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Cost-benefit analysis of implementing policy measures for reducing PM and O_3 concentrations: the case of Israel

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It is estimated that a quarter of the world's population is exposed to high concentrations of air pollutants, resulting largely from human activities, causing premature death of approximately two million people annually. In particular, ozone (O_3) and particulate matter (PM) adversely affect human health and are associated with morbidity and premature human mortalities. Air pollution is one of the most serious environmental problems that Israel is facing today, causing morbidity and mortality in many parts of the country, and has long been a priority in Israel's environmental policy. The aim of this paper is to identify the most suitable and economically feasible policy measures for reducing concentrations of PM and O_3 in Israel. The analysis includes two main examinations. The first quantifies the economic cost of health effects caused by the failure to meet the target pollution values. The examined health effects include both chronic exposure effects and acute exposure effects. This examination is based on the estimation of health effects due to exposure to PM and O_3, on the economic quantification of health effects due to pollution and on expected pollution values of pollutants based on the BAU scenario. The second examination is a CBA analysis of additional policy measures (additional to the measures assumed implemented in the BAU scenario) that are aimed to reduce pollution. This examination is based on quantifying the cost and benefit of the different policy measures. An applicability check that includes a global comparison of implementation of the different measures was performed as well, and the most appropriate policy measures are recognized. This presented as a comparison to the BAU scenario for each of the target years. The change in the emissions in the target years is calculated relative to the emissions in 2010. According to our findings, the vast majorities of the examined measures are feasible, have a positive net benefit to the economy and are expected to lead to considerable reductions in pollutants. These policy measures have a significant impact on reducing air pollution on one hand, while constituting the highest net benefit to the economy on the other. Although the detailed estimates of benefits and costs presented in this paper refer to Israel, the basic methodology presented is applicable universally. Such assessments may assist policy makers to carry out informed decisions on such subjects.

Biography

Doron Lavee holds a PhD in Public Economics from the Ben-Gurion University, an MA in Economics and an MBA in Business Administration and Economics from the Hebrew University. He is a member of the Department of Economics and Management at Tel-Hai Academic College. He also serves as a Partner and General Manager of Pareto Group Ltd. He is a well-known expert with over 22 years of experience in economic and environmental consulting, financial advisory and strategic consulting in various fields, including issues related to economic efficiency and the periphery. He has extensive experience in managing complex projects and large-scale environmental economic consulting and conducting projects for the public and government sectors, including government ministries, local authorities, government corporations and public agencies.

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