting through peaceful negotiations between the siting authorities and the host communities. However, such a case is very rare considering the controversial issues of safety and compensation. Therefore, it is inevitable that the VA has to include a referendum as its integral part and use it as an ultimate measure in order to reach resolution with the siting proposal. For that reason, Munton considers a referendum as an indispensable part of the VA: “It requires public participation and full communication with potential host communities. It accepts the need for risk mitigation through community involvement and transparency in facility operation. It has, at its core, community meetings and a formal community decision, usually a referendum” (Munton: 22).

The most important consideration in the majority vote lies in protecting the rights of minority. In this regard, it is worth noting that InfoUSA writes about the principle of democracy: "On the surface, the principles of majority rule and the protection of individual and minority rights would seem contradictory. In fact, however, these principles are twin pillars holding up the very foundation of what we mean by democratic government."[14] To follow this principle, the VA should use the referendum not as a means to suppress the minority rights but as an opportunity to coordinate different interests by supporting effective communication among the residents in the potential host community. In this respect, the concept of "unitary democracy" provides an alternative approach to address the problem of manipulation in referendums.

3.3.2 Majority Rule and the Unitary Democracy

Referendum, by its nature, assumes a conflict of interests by the competing parties. However, from the point of the VA which tries to secure consensual decision-making process, the referendum should be used as a last resort after completing all necessary procedures for deliberative democracy. In this respect, it is necessary to note the strength of the "unitary democracy" advocated by Jane Mansbridge (1980). The unitary democracy tries to seek mutually agreeable solutions instead of assuming the irreconcilable conflicts of interests. Therefore, she maintains that voting should be avoided as much as possible. In *Beyond Adversary Democracy* (1980), she defines two type of democracy: adversary and unitary democracy. Proposing the consensus-based unitary democracy, she argues that the adversary democracy which assumes conflicts of interests and resolving conflicts by majority rule should be avoided as much as

[14] US Department of State: InfoUSA (http://infousa.state.gov/government/overview/majority.html.) InfoUSA is maintained by the Bureau of International Information Programs (IIP), U.S. Department of State.

possible. She is concerned about the possibility that majority vote in the form of adversary democracy could alienate people who lose the vote.

Kent Portney (1991) also refers to the concept of "unitary democracy" as a remedy to address the siting dilemma:

> The adversary democracy, represented by majority rule, assumes that citizen's interests are in constant conflict. It contradicts an 'older understanding of democracy,' which has an implicit assumption that ultimately citizens have a single common interest as 'unitary' democracy. It advocates a decision-making process in which disagreeing interests might work together to find some mutually agreeable decision as opposed to adversary democracy, in which some interests are sacrificed for others (53).

Applying the concept of unitary democracy to solve the siting conflicts, he provides suggestions for a successful siting. The first is a creation of structures for community control of the operation of sited facilities. The second is to convince affected local residents that they indeed have a shared interest in a successful siting and facility operation (ibid: 54). However, his support for the unitary democracy is based on the optimistic assumption that the siting authority can succeed in convincing the residents in having a shared interest with the siting issue. Thus, unitary democracy will succeed only when the residents agree that they have a shared interest with the siting.

It is undeniable that the consensual procedure of the unitary democracy is desirable over the adversary democracy. Nevertheless, there is no guarantee that a consensus will always be derived by the unitary democratic procedure. In addition, a majority vote or referendum does not necessarily lead to the adversary democracy if all participants are accurately informed about the impending issue and are provided enough opportunity to discuss the issue in an open and transparent way. Therefore, the referendum in the VA could be used in a way consistent with the ideals of unitary democracy. Important criterion to judge the legitimacy of a referendum is whether the voters understand the core of the problems for which they are voting. In this respect,

the principle of informed consent becomes an essential criterion in deciphering whether the referendum has been done with respect to the idea of unitary democracy.

3.3.3 Principle of Informed Consent

The legitimacy of a referendum in deciding the siting issue should be judged by whether informed consent is secured during the siting process. Laura Westra and Bill Lawson (2001) describe this succinctly: the risk imposers must disclose full information about threat; potential victims must be competent to evaluate it; they must understand the danger; they must voluntarily accept it (xx). Ruth Faden and Tom Beauchamp (1986) also regard this principle as the most critical factor that determines the legitimacy of local acceptance. They define the informed consent as a willing and unforced acceptance after adequate disclosure of risks and benefits, as well as of alternatives with their risks and benefits, have been obtained (283).

Manipulation is an opposing concept to the informed consent. According to Faden and Beauchamp, manipulation is "an intentional and successful influence of a person by non-coercively altering the actual choices available to the person." They regard the absence of manipulation as essential for informed consent. They also differentiate persuasion from manipulation by defining it as an influence by appeal to reason (ibid: 261). According to them, persuasion is "the intentional and successful attempt, through appeals to reason" (ibid: 347). Stevenson (1991) further distinguishes persuasion from informed consent. According to him, "informed consent" is based upon reasoned dialogue, while "persuasion" means that the persuader already know what is right (16). However, Faden and Beauchamp (1986) see no problem with the act to influence and modify behavior arguing that "So long as an offer is welcomed by the person influenced, it is completely compatible with informed consent" (357).

It is not easy to discern such concepts as manipulation, persuasion and informed consent because they are too abstract and subjective concepts. To apply these concepts to policy-making process will be even harder. Demanding the perfect sense of neutrality for the public officials who are responsible for siting the repository is too idealistic. Therefore, they are not to blame if they try to persuade the local residents only by providing all the necessary information to judge the risks and benefits from the siting. The problem is how to prevent the authorities from manipulating the residents by exaggerating the benefits while concealing the potential problems.

Given that a referendum is becoming the only alternative to resolve the siting conflicts, there is a vital need to prevent referendums from becoming a tool of manipulation. The long-term success of the VA also depends on how to use a referendum as a means to secure the informed consent rather than to manipulate the local voters. Although the siting authorities can succeed in obtaining consent from the local community by manipulating a referendum, its effect will not last long because the residents will realize that they did not make an informed decision at the time of the referendum. Moreover, if the host community gets worse after the siting, finding a new volunteer community with a future siting project would be impossible because no other community will trust the government's guarantee. Therefore, the siting authorities should not hasten the referendum until the residents fully understand the significance of their vote.

3.4 The NIMBY Resistance and Rethinking the VA

The VA is based on the assumption that the local communities' vehement opposition to the siting proposal, which is often called "NIMBY phenomenon," is a natural response to protect their fundamental rights of safety and property. In this respect, it is worth noting the changing perspective on the NIMBY phenomenon because the VA tries to use it as a constructive force to

draw a social consensus on the facility siting. Indeed, the so-called NIMBY opposition is a driving force for the VA to succeed because social consensus to adopt the VA to solve the siting conflicts would not have been possible without the vehement opposition by the local communities.

Moreover, there is an increasing tendency that the direct democracy triggered by the opposition to the nuclear waste siting is expanding to other controversial public policy areas, as will be introduced in the following Korean cases. Such phenomena contribute not only to solve the policy dilemma in many NIMBY conflicts but also to increase the capacity of the general public to participate in democratic decision-making process. Therefore, the VA, if conceived and practiced in just and effective ways, has a great potential to be applied in many public policy areas decisively contributing to the democratization of the government. However, expansion of direct democracy caused by the NYMBY opposition can debilitate the role of representative government. Therefore, the potential impact of the NIMBY resistance on changing the political system needs to be discussed.

In general, NYMBY syndrome is considered a selfish behavior because the NIMBY protesters usually admit the social needs of the facility to which they are opposing in their neighborhood**.** Hence, the opposition to the nuclear waste siting is not necessarily a NIMBY opposition given that the nuclear waste repository is not a socially necessary facility for the people who oppose using nuclear energy. Nevertheless, from another perspective, it can also be regarded as a NIMBY opposition because most of the local residents who oppose the nuclear waste siting in their neighborhood admit the inevitability of using nuclear energy. Especially for

Korea, which imports 97% of its energy source from abroad,[15] it is unrealistic, at least in the foreseeable future, to abolish all nuclear power stations.

Initially, critics of the NIMBY phenomenon characterized such grassroots groups as emotional, uninformed, and unscientific; motivated by selfish interests, in particular concerns about property values; and unwilling to bear the costs associated with their life styles (J. Layzer 2002: 53). Many critics on NIMBY phenomenon share the same perspective.[16] These days, however, many scholars regard NIMBY as a natural response of people to protect their essential rights. Munton emphasizes the legitimacy of the NIMBY claim referring to many scholars[17] in the siting conflicts. They emphasize that the NIMBY protests contribute to the expansion of democracy while complementing the weakness of representative political system. In this respect, it is not surprising that many scholars try to find a democratic potential of NIMBY syndrome by regarding it as a positive force to achieve democracy in its ideal form.

Rabe (1994) stresses that NIMBY provides citizens and communities with essential information and direct opportunity to shape policy (ibid: 2-3). Hence, he regards NIMBY as a triumph of western democracy in which citizens tried to achieve eco-democracy and environmental justice (14). Charles Piller (1991) considers NIMBY as a gradual withdrawal of

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[15] Nuclear power accounts for 31% of electricity generated in Korea. The Korean government plans to increase this ratio to 59% by 2030. Other sources to generate electricity are coal (40.8%), LNG (20.4%), petroleum (2.7%), hydro (1.4%) and other (2.5%). (White Paper on Nuclear Power 2010:35).

[16] Michael Kraft and Bruce Clary (1993) summarize the NIMBY opposition as "poorly informed, interested primarily in avoiding local imposition of risks, and emotive rather than cognitive" (96); Inharber (1998) also describes NIMBY as "a dragon to slay"; Portney (1991) considers NIMBY as a syndrome to cure.

[17] "NIMBY is a natural, rational reaction to a possible threat to one's community (Jackson, 1990); the public concern and fear of waste management facilities is both well-founded and healthy. It results from failure to acknowledge the legitimacy of concerns and opposition (Armour, 1993); the root of NIMBY is in the failure of meaningful public participation (Mathney and Williams, 1985);(in *Hazardous Waste Siting and Democratic Choice*: Munton 1996: 2-3).

consent at the grass-roots level (xi). According to him, NIMBYism is a determination to be part of the process to end alienation and to help build a healthier and more robust democracy (ibid: 205). Press (1994) also argues that NIMBYism as civil disobedience is attributable to the failure of major attempts to reform the institutions of representative democracy (132). He maintains that the negative power of NIMBYism can be turned into constructive mobilization by turning participation into a consensus-building exercise (ibid: 133). Piller (1991) also shares this view that NIMBYism grew out of the failure by the conventional institutions of liberal democracy to solve social and environmental problems (164). He anticipates that the gridlock caused by the NIMBYism will force changes in society to improve long-term prospects for responsible development of controversial technologies (ibid: 170).

The NIMBY stalemate highlights the problem of legitimacy in the modern representative government systems. According to Jürgen Habermas, Western societies face a legitimacy crisis. He argues that this crisis was caused by the restriction of democracy to a formal parliamentary type. This crisis is exacerbated by confining citizen political involvement to periodic voting while conferring legitimacy on elites or technocrats who are substantially free from public accountability (Seidman 1989: 22). He believes that the legitimacy crisis can be addressed by restoring the spirit of the Social Movement; equality, self-realization, issues of identity and community, the preservation of the environment, and peace issues (ibid: 24). To face this legitimacy crisis, Douglas Kellner (1989) advocates for the new Social Movement which exhibits radicalized demands for democracy, equality and citizen participation (222). He urges to increase dramatically the boundaries and extent of democracy to prevent the state from becoming a repressive bureaucratic apparatus (ibid: 226). John Dryzek (1996) also predicts that other forms

of democracy such as radical participatory alternatives could emerge if liberal democracy fails to solve urgent social problems (84).

In this regard, it is worth observing whether the NIMBY protest could go beyond the boundary of protecting one's narrow interests to provide alternative ways to create a new political system that can deal effectively with such a policy dilemma. However, there is not much evidence that NIMBY opposition brought desirable change in the overall political structures. Rather, most of the NIMBY oppositions, so far, stopped short of developing as a force that can realize the necessary political change. It is regrettable because sporadic explosions of NIMBY oppositions inflict enormous social and economic cost while not contributing to the advancement of democratic politics.

Nevertheless, there is a vital need to explore the possibility whether the VA could create a new legitimacy that is based on the participatory potential of the general public. To do so, it is necessary to develop the VA in a comprehensive and systematic way so that it can embrace and use the disruptive force of NIMBY opposition as a driving force to bring necessary change in the social and political structures. In this respect, it is noteworthy that Daniel Sherman (2011) observes that LLRW opponents consciously moved away from NIMBY themes and strategically adopt alternative frames (56). He argues that the local opponents to LLRW facilities created sophisticated injustice frames by undermining the legitimacy of the site selection process by marking the authorities as technically incompetent, politically motivated, and fundamentally undemocratic (69).

NIMBY phenomenon is an indication of lack of democracy, and thereby allows us to see the need for better understanding democracy. It shows that people still possess the potential

capability to practice direct democracy when there is an urgent need for them to act. The solution of revitalizing direct democracy and local autonomy to solve the siting conflicts is in line with the principle of the VA. But, it must be clarified and rethought via democratic theory. In this respect, we will need to look at key issues raised by democratic theory. The introduction of the VA to solve the NIMBY opposition is a significant experiment not only to solve the siting dilemma but also to provide a new legitimacy that is based on the participatory potential of the general public. In many respects, the VA has great potential to increase the acceptance for the siting proposal as well as the capacity of the general public to participate in democratic decision-making.

The reason for the effectiveness of the VA comes from the fact that it tries to seek a consensual process allowing the potential host community every opportunity to review and negotiate over the proposed siting plan. The VA is based on the fundamental belief in the ability of the general public to make a wise and practical decision facing the siting dilemma. It also assumes that the general public can participate effectively in the siting process if adequate information and resources are provided. The strength of the VA lies in the efficacy of the deliberative democracy where the residents are willing to deliberate and negotiate on the social issues of the nuclear waste siting because they have a shared interest as members of a political community.

However, there is a possibility that the proponents of the VA might focus only on the acceptance of the siting proposal rather than the long-term effects of the siting on the host community. In order for the VA to be meaningful and have a lasting effect, it should include the normative and substantive issues of social justice. If the siting authorities determine that the host community deserves to accept any negative effect of the siting because they were provided with

a satisfactory level of safety and compensation, it goes against the principles of the VA. The VA should not be used as a game strategy in which one party gains while the other loses. The significance and value of the VA lie in the win-win strategy where both the host community and the country can benefit from the siting in the long run. The reason the VA can work is not only because the host communities consider the siting proposal as acceptable in terms of compensation and risk but also because they believe that the siting will be truly beneficial for their communities in the long-term perspective. If people realize that the formal democratic procedure does not necessarily lead to a desirable outcome in the long term perspective, the VA will not work in similar future projects. In this respect, the VA as a siting strategy should take the long-term interests of the host community into consideration. The government or the siting authorities must also assume the legal and ethical responsibility to continue their efforts in promoting the wellbeing of the host communities even after the siting decision. Such a sense of obligation comes from the belief that the society should not impose excessive burdens on the unfortunate minority in order to benefit the majority. This belief is related to the idea of environmental justice and deserves in-depth analysis to make the VA meaningful and feasible. Indeed, the strength of the VA as a siting approach lies in the fact that it can satisfy both the practical needs and the normative demand at the same time. Therefore, the next chapter will deal with the issue of environmental justice arising from the siting conflicts.

Chapter 4 Theories of Environmental Justice

4.1 Justice and Nuclear Waste Siting

As noted earlier, the most important requirement in the Voluntary Approach (VA) is the democratic procedure. The fundamental question involved in a democratic procedure is whether or not it includes the concept of justice. Past experience has shown that the fierce opposition of the local residents to the siting proposals is caused by the feeling that they are treated unfairly during the siting process and that they are targeted as a national dump site because they lack political or economic power to resist such an attempt. Such a siting proposal could not succeed as it hurt local residents' feelings of justice. If we understand democracy as a substantive meaning, then the purpose of a democratic procedure is to achieve a socially desirable outcome. Therefore, a democratic procedure in the VA must include the conceptions of justice, meaning that the outcome of the siting should be as fair as possible in the long-term perspective. If the general public believes a certain policy is "just," then the policy has much possibility to succeed. It has been proven that the local residents' opposition to the government siting policy is caused by the distrust in their government. If people suspect that the government has the intention to deceive or force them to accept the unwanted facility, they will resist against such attempts. Therefore, it is imperative for the siting authority to use ethical methods to ensure trust from the potential host communities. Such a sense of trust is related to the concept of justice.

In the aspect of environmental justice, there are four controversial issues in the siting conflicts. The first is targeting certain communities first and persuading or forcing them to accept the siting proposal. Second is the possibility that siting decisions by referendum could harm the interests of the minority people who oppose the siting proposal. Third is the possibility of accepting the siting proposal because of poverty. Fourth is the method for compensation. Direct

compensation to the affected individuals is less desirable compared to the community package incentives because the compensated areas will gradually become worse by attracting poor families who cannot afford to move to other areas. Lastly, the most important task for practicing environmental justice in the siting conflict is to provide desirable and workable guidelines used to design a siting policy. To do so, it is inevitable to criticize the idea of utilitarianism which has long been the guideline of siting policies. Its overemphasis on cost efficiency while neglecting ethical values is the main reason for the past failures. Therefore, more desirable and appropriate concepts of justice will be proposed in application to the siting conflicts. John Rawls's theory of justice, which sets priority in the protection of the vital rights of the weakest people in society, will be provided as an alternative public philosophy for the siting policy.

There is no denying the fact that the LULUs (Locally Unwanted Land Uses) are usually concentrated in economically poor areas or in areas where the majority of its residents are a racial minority. Intentional discrimination is the most critical factor that triggers vehement opposition from the local residents targeted in a siting location. Therefore, it is vitally important for the siting authority practicing the VA to clear itself of any suspicion of discrimination from the beginning of its siting efforts. A critical debate relating to the issue of environmental justice in the siting conflict is whether there has been discrimination or not. As this issue is also related with the controversial issue of capitalism and justice, it needs to be discussed in detail.

4.2 Discrimination, Market Force and Alienation

The claim of discrimination would occur if the government intentionally tries to impose the burden of risk on the targeted communities which are politically and economically vulnerable and unable to resist against such an attempt. There are two competing arguments

regarding this issue of discrimination in the facility siting. According to the discrimination argument, there is plenty of evidence of discrimination in facility sitings. It claims that discrimination has been the most decisive factor that caused deepest anger or hostility from the local residents. However, the logic of the market argument is that the real factor which determines the seemingly unfair distribution of the hazardous waste facilities is a result of the market force in the capitalist economy, not the intentional targeting. The significance of this debate cannot be overemphasized because it can exert a pervasive influence on the policy perspective in the facility siting.

In the US, there have been many environmental injustice claims during the last three decades. It is noteworthy that the U.S. General Accounting Office (GAO) Report in 1983 observed a strong relationship between the siting of hazardous waste landfills and the ratio of the socio-economic status of surrounding communities. The study of the United Church of Christ (1987) concluded that African-Americans were two to three times more likely to live near a hazardous landfill compared with whites. Robert Bullard (1994) also argues that "historically, toxic dumping and the location of locally unwanted land uses (LULUs) have followed the 'path of the least resistance' meaning black and poor communities have been disproportionately burdened with these types of externalities" (3). Westra and Lawson (2001) also claim that the best predictor of where to find hazardous waste is to classify communities by race, not income or real estate values (142). Paul Mohai (1995) reaches the same conclusion arguing that environmental hazards are inequitably distributed according to race or income or both (615).

In 1985, a consulting firm for the California Waste Management Board gave the following recommendation for selecting a hazardous wastes site: (1) rural; (2) low income, (3) jobless; (4) elderly population; (5) a majority of long-time residents and (6) low education. In

general, those areas where farming and ranching are the major economy are most desirable to be considered for various dump sites (McAvoy 1999: 64). It is noticeable that the siting strategy focuses on vulnerable human factors rather than scientific or technical criteria. This demonstrates how the primary focus for the siting authorities rests on the residents' acceptability rather than safety issues or long-term effects of the siting.

In contrast to the discrimination claim, Vicki Been (1995) explains the concentration of hazardous wastes sites in poor communities with the market mechanisms. She argues that people of color are disproportionately burdened due primarily to poverty, not racism. According to her, it was only after the siting that the level of poverty and percentages of African-Americans in the host neighborhoods increased. She explains the reasons for this: first, those who can afford to leave the area once a facility is sited tend to do so. Second, the property values of the host communities decline after the siting and it is the poor and minorities who tend to move there to take advantage of the cheaper housing. She concludes, "Market forces are likely to create a pattern in which polluting facilities are surrounded by people of color or the poor. Even if the siting process is improved, market forces are likely to create a pattern in which LULUs become surrounded by people of color or the poor" (At Issue 1995: 8). For that reason, she argues that the problem of unjust siting decisions can better be addressed through fair income redistribution programs rather than through changes in the siting process (ibid: 42).

This is a very important argument against the discrimination claim. However, there is a concern that this argument can be used to justify an inequitable distribution of risk considering the difficulty of changing the capitalist system. The environmental justice advocates respond that Been's focus on "market forces" is an attempt to derail their movement by transforming an issue of social justice into an economic matter (ibid: 8). Bullard (1994) also argues, "This was not a

chicken or egg problem. In all cases, the residential character of the neighborhoods had been established long before the industrial facilities invaded the areas" (xiii).

Westra and Lawson (2001) also claim that blacks settled on perfectly clean land that was progressively polluted due to land-use decisions of white government officials (xxii). Emphasizing that the moral issue is more basic than economic, they argue, "Even if the only discrimination is economic, justice requires redress and significant alteration of current practice because the disproportionate impacts on poor people violate principles of distributive justice" (8). Shrader-Frechette (2002) also asks, "even if minorities moved to an area after it was polluted, the issue is whether some citizens ought to have less than equal opportunity to breathe clean air, drink clean water, and be protected from environmental toxins" (16).

Arguing that the market approach failed to accord equal consideration to everyone's interests, Peter Wenz (2001) proposes the principle of commensurate burdens and benefits, which means, that those who derive benefits should sustain commensurate burdens(in Westra and Lawson: 59). But in reality, the poor people are more proximate to wastes sites. Therefore, he maintains that where vital needs are concerned, markets should be supplemented or avoided in order to give equal consideration to everyone's interests (ibid: 66). In this respect, Wenz shares a similar perspective with John Rawls (1971) who claims that the vital needs of the most disadvantaged class in society cannot be sacrificed in any case.

In the case of Korea, the market mechanism explains the siting policy better than the discrimination argument, although there have been frequent claims about regional discrimination where the government intentionally targeted one region because of the historical antagonism

between two regions.[18] However, most of the areas selected by the central government have similar characteristics: coastal area with sparse population; close from the nuclear power stations; cheap land price. The fact that most of the nuclear power plants are located in the Gyungsang Province, which produced most of the political leaders in Korea, further strengthens the claim that there was no regional discrimination in the nuclear waste siting.

Regardless of which claim is true, that of discrimination or market force, the reason for the frequent claims of discrimination come from past practices of siting policy which was based on unilateral decision-making. Such practices generate feelings among the local residents that they are victimized to benefit the country. These feelings are known also as the "sense of alienation." Morell (1982) provides an example of citizen opposition caused by the sense of alienation. In the case of Starr County, Texas, he concludes, "The residents recognized that the risks presented by the site were negligible, but they resisted the facility nonetheless. The question of equity was not contingent upon the risks the facility posed, but rather fed upon pre-existing feelings of alienation and injustice" (74). Gerrard (1994) has the same view and states, "The sense of intrusion is further magnified if the community feels it is being treated unfairly- if, for example, there is no obvious reason why it is being singled out to be exposed to a waste facility. A sense of random victimization increases the outrage felt by the neighbors" (107).

The concept of "recognition" proposed by Nancy Fraser (1997) can be understood in the same context. Referring to the Hegelian notion of recognition, she claims, "Nonrecognition or misrecognition can be a form of oppression, imprisoning someone in a false, distorted, reduced mode of being" (13). She emphasizes that peoples' fury and resistance does not come

[18] The antagonism between the Jeolla Province and Gyungsang Province is a deep-rooted problem in Korea. It began with the twenty years of military dictatorship by the deceased president Park, Junghee who was born in Gyungsang Province.

from economic reasons only, it also comes from the sense of alienation (14). Hunold and Young (1998) also found that the sense of recognition is vital for the acceptance of the siting proposal and concluded; "the reason for the opposition of the Warren County residents is not because they did not receive sufficient compensation, but because they were not involved in the decision to site a hazardous waste treatment facility in their community" (85).

The Korean cases also prove that alienation is the most decisive factor that arouses anger from the local residents. For example, there was not much difference between the incentive packages offered to both Buan and Gyungju. But, the procedure used to attract residents' cooperation was quite different between the two cities. The failure at Buan is attributable to the fact that the Korean government targeted Buan first and tried later to persuade the residents with economic incentives. With Gyungju, the Korean government acknowledged the rights of the residents to refuse the proposal from the beginning. Gyungju residents were included in the decision making process while Buan residents had no choice but to accept the proposal. Although, the proposed incentives are approximately the same, the feeling of alienation was substantially different in both cities

4.3 Compensation and Justice

One reason environmental justice is so difficult to secure is that often its victims claim that a dangerous facility or life threatening land use will bring the much-needed economic benefits to a poor area (Shrader-Frechette 2002: 71). No doubt that the decisive factor that facilitated the Gyungju siting was compensation and economic incentives. Actually, these are minimum requirements in any siting plan to enhance the acceptability. There is a controversy that compensation has been used to exploit the poor residents by buying them off cheaply and concentrating hazardous wastes in the poor neighborhood. It is certain that rich communities will

not accept any risky facility unless very unrealistic amount of compensation is offered. The resulting concentration of hazardous wastes in poor communities raises the issue of environmental justice.

Bullard (1994) has a negative view on compensation claiming that it is unethical to pay those who are less fortunate to accept risks which others can afford to escape. He is concerned about that compensation can exacerbate existing environmental inequities (85). Shrader-Frechette (2002) also criticizes the compensation solution on the grounds that paying the poor to take health risks amounts to bribery or coercion (18). She concludes that depressed socioeconomic conditions create a situation in which neither the voluntariness nor the free informed consent can be secured (ibid: 78). Criticizing the capitalist market system for the cause of siting conflicts, Daniel Faber (1998) also argues that the benefit of greater participatory democracy are extremely limited if the marginalized community has to accept construction of a toxic site because of the greater job opportunities and tax revenues (14).

However, many scholars recommend compensation as a practical measure to address the potential damage caused by the siting. Boerner and Lambert (1995) assert that compensation is the only solution to address environmental racism. According to them, prohibiting sitings in disadvantaged communities cannot prevent site areas from becoming populated with the poor and minorities who move to the source of pollution precisely because of lower property values (At Issue: 85). Denying these communities the economic benefits would ensure that such communities remain poor and unhealthy. Therefore, they maintain that the affected communities should be allowed to make trade-offs and decide for themselves whether or not to accept the risky facilities (ibid: 90).

Inharber (1998) also argues that an equitable distribution of risk in society cannot be achieved because rich communities, regardless of the siting system used, will almost always be able to prevent undesirable situations (64). He mentions that compensation is different from bribes in the aspect that compensation will be decided in public and therefore open to scrutiny (ibid: 66). Sloan (1993) also argues that compensation can address the need of justice and equity because it increases the economic efficiency of the siting process by paying social costs that are frequently neglected (53). Morell (1996) shares the same view and notes, "Communities have a legitimate right to expect to be compensated in exchange for being willing to accept the costs of these facilities. Conceptually, this is not bribery for accepting the facility, but fair compensation for localized harm" (151). To avoid the charges of the 'bribery problem,' K. Gunreuther and A. Thomas (1993: 304) provide suggestions: (1) an open process which establishes the need for the facility and specifies its impacts; (2) a public guarantee that the site selected meet basic technical requirement; (3) a public promise that incentives will be given to everyone in the community, not just a few individuals.

Another issue relating to compensation is paternalism. Shrader-Frechette (2002) provides a case in which the chief of the Mescalo tribe demanded to cease the paternalistic intervention, claiming that the tribe has the right to host hazardous waste projects if it believes such projects will be beneficial to it (124). Referring to J. S. Mill who allows for paternalism if it is only used to protect third parties or to prevent someone from selling herself into slavery, Shrader-Frechette concludes that paternalistic intervention is necessary to protect vulnerable people in society because such people are unable to engage in genuinely free transaction or decisions (ibid: 132).

Another subject which raises the issue of environmental justice is the increasing tendency to build a nuclear waste repository in places where nuclear facilities already are

concentrated. Andrew Blowers (1999) called such places "nuclear oases"[19] where nuclear facilities or wastes already exist and a disposal is welcomed. If the siting of hazardous facilities is decided entirely on the market system, there is much possibility that these facilities would be concentrated in poor areas. Gerrard (1994) observes this phenomenon and states, "Communities that already have risky facilities tend to have local cultures that have accepted such risks and often will accept still more risks" (111). Euston Quah and Khye Tan (2002) also point out that the attempt to elicit a community's acceptance price for hosting a NIMBY facility may result in a biased concentration of such facilities in relatively poorer neighborhoods because richer communities would reject the proposal of compensation or the compensation required would have to be high to achieve acceptance (26). Weingart (2001) explains the reason for the location of disposal facilities on land near the existing nuclear power plants: "the residents of the area have already gained some level of comfort with the issues associated with radioactive materials, so any possible harm that could be caused by the waste is dwarfed by the risks already present from the power plant." (335). As a consequence, many siting attempts start from thorough examination of the possibility of placing it adjacent to an existing nuclear power plant or within a military base (ibid: 336).

The phenomenon of the concentration of nuclear- related facilities in a certain area is also observable in Korea.[20] The unusually high acceptability for the nuclear waste repository in the four cities that competed in the referenda can be explained by the fact that all four cities already had nuclear power plants and did not experience any serious accident during the last two

[19] Blowers provides the examples of nuclear oases: Hanford in US, Sellafield in UK, La Hague in France and Gorleben in Germany.

[20] The south-eastern coastal cities in the Korean peninsula which include Gyungju (Wolsung), Busan (Gori), Woolsan and Uljin are becoming the center of nuclear industry.14 nuclear reactors out of 21reactors in Korea are located within 100km radius from Gyungju City. In 2012, other two areas, Youngdok and Samchuk, which are very close from the above cities, were also designated for the place to build new nuclear power stations.

or three decades. As Gyungju already has four nuclear reactors which are riskier than the repository, the decision at the referendum can be considered a rational choice for Gyungju citizens. However, it is undeniable that the concentration of risky facilities in a small area would increase the possibility of accidents and would cause irrecoverable damage to the area in the event a catastrophic accident such as Chernobyl or Fukushima happened.

Another important subject related to the compensation is how to compensate the affected local residents. On the whole, there are two main methods of compensation: direct compensation and community incentive packages. In the aspect of environmental justice, incentive packages rather than the direct compensation to the individual households should be considered first. In the capitalist system, compensation for falling house prices is the required minimum. However, direct compensation on individual property cannot cure all of the damages such as loss of market in agriculture, fisheries and tourism, and in particular, the stigma effect. If compensation measures focus only on direct individual compensation, then the host community as a whole will gradually become worse by attracting NIMBY facilities and low income families. Residents who are compensated enough may move to other areas leaving behind the unfortunate neighbors who cannot afford to do so. Thus, the area will become a nuclear waste dump site, attracting more nuclear- related facilities, because residents who moved to this area after the compensation cannot claim the legal rights to ask for a safer environment. This negates the conceptions of justice in terms of fair distribution of the risks and benefits further infringing on human rights to live in a safe environment.

In this respect, there are some cases where the government makes a good effort to save the whole community instead of a small number of beneficiaries from the compensation. For example, in Rokkashomura, Japan, the central government put most of their efforts in providing

community benefits packages instead of direct compensation. The entry fee of the radioactive wastes was used to develop local community. As a result, roads, parks, schools, cultural centers, sport facilities and so on, were provided to the host community. Income increase for the average household was also remarkable. The average income of each household, which was half of the national average in 1970, caught up to the national average in 1994 after a decade of hosting the facility (Kyung-Sok Chae 2003: 70-72). In 2006, The British Committee on Radioactive Waste Management also recommended to enhance the well-being of the host communities through community package programs (Vandenbosch 2007: 229). Through his empirical research, Mike Baughman (2004) also stressed the importance of focusing upon the indirect benefits such as employment opportunities, local procurement, and community investment (145). If the improvement of living standards of the host area is known to the general public, then the NIMBY resistance in a nation would decrease gradually. Community packages may cost more in the short-term perspective, but in the long run, it will reduce the cost of another similar project because residents will believe that NIMBY facilities eventually can bring more benefits than harmful effects. If the opposition decreases, more budget or funds could be saved to benefit the future host communities rather than to advertise government's policies.

In the early period of the siting attempts, the Korean government tried to buy off the local residents by giving them sufficient compensation. However, to save the budget, the compensation areas were confined to the directly affected areas such as the construction site and its close vicinity. Furthermore, the Korean government pursued this policy in secrecy lest the neighboring communities which are not to be compensated should become aware of it. However, such a secretive strategy was always revealed and ignited furious reactions among the neighboring areas that are close enough to experience the negative effects of the siting. Thus,

compensation in the form of community development is not only desirable in terms of environmental justice but also helpful to reduce the opposition in the pursuit of other mega projects in the future.

4.4 Importance of Moral Criteria for Siting Policy

4.4.1 Criticism of Utilitarianism as a Siting Policy

One of the most basic requirements in making a siting policy is to establish a fundamental principle which can be applied to all siting processes. The conflicts and disorders of the last decades relating to hazardous wastes siting are attributable to the absence of legitimate and solid principles applied in the siting procedure. The nuclear waste siting policy should be based on more strict moral criteria than the general public policy-making since it has to deal with the most fundamental human rights to survive. Considering the possibility of unimaginably grave consequences of nuclear accidents, it is not surprising that the nuclear waste siting proposal becomes a life and death matter for the communities targeted as a potential site. Therefore, it is essential that the nuclear waste siting policy should be based on firm and unwavering moral principles which take the social norms and values as first priority.

However, the governments or siting authorities around the world did not take this concern seriously and insisted on using the traditional DAD (Decide, Announce and Defend) approach until they were faced with insurmountable opposition from the local communities targeted as a siting location. The basic technique which provides the grounds for the DAD approach is the Cost Benefit Analysis (CBA), which is the most frequently used criterion to determine the validity of a public policy. The philosophical basis of the CBA is utilitarianism which judges the validity of a public policy by the utility it created. Hence, the principal goal of the DAD approach is to maximize the utility created by a policy, which is usually calculated as a

concrete sum of utility. Therefore, abstract and incalculable values such as social responsibility or social norms are excluded from judging the validity of a public policy. However, it has been proven that the CBA based DAD siting policy cannot solve the siting dilemma. The failure of applying the CBA to a siting policy is due to the fact that it deals with fundamental human rights, which cannot be measured or compromised with the calculated utilities. No wonder that utilitarianism, which provides the logic for the CBA, is criticized by many theorists as follows.

Genevieve Johnson (2008) has a concern about the weakness of utilitarianism which only takes a decision's consequences into consideration while neglecting its intrinsic nature or its conformity to certain substantive rules (56). Daiches Raphael (2001) criticizes utilitarianism for its negligence of the need to distribute benefits equitably in society because it only judges a distribution of benefits to be more just than another if it is likely to produce a greater total sum of happiness (215). Stevenson (1991) also points out the problems of applying utilitarianism to siting policies: "If society as a whole benefits from the siting, it should be executed in the first place. Who gets the benefit and who loses is another matter that can be decided after the decision" (7).

Robert Nozick (1974) opposes applying utilitarian principle to moral judgment declaring that, "Individuals should not be treated as fungible for the purposes of achieving the greatest social good… There is no moral outweighing of one of our lives by others so as to lead to a greater overall social good (33)." Serge-Christophe Kolm (1996) also claims that utilitarianism cannot be a moral theory because it tends to sacrifice individuals to some "collective interest" (19). Gutmann and Thompson (1996: 196) also warn, "…If policymakers use utilitarianism as their sovereign principle, they are likely to ignore or distort the meaning of some legitimate claims that citizens make, in particular those that express the value of basic

liberty and opportunity" (196). They stress, "… no government may require me to act without my consent to satisfy the claims of my fellow citizens, no matter how worthy. A distribution is justifiable only it is the product of the free choices of all the individuals involved" (ibid: 203). Emphasizing the need to focus on distributive equity, Hunold and Young (1998) also maintain that utilitarian concepts of siting decisions are inadequate because they fail to address questions of fairness (83).

According to Michael Sandel (2009), the utilitarian approach has two defects: First, it makes justice and rights a matter of calculation, not principle. Second, by trying to translate all human goods into a single, uniform measure of value, it flattens them, and takes no account of the qualitative differences among them (260). Immanuel Kant launches a devastating critique of utilitarianism. He maintains that morality is not about maximizing happiness or any other end. Instead, it is about respecting people as ends in themselves (ibid: 105). Thus, he declares the most fundamental principle of morality: "Man, exists as an end in himself, not merely as a means for arbitrary use by this or that will" (ibid: 122). Shrader-Frechette (2002) shares the same view with Kant and states, "If all humans have equal rights and equal dignity, then using some people as means to the end of others, without justification, is ethically wrong" (84). The UNESCO (2005) also provides a criticism on utilitarianism: First, it has the tendency to focus on economic aspects while neglecting the issues of equity, morality and public acceptability. Second, cumulative impacts, irreversibility and irreplaceability can be neglected. Third, CBA does not deal with who gets the benefits and who suffers the costs. Aggregation of costs and benefits may obscure ethical issues of fairness and equity (31).

Repeated failures in the siting attempts lead to the conclusion that the utilitarian principle is neither desirable nor effective as a policy guideline to solve the siting conflicts. It has

been proven that siting policies based on utilitarian ideas could not attract the much needed cooperation from the potential host communities. Therefore, there is a need for the VA to avoid using utilitarianism while finding an alternative public philosophy that can help solve the siting dilemma. So far, it is becoming evident that people's feelings of fairness in the siting procedure decide the fate of the proposed siting plan. Therefore, it is inevitable that the democratic procedure required in the VA should contain the normative and substantive issues of social justice.

4.4.2 Justice as a Guiding Principle for the Siting Policies

The fundamental change from the conventional DAD approach to the VA cannot occur unless the government or siting authorities change their perspective on the siting conflicts. It is not easy because most of the experts in the nuclear energy policy are deeply instilled with the utilitarian standards of public policy goals. As they were used to sacrificing the minority rights if it can benefit the majority of people in a nation, they will try to apply the DAD approach if opportunity allows them. Therefore, an essential requirement to solve the siting dilemma is to shift public policy philosophy towards more democratic ways taking the issue of social equity and minority rights into consideration.

If the inevitability of using nuclear energy is admitted in the general public, the main aspect of the nuclear waste siting controversy centers on the conflict of interests between the majority and minority people in the nation. The majority of people enjoy the benefits of nuclear energy while passing the burden of risk to the minority of people in the siting area. Therefore, the siting controversy is related to the most fundamental moral conflicts in democracy. Although there are endless debates surrounding the concept of justice, it is worth paying attention to John

Rawls's theory of justice, since it provides the insight to understand the essence of the siting conflicts and therefore can be used as an appropriate principle for designing the siting policy.

In the *Theory of Justice* (1971), Rawls proposes critical conceptions of justice opposing a utilitarian one providing a moral reason why the society has to protect the minority rights as the first priority in the moral debate. According to Rawls (1993), social and economic inequalities are permissible provided that they are to the greatest benefit of the least advantaged class in society (5). It is called the "difference principle" since it permits unequal distribution if it would improve the position of the worst off. He replaces Bentham's principle of "the greatest happiness of the greatest number" to the "greatest benefit of the least advantaged members of society" (6). He argues that certain primary goods such as income and wealth that are necessary conditions for living should be distributed so as to maximize the life prospects of the least advantaged members of society. Any social institution or practice that falls short of maximizing the long-term opportunities of the least advantaged violates the "difference principle" (Gutmann 1996: 210). Accordingly, a siting proposal is not permissible unless it becomes advantageous for the residents of the siting area because they usually are the most disadvantaged members in society. Kolm (1996) proposes the concept of "practical justice" which takes care of the most miserable, notably when not all basic needs are satisfied (23). Sandel (2009) also agrees with Rawls by claiming that equal basic liberties should take priority over attempts to maximize the general welfare. He stresses that fundamental rights and liberties should not be sacrificed for social and economic benefits (151).

Rawls's theory of justice is significant in that it can provide a fundamental guideline for making a siting policy which takes first priority in the idea of social justice. Rawls (1971) maintains; "Justice is the first virtue of social institutions… A theory however elegant and

economical must be rejected or revised if it is untrue; likewise laws and institutions no matter how efficient and well-arranged must be reformed or abolished if they are unjust" (3). Johnson (2008) also advocates that conception of the good or ultimate values should be upheld or realized in public institutions and policies. She holds that an approach to ethical policy analysis has to contain a conception of the legitimacy-conferring relationship between those who make public decisions and those who are bound or affected by these decisions (53).

One of the most important factors that contribute to the acceptance of a siting proposal is the people's trust in the government. If residents in the potential siting area have a firm belief that their government would not sacrifice them to benefit the majority in a nation, then the chance that they will consider the siting proposal, evaluating the risks and benefits, will greatly increase. The core of the conceptions of justice in the VA is to gain people's trust in the government and the siting authorities. Perfunctory democratic procedures that hide the intentions of targeting a certain community ultimately negate general notions of justice. Such an attempt can succeed temporarily, but will create distrust toward the government resulting in dramatic cost increases of any controversial government project in the future because, as Abraham Lincoln stated,[21] people will not be repeatedly deceived. Therefore, trust building becomes an imperative task for the government when pursuing the long-term goal of facility siting. Given that the people's trust in the government is a crucial factor to facilitate a successful siting, the public policy philosophy required in the VA must reflect the sense of justice desired by the host community as well as the general public in society.

[21] You can fool some of the people all of the time, and all of the people some of the time, but you cannot fool all of the people all of the time. (http://www.quotationspage.com/quote/27074.html)

Indeed, the unnecessary violence and disorder during the siting process, which results in enormous economic and social costs, is caused by the people's loss of trust in the government. The siting policy, which is based on the conceptions of social justice: an equitable distribution of risk and benefits in society, has the best potential to secure people's trust in the government. A siting policy which is based on the principles of justice is not only desirable but also practical for public policy-making in the long-term perspective. Such a policy can take more time and increase financial burden in the short-term perspective, but it will contribute to cost and time savings in the future as it will build the much needed people's trust in the government policy.

In conclusion, the strength of the VA lies in the democratic procedure, which is, in many respects, more important than the issue of safety or compensation. However, the democratic procedure required in the VA must include the conceptions of justice as a fundamental principle for the siting policy in order to have long- lasting effects on solving future siting conflicts. Applying Rawls's theory of justice to the siting policy is necessary to prevent the siting authorities from targeting the most vulnerable communities in the nation. After all, the material well-being as a nation becomes meaningless if it can be acquired only by sacrificing the vital interests of a minority of people who lack the economic and political power to resist such an unjustifiable intervention. Therefore, the legitimacy and effectiveness of the VA depends on how it can embrace the idea of democracy and justice when practicing the siting policy.

Therefore, the following Korean cases will focus on how the siting policy has changed according to the increasing demand for participatory decision-making. It is noteworthy that the Korean government continually tried to improve its siting strategy focusing on the issue of safety and compensation while not paying enough attention to the need of a democratic procedure. It is

surprising that it took more than two decades for the Korean government to realize that the most decisive reason for the vehement opposition from the local residents was not the insufficient safety or compensation but the lack of participatory democracy during the siting process. The decisive turning point of the Korean siting policy is the Buan Conflict (2003) in which the Korean government finally forsakes its old siting strategy of the DAD policy to adopt the VA. The VA practiced in Gyungju was imperfect in many respects. However, it has achieved remarkable success because it contained the most essential factor of the VA: self-determination and empowerment of the residents who are most affected by the siting.

Chapter 5 The Korean Cases

5.1 Overview

During the last two decades since 1984, there have been at least nine major attempts to site radioactive waste repositories throughout the country. Until 1997, the Ministry of Science and Technology (MST) was responsible to find a location for the radioactive waste repository. It tried to locate the repository at Youngdok, Youngwol and Uljin Gun[22] (1986-1989) in Gyungsang Province,[23] but failed. The ministry used the same authoritative approaches in Anmyondo (1990), Chungha (1991-92), Changan and Uljin (1993-94) and Gulupdo (1994-95) resulting in complete failures. In 1997, The Ministry of the Industry and Resources (MIR) took over the task and the major project developer changed from the Atomic Energy Institute to the Korea Electric Corporation. In 2000, the ministry realized that it is difficult to accomplish the siting by relying on the authoritative DAD (Decide, Announce, and Defend) approach and therefore tried to adopt the voluntary approach by conducting a geological survey in the targeted 46 coastal areas. Consequently, it announced the four candidate local areas (Youngdok, Uljin in the east coast and Gochang and Younggwang in the southwest coast) as suitable sites. The ministry also added the Proton Linear Accelerator Project as inducements and introduced the voluntary application procedure. This was the first time that the Korean government tried to enhance the acceptance from the local communities by proposing significant incentives and also relying on the voluntary application. It is to be noted that it took about more than fifteen years for the Korean government to conceive the basic idea of the Voluntary Approach (VA) to solve the siting problem.

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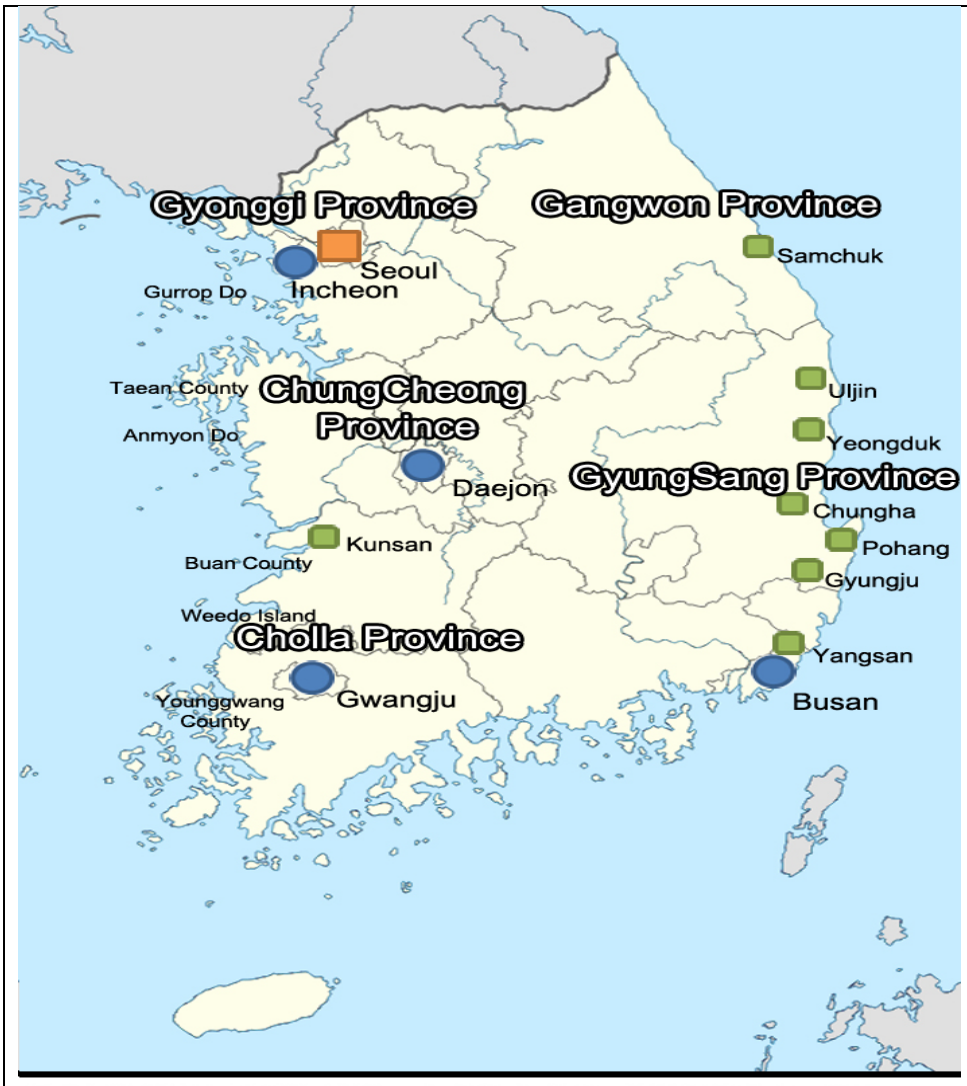
[22] Gun is an administrative zone, which usually has population about 100,000. Gun is usually a countryside compared to a city which is urbanized.

[23] Province is the biggest local administrative zone. Korea has 9 provinces. Province usually has a population of the smallest about 500,000 of Jeju Province to the biggest 12 million of Gyunggi Province.

These measures produced some positive results, and the Buan Gun submitted an application which resulting in the bitter Buan Conflict. In March 2005, after the failure in Buan, the National Parliament passed a law to guarantee the support for the host areas with various incentives. Of importance, this law separated and excluded the high-level radioactive waste from the siting proposal and it decisively increased the local acceptability. As a consequence, four cities submitted their applications and competed in the following referenda resulting in the victory of Gyungju City in the heated competition (Soon-Ae Park and Ji-Han Lee, 2005). The nine cases of the failed attempts from 1984 to reach to the Gyungju resolution in 2005 will be described below focusing on the failure of the authoritative approaches and changes made to the more open and participatory approaches. The Buan Conflict and Gyungju Referendum are two typical examples that clearly demonstrate the strength of the VA as a siting policy, compared to the authoritative DAD (Decide, Announce and Defend) approach. Therefore, these two cases will be analyzed and compared in detail.



Korea has 20 nuclear reactors with total capacity of 17,716 MW, which account for 31% of total electricity generated in nation: Busan(Gori: 4) Gyungju(Wolsung:4), Younggwang (6), Uljin (6).The Korean government also has a plan to site six more nuclear power stations by 2024, which includes three reactors in Gori (Busan) and two in Uljin. The long-term goal is to increase the electricity generated by nuclear power from 31% to 59% by 2030 (White Book 2011: Ministry of Knowledge Economy and Korea Hydro & Nuclear Power Co.)

Figure 1 Korea's Nuclear Power Stations

5.2 Twenty Years of the Failed Attempts (1986-2005).

5.2.1 The First Attempt: Namjung Myun,[24] Youngdok Gun Case (1984-1989)

In 1984, the Korea Energy Institute (KEI), which is a government agency, initiated a national research study to find appropriate disposal sites for radioactive waste. It finally considered three areas: Uljin Gun, Youngil Gun and Youngdok Gun in Gyungsang Province. Namjung Myun in Youngdok Gun was finally selected for the site. For four years from 1984 to 1989, the KEI conducted its geological survey and soil test in secrecy, but was discovered by the local residents three times (Sang-Pal Lee 1995: 69). This period was the typical example in which the Korean government practiced the DAD siting policy without any reservation. The location of the siting was unilaterally decided by the government with the sole criteria of technical and economic feasibility.

On February 1989, one member of the National Assembly, who has his electorate in this region, pushed to revoke the government plan to site the radioactive waste repository in Namjung Myun. On hearing the news, the local residents became furious and organized a strong protest movement. Three thousand angry citizens came out on the street to protest against the attempt. They blocked the national road and confronted the police. Their fighting was so effective that the MST finally announced the revocation of the plan on October 23rd (ibid: 72).

The government's secretive plan reveals that it was afraid of strong opposition from the local residents. As it passed only six years since the operation of the first commercial nuclear

[24] Korean administrative zones are consisted of Province, Gun, Myun and Ri in decreasing order. Usually the population of Ri is approximately several hundred; Myun is several thousand; Gun is more than fifty thousand. Province is usually more than one million. Myun is usually composed of several Ris and Gun is also composed of several Myuns. There are 9 Provinces and 6 Metropolitan Cities (Busan, Incheon, Daegu, Gwangju, Daejon and Woolsan). Metropolitan City is legally equivalent to the Province. Seoul is an independent Metropolitan City though it is surrounded by Gyunggi Province.

power station,[25] it can be said that the Korean government started the siting process early enough. However, the frequent news of nuclear accidents including the Three Mile Island Accident (1979) already raised public awareness about the dangers of siting the nuclear waste repository. It should be also noted that the Korean government could not employ physical force easily to suppress the opposition of the local residents as in the past because the people's power has increased enormously after the democratization movement[26] which started from the early 1980's.

5.2 2 The Second Attempt: Anmyundo[27] in Taean Gun Case (1989-1994)

After the failure at Youngdok, the Korean government attempted again to site the repository at Anmyundo in Taean Gun, Chungnam Province, which is located on the western coast of the Korean peninsula. Not to repeat the failure, the Korean government upgraded its plan as a third-level top secrecy operation. The new minister, an expert in nuclear science, took office and pursued the siting policy in secrecy. The Chungnam provincial government, which administrates Taean Gun, cooperated with the central government in procuring the land in secrecy. The government disguised the official reason for the purchase of the land under the cloak of constructing an energy research institute, entitled "Western Sea Science Research Park" (Yeon-Hong Choi: 78).

The secret plan was revealed and made public by two newspapers in October 1990. As there was increasing concerns about the danger of nuclear accident in Korea, especially due to

[25] The first nuclear power station, the Gori Nuclear Power Station was built in 1978 in Gijang Myun, Busan. It is only 20km away from the heavily populated area of Busan Metropolitan City which has a population of more than 3 million.

[26] The President Park, Jung-hee was assassinated in 1979 in the middle of democratization movement. Although, military dictatorship was continued by his successors, the waves of democratization swept Korea until the civilian president took office in 1992.

[27] "Do" means an island. Although Anmyundo is an island, it is big enough to be an Eub with a population of 13,000. If a certain area of Myun becomes urbanized with population increase, it can be promoted to an Eub.

the Chernobyl Accident (1986), this news ignited an immediate reaction in the local community. Thousands of furious local residents started an anti-nuclear demonstration. The protesters took to the streets occupying the local roads. On November 8, 1990, the local representatives visited the Ministry of Science and Technology (MST) only to hear that the government would push the project as planned. The government also blamed the residents for their socially irresponsible and illegal behavior. Consequently, residents of Taean Gun started a violent demonstration, holding some public officials and police men in hostage, burning a police car, and burning arsenals in the local police station. The central government dispatched about 2,500 riot police and several residents who led this demonstration were arrested (ibid: 89).

It is noteworthy that the whole community was divided in two groups, the anti-nuclear group and the pro-development group. The pro-development group was generally supported by the local government which cooperated with the central government in order to get the financial assistance for regional economic development. But, their cooperation was kept in secrecy since both sides were afraid of the local opposition to the siting proposal. There were many cases where the pro-development group members were attacked by the anti-nuclear group members under the accusation that they betrayed their community for selfish rewards. Anti-nuclear groups held a burning ceremony of the pictures of the pro-development leaders. They punished the pro-development residents by banning business transactions, excluding them from any communal meetings, and boycotted or hindered ceremonies like funerals or weddings. The walls of the pro-development leaders were painted with dirty graffiti and windows were broken by stones thrown by the opponents (Sang-Pal Lee: 230-233).

The residents' income and occupation influenced their level of consent. The residents who could afford living without the incentive project opposed the siting, while the residents who

could take benefit from the project favored it. It is no wonder that the very villages which have been chosen as the construction sites for the repository showed almost 100% consent level since the government would purchase their land for a good price. Therefore, the closer the land was to the construction site, the higher the consent rate. The most vehemently opposing areas were the adjacent counties that were not included within the 5km distance required for compensation by the law.

As the clash between the protesters and the police became uncontrollable, the minister of MST capitulated by announcing that the government would not try to site any radioactive waste repository in Anmyundo without the consent of the local residents. On June 7, 1991, The Atomic Power Commission officially announced that Anmyundo was excluded from the repository (ibid: 180). On October 1, 1991, the Korean government announced that it has changed its siting policy from the authoritative approach to adopt a voluntary approach based on open procedures and economic incentives. Accordingly, a multiple candidate system, instead of targeting one city, was introduced expanding the compensation areas and increasing the incentives. The Korean government also advertised its new incentive approach through the newspapers and the media. It took effect and six cities including the Anmyundo applied to host the repository. October 22, 1990, fifty three residents in the Anmyundo submitted an application for the repository with the other forty four competing cities throughout the country.

The Institute for the Population and Development (IPD) at the Seoul National University has been conducting a study since 1990 on the attitude of the two county residents in Anmyundo concerning siting proposals. On December 1991, the institute included Anmyundo again and announced that it is the most appropriate site for the nuclear waste repository. As a result, the so-called “2nd Anmyundo Conflict” broke out in January 1992 when nine thousand

local residents held a rally to denounce the government plan. The angry residents started an anti-nuclear demonstration, which continued throughout the year.

Some community representative members who supported the siting project made a secret deal with the MST. On January 18th, 1993, one of them made a conscientious interview revealing the secret deal and also the government's attempt to bribe him. He confessed that he received some money from the Atomic Research Institute to promote the project (Yeon-Hong Choi 1999: 189). The Korean government suffered a serious damage in its image and morality. On hearing this news, the angry protesters started a violent demonstration again, which created severe conflicts on the street. Finally, the minister of MST resigned and the new minister took office in March 1993. He announced that he would not build the repository in Anmyundo unless more than 90% of the residents give their consent for the facility.

According to the research conducted by the IPD during this period, the main reason for the residents' opposition was: (1) exclusion of the resident's opinion during the decision-making process (24.9%-30.1%); (2) distrust towards the government (24%-34%); (3) concern regarding the environmental risks (9.1-22.6%) (Kwang-Hee Kim 1991: 8). It is notable that residents' demand for participatory decision-making and the trust in their government is the most important factor which caused the fierce opposition of the local residents. This example provides evidence that the democratic procedure can be more important than the risk itself. The Korean government tried to adopt a voluntary approach for the siting. However, most of its efforts were focused on the issue of safety and attractiveness of compensation. The "voluntariness" of application was not provided to the residents as is evident from using police force to suppress the opposition movement. This also shows how a democratic process may provide hope for a successful siting.

However, it is noteworthy that most of the violence committed between the residents was done by the opponents of the siting proposal rather than by the proponents. Regardless of the cause of the opposition to the siting, it is a serious violation of democratic rule. Some of the proponents were even forcibly dragged to the public meetings to disavow their commitment to host the facility. One of the reasons of the violence is attributable to the fact that the government did not provide enough opportunity to debate the issue within the community before the conflicts escalates into an uncontrollable level. However, more important reason could be found in the political culture which was negatively influenced by the long-term military dictatorship. As people were not trained to solve their problems in a democratic way, they did not feel guilty for using violence if they believe they were doing the right thing.

By revoking the siting proposal again, it can be concluded that the Korean government did not learn any valuable lessons from the failure of the first attempt at Youngdok in that it tried to pursue the project in secrecy by upgrading the secret level of this siting plan. The government assumed that the failure at Youngdok was attributable to the revelation of the secret plan rather than an undemocratic procedure. Although the government introduced the voluntary approach based on economic incentives, it only tried to obtain the formal application from the proponents while neglecting the sharply divided opinions in the local community. The failed attempt to bribe the resident representatives clearly shows that the government only focused on inducing the formal application process instead of providing a spirit of cooperation by allowing the local residents enough opportunities to discuss the overall effects of the nuclear waste siting.

Nevertheless, it is remarkable that at least six communities showed interests and made a formal application for the siting. It was the first time that the Korean government tried to seek a voluntary application from the local communities. However, these applications would have

yielded the same results as the applications came from the local governments that did not secure the consensus from their local communities. Therefore, the Korean government should have learned lessons from this failure that acquiring a formal application from the part of residents who support the siting proposal does not help solve the siting problem if the conflicts among the residents are too severe to reach a consensus on the issue. However, the Korean government repeats the same mistakes as will be described in the following cases.

5.2.3 The Third Attempt: Chungha Myun, Youngil Gun Case (August 1991 - December 1994)

Chungha Myun, Youngil Gun in Gyunsang Province had been included as one of the six candidates selected by the PDI which already had surveyed this area in secrecy. The Korean government introduced a new system called MRDA (Modified Reverse Dutch Auction), wherein a county that offers the least amount of government subsidy would win the bid to host the repository. This was a new trial to adopt a VA to the siting policy. This method was contrived to reduce the financial burden of constructing nuclear power plants in the future rather than to promote the interests of the host community in the long-term perspective. Therefore, although it was based on the voluntary application, it was not truly a VA in the aspect that it did not consider the interests of host community as the first priority.

To pursue this project, the central government procured the support from the Chungnam Provincial government by offering a plan to construct a large scale Science Research Complex in this region. But, again, the deal was done in secrecy. Later, they passed the buck to each other when the scheme was revealed. On November 1991, the Korean government offered the community leaders of Chungha Myun a free tour to the DMZ(the Demilitarized Zone), followed by a persuaded visit to the Korean Atomic Institute(KAERI) located in the Daeduk

Research Complex in Taejon, Chungnam Province. The visit to the DMZ was a disguised tour to hide the real purpose of inviting the residents to the Daeduk Research Center in which the government had confidence to persuade the residents of the safety of nuclear related facilities. The residents were welcomed by the experts in the institute and educated on the safety of the nuclear power plants and the radioactive wastes disposal systems. Most of the visitors were impressed with the safety assurance and became proponents for the siting. On December 31, 5,300 residents signed an application for the repository and sent it to the central government. The MST announced that it finished the geological survey in this area. The ministry held several public meetings to explain the safety of the repository.

However, on December 30, 1991, two thousand residents in Chungha Myun held an anti-nuclear rally and marched in the streets. Thousands of residents blocked the local main roads with cars and farm tractors. While the police shot tear gas, protesters resisted by throwing stones or burning tires as barricades. This confrontation lasted for more than a week. Though the demonstration was dispersed by the police, it left injuries on both sides and several residents were arrested or imprisoned. Many office buildings and local shops were closed during this struggle. There were many cases where the riot policemen were beaten and wounded. This struggle lasted for almost three years. During this struggle, the KAERI intensified its efforts to inform residents about the safety of the nuclear technology. Many politicians and environmental movement leaders also were involved in the struggle. The confrontation lasted until the end of 1994 (Kyung-Sok Chae 2008: 98-101).

It is noteworthy that the Korean government tried to introduce a new siting approach by trying to secure voluntary applications from local communities. However, it had a limitation in that the government focused only on the compensation and safety issues rather than trying to

open the whole procedure by providing the residents with enough time and expenses to examine thoroughly the costs and benefits from the siting. It is regrettable that the Korean government achieved nothing despite three years' wasted time and money. If they had been put to facilitate democratic procedure, the results would have been much better. Moreover, the siting scheme based on the MRDA, which is planned to offer the least amount of compensation, raises concerns about environmental justice.

5.2.4 The 4th Attempt: Changan Eub, Gijang Gun in Busan City[28] Case (Nov. 1993- May 1994)

On November 26, 1993, the MST announced three guidelines to pursue the siting of radioactive waste repositories. The first was to follow democratic procedures, second was to link it to regional development projects, and lastly, was to base it on the consent of the local residents. A new law entitled, "Act to Promote Installation of Radioactive Waste Disposal Facilities and to Assist the Adjacent Areas" was passed according to this principle. This law included concrete procedures for compensation and local participation. A regional development fund amounting to 50 billion won would be provided to the host area. It can be said that most of the requirements for the VA has been adopted in this proposal. Especially, the guarantee of compensation by the law undoubtedly enhanced the trust in the government.

Some cities submitted applications after this announcement. On November 1993, Changan Eub submitted the siting application to the ministry. As Changan Eub already had the first nuclear power station in Korea, the Gori Nuclear Power Station, it faced minor resistance compared to the other regions. It is no wonder that the residents of this already affected area,

[28] Usually Gun includes both Eubs and Myuns. The first nuclear power station, the "Gori Nuclear Power Station," is situated in Changan Eub, Gijang Gun in Busan Metropolitan City.

both in terms of proximity to the power plants and the recipients of government compensation, submitted an application for the radioactive waste repository while their neighbors vehemently opposed the attempt. During this period, many public meetings, debates and overseas sightseeing to nuclear facilities paid by the government took place. These government activities facilitated the local residents to form the "Changan County Economic Development Committee."

To inform the safety of the facility to the local residents, the Korean government spent large amounts of money to advertise through the media. The ministry also operated free tour course for the local residents to learn about the advanced radioactive waste facilities in other advanced countries such as Japan, France and England. These activities increased the acceptability of the siting among local residents and the number of people who agreed to the siting proposal began to increase. The residents said that they would accept the facility on the condition that the government provided them with enough compensation and aid for regional economic development. They even said they were willing to accept more nuclear power plants or repositories if they decided it was in the region's best interest.

However, strong anti-nuclear movement groups were organized in Gijang Gun and its neighboring areas. Severe conflicts arose between the strong anti-nuclear movement groups and newly formed pro-nuclear groups called "Pro-development" groups. The anti-nuclear opponents blamed the proponents for being selfish by trying to take personal advantage under the guise of local development. The pro-development groups insisted on deciding this matter by the majority vote, but this was not agreed upon by all stakeholders. The anti-nuclear activists and community members maintained a tough attitude towards the pro-development residents by excluding them from community life whereby declaring a policy of "no greeting, talking, and participating in ceremonies."

The opponent groups intensified their activities by blocking the roads and railroads. 1,500 riot police were dispatched and confronted the demonstrators. Many households kept their children from going to school. On May 22, 1993, as the demonstration began to expand to the whole region, the Korean government finally revoked the siting plan and officially sent a letter of withdrawal to the county. The Korean government regretted the withdrawal because 80% of Changan Eub residents had given their consent for the siting proposal. However, it was an expected result because Changan Eub residents were only a small part of the affected people in the broader Gijang Gun.[29] As Changan Eub already had nuclear power plants, it was not a big problem to add a less risky repository in the area.

Also demonstrated by the Korean cases is the "brownfield effect", which states that an area that already has many hazardous facilities is likely to attract more such facilities in return for relatively minor benefits because they do not have much to lose. However, whether this is a desirable policy in regards to environmental equity should be discussed as the concentration of the risk in a small area increases the possibility of accidents and subsequent consequences. However, the problem of environmental equity relating to the concentration of the risks was not an issue in the Korean government. Rather, the Korean government targeted the brownfield area of Changan Eub and believed the acceptance of the Changan residents will bring the successful siting. However, it turned out that the government underestimated the potential reactions from the neighboring areas.

It is an advance as a siting policy that the Korean government passed a law which guarantees considerable amount of compensation to the host communities. However, the law

[29] Gijang Gun has three Eubs and two Myuns including Changan Eub. The population of Gijang Gun is 100,000 while the population of Changan Eub is only 10,000.

focused more on the implementation of siting strategy rather than participatory decision-making. Furthermore, it also became apparent in this case that it is impossible to save expense by focusing compensation only on a small affected area because the perception of potential risk for neighboring residents far surpasses the compensated narrow area. People's perception of the potential risk area from the possible nuclear accident is not exaggerated as is evidenced by the Fukushima Accident.[30] Therefore, the government compensation plan should be based on broader incentive package programs focusing on regional economic development rather than trying to buy off the small areas of the very construction site. Again, lack of participatory democracy and inequitable compensation plan was the main reason of the siting failure.

5.2.5 The 5th Attempt: Kisung Myun, Uljin Gun Case (1989 - 1994)

Uljin Gun is located at the eastern coast of the Korean peninsula. Traditionally, its main industries are fisheries, agriculture and tourism. Uljin already has acquired four nuclear power plants since 1978. When the first two nuclear power plants were built in Uljin, the residents welcomed the facility as a symbol of regional development. But, when the Korean government tried to construct the third and fourth nuclear reactors in 1999, it took more time to complete due to growing concerns among the local residents. Uljin is known for its beautiful nature and tourist attractions. However, many local residents complain that the number of tourists has been declining since the construction of the nuclear power plants, while sales of agricultural products also have been on the decline. Currently, Uljin Gun receives three to four billion won annually from the central government according to the "Act to Support the Adjacent

[30] In the Fukushima Accident (March 11, 2011), the Japanese government declared first, a 10km and subsequently, a 20km evacuation zone. (Alternative Energy Sources 2012: 159. Efstathios E. Michaelides. Springer). Later, the Japanese government announced that it will extend the mandatory evacuation zone around the stricken nuclear plant to 30km (http://www.greenpeace.org/usa/en/news-and-blogs/campaign-blog/fukushima-evacuation-zone-expanded/blog/34196/).

Areas of the Power Plants." However, the residents claim the loss caused by the nuclear power plants exceeds more than 1,000 billion won (Kyung-Sok Chae 2003: 153-156). Some residents complain that the first image of Uljin has changed from tourist destination with its beautiful nature to that of a nuclear power plant. They argue that the people nationwide refrain from buying agricultural or sea products from Uljin because they believe these products are contaminated with radiation (ibid: 168).

On March 1994, several staff members working in the MST visited Kisung Myun, which is one of the eight Myuns in Uljin Gun, and discussed the siting plan with the proponents in the county. But, the secret meeting was detected by the opponents in the county. The director from the ministry was abused physically and his car was damaged. The proponents also were verbally abused and threatened (Kyung-Sok Chae 2003: 104).

Despite negative reactions from the local community, the Korean government pursued this siting plan, which triggered the violent opposition in the surrounding area. On May 16th, 1994, despite the vehement opposition in the region, 2,150 residents out of population of 3,850 of Kisung Myun submitted an application for the siting.[31] Particularly, a small village called "Samsin Ri"[32] was chosen for the direct site, in which 90% of the residents consented to the siting. But, the approval rate of the Kisung Myun, which includes Samsin Ri, was only 57%. The difference in consent rates was dependent largely on the possibility of the compensation (Sang-Pal Lee: 206). It is no wonder that in all of the areas of Kisung Myun that were included within the 5Km distance, which is required for compensation, more than 80% of the residents consented to the siting proposal (ibid: 285).

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[31] Application from the residents is not an official or legal requirement. But, the Korean government vigorously promoted applications signed by the majority of the community residents to show the legitimacy of the siting.

[32] Ri is a rural village and the smallest administrative zone. Several Ris make a Eub.

The anti-nuclear groups were organized by the residents. They blamed the government for trying to make Uljin concentrated with radioactive waste since this region already had four nuclear power plants. However, the leaders of pro-development groups, which had the approval from the Samsin Ri residents, announced that they would accept the facility on the condition that the government provided them with enough economic incentives and safety measures. They procured the consent from two thousand residents and proposed sixteen conditions to host the facility.

On May 17, the Local Assembly of Uljin Gun started the "30,000 signatures campaign" in an effort to block the siting attempt. All the members made a resolution to resign in case they failed to prevent the siting. The conflict between the two resident groups grew severe and the anti-nuclear groups threatened to use violence on the pro-development residents. As the threats increased, some residents who supported the siting had to evacuate their houses and restrain themselves from social activities (Kyung-Sok Chae: 105-107). On May 29, the anti-nuclear group seized the highways and clashed with riot police. They threw stones and set fire to barricades of tires. They stopped three oil tank trailers and other trucks and punctured the tires to block the roads. They threw petrol bombs to the riot police. During the night, they even broke windows of many pro-development residents. The riot police shot tear gas and arrested sixteen demonstrators. This violent situation lasted two more days until the government announced that it would not install the repository without the consent of the Uljin Gun residents. During this turmoil, about thirty residents and riot policemen were injured (ibid: 104-110).

One peculiar observation in the case of Uljin Gun was the exceptionally high consent rate in the areas chosen for the construction site compared to other region such as Anmyondo. It was due to the fact that these areas already had nuclear power plants for more than two decades.

So the risk imposed on them was a familiar risk to the residents who already lived there. The number of the facilities did not matter once one facility was already in place. This raises the issue of environmental equity since most of the nuclear power plants would be concentrated in the same small area on the southeast coast of the Korean peninsula. The Korean government tried to take advantage of this exceptionally high acceptance rate in the construction site area while neglecting the strong opposition from its neighboring areas that did not receive any compensation.

The Korean government failed to acquire the legitimacy of the siting from the residents of the Uljin areas by ignoring the residents' demand for participatory decision- making during the siting process. However, another serious mistake of the Korean government is it tried to buy off only the small area targeted as the construction site for the repository while neglecting the safety and economic concerns in the neighboring areas that are not included in the compensation plan. The Korean government repeats this strategy until it realizes that compensation, to be effective, should encompass all areas affected by the siting. This, of course, will increase the cost of the siting project. However, nuclear energy policy should ultimately be based on the assumption that using nuclear energy is still desirable even after paying the full social cost rather than passing the burden to the host communities. Nevertheless, the Korean government still persists in this policy of buying off a small area as described in the following case of the siting attempt at the Gulupdo Island.

5.2.6 The 6th Attempt: Gulupdo in Incheon City Case (1994. September-November)

Gulupdo[33] is a small island located in Dugjuk Myun, Ongjin Gun in Incheon Metropolitan City.[34] Its size is 1.3 ㎢ and has six households with only ten residents. It is 13km away from its mother island Dugjuk Myun which has a population of fourteen hundred. Gulupdo is 80km away from the Incheon Metropolitan City which has a population of almost three million. 99% of the land in this island is possessed by the outside land holders who live mostly in Incheon or Seoul. Hence, it is no wonder that the land owners in the Gulupdo welcomed the siting project since the government promised to offer sufficient compensation. Of course, the resident of the Dugjuk Island[35] strongly opposed the plan since they were not offered compensation. They worried about the decrease of income from tourism and fisheries (Soon-Ae Park and Ji-han Lee 2005: 76).

Gulupdo has been administratively included in Gyunggi Province until 1994, but has been changed to Incheon Metropolitan City after the administrative zone rearrangement in 1995. It is interesting that Incheon citizens instead of the Gyunggi residents became the main protesters after the zoning rearrangement, though the Gyunggi Province is much closer than Incheon from Gulupdo. This case illustrates that people's subjective understanding of the issue, including "the stigma effect," influences the opposition to siting. Though this is irrational, there is no denying the fact that, sometimes, perception matters more than the facts. Stigma effect, if once created, is

[33] "Do" means an Island.
[34] A Metropolitan City is equivalent to nine Provinces in Korea. Korea has six Metropolitan Cities with a population of more than one million each. Usually, if a Gun or a City in the Province becomes bigger enough to comprise more than one million populations, then it can be separated from the Province and becomes an independent Metropolitan City.
[35] Dugjukdo is both an island and a Myun.

hard to eliminate even with scientific evidence. Therefore, compensation should take the negative image created by the siting into consideration.

The Korean government changed its strategy by organizing a comprehensive steering committee that included all related government departments to coordinate all-out efforts for the siting. This is a significant change of view within the government since they began to understand that the siting issue was not only a technical or scientific issue that could be resolved by the initiative of the MST, but also a social and political issue that require broad cooperation among all the related institutions. Accordingly, the Korean government tried to publicize this issue to draw a social consensus on the inevitability of using nuclear energy and the resulting necessity of building a nuclear waste repository.

On July 4, 1994, the Korean government announced five principles to select the site: independence, openness, clarity, efficiency and credibility. A new task force team called the 'Headquarter for Steering the Promotion of Radioactive Waste Repository' was established as an official organization under the Prime Minister. The Korean government changed its siting strategy by adopting policies of open and participatory processes while introducing economic incentives amounting to 50 billion won. The government also announced its plan to compensate the border areas from the repository. Additionally, it advertised the safety of the repository through national TV and radio. In a short period, 1.7 billion won was spent to advertise the safety and inevitability of using nuclear energy. The image of a clean energy which produces no greenhouse gas was emphasized. Many residents also participated in the free tours to set up to visit well managed foreign nuclear facilities (Kyung-Sok Chae: 111).

On October 29, the Korean government established “Radioactive Waste Project Promotion Committee” composed of several ministries, chaired by the Prime Minister. “Radioactive Waste Project Planning Division” also was established to execute the policy decided by the committee. The government announced a new principle for the repository siting as below: (1) Siting process will be based on open and democratic procedures. (2) Siting will proceed in connection with regional development plans. (3) The special fund for regional development which amounts to 50 billion won, in addition to 5 billion won of local subsidy during the seven years of the construction period, and also another 3 billion won each year during the thirty years of operation, will be provided. Additionally, public facilities such as roads, hospitals and schools will be provided.

On November 1993, a special law called “Act to Promote the Radioactive Wastes Disposal Facility and to Support the Residents of the Host Area” was passed. This was an important turning point from the previous government policy which relied on an official announcement of compensation rather than law-making, because it gave strong credibility to the government's promises on the economic incentives. The MST also made it clear that not only the ten proposed areas but also all 240 coastal cities in the Korean peninsula will be considered as potential candidates for the siting. Instead of targeting a certain area which best suits the technical and economic criteria, the Korean government decided to consider all cities as a potential site. This is a remarkable advance from the previous siting plans in the respect that the siting authorities changed the policy priority from the technical and economic feasibility to the social and political feasibility.

Nevertheless, in November, 1994, as the government sped up the siting plan, nationwide anti-nuclear movements began to intensify. Environmental Movement Association,

National Teacher's Association, and many opposition groups in the targeted areas, religious groups and various social organizations gathered together and established a nationwide "Anti-nuclear Movement Association." They declared a resolution to start a strong anti-nuclear movement and marched through downtown Seoul. Despite these opposition movements, on December 16, 1994, the MST announced ten potential sites, emphasizing Gulupdo as the best location. The ministry held a public hearing explaining how the island has a safe geological structure composed of solid granite and a convenient sea transportation route. The government promised to offer 50 billion won and other incentives for regional development. The central government also promised to help the local government's long-time plan to develop this region as a marine resort area. Accordingly, January 19, 1995, some of the local representatives of the Gulupdo submitted an application for the facility.

However, the Korea Electric Power Corporation, which operates the nuclear industry as a government run corporate, had made a special report criticizing the Ministry's decision to site at Gulupdo. Its conclusion was negative for the following reasons. They argued that the geological survey was done superficially as it turned out the site had three seismic faults and also had the possibility of seismic sea waves. The risk of transporting radioactive wastes by ship and also the lack of water in the island were pointed out by one leftist newspaper called "Hankyore Daily" (Sang-Pal Lee: 157). The internal conflicts between the Ministry and the corporation to seize the power to control the nuclear industry raised serious doubts concerning the honesty of the government.

Incheon Environmental Movement Association, with the other national environmental groups, started another anti-nuclear movement. Thousands of protesters marched through the city. They demonstrated in front of the City Hall and the Ongjin Gun Office. On December 27, 1994,

the Korean government held a public debate forum in the Incheon Citizen's Center. The central government officials emphasized the inevitability and safety of using nuclear energy, while the opponents argued that the Korean government should change the energy policy from relying so heavily on nuclear energy to a more environmentally friendly energy policy and claimed that Gulupdo is the worst place to site the repository. Although they could not draw a consensus on this issue, it was a significant effort toward promoting more participatory decision-making process.

In January 1995, the Incheon Metropolitan City government, which administrates Ongjin Gun, announced it would approve the siting proposal on the condition that the central government would provide the following incentives: approval of the Incheon local TV broadcasting systems; providing national budgets to construct the International Exhibition Center, the 3rd Seoul-Incheon Expressway, the Museum, the Seoul-Incheon Subway; and the removal of the military defense wires alongside the sea coast and so on (Kyung-Sok Chae: 116). As a matter of fact, the local governments in Korea have a history of these types of demands toward the central government when faced with this kind of confrontation. Although the local autonomous system was nationally introduced in 1991, most of the Korean local governments severely lack the financial resources to pursue economic development because only 21-23% of the total tax in the nation is allotted to the local governments.[36] Therefore, redistribution of the central government budget is the essential leveraging tool for the central government to control the local governments. This indicates that true democracy in the local levels cannot be accomplished

[36] For instance, the ratio between the national tax and the local tax is 44% in US, 50% in Germany. And in most of the advance European countries, the ratio is above 30%.
(http://blog.naver.com/ntscafe?Redirect=Log&logNo=110055883120)

without financial capabilities. In this respect, Korea's local autonomous system is vulnerable to the manipulation of the central government.

January 26, 1995, two specialists from the International Atomic Energy Agency visited Gulupdo. At the press conference, they announced that the site was suitable for the repository siting. But, there was suspicion that this announcement was made in order to support the Korean government's policy rather than to provide an objective and scientific review since a previous geological survey conducted in November 1995 found active earthquake faults in this island. This case indicates that institutions relating to nuclear technology tend to have an optimistic view on the safety issue. On November 30, 1995, the Korean government finally revoked its plan to site at Gulupdo under the excuse of finding earthquake faults and announced that it would not consider this place again as a potential site for the repository. However, the main reason of the withdrawal was the intense local opposition rather than the geological survey results.

It should also be pointed out that there have been confusion and disorder regarding which agency has the ultimate responsibility for the Korean nuclear energy policy among the government institutions. There were at least three authorities that were responsible for establishing the nuclear energy policy; The Ministry of Trade, Industry and Resources (MTIR), the MST and the Korean Electric Power Corporation (KEPC). For example, the regulatory institution at the MST, indicted the KEPC fifty seven times for a breach of the Atomic Power Act (Sang-Pal Lee: 146). On August 1994, the KAERI reported to the public that the storing capacity of the temporary repository of the radioactive wastes that are located at the nuclear power plants would be saturated by 1996 to 2000. However, the KEPC repudiated this claim as an exaggeration to create a sense of emergency and argued that the temporary storing capacity could be extended until 2030 (Sang-Pal Lee: 147-154). These incidents provide clear evidence

that the government is likely to exaggerate the situation to persuade the general public. It further demonstrates how truths are revealed when there is a conflict between the competing authorities rather than when they are in harmony. Hence, it reiterates how indispensable the principle of checks and balances is in keeping democracy working.

The behaviors of the politician members of the National Assembly also should be analyzed since they failed to perform their roles in the period of severe conflict. Legally, they are the representatives for the nation, not the counties or cities in which they are elected. Thus, in theory, they should represent the national interest instead of the local interest. However, the attitude they showed during the siting conflict had always been ambiguous and changed according to the emotions of the local voters. When the protest of the residents became intense or violent, they turned to the anti-nuclear side. In Korea, most of the national parliamentary members are elected in their own electoral districts rather than on a national scale. Therefore, it is understandable that they act on behalf of their own electorates rather than the nation as a whole, especially when there is a conflict between them. One member of the National Assembly lost the election held in 1992 because of his neutral attitude toward the siting controversy (Sang-Pal Lee: 246). This raises a question of which electoral system can best represent the public interest in a situation of conflict between broad national interests and narrow local ones.

There are fundamental contradictions in the compensation method. The law "Act to Support the Adjacent Areas of the Power Plant" confines the compensation area within 5 km radius from the site. Thus, many areas which have the same, or sometimes even more, burden with the site are excluded from the compensation because of the boundary limit. No wonder these areas most vehemently oppose the siting. The Korean government tried to save the budget by sticking to the irrational laws and regulations. It caused anger and distrust from the residents

in the victimized areas. Therefore, compensation should be based on the real risks rather than the legal boundary because administrative convenience should not take precedence over equity. In this respect, there is a need that the law should be revised accordingly.

According to one survey, the main reasons for the opposition of the residents were anxiety for safety; economic loss coming from fisheries and agriculture; contamination of living environments; and decline in the price of land and houses in decreasing order (Soon-Ae Park 2005: 75). This survey demonstrates that guarantee of safety and compensation is the minimum requirement in any siting approach.

Of additional interest is that Incheon citizens opposed more vehemently the siting in Gulupdo than the residents of Chungnam Province even though Gulupdo is closer to Chungnam Province. Gulupdo is more than 70km away from Incheon, and 50km away from Chungnam Province. Gulupdo was rezoned to Incheon in 1995. If it had not been for the zone rearrangement, Chungnam residents would have opposed the siting proposal more strongly than Incheon citizens. It is ironic that the acceptability of the facility was affected more by the administrative location than the distance from the facility (Sang-Pal Lee: 3). Again, this phenomenon is attributable to "the stigma effect" where perception matters more than the facts based on scientific data.

5.2.7 The 7th Attempt (2003.2 - 2004. 12. 12): The Buan Conflict

The Korean government regards the attempt to site at Buan as a complete failure often naming it "the Buan Riot". However, the anti-nuclear groups are proud of having thwarted the siting attempt in Buan and they call it "the Buan Struggle." Either way, it was the biggest clash between the local residents and the central government during the twenty year period of these siting conflicts. The Buan clash may be one of the biggest environmental conflicts in the world

caused by the governments' attempt to site a radioactive waste repository by physical force despite intense opposition of the local residents. The Buan clash ultimately proved that an authoritative government approach can no longer work in Korea. After this incident, the Korean government completely changed its siting policy to include more democratic and voluntary approaches. The Buan case deserves detailed description since it contains many extreme cases that prove an authoritative siting policy has little possibility to succeed.

In June of 2000, the Korean government publicly invited applications from 46 coastal cities promising economic incentives. However, there were no applications from these cities. Hence, on February 2003, the Korean government announced that it would introduce incentive-based voluntary application procedures to site the repository. But, it also added that it would select one site among four areas that were already under investigation in case there were no applications by the deadline. The selected four areas were Younggwang Gun and Kochang Gun in Jeolla Province, and Youngdok Gun and Uljin Gun in Gyungsang Province. It can be inferred that two sites from each Province may have been selected to avoid the criticism of regional discrimination. These sites were selected after conducting geological surveys on forty coastal cities during 2001-2002. However, the government took a tough position by declaring it would not tolerate opposition activities against the final decision and it would subdue the opposition at a level used to suppress terrorism. Hence, it is observed that the introduction of voluntary procedures in the Korean government was still not based on genuine respect of the residents' rights.

The Korean government increased the local development fund to 300 billion won, a six fold increase from the previous 50 billion won. It also decided to construct interim repositories for the spent nuclear fuel. The change in the government policy towards open and incentive

based approaches were undoubtedly considered progress in the siting policy. Nevertheless, the new government policy still had an inherent flaw in that the government targeted candidate areas without the consent of the local residents. Moreover, the threat of coercion in the case of no application shows how the policymakers in the government still did not understand the necessity of democratic procedures.

In May 2003, as there were still no applications, the government added one more incentive: construction of the Proton Linear Accelerator in the host city. According to the research conducted by the Gyungbook University, this project, which costs about 30 billion won of construction cost, was estimated to create 3,500 billion won of economic effect as well as 4,000 jobs in the local economy. Finally, some cities began to show interest. On July 14, 2003, in response to the central government proposal, the mayor of Buan Gun submitted an application with signatures of eighty percent of Wido island residents. Wido Myun, Buan Gun is located on the western coast of the Korean peninsula. It is 15km away from the closest land, Buan Gun in Jeolla Province. Wido is a relatively big island with the size of 10 ㎢ and a population of thirteen hundred. Administratively, Wido Myun belongs to Buan Gun in Jeolla Province. Most of the residents are living on fisheries and tourism, but the fishery products were decreasing due to the discharge of the warm water from the neighboring Younggwang nuclear power plant. Therefore, the residents of Wido desperately wanted to improve their economic situation. Of note, the residents of Younggwang had not been sufficiently compensated for their loss of fishery caused by the discharge of the hot water since the nuclear power plant had been built prior to awareness about the environmental risks related to the facility.

On May 2003, the residents of Wido Island organized a steering committee to host the repository in their island. Eighty Wido residents visited the Korea Atomic Research Institute

(KAERI) by invitation from the Korean government. Returning home with a positive impression about the technology and safety of the radioactive waste management systems, they submitted an application to the Buan Local Assembly. The government promised to provide 300 billion won of special local development fund and unofficially suggested they would distribute 500million won for each household in Wido as compensation. Without doubt, this incentive plan was more than enough to draw consent from all the households in Wido Island.

However, residents of Buan Gun, which comprises Wido Myun, reacted differently. Although the central government proposed a substantial incentive program to Buan Gun, it could not be comparable to Wido. Obviously, the Korean government could not buy off all the100, 000 Buan residents with the same excessive amount of compensation offered in Wido. Later, after inconsistencies in compensation policy and increased concern about burdens on future national projects was revealed, the Korean government revoked direct monetary compensation to Wido residents and instead proposed incentive programs for regional development. However, this inconsistency increased distrust towards the government policy. Many Buan and Wido residents who had consented to the original government plan changed their attitudes and participated in the anti-nuclear protest. This is a natural response from the residents since they could not move to other areas if they did not receive enough compensation. It is apparent that the direct monetary payment was the most effective at changing attitudes of the residents. There is also no doubt that excessive compensation would certainly lead to the acceptance of the siting. However, the government can neither afford to compensate all the property owners in the affected areas at the same level as it purchases the very construction site at a good price nor does it not make sense in terms of the cost-benefit analysis for siting the facility.

In June and July, the anti-nuclear movement steering committee was organized and led strong anti-nuclear protests in Buan. They claimed that the central government already had prepared an incentive program targeting Wido before it was decided as a final candidate for the siting. They also claimed that the geological survey on the island was only a token procedure in order to justify the government decision. They criticized one-sided approach that focused on increasing the acceptability of the local residents while neglecting the safety concerns. This case demonstrates that intentional targeting is the most important reason that causes fierce resistance from the local residents.

On July 9, 2003, two thousand Buan citizens demonstrated on the street to protest against the siting plan. However, on July 11, the Mayor Kim, Jong-Kyu held a press conference and announced that Buan Gun would apply for the siting. There was a compelling reason for him to risk supporting the siting in the midst of the controversy. Although Buan's main industry was agriculture, its prospect was declining due to the international competition caused by the recent W.T.O. agreement.[37]As the population of Buan was decreasing rapidly, the mayor needed to take special measures to restore economic vitality of the region. Therefore, the promised local development fund amounting to 30 billion won, and accompanying mega projects such as the construction of the proton linear accelerator, would boost the regional economy. In addition, the central government also offered an appealing proposal that the headquarters of the Korea Hydro and Nuclear Power Corporation (KHNP) would move to the host area. Not only did this proposal illustrate how moving the corporation would boost the local economy but also that the repository

[37] Korea participated in the World Trade Organization in 1995 despite vehement opposition from the farmers nationwide. With the reservation of importing some items, particularly the rice market until 2014, most of the agricultural products in the world are imported to Korea almost destroying the small scale agriculture.

was safe enough since the employees and families of the operating company would live with the residents.

However, just one hour later that same day, the Local Assembly of Buan Gun voted against the mayor's application. Nonetheless, on July 14, Mayor Kim submitted the application to the MIR, which quickly approved it. It was also reported that the Korean president Roh called the mayor and encouraged him. This further increased the local residents' fury and distrust toward the central government. Furthermore, encouraged by the voluntary application of the mayor of Buan Gun, the Korean government also changed its original plan and announced that the spent nuclear fuel would be also temporarily stored in Wido Island until the permanent repository for the high-level radioactive wastes was built. This became the most decisive reason that ignited the residents' resistance in Buan. This announcement bewildered even the proponents of the siting in Buan who believed only the LMLRW would be disposed here. But, most of the proponents for the siting still held their position (Jin-Chul Roh 2004: 203).

It should be noted that all the public officials in Buan Gun were mobilized to support the siting. According to an interview with one public official and one of the civilian representatives in Buan Gun who worked on the special task force team to attract the repository, the siting was considered a great opportunity to boost the local economy and develop Buan. What they regretted was that the government was not determined enough to push its original plan. They sincerely believed if the central government helped the proponents a little more, then the siting would have succeeded. They believed that the failure of the siting projects was caused not by the lack of democratic procedures but a lack of the central government's determination to employ more physical power to crush the opposition. As they had a strong conviction that the facility would be safe, they felt it was regrettable that the residents had exaggerated the facility's

potential risks. However, their conviction of safety was relied only on the data provided by the central government. The repository siting was just a goal for them that had to be achieved at all costs.[38]

The anti-nuclear protest became intensified and brought three thousand Buan residents on the street. The local assembly passed a resolution to force the Mayor Kim to resign though it was not legally effective. Undaunted, on July 24, 2003, the ministry finally announced its final decision to site the repository in Wido. The site selection committee announced that the island had solid rocks with no active earthquake fault. But this announcement was in contradiction with the report made by the Korean Resources Research Institute in 1991, which concluded Wido unsuitable for the siting. This contradictory announcement further weakened the reliability of the government data on the survey (Chul-Kyu Kim: 46).

The next day, a strong demonstration participated by 12,000 Buan residents took place. The demonstration continued even during the night. An increasing number of the local residents began to participate in the "Candle Light Demonstration." The candle light demonstration, which became the symbol of people's resistance, was a spectacular meeting held at night. The night meeting continued from July 2003 until February 2004. Every night, about one thousand to three thousand residents gathered on the street plaza holding candles in their hands. This number often exceeded ten thousand. Coincidentally, Buan had a history of leading the famous "Peasant Rebellion (1894)," where Buan peasants fought against the corrupt Chosun Dynasty which was the last kingdom before the modern Korea. This event strengthened people's solidarity to continue the resistance until the defeat of the siting attempt (ibid: 222-224). Some of the placards

[38] I made this interview in Buan Gun office on May 23rd, just after the Korean government revoked its plan admitting its mistake in the whole process. However, it should be taken into consideration that the official was in a position to get incentives by fulfilling his mission of attracting the repository.

and banners hanging in the demonstration were written "Nuclear waste to the Blue House,[39] Nuclear power plants to Yeoeuido!"[40] The residents claimed if the repository was really safe as the government announced, why not take it to Seoul, the capital of Korea.

The Korean government sent thousands of riot police to Buan to suppress the demonstration. Mayor Kim proposed to hold a referendum for this issue and the Korean government announced it would consider Kim's proposal. However, the protest intensified, leading to a situation of general strikes blocking the local roads and national highways and refusing to send their children to schools. On August 1, as the damages to both parties reached to an intolerable level, the minister of the Government Administration proposed a referendum to decide the fate of the matter. The Korean government already had prepared a new law called 'Resident Voting Act' introducing the plebiscite to solve serious controversial problems with the final decision of the affected residents. The law was to take effect after one year, in July 2004, but Mayor Kim proposed to hold the referendum in advance. However, the MIR opposed the proposal insisting that it will not revoke the siting decision in Wido. It was apparent that the Korean government was afraid that the Buan residents would vote out the repository which was fortuitously acquired by the hasty application of the mayor of Buan. The Buan Anti-nuclear Citizens Alliance also opposed the proposal because they did not want to be forced to hold a referendum for which they had no obligation.

The opposition movement continued throughout the year and the candle light demonstration became an almost like festival, promoting the identity and solidarity among the Buan residents (Chul-Kyu Kim: 49). The citizens' alliance even warned the government that they

[39] Blue House is the Presidential Office in downtown Seoul.
[40] The National Assembly of Korea is located at Yeoeuido, Seoul.

would occupy national infrastructure facilities such as dams, railroads and electric transmission towers. They put their resolution into action by occupying two national highways. Hundreds of protesters drove their cars very slowly along the national highways and roads to show their resolution to the nation.

However, the Korean government took a firm stand announcing that the government would not tolerate the unlawful demonstration. The government called the opposition movement as a mob maneuvered by some behind groups which instigate violence. President Roh ordered the riot police to raise the level of suppression in order to crush the demonstration. This ultimately caused serious damage to both sides. Two police buses were set afire and many residents and policemen were wounded. Parents' refusal to send their children to school continued for almost forty days until October 4.

During this period of contentious confrontation, four thousand Buan residents visited their neighboring city, Younggwang, where the six nuclear reactors had been operating for about twenty years. They observed how the local economy benefitted during the early period of the construction. However, the real estate prices kept falling after the reactor operation. The Buan residents became convinced that the long-term economic effect was minimal compared to the negative economic impact as well as the disintegration of the local community (Gil-Soo Kim 2005: 299). This case demonstrates how the success of prior facilities was vital in promoting the acceptance of a next risky project.

On September 8, Mayor Kim was attacked at a public meeting and wounded seriously. Consequently, the Korean government increased the number of riot police from two thousand to eight thousand. The whole city of Buan took on a martial law-like presence. In November, local

referendum was negotiated again between the opponents and the government but was ultimately rejected by the Korean government. The Korean government announced that it would not invalidate the legally effective application submitted by the mayor of Buan. It showed how the Korean government still did not understand the seriousness of the situation as it stuck to legal formalities.

On September 30, the Prime Minister announced that the government was willing to start a dialogue with the residents of Buan. Accordingly, on October 24, the government and Buan citizens cooperated and made a temporary committee to solve the situation. They held meetings and reached a consensus to hold a referendum to decide the issue. However, there was a disagreement on the date of the voting. The government proposed the voting date after the general election next year, while the residents wanted it as early as possible. The residents claimed the government tried to buy time to persuade the residents. The dialogue broke down as the government refused the early referendum.

On October 25th, President Roh expressed that he was willing to meet Buan residents and other anti-nuclear group leaders. He admitted that there were some problems in the siting process and would withdraw the siting plan if the residents of Buan really did not want it. However, the Korean government still tried to persuade the residents by continuing the negotiation. On November 19, the most serious clash between the residents and police broke out. Thousands of residents marched throwing stones and petroleum bombs to riot police. Iron pipes and farming tools also were used as weapons to confront riot police. Portable LPG tanks and used tires were brought to set fire. Buan fell into an anarchic situation. Many women were also in the forefront of the struggle. They even shaved their head to express their resolution to oppose the nuclear waste repository.

This confrontation lasted for a few weeks. On November 20, the general chief of police held a press conference warning the demonstrators that the government would not tolerate violence any longer and would punish the leaders of the mob to the very end. The night candle demonstration was banned and censorship and surveillance on the resident's activities were strengthened. The amount of physical force the government could employ was at its peak. Riot police set up checkpoints at every street that lead to Buan and the residents were completely denied their freedom of speech. However, the residents did not yield to the physical power and continued their resistance to protect their place. On December 10, 2003, the Korean government finally pronounced that it would hold a referendum to decide the siting. The next day, the minister of the Industry and Resources resigned taking responsibility for the situation. At this point, the government began to withdraw the police from Buan.

On December 24, 2003, the representatives from a variety of opinion leaders including NGOs, intellectuals, environmentalists, poets, and lawyers gathered in Seoul and held a press conference. They issued "two thousand citizen's declaration" which criticized how the government used excessive physical forces without providing an appropriate solution to the problem. They claimed that the local referendum was the only solution and urged to hold the local referendum as early as possible. They also urged the government to withdraw the police from Buan (Chul-Kyu Kim: 55). However, the Korean government decided against holding a referendum in Buan as they were already fairly certain how the vote would end. According to Dong- A Daily,[41] one of the most influential newspapers in Korea, 88.3% of residents were expected to oppose the siting.

[41] *DongA Daily* is one of the three major newspapers in Korea.

The Korean Lawyers Association also sent a human right commission to Buan and investigated the Buan struggle. It made an Investigational Report on the Buan Conflict (2004) and held a press conference to urge the government to respect the rights of Buan residents that include an express of their free opinion in the open process. Dozens of foreign environmentalists also gathered in Buan to attend "Anti-nuclear International Forum in Buan." One Taiwanese environmentalist claimed that the Taiwanese government deceived the residents when they built a radioactive waste repository in Ranwee Island in 1982 by concealing it as a fish can factory. He explained how the island became worse in every aspect after the siting. Japanese and German environmentalists also encouraged the anti-nuclear movement in Buan by enumerating many negative accidents related to the nuclear facilities.

As the government was reluctant to hold the referendum, the Buan residents decided to hold the referendum under their own supervision. The central government announced that the referendum is illegal and thus would not be allowed. However, the government could not stop the referendum because the Buan residents' resolution to show their will was too strong. Finally, on January 14, Buan residents held a self-ruled referendum to decide on this siting issue. The result was 92% against the siting with a 72% turnout rate. Although the Korean government claimed the referendum did not have a legal effect, it had an impact on the final decision to revoke the siting plan at Buan.

The Buan clash left deep scars on the local community. About three hundred residents were taken to police stations and thirty residents were arrested. Five hundred Buan residents and two hundred riot police were wounded. Loss of income from the fishery, tourism and local business were heavy (ibid: 44). However, the most serious damage was the breakdown of the local community caused by the hostility and violence committed between the opponents and

supporters of the siting. The rancor and animosity among the Buan residents who opposed or supported the siting proposal are so deep that Buan Gun could not hold its annual festivities.

The Buan Conflict becomes a decisive turning point when the Korean government finally gives up the authoritative DAD approach and decides to adopt a genuinely voluntary approach as much as possible. After so many years of failed attempts, the government finally realizes that the "divide and rule policy"- securing formal application from the part of the residents and pushing it through- of the DAD cannot succeed. It also realizes that buying off some areas of the directly affected residents is possible, but it is impossible to buy off all areas that are affected due to budget constraints. Therefore, the Korean government forsakes the strategy of directory monetary compensation and focuses on increasing the incentives offered in the regional bases. In addition, instead of the authoritative decision-making in which the best location is decided by the siting authority, the government decides to leave the siting decision to the voluntary application process from local cities willing to use the repository siting to promote its own interests. Thus, for the first time since the beginning of the siting efforts, the VA is introduced in its original meaning, and achieves remarkable success in Gyungju.

5.2.8 The Eighth Attempt: The Gyungju Referendum (November 2, 2005)

(1) The Shift in Siting Policy

It was not until the end of 2003 that the Korean government began to admit its failure in taking the authoritative approach to site the repository. On December 10, 2003, the MIR announced a new policy to pursue the siting. The main change is the introduction of a referendum for the final decision making. The concept of self-determination became an unwavering principle in deciding the siting place. The siting decision required the majority

approval rate in more than one third of the electorates. Therefore, nuclear waste siting will not occur in any city unless majority of its residents hold a referendum and give their consent to host the repository.

On February 4, 2004, the government started the voluntary application process and also made it clear that the high-level radioactive wastes (HLRW) including the spent nuclear fuel at the nuclear reactors will be excluded from the siting. Indeed, this becomes a decisive factor that promotes applications from many local governments. This is a remarkable advance from its previous siting proposals in the aspect that the concerns for safety risks dramatically reduced, while the remaining incentives were either untouched or increased with some added projects. However, in the respect that the siting of the HLRW repository became an even more difficult dilemma, the significance of the Gyungju siting becomes reduced.

Despite this limitation, the Korean government considered the siting of the low and medium level radioactive waste (LMLRW) repository as too important and urgent to delay. This policy change took effect and prompted applications from ten local cities by the end of May, 2004. The central government started the geological survey in these areas in the midst of conflict between the pro- and anti-nuclear residents. On May 2004, several local cities throughout the nation submitted their applications for the siting. Consequently, NGO's such as Anti-nuclear National Movement Groups started their anti-nuclear movement again. In an effort to draw social consensus concerning the overall energy policy, the Korean government tried to devise various administrative systems. Official organizations such as the “Meeting for Policy Coordination for the Current Affairs” presided by the Prime Minister, the “Meeting between the Administration, Party and Presidential Office,” and “Emergency Meetings between the Related Administrations,” were among them. To institutionalize the citizen participation, the government organized the

"Joint Forum between the Governments and Civilians to Discuss Energy Policy" which included NGOs, the ministries, Korea Electric co., the Federation of the Korean Industries, the Korea Chamber of Commerce and Industry, etc. Another joint meeting between the government and civilians called "Energy Round-Table Conference" also was organized. This was a remarkable advance from the previous siting strategy in that the government began to understand the importance of participatory decision-making that included the civilian sectors. But, these government- initiative organizations did not prove to be very effective due to the fundamental difference of perspective on siting issues among the political parties, social organizations, and administrations. In addition, the reluctance of the government to transfer decision-making authority to the Energy Round Table Conference hindered effectiveness.

In December 2004, the Atomic Power Commission of the Korean government decided again to separate and exclude the high-level radioactive wastes (HLRW) from the siting proposal. The reason of separation of the HLRW from the siting can be explained by two factors. First, the government judged it impossible to site the HLRW in a foreseeable future. Second, the saturation of the LMLRW was almost approaching. Consequently, on March 2005, "Act to Support the Host Area of the Low and Medium Level Radioactive Wastes Disposal Facility" passed in the National Assembly, thereby increasing the credibility of the government policy to provide compensation and various incentives to the host community. According to the law, the host community could receive incentives as follows: (1) a special regional development fund of 300 billion won; (2) Waste entree fee which would amount to 8.5 billion won each year; (3) Relocation of the KHNP to the host community; (4) Opportunity to participate in the relating construction projects, etc. (Sung- Kyung Cho 2005: 3).

The government incentive plan proved effective and several cities including Gunsan, Uljin, Pohang and Gyungju submitted applications in the midst of controversy throughout the nation. This was the first time that the applications were completely decided by the local residents. On March 2005, the residents of Youngdok started activities to submit the application and this prompted Gyungju City to seriously consider applying for the siting. On August 16, 2005, Gyungju City submitted the first application to the MIR followed by the other three cities- Gunsan, Pohang, and Youngdok. It was certain that the central government succeeded in promoting competition with the nuclear waste facility.

The referenda were to be held six months after the "Resident Voting Act"[42] passed. No doubt that this act was conceived primarily to solve the siting conflicts. It was a significant ordeal introducing direct democracy in order to resolve controversial issues in the nation. The most important change introduced by the new law is the requirement of local referendum as the final decision-making process. Before holding the referendum, the local government should procure the approval from its own local assembly. Therefore, the local society has at least three opportunities to consider the siting application.

On August 19, 2005, the government announced that the four cities were geologically suitable for the siting. On October 4, the central government announced November 2nd as a date to hold the referenda in these four cities. These proceedings happened very fast compared to the past experiences. The government strategy used to stimulate the competition between the four cities was met with remarkable success. November 2nd, 2005, all four referenda were held at the same time in each of the four cities. As it turned out, Gyungju won the siting competition with an

[42] The purpose of the Resident Voting Act is to decide important issues in the local government by the majority vote of the residents. One third of the electoral is required to hold the majority vote and half of the votes are required to decide the issue.

89.5% consent rate out of a 70.8% turnout rate. The Korean government announced Bonggil Ri,[43] Yangbook Myun, Gyungju City[44] as the final location to site the repository (Sung-Kyung Jo: 16).

Table 1 The result of the four referenda held on Nov. 2nd

City / Voting	Gyungju	Gunsan	Youngdok	Pohang
Electoral	208, 607	196,980	37,536	374,697
Voters	147,636	138,192	30,107	178,586
Turnout Rate	70.8%	70.2%	80.2%	47.7%
Approval Rate	89.5%	84.4%	79.3%	67.5%

Source : Joo-Yong Jeong 2008 : 73

(2) Why Gyungju City Competed to Win the Referenda?

Gyungju, with a population of 280,000, is a medium size city located in the southeastern coast of the Korean peninsula. It is an ancient capital of the Silla Dynasty (BC. 57-935 AD.), which unified the Korean peninsula in 654 AD. Having been a capital of the Silla Dynasty for a thousand years, Gyungju is rich in numerous historical sites and treasures including three World Cultural Heritages designated by UNESCO (United Nations Educational, Scientific and Cultural Organization). Although these great historic sites and relics attract a lot of tourism year round, it also constrains the urban development of Gyungju City. Tourism, still the most popular industry in Gyungju, is seeing a decline in the local economy while the other regions in the country are making rapid industrial progress. Gyungju City's development is severely contained by the regulations used to preserve the ancient heritages.

[43] Ri is the smallest administrative zone usually with a population of several hundreds. Several Ris make a Myun.
[44] Gyungju City is composed of eight Myuns, four Eubs and downtown. Usually Myun is an agricultural area. If Myun becomes urbanized it is promoted to Eub.

Gyungju already has four nuclear reactors at the "Wolsung Nuclear Power Plant." It is located about 30km from downtown Gyungju. Another two new reactors also are under construction from October, 2005 to be completed by 2012 and 2013 respectively. It is ironic that adding two new nuclear reactors to the existing reactors almost met no resistance in Gyungju while the LMLRW repository which is less risky than the nuclear reactors faced tougher resistance. The first nuclear power plant in Korea, the Gori Nuclear Power Station which was built in 1978, is also 50km away from Gyungju.

As the local economy becomes stagnant, the demand of Gyungju citizens for industrial development grew high. The recent failure to attract the government-funded Racetrack and Taekwondo Park was a huge disappointment for Gyungju citizen (Ju-Yong Jeong 2008: 65). Therefore, it is possible that the citizens might have been ready to accept any facility that could boost the local economy. On March 2nd, 2005, the Local Assembly of Gyungju City held an unofficial meeting to obtain assembly member's opinions about hosting the repository. Fifteen out of twenty four local assembly members voted for the hosting, while only four members objected to the idea. Encouraged by this response, the local assembly held an official session and organized a special committee to host the repository (Young-Jong Kim 2005: 303). On August 12, 2005, the Local Assembly of Gyungju unanimously passed the proposal to host the repository submitted by the mayor of Gyungju. The mayor submitted the application to the MIR on August 16th. The Korean government announced it would start the evaluation of the proposal in terms of safety and various administrative procedures (Young-Jong Kim: 304).

On March 4, twenty NGO groups in Gyungju held a meeting in front of the gate of the Wolsung Nuclear Power Plant and declared that they would help to host the repository. Strangely enough, on March 23, the "Anti-Nuclear Citizens Alliance in Gyungju" made an official

announcement that the radioactive waste repository should be built in Gyungju to revitalize the stagnant economy. One of their reasons for the approval of the repository was the exclusion of the high-level radioactive waste (HLRW) form the siting. Consequently, the Local Assembly of Gyungju City voted to host the repository. Gyungju citizens did not express any anger about the contradictory act of the anti-nuclear association or the Local Assembly. Because Gyungju already had nuclear power plants that were much riskier than the repository, adding the repository did not bring about severe opposition among its citizen. Furthermore, because the central government already promised that the place that would host the LMLRW repository would not store the HLRW, Gyungju City did not have much to lose.

At present, all the HLRW in Korea are temporarily stored at the sites of the nuclear power plants. Logically, the decision at Gyungju means that the HLRW that are stored at the four nuclear reactor sites in Gyungju should be moved to other areas when the HLRW repository is built elsewhere. The existing Wolsung nuclear power plant has been operating in the PHWR (Pressurized Heavy Water Reactor) method, which has a higher risk of radioactivity than the other nuclear power plants in Korea that use the standard method. Furthermore, the Wolsung nuclear power plant is storing 96% of the spent nuclear fuel in Korea (Ju-Yong Jeong: 64.) As the government announced that the host area will not accept the spent nuclear fuel, it became rather advantageous for Gyungju City to export out the spent nuclear fuel in exchange for the LMLRW repository. But, this would be impossible until the site for the HLRW repository is built in other areas. Although many skeptics had doubts about the government's promise, no serious debates concerning this problem took place. The high acceptance rate of Gyungju citizens can be explained by the fact that they already became comfortable living near the nuclear power plants. We see this throughout the world localities that already host a nuclear

power station often have a sympathetic attitude towards the idea of becoming the place chosen for nuclear fuel storage (Blower et al, 1991: 326).

The siting approval at Gyungju prompted other cities to reconsider their previously negative attitude toward the repository. The proponents of the repository in other regions, who were afraid to express their idea for fear of the opposition, began to gain confidence and rushed their applications in the bid to host the repository (Ju-Yong Jeong: 67). As might be expected, conflicts between the opponents and supporters broke out in Gyungju. However, the voice of the opponents kept losing after the discussion surrounding this issue became active. The number of residents who favored economic development far outnumbered those who advocated for the preservation of the historic city. Members of the Labor Party in Gyungju, artists groups and residents who live near the site but away from the 5km distance of compensation area were the main opponents; yet their number and available resources were too limited to oppose the siting.

Compared to the limited budget that was available to the opponents, the proponents were supported by an official organization called "Special Task Force Team to Host the National Project," composed of public officials in the local government. Gyungju City overtly allotted 15 billion won of official budget to host the repository and many public officials were mobilized to persuade the general public. The Gyungju TV, which is under the influence of the city government, regularly broadcasted the safety and necessity of hosting the repository. All four universities and student association in Gyungju City supported the siting. The opposition groups were stifled as they were overwhelmed by the strength of the proponents. Even one scientists' warning that "the Gyungju area has an active seismic fault and would therefore not be appropriate for the nuclear power plants or the repository" was buried in the frantic competition (Young-Jong Kim: 306).

Nationwide environmental organizations also lost their voice in Gyungju because of the Gyungju citizen's strong need for economic development. The first survey conducted at the four competing cities showed that a majority of the citizens were in favor of the facility. The consent rate of Gyungju was 55% while the other two cities Gunsan and Youngdok were 68% and 62.4% respectively. Seeing their consent rate trailing the other two cities, the Gyungju citizens further promoted the supporters' activities. When the survey result came out in favor of the Gunsan City in Jeolla Province, Gyungju citizens became united under the motto that "we cannot lose this opportunity again after losing the competition to host the Taekwondo Park to Jeolla Province."[45]

One leader of the National Environmental Association confessed they would not engage in the opposition movement in these four cites because most of the local residents in these areas wanted to host the repository (Joo-Yong Jeon: 68). Finally, the Korean government succeeded in stimulating intense competition with the twenty year's NIMBY facility. All national media focused on the results of the competition rather than the long-term effects of the siting. Even the local newspapers in these cities encouraged their citizens to win the competition (ibid: 72).

After the decision of the siting in Gyungju, many politicians and local officials of the three other cities that lost the competition were blamed for their incompetence to host the facility. For example, the mayor Baek of Gyungju who led the efforts to win the competition was reelected for another term in the election that was held after the Gyungju siting. He even had shaven his hair to unite the Gyungju citizen to host the repository. On the other hand, many

[45] The Taekwondo Park was decided to locate in Muju Gun, Jolla province in Dec. 2004. It was advertised to create an economic effect amounting to 2,000 billion won. Gyungju, Choonchun and Muju were the final competitors.

environmentalists or priests who were accused to have influenced on losing the competition were severely criticized or even attacked in the three cities. The residents in the three cities demanded them to leave their cities.

After the referendum, one of the opponent groups, the Anti-nuclear National Movement announced that this referendum was the worst fraudulent vote in the Korean history (ibid: 72). However, the social atmosphere of congratulations overwhelmed any attempt to invalidate the results of the referenda. For the general population, the success of siting was more important than the concerns for the democratic procedures in the referenda because most of them believed in the inevitability of using nuclear energy. In addition, the media's report on the illegal practices during the referenda was too sporadic compared to the intensive coverage on the hot competition. On the surface, the Gyungju referendum ended twenty years' of siting conflicts, questions still remain about the many unsolved controversies that will no doubt rise to the surface in the near future.

5.2.9 Timeline of Korean Siting History (1986-2005)

1988-9: The Energy Institute began a geological survey on the East Coast targeting three areas in Youngdok, Youngil and Uljin but was stopped by the local resident's opposition.

1993.11: The law to support the host area with an incentive of 50 billion won of local development fund was passed.

1994. 5: The attempt to site at Kisung and Changan failed.

1994.12- 95.11: The central government announced Gulupdo for the site but canceled after finding active seismic faults

1998. 5: The government adopted the voluntary choice approach by promising an incentive of 300 billion won.

2000-2001: The government recruited applications targeting 46 coastal cities, but no application was submitted.

2003. 2: The government chose four areas, Youngdok, Uljin, Kochang and Hongnong, but canceled due to the local opposition.

2003. 5: Another incentive (Proton Linear Accelerator Project) was added.

2003. 5. 7: Wido residents submitted the application to Buan Local Assembly with 80% consent.

2003. 7.12: Buan Mayor held a press conference to host the repository but the Buan Local Assembly rejected the proposal by 7 to 5.

2003. 7.14: Buan Mayor submitted the application to the central government despite the veto of the Local Assembly, which ignited the Buan struggle.

2004. 2. 4: The government made a law which requires the resident referendum for the siting application but no application was submitted by October.

2004. 2.14: Buan citizens voted against the proposal by 92 % opposition.

2004. 5: Ten localities submitted application including Younggwang, Uljin, Gunsan.

2004.12.17: The Nuclear Committee excluded the HLRW from the siting proposal.

2005. 1.25: The ministerial committee decided to make a law to support the siting area.

2005. 3.28: The Gyungju Local Assembly voted to host the repository by 15 to 4.

2005. 3.31: The law to support the host area was passed.

2005. 7.18: Gunsan Local Assembly passed a resolution to host the siting.

2005. 8.16: Gyungju City submitted an application to host the repository to the central government.

2005. 8.29: Gunsan City submitted an application

2005. 8.29: Pohang City submitted an application.

2005. 8.29: Youngduk Gun submitted an application

2005.11. 2: Four Referenda were held in Gunsan, Gyungju, Pohang and Youngduk and Gyungju won the referenda.

Chapter 6 The Analysis of the Korean Cases

6.1 The Analysis of the Buan Conflict

6.1.1 Failed Project or Victory of the Eco-Democracy?

Sung-Tae Hong (2004) argues that the Buan struggle is not NIMBYism driven by selfish regionalism, but rather an eco-movement urging the government to change its anti-democratic development strategy based on unsafe technology. He maintains that people have the natural rights to pursue happiness by living in a safe environment (225). He also criticizes the nuclear energy policy for supporting anti-democratic nationalism with the logic that the minority should be sacrificed for the majority as exemplified by Fascism (ibid: 239). Defining the eco-democracy as "a political will and institution pursuing the transition from the anti-ecological society based on nuclear energy to eco-society based on the circulation of the nature," he claims that people have the right to resist if governments undermine this basic principle (ibid: 270).

There is some evidence that the Korean government decided to site the repository at Wido Island without a sufficient geological survey. Moreover, in terms of transportation routes, Wido Island is an illogical choice as it is located more than 500km away by from the location of nuclear power plants. The longer the route, the more opportunity is there for an accident involving risky materials. The government also announced that Wido is the best place to site the facility without surveying the seismic faults, the most basic geological research (ibid: 227). Furthermore, the members of the "Committee to Select the Radioactive Waste Repository" were all government officials and nuclear scientists. Though there were four university professors, they were all regular members of the nuclear committee appointed by the government (ibid: 228). It is certain that the Korean government targeted Wido first and tried to persuade the local residents later.

There is another example of the government's dishonesty. There are many claims that the Korean government tried to conceal the results of scientific research and data. For instance, the "Hankyore Daily" disclosed the purposeful concealment by the government. According to the newspaper, the final report called "Long-term Management Plan for the High-level Nuclear Waste Concerning the Suitability of Wido Island as a Radioactive Waste Repository" which was submitted by Seoul National University at the request of the Korean government, confirmed that there was no need to construct new repositories. The report concluded: "Considering the enormous social and economic costs, it is better to store the used nuclear spent fuel at the temporary site of nuclear powers plants until better alternative way is found." Embarrassed with the unexpected research results, the Korean government tried to conceal it (Korean Lawyer's Association 2004: 249).

On September 2002, the Korea Hydro and Nuclear Power (KHNP), which is a government corporation, requested a study to the KAIST (Korea Advanced Institute of Science and Technology) to find solutions for the siting. According to the report submitted by the KAIST on December, the cost of building a separate repository was 2,200 billion won, 42% higher than storing the waste at the existing nuclear power plants. It also pointed out the risk of transportation. However, the KHNP requested KAIST revise the final data for their purpose, but was turned down. This was revealed by a minor newspaper called "MunWha Ilbo."[46] It deserves attention in that the most influential newspapers in the nation[47] rarely disclose facts that are unfavorable to the government (ibid: 231).

[46] IlBo means a daily newspaper.

[47] Chosun, DongA and JoongAng are three major daily newspapers in Korea.

It also should be noted that the increasing use of physical power by the government did not help to solve the situation. The total population of Buan Gun is only 70,000 including the 23,000 residents living downtown. However, the Korean government deployed 8,000 riot police to suppress the resistance. This amounts to almost one policeman for each person in the county excluding the children and elderly. This suggests that the Korean government still tried to suppress the local residents with physical power. This clearly is an overuse of the police power (Sung-Tae Hong: 233). Even with this overwhelming physical force, the central government could not suppress the opposition. The local residents fought bravely and it turns out that the government could not force the unwanted facility to them. It is true that Buan city fell into an almost anarchic state during the peak period of confrontations between the demonstrators and the police. The violence and disorder in Buan during this struggle poses a serious question about natural rights of resistance and the inability of representative democracy to solve a social conflict.

6.1.2 The Role of the Political Institutions during the Conflict

There is no question that the role of mass-media is vital in establishing democracy. However, it is doubtful whether the press and media in Korea played such a role especially during the period of severe conflicts. Even though the media admitted how difficult it was to make judgments regarding the conflict, by taking the same position with the government, they lost credibility and a sense of objectivity in the eyes of the people. The national media focused only on the violence of the Buan residents describing them as a violent mob that breaks the law and order for their own selfish goals. What attract the general public's attention were the dramatic clash scenes between the residents and police rather than the complexity of the problems. The media also warned the environmentalists and supporters from outside Buan to stop interfering in the conflict blaming them for instigating the residents to become violent. As

they could not find a logical reason to blame the residents directly, they instead described the protesters as being manipulated by outside instigators like the anti-nuclear movement members or environmentalists. This made the Buan residents distrust the national media even further (Chul-Kyu Kim 2005: 61).

Contrary to the arguments of the national media, 86% of the residents responded to one survey that they voluntarily participated to save their community. According to the survey, the motive of the Buan residents to participate in the struggle was: Anger at the anti-democratic procedure (32.4%); Protection of the community life (28.4%); Possible reduction of income (13.5%) (ibid: 63-64).

Only one newspaper "HanKyore Daily" reported on behalf of the Buan residents and maintained objective views on both sides. This may have stem from the fact that this is the only national newspaper not owned by the big financial conglomerates in Korea. It should be noted that the press and media can play an important role in protecting democracy, especially in the case of confrontations between competing interests. Most of the significant news that was not reported by the main newspapers came from the Hankyore Daily, a newspaper whose shareholders are general citizenry rather than corporate families. Unfortunately, the major newspapers and media outlets, despite their massive ability to collect information and analyze facts, did not try to confront or criticize the government policies. Hence, they neglected to follow through on their fundamental roles as a herald of truth as they were biased towards advocating the arguments of the government instead of keeping an objective stance on both sides of this national controversy.

Legal institutions such as the National Parliament or the Courts ought to play a vital role in solving the siting conflicts. Regrettably, the role of both of these institutions during the siting conflicts can be seen as almost negligible. The politicians never took a stance and switched sides depending on public pressure. Unfortunately, it was apparent that the politicians did not have enough information and/or conviction concerning the safety and risks of nuclear energy, as evidenced by their wavering viewpoints that were also influenced by reelection. Nevertheless, the National Parliament helped the Korean government by passing an act for the promotion of the siting: the Act to Support the Areas that Host Low and Medium-Level Radioactive Wastes Disposal Facilities (2005).

It is notable that some of the most of the important decisions on siting conflicts in the US were done by established institutions such as Congress and the Courts. Duffy (1997) points out that the courts were receptive to the pleas of antinuclear activists and intervened to open up the AEC to greater and more meaningful citizen participation (102). The US Congress also plays an active role in the siting policy. Concerned about abuses of administrative power on nuclear policy, the US Congress actively sought to abolish the AEC and reorganize the nuclear-related institutions. Some members of the Congress became champions of public interest, demanding that the Nuclear Regulation Committee (NRC) adopt more stringent regulations to ensure the safety of the public (ibid: 139). In this respect, despite the inability to reach a successful siting, it is fair to say that the US representative political system is working. This explains why the physical confrontation or violence surrounding the siting conflicts in the US is not as severe as Korea. The Korean cases demonstrate that violence can occur when the political institutions fail to perform their functions properly.

The courts in Korea also kept silent during the severe siting conflicts despite numerous lawsuits filed by the opponents of siting. Under the excuse of judicial restraint or political matters, the courts dismissed or deferred on the judgments. In this regard, the Buan case can be described as a case where the majority in a nation, the government, the media, and the indifferent public together, tried to sacrifice a minority group of people in the name of national interest. If the majority in a nation forced the local minority to take the burden for the benefit of the majority, it would fit a utilitarian standard. However, democracy, in a substantive meaning, requires that the minority should not be sacrificed for the benefit of the whole. The state risks eventual degeneration into a totalitarian regime by repeating such practices as anyone could potentially become a minority over time.

6.1.3 Violence and Democracy

Another point to discuss is the case of serious violence committed from both sides during the conflict. It is not easy to decide who is responsible for the escalation of violence and anarchy. The residents argue that the peaceful demonstration became violent when the police started using excessive force. The police argue that increasing physical force was inevitable to keep law and order because their protest exceeded a socially acceptable level. In many cases, the police reported that they arrested residents for violent protest and seized many iron pipes, ploughs, LPG containers and empty bottles to fill gasoline, and so on. The police always emphasized that many riot police officers were wounded. However, several incidents also report that some policemen sharpened the edge of their shields to attack the demonstrators. Sexual harassment cases reveal that some riot policemen spoke obscene words to woman protesters whose clothes were almost taken off during the fierce confrontation.

There is no doubt that resistance activities such as blocking the roads or occupying the office buildings are illegal. However, if the courts continue to avoid their responsibilities under the guise that "political matters" are not under their jurisdiction, the people will have no alternative but to resort to physical power to express their will. As it is not easy to decide on what constitutes an acceptable level, it always happens that both sides accuse the other of using excessive violence first. If the opponent's strategy is to dramatize their opposition in order to attract the attention and ear of the general public, they will tend to use violence first. However, if the government strategy is to subdue the opposition from the beginning before it expands, then it will incline to use violence first to maintain order. However, the mass-media focused on the violence committed by the residents rather than the riot police. The role of the mass-media as a neutral observer is essential in keeping democracy in order. However, the Korean national media failed to play this role appropriately.

Sherman (2011) studied the U.S. cases of local opposition to the LLRW site and concludes that the more actively opposed the candidate county, the more quickly the siting process ended. Social movement scholars such as Gamson (1975) and Piven and Cloward (1979) argue that movements employing disruptive protest are more likely to successfully achieve their policy goals (157). This is proved in many Korean siting conflicts, where siting attempts were abruptly stopped by the immediate and strong reaction of the local residents. Hence, it is understandable that even if the local residents employ violent activities first, they are not to blame because it is due to the inability of legal or political institutions. Nevertheless, it still does not explain the violence between local residents who have opposing views. The main reason for the unnecessary violence between the local residents during the siting conflict can also be

explained by the lack of political culture to solve social problems by employing deliberative democracy.

Chul-Kyu Kim argues that the Buan struggle was a victory for the Korean environmental movement illustrating the possibility of eco-democracy in Korea (42). Although there was considerable support from the outside groups, the main driving force of the Buan struggle was the local people themselves. This is apparent in light of the voluntary referendum held in Buan by the local residents, which illustrates the potential for participatory democracy in Korea (ibid: 43).

6.2 The Analysis of the Gyungju Referendum

6.2.1 How the Korean Government's Siting Policy Succeeded

(1) Participation, Safety and Compensation

Despite the limitation of the Gyungju siting, particularly the exclusion of the HLRW from the siting, the Gyungju siting was a remarkable success from the perspective of the Korean government. However, in terms of a democratic procedure, the Gyungju approach has many defects and cannot truly be called democratic. The residents were not allowed enough time and resources to compare the risks and benefits from the siting. Further, there were a lot of illegal or unethical practices during the competitive referenda, which are serious enough to consider an invalidation of the results. However, it is undeniable that the Korean government applied the VA siting policy and achieved the intended goal. As the Gyungju siting case contains many factors that facilitate the repository siting, it is worth analyzing it in terms of the recognized factors that constitute the VA for the siting.

According to the Guideline for Facility Siting, which is the result of the workshop in 1990 by MIT, Harvard, and Wharton held in 1990, there are thirteen guidelines which describe the components of a desirable siting process (Baughman 1994:40). These components include:

(1) Institute a participatory process that strives for consensus.
(2) Develop trust with an open process.
(3) Get agreement that status quo is unacceptable.
(4) Choose the facility design that best addresses the problem.
(5) Consider a competitive process.
(6) Work for geographic fairness
(7) Keep multiple options on the table at all times.
(8) Guarantee that stringent safety standards will be met.
(9) Fully compensate the negative impacts of the facility
(10) Make the host community better off.
(11) Use contingent agreement.
(12) Set realistic timetables.

It is remarkable that the Gyungju case has met at least seven above requirements: First, it introduces open and participatory approach as indicated by (1) and (2). It is especially successful in attracting communities to compete in the referenda as indicated by (5). The Korean government also succeeded in (3) in persuading how the situation of storing the radioactive waste at the nuclear power plants is no longer sustainable. For the safety issues concerning (4) and (8), the most important factor that reduces the residents' fear on safety issues is the exclusion of the HLRW from the siting. The Korean government invested a lot of budget and personnel to advertise the safety of the facility. The relocation of the Korea Hydro and Nuclear Power (KHNP) to Gyungju City also increases the residents' confidence regarding safety. Moreover, the Korean government succeeds in convincing Gyungju citizen that the repository will contribute improve the local economy as indicated by (10). The construction of the Proton Linear Accelerator in Gyungju and assistance of the local development fund amounting to 300 billion won and other economic incentives are the main reasons to host the site.

However, there are some defects in (6), (7), (9) and (12). Relating to (9), the government did not compensate for the potentially negative impacts on the neighboring city, Woolsan, although it is closer than Gyungju from the repository site. The Gyungju siting is also against the geographic fairness of (6) since this area is already saturated with the six nuclear power plants. Lastly, it cannot be said that the Korean government had multiple options on the table as indicated by (7) in case no communities apply for the repository. The success of the Gyungju siting can be understood in the context that the risk was relatively minor compared to the economic incentives. Therefore, it is doubtful whether this approach could succeed if the HLRW was included in the siting.

From the perspective of the Korean government, a decisive factor of success in the Gyungju siting is attributed to a competitive process as recommended above. However, a more urgent task of the Korean government is the siting of the HLRW because the capacity to store the HLRW at the site of the nuclear power plant would, reportedly by the Korean government, reaches its limit by 2016. Even if the Korean government promises to offer more incentives to attract the HLRW site, it will be an extremely difficult task unless there are poorer communities other than Gyungju that would compete to host it.

(2) Promotion of Competition with Economic Incentives

Weingart (2001) predicts that the siting authorities might be able to have communities compete with each other in order to be the victorious community to host such a repository (48). This very scenario happened in Korea where four cities including Gyungju competed vigorously. By introducing the VA, especially with the guaranteed incentives by the law, the Korean government succeeded in drawing interests from many local communities. Indeed, multiple candidate approach is useful to avoid the criticism of targeting. By recommending a competing

siting process, Kunreuther et al (1993) argues that the advantage of having more than one site compete for the facility is that no particular community feels it has been singled out to house a facility (305).

Nevertheless, this strategy is not perfect as demonstrated in the Korean case, where the excessive competition produced severe conflicts and animosity in the four cities. Besides, there is much likelihood that excessive competition between candidate cities would result in the least amount of compensation. Furthermore, there is also a possibility that the stimulation of competition could be used to exploit the ignorance of local residents where competition obscures the impending issues of safety concerns and diverts attention in order to win the game. This is proved by many cases after a few years of the siting decision, in which Gyungju residents express their regret of having voted for hosting the repository.

The VA has many advantages as a democratic procedure. However, if applied directly and hastily, it can negatively affect a rational decision-making process. This is proved by many cases in which the Korean government sacrificed the rationality in policy making by relying too much on the political feasibility. The selection of the repository site requires the highest level of specialty in terms of safety concerns and cost efficiency. It is desirable to select the best site first in terms of geology, overall cost, transportation risk and so on. There can be no dispute that safety should be the first priority in choosing the nuclear waste sites. Acceptability by local residents should be considered second to the safety issue. But the procedure is always reversed. In many cases, the government started the geological survey after the application was received, which means that the political feasibility instead of a scientific investigation was considered the first priority.

Fortunately, Gyungju was already considered a comparably good place for the siting, especially in terms of the transportation risks since it already has four nuclear power plants. Additionally, it has a good harbor to transport the radioactive wastes. However, if Gunsan in Jeolla Province had won the competition, the situation might have become very complicated. At first, the radioactive wastes, which are created mostly in the eastern coast of the Korean peninsula, would have to take a 500km long sea route, increasing the risk and cost. Further, construction of a new harbor also would have been inevitable in Gunsan area, which would increase the cost significantly. Therefore, rationality in the decision-making was sacrificed in the early stage of finding a location. Consequently, Gyungju's winning the referenda was fortuitous for the Korean government.

The competition with the consent rate of each city also goes against the rational decision making process. There was an argument that comparing the ratio of consent while ignoring the number of residents in each city is irrational. A small city that is united has a better chance of winning the competition. However, the groups of Korean scholars and law specialists decided the rules fit the spirit of the Constitution which includes comparing the ratio of consent rate rather than comparing the number of people in each city. However, their decision fails to fit even the utilitarian standard of morality in that they did not provide any logic for it.

The media also prompted hot competition by broadcasting special programs advertising the inevitability of using nuclear energy and also the safety of the facility. The newspapers and TVs competed with each other to broadcast the well-managed radioactive wastes sites of advanced foreign countries such as Sweden, Germany, France, Japan and the US. However, they did not spare enough time to broadcast the view of anti-nuclear policy advocates. The internet offered the only communication route to the anti-nuclear activists to inform the

general public of the negative aspects of using nuclear energy. But, its influence on the general public was negligible compared to mass-media. Rather, the government took advantage of using the internet by advertising the safety of the facility and also emphasizing the opponents' exaggeration of the risk.

The Korean government spent a lot of budget to advertise the necessity and safety of using nuclear energy. It spent 30 billion won to advertise a positive image of the nuclear industry and its ability to produce clean and safe energy through newspapers and national TV networks at the most expensive prime time rates (Hankyore Daily, 2006/11/16). Gyungju City also procured 20 billion won for the budget to host the repository (Soon-Jin Yoon 2006: 294). Enormous amounts of booklets and brochures informing the safety of the facility were also published and distributed broadly. The government also spent a large amount on the internet by constructing pro-nuclear policy sites and hiring many part-time employees to debate with the netizens who opposed the government energy policy. The internet might have been the only way for the opponents to express their arguments. It is true that the internet broadened the opportunity for individuals to express their opinions. However, it should be noted that it also can be used as a convenient tool to manipulate the public opinion, especially considering the huge budget that government could mobilize. There is no doubt that the government advertisement program achieved its goal. With the knowledge in nuclear technology and massive budget spending, the central government could make the project persuasive or even convincing to the general public.

Regionalism was also used to promote intense competition for the referenda. Slogans or propagandas, which aroused animosity toward the competing region, provided examples of regionalism. Although there is no evidence that the Korean government purposefully employed regionalism to intensify the competition, it is certain that it could have been predicted and might

have been the expectation of the government. Once the central government succeeds in making the residents believe that the siting is a golden opportunity to lose, the national media competed to report on which region would win the game of referenda. It is not certain whether the siting will eventually become a benefit for Gyungju in the long-term perspective. However, using regionalism to promote government policy will become harmful for the political development and thus should be avoided as much as possible.

(3) Legalization of the Incentives: Enhancement of Credibility

From the perspective of the Korean government, the siting resolution at Gyungju is a remarkable success compared to the grand failure in Buan. According to the interview[48] with one public official in Gyungju City, one of the main factors that promoted the acceptance of the repository among citizens is the growing credibility of the government compensation policy. The Korean government passed a law, "Act to Assist the Host Community of the LMLRW Repository", which guarantees economic incentives to the host communities. Although almost the same incentives were already offered to Buan residents, they did not trust the government's promise because it was announced and changed frequently. Therefore, no doubt that the legalized incentives enhances the credibility of the government's promise. It demonstrates again how the residents' trust in the government is the most crucial factor to facilitate the siting.

However, the fact that the Korean government had to make a law to guarantee the compensation demonstrates the intensity of the residents' distrust in their government. Usually, the accurate amount of money or special measures to be transferred to a local community is a matter that should be specified by the administrative policy rather than law-making policies.

[48] This interview was made in Gyungju City Hall on 15th May, 2006. The interviewee Mr. Lee was working in "Special Task Force Team to Promote the National Project." His former task of hosting the repository was changed to promoting the development of Gyungju City with economic incentives offered by the central government.

Therefore, it can be said that the Korean nuclear agencies admitted their incompetence to deal with the siting issue by passing the burden to the National Assembly. Another problem in the siting policy law is that it focuses on economic incentives while neglecting safety regulation and resident participation. Legal compensation should be combined together with strict safety regulations in order to avoid the criticism of buying off the poor neighborhoods.

6.2.2 The Problems with the Gyungju Siting

(1) Illegal Activities during the Voting Campaign

There are many accusations that the referenda were manipulated by the government. Many public officials in the four cities were mobilized to enhance the turnout rate and consent rate. Despite the law which prohibits public officials from influencing the election, numerous illegal activities such as bribing the voters, fraudulent absentee votes, and misuse of the government authority to advertise the propaganda during the referenda were reported. The rate of the absentee voting which usually is as low as 2 or 3 percent in any election reaches almost 40%, strangely high in these referenda. The consent rate of the absentee vote was more than 90% in all three competing cities. In Gyungju, the 79,000 absentee voters account for 38% of the electorate. The absentee vote rate of Gunsan was also 39%; therefore, each city could not accuse the other for pampering with this issue. The Anti-nuclear National Movement criticized that this unusually high rate of absentee vote resulted from the local government's strategy to force the local residents to register for absentee votes even for the residents who could vote on the voting day. It is not surprising that there was a suspicion that the absentee voting was manipulated (DongA Ilbo 2005.Oct.11). For instance, the members of the Anti-nuclear People's Movement held a press conference after detecting one village leader of Gyungju who kept two hundred absentee ballots that should have been delivered to the individual voters (Hankook Ilbo, 2005.Oct.25).

However, these cases were not taken seriously because each competing city committed similar illegal practices.

The pro-nuclear groups intimidated the anti-nuclear groups not to interfere with their efforts to host the repository. There also was a case where the pro-nuclear groups registered and preoccupied all public meeting places with the implicit cooperation of the city government in order to block the activities of the opponents (Joo-Yong Jeong 2008: 70). Several domestic newspapers also reported many fraudulent voting and illegal practices. Nonetheless, these accusations disappeared after the winner was decided. As all four cities committed illegal activities, no city could claim that the result of the referenda should be invalidated. Although many opposing groups like the Environmental Movement Association, the Lawyers Association and the Democratic Labor Party raised the issue of the legal validity of these referenda, their voices gradually disappeared in the excitement of the competition and results of the voting being massively broadcasted through the media (Sung-Soo Joo 2007: 240).

(2) Unequal Opportunity for Opposition Activities

Duffy (1997) argues that nuclear politics is best explained by the advocacy coalition framework. The pronuclear coalition consists of actors who are technical and scientific optimists who believe that nuclear power will lead to greater economic growth and a higher standard of living, and who believe that experts should make policy decisions (230). It is certain that the pro-nuclear group in Korea enjoyed the overwhelming support in terms of available resources. Most of the experts in the universities and government institutions are well equipped with specialized knowledge and funding to substantiate their pro-nuclear arguments. On the other hand, the anti-nuclear coalition in Korea, though their numbers are countless, has meager financial resources and lack specialized knowledge concerning nuclear technology and environmental science. To

the general public, most of their anti-nuclear movement was viewed as agitating violent activities while lacking scientific support. Most of their anti-nuclear movement focused only on the dramatic disaster scene of the nuclear accident or deformity caused by the radiation. They failed not only in providing realistic energy policy solution to maintain environmental sustainability, but also in warning the government to keep democratic rule in the referendum.

However, their incompetence to form an effective anti-nuclear coalition cannot be ridiculed considering the overwhelming gap between them and the government in the ability to mobilize financial resources and specialized knowledge. It should be noted that the money spent by the proponents to host the repository enormously exceeded the money spent by the opposing groups. For example, Gyungju City made a budget of 2 billion won to win the siting competition. The current General Election Law regulates the limit of money that can be used by the candidates to win the election. However, the Resident Voting Act which was passed just one year before the Gyungju referendum had no such regulations. This may have resulted from the Korean government's intention to spend as much of their budget that was needed to win the referendum.

The activities of the opponent groups were severely constrained by the lack of available resources. It is apparent that the referenda, which were executed in extreme financial inequity between both parties, cannot claim to have followed democratic rules. Sung-Soo Joo (2007) argues that the residents of these communities became targets of the government's advertising and as such, were persuaded rather than voluntary participants (242). In this respect, it should be noted that the appearance of democratic procedures can be more harmful than blunt oppression because it gives off the notion that a democratic procedure is really happening, thus disarms the people with the false belief that they made the decision. It is no longer voluntary and

truly democratic. Therefore, a democratic procedure should be judged not only by its appearance but also by the real content.

(3) Lack of Deliberative Process

The five months in between the announcement of the voluntary choice program to the referenda was too short to give the local residents enough time to gather information and to discuss the matter broadly and deeply. It is suspected that the Korean government purposefully hastened the process focusing on compensation and economic incentives rather than giving the residents enough time to consider the safety and long-term consequences of their decision. During the five months period to the referenda, the hot issue in the four competing cities was how to win the competition rather than public discussion about the long-term effect of the siting.

Sung-Soo Joo (2007) concludes that the referendum was a failure although it acquired the procedural legitimacy by achieving the majority vote. He argues that various opinions and ideas were not collected or discussed before the referendum. It also failed to solve the conflicts between the competing interests and, therefore, could not build trust between the opposition groups and the government. He adds that it failed to provide the people with the education and an information process which is imperative aspect of direct democracy (243). The referendum also reveals shortcoming of the process which demands the voters to vote only "yes or no" to the issue rather than allowing a choice between various alternatives. Sufficient discussions and alternative processes were unavailable for the referenda because five months is insufficient time to prepare alternatives between the notification of the siting proposals to the actual referenda (ibid: 239).

The Anti-Nuclear National Solidarity composed of 500 social and environmental associations, criticized the Korean government for trying to instigate competition among candidate cities with economic enticements rather than focusing on deliberative processes including safety issues. It also criticized the prevalent illegal or unfair practices enacted during the referenda such as dissemination of money and goods, free tours to the nuclear facilities, advertisement utilizing government budget and so on. However, their protest could not draw public attention because there was a general sense of urgent necessity of the nuclear waste repository throughout the country. The environmentalists and anti-nuclear activists also demanded to discuss with the alternative energy policies and the long-term sustainability of the government energy policy. However, the government did not promote such opportunities enough. It focused only on stimulating the competition to host the repository. Experts on both sides did not have enough discussions and debates in open forums with participation by the informed citizens.

(4) Problems with the Referendum

The referendums which were held to decide the siting issue is significant in that it revealed the weakness inherent in the present political system. The cases illustrate that representative democracy can face deadlock over the issue of siting dilemma. Referendum can provide breakthrough in the situation of nuclear waste stalemate. However, as is observed in the Korean cases, there is a great possibility that the referendum can be manipulated and used to serve and justify the government's purpose. Moreover, referendum can be used as a convenient tool to transfer the responsibility of the government to the people who are ignorant of the contending issues. Even if the government had no such intention, it can be argued that the

government has passed the buck to the citizens, thereby abandoning its responsibility and legal authority.

One influential daily newspaper raised a question: “Are the new systems of promoting competition with risky project desirable?” The article concludes that the siting should consider the technical and economic validity first rather than promoting competition. However, this newspaper also criticized the Anti-Nuclear Movement’s activity for trying to invalidate the results of the referenda by denouncing it as a divisive behavior harmful for the harmony of the Korean society (DongA Daily, 2005.Nov.4). It is more logical and rational to decide the siting location with the technical and economic feasibility first rather than with the voluntary application from the local cities as this article accurately pointed out. However, the VA is based on the assumption that technical or economic criteria cannot be used as a valid reason to coerce the residents into accepting the unwanted facility to benefit the whole country. Therefore, democratic procedure deserves first priority in the VA as long as the proposed level of safety and compensation satisfies the need of the volunteering communities.

One important issue in the referendum is how to compose the electoral process. It is important to note that the consent rate of East Gyungju which is much closer to the siting place than the West Gyungju was only 58 percent, which was very low compared to the 89.5 percent consent rate of all the Gyungju City. As the majority of Gyungju citizens live more than 35km away from the site, they feel safer than the residents in Yangbook Myun where the repository is under construction. If the residents in Yangbook Myun are affected most by the siting, how fair is it that their vote carries the same weight as those citizens that live in relatively distant areas? If Gyungju citizens, as a whole, considered as victims, then the village people of the Yangbook Myun certainly become the final victims of a majority tyranny. In this regard, referendum should

be held after protecting the rights of the communities which are directly affected by the siting. In this case, direct compensation should be provided to the affected individual households before applying the compensation package to the broader area.

Young-Jong Kim (2005) argues that the referendum enhanced procedural democracy but did not guarantee the rationality of the policy by focusing on compensation and incentives instead of scientific decision-making process. To address this problem, he suggests that strict site-selecting criteria should be enforced before practicing the referendum (312). Evaluating the refusal in Buan as a success of democratic resistance, Chul-Kyu Kim (2005) also argues that Gyungju citizens failed to refuse the government proposal. He defines the Gyungju siting as a failure of citizens succumbed to the massive economic incentives and strategy of competitive referendum. He concludes that the Gyungju referendum, disguised as democracy, degraded the residents as a tool in order to vote for the induced decision (66).

Regionalism is a chronic pathology ruining Korea's democracy for a long time. Regional discrimination originally was created by politicians who tried to use it to their advantage in the elections. They promised and carried out discriminating policies that aimed at promoting the economic or political interests of their native regions at the expense of the other regions. When political leaders of other regions seized power by winning the election, the same retaliatory practices were repeated creating a vicious circle. Regionalism was employed in the referenda to host the repository. Each city blamed the other for trying to take advantage of this opportunity. There is suspicion whether the Korean government purposefully evoked

regionalism to stir the competition between the two regions,[49] by enjoying watching it play a decisive role in the referenda.

The referendum brought about severe social conflict and loss to the competing cities. Accusations and violence toward the residents who opposed the siting appeared in the three cities that lost the competition. For instance, in Gunsan, a priest who led the opposition movement was assaulted (Young-Jong Kim: 312). Serious questions must be raised whether it is desirable to promote competition between neighboring communities to attain the government's goals. During the last several decades, Korea has suffered enormous social and political loss because of regionalism. The antagonism and hostility produced during this competition exceeded socially acceptable limits. The Korean government is not free from the criticism that it engendered deep distrust and animosity between and within the competing cities by purposely stimulating intense competition.

The referenda not only increased undesirable regionalism for the Korean society but also created antagonism within the local communities between the opponents and proponents of the siting. For instance, the supporters in Gunsan held a street demonstration accusing the anti-nuclear environmental movements groups and opponents as responsible for hampering local development. They even intimidated the opponents to leave Gunsan by making accusations that only fifteen percent of irresponsible citizens are ruining the future of Gunsan City (Kookmin Ilbo, 2005.Nov.7).

It is a matter of grave concern that referendum can be utilized to manipulate public opinion and justify the government policies. The dangers of populism can be best exemplified in

[49] Among the four cities that competed in the referenda, Kunsan is in Jeolla Province while Gyungju, Pohang and Youngdok are in Gyungsang Province.

the referendum when manipulated by the government. Referendum can become another form of domination replacing the coercive measures done in the past. It could be more dangerous than the authoritative policies because it is more subtle and ingeniously disguised as democratic. With an enormous budget and expertise, it is easy for the government to influence the general public to accept the government's propaganda. Therefore, referendum should be held only after satisfying democratic procedures such as a deliberative process, transparency and openness of information. Financial resources and organization are essential to prove one's argument. Therefore, both groups must receive equal availability of financial resources and expert knowledge to practice democracy through the referendum.

(5) The Real Burden to the Future

The exclusion of the High Level Radioactive Waste (HLRW) from the siting proposal decisively enhanced the acceptance of the facility. The new law, "Act to Support the Host Area of the LMLRW repository," which was enacted on March 2005, prohibited the construction of the HLRW repository in the host area of the LMLRW, thereby making it obligatory to move the spent nuclear fuel from Gyungju to other areas. This prohibition was brought into law to eliminate the suspicions by the local residents that the government would, in the long run, deceive them by secretively adding the HLRW repository (Sung-Kyung Cho 2005: 93).

As the Korean government promised HLRW would be stored in another repository, it automatically meant that the HLRW, which already had been stored at Gyungju, would have to be removed to other areas in the future. Given that the Wolsung nuclear power station in Gyungju City already stores 53 percent of the HLRW produced in Korea in addition to two more reactors under construction, the acceptance of the repository becomes rather advantageous to Gyungju in the long run. However, this decision has made the disposal of the HLRW, which is

stored at temporary sites in each nuclear power station, more difficult.[50] It remains to be seen whether this decision was desirable for the Korean government because disposing the HLRW is much more difficult and controversial in terms of technological difficulty and social impact. If Gyungju was the best place for the disposal of the HLRW, it means that the Korean government sacrificed the best option to solve a comparatively easy problem. At present, there is no country in the world which runs a HLRW repository, therefore, most of the countries are locked in a wait and see policy. Some countries reuse the used nuclear fuel after reprocessing, but, Korea is prohibited to do so due to the Anti-nuclear Proliferation Treaty.

By taking the easy way, the Korean government might have reduced the potential options to site the HLRW repository in Gyungju if it could meet the conditions. By hurrying the compromise with the LMLRW repository, the government might have promised too much incentive in this area for a relatively minor risk compared to the HLRW. There is no doubt that it will take a much bigger budget in the future to reach a compromise with siting the HLRW. As the Korean government already used important available options such as relocating the KHNP and constructing nuclear- related industrial facilities, it may be more difficult to propose other persuasive incentives in the future. It can be said that the Korean government solved an easy problem while increasing their burden of a much more urgent task in siting the HLRW repository.

[50] The HLRW in Korea is stored at the temporary sites in the nuclear reactors. They will be saturated by the order of the Gori (2016), Younggwang (2018), Wolsung (2019) and Uljin (2021). The accumulated volume of the HLRW will reach to 534,029 barrels by 2021, which will exceed the temporary storing capacity of 517,549 barrels. "The storage of the HLRW is saturated. Public debate on this issue is urgent (Money Today 2012 Dec. 22)." (http://mt.co.kr/view/mtview.php?type=1&no=2012102210005714376&outlink=1)

6.3 Gyungju, After the Referendum

6.3.1 Delay of the Construction Caused by the Safety Problems

November 9, 2007 marks the beginning of the construction for the radioactive waste repository in Gyungju after many failed attempts during the past twenty years. The site is located at Bonggil-Ri, Yangbook Myun in Gyungju City with the size of 2.1 million ㎡, which can store 800,000 drums of radioactive wastes.[51] The construction cost amounts to 1,500 billion won. The Korea Hydro and Nuclear Power (KHNP) announced that there will be no possibility of radioactivity leakage since it will be stored in a perpendicular underground cave at a depth of 80-130m protected by a threefold protecting wall. The original design of the repository was an above-ground retrievable storage. However, as Gyungju citizens implored for the permanent deep geological repository, the government changed the design accordingly. This case demonstrates how citizen participation is secured during the construction of the repository.

The construction of the repository started November 2007 and was scheduled to be completed by June 2010. However, the government announced it was extended by two and a half years because of the unexpected geological problems found after the construction started. The government changed again the schedule by extending another six months, to be completed by December 2012, 3 years late than the original plan.[52] The repeated deferment of the completion date demonstrates how the Korean government rushed the construction without thoroughly examining the site. In the geological survey done before the referendum, the cave for the

[51] White Paper (2010): Ministry of Education, Science and Technology, p. 239.

[52] Recently, the Korean Radioactive Waste Management Corporation (KRMC), which is responsible for the construction, announced again that the construction will be finally completed in June 2016 due to the fragile rocks found during the construction. The KRMC emphasized that it will not hurry the construction because safety is the first priority. "The completion of Gyungju repository will be postponed to June 2016 (KRMC December 13, 2012)." (http://blog.naver.com/yeskrmc?Redirect=Log&logNo=130131326174).

repository was reported to be composed of solid granite, but it turned out that it had too many cracks to proceed as planned. It was not until July 2009 that the Korean government disclosed the results of the geological survey to test the suitability of the site, which was done four times during a four month period from April to July in 2005. Even in that short period of survey research, they found serious problems in the geological character of the site, which was composed of fragile base rocks and seismic faults. However, they concealed this fact and concluded that the problem can be overcome by advanced construction technology. MIR and the Site Selection Committee announced that the site had a stable geological structure. This case clearly shows that the siting authorities focused on the acceptance of the siting first rather than safety concerns.[53]

As Gyungju residents raised concerns about the safety issue, the central government requested the Geological Society of Korea to conduct more research. Although the result of the geological investigation was positive, Gyungju residents did not trust the research results. Hence, the residents themselves hired experts and organized a new "Safety Investigation Team." Repeated deferment on the construction shows a strong possibility that the safety concerns about the geological structure of the Gyungju site, which were raised before the referendum, was not exaggerated. However, the team also concluded that the geological problem can be addressed safely. It is not surprising considering the expected social shock in case this team would conclude the site is inappropriate for the siting. It is unimaginable to expect the experts, who are hired even by the local residents, to announce a research result which can invalidate the Gyungju siting. This case demonstrates again how it is difficult for the local residents to acquire the help

[53] This disclosure was done by one leftist party and several environmental movement associations. (http://blog.daum.net/bbkj50/16299751)

of experts who can serve them only with an objective stance. However, the Korean government advertised this case as a model case of citizen participation (HanKook IlBo, March 12, 2010).

The spent nuclear fuel which is stored at the temporary storage site in each nuclear power station in Korea, reaches saturation point starting from 2016 in the Gori nuclear power station. However, the Korean government fears starting extensive public debates on siting the HLRW repository. As the completion of Gyungju repository is deferred to 2016, there is much possibility that the Korean government might try to persuade Gyungju citizens to accept the HLRW by adding more incentives. It is a serious breach of the promise, which is even secured by the law.[54] It can be even suspected that the reason of the deferment of the completion may be attributable to the fact that the government might already is preparing for the disposal of the HLRW in Gyungju, which would require much strict safety regulations. No wonder it can take more time to build secure facilities to accept the HLRW compared to the LMRW. It remains to be seen whether Gyungju could escape the burden of hosting the HLRW in a situation when there is no alternative for the disposal of the HLRW.

There is also a question about whether the repository design of having a permanent geological disposal is the best choice for Gyungju both in the short and the long-term perspectives. Although, the Korean government changed its original design from the above-ground retrievable repository to a deep permanent repository due to the demand of Gyungju citizens, each method has advantages and disadvantages. According to a 2005 report of the Canadian Nuclear Waste Management Organization, entitled, "Understanding the Choices," the permanent disposal is advantageous in that it does not need a long-term institutional control. But,

[54] According to "Act to Assist the Host Community of the LMLRW Repository (May 2005)," it is prohibited to store the HLRW in the host area of the LMLRW repository (Article 18).

it also questions whether isolation of the waste from the environment could be guaranteed over the very long period. It concludes that, as each method has its own strength and weakness in terms of fairness, safety and economic viability, the final choice cannot escape from being influenced by the differing views and objectives of the decision-makers (Vandenbosch: 218). However, the change of the original siting plan which accepted the residents' demand is meaningful in the respect that the ideal VA should reflect the demand of residents as much as possible.

6.3.2 Regret rather than Satisfaction?

In January, 2007, Jin-Sik Choi (2008) conducted interviews with 213 Gyungju citizens regarding the citizen's consciousness about safety and acceptability of the risk. Out of 266,000 Gyungju residents, 90,000 persons, or 34 percent, are living within 25km from the repository site. The other 66 percent live between 25km and 50km from the site. The respondents still support the siting decision but the intensity of acceptance was significantly lowered. Gyungju citizens had serious concerns about the safety of the repository over the long term. And their acceptability for the risk still was influenced more by economic incentives rather than the actual risk. The respondents also felt the repository will negatively impact future generations with increasing risks as the site accepts more wastes. Some respondents even expressed fear about the possibility that the repository might bring disaster in the future. Choi concludes, based on the high rate of safety concerns of the Gyungju citizens, that the decision of the referendum should not be regarded as an acceptance induced by the belief in the safety; rather it reveals how residents of Gyungju citizen did not have enough time to debate the safety issue. Safety concerns took a back seat to the spirit of the competition.

Six years after the siting decision at Gyungju, the GyungHyang Daily compared the consequences of siting between Buan and Gyungju. It concludes that Gyungju citizens, in general, are not satisfied with the results. Gyungju citizens have the following complaints: first, the national government which promised to subsidize 3,435 billion won, transferred only about 26 percent to Gyungju City. Second is a concern about the safety issues. The completion of the repository was deferred by 30 months because of the unexpected findings of a weak geological structure, which raised doubts about the credibility of the initial government testing regarding the site's geological safety. The environmental movement activists still raise the possibility of ground water leakage despite the central government guarantee of safety. Additionally, the Gyungju site began to receive radioactive wastes from other areas in its temporary above ground facilities because of the saturation of radioactive wastes from other nuclear power plants. This further increased local residents' concern. Conflicts with the relocation of the KHNP and how to use the government subsidies also divided local opinion creating animosity among Gyungju citizens.

On the other hand, the newspaper reports that most of the Buan citizens are happy about rejecting the siting proposal. This is supported by the successive election of two mayors of Buan Gun who opposed the siting during the Buan Conflict. The Mayor Kim who tried to attract the repository lost the next election after the Buan Conflict. However, Buan still does not hold its annual festivities because of the bitter experiences during the Buan Conflict (2011, April 3, GyungHyang Daily).

After the Fukushima Disaster in 2011, anti-nuclear activities began to increase in Gyungju. Under the placard of "Wolsung = next Fukushima" the Anti-nuclear Movement Association and the local residents living near the Wolsung nuclear power plants intensified their

opposition to the Gyungju siting. It is notable that the residents in Yangbook Myun who first consented to the repository on the condition of the relocation of the KHNP in their village changed their attitude and urged the government to cancel the repository despite of all the incentives (Hankyore Daily, 2011.Mar.17).

6.3.3 Protest of the Neighboring City

It should be pointed out that the neighboring city of Woolsan made a strong protest against the results of the referendum. Though the construction site of the repository is administratively located at Gyungju, downtown Gyungju where most of the citizens live, actually is 30km away from the site. However, the larger populated northern area of Woolsan City is only 10 to 20 km away from the site. This close proximity to the site makes them more vulnerable to accidents than the residents of downtown Gyungju. Nevertheless, Woolsan City never received compensation from the government. Therefore, the Woolsan citizen made a strong protest against Gyungju City's attempt to host the repository during the referendum. However, Gyungju citizens rebuked Woolsan residents for their complaint and claimed that they should endure the risk of the repository since Gyungju citizens had already been enduring pollution emanating from the Woolsan industrial complex. One thousand Woolsan citizens filed a petition to the Constitutional Court, but there is little possibility that the Constitution Court will overrule the results of the referendum since they usually do not act unless there is extensive social pressure. In the general public, the petition is considered a minor complaint trying to make noise in the face of a national accomplishment.

According to the interview[55] made with the central government official who is responsible for the task of siting radioactive wastes disposal facilities in the MIR, the success of Gyungju siting is attributable to three factors: first is the success of the government education programs surrounding safety of the radioactive wastes management systems. Second is the passing of the law that guarantees economic incentives and compensation. The third is the enormous amount of incentives to promote the economy of Gyungju. He was proud of having fulfilled the mission of hosting the repository and was busy in pursuing the next project which involved promoting Gyungju's development with the promised incentives. He has a firm belief in the ability of the government to safely manage the facility. He admits that minor accidents could happen in the future but believes that technological progress is enough to handle such accidents. However, it is noteworthy that he did not have any idea of justice issue concerning that the main reason for the Gyungju citizen's acceptance of the site was economic stagnation, and therefore cannot be considered truly voluntary or democratic. According to this official, it was a democracy if people made the decision by themselves. Regarding the complaints from the neighboring areas that received no economic incentives or compensation, he explains how difficult it is to demarcate the compensation areas in line with the possible negative effects of the facility. One reason has to do with how complex it is to administer referenda or incentive project in the current local government system in Korea. He also believes that the neighboring residents should accept the minor risk as a member of the nation. It is certain that the Korean government will not consider the compensation for the Woolsan residents unless their protest reaches to an uncontrollable level. However, this strategy will effect negatively on pursuing next similar projects for the Korean government. It is unwise if the Korean government thought it saved

[55] The author conducted this interview on May 10, 2006 at the office in the Radioactive Wastes Management Division in the Department of Industry Resources which is in Seoul. Two interviewees were official Park and middle level civilian manager Kim who was dispatched from the KHNP to coordinate with the government.

budget expenses by not compensating the neighboring areas. Such a strategy will certainly lose as opposition from neighboring areas increases.

6.3.4 Conflicts with the Economic Incentives

The Korean government emphasizes that the total long-term economic effect expected from the siting is estimated to be about 3,600 billion won. In addition, an increase of employment is estimated at about 29,000. Gyungju is expected to receive 300 billion won of local development funds from the central government in addition to an estimated annual 8.5 billion won entry fee. The entry fee will be proportional to the amount of the waste received. 40 billion won of national government subsidies will also be provided to facilitate the Proton Linear Accelerator Project. This project is estimated to create 1,500 billion won of economic growth by attracting 130 billion won of investment until 2012. Twelve other development projects including the construction of the Exhibition Center also will be promoted. The relocation of KHNP and Korea Radioactive Waste Management Corporation (KRMC) to Gyungju City is also scheduled (MunWha IlBo, 2005.Nov.2).

Conflicts continue to arise amongst the locals of Gyungju about how to use the funds. There is much difference between the citizen's opinion and the city government's plan to use it. Competing interests to spend the money include construction of roads, scholarships, and investment in cultural facilities. An additional conflict exists surrounding the issue of the construction site for the Proton Linear Accelerator Project. Several counties in Gyungju competed to host the project, which is predicted to enhance the region's economy.[56] However,

[56] Through keen competition among the four counties in Gyungju, the Proton Linear Accelerator was finally decided to be constructed in Geonchun Eub, which is rather far away (30km) from the nuclear waste site. It is scheduled to be completed by December 2012.

the Korea Green Association cites various foreign cases and argues that the effect of the facility on the local economy will be almost negligible.

The relocation of the KHNP headquarters by 2014 is the hottest issue following the siting decision at Gyungju. It is expected that one thousand employees working in the corporation and their family not only boost the local economy but also prove the safety of the place. The economic effect of the relocation of the headquarters of KHNP is estimated at 17 billion won including the increase of local taxes and increased consumption (SeGye Ilbo 2011, June 11). Though the employees of KHNP were reluctant to move to Gyungju, they could not oppose to the moving plan because the corporation is under the influence of the Korean government. The Korean government had promised to relocate the main office of KHNP to Yangbook Myun, but hesitated to move once the construction has already started (SeGye Ilbo, 2011, Jun.16). The employees wanted KHNP to move to downtown Gyungju which is 30km away from the site. The Gyungju City government also insists that most of the Gyungju citizen want the headquarters in the downtown area because it will have the biggest impact on the Gyungju economy. However, it would be a breach of trust as the central government promised to move the headquarters to the very construction site of Yangbook Myun.

Serious conflict broke out in the local community. The residents of East Gyungju, including Yangbook Myun, which has 20 thousand populations, strongly urged the corporation to move in their area and prove that the repository is truly safe. Another concealed reason was that they believed it would raise their land prices. However, most of 260 thousands Gyungju citizens and the city government want the corporation to move downtown, insisting it creates the biggest impact to promote the local economy on a bigger scale than could be possible in a small village. It is natural that the employees in the corporation also want to live in downtown Gyungju

not only for the safety concerns but also to access the amenities of the city including education of their children.

As a compromise, The KHNP announced to move its headquarters to Janghang Ri, Yangbook Myun, which is about half way between the construction site and downtown Gyungju. But, this time, the labor union in KHNP, with the support of the majority of the Gyungju citizens, successfully obstructed this plan (DongA Ilbo, 2006. Dec.30). The leaders in the labor union claimed that the decision was made without consulting them. But the main reason was their reluctance to move to the remote village. On October 2011, the Gyungju local government announced that the headquarters would move to downtown Gyungju. Again, the residents of East Gyungju fiercely opposed to this plan by threatening to physically block the construction of the repository. Hence, the final site was again decided to Janghang Ri, about 10 km from the repository site. It is a compromise between the three actors: labor union of KHNP, Bonggil Ri residents and downtown dwellers. It is to be noted that although KHNP could not move downtown as most of the employees wanted, at least, it could move further away from the construction site. Although residents in Bonggil Ri, Yangbook Myun could not succeed in hosting the headquarters in their village, as the government promised in the initial proposal, they are still successful in bringing the headquarters closer to their area.[57] This case clearly demonstrates that the local minority people could secure their own rights only after strong resistance against the pressure of the majority in society. Although there was a bitter conflict among the Gyungju citizens, it is indisputable that the final relocation of KHNP at Yangbook

[57] The relocation of KHNP in Janghang Ri, Gyungju pleased Woolsan City rather than Gyungju because Janghang Ri was too small to provide housings to the KHNP employees. As Woolsan was closer than downtown Gyungju, most of the employees would find their living places in Woolsan. The relocation of KHNP headquarters is scheduled by 2015, which is almost three years after the construction of the repository. The intentional delay of relocation shows the reluctance of KHNP employees to move from Seoul to Gyungju.

Myun contributed to enhance the credibility of the central government, which will prove to be an asset for pursuing future mega projects in Korea. However, it is questionable whether the basic rights of one thousand people working in the corporation should be held hostage to prove the safety of the residents in the siting area.

6.3.5 Uncompensated Damage

It is unfair that the neighboring city Woolsan has not received compensation from the government. But, there are many similar cases in Korea where regions with high risk facilities receive no compensation due to the ignorance of local residents at the time of construction. Most of the areas that accommodate the nuclear power plants such as Younggwang, Uljin and Gori nuclear power plants, did not receive enough compensation as compared with the Gyungju siting. In December 2006, the Korean government also announced its plan to build eight new nuclear power plants at the places already housing nuclear power plants: Busan(Gori), Gyungju(Wolsung), and Uljin. Strangely, despite an official announcement by the opposition group, Environmental Movement Association, the residents of these areas did not express any extreme reaction (Yonhap News 2006, Dec.11).

By the Korean law, these areas that host nuclear plants are receiving a much smaller amount of government subsidy compared to the Gyungju siting. When we consider how nuclear power plants are more dangerous than nuclear waste site as seen with Chernobyl, Three Mile Island, and the recent Fukushima Disaster, one can argue how these areas are virtually receiving no compensation. It is irrational that all the local cities which house nuclear power stations,

Younggwang, Uljin and Gijang(Busan), receive small amount of subsidy[58] compared to the 300 billion won and more for the LMLRW repository in Gyungju City (Sung-Soo Joo: 295).

This disparity, however, reveals how risk perception is more important than the actual risk. It is no wonder that the image of radioactive wastes looks more dangerous compared to a grandiosely looking nuclear power plant built by cutting-edge technologies. Nevertheless, the risk and the compensation should be balanced. Both the over-compensation and the under-compensation raise concerns about equity. Korea should also consider providing a balanced level of compensation for those residents that already host a nuclear power plant. It is unfair to penalize the local residents because they had insufficient knowledge about the risks at the time of construction.

6.3.6 Evaluation of the Gyungju Siting

There are some accepted principles recommended for a desirable siting process. It will be useful to evaluate the siting decision at Gyungju according to these principles. Stevenson (1991) proposes three principles to solve the siting conflicts: (1) those that use nuclear energy ought to take care of the waste; (2) The waste ought to be dealt with in a way that is not a burden to the future; (3) The process of dealing with the waste ought to involve informed consent from the present generation (10). Gerrard (1994) has a similar perspective with Stevenson. He emphasizes three generally accepted principles in achieving regional fairness: (1) the benefits and burdens of waste disposal should be correlated; (2) No place should bear a disproportionate

[58] According to the 'Act to Assist the Area which Host Power Plant', several incentive programs are provided to the local communities including scholarships, subsidy in the electricity cost and local industries. However, the total sum of subsidy is only about 3 billion won a year for each city which houses nuclear power stations.

share of the country's environmental hazards; (3) Facilities should be placed in the best location in order to minimize adverse health and environmental impacts (480).

According to the above criteria, the present distribution of benefit and risk cannot be regarded as fair since the Gyungju area has disproportionately larger shares of radioactive wastes. And it is doubtful whether the siting decision at Gyungju was based on the informed consent, especially in light of the ability to hold a serious debate in a shortened time period allotted before the referendum. Besides, as is revealed with the unstable geological structure of the construction site, the siting location was based on political feasibility rather than safety and health concerns. It is undeniable that the Gyungju siting has too many weaknesses to be utilized as a successful model in solving the siting conflicts. Nevertheless, it is too early to evaluate the long-term effects of the Gyungju siting at this point since the construction and operation of the repository is not yet finished. It is also worth observing whether the incentives will eventually promote the local economy of Gyungju. In this regard, the changes in the real estate price in Gyungju City will be a telling indicator of the long-term impacts the repository will have on the city. There is much possibility that the Gyungju model will be used to decide the more risky HLRW siting. Gyungju has been a symbol of tourism in Korea that is rich in culture and historic heritages. It remains to be seen whether Gyungju City can prosper economically while keeping its glorious image of a designated UNESCO World Heritage historic site.

Chapter 7 Conclusion: Democracy, Justice and the Future of Nuclear Waste Siting

There is no denying the fact that siting a nuclear waste repository in a nation is one of the most difficult and controversial policy problems all over the world. The fact that there is virtually no case that has been acknowledged as a successful siting, particularly in the siting of the HLRW repository, demonstrates the difficulty of nuclear waste siting. However, a few cases that achieved significant results in the efforts to site the repository were reported in some countries around the world, which provide a new hope for solving the siting dilemma. They are called the "voluntary approach" (VA) since their essential strength lies in the completely voluntary application from the communities that truly desire to host the facility in order to use it as an opportunity to promote their own interests. The Gyungju case of Korea is also one such example in which the VA was applied to achieve significant success.

The VA is based on the assumption that there is always scientific uncertainty even in the most advanced technology. Therefore, the decision to accept the risks based on the technology should be made by the people who will be most affected by the decision. In a situation of uncertain risk, it may be wise to follow the "precautionary principle" instead of using the concept of "acceptable risk," which implies accepting the risks; but such a decision also must be made by the people who are willing to take responsibility for the consequences of their choices because people have different values and belief systems.

The VA considers the safety and compensation as necessary conditions for a successful siting. However, these are the minimum requirements for any siting approach, including the DAD (Decide, Announce, and Defend) approach. The DAD approach is logical and rational in the aspect that it starts from examining the technical and economic feasibility and

it is supported by the government's ability to employ expert knowledge and physical power to push it through. However, as it turns out, the DAD approach has been increasingly known to have the least chance of success in the facility siting in light of vehement resistance from the communities targeted as a siting location. The reason that the DAD approach arouses the most severe opposition from the local residents is because the targeted community feels like they are being used as a national dump site in order to promote the interests of the rest of the country. The guarantee of compensation and safety by the government cannot supersede the demand for a democratic procedure. The failure of the DAD approach is due to the fact that it did not consider the local residents choice in participating in the siting decision that will ultimately impact their vital interests with as much importance as the safety and compensation concerns. The government or the siting authorities did not understand the importance of the democratic procedure and thus repeated the same mistakes by trying to suppress the vehement opposition of the local residents with physical force while blaming them for their irresponsible behavior or NIMBYism. Hence, the VA starts by acknowledging the NIMBY resistance as a legitimate claim by the people who are trying to protect their fundamental human rights.

The value and strength of the VA is that it considers democratic procedure above all other considerations. A democratic procedure takes priority over the requirements of safety and compensation because the residents will not negotiate with the proposed government siting plan and therefore cannot reach a compromise unless they are provided with sufficient opportunities to discuss the siting issue as equal partners. The VA does not guarantee the solution to the problem of the nuclear waste siting. However, the experience of siting conflicts around the world and also in Korea has proven that the VA has the best potential to solve the siting dilemma.

The essence of a democratic procedure lies in the belief that participatory decision-

making by the general citizens, compared to expert-dominated decision-making, has enough potential to produce a responsible and qualitative public policy complete with complex and controversial social issues. Such a belief comes from the basic assumption in the strength of deliberative democracy that people can reach a wise decision through collective deliberation if opportunities to gather sufficient knowledge and information are provided. In this respect, the democratic theories such as "deliberative democracy", "communicative democracy", "discourse ethics", or "the unitary democracy" proposed by many theorists are crucial for the validity of the VA because they provide the possibility of reaching consensus in the midst of conflict among participants with different interests.

The VA takes into consideration the long-term outcomes of the siting because it should ensure long-lasting effects of the present siting to help solve future siting conflicts. The democratic procedure in the VA becomes meaningless if it does not satisfy the true needs of the host communities because the reason they accept the siting proposal is to promote their own interests. If the host communities suffer significant loss in the future because they accepted the siting proposal, it does not conform to the conceptions of justice; nor does it satisfy the basic assumption of the VA: the siting is feasible only when it does not sacrifice the interests of the host community in order to serve the interests of the majority in a nation. If the degradation of the host communities, regardless of the incentives, can be predicted before the siting decision, there is much possibility that the siting authorities might have used exploitive and deceptive strategies to increase the acceptance. Therefore, if the siting policy focuses only on the acceptance of the repository rather than the genuine long-term interests of the host communities, it is likely to lead to a perfunctory democratic procedure.

A perfunctory democratic procedure can degenerate into pseudo-democracy and cannot contribute to the successful implementation of the VA in the long-term. The conceptions of justice in the siting procedure require that the host communities should not be negatively influenced by the siting because they would not have accepted the siting proposal had they known it could harm their vital interests. Therefore, the government and the siting authorities have a responsibility to fulfill its promise that the siting will ultimately benefit the host communities in the long term. By all means, democracy and justice are two requirements for a successful siting. If the VA satisfies these two requirements in the siting process, there will be a good chance that the controversial issues of safety and compensation can be discussed and negotiated between the host community and the siting authorities.

The reason for the repeated failures of the siting attempts during the last two decades is due to the fact that the Korean government insisted on using the DAD siting strategy- choosing a location with the economic and technical criteria and trying to buy off the targeted area with the minimum expense- while neglecting the need for participatory decision-making. Only after the bitter experience in the Buan Conflict did the Korean government adopt the VA and achieved the desired goal. Despite its remarkable success, the Gyungju siting has many serious problems. In terms of a democratic procedure, the referendum was held without sufficient time and opportunities to debate the long-term effects of the siting. Additionally, the central and the local governments together engaged in illegal or unfair activities to increase the consent rate of the residents. Furthermore, threats of violence to the siting opponents were prevalent in the process leading to the referenda. Another problem is that political feasibility became the sole criterion whereby replacing the scientific or technological criteria in deciding the siting location.

The Gyungju siting has many problems regarding the aspect of justice. First, the citizen's decision to host the repository is attributable to the economic depression. All four cities that competed to win the referenda were suffering from the economic depression. Summers and Hine (1997) argue that a referendum to decide a NIMBY facility in return for economic benefits can degenerate into pseudo-voluntarism that exploits individuals (214). The Gyungju case is not an exception to this criticism in that the decision was made in the face of a stagnant local economy. This raises a serious question whether it is desirable to present a siting competition among the communities suffering from poverty. Another issue of justice in the Gyungju siting is the concentration of risky facilities in a narrow area. Most of the nuclear power stations in Korea are concentrated in the south east coastal area of the Korean peninsula. Construction of a nuclear waste repository in Gyungju will continue to aggravate this situation.

It is useful to compare the difference between the Gyungju and Buan cases from the aspect of how the idea of justice and democracy are practiced in both cases. Although the proposed incentives were almost the same in both cities,[59] the approach applied in both places was quite different. In Buan, the government tried to force the local residents to accept the proposal by not allowing the voluntary choice that was offered to Gyungju. Indeed, "voluntariness" was the most crucial factor that decided the outcome of the siting proposal. It has been proven that the siting decisions, which target a certain locality with the excuse of sufficient compensation and safety, cannot replace the consent of the local residents.

[59] After the government announced the separation of HLRW from the siting, the opinion to participate in the referenda to host siting resurfaced again in Buan. However, the scar left from the animosity during the Buan conflict was too severe to draw a social consensus among the Buan residents. The Korean government also excluded Buan from consideration in fear of another conflict in Buan.

It is true that most Koreans regarded the decision by the referendum as truly democratic among all other alternatives. Although there were many claims of illegal activities and ethical issues during the referendums, most of the people, including the local voters, considered these claims negligible and believed the outcomes of the referendum cannot be invalidated. The Korean government did achieve its goal even if it was by way of disguised or quasi- democracy. This raises grave concerns about the possibility that even democracy can be employed as one of the tactics used to manipulate people. Pseudo-democracy is more dangerous than overt oppression because it can dissipate the people's resolution to resist anti-democratic rule.

Nevertheless, the importance of a democratic procedure is still valid because even the pseudo-democracy practiced in the siting process was still effective in bringing about a successful siting. However, the outcomes produced by a pseudo-democracy will not last long as people eventually realize if they have been deceived or not. The government will lose much in the long run by using deceptive means because it will take away the most valuable assets from the government: people's trust in the government. The loss of trust from the people will have a disastrous effect on the government and will greatly increase the cost in any controversial mega project in the future. Therefore, a democratic procedure in the VA should focus on gaining the host community's trust in the government because it represents the most crucial reason to apply the conceptions of justice to the siting process.

Analyzing the nuclear waste management policy in Canada, Johnson (2008) proposes five perspectives that must be taken into consideration: (1) future generations; (2) safety and risk; (3) burdens and benefit; (4) inclusion and empowerment; (5) accountability and oversight (35). Sloan (1993) also points out the essential requirement of the siting policy by stating that "Broad social support is desirable or even vital. The acceptability of a facility rests on the creation of

both a climate of openness or trust and acceptance of the validity and fairness of the siting process" (23).

Although the Gyungju siting does not satisfy all the above conditions, it is undeniable that the Gyungju siting has succeeded, to a certain degree, in drawing social support by including and empowering the local people through its open and participatory process. Also, in terms of accountability, the Gyungju siting shows improvement over the DAD approach by including local residents in the construction and management of the repository.[60] Although the Gyungju siting has too many defects to be justified as a model for the VA, it is true that the Gyungju approach is the most similar to the VA in that the Gyungju residents made the decision. Regardless of the controversy of democracy in the Gyungju siting, it is still true that the Korean people themselves solved the dilemma of the nuclear waste siting through a social agreement. Despite the flaws inherent in reaching a resolution via referendum, it was the people who ultimately settled this issue. The Gyungju siting leads one to conclude that the only way to produce a successful siting is by allowing the people who are most affected to make the final decision.

The crucial factor that enhanced the acceptability of the siting was the exclusion of the HLRW from the siting proposal. Between the democratic procedure and the increased safety, it is not easy to decide which factors contributed more to the Gyungju siting. However, it is certain that the exclusion of the HLRW alone would not have brought the Gyungju siting unless democratic procedures were respected. This is apparent from the many siting failures in Korea,

[60] In accordance with the "Act to Support the Adjacent Areas of the Power Plant," every domestic nuclear power plant has a resident surveillance organization which is operated by the financial support of the government. The organization watches the environmental effect of the nuclear power plants on the surrounding areas (White Paper on Nuclear Power 2011, 64)

where citizens were more concerned about their voices being heard than the safety or compensation.

Gyungju City becomes more concentrated with radioactive waste related facilities with the addition of two more nuclear power stations in the near future, on top of their four existing plants. Concentration of risky facilities in small areas could increase the potential damages in the event an accident happens. If the siting authorities did not consider the long-term outcomes of the siting, focusing only on the acceptance from the host communities, it no longer represents a VA, no matter how successful they were in obtaining consent from the host communities. Even if the VA application procedures are applied, the VA approach is not achieved if the principle of justice is excluded. Concentration of the risky facilities may reduce the overall social costs to manage the radioactive wastes, and therefore, may fit the utilitarian perspective. However, environmental justice requires equitable distribution of risk throughout the nation.

In addition, the Korean government ignored the reasonable complaints of the border areas which are closer to the actual site but are excluded from the compensation because of administrative zones. The government fortunately saved expenses because these border areas' protest did not grow large enough to force the government to consider a compensation plan. But, such an irrational practice will increase burden in the future with similar projects arousing vehement opposition from the neighboring areas. Therefore, to recommend the VA without reservation, it must include the conceptions of justice. Although, the Gyungju siting may have satisfied the requirement of the democratic procedure in the procedural aspect, it cannot be recommended as a desirable model for the facility siting because it has a serious limitation in terms of environmental justice.

The most serious limitation of the Gyungju resolution is that it solved the comparatively easy problem of disposing the LMLRW while complicating the problem of siting the HLRW repository. Korea does not have any concrete program for the disposal of the spent fuel. The spent fuel stored in the temporary repository in the nuclear power plants is approaching its saturation point by 2016. Therefore, urgent programs to deal with this issue should be made (Ministry of Commerce and Industry 2007: 25). However, the issue of siting the high-level radioactive wastes is a political taboo which no politicians or government officials dare to raise publicly.

According to Shrader-Frechette (2002), choosing to site a risky plant is not merely a matter of what experts say is safe enough but also a matter of what stakeholders say is informed enough, compensated enough, and fair enough (28). Her answer succinctly provides all the essential factors to site the facility. "Compensated enough" represents protection of individual property rights and "fair enough" emphasizes that the risks and benefits from the siting should be distributed equitably in society. And most importantly, "informed enough" represents the democratic procedure. Her recommendation corresponds with the ideal form of the VA since it contains all three requirements of safety, compensation and democratic procedure.

It is certain that the Korean people cannot forsake nuclear energy unless there is a breakthrough in the efficiency of using alternative energy sources such as solar or wind power.[61] Therefore, it is evident that the Korean government has to offer attractive compensation to the host community of the HLRW. However, the total compensation which can be offered to the host community cannot logically exceed the cost of using the conventional energy sources such

[61] The solar and wind power together provide less than 0.1 % of energy source to generate electricity in Korea. The other sources are: Coal (42%), Nuclear (31%), Gas (19%), Petroleum (4.7%) Wind and Solar (0.007%).(White Paper on Nuclear Power. 2011. Ministry of Knowledge Economy).

as coal, petroleum or natural gas. Therefore, if the government increases the compensation, then it will have to reduce the construction cost for building the HLRW repository, resulting in sacrificing safety standards. The Korean people will have to choose between safety and compensation. According to the VA, it should be decided by the social consensus in the Korean society.

Fortunately, the Korean government has kept most of its promises relating to the economic incentives to promote Gyungju's local economy. This includes the relocation of the KHNP, construction of the Proton Linear Accelerator and the transfer of local development funds. Although there is considerable noise and conflict surrounding the incentive programs, most of the promises are being implemented as scheduled. It can be said that the Korean government enhanced its credibility by keeping its promises, which will certainly help pursue the next mega project of the HLRW siting. However, what is more important than keeping the promises of incentives is that the Korean government should make every effort to improve Gyungju's economy to be better than before the siting. If Gyungju is able to improve its local economy and keep its rich cultural heritage, it will decisively help the Korean government site the HLRW repository in the near future.

The VA, if practiced in a manner to satisfy the principles of democracy and justice, has strong potential to solve siting dilemmas. However, it is possible only when at least one community wishes to accept the facility with an adequate amount of incentives. In case no community volunteers to host the facility with the available amount of incentives, the project should be considered infeasible since the society as a whole is not willing, or cannot afford to pay the full cost of the siting. In that case, the society should find other alternatives no matter how much it costs.

With the help of Korea's oversea embassies, the Board of Audit and Inspection (BAI) intensively gathered and analyzed the failure and success cases of radioactive waste repository siting throughout the world. In the final report, the BAI concludes that the most important factor for the successful siting is the "trust". If local residents believe that the government will keep its promise that the site will be managed safely and enhance the local economy and development, then there is much possibility for success. It also refers to the successful case of Finland. In Finland, the government secures trust of the local residents by listening to local opinion concerning the waste management through all available means of communication, including e-mails. As a result, the repository siting has a 90 percent consent rate. One auditor exclaims that "There is one thing envious in the successful cases. It is the authority and power of the national parliament" (Mail Daily 2007, May 30).

As such, the most important factor for successful siting is how to secure trust from the people. In this regard, it is certain that the VA has the best possibility to attract people's trust in the government because it relies on truly democratic procedures, which emphasize following the principles of justice. If people trust the government, then the national parliament will have the authority to decide the siting issue. However, if national parliament is incapable of solving the siting dilemma, the only alternative can be found in the expansion of direct democracy, in which the idea of the VA can best be practiced.

Each country in the world has a different nuclear energy policy depending on its socio-economic condition and people's attitude toward the nuclear energy. Even if people's choice is seen as irrational to the eyes of the experts, the decision of the people should be respected rather than regretted. Ultimately, the strength of democracy lies in the belief that people can make a wise decision in the long run. If deliberative democracy is fully practiced, there is much chance

that people will find the most practical solution for the siting problems. The role of government is to provide the people with enough opportunity to participate in such democratic process.

Finding a solution for the siting conflicts is a very important task. However, it cannot take priority over the supreme value of democracy and justice. Democracy has both intrinsic and instrumental value as Press (1994: 24) expresses: "Not only is democracy a means to achieve one's political goals, but it also serves as a way of learning how to articulate those goals and which matters to discuss in the public sphere" (24). In this respect, the VA contributes not only to solve the siting dilemma but also to educate people in democratic decision-making. In democracy, the goal itself should be decided by the people, especially when there is a conflict of value within society; and nuclear energy policy is one of the most typical examples. Therefore, the VA has the best chance to solve the siting problem since its emphasis on the two pillars of democratic principles- democracy and justice- have the best potential to draw social consensus on this issue.

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