

**Diagnostic of the situation [Part 1. Components of drought planning. 1.1. The planning framework]**

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# Chapter 3. Diagnostic of the situation

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**SUMMARY** – Water shortages can be the result of drought phenomena but can be also the result of human actions such as increase of water demand due to population growth or changes of people habits, or due to bad water management plans. This chapter outlines the diagnostic search that water policy makers, water managers, decision makers and other stakeholders, should take before embarking on the preparation of drought preparedness plans, so that they know the causes of water shortage and that drought preparedness plans are necessary. If the results from this search are negative, the relevant authorities must take the necessary measures and actions so that the proper environment is created in each of the items so that the preparation and implementation of Drought Preparedness Plans is facilitated, and it is effective and efficient.

**Key words:** Drought, water shortage, water balance, Institutions, laws, knowledge, environment, education.

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## The purpose of diagnostic search

The immediate result of a drought phenomenon is water shortage with impacts on the economy and social life and the environment. However water shortages or better water scarcity can be caused by human actions such as population growth, wasteful use of water, inefficient water of water and in many cases by non rational water balanced water management plans. Since the drought preparedness plans constitute a part of the water resources management plans and since the drought preparedness plans (which involve too many economic, social and other measures and actions), are put into operation when certain indicators or water supply alarms levels are realized, it is imperative that before preparing the drought preparedness plans that a diagnostic search is carried out to find out that the water scarcity or water shortage are the result of drought and not the result of human actions and inefficient water management plans. In view of the above those responsible for the preparation of the drought preparedness plans in close cooperation with those responsible to prepare the water management plans, should carry out a diagnostic search which is outlined below.

## Steps in diagnostic search

In view of the need to carry out a diagnostic search the following items should be investigated:

### Are there sufficient Institutional and Legal Frameworks?

The preparation of drought management plans, requires continuous monitoring of the meteorological conditions, the hydrological conditions, the water demand change, the nature of the activities taking place within the perimeter of the project, the physical and operational condition of the structures and equipment of the project, the set up and performance of the operation and maintenance personnel of the project and generally the overall project performance in meeting the projects objectives. The collected information on each and every activity has to be analyzed and evaluated on a continuous basis, enabling the water managers to deduct conclusions and make projections concerning the water availability, water demand and water scarcity and the proposal of additional works to increase efficiencies, and water resources availability if necessary. The above can be carried out within an institution, which shall be given the legal rights and the power and means to execute their functions in the best possible manner. Governments should have established the appropriate institutions whose duties and responsibilities shall be clearly defined with their rights and powers to execute the duties and responsibilities defined in the legal frameworks. If the appropriate Institutional and Legal Frameworks, for the preparation of the water resources management plans and the preparation of drought mitigation plans, are not available both plans shall suffer from deficiencies and most probably shall not be effective and efficient. Every country which considers seriously

the good governance of its limited, fragile, and threatened water resources, if it has not sufficient institutional and legal frameworks should prepare and establish one the soonest possible.

### Is water shortage caused by droughts or else?

Water governance includes all those institutional, legal and administrative actions and measures which together with the national or regional policies set the framework for water management. Good water governance means that water demand to a project does not exceed the water supply resulting to zero scarcity except under drought conditions. This means that water scarcity (see definition in Annex 2 Glossary of terms and concepts) under normal conditions is equal to zero. In order to achieve this, water managers must be able to revise continuously the water management plans to take into account the increase in water demand (population growth, irrigation growth, industrial growth, rising of standard of living and increase in environmental demands etc.), and the water supply changes mainly water supply decrease due to climatic changes, or groundwater depletion. While water demand increases due to population growth and due to other reasons, the water supply usually remain the same or even decreases due to environmental reasons, resulting to water scarcity. The increasing water scarcity of a project with demand exceeding the available water resources, at the national, the regional or project level, due to human actions (population growth, irrigation growth, industrial growth, rising of standard of living and increase in environmental demands etc.), if not taken into account in the preparation of the general water management plans, will result into frequent water shortages, which together with drought events may create an intolerable situation. With the above in mind it will be advisable to carry out the following diagnostic search and analysis:

(i) Are adequate Institutional and Legal Frameworks established? If not the responsible authority should take actions to establish them the soonest possible.

(ii) Are the water management plans updated on a continuous basis with zero water scarcity under normal average conditions? If the water management plans are not updated then it is necessary to take this action the soonest possible. If water scarcity is increasing then either water demand should be reduced or additional water resources should be made available to the project so that the average demand does not exceed the average water resources available to the project.

### Is there sufficient scientific knowledge and acquaintance with the methodologies and in depth knowledge of the project in general?

The preparation and implementation of water management plans and drought preparedness plans requires scientific knowledge, and methodologies which are provided within this guidelines, but it also requires good knowledge of the project (water impounding structures, aquifers, their yields, the structures capabilities etc), their design specifications and limitations. All above require continuous educational and training both in office and in the field of those involved in these activities. Water management plans and drought preparedness plans are project specifics and those involved in these activities should be well acquainted with the project operational capabilities on top of the scientific and methodological know-how. Water Institutions must encourage and facilitate their personnel to acquire the scientific knowledge and the methodologies required for the risk analysis and drought characterization necessary for drought preparedness plans but also on the preparation of rational water resources management plans.

### Are environmental needs taken into consideration?

Water supply under drought conditions is very critical since the satisfaction of the environmental needs in business as usual are rated very low compared to domestic and industrial water supply, and supply for agricultural consumption and usually are not taken into consideration under drought conditions. Environmental needs must be estimated and the benefits derived evaluated. According to the water needs and the benefits derived, they must be ranked in priority of supply in comparison to the other economic sectors. This will enable the decision makers to take into account these needs during the allocation and distribution of the limited water resources under drought conditions and contribute towards the satisfaction of the basic environmental needs.

## Is a common language used by all stakeholders?

Drought, water scarcity, hazards, vulnerability, and other terms and concepts have a different meaning for different stakeholders. It is necessary that all the stakeholders have a common language concerning the water resources management and drought preparedness plans. Acquaintance and knowledge of the terminology is a must for those involved in the drought preparedness plans and on water management preparation and implementation plans.

## Are the consumers aware of the water issue and educated to use water?

The preparation and implementation of water management plans and drought preparedness plans requires that consumers have knowledge on the efficient and effective uses of water. Since water is a very important commodity for the social, economic and environmental development of a country and since water is treated by many as a social good, with the supply and demand not defined by the free market but by the demand and willingness of the consumers, it is not easy to regulate the supply of water. In view of the above the supply and demand, should be regulated by the consumers, by being aware that the water resources are limited, fragile and threatened by the unwise, inefficient and ineffective use. Governments not willing or due other reasons not being able to apply water tariffs for the regulation of supply and demand should intensify their efforts to create water awareness by educating the consumers on the water availability issues and on the efficient and effective use and utilization.

## **Remedy of the issues. Conclusions of the diagnostic search**

If during the diagnostic research it is concluded that there exist deficiencies in any of the investigated items, it would be advisable that the relevant authority takes steps to remedy or improve the situation. Institutional and legal frameworks should be adequate to enable the collection, process, storage and analysis of the data and information required for the preparation of rational water management plans and efficient and effective drought preparedness plans. The legal frameworks should give the right, the power and means to those responsible to implement the water management plans under drought conditions to act within legal and rational frameworks so that they are effective and efficient. It is also necessary to make sure that drought preparedness plans are made for water shortages caused by drought phenomena and not by human actions. To avoid this all stakeholders should contribute to the formulation of rational water management plans, which under normal conditions do not create water shortages or water scarcity. Other deficiencies such as scientific know-how and methodologies of those responsible with the execution of these operations should be made up with the attendance of training and educational courses including the use of common language. Finally but most important is the creation of awareness on the water issues and the education of the consumers to use water in an efficient, and effective way. The best Drought Preparedness Plans are probably destined to fail if the consumers' cooperation and understanding is not secured, because they do not know the problem or cannot mitigate the water shortage problem.