

# Present and Future of Risk Management of Construction Practice in Asia

Tsunemi Watanabe<sup>1</sup>

**Abstract:** *Owing to rapid infrastructure development, Asia is experiencing dramatic economic growth. There are not a few cases in which, however, economic growth is achieved by increasing the external diseconomy. Pursuit of sustainable development is one of the most important issues for mankind. Under the post-industrial capitalism society, however, there seems a big risk of increase in the external diseconomy worldwide. The objectives of this manuscript are to discuss importance of risk management of construction practice in present and future. Regarding the latter, a particular attempt is made to discuss how project risk communication should be done to reduce the external diseconomy. Presently, one of the important issues in implementation of infrastructure projects is practice of risk management to properly manage time, cost, quality, and safety: mainly maximization of internal economy. Multi-party risk and uncertainty management process (MRUMP) is one of tolls to assist it. The idea on MRUMP can be used to reduce the external diseconomy through identifying, sharing, and tuning people's rhythms.*

**Keywords:** *Risk Management, Risk Communication, External Diseconomy, Post-industrial Capitalism, Sustainable Development*

## I. BACKGROUND AND OBJECTIVES

Owing to rapid infrastructure development, Asia is experiencing dramatic economic growth. There are not a few cases in which, however, economic growth is achieved by increasing the external diseconomy. Pursuit of sustainable development is one of the most important issues for mankind. As presented by “Think globally, act locally,” thus, it is needed to implement projects to reduce the external diseconomy and contribute to realizing the sustainable development in many occasions. In order to do so, effective and efficient project risk management and appropriate risk communication are expected to play an important role. The objectives of this manuscript are to discuss importance of risk management of construction practice in present and future. Regarding the latter, a particular attempt is made to discuss how project risk communication should be done to reduce the external diseconomy.

## II. RAPID ECONOMIC GROWTH AND INCREASE IN EXTERNALITY IN ASIA

In many Asian countries, their economies and energy consumption are growing rapidly. For example, now coal consumption in China is almost equal to that of the rest of the world. It means that we now need multiple “earths.” Wang et. al. (2015) compares the external costs per unit generated electricity in between the coal-fired power plant and the biomass power plant in the Northeast China. It is found the former cost is almost 600 times as high as the latter cost in their case study. Chinese economy has been growing partly by increasing the external diseconomy.

China's case is never exceptional. It seems that under capitalism society increase in the external diseconomy is unavoidable for the following two reasons. The first reason is described based on Iwai's observation (Iwai,

2003). Iwai emphasizes that the basic principle of capitalism is to pursue profit through using the difference in two market prices: buying goods at low price in one market and selling them at higher price in other market. The principle of post-industrialism, which most economically developed countries have been pursuing, is essentially the same as the conventional capitalism. The only difference is to create the profit by making difference intentionally or not. Globalization of economy is necessary activity along with this principle. What is being competed is under the post-capitalism society, therefore, intentional creation of differences in global scale. The second reason is characteristics of economically developing countries: excessive expectation towards environmental protection technology by policy makers and weak environmental governance. Although good environmental protection technologies are developed and available, their effectiveness is limited under weak environmental governance. For the above two reasons, the difference can be intentionally and often “maliciously” created by increasing the external diseconomy. Under the post-industrial capitalism, there seems a big risk of increase in the external diseconomy worldwide.

## III. ALTERNATIVE VIEW ON SUSTAINABLE DEVELOPMENT

It is not overstatement to say that sustainable development is one of the most important issues for mankind nowadays. In sustainable development, it is needed to balance economic, environmental, and social objectives. As discussed in the previous chapter, however, it is never easy to pursue sustainable development under the post-industrial capitalism. Debate and conflict on an issue of operation of nuclear power plants in Japan after 3.11 in Fukushima is an example to show this difficulty.

---

<sup>1</sup> Vice Chair, Construction Management Committee, Japan Society of Civil Engineers, Professor, School of Economics and Management, Kochi University of Technology, 2-22 Eikokuji-cho, Kochi-city, Kochi 780-8515, Japan, [watanabe.tsunemi@kochi-tech.ac.jp](mailto:watanabe.tsunemi@kochi-tech.ac.jp)

Those who would like to pursue economy say that the plant operation is indispensable for our economy. Those who are concerned with children claim that its operation has to be stopped to protect their lives and health.

Conventional framework of sustainable development is not necessarily applicable to this issue for two reasons. First, a concrete way to balance the three objectives has not been established yet. Second, the life and health problem of children are related to the both social and environmental objectives. The relation to the two objectives makes derivation of the solution to the health problem of children more complex.

Actually this conflict is between economy and life. It is worthwhile discussing alternative framework to incorporate this conflict. Here, a tentative proposal is made for a new framework. A proposal is based on Miyajima's experience, an entrepreneur of cheese production working with physically and mentally handicapped people. With his sincere efforts, his chesses have obtained many international awards. His remarks are full of hints for discussing alternative framework for sustainable development (Miyajima, 2008).

"Distortion in our society comes from ignoring laws of nature & life. By pursuing economy, ...we have destroyed global environment and exhausted peoples' minds." "Endogenous way of life and production, which is tuned to the natural rhythm, first gives us health and satisfies our minds and protects the natural environment. The next task is to create economic systems based on the above accomplishment. It seems to me that a great force leading to the next society will act when the life of each person resonates with the nature of rhythm."

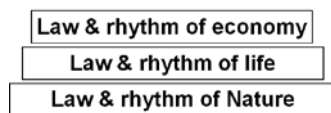


FIGURE I  
 A NEW FRAMEWORK FOR SUSTAINABLE DEVELOPMENT

Alternative framework for sustainable development (Figure I) has two characteristics. Firstly, rhythms of nature and peoples' lives have to be maintained first. Pursuit of economy should be after it. Secondly, it is important to check if rhythms of people's lives are protected or not. People are the ones who eventually receive damage and suffer from abnormal rhythm of the nature and excessive pursuit of economy. It is important, thus, to develop and use a tool and systems to check the rhythms of people, share them among society members, and tune the rhythms of the nature, people, and economy.

#### IV. PRESENT AND FUTURE OF RISK MANAGEMENT OF CONSTRUCTION PRACTICE

Presently, one of the important issues in implementation of infrastructure projects is practice of risk management to properly manage time, cost, quality, and safety: mainly maximization of internal economy. It is particularly difficult to deal with a "catastrophic" risk

factor: the one with small probability of occurrence but huge impact once it occurs. It is easy to undervalue or neglect a catastrophic risk factor. A measure without incorporating it may look economical. To the contrary, a measure incorporating it would be able to prevent a huge cost increase even if a catastrophic event occurs. Different parties have different perceptions on project risks depending on their knowledge and experience. To manage a catastrophic risk factor properly, thus, it is effective for project stakeholders to do risk communication, that is, identify, share, and integrate their different risk perceptions. Multi-party risk and uncertainty management process (MRUMP) is one of tolls to assist it (Pipattanapiwong and Watanabe, 2009).

In future, the idea on MRUMP can be used to reduce the external diseconomy through identifying, sharing, and tuning people's rhythms. Janmaimool and Watanabe (2014) study environmental pollution problems in Maptaphut, Rayong Province in Thailand. Their preliminary survey shows that it is likely to have a difference in perceptions of environmental health risk among various types of stakeholders. People in industrial and public health sectors considered "probability of environmental contamination" as most influential factor to their risk perceptions. Lay people considered "probability of receiving impacts" as most influential factor. Environmental NGO and academia considered "severity of catastrophic consequences" as most influential factor. Understanding the difference in their risk perceptions serves as a foundation to develop risk communication strategy in solving this environmental problem.

#### V. FOR PROJECT RISK COMMUNICATION TO SUPPRESS EXTERNAL DISECONOMY

Frequently, those who suffer from damaged associated with external diseconomy are at weaker position in the society. There are few opportunities for them to be listened by the society. Their voices are actually "voiceless voices." In order to reduce the external diseconomy, it is needed to listen to their voiceless voices of anxieties and expectations for their present and future lives. Project risk communication is a vital tool to realize it in future construction.

#### REFERENCES

- [1] L. Wang, T. Watanabe, Z. Xu, "Monetization of external costs using lifecycle analysis—A comparative case study of coal-fired and biomass power plants in Northeast China", *Energies*, vol. 8, pp. 1440-1467, 2015.
- [2] K. Iwai, "How companies will be in future (in Japanese)", Tokyo: Heibon-sha, pp. 203-218, 2003.
- [3] N. Miyajima, "Everyone has come to me bringing god (in Japanese)", 1<sup>st</sup> ed., Tokyo, Diyu-sha, pp. 203-206, 2008.
- [4] J. Pipattanapiwong, T. Watanabe, "An effective risk and uncertainty management process for infrastructure projects: development of multi-party risk and uncertainty management Process," *Journal of Society for Social Management Systems*, SMS09-119, 2009.
- [5] P. Janmaimool, T. Watanabe, "Evaluating determinants of environmental risk perception for risk management in contaminated sites," *International Journal of Environmental Research and Public Health*, Vol. 11. No. 6, pp. 6291-6313, 2014.