



TRANSNATIONAL INTEGRATED MANAGEMENT OF WATER RESOURCES IN AGRICULTURE FOR EUROPEAN WATER EMERGENCY CONTROL (EU.WATER)

Priority Axis: Protection and Improvement of the Environment

Area of Intervention: A.O.L. 1.2 Improve integrated water management and flood risk prevention

Project Duration: 36 months

WP3: Knowledge capitalization and sensitive area maps

Action 3.2: regional report

Abstract of the regional report

Pilot area: Pančevo city (Republic of Serbia)

Partner: Institute of Agricultural Economics, Belgrade, Serbia



Belgrade, 15th November 2010.

Abstract of Regional report

1.1. Location and topography of the study area - Pančevo city is located in the Republic of Serbia, in southern part of the Autonomous Province of Vojvodina. Territory covers part of the south-west Banat within the river basins of Danube, Tamiš and Nadela. The Municipality of Pančevo has an irregular shape with its longer axis stretching north to south, covering an area between 44° 39" and 45° 02" North geographic latitude and 20° 32" and 20° 55" East geographic longitude. Territory covers 755 km², representing 3.51% of the area of AP Vojvodina. According to census made in 2002, the Municipality has 127,162 inhabitants, i.e. 168 inhabitants per km². In the Municipality of Pančevo distinguish three geomorphological units:

- 1) *Loess plain* are the highest parts of the field with an average altitude of 100 to 150 m above sea level and an area of 191 km²;
- 2) *Pančevo loess terrace* which sloped gently rolling plain the southeast, with an average altitude of 75 to 83 m above sea level and an area of 382 km²
- 3) *Alluvial plain* are formed along the two rivers Tamiš and Danube with an average altitude of 70 to 73 m above sea level.

1.2. Hydrometeorological data

Climate -The most important climatic factors affecting the characteristics of the Municipality are geographic latitude, distance from the Mediterranean and the Atlantic seas, as well as its isolated position in the Pannonian Basin, surrounded by the high-altitude ranges of Alps, Dinaric Alps, Carpathian Mountainuns and Rhodopes. An important climatic element is also a zero-point to active air-pressure centres (both permanent and seasonal) of Azores Anti-Cyclone, Asian Winter Anti-Cyclone as well as of Atlantic and Mediterranean cyclones. Significant influence of the Azores Anti-Cyclone is reflected in increased air pressure, generating prolonged periods of a stable weather conditions, intense heating of ground surface and air characterised by its descending movement.

Temperature-Territory of the Municipality of Pančevo ranks amongs the warmer parts of Vojvodina. Pančevo has the average monthly temperatures for 11 months per year that are higher (by 0.1 °C to 0.5 °C) than the average for Vojvodina. The average annual temperature in Pančevo is 0.3 °C higher than the average calculated for the AP Vojvodina.

Wind - The south-eastern wind called "Košava" is dominant one. "Košava" is the most frequent in October, November, February and March.

Relative air humidity - The highest monthly average values of relative humidity are recorded during the months with the lowest air temperatures, namely in December 90%, January 87 %, February 86% and November 84%. July and August have the lowest average values 70%. The annual average value for air humidity is 77% and the annual amplitude 20%.

Cloudiness - The highest % of cloud covered sky in the Municipality of Pančevo is registered in December (73%), January (70%), February (67%) and November (66%). The lowest monthly

average is registered in August (34%), September (37%) and July (38%). The remaining months have on the average a cloud cover ranging from 44 to 59 %. The annual amplitude of cloudiness is significant and amounts to 39%.

Precipitation - Variation of precipitation distribution in the Municipality of Pančevo is characterized (similarly to the rest of Vojvodina) by significant unevenness, i.e. by alternation of rather humid and rather dry periods. Two humid and two dry periods appear on average each year.

1.2. Soil properties

Geology and geomorphology - Pančevo territory is an integral part of the Pannonian Basin, displaying the basic characteristic relevant to this morphologic entity. The predominantly prairie-like aspects of relief, slight inclination from north-east to south-west and in the direction of river flows, insignificant elevation differences in relief forms and overlapped young geological surface layers – they all contribute to the impression of a simple morphologic genesis and mono-genetic character of the respective processes and forms three relief entities can be identified in this region – the alluvial plains, the loess terraces and the loess plain.

Soils - Pančevo is characterised by presence of several soil types, the most important being: Carbonate and sandy black soil (tchernozom), Pastureland black soil, Marsh black soil, Alluvial soil, Salty soil.

1.4. Land uses and agricultural land

Agricultural land - Pančevo with its agricultural resources is one of the richest municipalities in the Republic of Serbia, with a relatively high degree of stability and arable of total agricultural areas. Agricultural land occupies 63 322 ha, which is 83.87% of the City. The largest area occupied by fields and gardens (58 981 ha), pasture (2 415 ha), meadow (564 ha), orchards (474 ha) and vineyards (168 ha), and the rest are: fish ponds, marsh and ponds (720 ha).

Forest - On the territory of the Municipality Pančevo, forest covered amounted to 12,925 ha. Forests managed by Public Company "Vojvodinašume". The Municipality of Pančevo is characterized by a rather low percentage of forest cover concentrated in the narrow inundation zones along the rivers. The forest structure is dominated by poplar mono-culture, while mixed forest are sparse and of poor quality. Tree species found within the municipal territory include hybrid Euro-American poplar, white willow, American white ash, white poplar, black poplar, English oak and elm.

Water bodies - These are, first of all, flows the rivers Danube, Tamiš and Nadel and then the channel system in the northeastern part (the Danube-Tisa-Danube) and large reserves drinking water. The settlements are supplied with water from local sources of groundwater and surface water. In periods when local water sources can not meet the needs of the population, the necessary quantities are provided from large regional systems. For Technological needs municipality use water from rivers.

1.5. Surface waters - The Danube forms the south-western border of Pančevo territory (in length almost 30 km). As it enters the territory of Pančevo, the Danube forms a major northbound meander. At this place there are two larger and two smaller parallel Danube riverbeds, with islands between them. Along the left bank, about 2 km downstream from its confluence with the Tamiš, lies the river island Starčevačka Ada, which is bordered to the east by a river branch that has at its head a rock-filled dam constructed in 1907. The River Nadela merges into this branch of the Danube. Downstream from Pančevo the average breadth of the Danube is 600-700 m. During the periods with average and high flow, river depth increases by 2-7 m, and breadth by up to 50 m.

1.6. Hydrogeology and ground water - The territory of Municipality of Pančevo abounds both in surface and in ground waters. Ground waters encompass shallow (phreatic) and deep (artesian) water-bearing layers. Surface waters could be divided into natural ones (rivers Danube, Tamiš, Nadela and Ponjavica) or artificial (melioration canals and artificial lakes).

1.7. Pollution Sources - following important problems and correlated factors influence the present situation:

- High concentration of chemical and oil industry production facilities at a single locality;
- Vicinity of industrial complexes of Oil Refinery, Petrochemicals Plants and Fertiliser Plant in direction of dominant winds blowing towards the residential areas;
- Use of obsolete technologies with plant installations aged over 20 years;
- Permanent threat from major chemical incidents;
- Disregard of legal requirements concerning environment protection;
- Significant adverse effects of the 1999 NATO air strikes.

1.8. Protected Areas - Pančevo encompasses the following protected areas: Ponjavica Nature Park, Three Ash Trees Monument of Nature, Deliblatska Peščara or Deliblato Sand.