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A STUDY ON CITIZEN INVOLVEMENT IN IMPLEMENTATION AND PLANNING PROCESSES OF INFRASTRUCTURE CONSTRUCTION PROJECTS

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Abstract

This paper targets to analyze a negotiation process between opposing citizens and project managers in infrastructure construction projects, by surveying actual different kinds of infrastructure construction projects, especially highlighting a citizen involvement in planning and implementing process. After a basic concept and a framework of the analysis are defined, an overall structure of the negotiation and some hypotheses of negotiators' behaviors are discussed. The authors survey negotiations of eight infrastructure construction projects in Japan, and the negotiation process and behaviors of two negotiators are analyzed based on the hypotheses and the result of the survey.

INTRODUCTION

Infrastructure, like highway, railroad, airport, power station, waste disposal facility, etc. often discharges external diseconomies to the surroundings, such as noise, vibration, air pollution, water pollution, and other various contamination. To construct such facilities sometimes torments not only residents who are forced to move to other places but also many citizens who are living near around the facilities. So far, many project managers have faced oppositions from citizens and natural conservation groups who are requesting a cancellation of the projects or a modification of original plans. Some of the managers have experienced very fierce oppositions from citizens, for instance, by a demonstration parade, a sit-in protest, a disturbance of public hearing and so on. Such a hard friction often causes a delay of starting construction, and, at times, result in a cancellation of the project itself. The delay or the cancellation of the project means that many people who would be able to enjoy the service if the project be finished could not receive a benefit at an appropriate time. Therefore, it is a quite important issue for managers, engineers, and our whole society to find a technique to win a smooth agreement of as many citizens as possible about the infrastructure construction project.

This study especially focuses on a citizen involvement procedure in planning and implementation process. This is because many of complaints submitted by opposing citizens can be classified into the two types of dissatisfaction, both of which are related to the citizen involvement. One is that information is too asymmetrical between citizens and managers, and the other is that there are too less opportunity to involve and too less power to decide a plan for citizens. Engineers and other professionals have so far believed that they can remove the citizens' complaints by providing much citizen involvement and by revising a related law system. However, do we really understand a structure of conflict and an effect of the citizen involvement technique? What kind of project properties effect on behaviors of managers and opposing citizens? How do the related law system effects on their behaviors? How will managers determine a technique of citizen involvement and how will citizens decide their opposing strategy? How much will those factors influence on a result of negotiation? Finally, what is the best solution to settle these complicated and tough conflicts?

For answering such questions, many researchers have already studied the citizen involvement in infrastructure planning, urban planning, and local planning. There are many case studies in infrastructure construction projects. Patterson (1984) surveyed a public participation in railroad relocation project in Lafayette, Indiana. Gordon and Lee (1982) compared two roadway construction plans connecting between two big cities of U.S. from a viewpoint of standards of the citizen participation. Petts (1995) reported a case study of a community involvement and a consensus-building in a waste facility in Hampshire, UK. On the other hand, some papers analyzed a planning procedure and the citizen participation in infrastructure projects. Arnstein(1969) pointed out that a definition of participation is so vague that many researchers and engineers confuse its meaning. She suggests 'a ladder of participation' as a classification of the participation and claims that the citizens should be provided a higher rung of the ladder. A report of Department of the Environment in U.K. (1994) analyzed deeply a structure of planning process and discussed problems of the present situation and future prospects.

Though there are many related studies, it seems difficult to apply the obtained knowledge to all kinds of infrastructure. One of its reasons is that many of the previous case studies achieved general conclusions by expanding a result of just a specific type of infrastructure. With regards to analytical studies, because most of them are not based on actual surveys, suggested models or theories may not be so realistic for being used in practical way. Therefore, this paper targets to analyze a negotiation process between opposing citizens and project managers in infrastructure construction projects, by

surveying actual different kinds of infrastructure construction projects, especially highlighting a citizen involvement in planning and implementing process. Firstly, a basic concept and a framework of the analysis are defined. Secondly, an overall structure of the negotiation and some hypotheses of negotiators' behaviors are discussed. Thirdly, the authors survey negotiations of eight infrastructure construction projects in Japan. Fourthly, the negotiation process and behaviors of two negotiators are analyzed based on the hypotheses and the result of the survey. Finally, a conclusion and a perspective of this study are discussed.

BASIC STRUCTURE OF THIS STUDY

Basic Model of Negotiation between Opposing Citizens and Managers

This study assumes that a negotiation over a project is expressed as a negotiation model. In this model, there exist two negotiators, a project manager and opposing citizens. They interact with each other under a given condition by determining their behaviors based on their own behavior's strategy. The negotiation is affected by some properties of the project, a related law system, and a social background. A result of the negotiation is measured as a period from exhibiting an initial plan to achieving a consensus. This negotiation model is divided into two parts: The former one is a pre-negotiation stage and the latter one is a negotiation stage.

The pre-negotiation stage is a preparation step where an environment of the negotiation will be determined. The related law system forces the manager to conduct the necessary level of citizen involvement technique to the citizens. Then, the manager decides and executes the technique. Finally the citizens determine a level of opposition after considering both a manager's plan and the level of citizen. After the pre-negotiation stage, two negotiators will fix their opinions about the project plan based on the level of citizen involvement and the level of opposition. If they are of the same opinion, they finish the negotiation. Else if they find a difficulty to accept each other's opinion, they return to the previous stage and repeat the same process again.

Behaviors of Two Negotiators at Pre-Negotiation Stage

Behavior of Project Manager to Determine Level of Citizen Involvement

The project manager determines how much the citizens can involve to the planning process, that is called as a level of citizen involvement, in a condition that a related law system demands the minimum requirement of citizen involvement. Here, the related law system means all kinds of rules which stipulate rights and obligations of the project manager, such as the Constitution, laws and ordinances, government orders, regulations, acts, customary rules, etc.

How much the related law system requires the managers to conduct the citizen involvement depends upon two factors: one is a legal force of the laws to the manager and the other is a range of citizens covered by the laws. The legal force of the laws will be determined by some criteria, for instance, an existence of any rule about a citizen involvement, a range of the manager's discretion in observing a stipulated rule, an existence of penal regulations, etc. We can easily expect that the legal force is stronger when there exists a related rule than when there is no rule. It is thought stronger when the rule obliges the managers to keep it than when it does not. In the same way, it can be thought stronger when the law can punish an inappropriate behavior than when it can not.

The level of citizen involvement is defined by how much information the citizens can receive and how much the citizen can impact on the planning procedure. When the citizens get much information from the managers, we can regard those citizens as achieving quite a high level of citizen

involvement. In the same way, when the citizens have many opportunities to join the planning procedure, we may say the level is high.

When the project manager increases the level of citizen involvement, he can expect the citizens to be satisfied with the negotiation environment, while he has to lose time and labor cost by providing a citizen involvement technique. When the citizens are satisfied with the negotiation condition, the manager does not have to consume much time and cost to decrease the citizens' opposing level. Therefore, the manager is facing a trade-off between providing the citizens with a satisfactory and losing time and money, when he determines the level of citizen involvement. He determines the level to minimize a generalized cost.

Then, we can prospect following situations:
Some project managers, who are so sensitive to citizens' demand as to hate facing an opposition, are expected to increase the level of citizen involvement. On the contrary, when a manager does not have enough budget, or when he is compelled a deadline of completing the project strictly, they have a difficulty in increasing the level of citizen involvement.

Behavior of Citizens to Determine Level of Opposition

The citizens determine how hard they will oppose to the project manager, that is called as a level of opposition, in a condition that the manager has shown the level of citizen involvement. The level of opposition can be expressed by how many citizens are opposing and what kind of technique they adopt to oppose. The technique of opposition can be classified into three types. The first type is to persuade the manager logically when they are allowed to involve a legal procedure. The second type is to entrust a third party, such as a court, a public coordinator etc. with the negotiation. The third one is to threaten the manager emotionally by an extreme and radical way, such as demonstration march, appealing to force, etc.

When the citizens increase the level of opposition, they can appeal to the manager to rethink or revise the project plan, while they need to consume much time and to shoulder mental or physical burden. The modification of the plan means that the citizens possibly can reduce an environmental impact. Therefore, the citizens determine their behavior by maximizing their own utility under a trade-off between the improvement of the plan and the consumption of their resources.

Then, we can expect following situations:
Because it is quite difficult for the citizens to keep opposing for a long time due to their time and money restrictions, the level of opposition should be decreasing gradually as time goes by. However, when they can receive some supports from external supporting organizations or the public opinion, the level of opposition will keep high for quite a long time because the opposing citizens feel the restrictions are eased.

Behaviors of Two Negotiators at Negotiation Stage

The manager and the opposing citizens revise their opinions after the level of citizen involvement and the level of opposition are fixed at the pre-negotiation stage. At an initial point, both negotiators have their own demands which are different from each other. A common basic tactics of each negotiators is to keep his initial idea while the other negotiator selects a negative persuasion strategy. However, when one negotiator changes his strategy, the other will change his tactics as well. A manager will not revise so much when opposing citizens choose a low level of opposition, while he changes his opinion drastically into a plan similar to the citizens' opinion when the level of opposition are very high. On the other hand, the citizens will try to maintain their initial idea when the manager provides a low level of citizen involvement, while they will compromise with the manager when the manager takes much effort to involve the citizens into the planning process.

Therefore, we can easily imagine that the opinions shown by both negotiators will change as time goes by.

Effect of Project Properties and Social Background

Project Properties

There are some project properties which impact on the negotiation, for instance, a population density around the site, type of infrastructure's service, and a shape or a size of the facility. First of all, when a given facility is located at an urban area with the high population density, it is a quite hard work for a manager to achieve a consensus because many citizens are living near the site and are related to the project. On the other side, when a given facility is located in a rural area, it maybe easier for the manager to negotiate with them because there are not so many residents in a rural area. Of course, as many researchers (e.g. Walker, 1994) have reported, it is true that there sometimes occurs a heavy conflict even in a rural region because such a region sometimes has a rich natural environment like a forest, a lake and so on. Anyway, from a viewpoint of persuading residents inhabiting near the site, a project in the urban area is more difficult to be executed than the one in the rural area. Next, a distribution of a beneficial area and a damaged area is also a very important factor to determine the negotiation circumstances. A beneficial area is defined as an area where residents can enjoy a service or can receive any other kind of benefit from the infrastructure. A damaged area is defined as an area where residents will suffer a negative externality from the infrastructure, such as air pollution, vibration, noise, bad smell, etc. If most of the both area overlaps each other, a resident living there can receive both benefit and damage at the same time. In this case, as residents can understand both a good side and a bad side of the project, they can negotiate with the manager constructively. However, in a case that the beneficial area and the damaged area are apart from each other, an opposition by the citizens of the damaged area becomes serious because there is no advantage for them to construct a new infrastructure. Finally, a shape and a size of the facility are also quite important factors. Because a facility requiring a wide area should force many residents to move to the other places, the manager cannot help persuading so many residents to sell their lands. This means that it takes so much time for the manager to finish getting all citizens' consent. When an infrastructure is linear in shape, the infrastructure should cross over many regions. Then, it may be quite difficult for the opposing residents to unify an integrated organization, because they are living apart from each other.

Social Background

Since the social background differs from countries, time, culture and races, we cannot discuss it in general. Therefore, this paper treats only a social movement as the social background. Many countries have experienced various kinds of social movements, for example, the feminist movement, the nature-conservation movement, the movement for abolition of nuclear weapons, the student movement, the labor movement, and the other political, religious, or racial movement. As a matter of course, a reason why such a movement occurs is different from the situations. This study considers only how much the social movement dominates the society when a manager starts a project. If a social movement influences an atmosphere of citizens very much, the level of opposition is expected to be higher.

SURVEY OF INFRASTRUCTURE CONSTRUCTION PROJECTS IN JAPAN

Outline of Survey

The authors' group surveyed recent eight infrastructure projects in Japan to examine a negotiation process between opposing citizens and managers. A list of the projects is shown as Fig.2. with their

location in a map. A list includes two urban railroads, an inter-city high-speed railroad, a ring road, two urban highways, a waste disposal facility and a nuclear power station. All of them were completed in 1980's or 1990's. What we examine in the survey is an outline of a structure of facility, a geographical feature near the site, a related law system, a profile of interest citizens and organizations, time-series behaviors of opposing citizens and managers, a result of the negotiation, and the other related matters. Then we made a database for all cases according to public documents, technical reports, articles of magazines and newspapers, published books, newsletters for interest citizens and the other materials we originally acquire. Moreover, we directly interviewed a person in charge of the project manager to complement a lack of the database.

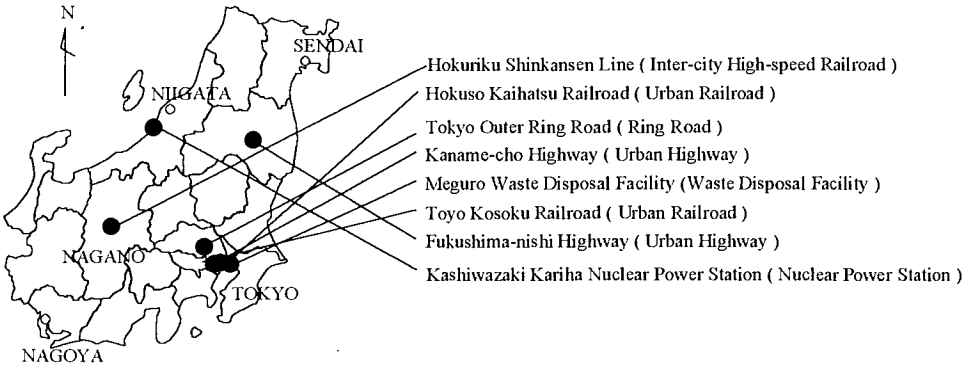

Fig.2 - A map of case study's projects

Hokuriku-Shinkansen Line (Karuizawa Area)

The Hokuriku-Shinkansen is a bullet train which is operated between Tokyo and Nagano, having the maximum speed at 260 km/h. A section between Takasaki and Nagano was additionally constructed because a section between Tokyo and Takasaki had been already completed. Nagano is a host city of the Winter Olympic Games in 1998, located at a center of the Honshu Island. Karuizawa, about 45 km south-east of Nagano, is one of the most popular resort town in Japan. As a planned route is passing through Karuizawa, many cottage-owners and land-owners opposed to the project and the conflict developed into a serious problem. A project manager of this project is the Japan Railway Construction Public Corporation. There are two kinds of opposing citizens related to this project; the residents in Karuizawa Town and cottage-owners who live far from here at usual time. Moreover, as local governments, the Karuizawa Town and the Nagano Prefecture were involved into the negotiation.

The project manager opened an initial plan to the public in 1972. In the initial plan, most of sections in Karuizawa is on the ground or elevated except a short tunnel part. At the early stage, Karuizawa Town and the residents in Karuizawa (we call them group 1) requested to the manager that a structure should be changed from on the ground to a tunnel. However, after negotiating with the manager, they found it too difficult. Then, they gave up the initial request and started to demand the manager to construct an additional side-road instead. Because the manager adopted their proposal, the group 1 quitted opposing and began to cooperate with the manager. On the other hand, the cottage-owners (we call them group 2), most of them are living in other places at usual time, requested that a type of train should be changed from a full-scale vehicle to a mini-scale one. When the full-scale vehicles run, its maximum speed reaches 260 km/h, but when the mini-scale vehicles run, it is just 130 km/h. Many external groups mainly consisting of environmentalists supported the group 2 by proceeding so-called a Wood-Trust Protest. The Wood Trust Protest is one of the protesting techniques that many protesters buy tiny lands each to delay an implementing procedure. Nevertheless, because some of the participants can not agree with the group 2's opposing policy and

left it, a power of the protest became weaker gradually. On the other hand, the Karuizawa Town kept supporting the project manager from beginning to end. The managers persuaded on the protest groups patiently for more than four years, while the Pollution Adjustment Committee meditated the conflict. Eventually, the Land Expropriation Act was applied to the opposing land-owners and all residents accepted the land acquisition after all. In 1997, the project was completed in time for the Winter Olympic Games in 1998.

Hokuso-Kaihatsu Railroad (Katsushika Area)

The Hokuso-Kaihatsu Railroad is a railway line which runs between Keisei-Takasago, Katsushika, Tokyo, and Inzai-Makinohara, Inzai, Chiba Pref. This line has a role of a feeder transportation between the CBD and a suburban area. Katsushika is located at an eastern part of Tokyo, where the population density is very high. This project was managed by the Hokuso-Kaihatsu Railway Co. and the Japan Railway Construction Public Corporation, while most of opposing citizens are residents in Katsushika. The Katsushika Ward was also involved into the project as the local government.

The project managers opened an initial plan in 1972 for the first time. In the original plan, a whole route is based on an elevated structure and there is no new station in Katsushika. The Katsushika Ward and its residents protested against the exhibited plan and discussed it with the managers for six years in the ward assembly. The opposing side demanded constructing a tunnel instead of the elevated railroad. However, the ward assembly, eventually, approved to the elevated structure because the managers insisted that it is impossible to construct a tunnel from a technical problem. In compensation for it, the opposing groups requested to the manager the following points;

- To add a new station in the ward.
- To establish a new committee that consists of the project managers, main members of the ward assembly, and some opposing residents.
- To construct an additional public utility infrastructure, such as a public park.
- To improve an environmental protect measure.

Eventually, the project managers, the Katsushika Ward and the local citizens concluded an agreement including the four demands. The "Hokuso Railroad Environmental Problem Raison Arrangement Committee" was established by the Hokuso-Kaihatsu Railway Co., the Katsushika Ward, and some residential groups for a deep discussion of the project. After the project manager completed all land acquisitions, he finished the project in March, 1981.

Tokyo Outer Ring Road

The Tokyo Outer Ring Road runs between Wako and Misato, a southern part of Saitama Prefecture, passing the following seven cities; Wako, Toda, Urawa, Kawaguchi, Soka, Yashio, and Misato. Here, we target especially a section between Urawa City and Misato City. The Ministry of Construction, and the Japan Highway Public Corporation planned and managed this project. Some residents' groups opposed to this project in many cities along the planned road. The Saitama Prefecture and its seven cities were concerned with this road.

The project manager exhibited an initial plan in 1986 according to the City Planning Law. The Saitama Prefecture and some of the seven cities approved to the initial plan from the beginning. On the other hand, the other cities opposed to the project and requested its cancellation, because many residents in those cities strongly opposed to the project due to the environmental problem. The opposing residents got together and organized a large-scale opposing organization. This opposing organization opposed to the manager in many ways for several years. However, as a traffic congestion was getting worse because of a delay of the project, they gradually began to consider that they need the road for preventing the traffic congestion. Then, the opposing residents determined to change their opinions. Instead of requesting a cancellation, they started to request an additional flood control facility and an additional green belt for noise reduction. This is because the flood damage of

a river crossing the road had been one of the most serious problems in the areas. The manager accepted their new suggestion and determined to revise the plan in 1985. The opposing side gave up its activity and came to terms with the manager. The road service was started in November, 1992. The manager constructed a special facility for a flood control and increased its width from 40 m to 60 m by adding a green belt to the expressway lanes as well.

Kaname-cho Highway

The Kaname-cho Highway runs between Toshima Ward and Nerima Ward, Tokyo. This highway is one of the radial arterial roads in the Tokyo Metropolitan Area. Both Toshima Ward and Nerima Ward are located at northern part of central Tokyo, and typical residential areas of Tokyo. In this project, the Tokyo Metropolitan Government acted as a project manager and participated the negotiation with citizens. Though some residents' groups promoted the project, many other citizens opposed to it by joining many residents' groups' activities. The opposing groups can be divided into two ones; one was demanding a cancellation of the project and the other one was insisting on a preservation of a school environment.

The project manager determined a construction of the highway according to the City Planning Law in 1966. Two new subway lines, Subway No.8 and No.13 were determined simultaneously to be constructed just under the Kaname-cho Highway. Though the opposing citizens' groups and the promoting citizens' groups kept a hot discussion, the manager determined by force to start constructing a part of the road, because he judged that many citizens expected an early start of the highway service. However actually, the project manager couldn't complete to construct the road, because a serious conflict occurred between the approving resident groups and the opposing groups. The then governor of Tokyo Metropolitan Government proposed an idea that they would determine the project plan by a referendum. Although the governor established a project team for the referendum and started to discuss a possibility of holding it, after all, the referendum was not conducted due to the financial problem. The manager determined, in 1979, to start a construction of only the Subway No.8 and to postpone to start constructing the highway. Just after the decision of delay, the promoting residents cooperated each other and requested again to the manager to start the construction of the highway as soon as possible. The project manager approved to the request, and concluded an agreement with the opposing residents in 1981. The citizens and the manager established the "Radial Line No.36 Committee" and discussed the project together. The highway service was started between Urawa and Misato in 1987.

Meguro Waste Disposal Facility

The Meguro Waste Disposal Facility is located at Meguro Ward, Tokyo which has an incinerator which can dispose of 600 tons of waste per day. Before this facility was constructed, waste gathered from Meguro Ward was sent to the other adjacent wards and was disposed there. However, as the volume of waste in Tokyo increased too much to be disposed by the existing disposal facilities, the Tokyo Metropolitan Government determined to order all wards in the Tokyo metropolitan area to dispose of their waste by their own facilities. A construction of the Meguro Waste Disposal Facility was also planned due to this demand. In this project, the Tokyo Metropolitan Government was a project manager, and the Meguro Ward, the local authority, supported the project manager. Many opposing citizens groups were organized at an early stage of the plan, but all of them were unified into one organization later.

In 1982, the project manager held the first public meeting and exhibited its plan to the audiences. Though not some citizens objected to the plan, this plan was authorized formally in November, 1985. Even after the statutory decision, the opposing citizens kept claiming to cancel the plan to the municipal assembly, but all of the claims were rejected. The opposing citizens gradually changed their opposing strategy from claiming a cancellation of the project to a partly modification of the

plan. In 1990, the project manager suddenly determined to dispose of the other wards' waste in the Meguro facility, even though in the initial plan it was planned covering only Meguro Wards' waste. This was because the other wards faced too hard opposition to construct the facilities. The Meguro citizens, the Meguro Ward and the Meguro Assembly opposed to the new plan very hard. The manager negotiated with the concerned people many times and persuaded the opposing citizens with much patient. In 1991, they successfully reached the agreement on operating the facility.

By the agreement, the opposing citizens groups eventually succeeded to modify the plan partly as they demanded, such as setting up a wall to prevent noise and decreasing a height of buildings from a viewpoint of landscape and sunlight. In regard to disposing of other wards' waste, the opposing citizens agreed with the manager in a condition that they would accept it by 1995 but would refuse it after 1996.

Toyo Kosoku Railroad (Natsumi area)

The Toyo Kosoku Railroad runs between Nishi-Funabashi and Katsuta-dai, and its total length is 16.1 km. This railroad was planned for the residents in the suburbs to access the central Tokyo by connecting to the subway directly. A section of 10.8 km of a whole section is on the ground or elevated. This case study especially highlights a conflict at Natsumi area where the residents demanded to change the structure from the elevated railroad into a tunnel. This project was managed by the Toyo Kosoku Railway Co. and the Japan Railway Construction Public Co. Some citizen groups which mainly consists of the residents around the site opposed to the project. As local municipal governments, Funabashi City and Yachiyo City are involved into the project.

This railroad construction project was determined legally according to the City Planning Law in 1983 even though some citizens opposed to the plan. The managers started to construct a section where they succeeded to get an agreement with the residents along the line. In Natsumi area, the railroad was planned to be elevated in the original plan. However, as the residents maintained to revise the initial plan into a tunnel plan, a negotiation reached a deadlock. After the managers examined a possibility to change the structure, they determined to alter the railroad to be under the ground at last. But the other residents in the adjacent area furiously opposed to the partial change and complained why the managers changed the structure of railroad in just a specific section. The conflict between the managers and the opposing citizens lasted for a while. The managers appealed to public opinion to support the project, and collected many supporters' signatures and many supportive petitions to promote the project. The opposing residents yielded to the public pressure and in 1995 they accepted the manager's suggestion which includes a set-up of wall for preventing noise and a construction of an additional cross-over bridge for pedestrians.

Fukushima-nishi Highway

The Fukushima-nishi highway is just 6.4 km long, located at a western part of Fukushima city, about 250 km north from Tokyo. To construct this highway targets to ease a congestion of Fukushima city center by connecting main highways radiating from the center. Because this highway is directly authorized by the Ministry of Construction, the ministry managed the construction project. Fukushima City supported the plan. Many residents and their groups opposed to the project.

This highway used to be authorized in 1967 under the former City Planning Law as a road with 10.6 km long and 25 m wide. While the authority left the plan for more than fifteen years, the traffic demand around this area had increased so drastically. Then the authority revised the plan into the new one to construct a highway 6.4 km long and 40 m wide according to the present City Planning Law. When the manager revised the plan, he did not hold a public hearing because the law does not oblige legally him to hold it. Moreover, the manager did not execute a complete form of an environmental assessment because there is no regulation about it. The residents were dissatisfied

with the manager's unfaithful behavior and started to demand a cancellation of the project by submitting petitions and collecting many signatures of supporters. In 1983, sixty citizens raised a lawsuit against the manager as the first trial, but they lost their suit. They appealed to the higher court in 1984 to lose it again. Finally, they appealed to the Supreme Court in 1986. Nevertheless, the appeal was dismissed. After the final judgement, the opposing citizens gave up their activity. At the same time, the manager changed his attitude to being positive to involve the citizens. Because the manager achieved an additional budget for the citizen involvement, he took much effort to discuss a design in detail with the residents. As a result of the discussion with the residents, an underpass is constructed under a crossing for pedestrians and a special facility was added to conserve a spring.

Kashiwazaki Kariha Nuclear Power Plant

The Kashiwazaki Kariha Nuclear Power Plant is located at a border of Kashiwazaki city and Kariha village, about 300 km north from Tokyo. The facilities consist of seven nuclear reactors covering 4.2 million m^2 area. As a whole, the station can supply 8.2 million kW of electricity, one of the largest nuclear power station in the world. This electricity is sent to Tokyo metropolitan area. Tokyo Electric Power Company Inc. is a project manager. The Niigata prefecture, Kashiwazaki city and Kariha village are involved into the decision process as local governments. There are three main opposing citizens' organizations and some supporting groups including outside non-governmental organizations.

As this region was a barren sandy land, it had not been developed for a long time. While some of the residents hoped to make good use of this land, the Tokyo Electric Power Co. suggested a nuclear power plant construction project to them and started to discuss it with interest organizations to examine a technical possibility in 1968. Soon after the start of the discussion, some residents organized a large-scale opposing group (we call a Group A) with many progressive interest citizen groups, progressive political parties, and radical labor unions from all over the nation. They opposed the project by submitting petitions for a cancellation and by making a protest directly to the manager. Though the group A consisted of a few thousands of participants, most of them were just outsiders who were not related directly to the projects. Therefore, the group A lost a power gradually and reformed it into a new group B. In 1969, an another opposing group C was established by main members of residents near the site. Moreover, in 1970, young members of a local labor union formed the other opposing group D. Theses three opposing groups B, C, and D cooperated each other in many cases. First, they held an original referendum by force in 1972 and the opposing side won it. Next, they interfered with the first public hearing fiercely and made it cancelled by force in 1976. Their opposing technique became more and more radical and more and more in scale. In 1981, they sued the manager for a compulsory removal of a base of the opposing side. However, many of the local citizens gradually could not agree with their radical oppositions, and began to leave the opposing groups. Most of local citizens, at last, gave up opposing and concluded an agreement with the project manager in 1983. Eventually, when the opposing groups lost their suit at court in 1990, they gave up keeping opposing completely.

DISCUSSIONS OF THE NEGOTIATION PROCESS

Analysis of Project Manager's Behavior

Legal Force of Law System and Level of Citizen Involvement

The City Planning Law in Japan orders project managers to endeavor both to exhibit a plan to residents around the site and to listen to their opinions as much as possible. However, as this order is not an obligation for the managers to execute, some managers sometimes do not provide enough

quality nor enough opportunities of citizen involvement. For example, we can see this situation in the Fukushima-nishi Highway construction project. The manager held a meeting with main members of the interest groups and also held several public meetings with the local citizens. However, at the final public meeting, the manager failed to have a discussion because many opposing residents refused to have it. Nevertheless, the manager regarded that the meeting was effective enough to achieve an agreement with both sides. Then, the manager started to fix the plan according to the related laws and achieved an authorization of the plan. As a result of that, the opposing citizens sued the manager for an unsuitable planning procedure. In this case, the manager was not so affirmative to the citizen involvement. In an interview with a person in charge of this project, he told the authors that it is because the manager got an authorization in a too businesslike manner that many residents had an unfavorable impression to him. This case indicates that when a related law system allows a manager to select a level of citizen involvement, he has a strong incentive to intend executing just the minimum requirement from the laws.

Attribute of Project Manager and Level of Citizen Involvement

In general, an infrastructure developer needs to win a good reputation of citizens from a long-term point of view, in order to complete not only the present project but the other future projects as smoothly as possible. A small-scale manager who covers mainly a limited local area regards the citizens' reputation as an important factor, while a large-scale manager who covers nationwide projects does not have an incentive to involve the citizens so much. This can be found in several cases surveyed in chapter 4. In the Kaname-cho Highway construction project, the Tokyo Metropolitan Government, covering mainly the Tokyo Metropolitan area, challenged to have a local referendum. This is surely because the government intended to gain a political support from the citizens. On the contrary, in the Hokuriku Shinkansen project or Fukushima-nishi Highway project, because both of the project managers cover the whole country, it seemed that the managers were reluctant to provide the citizen involvement very much.

Time or Budget Constraints and Level of Citizen Involvement

The level of citizen involvement offered by the managers is expected to be lower when there is a serious limitation of time schedule or budget than when there is no limitation. In the Kaname-cho Highway project, although the referendum was planned by the authority, it was finally given up because the budget was in short due to the economic recession. In the Fukushima-nishi Highway project, just after the manager succeeded to acquire an additional budget for the citizen involvement, he became more active to communicate with the residents and to modify details of the plan. These two examples indicate that the budget constraints effect the behavior of the project manager considerably. As regards the time scheduling constraint, the Hokuriku Shinkansen project showed us that the manager could not communicate with citizens enough because the high-speed railroad must be completed by the start of 1998 Olympic Game in Nagano.

Analysis of Opposing Citizen's Behavior

Time-Series Change of Level of Opposition

Some cases of the survey show us a common transition pattern both in a form of opposing citizen organizations and in a opposing technique of the citizens. With regard to the form of the opposing organization, it tends to follow the three stages as time goes by. At the first stage of the procedure, some opposing residents usually establish small opposing groups based on some residents' associations. This is because they can exchange information and understand each other among their neighborhoods. At the second stage, the residents' group grows into a larger-scale organization gradually. Especially when the project manager is negative towards the citizen involvement, the participants of the local small groups distrust the manager and they become to cooperate each other

to oppose the project. Since the integrated organizations have more participants than the initial local groups, they have more persuasive power to the manager. At this stage, many outsiders like environmentalists, sometimes supports the opposing residents' groups and intervenes the negotiation. As a result of the outsider's intervention, though the original opposing groups have so far claimed the constructive demands based on their actual problems, they gradually change their claims into more vague and more ideological opinions. This leads to a serious stagnation of the negotiation and sometimes results in a long delay of the procedure. At the final stage, the large-scale organizations split into the smaller residents' groups or the individuals. When a tense situation keeps for a long time, both the opposing side and the manager side gradually start to find a more effective countermeasure to break the impasse. Then, the individual residents who hope to settle the conflict early start to leave the opposing groups in order to negotiate constructively. Finally, the opposing groups disappear and the negotiation reaches to an end.

As for the citizens' opposing technique, all of the opposing groups will follow the legal procedures under the given law system up to the regal determination of the project. This means that they negotiate with the manager in a reasonable manner in a planning stage. However, when a manager achieves an authorization of a project plan even if many citizens are opposing to it, all the opposing citizens do not keep their opposing strategy. Some of them change the opposing technique. The surveyed cases indicate there are the three types of opposing techniques after the regal determination. First, when the opposing citizens do not cooperate the external supporters and when they are quite sure of a manager's fault, they tend to bring the case to court. This type can be seen in the Fukushima-nishi Highway project. Secondly, when the manager is reluctant to communicate with citizens and when many outsiders are supporting the opposing citizens, the citizens intend to use force to disturb the procedure and sometimes take it to court for delaying the procedure. The Hokuriku Shinkansen project is categorized into this type. Finally, in many cases, the opposing citizens intend to compromise their demand and start to negotiate a modification of plan with the manager. One of reasons why the opposing citizens tend to go towards the compromise is that they hate to try in court. It takes too much time and cost to finish a trial and is too difficult for citizens to win a court against an administration in Japan. The interview with some managers manifests us that managers also hates the trial because they dislike to lose their good reputation. Therefore, many manager usually takes much effort to prevent the citizens from bringing a case to court.

Level of Citizen Involvement and Level of opposition

When the project manager does not exhibit complete information to the public nor involve the citizens into the planning process, the citizens are dissatisfied with the planning procedure and start to oppose against the project. For instance, in the Fukushima-nishi Highway project, the opposing citizens' group filed a suit with the court against the project manager for a lack of citizen involvement in the planning process. They complained that the manager determined the project plan even though he did not hold sufficient public meetings for the citizens nor executed a perfect environmental assessment. The Meguro Waste Disposal Facility project displays us that a project manager lost the citizens' trust when the manager breaks his promise with the citizens. These cases shows that it is important for a manager to be trusted by citizens in order to execute the project smoothly. On the contrary, as you can see in the Hokuso Kaihatsu Railroad project and the Tokyo Ring Road project, when the manager improved his attitude after he faced a hard opposition from the citizens, he successfully completed the project without a very serious impasse.

Outsiders' Support and Level of Opposition

When there is a support from the other regions to the opposing residents, the level of opposition becomes higher. In the Hokuriku Shinkansen project and the Kashiwazaki Kariha Nuclear Power Plant, the citizens opposed very fiercely because many environmentalists, labor unions, progressive political party, and the other interest groups all over the nation supported money, activists, opposing

technique, and the other resources to the opposing citizens. On the other hand, when the citizens are opposing for their egoistic reasons, for instance, for achieving more compensation, they can not get the backing of public opinion. In the Toyo Kosoku Railroad project, a few opposing land-owners provoked the surround's antipathy and the project manager successfully persuaded them by appealing the necessity of the infrastructure to the public opinion.

Project Properties and Social Background

How much the properties and the social background of each project influenced a result of a negotiation is indicated in Table 2. The result of the conflict is express as a period [years] of the trouble. First, many projects except the Kaname-cho Highway project suffered a long time impasse when they were executed in 1970's. In 1970's, there occurred violent student movements in many universities in Japan and many students participated the movement all over the nation. The most symbolic and the most famous movement is a struggle at the University of Tokyo in 1970. This social movement promoted many citizens to go towards opposing activity. This means that the other social movement impacts the citizens' behavior considerably. Next, the product of the population density multiplied by the facility's area means how many residents should be forced to move by constructing the facility. However, there can not be found a much clear relationship between the number of forced residents and the result of the negotiation. This means that it is the citizens around the site rather than the people forced to move that take the lead in the opposing activity. Finally, how much the beneficial area and the damaged area are overlapping correlates negatively with the period of conflict. For instance, because the Meguro Waste Disposal Facility is a local facility used for the waste gathered from only the Meguro Ward's residents, it was easier for the citizens to understand a significance of the project. On the contrary, the nuclear power station in Kashiwazaki was located far from Tokyo, user's area. Because the residents near the site can not enjoy the electric supplying service from the facility, it is a matter of course that they opposed to the project.

Table2 - Conflicting Period and Project Properties in Case Studies

project	conflicting periods [years]	most serious year	length [m]	area [m2]	population density	beneficial area	damaged area	overlapping
Kashiwazaki Kariha NPP	21	1975-80	–	4200	Low	TMA	Around the site	Low
Hokuso Kaihatsu Railroad	17	1974	1300	14.3	High	Around the site	Just near the site	Medium
Tokyo Outer Ring Road	16	1972	34600	2140	Midium	TMA	Just near the site	Low
Hokuriku Shinkansen	14	1991	41800	627	Low	TMA	in cottage area	Low
Toyo Kosoku Railroad	14	1990	4080	33.7	Medium	Around the site	Just near the site	Medium
Kaname-cho Highway	10	1970	2010	80.4	High	Around the site	Just near the site	Medium
Meguro WDF	9	1985	–	223	High	In Meguro Ward	Just near the site	High
Fukushima-nishi Highway	5	1985	6400	256	High	Around the site	Just near the site	Medium

NPP:Nuclear Power Plant
WDF:Waste Disposal Facility
TMA:Tokyo Metropolitan Area

CONCLUSION

Many political and technical ideas have been suggested to solve an impasse of an infrastructure construction project. There are a lot of laws ordering project managers to provide an opportunity to involve citizens. Nevertheless, some of them are not effectively operated by project managers while some of them are even insufficient from a viewpoint of the democratic decision process. This study showed that an insufficient law system sometimes causes a negligence of a project manager. Especially, when the law does not oblige legally him to observe it, it sometimes turns into a mere name. We should examine carefully whether a technique has really an effect, when we discuss an introduction of new citizen involvement techniques. Next, the engineers and the researchers have tended to discuss the citizen involvement in a specific type of infrastructure. For instance, a specialist

of transportation engineering can argue a problem of transportation project in detail, but not of a waste disposal facility nor a power station. However, it is true that many general citizens regard them as the same kind of NIMBY (Not In My Back Yard) projects. To reach a fundamental settlement of the NIMBY problem, all fields of engineers have to cooperate each other to exchange the information and to discuss an empirical methodology to break the impasse. The authors challenged to display that a conflict in infrastructure projects can be illustrated in the same structure, even if the project property or social background is different. The authors plan to analyze it more deeply to contribute to the future constructive discussions. Finally, the authors regard it as important to discuss why the citizen involvement is needed and how much citizen involvement is suitable from a practical viewpoint. It is true that the higher level of citizen involvement is provided, the more the citizens are satisfied with the procedure, but at the same time, the more period it takes to complete the project. Can we really regard that it is a justice to provide a satisfactory with a small number of citizens while to sacrifice many citizens' happiness? This problem may be judged philosophically. We need to keep challenging to find a solution.

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