

For measures against massive disasters exceeding the design force

—Research on low- frequency/mega-risk coastal disasters—

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1. Introduction

Interest in low-frequency/mega-risk coastal disasters (below called “mega-risk disasters”), which cause massive disasters when they do occur has been increasing, because of large-scale disasters such as the Indian Ocean Tsunami disaster and Hurricane Katrina which have occurred in succession around the world. The National Institute for Land and Infrastructure Management has studied how to deal with such disasters, defining “mega-risk disasters” as “massive disasters exceeding the design force”.

2. Study of disaster reduction effects of structures other than shore protection facilities and a method of evaluating their effectiveness

A simple simulation model constructed considering its use for administrative purposes is proposed as a method of evaluating disaster reduction effects of buildings etc. against tsunamis and storm surges. This model uses a simple “combined ground height model” which can be prepared using a residential map when aerial survey photographs are not available.

Accounting for effectiveness at normal times, adding to the conventional B/C (cost-benefits) analysis reveals that there are cases where it is possible to enlarge the investment limit several times. This means that there are cases where accounting for effectiveness at normal times ensures B/C in projects with a scale many times larger, even among cases where B/C are not obtained only from effectiveness during disasters.

3. Study of consensus formation methods

However, counting on disaster reduction performance of buildings, parks, etc. against seawater overflowing dikes means that a certain amount of damage should be accepted. It is vital to form a consensus regarding to what extent it is acceptable. And in addition to ordinary residents, there are also business offices, factories, and numerous lifelines, thus the quantity of entities located in a coastal area limits an administrative body’s authority. So a consensus formation process model is proposed for cases adapted for “mega-risk disasters”, and the need for an integrated management system incorporating

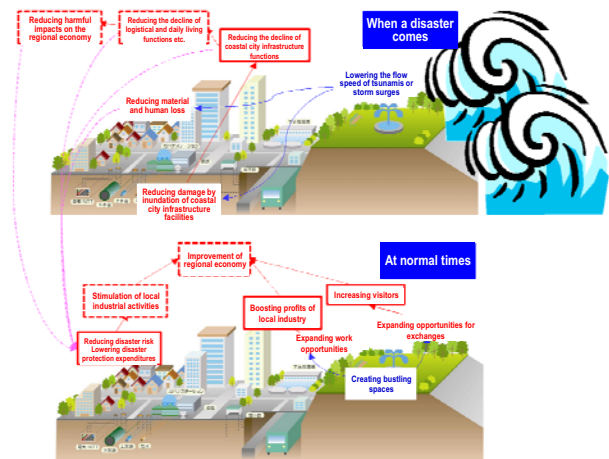


Figure. Effectiveness of Facilities (During Disasters and at Normal Time)

infrastructure information other than shore protection facilities is pointed out.

4. Conclusion

This research proposes a policy of preparing for “mega-risk disasters”, specifically countermeasures while providing facilities with social benefits, because they not only reduce damage during a disaster, but provide benefits at normal times, or in other words, the “No-Regret Policy”.

This survey was worked out to the extent of creating the basic conceptual material to discuss a policy of avoiding catastrophic destruction while accepting a certain degree of damage, but in the future, initiatives to show the way to reach a consensus will be required.