Introduction

Human lives have always been subject to different natural risks and dangers throughout the history all over the world. Parts of these dangers have been due mainly to the geological and geomorphological processes and activities such as earthquakes, volcanoes and so forth. Other dangers which are relatively more widespread and frequent, are the climate changing processes which sometimes result in devastating events among which flood, drought and severe storm events are remarkably commonplace. Drought, meanwhile, is strikingly common and of high importance of all. Drought is a worldwide phenomenon, which could happen everywhere throughout the world and lead to major economic, social as well as environmental losses and costs.

Drought has two effects, direct and indirect. Agricultural products decrease, deforestation, risk of fire, water level drop, and wildlife losses could be some impacts of drought. The result of direct effects would be indirect effects. For instance, the reduction of agricultural products and fertility of forests and grasslands could possibly decrease the income of farmers and increase the prices of food products, wood, unemployment, crime as well as increasing the immigration. In general the effects of drought could be divided into economical, environmental and social impacts.

Many studies have been conducted on the impact of drought and strategies to cope with it. In this study we discuss about direct and indirect impact of drought in function analysis system technique. By this technique we can detect internal relationships and use the results to suggest solutions to cope with droughts.

Methods

Function:
In general, the function of each subsystem is the target of it, in other words functionality is the main duty of every subsystem.

FAST Diagram:
One of the most well-known methods, which is used frequently specially by value engineers is function analysis system technique (FAST). The graphical representation was designed by Mr. Charles W. Bythway for the first time in 1964. This method makes it possible to organize functions based on cause and effect relationships.

In many cases the problem occurs in one of the functions and affects other functions, these kinds of problems are called Fuzzy Problems, finding the real source of these problems is very difficult. This technique is used widely to solve Fuzzy Problems and system problems. Because the purpose in FAST diagram is to gain a complete description of the process in a system to help to detect the problem with a function.

On the other hand considering this diagram shows the relationships between the functions graphically, it can help to improve creativity for solving the system problem, redesigning idea for cost reduction and make the system perform better. Ranking of functions and describing their position relative to the whole system are other advantages of this method.

Result

Among direct impacts of drought, reductions in water level, agricultural production, fertility and meadows can be mentioned as most important impacts respectively. Each of these proposed Fuzzy problems themselves cause increase or decrease in another Figure 1. Strategies in the areas of economic, social, environmental and health to deal with the effects of droughts are shown in figure 1 result. Some management strategies are shown in figure 2. Of other management alternatives which can help to deal with the drought the following items can be mentioned: using global successful experiences, collecting and recognizing the experiences of organizations and institutions, documenting and organizing their implementation strategies to maximize use of rain, managing the required water for agriculture, developing rural and urban sewage collection networks, improving wastewater treatment by constructing modern stations, flood control, allocating certain volume of water for suppliers, organizing a system of operation and maintenance of irrigation facilities.

Conclusions

Function Analysis System Technique (FAST) is considered as one of the most important parts in value engineering as a practical tool in analysis and detecting problem level. In this study we used FAST diagram for the next step, to investigate the direct and indirect impacts of drought on four separate items which are environment, economy, society and health. Then the problem-solving strategies to reduce the adverse effects of drought on the functions of these four items were developed (maybe without using this diagram we never reach to strategies to mitigate the drought adverse effects), some other solutions are shown separately as management strategies Figure 2. By noting the FAST diagram it can be concluded that all the suggested strategies feasible and management strategies have more impact and functionality. It means that in order to cope with drought and its adverse impact we must act systematically. The planning must be done before possible drought in a way that we reach minimum damage during drought. By this we detect internal relations in system and then by using the result we suggest solutions to manage and cope with drought.

References

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Further Information

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