

## THE ROLE OF LOCAL COMMUNITY IN DROUGHT MITIGATION

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*Summary: Drought consequences recently occurred show the great vulnerability of society and necessity of pro-active drought management. The increasing of drought vulnerability requests inclusion of local community in measures for drought mitigation. Therefore, the local community represents the first line in combat against drought. The combat against drought has included the measures that were used when drought occurred, while the new concept will include the measures which will be used before, during and after drought.*

*In this paper, the role of local community in drought mitigation is shown. In order to mitigate the drought effects and to increase the resilience of local community on droughts in the future, the principles and aims of active and effective combat against drought are highlighted.*

**Keywords:** drought mitigation, local community, drought management.

### 1. INTRODUCTION

Drought is a hydrological hazard characterized by the lack of rainfall. It can be classified as meteorological, hydrological, agricultural and socio-economic drought. The influence of drought threatens many sectors and thus, it is hard to apply the timely estimates of drought severity. According to [1], the response to drought contains monitoring, early warning and development of information systems, procedures of impact, risk management measures and program for actions. Also, the international community adopted declarations and strategies with the goal that combat against drought should be planned and institutionalized and a local community would have a key role [2].

The World Conference on Disaster Reduction which was held in Hyogo (Japan) in 2007 promoted the strategic and systematic approaches for reducing the vulnerabilities to hazards [3]. The local community was placed as an important factor in mitigation of

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natural hazards. In [4], the basic concepts of drought, the principles and objectives of national drought process and drought planning process were discussed, while in [5] the need for integrated and planned approach against drought was highlighted.

This paper analyses the influence of local community to drought mitigation through the early warning system and plans for drought.

## 2. LOCAL COMMUNITY RESILIENCE AND DROUGHT READY

Risk management at the local level is crucial for drought mitigation. Each local community is unique to drought vulnerability and its capacity to prepare and respond to drought. The local circumstances and priorities have the great influence on defining the measures for drought mitigation. The resilience of local community includes the drought risk identification, monitoring and early warning in combination with enhancing knowledge about drought. Also, the resilience of community is in its opportunity and capacity to cope with stress caused by drought. The effect of local community on drought mitigation depends on the capacity of local government and the cooperation with stakeholders.

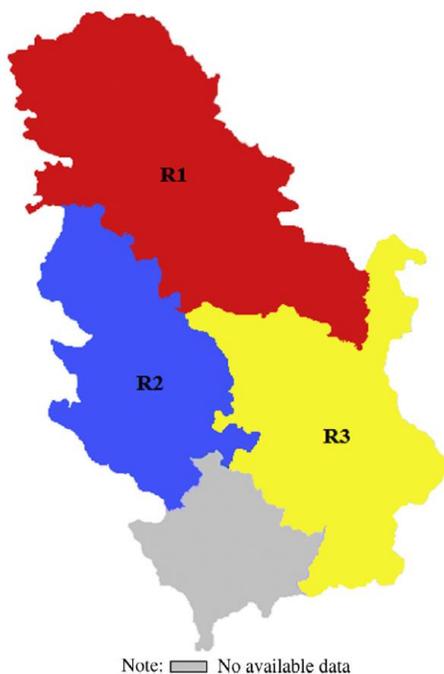


Figure 1. Drought-based regionalization in Serbia ([7])

According to [6], the local community should know which of its parts are especially sensitive to drought. Also, it is important to know the capacity of water resources, the data of its availability and quality and to define the water requirements. Crucial problem

is how to define the vulnerability of water resources during the drought period. Except the data of water resources, the regional maps of drought can be useful in order to plan the drought mitigation, to motivate people, to prioritize early warning system needs and to guide preparations for response and disaster prevention activities. The main purpose of these maps is to mark the areas which are especially vulnerable to drought. In [7], the spatiotemporal characteristics of drought in Serbia were analyzed. Also, three different drought sub-regions were found (Figure 1): 1) region R1 includes the north and the northeast part of Serbia, 2) region R2 includes the western part of Central Serbia and southwestern part of Serbia, and 3) region R3 includes central, east, south and southeast part of Serbia.

The agricultural production is the sector of economy which is the most affected by drought. The irrigation represents the measure that gives the most efficient results against drought. In [8], the public opinion survey was conducted in Leskovac municipality, and showed that a great number of farmers comprehends the great importance of irrigation, but a negligible part of the respondents was accepted the fact that the construction of the system inevitably enables the changes in crop structure, irrigation methods and water price. Also, 89% of the respondents mostly used the underground water, and 66% of farmers said that they were satisfied only with pumps. Even 85.6% of farmers who irrigate don't use experts' advice in the field of irrigation. Figure 2 shows how many farmers (in percentage) irrigate their agricultural land. The greatest percent of farmers (51.3%) irrigate less than 30% of their agricultural land.

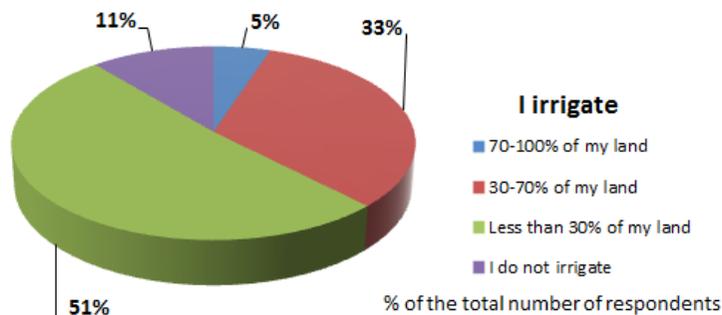


Figure 2. Results of how many farmers irrigate land

### 3. DROUGHT RISK IDENTIFICATION AND EARLY WARNING

Drought risk represents the combination of few components (natural hazards and human, social, economic and environmental vulnerability) which are related in space and time. According to [3], the main elements of drought risk reduction framework are drought risk identification and early warning. In order to implement the risk management actions for reduction of drought risks the local community should identify the most vulnerable population groups and sectors by drought.

The drought characteristics (primarily refers to slow-onset) provide an opportunity on early warning of drought. This kind of information leads to proactive drought

management with aims to prevent drought. The main purpose of early warning systems is to reduce the vulnerability and to improve the capacity of drought risk measures [9]. Such type of system should be designed to identify trends of meteorological parameters and to detect the probability of drought occurrence, severity and duration.

According to [10], early warning system consists of risk knowledge, monitoring and warning service, dissemination and communication, and response capability. Risk knowledge represents the process of data collection and analysis, which should take into account the variability of hazards and causing vulnerability. Warning service is a base of system that must constantly work. Also, service should have a sound scientific basis to generate accurate warnings. Monitoring of hazards is necessary to generate accurate warnings in a timely fashion. Communication is a key for understanding the warnings, which must contain clear and useful information. Local communities must also respect the warning service and know how to react to warnings. Also, they should be well informed on options for safe behaviour and on means to avoid damage and loss of property. The major problem with early warning system is when one part of system comes to failure then the whole system is in failure [10].

#### 4. COMMON LIFE WITH DROUGHT PLANNING

The current drought management practices have shown to be ineffective, poorly coordinated and untimely. The actions for drought are unplanned and directed only to drought mitigation. The proactive drought management requires systematic implementation of plan before, during and after drought.

The drought planning is unique for each community. The plan should be based on specific conditions, priorities and capacities of the local community. The overriding principle of drought plan should be risk management through the application of preparedness and mitigation measures. One of possible organizational structure for drought planning was proposed in [4] (Figure 3).

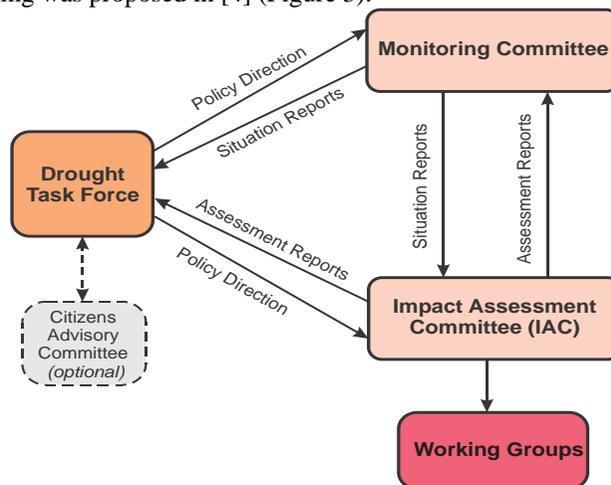


Figure 3. Organizational structure for drought preparedness ([4])

Figure 3 shows one principal structure for drought planning which can be modified for specific conditions of each local community. According to structure, it is important to create a drought task force which aim is to coordinate the planning process of drought. Also, formation and work of monitoring and impact assessment committee represent an important part of organizational structure.

The local community along with drought planning should raise awareness of drought and problems with water supply during the dry years. Community should propagate knowledge of drought and give information about vulnerability for sectors which are threatened by drought. Information will represent the integral part of educational campaign and program for drought management.

The educational campaign through material for education has the task to design a public awareness about severe drought conditions. The mechanisms for the dissemination of drought information usually used learning platforms, presentations, training and workshops/seminars.

Design a public awareness for drought will help community to understand the benefits of planning for drought, water supply and water conservation techniques.

## 5. CONCLUSION

In this study, the importance of local community for drought mitigation is given. Also, paper presents an overview principle of drought policy for local community, which represents the first line in combat against drought, with goal to reduce the vulnerability on it. The importance of development of early warning system and drought plans for successful combat with drought are highlighted.

Drought management in local community must be integrated in the hazard plans and strategies for risk mitigation at the national level. The local community can not alone be successful to conduct the mitigation of hazards. Thus, the proactive risk-based drought preparedness approaches should be developed.

## ACKNOWLEDGEMENT

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## ULOGA LOKALNE ZAJEDNICE U UBLAŽAVANJU SUŠE

**Rezime:** Posledice suše koje su se nedavno desile pokazuju veliku ranjivost društva i neophodnost pro-aktivnog upravljanja sušama. Povećana ranjivosti na sušu zahteva uključivanje lokalne zajednice u sprovođenju mera za ublažavanje suše. Zato lokalna zajednica predstavlja prvu liniju u borbi protiv suše. Borba protiv suše je do sada obuhvatala mere koje su se koristile kada se ona desi, dok novi koncept obuhvata mere koje će biti korišćene pre, za vreme i posle suše.

U ovom radu prikazana je uloga lokalne zajednice u ublažavanju suše. Kako bi se ublažili efekti suše i povećala otpornost lokalne zajednice na pojavu suša u budućnosti, istaknuti su principi i ciljevi aktivne i efikasne borbe protiv suše.

**Ključne reči:** ublažavanje suše, lokalna zajednica, upravljanje sušom.