

International Energy Analysis News from Berkeley Lab

April 17, 2023



Greetings and welcome to the third edition of the Lawrence Berkeley National Laboratory (Berkeley Lab) International Energy Analysis quarterly newsletter.

Featured in this edition are Berkeley Lab's recent study on India's pathway to achieving cost-effective energy independence and greenhouse gas emissions reductions, contributions to the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report, study on occupant aspects of building energy codes, roadmap for net-zero steel industry in China, program for training Uganda's women entrepreneurs on efficient and productive use of energy, and announcement of a working group on decarbonized energy systems modeling by the International Building Performance Simulation Association.

Please add us to your address book and forward this newsletter to any colleagues you believe might be interested.

Sincerely,

Nikit Abhyankar, Research Scientist
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Our Latest Research

New Study Shows India Can Achieve Energy Independence by 2047

India can achieve its vision of energy independence by 2047, according to a new study titled [Pathways to Atmanirbhar Bharat](#) (which translates

to “self-reliant India”), released by the U.S. Department of Energy’s Berkeley Lab. Examining India’s three most energy intensive sectors (power, transport, and industry) responsible for over 80% of the country’s energy consumption and energy-related greenhouse gas emissions, the study shows how deep cost reductions in clean energy technology, and India’s renewable and lithium edge, can enable a pathway for cost-effective energy independence and generate significant economic and environmental benefits. This includes \$2.5 trillion in consumer savings through 2047, reducing fossil fuel import expenditure by 90% or \$240 billion per year by 2047, enhancing India’s industrial competitiveness globally, and enabling India’s net-zero commitment ahead of schedule.



[Read the Article](#)

New UN Report: Limiting Global Warming to 1.5 Degrees Celsius Requires Deep Decarbonization Across All Sectors



Berkeley Lab scientists, pictured above, contributed to research behind the [Synthesis Report of the Sixth Assessment Report](#) that was recently released by the United Nations’ Intergovernmental Panel on Climate Change (IPCC). The report finds that renewable energy, energy efficiency, electric vehicles, recyclable materials, alternative fuels, and carbon capture and storage are needed to slow climate change.

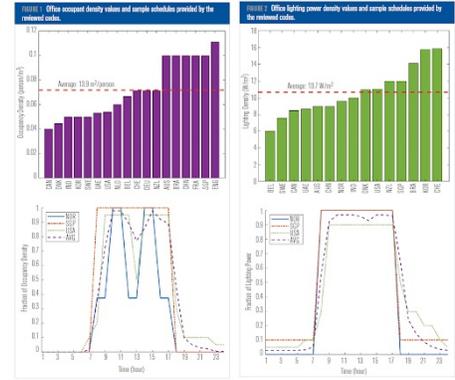
Limiting global warming to 1.5 degrees Celsius above pre-industrial levels will require severely cutting greenhouse gas emissions in half by 2030. Doing so calls for the immediate, large-scale adoption of renewable energy like solar and wind, electrified transportation, energy-efficient systems, alternative fuels, and carbon capture and storage technologies across all sectors globally.

[Continue reading about Berkeley Lab contributions.](#)

Occupant Aspects of Building Energy Codes and Standards

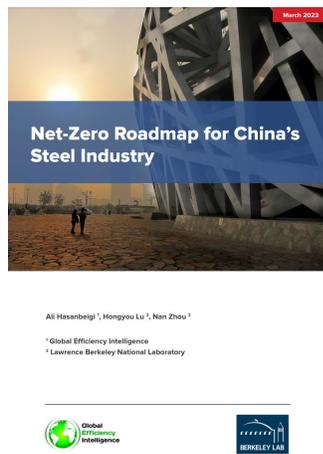
Occupants are recipients of building services, and they have direct influence on building operation and performance. However, they are often addressed in

simplified ways in building energy codes do not reflect the realistic occupant behaviors in buildings. Under International Energy Agency's Annex 79, an international review was conducted on 23 regions' building energy codes and standards. Results showed major discrepancies between occupant-related densities (e.g., occupancy and plug loads) and rather significant differences between schedules. Authors recommend building codes could be enhanced to better incorporate occupant behavior. With these recommendations adopted, buildings will have a higher chance of achieving energy and comfort performance targets.



[Read a short article](#) and the full article at doi.org/10.1016/j.buildenv.2020.106906.

Release of Net-Zero Roadmap for China's Steel Industry



Berkeley Lab and Global Efficiency Intelligence conducted a study to develop a deep decarbonization roadmap for China's steel industry. The report developed scenarios to assess different decarbonization pathways to substantially reduce the CO₂ emissions of the steel industry. The study included five major decarbonization pillars: 1) demand reduction, 2) energy efficiency, 3) fuel switching, electrification, and grid decarbonization, 4) technology shift to low-carbon steelmaking, and 5) carbon capture, utilization, and storage. It also provides recommendations for policymakers, industry, and other stakeholders for near-, medium-, and long-term actions. The report was released through two public webinars in both English and Chinese and joined by about 150 attendees.

[Read the full report.](#)

Women Entrepreneurs in Uganda Receive Training on Efficient and Productive Use of Energy

Energy Empowers East Africa (EEEA) is a program developed by Berkeley Lab with the U.S Agency for International Development (USAID) to unlock the benefits of modern energy access for women and enhance their role as agents of change in promoting clean, affordable, and efficient energy use in East Africa.

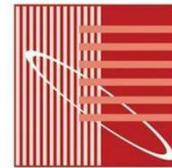
In Uganda, EEEA partnered with the Consortium for Energy Efficiency (CEE) to support women entrepreneurs of small businesses in gaining access to efficient and productive electric equipment. The team trained 240 businesswomen after undertaking a large participatory survey to collect information on barriers that prevent access to productive use of energy. The training was conducted in 8 districts and provided 5 days of knowledge sharing and assistance on the development of business plans, and included demonstrations of equipment, guest speakers and group discussions.



For more information, go to ee4d.org or contact [Stephane de la Rue du Can](#) and [Ingrid Xhafa](#).

IBPSA Approved Modelica Working Group to Develop Models for Decarbonized Energy systems

The International Building Performance Simulation Association (IBPSA) approved on January 25, 2023, the formation of the IBPSA Modelica Working Group which is chaired by Michael Wetter from Berkeley Lab, Building Technology and Urban Systems Division.



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The Working Group will further develop the Modelica IBPSA Library, which originated from two international projects led by Michael Wetter and Prof. Christoph van Treeck (RWTH Aachen, Germany). It continues work from the International Energy Agency (IEA) Annex 60 and the subsequent IBPSA Project 1. The group will develop models for design and operation of decarbonized grid-flexible building and district energy systems, bringing together international knowledge and requirements for the energy transition towards such systems.

See github.com/ibpsa/modelica-working-group for details.

Learn More at international.lbl.gov

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