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**TITLE: OPTIMIZING PRODUCTION IN GREECE UNDER GHG EMISSION REDUCTION  
CONSTRAINTS: A COMPARISON OF OBJECTIVE FUNCTIONS**

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**ABSTRACT:**

According to the Kyoto Protocol and the EU burden-sharing agreement, Greece is committed to limiting its greenhouse gas emissions increase for the period 2008 - 2012 to +25% compared to base year (1990) levels. However, information derived from greenhouse gas emissions inventories has shown an increase of approximately 28% in GHG emissions between 1990 and 2005. Consequently, there is a pressing need to curtail GHG emissions, after taking into consideration relevant economic and social parameters. This paper outlines a constrained optimization problem that could assist policy makers in maintaining optimal levels of economic (production) activity, under a GHG emissions minimization scenario. We compare four alternative optimization criteria, including i) gross value added, ii) the product of gross value added and production value, iii) total production value, and iv) total GHG emissions - all put forth as possible objective functions to be used for optimizing production in Greece. The constraints placed on the model include bounds on fluctuations allowed in sectoral production (&#61617;10%) and overall demand (&#61617;3%). Our model, calibrated using the Greek environmental input-output matrix for 2005, indicates the maximization of total production value to be the superior criterion.