

Motives of Decisions in Cooperation for Long-term Disaster Recovery: Housing Reconstruction in Sri Lanka

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Regarding the recovery of developing countries after large-scale disaster, long-term cooperation projects implemented by aid agencies have been increased in importance. In spite of the agreed common objective and principle in cooperation, however, actual decisions of players are influenced by the respective motive. Different motives existing in cooperation process can be the challenge to achieve the agreed goals in long-term recovery. As the case study, the respective motives and its causes of Government of Sri Lanka and Belgian Red Cross in housing reconstruction projects after 2004 tsunami are analyzed. Player's motives in cooperation for long-term reconstruction can be classified into three types of root cause of each motive: (a) player's characteristics, (b) disaster circumstance, and (c) interdependent relation between players.

Based on the understanding of the root cause for motives, four kinds of players' incentive-compatible systems for cooperation are suggested: (a) Limiting the participation of aid agencies as an implementer in crucial fields to prevent aftermath by sudden halts of projects, (b) Developing the impact indicator of long-term contribution beyond the project and notifying it to donors in order to promote spontaneous attention, (c) Forming a permanent consultative group on infra and housing to assist the initial planning and save the time as a single window, and (d) Sharing the project cost between government and donors to hedge the both risks of fund instability to agencies and conditional commitment to government.

Key Words : *motive of decision, long-term recovery, incentive-compatible cooperation*

1. INTRODUCTION

Damage by large-scale natural disasters in developing countries generally exceeds ordinary capacity of local government and people. For quick recovery, the assistance of the central government and foreign aid agencies is required. In marginalized area, exceptional assistance from outside can be the chance of local development as well as the momentum of recovery. Long-term disaster recovery by aids is especially important in the viewpoint of sustainable development because infrastructure and housing improved by long-term recovery assistance are the prerequisite for not only disaster resilience but also social development.

Long-term recovery aids for housing and infrastructure has been increased in importance. According to the study for the World Bank, overall funds

available had not increased for 20 years since 1980, but the share of loans supporting housing reconstruction had grown¹. And in the 2010 Haitian Earthquake recovery, construction partnership was the second largest part of partnership between international NGO and local agency after food distribution². But, when aid agency takes part in long-term recovery programs as an implementer, the cooperation between government and aid agencies becomes more complicated than short-term recovery in which aid agency works as a supporter.

For the long-term cooperation, common objective and outcomes are agreed between government and aid agency at an early stage. However, at the same time, both of government and aid agencies have different objectives and motives as well. Such differences can have influence on achievement of agreed outcomes. In the housing reconstruction, for instance, allocation of

houses based on identified needs is generally consented. Unlike the agreed objectives, government sometimes selects ineligible beneficiaries without time-consuming process of strict screening under great pressure to decide as soon as possible³. On the other hand, some aid agencies abandon their housing projects before completion because donors divert attention to the new flashpoint^{4,5}. Such different motives existing in cooperation process between government and aid agencies can be the challenge to achieve the agreed goals in long-term recovery^{6,7}.

In the evaluation reports of long-term recovery projects and researches regarding it, different motives of players in the cooperation come up frequently at implementing stage. But, it is difficult to overcome without understanding of each motive's root causes. If the countermeasures are applied without consideration of each player's motive for cooperation, another problem will appear during recovery process. Therefore, the motives in decision of players should be understood for making the incentive-compatible recovery process that can achieve the common goals effectively. Although long-term recovery cooperation has connection with many players like local contractor, affected people and so on, this research limits key players as the government and an aid agency. By the recovery case study, each player's motives are analyzed according to the root cause. Based on it, the incentive-compatible systems are suggested as countermeasures.

2. HOUSING RECONSTRUCTION IN SRI LANKA

The 2004 Indian Ocean Tsunami was the significant event in the viewpoint of recovery aids as well as disaster magnitude. Although the scale of the disaster in terms of casualties and economic loss has been exceeded several times in the past, the response to the tsunami was unprecedented⁸. Instant disaster reporting by global media led to the quick mobilization of an international humanitarian response including the pledge of approximately US\$13.5 billion^{4,8}. Disaster affected countries, mainly developing countries, could complement limited capability for recovery, from emergency relief to long-term reconstruction, by huge international aids. Especially, the participation of aid agencies in long-term recovery project as implementers based on unprecedented fund was remarkable.

One of example was the housing reconstruction in Sri Lanka. The tsunami had caused severe impact in Sri Lanka including 35,322 people killed, 516,150

Internally Displaced People (IDPs) and 99,480 completely destroyed houses^{9,10}. In terms of economic loss, the ADB estimated that the loss in housing (\$341million) was more than one-third of Sri Lanka's total loss (\$970-1000million)¹⁰. At the severe damage of houses in coastal area, the Government of Sri Lanka (GoSL) saw the necessity to implement coastal development regulation that had not been implemented before the tsunami. Only days after the tsunami struck, GoSL announced a "no reconstruction" coastal buffer zone that varied in width from 100m in the South to 200m in the East and North¹¹. By the policy, about 43,000 houses inside the buffer zone had to be relocated at inland sites¹⁰. To complement limited capability of housing reconstruction, GoSL adopted two types of programs, the Donor Assisted Program for relocating houses and the Owner Driven Program for houses in situ. As the response of huge needs, about 100 agencies developed housing projects in their programs¹².

The necessity to make the common objective and goals clear had arisen by participation of various players. Agreement among GoSL, international donors and civil society in Sri Lanka on core principles for recovery was made. Housing-related core principles consist of two parts:

(a) Resource allocation based on identified needs and local priorities, without discrimination on the basis of political, religious, ethnic, or gender considerations.

(b) Coordination of the recovery effort in order to maximize benefits and prevent duplication.

Even though the evaluation of a decision can be different according to the viewpoint, in this research, these two principles are considered as criteria for evaluation of players' decisions at each housing recovery phase.

As the case study, the housing reconstruction project of Belgian Red Cross in Sri Lanka is analyzed. The Red Cross Red Crescent was the biggest single housing donor taken the responsibility of implementing 15% of the national housing reconstruction after 2004 tsunami^{3,13}. And Belgian Red Cross was one of 21 Partner National Society (PNS) that joined housing reconstruction¹⁴. Belgian Red Cross consisting of two group, the Belgian Red Cross-Flanders and Belgian Red Cross-French Speaking Community, implemented total 763 houses^{3,16}. Unlike other agencies that failed to make detailed data on decisions during recovery process because of a shortage of time and manpower, Belgian Red Cross releases the data in detail. With the reports of Belgian Red Cross and other researches on Sri Lanka's housing reconstruc-

Table 1 Key decisions in phases of housing reconstruction.

Phase	Player	
	GoSL	Belgian Red Cross
Initial Planning	Implementation type of housing reconstruction	Participation in housing
Plan Adjustment during Implementation	Change from DAP to ODP partially	Continuing participation
Completion and Handover	Reexamination of ineligible people	Reexamination of ineligible people

tion, motives in cooperation and its cause were analyzed.

In the cooperation project, each player makes decisions continuously through the whole process from planning to completion in interrelation with other players. In this research, three phases are chosen as key phases that have an important effect on achievement of recovery outcomes by cooperation, as shown in **Table 1**.

At each phase, desirable decisions of GoSL and Belgian Red Cross were decided in the viewpoint of expected common goals. And actual decisions are compared with desirable decisions. In terms of player's objective and characteristics, two contrary motives in each decision were identified.

(1) Initial Planning

In the initial planning phase of long-term recovery, the government decides the overall recovery scope, target and method. Under the frame made by government, aid agency can decide its scope of participation. In this phase, the players' role in cooperation is determined.

a) GoSL: Decisions and Motives

The key decision for GoSL in the initial planning phase was 'Implementation type of housing reconstruction'. Relocation policy of almost a half of tsunami affected houses required huge resource and implementing capacity exceeding the capability of GoSL. Based on the unprecedented aid pledges, GoSL tried to bridge this gap by long-term cooperation with aid agencies. When aid agencies take part in housing reconstruction, the method for implementation can be considered as two types. One method is Owner Driven Program (ODP). House owners manage the reconstruction by themselves and agencies support the budget and technical aspects. Another method is Donor Assisted Program (DAP). Aid agencies construct new houses and hand over to beneficiary. Because the type of implementation influences the whole

process, this decision is important in initial planning in terms of project outcomes of projects.

According to UN-Habitat, the UN agencies for housing, ODP is preferred as housing reconstruction because of several reasons¹²⁾. ODP has the advantage in motivation for affected people's participation in the program than DAP. By active participation of people, houses can be constructed more suitable for local condition and cultures. Moreover, local people can know materials supplier and skilled people better than external aid agencies. When the technical assistance by experts of aid agencies is combined, ODP can be the desirable decision.

However, GoSL adopted both methods: DAP for relocation and ODP for houses in situ. Consequently, the process of housing reconstruction was impeded by DAP. Large number of houses as DAP requires many implementing agencies without consideration of whether they have experience in housing fields or not. Such inexperienced aid agencies revealed several problems not only delay of schedule but the quality of houses^{12,15)}. Nevertheless, the GoSL decided to adopt DAP for almost a half of whole houses. The reason why GoSL selected this option can be understood by analysis of two conflicting motives in decision-making.

Key motive to adopt only ODP can be said as 'Awareness of people participation's importance'. Especially for involuntary resettlement, it is easy to fail by returning people to original place when the participation of people is limited. For instance, after the India Gujarat Earthquake in 2001, the government tried to maximize the people's participation in relocation process because of previous experience of relocation failure¹⁶⁾. Unfortunately, GoSL had neither procedures of involuntary relocation nor experience of large disaster's recovery⁸⁾. Consequently, it became the cause of overlooking the advantage of ODP.

On the contrary, the most important motive for selecting DAP was 'Utilization of agency's management capacity'. Because the funding was not the major challenge after the 2004 tsunami, there was no significant difference in terms of securing budget¹²⁾. But in the view point of GoSL, DAP has the significant advantage to supplement the shortage of capacity to manage the huge relocation. Through the DAP for relocation, GoSL could save much effort in housing reconstruction.

Additionally, another indirect motive for adopting DAP partially was 'Pressure to quick response'. In fact, one of reasons why GoSL decided massive relocation in haste without careful consideration was great pressure to quick response. Because GoSL

thought that it is needed to act quickly before people move back to risk-prone area, GoSL hurried to set the criteria for reconstruction as soon as possible^{17,18}. By the same token, DAP for relocation was decided without detailed comparison with ODP as the quickest way to act.

b) Belgian RC: Decisions and Motives

In terms of the field of activity, long-term housing reconstruction was not the ordinary field of Belgian Red Cross focusing on emergency relief for short-term. Therefore, for Belgian Red Cross in the initial planning phase, the decision of participation in permanent housing reconstruction was the key decision. Although housing field was one of main issues in Sri Lanka, Belgian Red Cross didn't have experience or procedure on housing reconstruction before the 2004 tsunami. So, it was a significant challenge for staffs of Belgian Red Cross who were more familiar with short-term relief programs¹³.

In the viewpoint of appropriate resource allocation, 'nonparticipation in housing reconstruction' was desirable decision for Belgian Red Cross. According to the research on the quality of houses reconstructed by inexperienced INGOs after the 2004 tsunami, many INGOs had failed to come up with quality of housing in terms of construction material, earthquake-resistance, sanitation, etc¹⁹. In some case, the poorly constructed houses by representative INGO like Save the Children had to be destroyed. In terms of effective usage of resource, inexperienced NGO's participation in housing as the leading role cannot be desirable decision. Nevertheless, Belgian Red Cross decided to join the housing reconstruction³.

Major motive for decision of participation in unfamiliar field was 'to satisfy the donors' demands'. After the 2004 tsunami, many of the NGOs had expanded their commitment from relief to reconstruction as they met unprecedented flow of grant funds¹⁹. According to the researches on aid agencies, they have strong accountability to meet donors' expectation. For aid agencies under pressure to demonstrate their effective usage of resources to donors, participation in important recovery work is crucial to profile and becomes an important opportunity for fund-raising as well^{10,14,20,21}. For this reason, Belgian Red Cross might decide to participate in housing reconstruction, even though it didn't have enough know-how.

On the other hand, Belgian Red Cross could have the motive for nonparticipation, 'minimizing responsibility of donors'. According to the report on planning phase, Belgian Red Cross staffs' preference on implementation type was swayed between DAP and ODP by the interpretation of responsibility in each

type³. Regardless of result, main criteria were exactly same. That was minimization of grant donor's responsibility. From this point of view, Belgian Red Cross might prefer supporting role at ODP to leading role at DAP. To conclude, Belgian Red Cross decided to participate because the motive to satisfy the donor's demands was stronger than the motive regarding responsibility.

(2) Plan Adjustment during Implementation

In the many cases, it is inevitable to revise the initial recovery plan because of not only uncertainty in considerations but also various changes during implementation of plan. For this reason, plan adjustment during implementation was second key phase for achieve desirable outcomes for cooperation.

In the case of Sri Lanka, several problems mainly caused by hurried decision for relocation were revealed during implementation. One of main issues was the scarcity of land as relocation site⁹. Even though there are many government-owned sites, only limited number of site was appropriate to live. Additionally, some INGOs that pledged participation in housing reconstruction abandoned their projects before completion of mission⁴. Such changes required another key decision to both players for reaching the initial goals.

a) GoSL: Decisions and Motives

The sweeping change of plan was impossible because many of DAP already made some progress in this phase. Therefore, one possible decision was to reduce the portion of DAP partially. Or it can be another option to keep original plan on DAP and change only implementers of stopped projects.

In this situation, the desirable decision will be to reduce the portion of DAP because it can solve the both of problems, stopped projects and land scarcity, for sustaining recovery. Moreover, at this time, ODP had shown considerable progress in comparison to DAP²². In terms of quick recovery, change some DAP to ODP was appropriate decision. The same decision was made in reality. The criteria between ODP and DAP, the buffer zone, was reduced from 100~200m to 35~125m^{3,17}. By this revision, about 30% of 43,000 DAP houses was changed into ODP types.

Key motive to reduce the portion of DAP partially was 'stable progress of housing reconstruction'. Basically, housing reconstruction influences the whole recovery because it is key component for society as the life space. If high dependency on aid agencies for housing reconstruction was kept, there might be possibility to spread recovery delay from housing to other fields like livelihood. To prevent this, reduction of the

DAP's portion was required.

There was the contrary motive to keep the original criteria as well because of 'worry about confusion by changing criteria'. If the method is changed during implementation, aid agencies can go through difficulty because there is no way to redeem the investment until that point. This can be supported by the real cases that many aid agencies postponed the investment because of frequent change of reconstruction criteria by GoSL^{12,23}. In spite of such possibility of investment delay, the portion of DAP was adjusted to cope with more important issues.

b) Belgian RC: Decisions and Motives

In the aftermath of change in criteria by GoSL, Belgian Red Cross had to decide whether continuing projects which was changed from DAP to ODP or not. In the viewpoint of implementer, it was totally different between DAP and ODP, including project location, required type of human resource, scope of responsibility and so on. Therefore, the halt of project was also reasonable choice for Belgian Red Cross.

Between two possible options, continuing project with changed method was desirable in the meaning of distributing secured resource to affected people. In this case, Belgian Red Cross decided the same option. Regarding one project site changed from DAP to ODP, Belgian Red Cross keep the participation⁸.

Main motive to keep the participation is 'to satisfy the donors' demands'. Even though the methods for implementation were totally different, there were still same demand for new houses and necessity for assistance. Moreover, the change from DAP to ODP meets the incentive of aid agencies to reduce the responsibility of donors.

On the other hand, there was the motive to halt the changed projects for 'converting saved budget to other projects'. If secured budget cannot be spent, it can be used to other projects. However, in conclusion, Belgian Red Cross selected to endure the hardship that is needed for projects change to satisfy the donor's demands.

(3) Completion and Handover

Unlike ODP in which ownership was fixed for entire reconstruction process, ownership of house by DAP can be adjusted before the handover. Because permanent house construction takes long time, the conditions of potential beneficiaries can be changed significantly between initial phase and completion phase. In terms of resource allocation based on needs, reexamination of ineligible people as beneficiary should be considered at the completion phase.

a) GoSL: Decisions and Motives

At the completion phase, GoSL's key decision can be the reexamination of ineligible people as beneficiary of DAP houses. For example, some people in initial beneficiary list can find the alternative houses by themselves before the construction of DAP house. In the other case, some people found jobs in other place no longer needed new houses in the remote site. To distribute resource based on actual needs, such people ineligible for new house should be checked at the final phase.

Of course, reexamination of beneficiary list just before handover phase is desirable action to help the most vulnerable. The principle in housing reconstruction of GoSL was 'a house for a house' that means each house owner gets back the same amount of houses that he had before the tsunami^{3,12}. Even though it was proper as the quick criteria, it was impossible to screen ineligible beneficiaries, for instance, who owned more than two houses. However, GoSL didn't reexamine the beneficiary list at completion phase.

Key motive of GoSL to reexamine ineligible beneficiary is 'to distribute resource to the most vulnerable'. According to the survey after completion of projects by Belgian Red Cross, actual occupancy rate was only 86% in DAP and 93% in ODP⁸. The owners in non-occupant houses usually lived in alternative house in the original place of the coastal area or other places. If beneficiary list was examined at the completion phase of project, these non-occupant houses could be allocated to more vulnerable people.

In the case of keeping the initial beneficiary list, the motive is 'to minimize the resistance and confusion by change of list'. This motive can be understood in the viewpoint of political consideration of the government. In fact, political consideration was revealed at the housing allocation in the planning phase as well. For instance, in Hambantota, the political base of the President of Sri Lanka, more than 30% of housing recipients was just political nominees who had not been affected by the tsunami⁴. It shows the resource distribution in recovery can be influenced by political factors. For the adjustment of the beneficiary list, GoSL had to endure the resistance of people who will lose their vested rights. The fact that GoSL didn't reexamine the housing beneficiary list at completion phase shows that political consideration can be stronger motive to the government than fair distribution of resources.

b) Belgian RC: Decisions and Motives

Just like GoSL, reexamination of ineligible people at completion phase can be key decision in terms of achieving expected goals. Belgian Red Cross knew the limitation of their beneficiary list including ineligible

people through the survey on beneficiary list³⁾.

As the same reason of GoSL, reexamination of beneficiary list just before handover phase is desirable action for Belgian Red Cross. However, Belgian Red Cross didn't apply reexamination on the list.

The motive for reexamination corresponds exactly with the agreed principles between GoSL and stakeholders in recovery. For 'the resource allocation according to needs', exclusion of ineligible beneficiary should be conducted before handover of new houses.

On the contrary, the key motive not to revise the initial beneficiary list strictly can be found at 'aid agencies' way of reporting project outcome to donors'. Usually, numbers of constructed house are emphasized in progressive reports and completion report of recovery projects rather than the fair allocation of houses based on exact needs, which is difficult to show with simple index. When the dependency of aid agencies on donors is considered, easiness of reporting can be one of reasonable criteria to pay attention especially at completion phase.

It was quite exceptional case as compared with other aid agencies that Belgian Red Cross surveyed on the occupancy rate and the causes of low occupancy after the completion of projects⁸⁾. However, even Belgian Red Cross didn't pay attention to increase occupancy rate before handover of houses.

3. TYPES OF MOTIVE IN COOPERATION PROJECTS

In the long-term recovery cooperation, key motives in decision-making at important phases were analyzed. In terms of expected common outcomes, the fair distribution of resource based on actual needs, players made quite different decision with the desirable decision to achieve agreed goals except plan adjustment phase. It shows the necessity of understanding the characteristics of motive in player's decision for improving recovery process effectively.

Player's motives in cooperation for long-term reconstruction can be classified according the root cause of each motive. First of all, there are the motives induced by player's characteristics. These motives are decided by the establishment object or management style of each player. Secondly, disaster circumstance influences the motive of decision as well. Pressure to quick action after disaster and changing factors during implementation can be categorized in this motive. Thirdly, interdependent relation between players for cooperation induced different types of motive. Interdependent relationship, such as the government of

developing country counting on the assistance of aid agencies for implementing capacity and the aid agency relying on the government for securing recipients, was closely related to motives.

Based on the understanding of the root cause for motives, players' incentive-compatible systems for cooperation are suggested briefly. The details on each category are like below.

(1) Characteristics of Player

a) Motives

The agreement on fair distribution of resources especial to vulnerable group as core principle for recovery was closely related to both players' establishment object for public benefit. Government exists for the public interest and recovery aid agencies exist for humanitarian help for disaster-affected people.

Although two players share the similar establishment objects, difference in management style induced different motives as well. In the case of Government, consideration of political factors is induced by government management system, especially the election by people. In fact, one of important reasons for revision of buffer zone policy was the change of government regime. New president elected during recovery process wanted to distance himself from previous presidency by recovery policy²⁴⁾. Such characteristics of government sometimes made policy makers pay more attention to evaluation of people than the fair distribution of resources.

Aid agencies depend on grant funds by donors for their project budgets. This management system also closely related with the motive to meet donors' expectation in the initial planning and plan adjustment phases. And the motive to minimize responsibility is mostly due to project-based management system. Because each project is conducted only for limited duration, agencies want to finalize the whole issue including responsibility within the project schedule. Relative neglecting longer impact even after the end of projects as compared with the effects within the schedule of project also related to this aspect.

b) Incentive-Compatible System

Based on the features of player's motive, cooperation system designed for easy achieve desirable goals can be suggested. Regarding the motives from player's characteristics, aid agencies' dependency on donors is worthy of notice because it influence the recovery process in various ways.

First of all, the measure to prevent negative impacts by sudden halts of projects by aid agencies to follow donors' interests can be established. If high dependency on fund is understood as unavoidable feature of

aid agencies, the government can reduce the negative impacts to whole recovery process by limiting the participation of aid agencies as an implementer in crucial fields like infrastructure and housing fields. Unlike relief item distribution, if housing or infrastructure reconstruction is stopped suddenly, it can influence the whole recovery. In such crucial fields, aid agencies' role should be limited as a supporter not a main implementer. It can be the ways of mitigating the aftermath by unexpected halts of projects.

Secondly, development of the index for long-term contribution beyond projects can be the incentive for achieving such goals because aid agencies pay attention to the evaluation of donor on their achievement. Aid agencies usually emphasize their achievement as simple numbers like the number of constructed houses. Unfortunately there is no proper indicator showing sustainable contribution by aids. If such indicator is developed and reported to their donors, staffs of aid agencies will pay more attention spontaneously to long-term contribution beyond project as well as achievement within project schedule.

(2) Disaster Circumstance

a) Motives

Government's pressure to quick response in the initial planning phase results from the distinguishing disaster circumstance. After the unexpected large-scale disaster, government has to decide many things quickly under the uncertainty. Therefore, the pre-existing characteristics of disaster-affected government are clearly revealed in planning phase. For instance, the centralized decision-making of GoSL was reflected in its recovery planning. Even though it was helpful to make decision quickly, it prevented time-consuming consideration of local opinions in recovery plan.

And the burden to quick response prevents the utilization of expertise in aid agencies as well. If GoSL took more time to consult experts about relocation planning, GoSL could reduce the overall recovery time when it is considered that inappropriate initial plan in haste make huge delay of recovery.

Necessity for plan adjustment during implementation also related to distinctive disaster circumstance. In comparison with planning of ordinary development projects in which most of influential factors are predictable, many of influential factors for plan continuously changed through the complex interaction since the occurrence of disaster. Therefore, the motive to adjust initial plan is inevitable in disaster circumstance.

b) Incentive-Compatible System

When the importance of initial planning for long-term recovery is considered, the countermeasures satisfying both of quick planning and complementing inexperience of government is strongly required. For this issue, the permanent consultative group for aid agencies of the fields like infrastructure that needs long-term implementation can be helpful. This permanent consultative group can save the planning time of government by minimizing the contact points as single window. Because the number of agencies in that field is much smaller than the number of emergency relief, it is quite practicable as well.

In Sri Lanka case, lead agencies playing a pivotal role in the coordination of each field were decided during recovery implementation²⁵. But the lead agencies couldn't contribute to prevent mistakes at initial planning phase because it didn't exist before the tsunami.

(3) Interdependent relation for Cooperation

a) Motives

Government and aid agencies cooperate for recovery in interdependent relationship. As a result, one's decision itself became another's motive to decision.

In the unprecedented grant funds for recovery after the 2004 Indian Ocean tsunami, GoSL decided to rely on aid agencies for implementing almost half of housing reconstruction. And this decision of GoSL became the motive of aid agencies to expand the commitment to new field. On the other hand, GoSL got the motive to reduce portion of DAP by the decision of aid agencies to halt the on-going projects as well.

b) Incentive-Compatible System

When the interdependent relationship is taken into consideration, it can be the incentive for continuous commitment to aid agencies that government supports the budget of project partially. Through this system, aid agencies can hedge against the instability of fund to some extent. And based on increased commitment of aid agencies, government can reduce the needs for plan adjustment as well.

This approach was adopted in the housing reconstruction after the Gujarat earthquake in India. In this case, DAP was conducted as the public private partnership with 80 NGOs on a 50% cost sharing basis with government. Moreover, Gujarat government could save the budget for long-term recovery by promoting for NGO's participation after finish of relief by support half of budget for rehabilitation projects^{26,27}. These kinds of incentive-compatible cooperation system can be designed from the understanding of motives.

4. CONCLUSION

Regarding the recovery of developing countries after large-scale disaster, long-term cooperation projects implemented by aid agencies have been increased in importance. In spite of the agreed common objective and principle in cooperation, however, actual decisions of players are influenced by the respective motive. Different motives existing in cooperation process can be the challenge to achieve the agreed goals in long-term recovery.

As the case study, the respective motives and its causes of Government of Sri Lanka and Belgian Red Cross in housing reconstruction projects after 2004 tsunami are analyzed. Three phases are chosen as key phases that have an important effect on achievement of recovery outcomes by cooperation: (a) Initial Planning, (b) Plan Adjustment during Implementation, and (c) Completion and Handover. At each phase, desirable decisions were decided in the viewpoint of expected common goals. And actual decisions are compared with desirable decisions. In terms of player's objective and characteristics, two contrary motives in each decision were identified. According to the result, both players made quite different decisions with the desirable decision except plan adjustment phase. It shows the necessity of understanding the characteristics of motive in player's decision for improving recovery process effectively.

Player's motives in cooperation for long-term reconstruction can be classified according the root cause of each motive. First of all, there are the motives induced by player's characteristics. These motives are decided by the establishment object or management style of each player. Secondly, disaster circumstance influences the motive of decision. Pressure to quick action after disaster and changing factors during implementation can be categorized as the cause of motive. Finally, interdependent relation between players for cooperation induced different types of motive. Interdependent relationship, such as the government of developing country counting on the assistance of aid agencies for implementing capacity and aid agency relying on the government for securing recipients, was closely related to motives.

Based on the understanding of the root cause for motives, four kinds of players' incentive-compatible systems for cooperation are suggested. First of all, regarding the motives from characteristics of player, two remedies are suggested:

(a) Limiting the participation of aid agencies as an

implementer in crucial fields to prevent aftermath by sudden halts of projects.

(b) Developing the impact indicator of long-term contribution beyond the project and notifying it to donors in order to promote spontaneous attention.

Secondly, in terms of the motives by disaster circumstance, the measure to enhance the efficiency of initial planning under the pressure to quick act was considered:

(c) Forming a permanent consultative group on infra and housing to assist the initial planning and save the time as a single window

Finally, based on interdependent relation between players,

(d) Sharing the project cost between the government and donors to hedge the both risks of fund instability to agencies and conditional commitment to the government.

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