The Phantom Technologies Do Not Disappear: SMART Technology Processes Need Data â€“ Read the Report

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You donâ€™t need a degree in climatology to realize that the phasing out of gasoline-powered cars is necessary if we are to tackle climate change. But researchers at the Stanford Woods Institute for the Environment are using statistical analyses to demonstrate that the transitional methods used to phase out emissions-intensive technologies are incomplete.

The phasing out strategies for technologies that cause pollution and generate CO2 need to integrate the overall impact on climate from technology use with that from emission generation and the electric power generation it creates. But without data on greenhouse gas (GHG) emissions from the fossil-fuel dependent power sectors, the calculation of emissions-intensity (emissions divided by fuel burned) for our technologies could be unreliable.

To date, however, the scale and technology-based information have not been available. Stanford Woods Institute researchers led by Asako Yamamoto are using NASA GHG data, including satellite capabilities, to measure the cumulative emissions over the lifetime of an energy technology. (To see what the data look like, see â€œMeasurements of cumulative GHG emissions from point source energy systemsâ€).

Yamamoto describes how the technology-mix switch will be achieved in a follow-up research paper to be published in the journal Energy & Environmental Science. Some select key findings include:

The rate of new technology adoption doesnâ€™t have to be dramatically faster than historically. â€œWe havenâ€™t focused on â€˜huge leapsâ€™ in pace of technology.â€

â€œThe problem in terms of technology systems in the past was that technology was adopted very rapidly, the commercialization, that is, the scale of the technology coming online.â€

â€œWe need to capture the cumulative impact to be able to make a good comparison of the cumulative impact of different technologies from those used earlier.â€

The Stanford groupâ€™s findings highlight the need for more data to enable investment decisions. â€œFundamentally, we need to be able to assess the capacity of our energy systems to incorporate reduced GHG emissions from existing power plants into their future system,â€ said Yamamoto. â€œThat is the gap that has to be filled.â€

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