

BeWater

Making society an active participant in
water adaptation to global change

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Qualitative descriptions of river basins

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Contents

[1. Descriptions of the river basin 3](#_Toc434233016)

[2.1 Pedieos 3](#_Toc434233017)

[2. Overview of the basins 4](#_Toc434233018)

[3.1 Pedieos 4](#_Toc434233019)

# Descriptions of the river basin

Pedieos

The Pedieos River is the longest river in Cyprus with a total length of approximately 100 km. Similar to the majority of Cyprus rivers, it is a non-perennial river, of ephemeral nature that only flows during the rainy winter months or after heavy rainfall events. The river originates in the Macheras Forests in the north-eastern hillslopes of the Troodos mountain complex. The river basin has its highest point at Kionia at 1420 m above sea level. The forested upstream area hosts beautiful picnic sites and nature trails and forms an important Natura 2000 site. The fractured volcanic formations in the upstream area are mainly covered by conifers, with smaller areas of sclerophyllous and shrub woodlands and few plots of rainfed cereals, irrigated fruit trees, greenhouses and livestock farms. There are also a few old copper mines. The basin receives an average annual precipitation (1980-2010) ranging between 320 mm downstream to 670 mm upstream.

At the bottom of the foothills, the Tamassos dam, which was completed in 2002, captures and stores the runoff of the 45-km2 upstream river basin in a 2.8-million m3 reservoir. The dam provides flood protection, groundwater recharge through the release of water to the downstream alluvial aquifer, and water supply for nearby communities. Downstream from the dam, the river basin crosses about half a dozen rural communities, which grow rainfed and groundwater-irrigated crops in the Mesaoria plain. Irrigation is the largest user of water in the rural areas of Pedieos consuming on average 4.5 Mm3/year (82%).

The river then flows into the urban agglomeration of the capital Nicosia and its adjacent municipalities, where it receives part of the storm runoff of the city. The Water Development Department has identified this as an area of potentially significant flood risk, for the European Flood Directive (2007/60/EC). Along the river, a linear park with cycling path offers a quiet green corridor in the hectic urban environment of Nicosia. The river basin covers approximately 120-km2 at the green line in Nicosia, at 150 m above sea level.

The Pedieos has always been important for the foundation and growth of Nicosia. It provides the area with adequate water supply, while it enabled the development of suburban Nicosia. The river flew originally through the center of the old town of Nicosia, but was diverted northwards by the Venetians in 1576. The Pedieos River has flooded on numerous occasions in the past. However, due to its ephemeral nature, little consideration has been given to the river’s tendency to flood (Charalambous et al., 2014). The first flood ever recorded in Nicosia was caused by the inundation of the Pedieos River in 1300. A total of 38 floods were recorded from 1960 to 2012 in urban Nicosia, of which three were caused by flooding from the river (Charalambous et al., 2014). The most common floods in the Pedieos River Basin are flash floods (due to intense rainfall in a short time interval) and urban floods (due to inadequate drainage networks).

# Overview of the basin

Pedieos

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| --- |
| **MAIN USES**: What are the main uses in terms of water consumption, water quality in the basin? (e.g. wood plantation, industry uses). |
| List these uses | These uses are relevant in terms of  | Type of information existing on these uses | Reference/source of information |
| Irrigation water use | [ ] Water Quality [ ] Water Quantity[x] Both | Modelled irrigation water demand | Zoumides et al. (2013)Water Development DepartmentRural community leaders |
| Potable water supply (although groundwater does not coincide with basin boundaries) | [ ] Water Quality [ ] Water Quantity[x] Both |  | Water Development DepartmentNicosia Water BoardRural community leaders |
| **COMPETING USES**: What are the main competing uses in terms of water consumption, water quality in the basin? (e.g. agriculture irrigation vs. summer tourism). |
| List of these competing uses (possibly per pairs) | Type of information related to competing uses (e.g. irrigation data) | Reference/source of information |
| Irrigation water use | Modelled irrigation data | Zoumides et al. (2013)Water Development DepartmentRural community leaders |
| **CONFLICTS AMONG THE DIFFERENT USERS**: What are the main conflicts among the institutions/actors in the river basin due to water related issues? What are the reasons? (e.g. water quality, water quantity, water scarcity downstream/upstream…). |
| Conflict description (brief) | Actors involved | Existing agreements | Initiatives in conflict solving (if any) |
| Water quantity | Midstream rural communities vs upstream | * water allocation mechanisms
 |  |
| Water quality | Midstream rural communities * waste disposal in the river
* high salinity levels in groundwater (Deftera)
 | * the water of boreholes (at least two) for potable use is mixed with desalinated water
* automatic chlorination
 |  |
| Flooding risks (area of potentially significant flood risk) | * mainly concentrated in the low lying downstream urban areas
 | * small flood protection projects in the municipalities
 | * thoughts for a unified stormwater drainage plan for Nicosia
 |
| Urban sprawl to the midstream area | * agriculture vs urbanisation
 | * land zones (urban, industrial, agricultural)
* cleaning of riparian zone
 |  |
| **BEST PRACTICES IN WATER MANAGEMENT:** Are there any initiatives ongoing in the basin that represent an example of sustainable management of the water resources in the basin? |
| Brief description of the initiative | Actors involved | References/sources of information |
| Supply-side water management measures: (a) use of desalination plants, (b) reuse of treated wastewater in irrigation, (c) replacement of old domestic water supply networks, (d) construction of water refinery stations, (e) rainwater harvesting, (f) drilling of boreholes for irrigation purposes | Water Development Department | WDD Reports |
| Demand-side water management measures: (a) borehole abstraction permits, (b) installation of improved on-farm irrigation systems, (c) water charges imposed for domestic and irrigation water, (d) water allocation methods, (e) awareness campaigns  | Water Development Department | WDD Reports |
| Adaptation measures towards the increasing frequency and intensity of flooding events: (a) collection of stormwater, (b) establishment of riverbed protection zones, (c) construction of flood protection works.  | Nicosia municipality | I.A.CO Ltd Consultants |
| Expanding nature and recreation actions | Town Planning & Housing Department | Town Planning & Housing Department |
| **LEGISLATION AND POLICIES AFFECTING MANAGEMENT PLANNING IN THE CSRB[[1]](#footnote-1):** what are the policy instruments that affect directly or indirectly water management in the basin? Are there policies in place to mitigate the impact of climate change in the basin? This list includes policy instruments implemented by the governments (top-down) and bottom-up initiatives (such an NGOs signing agreements with landowners to conduct certain practices). |
| Name of the policy instrument Describe it in terms of the problem it addresses and the objective(s) it tries to fulfill.  | Type of policy instrument:\* Economic (e.g. tax, subsidy)\* Informational (e.g. campaign)\* Legal (e.g. laws, norms) | Scale of application |
| Water Framework Directive 2000/60/ECIntegrated Water Management Law 79 (I) /2010 | * water pricing
* quota systems (penalty charges for overconsumption)
* introduction of a more stringent procedure regarding borehole drilling and pumping
* installation and monitoring of water meters in boreholes
 | [x] Basin[x] Regional[x] National[ ] Supranational |
| Common Agricultural Policy – Pillar I | * decoupling of subsidies from production
* cross-compliance requirements (statutory management requirements and good agricultural and environmental conditions)
 | [x] Basin[x] Regional[x] National[ ] Supranational |
| Rural Development Policy (Pillar II) | * economic incentives for the substitution of chemical inputs use
* financial support to farmers for the modernisation of their agricultural holdings including the installation of irrigation scheduling systems and stormwater collection tanks
 | [x] Basin[x] Regional[x] National[ ] Supranational |
| Floods Directive 2007/60/EC Flood Risk Assessment, Management and Preparedness Law 70(I)2010 | * Flood Hazard and Flood Risk Maps (2013)
* Flood Risk Management Plans (2015)
 | [x] Basin[x] Regional[x] National[ ] Supranational |
| Designation of protected areas | * Areas designated for the abstraction of water for human consumption (Article 7 of the WFD)
* Areas designated to protect economically significant aquatic species (areas protected under Freshwater Fish Directive 78/659/EEC and Shellfish Directive 79/923/EEC);
* Water bodies designated as recreational waters, including areas designated as bathing waters (Directive 2006/7/EC)
* Areas designated as sensitive to nutrient pollution, including areas designated as vulnerable zones under the Nitrates Directive 91/676/EEC and areas designated as sensitive areas under the Urban Wastewater Treatment Directive 91/271/EEC
* Areas designated for the protection of habitats or species where maintaining or improving water status is important for their protection, including the sites of the “NATURA 2000” network, established under the Directives 92/43/EEC and 79/409/EEC
 | [x] Basin[x] Regional[x] National[ ] Supranational |
| **WATER MANAGEMENT PLANS**: Is there already a water management plan in place for the RB? Have some efforts been made to develop a plan? Was such a plan implemented following the WFD (For the European RBs)? If no plan is nowadays in place, is it foreseen to implement one? |
| Description of available data | Format of the data | Reference/source of information |
| Cyprus River Basin Management Plan (2011) | pdf | Water Development Department |
| Cyprus Drought Management Plan (2010) | pdf | Water Development Department |

1. A table with examples on different water-related policy instruments is shown at the end of this document [↑](#footnote-ref-1)