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Rapid assessment of irrigation full cost: An application for the Pinios Local Organization for Land Reclamation, Greece

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ABSTRACT

The paper presents a rapid assessment of the irrigation full cost of the Pinios Local Organization for Land Reclamation. The individual cost components (financial, environmental and resource) were estimated using the best available data and sound methodological choices. On the basis of our estimates it seems that water scarcity and its corresponding resource cost are quite important issues to be ignored. The resource costs fall within a range from 21% to 39% of the water full cost while the environmental cost is about 8%. The policy implications of these results are also discussed.

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1. Introduction

Until the advent of the Water Framework Directive (henceforth WFD), European water legislation was substantially fragmented with notable contradictions and conflicts. The radical reform of the European water policy brought about by the WFD was an answer to a quickly progressive political, economic and social context. This is reflected in the rhetoric of the WFD where political actors have been substituted by stakeholders, citizens by consumers, while there is an increasing emphasis on water as an economic good which should be managed accordingly [1].

The main objective of the WFD is to achieve a "good ecological status" of the European waters by 2015 [2]. The term European waters collectively refers to groundwater, surface waters, transitional waters, and coastal waters. The term "good ecological status" is perceived as a deviation from a reference point. The notable innovations of the new policy regime include three issues. First, water quality or "good ecological status" is not anymore determined by chemical criteria but the reference point for such comparisons is or should be biological [3–5]. Second, water resources should be managed in such a way that the users should bear the full cost of water uses [6]. The final innovation of the WFD refers to the crucial issue of public participation and its relevance to policy acceptability [7,8].

The analysis of full cost recovery is generally accepted as a step towards a sustainable water management regime which may incorporate the use of economic principles such as effective pricing derived from cost recovery assessments [9]. However, the full cost recovery of irrigation through effective pricing is not a desk exercise, but it has to be implemented within the local institutional, political and social constraints. Dinar and Mody [10] argue that pricing water can be an effective tool in demand management only when appropriately implemented and regulated. In particular, the authors stress that, inter alia, institutional reform must ensure water pricing acceptability and transparency in water resources management.

Furthermore, it should be emphasized that the effectiveness of cost recovery pricing is enhanced if it is used in conjunction with supplementary measures [11]. Such measures may include water saving adjustments (devices and practices), reduction of water losses in the production supply–distribution systems and or education and public information campaigns towards prudent water use. The achievement of high cost-recovery rates not only requires an agreement on the costs to be recovered but also a kind of a social commitment between farmers and local government. The earmarking of the collected water charges and their provision to finance maintenance and improvements of the irrigation networks, provides farmers with a strong incentive to pay these charges [12].

The issue of (water) full cost recovery has been previously examined in the relevant literature. Unnerstall [6] discusses the development of the full cost recovery rationale in terms of the European legislation (WFD), while Howarth [11] examines its link with the polluter pays principle. Molinos-Senante et al. [13] consider the principle of full cost recovery when they examine pricing policies for encouraging water reuse. Loehman [14] examines a non-linear water pricing method that includes cost recovery along with the efficiency objective. Ward and Michelsen [15] include the cost recovery requirement in their analysis of a multi-tiered pricing system, and Dono et al. [16] estimate the recovery rate for a land based pricing proposal.

Despite the fact that the previous literature acknowledges the importance of full cost recovery and even some papers have included it in their empirical analysis, there is hardly any illustrative example how all components of the water full cost are assessed at the same time. Our paper aims to fill this gap. To our best knowledge, only the work of Brown et al. [17] is similar to our paper, where the authors provide a structured way to estimate resource and environmental costs using emergy based monetary values.[4] By contrast, our analysis is primarily economic.

The objective of this paper is to provide a rapid way to assess the irrigation full cost of a local organization for land reclamation (LOLR) in central-northern Greece. The structure of the paper is as follows. Section 2 presents the concept of irrigation full cost. Section 3 gives a brief description of the

[4] The main premise behind energy valuation is that the more energy, time and materials are invested in something, the greater is its value.