

We are currently near completing an update of the MIT Emissions Prediction and Policy Analysis (EPPA) model to GTAP5.0 data and will produce a revised model documentation similar to the earlier report (Babiker, M., J. Reilly, M. Mayer, R. Eckaus, I. Sue Wing, and R. Hyman, 2001). This has taken somewhat longer than anticipated because we have come to modify the basic GTAP data in a number of ways. In particular, we add considerable detail for the electric sector, disaggregating nuclear and hydroelectricity and adding a number of backstop technologies. We are looking forward to the updated model and are beginning new studies with it that will focus on new policy proposals for limiting greenhouse gases in the United States, Europe, and Japan. The updated input-output tables for key countries will give us greater confidence in the results. This new version of EPPA will include 18 regions, with a greater focus on creating geographically contiguous regions as this is critical as we develop the capability to project local and regional air pollution. We are hoping to soon include the separate Russia Federation data, to replace the outdated FSU region.

A major staff change occurred during the summer of 2002. Sergey Paltsev joined the Joint Program, replacing Mustafa Babiker who has moved to the Arab Planning Institute in Kuwait. Sergey is most directly involved with the EPPA modeling, and has been working closely with the GTAP data. He was quite familiar with it, as he completed his Ph.D. with Tom Rutherford at Colorado.

Reports published as part of our Joint Program series can be downloaded directly from our Web site <http://web.mit.edu/globalchange/www/>. Abstracts of journal articles are also available via our WEB site along with information on requesting reprints of publications included in our reprint series.

Recent Publications

Journal Articles, appearing or in press

Babiker, M.H., H.D. Jacoby, J.M. Reilly & D.M. Reiner, "The Evolution of a Climate Regime: Kyoto to Marrakech", *Environmental Science and Policy*, 2/3, 195-206, 2002.

Webster, M.D., M. Babiker, M. Mayer, J. M. Reilly, J. Harnisch, R. Hyman, M. C. Sarofim, and C. Wang, "Uncertainty In Emissions Projections For Climate Models", *Atmospheric Environment*, 36(22), 3659-3670, 2002.

Reilly, J., M. Mayer, and J. Harnisch, "Multiple Gas Control Under the Kyoto Agreement", *Environmental Modeling and Assessment*, 7, 217-229, 2002.

Paltsev, S., 2001, "The Kyoto Protocol: Regional and Sectoral Contributions to the Carbon Leakage," *The Energy Journal*, 22(4), pp. 53-79.

Viguier, L., M. Babiker and J. Reilly, "The Costs of The Kyoto Protocol in the European Union", *Energy Policy*, 31, 459-481, 2003.

Babiker, M., G. Metcalf, and J. Reilly, "Tax Distortions and Global Climate Policy", *Journal of Economic and Environmental Management*, forthcoming, 2003.

Herzog, H., K. Caldeira, J. Reilly, "An Issue of Permanence: Assessing the Effectiveness of Ocean Carbon Sequestration", *Climatic Change*, forthcoming, 2003.

McFarland, J, J. Reilly, and H.J. Herzog, "Representing Energy Technologies In Top-Down Economic Models Using Bottom-Up Information," *Energy Economics*, forthcoming, 2003.

Webster M.D., C.E. Forest, J.M. Reilly, M.H. Babiker, D. Kicklighter, M. Mayer, R. Prinn, M.C. Sarofim, A. Sokolov, P. Stone, and C. Wang, "Uncertainty Analysis of Climate Change and Policy Response", *Climatic Change*, forthcoming, 2003.

Robert C. Hyman, R.C., J. M. Reilly, M. H. Babiker, A. De Masin, and H. D. Jacoby Modeling Non-CO2 Greenhouse Gas Abatement, *Environmental Modeling and Assessment*, forthcoming, 2003.

Babiker, M., L. Viguier, J. Reilly, A.D. Ellerman & P. Criqui, "The Welfare Costs of Hybrid Carbon Policies in the European Union", *Environmental Modeling and Assessment*, forthcoming, 2003.

Reports and submitted articles

Babiker, M., Bautista, M.E., Jacoby, H.D., Reilly, J.M., Effects of Differentiating Climate Policy by Sector: A U.S. Example. MIT Joint Program on the Science and Policy of Global Change, Report No. 73, May 2000, 15 pp.

Babiker, M., J. Reilly, M. Mayer, R. Eckaus, I. Sue Wing, and R. Hyman, "The MIT Emissions Prediction and Policy Analysis (EPPA) Model: Revisions, Sensitivities, and Comparison of Results", MIT Joint Program on the Science and Policy of Global Change, Report No. 71, Feb. 2001.

Viguier, L.L., M.H. Babiker, and J.M. Reilly, Carbon Emissions and the Kyoto Commitment in the European Union, MIT Joint Program on the Science and Policy of Global Change, Report No. 70, Feb. 2001, 32 pp.

Webster, M.D., C.E. Forest, J.M. Reilly, A.P. Sokolov, P.H. Stone, H.D. Jacoby, and R. G. Prinn, "Uncertainty Analysis of Global Climate Projections", MIT Joint Program on the Science and Policy of Global Change, Report No. 73, March 2001.

Reilly, J., M. Babiker, and M. Mayer. "Comparing Greenhouse Gases," MIT Joint Program on the Science and Policy of Global Change, Report No. 77, Cambridge, 2001

Babiker, M.H., H.D. Jacoby, J.M. Reilly & D.M. Reiner. "The Evolution of a Climate Regime: Kyoto to Marrakech", MIT Joint Program for the Policy and Science of Global Change, Report No. 82. Cambridge, MA, February, 2002.

McFarland, J, J. Reilly, and H.J. Herzog, "Representing Energy Technologies In Top-Down Economic Models Using Bottom-Up Information" MIT Joint Program for the Policy and Science of Global Change, Report No. 89. Cambridge, MA, October, 2002

Metcalf, G., M. Babiker, and J. Reilly, "Tax Distortions and Global Climate Policy," NBER Working Paper Series, Working Paper 9136, Cambridge MA, 2002.

Reilly, J.M., H.D. Jacoby, and R.G. Prinn, Multi-Gas Contributors To Global Climate Change, Pew Center on Global Climate Change, Arlington, VA, forthcoming, 2002.

Babiker, M., J. Reilly, and L. Viguiet, 'Is Emissions Trading Always Beneficial,' American Economic Review, submitted.

Metcalf, G., M. Babiker, and J. Reilly, 'A Note on Weak Double Dividends,' International Tax and Public Finance, submitted.

Bernard A., S. Paltsev, J. Reilly, M. Vielle, L. Viguiet, 2003, "Russia's Role in the Kyoto Protocol," submitted to Energy Economics.

Paltsev, Sergey V., 2000, The Kyoto Protocol: "Hot Air" for Russia? University of Colorado Department of Economics, Working Paper 00-9. <http://www.colorado.edu/Economics/CEA/papers00/wp00-9.pdf>

Rutherford, T. and S. Paltsev, 2000, GTAP-Energy in GAMS: The Dataset and Static Model. University of Colorado Department of Economics, Working Paper 00-2. <http://www.colorado.edu/Economics/CEA/papers00/wp00-2.pdf>

Presentations

Reilly

January, 2001, "Climate Policy After COP-6," MIT Global Change Forum XVII, New Delhi, India.

March, 2001, "Abrupt Climate Change and Agriculture," National Research Council and Yale/NBER Program on International Environmental Economics, Workshop on Economic and Ecological Impacts of Abrupt Climate Change, Washington D.C.

May, 2001, "The MIT Emissions Prediction and Policy Analysis (EPPA) Model," The 3rd Sino-Korea-U.S. Economic and Environmental Modeling Workshop, Beijing, China.

June, 2001, "Climate Change Policy: Now What?," Fourth Annual Conference on Global Analysis, Purdue University, West Lafayette, Indiana.

August, 2001, "Do Resources Matter?" Pew Center Workshop on Oil and Gas Markets, Snowmass CO.

October, 2001, "Technology Strategies for Climate Change: Some Thoughts," MIT Global Change Forum XVIII, Cambridge, MA.

October, 2001, "Anatomy of a \$2 Deal (Were we off by \$369?) and What Next?" Agriculture and Forestry Sequestration Workshop, Shepherdstown, West Virginia.

October, 2001, "The Price Of Action, The Cost Of Inaction: The Intersection Of Science And Economics," Bt Lectures Series: The Science, Economics And Policy Of Sustainable Strategies, MIT Architecture Department, Cambridge, MA.

November, 2001, "The Permanence of Atmospheric Carbon Reduction Options," MIT Carbon Sequestration Forum, Royal Sonesta Hotel, Cambridge, MA .

December, 2001, "The MIT IGSM: Climate Change, Urban Air Pollution and Long Range Transport," Workshop on Climate Change and Air Quality: Part I - Intercontinental Transport and Climatic Effects of Pollutants, Research Triangle, North Carolina.

January 2002, "The MIT Emissions Prediction and Policy Analysis (EPPA) Model & Non-CO2 GHGs," Non-CO2 GHG Network Meeting, Maastricht, Netherlands.

January, 2002, "Implications of a GDP-Indexed Global Emissions Target," US Environmental Protection Agency, Washington DC, also US Council of Economic Advisors, Washington DC, January, 2002.

March 2002, "The MIT Emissions Prediction and Policy Analysis (EPPA) Model & Transportation," Conference On GHG Emissions Trading and the Transportation Sector, Governor's House, Washington DC.

May, 2002, "Atmospheric Stabilization: What Does It Mean in a Multi-gas World," Energy Modeling Forum (EMF 21), University of Maryland, College Park, MD.

June, 2002, "Is International Permit Trading Always Beneficial," MIT Global Change Forum XIX, Paris, France.

Dec. 2002, "An Emissions Scenario for 550 ppm Atmospheric Stabilization of CO2 for Multi-gas Analysis," presented to the Energy Modeling Forum, Washington, DC,

May 2003, "Complexities in International Emissions Trading," Duke University

Ellerman

Sept. 2002, "Growth-Indexed Caps: A Better Idea?" presented at the CATEP Workshop on Global Trading, Kiel Institute for World Economics, Kiel, Germany, 30

Jacoby

July, 2002, “Where Is Climate Policy Headed?” luncheon address presented to a conference on International Experience with Energy Liberalization: Lessons for Europe, sponsored by the MIT Center for Energy Policy Research, Cambridge University and Fundación HidroCantábrico, Oviedo, Spain

Aug., 2002, “Climate Change: A Brief Introduction,” opening talk at a workshop on Greenhouse Gas Reduction Programs and Technologies, sponsored by the MIT Laboratory for Energy and Environment and the Northeast States Clean Air Foundation, Dedham, Massachusetts,]

Oct. 2002, “Prospects for a Fragmented Climate Regime,” presented at the CICERO Climate Forum, Oslo, Norway.

Oct. 2002, “Integrated Modeling at MIT,” presented to a Mini-Seminar on Climate and CGE Modeling sponsored by CICERO, Oslo, Norway.

Oct. 2002, “Prospects for a Fragmented Climate Regime,” presented to the Duke University Center for Environmental Solutions, Environmental Institutions Seminar, Durham, North Carolina.

Dec. 2002, “Informing Climate Policy Given Incommensurable Benefits Estimates,” presented to an OECD Workshop on the Benefits of Climate Policy: Improving Information for Policy Makers.

Master's Theses Completed Using GTAP data

Hyman, Robert, “A More Cost-Effective Strategy for Reducing Greenhouse Gas Emissions: Modeling the Impact of Methane Abatement Opportunities,” May 2001

Curtil, Laurianne, “Urban Air Pollution and Climate Policy, June 2002.

Xu, Yugao, “Participation of Developing Countries in a Global Climate Regime,” June 2002.

Valpergue De Masin, Ardoin, “Economic Modeling of Urban Pollution and Climate Policy Interactions,” February 2003

Ph.D. Theses Completed Using GTAP data

Ian Sue Wing, Induced Technical Change in Computable General Equilibrium Models for Climate-Change Policy Analysis, May 2001.