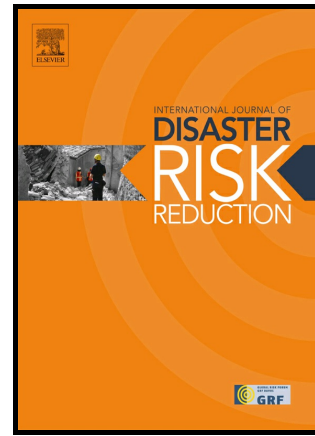


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THE ASSESSMENT OF SOCIO-ECONOMIC VULNERABILITY TO DROUGHT IN SOUTHERN ROMANIA (OLTENIA PLAIN)

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Abstract

Oltenia Plain is one of the most important agricultural regions in Romania and one of the most sensitive in terms of extreme weather phenomena i.e. drought, due to its location in the south-western part of the country, combined with the natural and socio-economic conditions. During the post-communist period, Oltenia Plain was subject to major transformations which triggered environmental consequences i.e. land use/land cover changes, excessive fragmentation of farming land, individual farms practicing subsistence agriculture, poor services in agriculture. All of these have turned this area into one of the most vulnerable to extreme weather phenomena leading to severe degradation of agricultural land with direct impact on crop production, human health, and rural welfare. The paper aims to develop a multi-criteria vulnerability assessment using both quantitative and qualitative methods. The authors are seeking to identify relevant indicators to assess various components of socio-economic vulnerability to the drought phenomenon, using the statistical data available at LAU 2 level. As a result, three main categories of statistical variables and indicators were taken into account: demographic and social features, economy and public utilities. Based on the resulted outcomes, the selected indicators are grouped in three major indexes: demographic and social vulnerability, economic vulnerability and infrastructure vulnerability based on which, an integrated socio-economic vulnerability index to drought (using the Hull score, average 50 and standard deviation 14) was computed. For the particularities of drought, the authors performed relevant climate indicators based on the meteorological data of the most representative weather stations in the study area.

Keywords: Socio-economic vulnerability, drought, Oltenia Plain, Romania

1. Introduction

Drought is among the most damaging natural hazards, with severe impacts on communities and water-dependent sectors [1], such as agriculture and energy. The complexity of impacts is mainly caused by the dependence of an extended number of sectors on water for producing goods and providing services [2]. Globally, the magnitude of economic costs and losses attributed to natural hazards i.e. drought, have led to increased attention to the drought vulnerability issue [1,3,4,5, 6,7]. Drought vulnerability can be differently addressed by different individuals and nations [7] and the factors that make a rural community in a developing country vulnerable to drought could be distinct from those of a prosperous industrialized nation [8]. Thus, the vulnerability to drought varies from region to region and from family to family [9].

Ref. [10] identified four categories of vulnerability factors which shape the framework of vulnerability analysis: internal socio-economic – e.g. household income, social life, access to information, internal biophysical – e.g. topography, environmental conditions, land cover, external biophysical – e.g. severe hazards, earthquake and external socio-economic – e.g. national, regional, international policies, economic globalization.

Ref. [8] identified 46 variables of generic vulnerability, reflected by economic well-being and inequality, health and nutritional status, education, physical infrastructure, governance, demographic factors, agriculture, ecosystems and technological capacity. Based on these variables, the authors adopted the vulnerability indicators (e.g. population with access to sanitation, literacy rate for different categories of population, maternal mortality, civil liberties, political rights, government effectiveness, life expectancy at birth). Although Ref. [8] refer to vulnerability, the

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