

Co-control of Urban Air Pollutants and Greenhouse Gases in Mexico City

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Abstract

This study addresses the synergies of mitigation measures to control urban air pollutant and greenhouse gas (GHG) emissions, in developing integrated “co-control” strategies for Mexico City. First, existing studies of emissions reduction measures – PROAIRE (the air quality plan for Mexico City) and separate GHG studies – are used to construct a harmonized database of options. Second, Linear Programming (LP) is developed and applied as a decision support tool to analyze least-cost strategies for meeting co-control targets for multiple pollutants. We estimate that implementing PROAIRE measures as planned will reduce 3.1% of the 2010 metropolitan CO₂ emissions, in addition to substantial local air pollutant reductions. Applying the LP, PROAIRE emissions reductions can be met at a 20% lower cost, using only the PROAIRE measures, by adjusting investments towards the more cost-effective measures; lower net costs are possible by including cost-saving GHG mitigation measures, but with increased investment. When adding CO₂ emission reduction targets to PROAIRE targets, the most cost-effective solutions use PROAIRE measures for the majority of local pollutant reductions, and GHG measures for additional CO₂ control. Because of synergies, the integrated planning of urban-global co-control can be beneficial, but we estimate that for Mexico City these benefits are often small.

References

West, J. J., P. Osnaya, I. Laguna, J. Martinez, and A. Fernandez (2004) Co-control of urban air pollutants and greenhouse gases in Mexico City, *Environmental Science & Technology*, 38: 3474-3481, doi: 10.1021/es034716.