

Proposal of a New Disaster Manual for Implementation of Efficient Disaster Management Measures

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ABSTRACT :

The ideal disaster management measures are to be conducted by property balancing the following three measures: “Disaster Mitigation” or efforts to prevent hazards from becoming disasters, “Preparedness/Disaster Response” or measures to prevent the disaster from affecting widely, and “Optimum Recovery/Reconstruction Plan” or prompt recovery and reconstruction to minimize the disaster effects. It is needless to say that a disaster management manual should contribute to the improvement of each of these approaches. Unfortunately, most of the existing manuals are mainly aimed at the “Preparedness/Disaster Response”. They are “Government prepared,” with inconveniences such as ambiguity over where the responsibility lies and the characteristics of the region and organization. They are “thick printed material,” difficult to edit and evaluate. Such manuals do not improve the overall disaster management. Based on these points, this paper presents a “New Disaster Management Manual” for total earthquake disaster management. This manual considers time flow and damage characteristic and scale so that the organizations and regions, which actually use this manual, can sort out potential problems, review, conduct and assess efficient disaster management measures. In this way, they can create a favorable dynamic environment for disaster management improvement. The authors believe that three functions are necessary to achieve the proposed manual: “Analysis and Assessment of existing manuals”, “Independent Edition by each purpose/user”, and “Drafting and Updating of manual”. With these functions, the users can understand the disaster countermeasure relations as well as their roles from different points of view and review the manual by themselves.

KEYWORDS:

disaster management manual, disaster response, database, web application

1. INTRODUCTION

The ideal disaster management countermeasures are to be conducted by properly balancing the following three measures: Disaster Mitigation, Preparedness/Disaster Response and Optimum Recovery/Reconstruction Plan (Figure 1). “Disaster Mitigation” means efforts to prevent hazard from becoming a disaster. “Preparedness/Disaster Response” means measures to prevent the disaster from affecting/spreading widely. “Optimum Recovery/Reconstruction Plan” means to recover and reconstruct from disaster as soon as possible to reduce its effects to a minimum. Moreover, disaster management can not be improved without user’s imagination of real disaster situation or the implementation of these three measures.

For realizing these measures, people should prepare an environment as shown in Figure 2 not only during disaster periods but also during disaster free periods. This environment consists of 5 elements: time and spatial imagination of what will happen after a disaster, sorting out potential problems by analyzing current disaster prevention policies, design and development of countermeasures, implementation or disaster drill, and “assessment of each element”. If all the people involved in implementing disaster countermeasures (hereinafter called users) participate in their design, they have the chance to plan them based on the regional characteristics because they have to study the background of each countermeasure. For realization of this scheme, it is important to prepare an environment which consists of ordered past or ongoing disaster responses and provide

information to people so that they can imagine the situation after a disaster occurs. Therefore it is necessary to satisfy the following conditions: building up and sharing disaster response information obtained from the current system, analysis/assessment of the information in real-time, and imagination of disaster response and related information.

It is needless to say that a disaster management manual should contribute to the improvement of each of these approaches. Unfortunately, most of the existing manuals are mainly aimed at the “Preparedness/Disaster Response”. They are “Government prepared,” with inconveniences such as ambiguity over where the responsibility lies and the characteristics of the region and organization. They are “thick printed material,” difficult to edit and evaluate. Such manuals do not improve the overall disaster management.

Based on these points, the authors propose the “New Style Disaster Management Manual”. Organizations and regions, that actually use this proposed manual, can sort out potential problems, review, conduct and assess countermeasures so that they can create a good environment for the disaster management improvement (see Figure 3). The authors concluded that there are three functions necessary in order to achieve the realization of this manual: “Analysis and Assessment of existing manuals”, “Independent edition by each purpose/user”, and “Drafting and Updating of manual”.

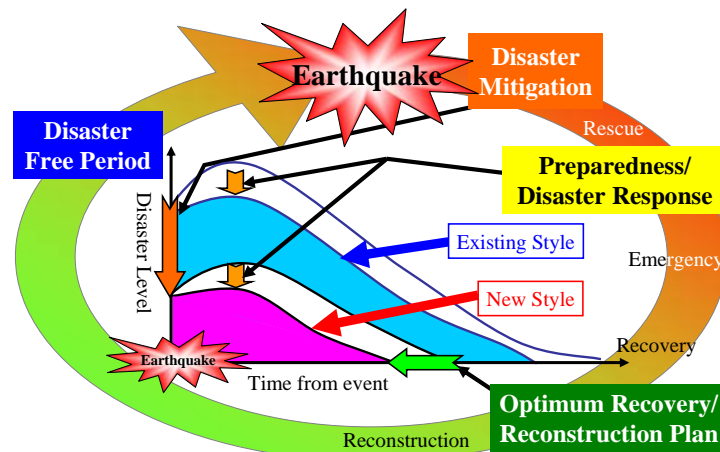


Figure 1 Ideal disaster management countermeasures

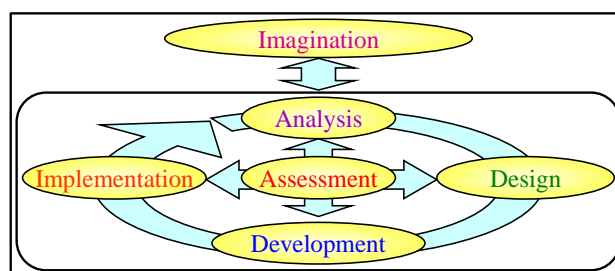


Figure 2 Environment for implementation of ideal disaster management countermeasures

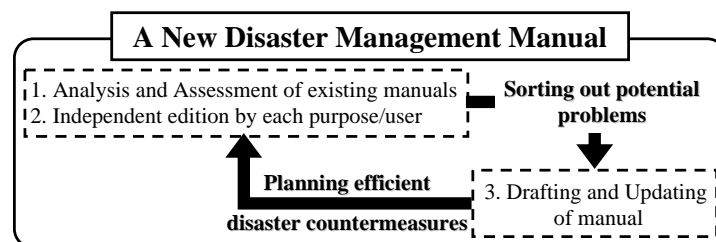


Figure 3 Flowchart of A New Disaster Management Manual

2. ORGANIZATION OF THE MANUAL

In a New Disaster Management Manual, the scenario of damage estimation is incorporated. So time flow and characteristic or scales of damage are considered into this manual. This manual has six indexes which are important for analyzing and evaluating disaster management based on the scenario of damage estimation. These contents are “Responsible organization”, “Service contents”, “Term of measures (Relatively)”, “Time to start and finish measures of an event (Absolutely)”, “Work loads (man x day)”. A relational database is constructed from those indexes. This database is used in web application as disaster management manual (see Figure 4). So, users can use this manual if only they can use Internet / intranet.



Figure 4 An instance of New Style Disaster Management Manual

3. ILLUSTRATIONS, DIAGRAMS AND PHOTOGRAPHS

3.1. Analysis and Assessment of existing manuals

For the realization of comprehensive disaster management, it is necessary to sort out problems of existing manual. Manual should be analyzed and assessed rationally / objectively. However, most of the existing manuals are “Thick books”, it is difficult to judge the quality of manual like relations between each items and the whole balance of contents.

In this study, the authors prepare the function, “Analysis and Assessment of existing manuals”. It is easy to know the relation between each works from indexes set at previous section “Organization of the Manual” excluding “Work loads”, therefore it is easy to analyze contents of present manual rationally / objectively from various points of view. Figure 5 presents an example of analysis and assessment of the disaster management manual of a big city in the Tokyo metropolitan region. The x-axis is “Time to start from an event”. The y-axis represents different “Responsible organization”. The z-axis is “Amount of the work” to be done. From the x-axis, we can see actions are not well pointed out after 6-24 hours and four days. Also from the y-axis, it can be seen that amount of work is not balanced among organizations.

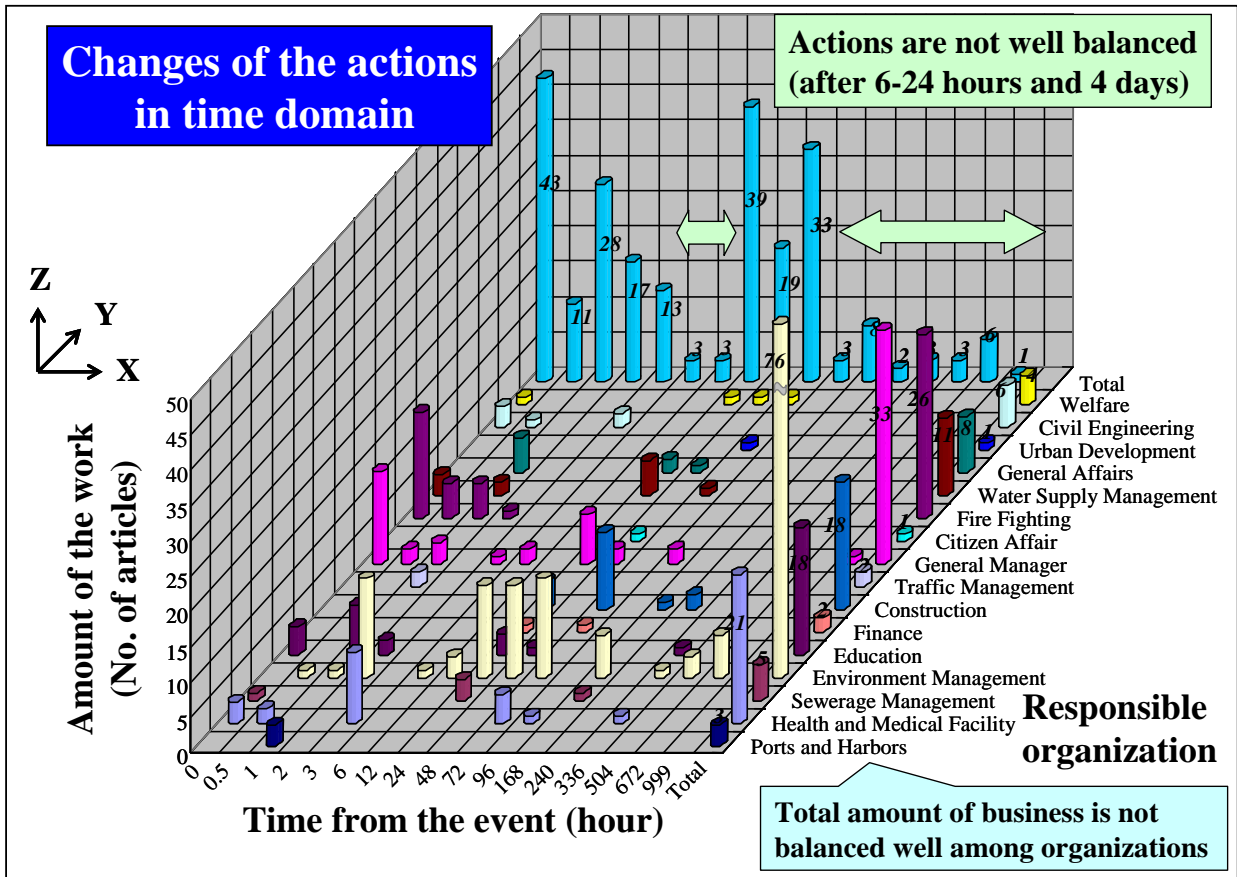


Figure 5 Sample of analytical result of existing manual (after MEGURO, 2001)

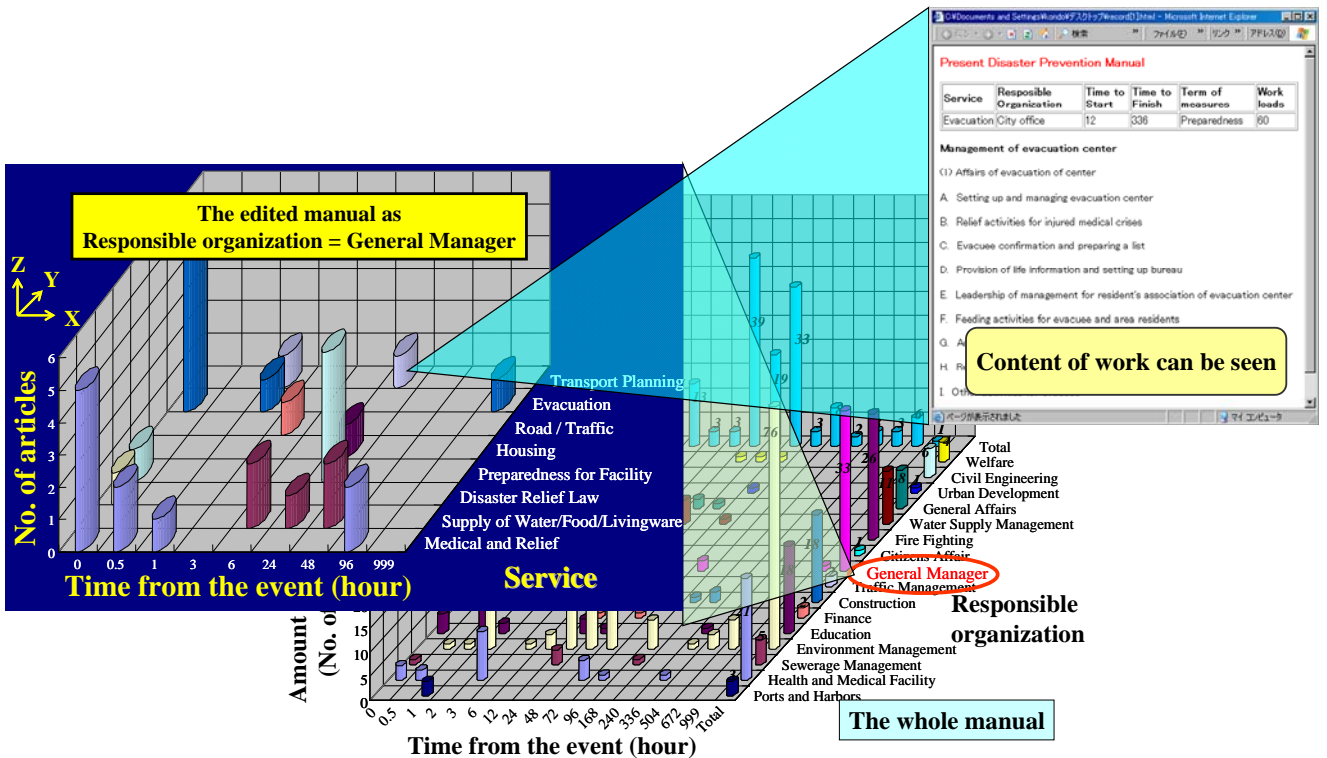


Figure 6 Independent edition by each purpose /user

3.2. Independent edition by each purpose /user

It is essential to analyze / assess disaster management manual from a whole organizational view, but it is not enough. Contents of the total manual become better, if users know how they should act personally and who / when to do some services. To pick information of a latest disaster and to know user's need, directly by accessing the manual is important to assess the real situation of a disaster.

In this study, the authors prepare the function, "Independent edition by each purpose / user". Users choose necessary conditions from indexes set at previous section "Organization of the Manual" excluding "Work loads", picking up necessary items from whole manual, so they can get idea about their own role, during a disaster. Figure 6 shows the application of this feature in the existing government disaster management manual as presented in Figure 5. This figure shows that how a General Manager, (normally mayor or governor) of an organization can select his own responsibility just by clicking a button on his position.

3.3. Drafting and Updating of manuals

Drafting and Updating process of the disaster management manual by real users is very important and useful occasion to study and understand contents of the manual, that is, sorting out potential problems and reviewing / assessing measures so users contribute in the improvement of comprehensive disaster management measures. However, most existing manuals are "the Government prepared", which cannot be improved through the process of reviewing the manual by the real users.

In this study, the authors prepare the function, "Drafting / Updating the resulting manuals". With this function, users can review their disaster management manual by themselves. For instance (see flowchart of Figure 7), in case of considering the manual of some organizations of the disaster countermeasures office, each member of this organization drafts his/her own manual by him/herself with information people should consider at each condition set by indexes. And members compare and discuss their own manuals, so they can sort out potential problems and consider and assess disaster prevention measures. It follows that when the manual of this organization is completed, members can understand not only problems of their organization / area but background of each item through this process, so they will be able to do measures without manual smoothly after a disaster occurs.

The features of "Drafting and Updating of manuals" are two. Firstly, users easily know which and how many actions should be added, if potential problems can be found, through analysis of present manual. Secondly, users easily know how many actions can be decreased, if they do proper measures before the event. Figure 8 gives an example of these changes.

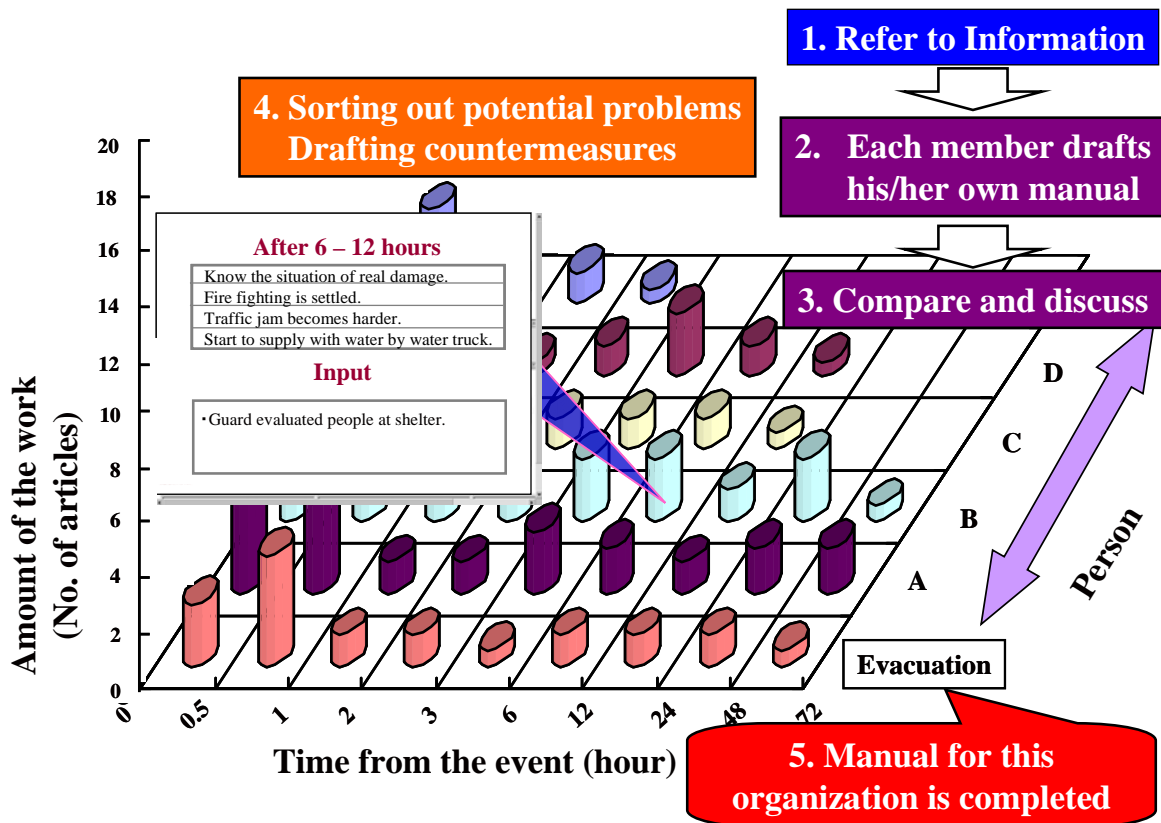


Figure 7 Flowchart of drafting a manual of an organization

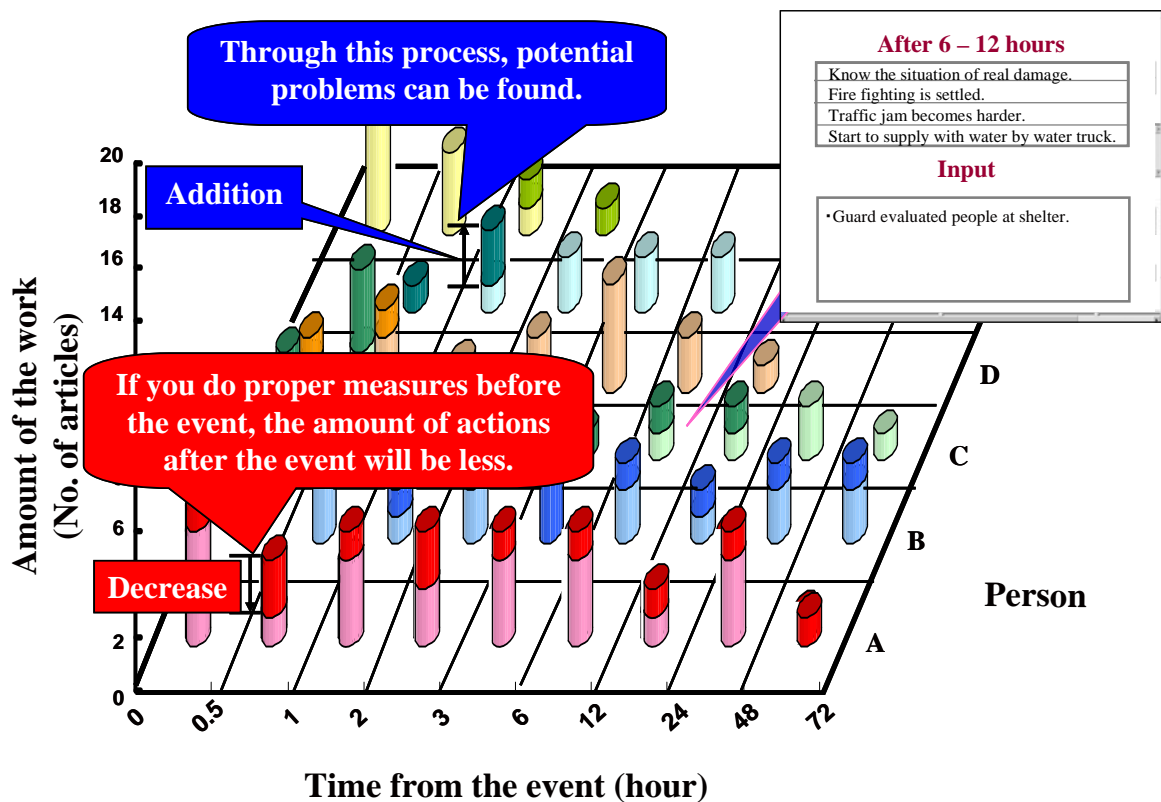


Figure 8 The features of the function, “Drafting / Updating the resulting manuals” (after KONDO et al., 2001)

4. CONCLUSION

In this study, the authors propose “New Disaster Management Manual”. As the result of incorporating the scenario of damage estimation, setting indexes, and construction of relational database, three functions as below are achieved: “Analysis and Assessment of existing manuals”, “Independent edition by each purpose/ user”, and “Drafting and Updating of manual”. Organizations and regions can create a good environment to sort out potential problems, review, conduct and evaluate countermeasures like the flowchart in Figure 9. And these can improve comprehensive disaster prevention.

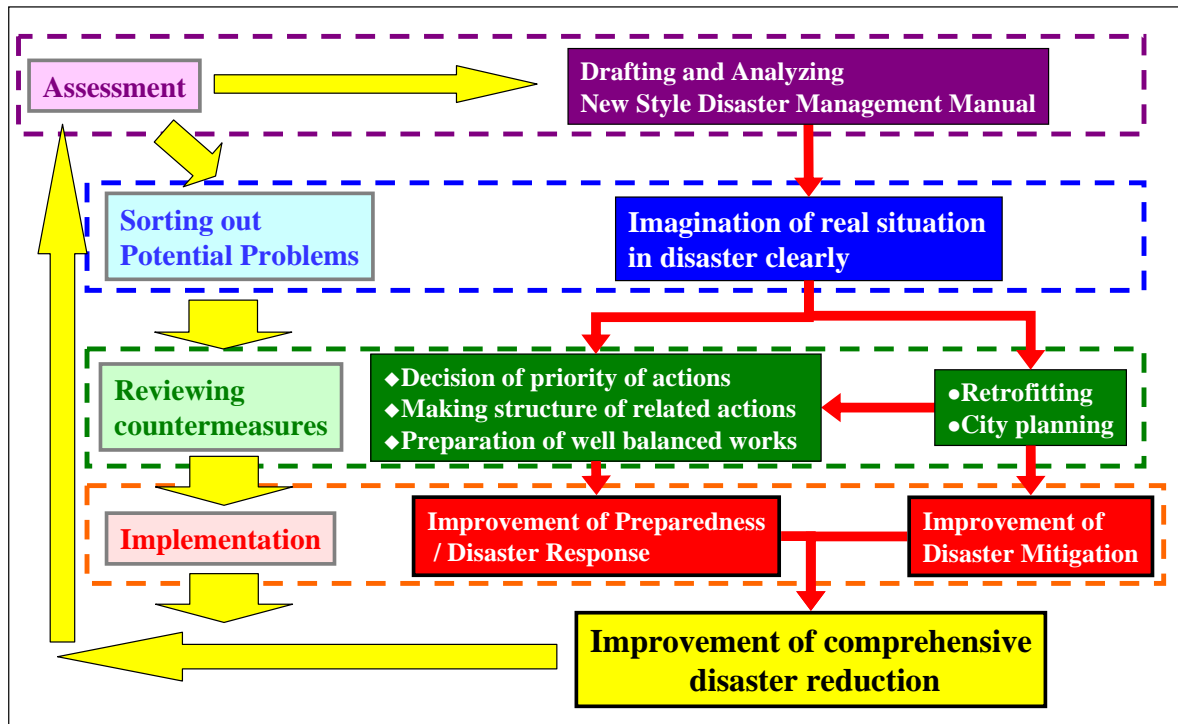


Figure 9 Flowchart of using of proposed manual

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