INTERNATIONAL ENERGY ANALYSIS
BERKELEY LAB

International Energy Analysis
News from Berkeley Lab

August 9, 2023

We are delighted to share highlights from the International Energy Analysis program at Lawrence Berkeley National Laboratory (Berkeley Lab).

Collaborating for the Change: Our collaboration with the Chile Ministry of Energy is informing policy making and investment strategies. By providing essential modeling and strategic insights, we are playing a key role in shaping Chile's sustainable energy future.

Driving Energy Transition: With a focus on Inner Mongolia, we are leading energy transition efforts by benchmarking industrial energy intensity to identify opportunities for consumption reduction and process optimization, contributing to sustainable growth and resource efficiency.

Innovative Cooling Solutions: We are developing innovative solutions to tackle cooling peak demand in Tunisia. Through advanced modeling and technology assessment, we aim to enhance energy efficiency, ensure reliable cooling infrastructure, and minimize environmental impact.

Transforming Buildings for Sustainability: By leveraging cutting-edge technologies and providing actionable recommendations in Tunisia and Mexico, we are driving the transformation of existing buildings into energy-efficient and sustainable structures.

Empowering Women Energy Leaders: We take pride in launching the Net Zero World Climate Smart Women Energy Leaders Program at Berkeley Lab. This empowering initiative fosters expertise, collaboration, and gender diversity among women leaders in the energy sector, driving sustainable energy solutions worldwide.

Read on to learn more about each of these transformative efforts.

Thank you for your unwavering support as we continue to work for a sustainable energy transition.

Warm regards,

Nan Zhou

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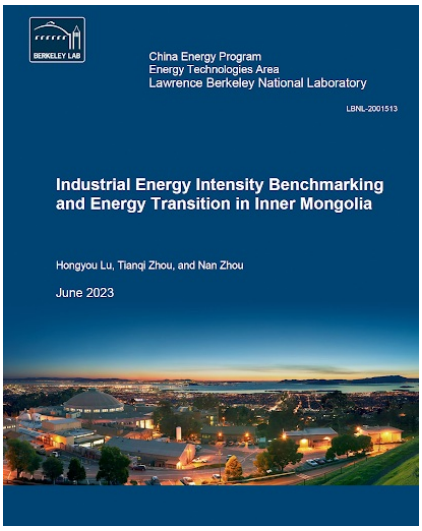
Our Latest Research

Industrial Energy Intensity Benchmarking and Energy Transition in Inner Mongolia

Inner Mongolia of China has significant energy and mineral resources, making it a major industrial producer in the country. However, it failed to meet the “Dual Control” targets during 2016-2020, which aimed to reduce energy intensity and cap energy consumption. It is critical for Inner Mongolia to identify gaps and areas for improvement. We analyzed energy intensity of Inner Mongolia’s steel and aluminum smelting industries using the most recent publicly available data. We found both industries have significant potential to improve compared to the Chinese industry average, domestic targets, global averages, as well as practical and theoretical minimum intensities. Inner Mongolia can support China’s net-zero goals by adopting technical and policy measures in these industries.



Read the **report.**

Accelerating Policy Development and Subnational Clean Energy Solutions with the Government of Chile

Berkeley Lab is collaborating closely with the Chile Ministry of Energy as part of the Net Zero World Initiative (NZWI), aiming to inform policy making and investment strategies through advanced modeling and pathways. Our team of technical experts engaged in discussions with the Ministry, conducting training, capacity building, and developing collaborative work plans for priority sectors.

The team played pivotal roles in leading a workshop in Santiago, analyzing critical factors like cost-benefit, local pollutant impact, and power optimization to support the country's long-term energy policy planning.

Additionally, efforts were directed towards district energy planning, addressing the growing need for low-carbon energy solutions for space heating and electricity. A comprehensive techno-economic analysis was conducted using Berkeley Lab's **DER-CAM** model, further enhancing the overall impact of our collaborative endeavors.

These combined efforts are aimed at supporting crucial initiatives, including the National Determined Contribution and the District Energy National Roadmap, while also progressing in the development of pilot projects. For further information or follow-up, please contact **Nina Khanna** and **Virginie Letschert** for energy-system wide modeling and Nan Zhou for district energy roadmap details.

Net Zero World Climate Smart Women Energy Leaders Program Kicked Off at Berkeley Lab this May

Berkeley Lab researchers led by **Reshma Singh** proudly hosted the formal launch of the Climate Smart Women Energy Leaders program (CS-WEL) as part of the Net Zero World Initiative (NZWI) launched by the U.S. Department of Energy (DOE) Secretary Jennifer Granholm at COP27. The program empowers women leaders in the energy sector from partner countries

through intensive training, peer learning, and ongoing coaching. Leaders from seven partner countries joined the program.

The launch featured panel discussions on clean energy transitions and included leaders from U.S. DOE, Berkeley Lab, NZWI, and CS-WEL. Women leaders also visited Berkeley Lab's facilities, received training and mentoring, and later met with Secretary Granholm.

Check out the **tweet** from Secretary Granholm about the program.

Mitigating the Impact of Cooling Peak Demand in Tunisia

Berkeley Lab is working closely with Tunisia's National Agency for Energy Management (ANME) on a roadmap for the market to adopt more efficient air conditioners (ACs). This collaboration led to two recent reports focusing on **market assessment** and **impact analysis**.

Our analysis shows that the range of prices on the market is correlated primarily to the size of the model rather than to its efficiency. Therefore, setting higher efficiency standards for cooling products could save significant energy, while having little impact on the purchasing prices of ACs.

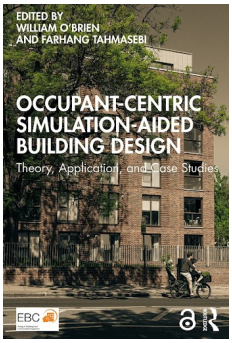
In particular, setting more ambitious standards will avoid the construction of a medium-size power plant, reduce 4.0 Mt of CO_2 emissions through 2040, and save consumers between $50 and $80 over the lifetime of their AC units.

Visit the U.S. Agency for International Development (USAID) Energy Efficiency for Development (EE4D) program website (**ee4d.org/**) for more information.

Occupant-Centric Approaches for Better Building Design and Operations

Berkeley Lab researchers are contributing to the International Energy Agency's five-year effort that is in its final stage and aims to integrate and implement occupant behavior into building design & operations to improve energy performance & occupant comfort.

Lab researchers **Tianzhen Hong**, **Jeetika Malik**, and **Handi Chandra Putra** developed advanced occupant behavior modeling approaches — synthetic population and agent-based occupant models. Other contributions include an open-access book on **Occupant-Centric Simulation-Aided Building Design**.



Berkeley Lab Accelerates Net Zero Energy Building Retrofits in Tunisia and Mexico

BETTER
BUILDING EFFICIENCY TARGETING TOOL FOR ENERGY RETROFITS
U.S. DEPARTMENT OF ENERGY

Buildings are often prevented from pursuing energy-saving retrofits because of requirements for expensive on-site audits and complex and data-intensive simulation models. To address these barriers, USAID Energy Efficiency for Development (EE4D) is supporting Berkeley Lab to customize for Mexico and Tunisia the BETTER tool — an award-winning on-line retrofit analysis tool developed by Berkeley Lab for DOE that estimates the size and makeup of potential energy efficiency projects without site visits or simulation. This includes adding Spanish and French language toggles, country-specific databases and benchmark statistics, and a connection with DOE's PVWatts® Calculator so that BETTER can quickly and easily target

buildings for net-zero energy retrofits globally.

Click on the following links to explore BETTER | **Mexico** and BETTER | **Tunisia**.

Net Zero World Initiative Makes First Successful Engagement in Indonesia With the Building Sector

In its first foray into Indonesia the **Net Zero World Initiative** hosted a U.S.-Indonesia Joint Workshop on Decarbonizing the Building Sector in February 2023. Supported by the U.S. DOE, the Indonesian Ministry of Energy and Mineral Resources (ESDM), and the Indonesian Energy Efficiency Society (MASKEEI), the event attracted over 150 building industry participants from many parts of the world. The workshop noted Indonesia's commitment to achieve rapid de-carbonization across its entire economy and concluded by identifying areas in which the U.S. and Indonesia might advance collaboration under the Net Zero World Initiative.

In May, NZWI launched the Indonesia Building Decarbonization Working Group, led by Berkeley Lab researchers Ronnen Levinson and Nan Zhou, ESDM, and MASKEEI. By November the working group plans to establish a National Center for Net Zero Buildings, whose first activity will be to develop whole-building cooling solutions for tropical climates of Indonesia; perform cost-benefit analyses of whole-building cooling measures to inform investments in the $20 billion **Indonesia Just Energy Transitions Partnership** (JETP); develop net-zero and passive design pilot projects for low- and middle-income buildings in Indonesia's tropical climate zones; and provide training and capacity building, including "train the trainer" programs.

Learn More at
international.lbl.gov

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