A methodology for estimating health benefits of electricity generation using renewable technologies

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Abstract:
At Copenhagen, the developed countries agreed to provide up to $100 bn per year to finance climate change mitigation and adaptation by developing countries. Projects aimed at cutting greenhouse gas (GHG) emissions will need to be evaluated against dual criteria: from the viewpoint of the developed countries they must cut emissions of GHGs at reasonable cost, while host countries will assess their contribution to development, or simply their overall economic benefits. Co-benefits of some types of project will also be of interest to host countries: for example some projects will contribute to reducing air pollution, thus improving the health of the local population. This paper uses a simple damage function methodology to quantify some of the health co-benefits of replacing coal-fired generation with wind or small hydro in China. We estimate the monetary value of these co-benefits and find that it is probably small compared to the added costs. We have not made a full cost-benefit analysis of renewable energy in China as some likely co-benefits are omitted from our calculations. Our results are subject to considerable uncertainty however, after careful consideration of their likely accuracy and comparisons with other studies, we believe that they provide a good first cut estimate of co-benefits and are sufficiently robust to stand as a guide for policy makers. In addition to these empirical results, a key contribution made by the paper is to demonstrate a simple and reasonably accurate methodology for health benefits estimation that applies the most recent academic research in the field to the solution of an increasingly important problem.

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Resource Description

Exposure:
weather or climate related pathway by which climate change affects health

Air Pollution

Air Pollution: Ozone, Particulate Matter, Other Air Pollution

Air Pollution (other): SO2, NOx

Geographic Feature:
resource focuses on specific type of geography

None or Unspecified
Geographic Location: resource focuses on specific location
Non-United States

Non-United States: Asia
Asian Region/Country: China

Health Co-Benefit/Co–Harm (Adaption/Mitigation): specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases
A focus of content

Health Impact: specification of health effect or disease related to climate change exposure
Cardiovascular Effect, Morbidity/Mortality, Respiratory Effect

Cardiovascular Effect: Other Cardiovascular Effect
Cardiovascular Disease (other): cardiovascular hospital admissions
Respiratory Effect: Other Respiratory Effect
Respiratory Condition (other): chronic bronchitis; respiratory hospital admissions

Mitigation/Adaptation: mitigation or adaptation strategy is a focus of resource
Mitigation

Model/Methodology: type of model used or methodology development is a focus of resource
Cost/Economic, Exposure Change Prediction, Methodology, Outcome Change Prediction

Resource Type: format or standard characteristic of resource
Research Article, Research Article

Timescale: time period studied
Medium-Term (10-50 years)