

ENVIRONMENTAL PERFORMANCE MEASUREMENT AT SECTORAL LEVEL: ELECTRICITY, GAS AND WATER

A. BELEGRI-ROMPOLI¹ and I. TSOLAS²

¹National Technical University of Athens, School of Applied Mathematics and Physics

²Technological Educational Institution of Western Macedonia, Dept of Geotechnology and
Environmental Engineering
E-mail: belegri@central.ntua.gr

EXTENDED ABSTRACT

The purpose of this paper is to apply the Data Envelopment Analysis (DEA) framework for measuring environmental performance at the sectoral level. DEA is based on mathematical programming principles and its application provides the relative efficiency scores of each one of the yearly activities (Decision making units, DMUs) of both the sectors: electricity, gas, steam and hot water; collection purification and distribution of water (sectors 40, 41 –NACE Rev.1– respectively) over the 1988-96 period. For the assessment of the sectors' yearly activities data taken from the environmental input-output tables of the Greek economy (1988-96) are used. The inputs are the intermediary inputs and labor, the output is the gross production value and the environmental impact data (i.e., NO_x and SO₂ emissions). Activities are deemed efficient if only environmental performance scores (i.e., DEA scores) equal to unity; deviations from unity indicate inefficiency (i.e., both the inputs and pollutants emitted could had been reduced).

Key words: Environmental performance measurement, Efficiency, Data Envelopment Analysis (DEA), Environmental input-output tables, Sectors 40, 41 (NACE Rev. 1)