国際コンフリクトマネジメントの支援手法論：トゥンヒンブン水力発電プロジェクトの調査事例を通して

BUILDING AN ANALYTICAL TOOL FOR CONFLICT MANAGEMENT IN DEVELOPMENT PROJECTS: A CASE STUDY OF THEUN-HINBOUN HYDROPOWER PROJECT

Akio YONEZAWA[1] and Masahide HORITA[2]

[1]M.Eng., Tohoku Regional Bureau, Ministry of Land, Infrastructure and Transport, Government of Japan.
(E-mail: yonezawa-a82ab@pa.thr.mlit.go.jp)

[2]Ph.D., Assoc. Professor, Dept. of Civil Engineering, University of Tokyo. (E-mail: horita@ken-mgt.t.u-tokyo.ac.jp)
Part-time Researcher, RISTEX Mission Program.

Development projects often cause conflicts. For supporting negotiation during conflict situations, this research has built a model that can provide a mediator with information about stakeholders' perception of the situation and other stakeholders. Also, the model's feasibility has been tested in a real conflict case.

In the case study, the model has successfully been used to clarify the overall situation of the conflict by argument trees and a table of decision making. Subsequently, it has found a crucial misperception which made stakeholders adhere to their decision by analyzing their preferences and strategies. It has been demonstrated that the model can provide helpful information for a mediator to move negotiation forward.

Keywords： *conflict management, development, hypergame analysis, argumentation.*

1. INTRODUCTION

1.1. Background and objective

Conflict management has recently been the focus of attention throughout the development community[1)]. As with any domain of social activities development projects often become the subject of conflict at every level, while at the same time it could work as absorbent or even solution to a larger-scale interstate conflict[2)3)].

This is primarily because development projects often cause large social impacts on all those concerned, positive and negative. In simple terms, to decide who gets what and how exposes or creates substantial conflict of interest among different social groups. Sometimes it is about involuntary resettlement caused by the infrastructure development, another about how to share water resources flowing from one country to another.

These conflicts arising from development projects need managing pragmatically, analytically, and methodologically. Though there is a long history of conflict management in development, which has produced much practiced guidelines on stakeholder relations and alternative dispute resolution, newer approaches are also arising. Among such on-going efforts, this paper turns to potential contribution from semi-formal approach to management science. We argue that some of the methods traditionally used for structuring ill-defected (or "wicked") problems can be applied to conflict management for mediators of development projects. The objective of this study is twofold: to build a model of conflict under possible misperception for mediators; and to implement the model and test its feasibility based on a retrospective case of an actual development project.

1.2. Conflict over development projects

Though it is beyond the scope of the present paper to propose a comprehensive picture of what essentially characterizes conflicts over development projects, it is useful to highlight some illustrative features of interplays among principal actors of this domain. In most cases of development projects, prominent actors include governments, international organizations, investors, project implementation contractors, local representatives/residents, and non governmental organizations. The precise form of actor constitution varies among the cases - they sometimes play multiple roles, or certain roles may remain to be filled. Some actors are inherently in conflict with each other. The dichotomy between

developmentalists and environmentalists is a classic example of such role conflicts. Those actors placed in an opposite end of this scale will evaluate the same consequences that materialize from a development project completely differently.

More often than not, these actors have an incentive to resolve the conflicts for political, managerial or organizational reasons. The project owner would like the project to be implemented swiftly without too much controversy. Local residents might also seek for an agreement because they would otherwise need to bear huge social cost as a result of the confrontation with more powerful actors.

At the same time, there are many reasons why these conflicts cannot be easily resolved. Even when all parties agree that they would be better off with an agreement, lack of trust or confidence can hider them from cooperating towards resolution. Some rational choice theorists call this 'trust dilemma[4)]', which has also empirical support in a number of development related conflicts.

The basic position of this study is that such 'views' – *i.e*., how each actor views others – have a significant impact on the way conflict develops. Knowledge about other actors is important in understanding the structure of a conflict, such as who they are and what they want. This may even be more important in some cases than the materialistic aspect of the project, such as what physical impact the project produces on the environment, how much income it would generate, *etc*. Since actors cannot always see what physical force their counterparts actually have, their actions are formed through a perceived image of the others though existence of substantive evidence also plays a crucial role in forming their perception.

It is not only each actor's perception of others, but their *differences* that matter. In conflict situations, there are gaps among stakeholders' perception which could prevent agreement or concession. Providing information about how stakeholders perceive the situation and what difference, if any, there is among their perceptions are useful for promoting negotiation and managing the conflict.

However, it is generally difficult for actors in conflict to find their perceptual gaps by themselves because the misperception is the very product that each actor wants to deliver for the others. There is also a heuristic problem that actors tend to believe their perceptions of others are correct. Under these circumstances, potentially useful clues for resolution may be overlooked or buried under large amount of dis-contextualized information. Perhaps as a first step t is useful to organize such information that helps the actors make sense of what they are observing and check the consistency with their views of the conflict. Below we propose a methodology for achieving this objective.

2. MODEL BUILDING FOR CONFLICT ANALYSIS

2.1. Overview of the model

Many development projects cause significant social and physical impacts. This often coincides with a large number of affected people and inter-connected issues. The complexity of the problem then implies conflicting views of the conflict[5)], with seemingly relevant information pointing to different interpretations. In such situations, one can very easily become unassured about what version of the story they should believe in. It is even more difficult to be focused about what particular issues they need to resolve with others. In building our model, we have made explicit a pre-requisite that such muddled views of the conflict should be incorporated.

First, a model has been devised to clarify what issues are in conflict and how stakeholders view them. In order to identify these issues comprehensively in the whole context of a project, 'argument trees' are created. This is broadly an offspring of argumentation theory originally developed by Toulmin[6)]. This original model by Toulmin divides and hierarchizes an argument into nodes and links, which correspond to a subset of stakeholders' statements and their relations, respectively. Argument trees can dialectically show the rationale behind the project justification by schematically showing what each stakeholder claims. Information to be included in the tree could come from any kind of data source. The collected information is then stored in a database and extracted when users need it. To highlight the relationship between each actor's argument and their actual decision, the argument tree can be complemented with a table of decision-making history.

Based on the information structured in the argument tree and decision table, the model next provides a way to compare differences in the views held by each actor. A schematic table is designed to visualize how, for example, Actor *A*'s view of Actor *B*'s thinking seems to differ from what actually is *B*'s thinking. Finally, these misperceptions are incorporated into a game theoretic model of strategic actions. Through this strategic analysis, it becomes possible to reason what consequence these misperceptions would produce or have produced. An illustration of the model is described in Section 3.

2.2. Proposed scheme for implementation

A proposed cycle for implementation of the model is shown in **Fig.1**. In setting out the context for implementation,

we consider the possibility (not necessity) that a mediator of conflicts uses the proposed methodology. A primary task of mediators is to structure the problem from an independent view point and to see if there is any room for negotiation for joint benefit. In this sense, the model is designed to be used by a mediator for demonstrating the rationality of mediator's proposed solution.

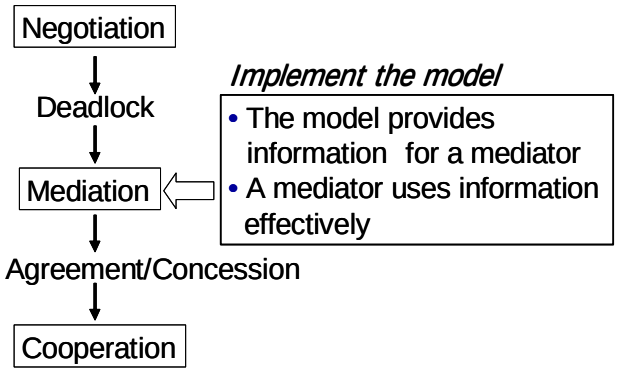

Fig. 1 Implementation cycle of the model

More specifically, the model highlights those elements of conflict including, i) interrelationship and dependency among issues, ii) perception and possible misperception of each stakeholder, and, most importantly, iii) the structure that makes the conflict deadlocked.

2.3. Model Building

The procedure by which users or mediators collect and analyze data is divided into two phases (**Fig.2**).

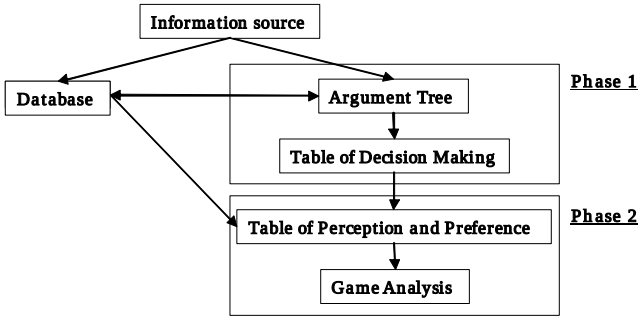

Fig. 2 Design of the model

(1) Phase 1: structuring an overall process of a project

The first phase of model building is to create an argument tree that captures the whole project. By constructing an argument tree, the history of stakeholders' decision making is displayed in a table of decision making. Mediators can understand the flow of the project, even if they themselves had not been involved in the project from the outset. Mediators can extract one or more issues which need to be elaborated. As is demonstrated in the case study below, one can see how each issue is related to others and how they can be argued from each side. This view of the conflict helps mediators decide the scope of analysis.

(2) Phase 2: analyzing stakeholders' decision making in a specific issue

In the second phase, those issues selected in Phase 1 are analyzed using tables of perception and preference, as well as a game theoretic model. Perception in this framework is broadly defined how each actor views other actors' reasoning and preference. Preference is defined as a completely or incompletely ordered set of possible outcomes of conflict. By comparing each actor's perception in a tableau format, mediators can find gaps among each stakeholder's perception of preference. Mediators can investigate which perceptual gaps of preferences need a careful examination.

The effects of these perceptual gaps are formally evaluated using hypergame analysis[7)8)]. Hypergame analysis can reveal what are the fundamental causes of the conflict and what consequence arises from a possible amendment to a certain actor's misperception[9)10)11)]. Mediators may then utilize this result in deciding what message they should provide for each actor to inform them of the structure of the conflict.

3. CASE STUDY

This section reports on a case study where the methodology was applied to a retrospective analysis of a real development project that displayed conflict of interest, We use this case to illustrate a possible implementation process assuming there was a mediator in the case.

3.1. Theun-Hinboun Hydropower Project

The project, a transbasin run-of-river plant of 210MW diverts water from the Nam Theun River, a major tributary of the Mekong River in central Lao PDR, to the Nam Hai River, a tributary of the Nam Hinboun River which also flows to the Mekong downstream of the Nam Theun[12)].

The main objective of Then-Hinboun hydropower project (THHP) is to support economic growth in Lao PDR by enhancing foreign exchange earnings through export of electric power to Thailand. The Government of Lao PDR (GOL) requested ADB assistance in early 1993 to act as the lead

coordinating agency and provide financial and legal advice. A company named Project Company A (PCA), incorporated under the foreign investment law of the Lao PDR, was to be the owner of the project.

During construction, ADB and GOL were alerted by NGOs to potentially significant impacts becoming apparent at several project sites, and particularly downstream in the Nam Hai and Nam Hinboun rivers, which would receive the diverted waters. Subsequent review missions of ADB noted that inadequate measures were being taken to address social and environmental impacts.

Main stakeholders which can make a decision by their own insistence in THHP are PCA, GOL, ADB, local people, and NGOs. Of these stakeholders, those who have frequently communicated with each other are PCA, ADB, and one of NGOs. Therefore, these three stakeholders, "PCA", "ADB", and "NGO" are defined as the main actors in the following analysis.

3.2. Implementation of the model

(1) Database on the case study

A database was built based on data collected from all available information sources. Of those sources, letters exchanged between the three stakeholders and interviews to them provided core information for the analysis.

(2) Phase 1: Argument tree on the case study

Through building an argument tree on this project, such issues as compensation, minimum downstream releases, and information sharing were found prominent. An example of an argument tree, which concerns the issue of information sharing, is shown in **Fig.3**. The relationship between these tree issues is shown in **Fig.4**.

In the argument tree, summary of stakeholders' statements about the issue is shown. Each item is added under its parent when the new item can be interpreted a response to the existing statement. Unidirectional arrows (→) designate that the child statement support or substantiate its parent statements. Bidirectional arrows (↔) designate that the child statements challenge or refute its parent. If a child statement falls into neither of these two categories, a single line (—) is used to represent the connection. In a box of a statement, the first number corresponds to its ID and the second number represents who made that statement. In this example, the IDs and of the stakeholders are 1: (PCA), 2: (ADB) and 3: (NGO), respectively.

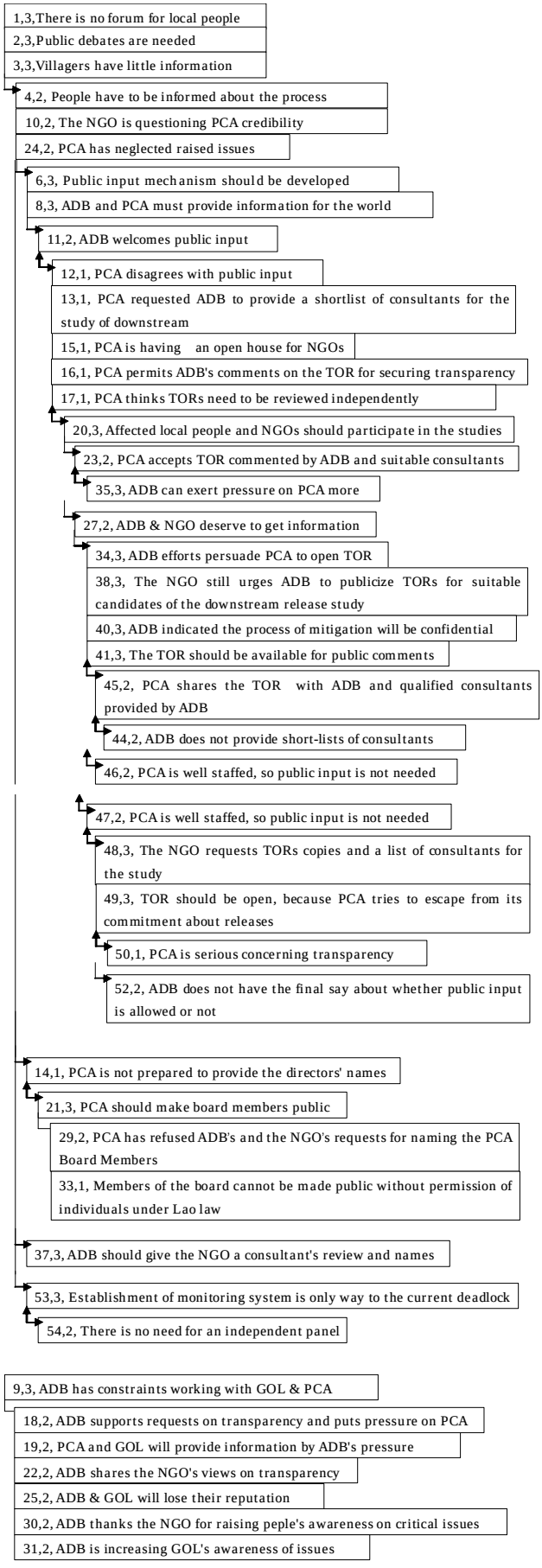

Fig. 3 An argument tree about the issue of information sharing

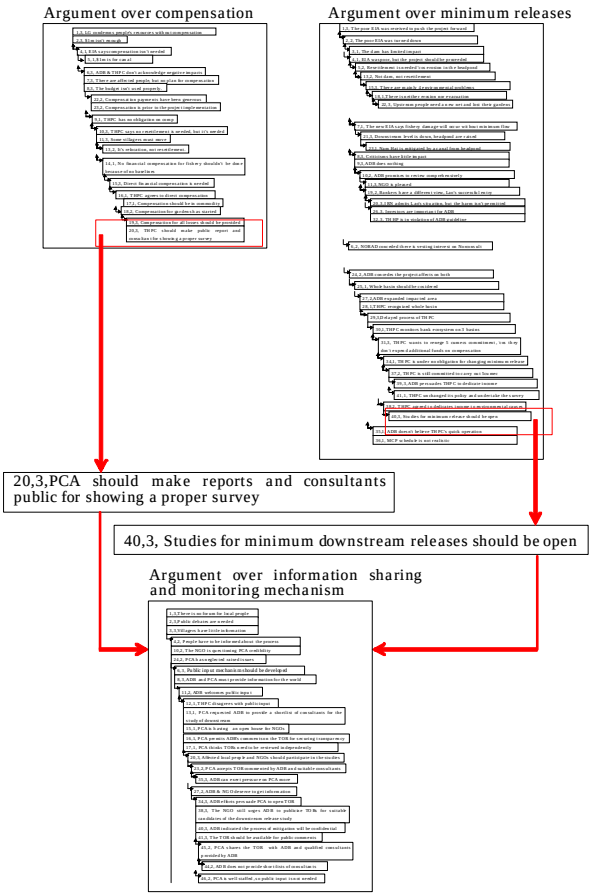

Fig. 4　Dependency of the issues

The information collected can be represented in the form of inter-connected argument trees (see Fig.4). By investigating the statements of those three issues illustrated in Fig.4, the relation among the different issues can be pointed out. Focusing on NGO's point of view, each statement defined in the argument tree over compensation and that over minimum release are mostly criticized over the information sharing (e.g. PCA should make reports and consultants public for showing a proper survey; studies for minimum downstream release should be open, etc.). Therefore, it could be implied that these two issues are strongly related to the issue about information sharing and monitoring mechanism.　For instance, NGO had criticized the project specifically over direct compensation and minimum downstream releases, by claiming the extent of adverse effects on local people and the environment. Later, the NGO was found to criticize the project over the issue of procedures and criteria on information provision. It is clear in the argument trees that every environmental and social problems raised by the NGO are linked to information sharing and establishment of independent monitoring mechanism. A mediator, if there was, could have seen that the NGO had doubts about PCA's implementation and thus demanded transparency in implementation procedure and criteria of evaluation.

(3) Phase 1: Table of decision making on the case study

A table of decision making by each stakeholder has been created based on the argument tree (**Table 1**). The table shows how stakeholders have changed their positions over the time.

For example, the NGO's criticism of the project had an impact on PCA and ADB's stands. PCA and ADB had not explicitly acknowledged negative impacts on the project area at first, but they did so in response to the NGO's criticism. This caused the project a big move to dealing with environmental and social problems. However, the NGO was still not satisfied with the pace of progress PCA made. NGO then requested PCA and ADB to provide terms of reference (TOR) about their mitigation and compensation plan (MCP), and names of the consultants and PCA board members. Although not all decisions of stakeholders are listed, an important sequence of events and decision makings such as this one can be found from the table. It is also possible to see what move produced what consequences.

Table 1　A table of decision making on the case study

PCA	ADB	The NGO	Month, Year
Provided the poor first EIA		Insisted that there are negative impacts	1993
	Approved the project by ADB Board		Nov,1994
Insisted that there is no negative impacts			Feb,1995
	Approved the second EIA		1995
Ignored criticisms and proceeded the project	Ignored criticisms and proceeded the project		Apr,1996
		Reported environmental impacts by a report based on a fieldwork	Apr,1998
Conceded expansion of impacted area	Acknowledged expansion of impacted area		Aug,1998
Implemented the mitigation plans on cautious process			1999
Insisted that PCA cannot compensate because of no baseline		Complained PCA's delayed process for mitigation	Sep,2000
Insisted on no obligation for minimum change and compensation		Insisted on development of public input mechanism	May,2001
Disagreed public input and provision of board members	Welcomed public input	Requested names of PCA board members	Jul,2001
Insisted on providing compensation by rice			Jul,2001
Permitted ADB's comments on the TOR	Put pressure on GOL		Aug,2001
Refused provision of board members because of Lao law	Followed the PCA about provision of PCA board members		Aug,2001
		Insisted that compensation should be financially for all losses	Oct,2001
		Continued requesting public input	Oct,2001
		Requested establishment of independent monitoring mechanism	Oct,2001
	Refused to prepare short-lists of consultants and establishment of monitoring mechanism		Nov,2001

In **Fig.4**, it can be shown that every issue is ultimately linked to the issue of transparency, which suggests the possibility that

transparency is the most important issue in this project. Then, a detailed analysis of decision making on the transparency issue was made as shown in **Table 2**. There are four issues over which each actor disagreed. Each stakeholder's position or claim about the issue is shown in the same row.

In the issues on transparency, there was a much disputed topic as to whether public should provide input on TOR for the minimum downstream releases. The NGO had insisted on public input on TORs for studies of MCP, but PCA had refused this request. This is because TORs were strongly related to how PCA implemented MCP, which also contained highly technical dimensions. ADB was naturally concerned with implementation of MCP because ADB was responsible for completing their projects without negative impacts on local people and environment. Also, MCP was an essential device for supporting local people's lives, which was a concerned topic for the NGO as they had alerted that the project would affect local people and environment. That is why the issue on public input on the TOR was a key topic for all the three actors.

In Phase 2, the issue of "public input on TOR for the study of minimum downstream releases" was analyzed as a detailed case analysis of issues.

Table 2　Positions of stakeholders on transparency issues

PCA	ADB	The NGO	Issue in Conflict
Share the TOR only with ADB	Agreed with the NGO and transferred the request to PCA	Requested to allow for public input for TOR for a study of the minimum downstream releases	Public input on TOR for study of minimum downstream releases
Replied that PCA is not allowed to meet the request under Lao law	Agreed with the NGO and transferred the request to PCA	Requested names, positions and nationalities of PCA board members	Provision of names of PCA board members
Not made the reports public	Requested both reports	Requested two consultants' reports about criteria of the way of compensation	Sharing of reports about the way of compensation
	Refused	Requested ADB to establish independent monitoring mechanism	Establishment of independent monitoring mechanism

(4) Detailed analysis of the TOR issue

The relationship between the three actors regarding the TOR issue can be represented as shown in **Fig.5**. The three actors were in a deadlocked situation by sticking to their own position. The NGO requested ADB to let PCA allow public input on the TOR for the study of minimum downstream releases. ADB thought the organization that had the capability to allow public input on the TOR is not ADB but PCA. This made ADB transfer the NGO's request to PCA. PCA did not want third parties' input on the TOR, because they felt that they already had adequate expertise in-house and, if PCA allowed the public input, efficiency of the study would be sacrificed. On the other hand, PCA did not want to refuse the request, because PCA was concerned about the pressure from GOL and ADB. PCA was partly owned by GOL and GOL was a public company in Lao PDR. That is how ADB could impose an influence on PCA via GOL. What actually happened is that PCA ended up sharing the TOR only with ADB, which means that PCA need not directly take the NGO's advice on the TOR. PCA tried to secure transparency and make the NGO trust PCA by involving ADB in the TOR process. PCA requested ADB for cooperation, particularly by providing consultants for the study and its audit. However, ADB did not agree with the provision of consultants. The action ADB took is to transfer the PCA's answer to the NGO again. The NGO requested allowance for public input again as they were not satisfied with the answer from ADB and PCA. It did not seem that the actors would compromise with each other. The situation was deadlocked.

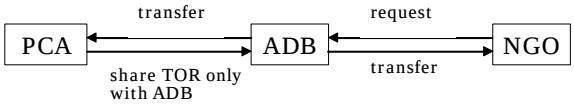

Fig. 5　Diagram of the conflict situation

This story of the specific topic, focusing on the actors' positions, was mainly established by studying letters reciprocated among the actors and by interviewing stakeholders. Also, information was available through web sites and newspaper articles. It is worth noting that even if there was already sufficient amount of information for establishing the structure, it is generally difficult to do so without a methodological representation of data. At this state, it has become apparent how the actors saw each other, and what were the possible causes of lack of trust, such as misunderstanding, and difference in value. This is made possible at Phase 2 of the analysis.

(5) Phase 2: Analysis of perceptions and preferences

Each actor's perception and preference was interpretively analyzed and represented in tables of perception and preference (**Table 3,4,5**). All collected information of stakeholders' perceptions regarding the corresponding topic was enumerated in the tables.

Definition of the item on the table is as follows: P_X is Actor X's true preference (as perceived by the analyst); P_{YX} is Actor

Y's preference perceived by X; P_{XYX} is Actor X's perception about how actor Y perceives actor X, and so on.

Though an analysis up to the third level (*i.e.* P_{XYX}) would have been of academic interest, in this particular case, we found no grounds that misperceptions at this level had an impact on the outcome. Therefore, most of the boxes of perception at the third level are blank. Some issues were selected for a detailed analysis using hypergame theory at the first and second levels of perception (P_X and P_{YX}).

(6) Phase 2: Game analysis on the case study

Game trees were constructed based on the tables of perception and preference (**Table 3,4,5**) and prepared for each actor. Game trees represent possible strategic interactions based on perceived preferences. This means that each actor owns a separate and possibly different game tree as a representation of their perceptions. Elements of differences can include options and preferences of the actors and these can be updated as the actors obtain new information. In each game tree, an equilibrium can be calculated based on what option the owner of the game tree decides to take. This yields to a combination of option-taking by each actor – a state that actually materializes under misperception. This is also called the 'moment of truth.' Not all misperceptions are necessarily important. What is of significance is those misperceptions without which 'the moment of truth' would be different. The primary objective of the analysis at this stage is to identify such misperceptions.

For example, a game tree on PCA's view is shown in **Fig.6**.

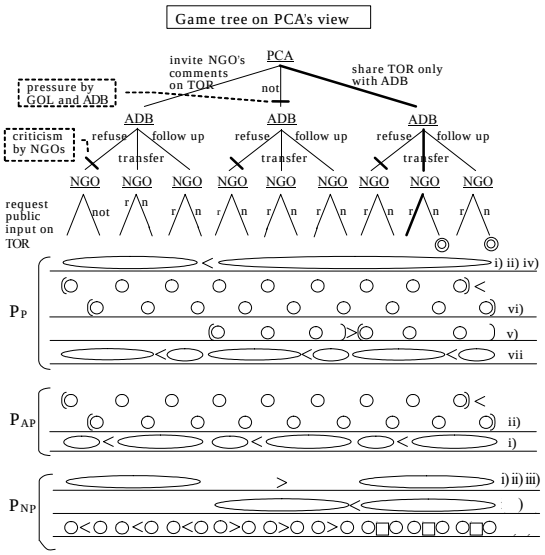

Fig. 6 A game tree on PCA's view

Options of each actor are as follows:

i) PCA's options:
- 'invite NGO's comments on TOR': PCA allows input on the TOR by the NGO;
- 'not invite': PCA refuses the request about public input on the TOR from the NGO.
- 'share TOR only with ADB': PCA allows to share the TOR only with ADB for comments.

ii) ADB's options:
- 'refuse': ADB rejects the request from the NGO and does not transfer the requests to PCA;
- 'transfer': ADB transfers the NGO's request to PCA without providing any response and information for the NGO; and
- 'follow up': ADB positively provides information about the study for the NGO.

iii) The NGO's options:
- 'request public input on TOR': the NGO continues requesting PCA and ADB to allow public input on the TOR; and
- 'not': the NGO stops requesting public input on the TOR.

Table 3 A table of perception and preference of PCA

Topic: Public input on TOR for the study of minimum downstream releases Stakeholder: PCA	
P_P	i) A private company does not have to provide information and accept public input on TORs ii) We do not want to take time and money by providing information for third parties iii) PCA thinks TORs need to be reviewed independently iv) PCA disagrees with public input v) PCA accepts ADB's and suitable consultants' comments on the TOR vi) PCA is considering NGOs concerns vii) ADB should provide some information for NGOs requesting information disclosure before transferring the requests to PCA, because ADB has much information
P_{AP}	i) ADB would address the questions raised from NGOs ii) ADB tries to meet requests from NGOs and villagers because information sharing is international standard now and ADB wants to avoid conflicts
P_{NP}	i) The NGO wants to stop dam construction, particularly Nam Theun 2, because of their view of dams as destruction ii) The NGO would like to intervene the TOR because the NGO wants to improve the world for villagers iii) The NGO is storing and providing information for other NGOs to use in a campaign against this and future projects iv) The NGO has little practical expertise on this subject v) The NGO's criticism will be dwindled by involving ADB in the TOR, because transparency will be secured
P_{PAP}	i) ADB doesn't believe PCA operates as quickly as possible
P_{PNP}	i) The NGO thinks MCP is not in accordance with some expectations or the original schedule

Table 4　A table of perception and preference of ADB

Topic: Public input on TOR for the study of minimum downstream releases Stakeholder: ADB	
P_A	i) ADB welcomes public input because ADB can always argue with NGOs and avoid being criticized by NGOs ii) ADB & the NGO as stakeholders deserve to get information iii) ADB believes the NGO should monitor as a suitable candidate of a reviewer for the study iv) We think GOL and PCA should take responsible for information providing and MCP v) ADB want to maintain a good reputation vi) ADB thinks ADB can put pressure on PCA through GOL, because GOL has responsibility for following ADB guidelines as dictated in the loan documents vii) ADB thanks the NGO for raising people's awareness on critical issues viii) ADB thinks transparency is not secured, if we provide information, because we are regarded as one of stakeholders ix) We do not have the final say about whether public input is allowed or not
P_{PA}	i) PCA doesn't try to meet requests from ADB and NGOs ii) PCA and GOL will provide information by ADB's pressure iii) PCA will act more quickly by ADB's pressure through GOL iv) GOL is positive for inviting third parties' monitoring on MCP v) PCA are willing to address the issue by sharing the TOR with ADB and qualified consultants provided by ADB vi) PCA doesn't allow a lengthy open review and comment for TORs on MCP vii) PCA tries to secure transparency by involving ADB in the TOR
P_{NA}	i) The NGO is questioning PCA credibility ii) The NGO continues to correspond with ADB, because they want to affect ADB's future hydropower projects and they have more leverage with us than GOL and PCA iii) The NGO will criticize us for concealing information, if we don't deal with their requests iv) The NGO will be influenced not by our decision but by PCA's decision
P_{APA}	
P_{ANA}	

Table 5　A table of perception and preference of the NGO

Topic: Public input on TOR for the study of minimum downstream releases Stakeholder: the NGO	
P_N	i) Affected local people should be considered first in the project ii) The NGO should be allowed for input on the TOR iii) The NGO believes the process of the downstream study must be open, transparent, and participatory iv) The TOR should be available for public comments v) ADB should compensate people using leverage with GOL vi) The NGO believes establishment of an independent monitoring panel is the only way to break the current impasse vii) Affected local people and NGOs should be directly involved in the TOR viii) ADB should approach this issue more positively
P_{PN}	i) PCA is still not positive to secure transparency ii) PCA tries to escape from its commitment about minimum downstream releases
P_{AN}	i) ADB tries to persuade PCA to open up the TOR for public input ii) ADB exerts pressure on PCA more iii) ADB tries to request PCA for providing information iv) ADB tries to proceed compensation and mitigation confidentially v) ADB has constraints working with GOL and PCA
P_{NPN}	
P_{NAN}	

Each branch of the game tree represents option-taking by the corresponding actor; and bottom-end nodes (or 'leaves') represent possible scenarios that result from the option-taking. Each circle in each preference set designates the scenario in the corresponding position. Ellipses mean a group of scenarios. Signs of inequality represent preferences. For example, "○>○" means the left scenario is preferred to the right one. The options which each actor actually took to produce the present situation are shown by a thicker line. The equilibrium scenarios on each game tree are shown by double circles. Uncertain preferences are shown by squares. Each roman number on the right side of preference sets indicates where the related description can be found is in tables of perception and preference.

In many conflict situations, misunderstanding of other actors' preferences plays a key role. While the preference sets were determined through an analysis of textual data in various formats, it is generally not possible to guarantee its exhaustiveness and completeness. However, even within incomplete set of interpreted preferences, significant misperceptions can often be extracted. Practically, each preference is compared with its correspondents as shown in **Fig.7**.

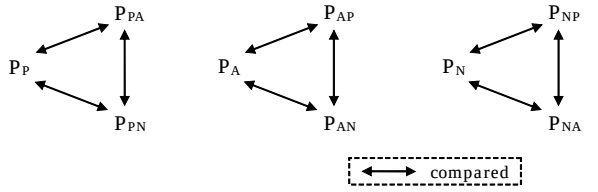

Fig. 7 Comparison of preference

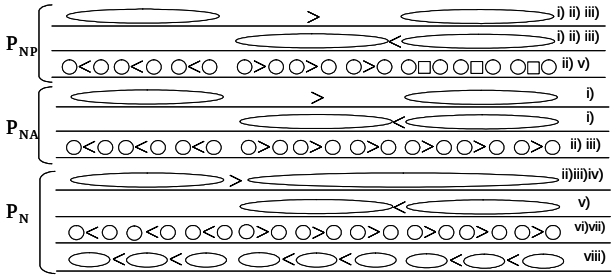

Fig. 8 NGO's real preference and others' view of NGO

As shown in **Fig.8**, we focused on the preferences of the NGO. PCA and ADB had almost the same perception as what we believe was the real NGO's preferences. However, it is possible that logical contradiction occurs depending on some uncertain elements in P_{NP}. The uncertain preference orders are designated as "□" instead of inequality. There was no available evidence to determine these preference orders. Therefore, we carried out a game analysis to investigate whether this missing part of the model would have any significant implications.

In **Fig.6**, PCA's view of each stakeholder's preference is shown. The equilibrium's calculation can be done by applying backward reasoning in game analysis. According to Fig.6, based on PCA's point of view, options chosen by NGO are firstly considered based on its preference (i.e. P_{NP}). Then by

moving upward, Options to be chosen by ADB and PCA itself have been consequently identified by considering P_{AP} and P_P, respectively. As a result of game analysis, four possible equilibriums were found given the uncertainty over P_{NP}. However, two of these scenarios are known not to be the case. In the actual story, PCA took the option to 'share TOR only with ADB', though in this analysis PCA could also take the option 'not to invite'.

A possible explanation is that PCA held a view of NPO's preference that led to the option-taking that actually happened. Elaborating this possibility, we explored what preference orders make PCA's action the only rational choice. The game tree was analyzed in every combination of inequality for all the three unknown preference ("□"). Those preferences which lead PCA to the option 'share TOR only with ADB' are found to be the following combinations: "< < <", "< < >", "< > <", "> < <", "> < >", and "> > <". Some of these six combinations are unrealistic, however. For example, it is not logically possible that the NGO prefers continuing the request if ADB provides a follow-up for PCA, even though NGO prefers stopping the request if ADB refuses the request. Impossible and infeasible combinations were then removed. As a result, it has been deduced that PCA's view of the NGO's preferences would be "< < <", "> < <", or "> > <". It appears that PCA thought the NGO would not continue the request for public input, at least if ADB positively provided a follow-up for PCA and provided information for the NGO.

Provided with any of these three combinations of inequality, the rational action taken by PCA is to share the TOR only with ADB as it happened. It has been demonstrated by the game analysis that PCA's misunderstanding of the NGO's preference can be a possible, even strong, explanation for the current deadlock.

As a conventional hypergame analysis, it is useful to investigate what would have happened if PCA had perceived the NGO's preferences correctly. Such a case is shown in **Fig.9**.

P_N was used as PCA's view of the NGO's preferences instead of P_{NP}. In this case, there are four possible equilibria. It is not determinable which option PCA should take, 'invite NGO's comments on TOR' or 'not invite', by available information. It depends on which PCA prefers, the NGO's renunciation of the request or avoidance of involving the NGO in the TOR process. However, it can be inferred that PCA would at least not select the option 'share TOR only with ADB'.

This means the PCA's misunderstanding of the NGO's preferences may be the very reason why PCA persists on trying to share the TOR with ADB. Now it has been demonstrated that the misunderstanding could be a fundamental cause of the current deadlocked situation. If PCA had perceived the correct preference of NGO, PCA might have selected another option.

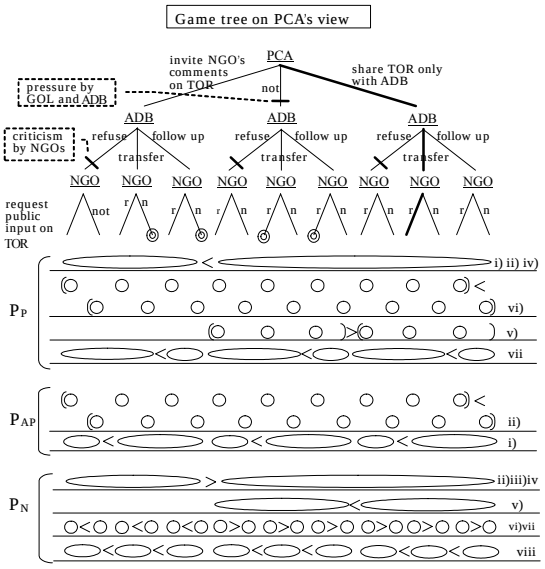

Fig. 9 Game tree on PCA's view in a case PCA perceives the NGO correctly

4. CONCLUSION

Although much research has been done for conflict resolution and prevention in academic and practical fields, potentially relevant body of knowledge and useful lessons from the past experience remain to be fully integrated. Practitioners have produced a number of pragmatic theories on 'what to do' in the face of real-world problems. Researchers have tried to analyze conflict by using descriptive and prescriptive theories and models. Both often refer to the importance of misperception and misunderstanding issues, but dialogues between the two sides is still much less than dialogues *within* themselves. This study is a preliminary attempt to incorporate these two approaches. This has led to a conclusion that it is useful to build an analytic model with adequate reasoning capability without excessive data demand. The model has been applied to the real context, and its possible use has been suggested.

The model of the case study has clarified the structure of a conflict. What the proposed methodology has delivered can be summarized as follows:

i) Analysis of relationship among different issues in the conflict for determining key issues.

The project used for the case study displayed a number of inter-related issues, namely compensation, resettlement, the amount of minimum downstream releases and information

sharing. The model has found that every issue can be finally linked to the issue of information sharing. Then, the issue was determined as an issue for a more detailed analysis.

ii) Showing each stakeholder's preferences

It is important in conflict management to understand what each stakeholder demands and how each stakeholder views the situation. In the case study, the main actors appeared to be stuck in a fallback position. PCA did not want to invite the NGO's input on the TOR of minimum downstream releases. ADB did not act proactively, because they thought they did not have a final say on the issue. The NGO requested their involvement in the TOR. Such stakeholders' perception and preference of others were investigated systematically.

iii) Identification of a fundamental cause of the conflict

Through game analysis of the actors' perceptions, the model has found that a possibly fundamental cause of the current deadlock is a gap between the NGO's preference perceived by PCA and ADB. A mediator can devise an appropriate countermeasure for breaking the deadlock considering the gap.

It has been demonstrated through a trial implementation that the model is useful for analyzing conflict situations and that the model can suggest specific points that a mediator should consider in order to make the actors cooperate. Such output will assist mediators in understanding conflict situations and give them unnoticed perspectives for promoting negotiation.

Though this methodology is certainly found on the rationalist perspective, it can also be applied to those cases with preferences of strategic manipulation. These preferences might appear paradoxical but this methodology could ultimately reveal inconsistency with what they seem to envisage. Plausibility analysis of this kind is also among the objectives of this methodology

The main objective of the model is to contribute to clarifying the structure of a conflict by focusing on gaps among actors' perception and finding fundamental causes of the conflict. As long as there is a possibility that differences in stakeholders' preferences is what prevents conflict from being resolved, there is potential benefit from utilizing the proposed model. It is also worth noting that the model could work in situations which actors have not yet fallen into confrontation. Any conflict of interests among actors can be analyzed in the same manners to produce a prescription for conflict prevention.

Again this study highlights a general point about social conflict that actors can easily be ignorant of how differently other people may be looking at the situation. Even those individuals and organizations with experience and knowledge are not the exception. The concept proposed here will hopefully be used to act as a catalyst for multi-perspective, pluralistic thinking for conflict management.

REFERENCES

1) Asian Development Bank (1998). Cooperation Between ADB and NGOs.
2) The Consensus Building Institute (2001). Chashma Right Bank Irrigation Project - Stage III, Workshop on Social Impacts: Draft Discussion Paper.
3) World Bank (2003). Field Research Guide, KDP & Community Conflict Negotiation Study - *Qualitative Research Phase 2A*(April 2003).
4) Howard, N., Bennett, P., Bryant, J., and Bradley, M. (1993). Manifesto For A Theory Of Drama And Irrational Choice *Journal of the Operational Research Society*, 44(1), pp. 99-103.
5) Horita, M. (2000). Folding arguments: a method for representing conflicting views of a conflict. *Group Decision and Negotiation*, 9(1), pp.63-83.
6) Toulmin, S.E. (1958). The Uses of Argument, Cambridge, *Cambridge University Press*.
7) Bennet, P. (1997). Toward a theory of hypergames, *Omega* (5). pp. 749-751.
8) Bennet, P., Cropper, S. and Huxham, C. (1989). Modeling interactive decisions: the hypergame focus, *Rational Analysis for a Problematic World*, pp. 283-314.
9) Bennet, P. (1980). Using Hypergames to Model Difficult Social Issues: An Approach to the Case of Soccer Hooliganism, *The Journal of the Operational Research Society*, 31(7), pp. 621-635.
10) Bennett, P., Bryant, J. and Howard, N. (2001). Drama Theory and Confrontation Analysis, *Rational Analysis for a Problematic World Revisited*, pp. 225-248.
11) Poundstone, W. (1992). Prisoner's Dilemma, *Doubleday*, a division of Bantam Doubleday Dell Publishing Group, Inc.
12) Asian Development Bank. (2003) *Theun-Hinboun Hydropower.* http://www.adb.org/Projects/TheunHinboun/ [2003, December 15].

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国際コンフリクトマネジメントの支援手法論：トゥンヒンブン水力発電プロジェクトの調査事例を通して

Building an Analytical Tool for Conflict Management in Development Projects: A Case Study of Theun-Hinboun Hydropower Project

米澤　明男[1]　　堀田　昌英[2]

[1]M.Eng.　国土交通省東北地方整備局
(E-mail: yonezawa-a82ab@pa.thr.mlit.go.jp)

[2]Ph.D.　東京大学大学院助教授
社会技術研究システム・ミッションプログラム　非常勤研究員（兼任）
(E-mail: horita@ken-mgt.t.u-tokyo.ac.jp)

国際開発プロジェクトの実施にあたっては、利益集団間の利害衝突がしばしば深刻な問題となる。本研究では、そのような状況での交渉を支援するための手法を考案した。本手法の特徴は、それぞれの当事者が争点や相手の発言・行動に対してどのような認識を持っているのかという情報を、仲介者に提供することにある。考案した手法は過去の開発事例に適用された。事例分析では、議論ツリーと意思決定マトリックスを用いて争点の全体像を明らかにした。さらに、認識表とハイパーゲーム理論を用いて当事者の選好と戦略を分析することで、各プレーヤーの協力行動を阻む「認識の齟齬」を発見した。本事例研究により、構築された手法が実際の交渉支援に適用可能であることが示された。

キーワード：コンフリクトマネジメント、開発プロジェクト、ハイパーゲーム、議論ツリー