

# A Framework of Watershed Management from the Viewpoints of Project Risk Management

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**ABSTRACT:** Under tighter project environment constraints, project risk management is rapidly becoming a popular tool in practice in the world. Its application field may not be limited to project management. Actually a golden rule of project risk management is a useful guideline in many fields: Risk should be managed by those who can do so best. As far as infrastructure development and management is concerned in the post war period in Japan, however, generally people have been pushing many risks towards public governments. This attitude often contradicts with the project risk management principle. The project risk management should be used as a conceptual tool to discuss a direction of how people and government should develop and manage infrastructure. Setting the principles of project risk management as an analytical viewpoint in watershed management, thus, the objectives of this paper are to reinterpret some of the Asian wisdom to coexist with the nature, to overview the history of infrastructure development and management in the post war period in Japan, and to discuss a direction of how people and government should cooperate in watershed management in Japan.

**KEYWORDS:** watershed management, project risk management, cooperation between government and people

## 1. BACKGROUND AND OBJECTIVES

Under tighter project environment constraints, project risk management is rapidly becoming a popular tool in practice in the world. Its application field may not be limited to project management. Actually a golden rule of project risk management is a useful guideline in many fields: Risk should be managed by those who can do so best.

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## 2. OVERVIEW OF PROJECT RISK MANAGEMENT

Main elements of project risk management are to identify, structure and analyze, and respond to major risk factors. Risk management process is a tool for assisting a project manager to conduct the above whole series of sub-processes. Application results are often represented with the trade-off between return and risk. Here, return is usually defined as the expected value of what the manager will achieve as her/his objective, and risk is defined as the variance of what she/he will achieve as her/his objective. It should be noted that time or costs to take measures are included in expected time or costs.

Measures bringing a situation with lower risk and higher return are desirable. If either is improved without sacrificing the other, that situation is said to be in “risk efficient.” Measure B is more risk efficient than measure D since the both expected time or cost and its variance associated with measure B are smaller than those associated with measure D. None of measures A, B, and C is more risk efficient than the others. The goal of risk management process is to obtain risk efficient measures such as A, B, and C (Figure 1).

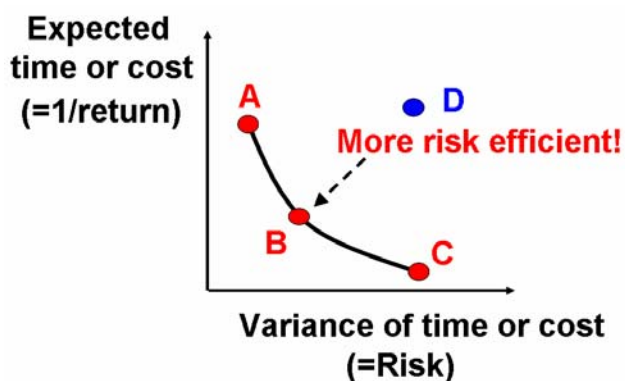


Figure 1 Concept of Risk Efficiency

## 3. CHARACTERISTICS OF INFRASTRUCTURE DEVELOPMENT AND MANAGEMENT AFTER THE POST WAR PERIOD

Regarding infrastructure development and management after the post war period, at least two observations are made from the viewpoints of risk management: high cost and no or undesirable achievement of risk efficiency for multiple parties.

High costs are caused by unreasonable risk allocation. Watanabe points out that as far as infrastructure development is concerned Japanese people have often been pushing many risks to the construction industry including the government. This attitude may have pushed the costs of infrastructure development. Theoretically if one party takes much risk, the party puts contingency fee to prepare for the risk (Watanabe 2006).

Yoshida points out that recent Japanese public works tend to be implemented on the adversarial axis between the public administration and residential people or citizens and that this axis should be redirected into dialogical axis to achieve consensus building (Yoshida 2006). As a result, some transaction does not necessarily put the all transacting parties in risk efficient conditions.

Pipatanapiwong and Watanabe (2001) define multi-party risk efficiency as the situation in which all parties in the transaction are in risk efficient conditions. For successful project risk management, it is important to take risk management measures that are able to achieve the multi-party risk efficiency. In reality, however, this is not necessarily achieved. Even if this is achieved, risk efficient conditions are not necessarily desirable for all parties.

For example, human beings take a significant amount of water for hydraulic power generation from many rivers. As a result, little water is left for underwater creatures. This water allocation enables only the human beings to enjoy “convenient” lives but often puts lives of underwater creatures in danger. Suppose that securing a sufficient level of water flow rate is an ideal goal for underwater creature. If

variation of water flow rate is too large, this situation is too risky. This may be medium return but too high risk, which may not be risk efficient. If water flow is hardly left for underwater creature, this situation may be low risk low return. Even if this is risk efficient, too low return cannot be accepted by underwater creature.

#### 4. LESSONS LEARNED FROM AN ACCIDENT IN A DAYCARE CENTER

Difficulty in achieving risk efficiency can be observed in other field. The author would like to introduce a case study of an accident in a daycare center. This case study actually suggests a hint of how to achieve the risk efficiency.

An accident occurred that a child died of heat disorder while playing in a daycare center in Ageo-city in 2005. After the accident, there was a discussion that assuring safety is of course important but that free nursing is also important. Nishikawa distinguishes between caring and nurturing and defines caring as “making a child stay away from any danger” and “nurturing as encouraging a child to live vividly at each moment by making a small failure and learning from it (Nishikawa, 2006).”

Nishikawa further states that “discussions swings between caring and nursing. This swing is a proof of sound daycare center.” and that “nurturing becomes only possible by officially and unofficially embedding the opportunities in administration of the daycare center for sharing the above-mentioned swing, bringing up worries and problems associated with nurturing from the both staffs and parents, and discussing among parents how the nurturing should be. It is important for parents and staffs to stay close so that they can share a fear of incident.”

Significance of the swing from project risk management viewpoints is explained in Figure 1. Here return and risk are defined as the expected

value and variance of what each child achieves as her/his objective, respectively. Then the caring is considered a low risk and low return task, and the nurturing may be perceived as a high risk and high return task. In principle the swing seems nothing more than consensus building steps towards ideal goals with lower risk and higher risk. The swing is an indispensable step towards a risk efficient solution.

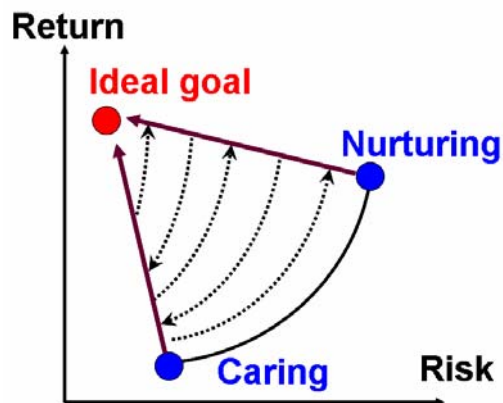


Figure 2 Significance of the swing from project risk management viewpoints

Yoshida says that major steps towards the consensus building include listening honestly to each other, swinging, accepting each other, and creating responsibilities each other (Yoshida, 2006). Creating responsibilities each other is equivalent to initiating to take risks each other.

Nishikawa further claims that public space really becomes “my important place” by not developing “for the citizens” but walking “with the citizens 2005).”

In order to create “my important place,” it is important to go through these four steps. However, this is never easy. In the following sections, thus, two possible measures are discussed to realize these steps: straightforward presentation for making people feel a sense of responsibility and reconsidering meaning of convenience.

## **5. STRAIGHTFORWARD PRESENTATION FOR MAKING PEOPLE FEEL A SENSE OF RESPONSIBILITY**

The first component is straightforward presentation for making people feel a sense of responsibility. People belonging to an organization with a hierarchical structure often have a difficulty in listening to others honestly. They often act as components of their organizational system, that is, replaceable and invisible even though they do not want to do so. They can only speak “language prescribed by the system.” They have a difficulty in talking about not only other peoples’ feeling but also their own feeling. Especially many Japanese public administrators have this fate (Kato, 1997). For example, it is often said an administrative officer responsible for compensation negotiation associated with dam construction is discouraged to have a chat with residential people who are required to move out the dam site. Thus, it is often extremely difficult for such a replaceable and invisible component to do honest listening.

Straightforward presentation seems effective to overcome barrier for honest listening and to reach the final step of consensus building: creating responsibilities and risk each other. Here three actual examples of paths to consensus building are described: recalling a sense of shame, feeling surprised, and sharing sorrow.

The first two examples occurred in Monobe river flowing in Kochi in Japan. The river used to be known for a very clean stream but is now facing a critical situation of a sharp decrease in catches of sweetfish. Its annual catches were beyond 70 tons in the beginning of 1980s but became less than one ton in 2006. Though existence of sweetfish is considered a symbol of a clean stream, many farmers who have been enjoying a sufficient amount of water intake are indifferent to this sweetfish crisis.

When young staffs in the agricultural sector participated in a cleanup event of the river and found plastic bags and bottles farmers left, the staffs were shocked and shamed with their colleagues’ behavior. This incident becomes one of turning points in attitudes of some people in the agricultural sector towards the river. Some cooperative activities are started by the agricultural sector and the inland water fishery sector in solving drought problem and agricultural muddy water problem to improve the river environment and to restore the sweetfish. Young people in the agricultural sector are creating responsibilities.

Even though a sense of shame is not felt, feeling surprised may be sufficient for some people to create responsibilities. One of the students of the author had no interest in Monobe river until he went to the estuary of the river and observed that it was blocked with deposit. He was first very much surprised with this condition. Then he watched excavation project to open the blockage. According to him, he was changed when he watched a moment when the estuary was opened and water started flushing from the river to the sea.

Stories after critical accident occurred in Tokai village are good examples of demonstrating significance of sharing deep sorrow. Yoshida actually asked each mother whose child may have been exposed to critical accident to write private papers. She then bound these papers in the file and circulated it through hand-in-hand to mothers. Many mothers were actually accusing themselves because they could not protect their child. In the next month after the file is started to be circulated, Yoshida received more than 1,000 faxes from readers. Many mother readers said “I first put off the light from my heart when the light is unnecessary.”

These three stories show that straightforward presentation is a worth-while attempt for the honest listening through mutual creation of responsibilities.

## 6. RECONSIDERING MEANING OF CONVENIENCE

The second component is reconsideration of meaning of convenience. Ohnishi (Ohnishi, 2006) successfully demonstrates this necessity through his interviewing people for years who have been living in old Tokuyama village, which went under water due to dam construction. An old man says, “We have to move with our legs to do our works, but we can do them in the range where we can walk. Cars and trains were not really necessary before. We could manage without them. Living in the heart of the mountain is not as inconvenient as you imagine. We actually think it is convenient.”

Ohnishi then says, “Meanings of “convenience” are totally different in between the current generation and old generation. The old people never feel convenient in the world where everything can be operated with one switch. Jo-san, the name of an old lady, always says that living in a city is inconvenient. ...The terra may have provided human beings with everything which are needed for them to be alive.” (Description with the underline was inserted by the author.)

Ohnishi also describes Jo-san as follows: “She is enjoying this earth very very much. She works very hard to eat, but she is never unhappy to do so. She seems to be telling me that her outlook on value of work is fundamentally different from our objective of work, that is, to eat.”

The author interprets the two meanings of convenience as follows. For people of the current generation, it is a possibility that they pursue return, that is, whatever they want to do without risk, that is, being worried about any life-threatening event. For the people in the old generation, it is enjoyment to be united with the nature, that is return, and to have the assurance, that is opposite to risk, of living in the nature where they can well manage their lives for

themselves most of the time.

It is never easy for them to survive in the heart of the mountain. They can only do so by carefully and more importantly enjoyably observing any change in the nature as well as acquiring and practicing wisdom which have been taking over from their ancestors over the generations. In this sense through dialog with the nature they always conduct risk management of avoiding and responding to factors to threaten their lives. Furthermore their pursuit of return and risk management are united and can not be separated. Independence and unification are the pillars of their convenience.

However, they are never overconfident. Ohnishi observes them and says, “They very often clasp their hands in prayer towards the gods of fire, water, ground, and light. The god lies in anything.” The author observes that this pray is practice of one of “the golden rules” in project risk management: minimize risks that you do not control (Kashiwagi, 2004). No matter how hard each party tries to manage risks, certain risks may be out of her/his control. In project management such risks may be transferred to other party through contract. The behavior of the old peoples of appreciating for today’s happiness and peace, today’s return, and praying for tomorrow’s happiness and peace, reciprocal concept of tomorrow’s risk, is considered equivalent to behavior of an excellent project manager of pursuing return while minimizing risks she/he does not control.

This independent and unified management by the old people is totally opposite to the people of the current generation. The current people pursue their return but hand most of “rights” of managing life-threatening events to other people such as government. Thus, the full dependency of risk management of one’s own life on others and separation between the return pursuit and the risk management are the pillars of their convenience.

Now sustainability of water environment is in critical conditions. Physical and mental health of not a few Japanese is also seriously questioned. Under this situation, the full dependency and separation of the return pursuit and the risk management is not a wise idea. The current people should change their concept of convenience to more independency and unification of the return pursuit and the risk management.

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