

## Chapter 16

# Management of Drought and Floods in the Dobrogea Region

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### ABSTRACT

*Dobrogea is a region of Romania with a high economic potential, partly due to its advantageous geographical position between the Danube and the Black Sea. Nevertheless, in the last decency, there have been significant social and economic damages due to the successive waves of excessive droughts and catastrophic floods, results of obvious climate changes. In order to avoid damages from future climatic events, Dobrogea has been included in the plans, programmes of measures and future actions, which include monitoring and early warning systems and proactive risk management measures. Furthermore, the institutional and administrative structures are designing preparedness plans aimed at increasing the adaptive capacity, as well as effective emergency response programmes, aimed at reducing the impact of droughts and floods. In this chapter is presented information on the national policies applied at regional and local level in Dobrogea, aimed at reducing the risk of droughts and floods.*

### INTRODUCTION

The Dobrogea Region is located in the *Dobrogea – Littoral catchment basin* of south-eastern Romania (Figure 1). Its limits are the Danube river (the branches Ostrov, Dunarea, Dunarea Veche Chilia – on the border with the Republic of Moldova and with Ukraine), to the south the border with Bulgaria, and to the east the Black Sea. In the south-west, it neighbors the Buzau-Ialomita catchment, and on a small portion in the north-east, the Prut catchment. The 11,809km<sup>2</sup> surface of the *Dobrogea – Littoral catchment basin* is distributed administratively in Constanta County (7,071km<sup>2</sup> with 42.68% of the hydrographic area), Tulcea County (3,742 km<sup>2</sup> with 22.59% of the hydrographic area) and the Great Braila Island of Braila County (of 996 km<sup>2</sup> with 6.01% of the hydrographic area). In this area, there are approximately 959,000 inhabitants, with a density of 81 inhabitants/km<sup>2</sup>.

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Figure 1. Dobrogea-Littoral catchment basin



*The relief* of the Dobrogea - Littoral catchment basin overlaps the geographic area of the Dobrogea Plateau (with the subunits Northern Dobrogea Plateau, Southern Dobrogea Plateau and Central Dobrogea Plateau) and the Danube Delta. The relief comprises a large morphogenetic variety, since this is where the new elements (the Danube Delta – Quaternary) blend with the old elements of the Macin Mountains (the Hercynian period).

*The geology* of the Dobrogea region is unique in Romania since this is where the oldest structures (Macin Mountains of Hercynian orogenesis) meet the newest ones of the Danube Delta.

*The hydrography* of the Dobrogea-Littoral catchment basin is characterized by the *river network*, consisting in 1,624km of inland water courses. In terms of own resources of surface, hydrographic basin Dobrogea - Seaside is very poor: 16 rivers with lengths greater than 10 km (in total 349 km), with small flow rates of water, 18 natural lakes – seaside lakes and the coastal related Danube and four artificial lakes, with the largest area of 0.5 km<sup>2</sup> (Planul de Management al Fluviului Dunărea, Deltei Dunării, Spațiului Hidrografic Dobrogea și Apelor Costiere [The Management Plan of the River Danube, the Danube Delta, Dobrogea Hydrographical Area and Coastal Waters]). Average annual discharge stock of rivers from hydrographic basin area Dobrogea, by 145 million m<sup>3</sup>/year (4.59m<sup>3</sup>/s) shows that *the Dobrogea region, is the poorest of Romania, in surface water resource*. The both surface and underground waters of the southern sub-basins of the Dobrogea-Littoral catchment basin, have their sources in Bulgaria, with a direction of flow toward Romania.

*The natural lakes* in the administrative area of the Dobrogea-Littoral catchment basin have a total surface of 15,500 ha (the lakes in the Great Braila Island, on the right bank of the Danube and coastal lakes): 5 permanent lakes with 28.2 mil. m<sup>3</sup>, 23 nonpermanent lakes with 27 mil. m<sup>3</sup> for the protection of the Danube-Black Sea Canal and 3 lakes for the protection of Techirghiol Lake, with 1mil. m<sup>3</sup>. *Natural*

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