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Education PhD, Applied Physics, Columbia University, New York, 1992
BS, Physics, University of California, Los Angeles, 1987

Activities/interests

Measuring and analyzing how technology systems influence societal resource consumption and the natural environment. Advancing the case for technological realism in US energy policy.

Affiliations

Senior Fellow (2024) NCEA National Center for Energy Analytics; Senior Fellow (2015), Breakthrough Institute.

Recent media

August 2023, The Virtual Worlds of Climate and Energy, *RealClearEnergy*,
https://www.realclearenergy.org/articles/2023/08/16/the_virtual_worlds_of_climate_and_energy_973375.html

May 2023, The Indo-Pacific in 2050: Alternative Energy Scenarios and Security, *RealClearEnergy* https://www.realclearenergy.org/articles/2023/05/10/the_indo-pacific_in_2050_alternative_energy_scenarios_and_security_898465.html

December 2022, Will Complexity Kill the Circular Economy? *RealClearScience*
https://www.realclearscience.com/articles/2022/12/28/will_complexity_kill_the_circular_economy_872458.html

September 2022, How to Invest in the Global Forests of the Future, *RealClearScience*,
https://www.realclearscience.com/articles/2022/09/23/how_to_invest_in_the_global_forests_of_the_future_855078.html

Nov 2021, Green Technologies Have a Glaring Problem of Scale, *RealClearScience*
https://www.realclearscience.com/articles/2021/11/27/green_technologies_have_a_glaring_problem_of_scale_805367.html

July 2020, Book Review of *Apocalypse Never: Why Environmental Alarmism Hurts Us All*, *National Review* <https://www.nationalreview.com/2020/07/apocalypse-never-the-polar-bears-are-alive-and-well/>

June 2020, Book Review of *A Question of Power: Electricity and the Wealth of Nations*, *National Review* <https://www.nationalreview.com/2020/06/book-review-a-question-of-power-explores-essential-role-of-electricity/>

January 2020, The Big Data Mindset, *Issues in Science and Technology*
<https://issues.org/the-big-data-mindset/>

April 2017, Populist Environmentalism?, *The American Conservative*,
<http://www.theamericanconservative.com/articles/populist-environmentalism/>

March 2024

Employment History

- 2010 – The Rockefeller University, Program for the Human Environment, *Senior Research Associate*, Research on global technology trends affecting natural resources and national security
- 2010 - 2018 City College of New York, *Lecturer*, Industrial Ecology, Life Cycle Assessment, Energy Systems
- 2004 - 2009 St. Lukes-Roosevelt Medical Center, Department of Radiation Oncology, *Medical Physicist*, Clinical responsibilities (and limited research) in external beam radiation treatment planning, brachytherapy, and imaging diagnostics
- 2004 - 2007 USEPA Radiation Protection Division, Center for Responsible Environmental Strategies, *Consultant*, Research on substitutes for commercial uses of radionuclides
- 2002 - 2004 World Resources Institute, *Senior Associate*, Conduct public policy analysis on national physical accounting systems
- 2000 - 2002 ECOS Technologies, *Co-founder & VP Content Development*, Design and manage development of digital Environmental Knowledge Management platform (Dot Com)
- 1997 - 2000 Columbia University, *Research Scientist*, Develop/teach courses in Industrial Ecology, Dept. of Earth and Environmental Engineering; Develop organizational strategy and goals for the Columbia Earth Institute
- 1992 - 1997 The Rockefeller University, Program for the Human Environment, *Research Associate*, Industrial Ecology research on social and technological trends influencing resource consumption and land use.
- 1990 - 1994 Stern College for Women, *Lecturer*, undergraduate physics

List of publications

- R Paivinen, IK Wernick, PE Kauppi, et al. 2023, Ensure forest-data integrity for climate change studies, *Nature Climate Change* <https://doi.org/10.1038/s41558-023-01683-8>
- IK Wernick, PE Kauppi, 2022, Storing carbon or growing forests?, *Land Use Policy*, Volume 121, <https://doi.org/10.1016/j.landusepol.2022.106319>
- PE Kauppi, G Stål, L Arnesson-Ceder, I Hallberg Sramek, HF Hoen, A Svensson, IK Wernick, P Högberg, T Lundmark, A Nordin, 2022, Managing existing forests can mitigate climate change, *Forest Ecology and Management*, Volume 513, 20186 <https://www.sciencedirect.com/science/article/pii/S0378112722001803>
- IK Wernick, P Ciais, J Fridman, P Högberg, KT Korhonen, A Nordin & PE Kauppi, 2021, Quantifying forest change in the European Union (Matters Arising), *Nature*, Volume 592, pp. E13–E14 (2021)
- PE Kauppi, P Ciais, P Högberg, A Nordin, J Lappi, T Lundmark and IK Wernick, 2020, Carbon benefits from Forest Transitions promoting biomass expansions and thickening, *Global Change Biology*, 26(10):5365-70 October 2020. <https://onlinelibrary.wiley.com/doi/full/10.1111/gcb.15292>
- I Wernick, 2020, Book Review of *More from Less: The Surprising Story of How We Learned to Prosper Using Fewer Resources—and What Happens Next*, by Andrew McAfee, *Journal of Industrial Ecology*; 1-2 September 2020. doi: 10.1111/jiec.13068
- JH Ausubel, AS Curry, IK Wernick, 2018, *Maritime Environment 2050: Implications for U.S. National Security*. Program for the Human Environment, The Rockefeller University, New York (available upon request)
- A Yazdanbakhsh, LC Bank, T Baez, I Wernick, 2017, Comparative LCA of concrete with natural and recycled coarse aggregate in the New York City area, *The International Journal of Life Cycle Assessment*, 23:1163–73, 2018. doi: 10.1007/s11367-017-1360-5
- IK Wernick, 2016, Jews in Space and Time, *International Journal of Anthropology*, 31:1-2(93-109), https://phe.rockefeller.edu/docs/Wernick_JewsTimeSpace_January%202016.pdf
- CC Liu, YH Yu, IK Wernick and CY Chang, 2015, Using the Electronic Industry Code of Conduct to Evaluate Green Supply Chain Management: An Empirical Study of Taiwan's Computer Industry, *Sustainability*, 7, 2787-2803. doi:10.3390/su7032787 <http://www.mdpi.com/2071-1050/7/3/2787>
- IK Wernick, 2014, Living in a Material World, *Issues in Science and Technology (Winter 2014)*, <https://phe.rockefeller.edu/docs/Wernick%20IS&T%20Winter%202014.pdf>
- JH Ausubel, IK Wernick, PE Waggoner, 2013, Peak Farmland and the Prospect for Land Sparing, *Population Development and Review* 38:219-242. <http://phe.rockefeller.edu/docs/Peak%20Farmland%202013.pdf>
- IK Wernick, 2012, Book Review of *Love Your Monsters: Post-Environmentalism and the Anthropocene*. M. Shellenberger and T. Nordhaus (eds). *Journal of Industrial Ecology* June 2012, 449-50.
- KL Maletz, RD Ennis, J Ostenson, A Pevsner, A Kagen, IK Wernick, 2012, Comparison

of CT and MR–CT Fusion For Prostate Post-Implant Dosimetry, *Int. J. Radiation Oncology Biol. Phys.*, Vol. 82, No. 5, pp. 1912–1917. doi:10.1016/j.ijrobp.2011.01.064

A Rautiainen, IK Wernick, PE Waggoner, JH Ausubel, PE Kauppi, 2011 A National and International Analysis of Changing Forest Density. *PLoS ONE* 6(5): e19577. doi:10.1371/journal.pone.0019577

AV Young, AW Wortham, IK Wernick, A Evans, RD Ennis, 2011, Atlas-Based Segmentation Improves Consistency and Decreases Time Required For Contouring Postoperative Endometrial Cancer Nodal Volumes, *Int. J. Radiation Oncology Biol. Phys.*, Vol. 79, No. 3, pp. 943–947. doi:10.1016/j.ijrobp.2010.04.063

IK Wernick, 2010, Book Review of *Changing Stocks, Flows and Behaviors in Industrial Ecosystems & The Dynamics of Regions and Networks in Industrial Ecosystems*, M Ruth and B Davidsdottir (eds.). *Journal of Industrial Ecology* 14(6):978-80.

IK Wernick, PE Waggoner, PE Kauppi, RA Sedjo, and JH Ausubel, 2010, Quantifying Forest Change, *PNAS*, Vol. 107 No. 38. doi: 10.1073/pnas.1008669107

JD Blasberg, SJ Belsley, GS Schwartz, A Evans, IK Wernick, RC Ashton Jr, FY Bhora, CP Connery, 2010, Robotic Brachytherapy and Sublobar Resection for T1 Non-Small Cell Lung Cancer in High-Risk Patients. *Ann. Thorac. Surg.*, Feb. 2010; 89: 360 – 367

RD Ennis, AV Young, IK Wernick, A Evans, 2009, Increased Consistency and Time Savings for Delineation of Pelvic Lymph Nodes for Adjuvant Therapy of Endometrial Cancer. *Int. J. Radiat. Oncol. Biol. Phys.* 2009, 75, S367

D Rogich, A Cassara, IK Wernick, M Miranda, 2008, *Material Flows in The United States: A Physical Accounting of the U.S. Industrial Economy*, World Resources Institute, Wash., DC, 51 pp.

IK Wernick, 2008, Book Review, *Useless Arithmetic: Why Environmental Scientists Can't Predict the Future* by Orrin H. Pilkey and Linda Pilkey-Jarvis Columbia University Press, *Journal of Industrial Ecology* 12(2): 249-251

IK Wernick, 2007, Global Warming and the Industrial System, International Relations and Security Network (ISN), Zurich, Switzerland.
<http://www.isn.ethz.ch/pubs/ph/details.cfm?lng=en&id=30366>

JH Ausubel, IK Wernick, AM Barret, P Waggoner, 2006, Industrial Ecology for Leverage to Let Loose Less Cadmium, *Progress in Industrial Ecology* 3(6):522-537.

LT Lu, IK Wernick, TY Hsiao, YH Yu, YM Yang, HW Ma, 2006, Balancing the life cycle impacts of notebook computers: Taiwan's experience, *Resources, Conservation and Recycling* (2006) 48:13-25.

JH Ausubel, PE Waggoner, IK Wernick, 2005, Foresters and DNA in Williams, C.G. (ed.), *Landscapes, Genomics and Transgenic Forests*, Springer New York, LLC.

IK Wernick, FH Irwin, 2005, *Material Flow Accounts: A Tool for Making Environmental Policy*, Policy Brief, The World Resources Institute, Washington, DC, 49 pp.

TY Hsiao, IK Wernick, YH Yu, and LT Lu, 2005, Materials Flow Analysis of Pollutants in Taiwan, *International Journal of Environment and Pollution*, Vol. 23(3):259-272.

IK Wernick, Book Review, 2005, The Economics of Industrial Ecology: Materials, Structural Change, and Spatial Scales, Jeroen C.J.M. van den Bergh, Marco A. Janssen (Eds.), *Journal of Ecological Economics* 55(3):449-51.

TY Hsiao, YT Huang, YH Yu, IK Wernick, 2003, Modeling materials flow of waste concrete from construction and demolition wastes in Taiwan, *Resources Policy* 28 (2003) 39–47.

IK Wernick, 2003, Environmental Knowledge Management, *Journal Ind. Ecol.* 6(2):7-9.

TY Hsiao, YH Yu, IK Wernick, 2002, Analyzing Materials Flows from Construction Aggregates in Taiwan, *Journal of the Chinese Institute of Environmental Engineering* 12(2):103-112

IK Wernick and P Eisenberger, 2002, A Task Driven Environmental/Business Taxonomy and Applications Delivery Platform Using an Enhanced Industrial Ecology Model. Provisional Patent filed 01/24/02. Application No. 60/352.064

TY Hsiao, YH Yu, and IK Wernick, 2001, A Note on Material Flows of Construction Aggregates in Taiwan, *Resources Policy*, 27(2001)135-7.

IK Wernick, 2001, Industrial Ecology and the Built Environment, pp. 177-195 in *Construction Ecology: Nature as a Basis for Green Buildings*, Edited by Charles J. Kibert, et al. Spon Press, London, UK

IK Wernick, 2001, Industrial Ecology, in *Managing Human-Dominated Ecosystems*, pp. 235-248. Victoria C. Hollowell (ed.). Missouri Botanical Garden Press, St. Louis, MO.

JH Ausubel, PS Meyer, and IK Wernick, 2001, Death and the Human Environment: The United States in the 20th Century *Technology in Society* 23(2):131-146.

IK Wernick, 2001, Encyclopedia Entry "Industrial Metabolism," *International Encyclopedia of Social and Behavioral Sciences*, pp. 7331-3. N. J. Smelser and Paul B. Baltes (editors), Pergamon, Oxford.

IK Wernick, PE Waggoner, and JH Ausubel, 2000, The Forester's Lever: Industrial Ecology and Wood Products, *Journal of Forestry* 98(10):8-14.

IK Wernick, 2000, The Future of Metal Recycling, *American Metals Market*, p. 14A, January 1, 2000.

IK Wernick, 2000, Book Review, Upsizing: The Road to Zero Emissions, More Jobs, More Income, and No Pollution, Pauli, G., *Journal of Ind. Ecol.*, 3(2):190-1, 2000.

T Amari, NJ Themelis, and IK Wernick, 1999, Resource Recovery from Used Rubber Tires, *Resources Policy* 25(3):179-188.

IK Wernick, 1999, The Role of U.S. and Soviet Scientists in Nuclear Arms Control Activities: The Example of the Committee on the International Security and Arms Control, <https://www.columbia.edu/sec/dlc/ciao/conf/nya02/nya02ai.html>

- IK Wernick, 1998, Material Flows: Definitions and Data, pp. 85-96 in *Managing a Material World*, P. Vellinga, F. Berkhout, and J. Gupta (eds.). Kluwer Academic Publishers, Norwell, MA, USA.
- IK Wernick and NJ Themelis, 1998, Recycling Metals for the Environment, *Annual Review of Energy and Environment* 23:465-97.
- IK Wernick, PE Waggoner, and JH Ausubel, 1998, Searching for Leverage to Conserve Forests: The Industrial Ecology of Wood Products in the U.S., *Journal of Industrial Ecology*, 1(3):125-145.
- NJ Themelis and IK Wernick, 1997, Metal Production and Greenhouse Gases, pp. 595-61 in *Proceedings of The Julian Szekely Memorial Symposium on Materials Processing*, Cambridge, MA October, 6-8 1997.
- IK Wernick and JH Ausubel, 1997, *Industrial Ecology: Some Directions for Research*, Report commissioned by the Energy and Environmental Systems Division, Lawrence Livermore National Laboratory, USDOE.
- IK Wernick, 1997, Book Review, "Design for Environment: Creating Eco-efficient Products and Processes" Fiksel, J. (ed.), *Journal of Industrial Ecology* (1)1, 1997.
- PE Waggoner, JH Ausubel, and IK Wernick, 1996, Lightening the Tread of Population on the Land: American Examples, *Population Development and Review* 22(3):531-45.
- IK. Wernick, R Herman, S Govind, and JH Ausubel, 1996, Materialization and Dematerialization: Measures and Trends", *Daedalus* 125(3):171-98.
- IK Wernick, 1996, Consuming Materials: The American Way, *Technological Forecasting and Social Change* 53(1):111-22.
- IK Wernick, 1996, Book Review, *Industrial Ecology and Global Change* by Socolow R., et al. (eds.), *Climatic Change* 32(1):117-19, 1996.
- IK Wernick, 1996, Editorial, Better Risk Information for Communities, *Risk Analysis* 16(5):601-3, 1996.
- IK Wernick and JH Ausubel, 1995, National Materials Flows and the Environment, *Annual Review of Energy and the Environment* 20:462-92.
- IK Wernick (ed.), 1995, *Community Risk Profiles: A Tool to Improve Environment and Community Health*, 87 pp., Program for the Human Environment, New York.
- JH Ausubel, DG Victor, and IK Wernick, 1995, The Environment Since 1970, *Consequences* 1(3):3-15.
- IK Wernick and JH Ausubel, 1995, National Material Metrics for Industrial Ecology, *Resources Policy* 21(3):189-98, 1995.
- IK Wernick, 1995, Book Review, Lean and Clean Management, Romm, J., *International Journal of Environment and Pollution* 5(2/3):314-6, 1995.

IK Wernick, 1994, Dematerialization and Secondary Materials Recovery: A Long-Run Perspective, *Journal of the Minerals, Metals, and Materials Society* 46(4):39-42.

IK Wernick and TC Marshall, 1992, Experimental Test of the Free Electron Laser Accelerator Principle, *Physical Review A* 46(6):3566-68.

IK Wernick and TC Marshall, 1992, An Inverse Free Electron Laser Auto-accelerator Experiment, *Nuclear Instruments and Methods of Physics Research A* 318:754-57.

Presentations

Breakthrough Institute 2019

Georgetown University 2014, 2015

Japanese Ministry of Environment 2003

Leiden University (Netherlands) 1997

Massachusetts Institute of Technology 2003

Missouri Botanical Garden 1999

National Academy of Engineering 1993-6

National Academy of Sciences 1997, 2004

National Materials Advisory Board 1993

National Taiwan University 1998, 2003, 2017

Naval Research Laboratory 1992

National Science Council (Taiwan) 2003

New York Academy of Sciences 1997

RAND Corporation (Santa Monica) 1994

Resources for the Future 2013, 2014

Robert Wood Johnson Foundation 1994

Swedish University of Agricultural Sciences 2022

Technical Chamber of Greece 2004

Technion University (Israel) 1996, 2012

The New School 2009

University of California Los Angeles 1998

University of Florida, Gainesville 1997

University of Helsinki (Finland) 2011

USDA Forest Service Forest Products Laboratory 1996

US Coast Guard Academy 2018

US Environmental Protection Agency 1996-2003

US Geological Survey 1997 - 2003

White House Office of Sci. & Tech. Policy 1999

Wuppertal Institute (Germany) 2003

Yale University 2013, 2023