B5. WATER USE

EXTENDED ABSTRACT

In the Southern European region, water is used in an unsustainable manner. The Southern European landscape, as a whole is ecologically fragile and seriously endangered by prevailing social and economic trends. On one hand, the future of the region may be threatened by increasing coastal areas stress, by expanding differences between tourist areas and the rural hinterlands, serious water resources interdependencies, high susceptibility to pollution, and by the sensitivity between the water and soil equilibrium. The soils in the region are extremely vulnerable to erosion with resulting problems in developing the water resources (Desertification, reservoir sedimentation, streambed stability etc.). Most of the population is concentrated in the coastal zones, and increasing tourism causes a strong, seasonal water demand. Thus, uneven water demands in both space and time greatly increase the cost of making water accessible. Additionally, wastewater management problems proliferate with the expanding urban population during the summer and effluents are deteriorating the quality of coastal waters. All in all, the region is under severe physical, social, economical and environmental stresses, compounding to the urban water uses.

More explicitly, with regard to the use of water, the most striking characteristic in Southern Europe is the dominant use of water for irrigation purposes (Figure 1). With Italy, being the only exception the share of water used for agriculture is more than 50 per cent in all countries. It accounts for 80% of the water demand in Spain, 85% in Greece , some 70% in Cyprus, 47% in Italy, 35% in Portugal and 57% in Israel (for comparison purposes). On a countrywide scale, the water used for tourism plays a minor role. However, the pressure that this demand is exerting on the resource in some regions is considerably high. Water demand is steadily increasing in most of the regions. As well as the availability of water, the demand is highly dependent on the season.

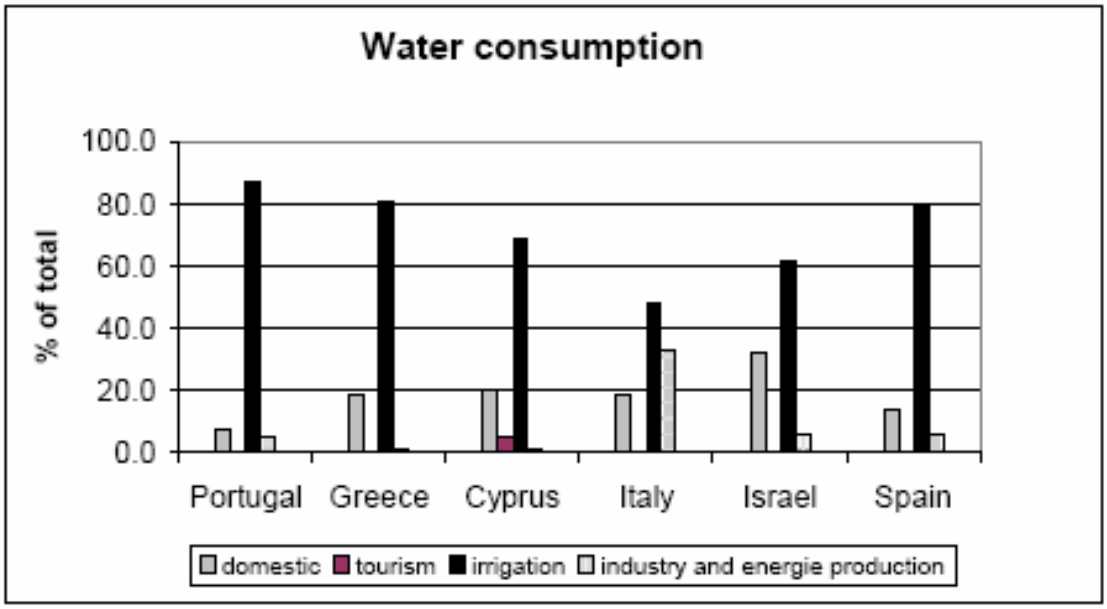

Figure 1: Water use per sector (county level)

1.1 Water use issues

In presenting the key conflicts and concerns combining integrated water resources management and a sustainable development orientation, in the Southern European region and by extension to similar areas, a few interrelated crises and issues may be demarcated in relation also to some more extensive comments: ***1) A demand and water supply crisis*** representing primarily an engineering dimension. Such a dimension incorporates pitfalls of water consumption reduction and water supply augmentation. ***2) A deteriorating water quality crisis*** producing an ecological dimension. Issues including, lack of adequate safe drinking water supplies in the needed space and time, groundwater deterioration and contamination, and interference of water resources development systems with the natural environment cycles are surfacing. ***3) An organisational crisis*** transforming into a management dimension. Attention is needed in combining competent personnel, facilities and processes, the promotion of more desirable levels and patterns of use, as well as the legal and administrative guidelines (capacity building). ***4) An information and data crisis***, regarding their validity, reliability, availability, and comparability, as well as combining data and judgement, modelling, and the building of applicable Decision Support Systems. In this context, all the pertinent factors point towards timely, contingency oriented and anticipatory water resources planning and management for the region rather than, waiting for even more serious water shortages, pollution and land erosion to occur.

1.2 Managing water use

In an effort to assess future urban water supply problems in the region, and by extension in similar urban regions, the most pressing issues regarding water supply management strategies should be addressed. Such issues should not only center around the coastal areas but they should also try to incorporate the whole system in a regional or even

international basis. This particular approach may offer some insight in realizing the comprehensive nature of water resource management and at the same time lead toward more effective urban water supply management responses. Therefore, two main areas of potential recommendations have been identified.

The first area concentrates on the water infrastructure and requires the: application of an aggressive and rigorous maintenance program for most Southern European countries (i.e., leak detection, new pipes, meters, etc.); analysis of the main reservoirs so as to improve their effectiveness in satisfying the demands, determine constraints to such effort, and improve their operation during crises; development of accurate and dependable databases for the reservoirs and watersheds. Stored data should contain, among others, hydrological information (historical and stochastic), water demand (priorities, fluctuations), hydrologic balance and potential institutional, legal, environmental, economic and social constraints. Using these data, DSS should be applied for management purposes.

The second area of water supply research recommendations for the region, as well as for similar semiarid areas, actually follows the above prepositions. Efforts should concentrate on: - the development of a complete and updated water resources policy for each country according to WFD. Such policy should set the guidelines for effective water resources planning and management. Some of the areas that this policy should incorporate may be: urban, industrial and agricultural water supply; wastewater treatment (reuse); water conservation practices; hydropower; recreation activities and wildlife protection; and, water quality issues; - the adoption of proactive urban water supply management strategies recognizing that urban water supply is extremely fluctuating - the improvement of the decision making through less centralized procedures and with the incorporation of DSS. Such an approach may ease the tension among various urban water supply management interest groups and lead towards the incorporation of an interdisciplinary urban water supply management posture - the conduct of impact assessments concerning urban water supply, as well as water resources developments in general. Such assessments should aid in evaluating urban water supply results, particularly in difficult quantitative analysis areas as environmental, recreational or social categories of impacts - the establishment of the necessary legal, institutional and economic framework for all the above actions in the spirit of WFD already adopted in the northern part of the region.