EDGAR AIR POLLUTANT EMISSIONS

RATIONALE

Ever growing economy takes high toll on the environment. Can technological air pollution abatement measures cope with the necessary reduction of air pollutant emissions, or will a change in lifestyle also be needed to avoid detrimental degradation?

A Kuznets analysis testing whether the wishful scenario that environmental degradation starts to reduce with increasing wealth can be observed in the case of SO2 emissions, but not for all countries.

EDGAR AIR POLLUTION RESULTS

The EDGARv4.2 inventory of man-made emissions covers, in addition to the Kyoto Protocol greenhouse gases, the air pollutants: CO, NOx, NMVOC, SO2, and NH3 for the time period from 1970 to 2008. In 2008, the top five global emitters for each of these substances were (in million tonnes):

<table>
<thead>
<tr>
<th>Substance</th>
<th>Country</th>
<th>SO2</th>
<th>NOx</th>
<th>NMVOC</th>
<th>CO</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>China</td>
<td>105</td>
<td>14</td>
<td>14</td>
<td>105</td>
</tr>
<tr>
<td>Sudan</td>
<td>India</td>
<td>95</td>
<td>11</td>
<td>14</td>
<td>95</td>
</tr>
<tr>
<td>India</td>
<td>Russia</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>The Democratic Republic of Congo</td>
<td>Central African Republic</td>
<td>6</td>
<td>14</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Mercury (Hg⁰, Hg²⁺, Hg-P) is included in EDGARv4.tox1, thereby enriching the spectrum of multi-pollutant sources in the database.

INTERNATIONAL FRAMEWORK

Today, air quality is regulated by the UN Convention on Long-Range Transboundary Air Pollution (LRTAP) for all UNECE countries, covering Europe and North America, and is elaborated in a number of Protocols with national emission targets.

GLOBAL EMISSION TRENDS¹ (e.g.)

CO emissions

NOx emissions

SO2 emissions

NH3 emissions

¹including large-scale biomass burning from the land use change and forestry (LULUCF) sector.

MITIGATION OF EMISSIONS

Emissions of SO2, NOx and Hg in power generation coal combustion, for two S1 and S2 scenarios.

Curves start bifurcating beginning 1990s

S1 - the baseline scenario, which considers existing emission reductions by End-of-Pipe measures allocated to each power plant type.

S2 - an ex-post mitigation assessment scenario, which assumes that no End-of-Pipe measures have been implemented.

The difference between total mercury emissions in 2008 and 1970 aggregated to 1⁰ x 1⁰ resolution [kg/m²/s].


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