

Research Spotlight

Proof of Concept for a U.S. Air Emissions Physical Flows Account

January 10, 2024

Countries maintain accounts of economic activity and use these accounts to compile and publish statistics, such as gross domestic product, for use in public and private decision-making. Measurement of the impact of economic activity on the environment contributes to good long-term decision-making by governments and other stakeholders, but it is absent from traditional economic accounts.

Environmental economic accounts help fill this data gap. These accounts—compiled in parallel with traditional economic accounts—measure flows between the environment and the economy, the health of the environment, and environmentally related transactions within the economy. Recognizing the value of these measurements for decision-making, the White House Office of Science and Technology Policy and Office of Management and Budget and the U.S. Department of Commerce (DOC) recently published the *National Strategy to Develop Statistics for Environmental-Economic Decisions (SEED)*, the first plan of its kind in the United States. Phase 1 of *SEED* includes an air emissions account; it is recommended that the physical flows account be developed first and that the U.S. Environmental Protection Agency (EPA) and DOC then explore methods for attaching monetary values to these flows.

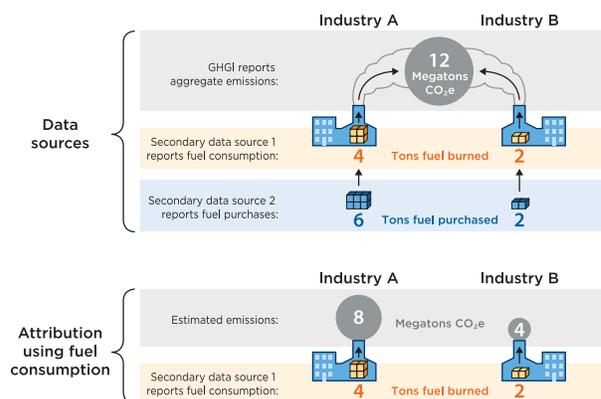
A [working paper](#) by Matthew Chambers of the U.S. Bureau of Economic Analysis presents a proof of concept for the air emissions physical flows account, consistent with international standards.

The paper uses primary data on emissions from EPA's greenhouse gas inventory. The proof-of-concept account covers 2012–2017 and presents tabulated emissions by industry, along with examples of additional analytic indicators, such as trends in industry emissions and trends in emissions per dollar of value added.

Notable trends based on this account include the following:

- a downward trend in utilities emissions,
- an upward trend in agricultural emissions,
- and

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CO₂e Carbon dioxide equivalent units
 GHGI Greenhouse gas inventory
 Note. This approach implicitly assumes that the production technologies of industries A and B produce the same emissions per ton of fuel burned (a reasonable assumption when focusing on greenhouse gases).

- a strong downward trend in household and transportation industry fluorinated greenhouse gas emissions balanced out by countervailing trends in other industries, especially manufacturing.

Primary challenges in constructing this account are (1) adjusting the greenhouse gas data from territory based to residency based and (2) attributing emissions to industries and institutional sectors. In the proof-of-concept account, emissions are adjusted to a residency basis using data on the activities of U.S. resident agents abroad and are attributed to industries in proportion to related measures of activity, like fuel purchases or output.

Further work on refining this account will include evaluating additional pollutants, such as fine particulate matter, for inclusion; searching for data to identify business use of passenger cars; and separating household emissions into heating, transportation, and other categories.

This *Research Spotlight* was prepared by *Survey of Current Business* staff. It uses language from the working paper “Proof of Concept for a U.S. Air Emissions Physical Flows Account” by Matthew Chambers, published in April 2023. [The working paper is available in full on the BEA website.](#)

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