



International Jobs and Economic Development Impacts Model: Stories of Use and Impact

The [International Jobs and Economic Development Impacts \(I-JEDI\)](#) model is a freely available economic model that estimates gross economic impacts from wind, solar, biopower, and geothermal energy projects around the world. I-JEDI estimates the employment, earnings, gross domestic product, and output from the construction and operation of renewable energy projects and across the domestic supply chain. The model results include total economic impacts as well as impacts by industry (e.g., construction, manufacturing, banking services, etc.). This information helps align renewable energy action with key economic development goals.

The tool has been developed and applied in several countries, including Mexico, Colombia, South Africa, the Philippines, and Zambia, and can now be used for many countries around the world with the [custom I-JEDI tool](#). The I-JEDI model was developed by the [National Renewable Energy Laboratory \(NREL\) with support from the United States Agency for International Development \(USAID\)](#).

How is I-JEDI being used around the world to support clean energy development and job analysis?



Zambia
Center for Energy, Environment,
and Engineering Zambia (CEEZ)

In 2014, CEEZ, a local Zambian technical institution, helped develop Nationally Appropriate Mitigation Actions (or NAMAs) for the government of Zambia as part of the country's broader action portfolio to address climate change. NREL trained team members of CEEZ on carrying out economic impact and mitigation assessments, incorporating modeling tools such as I-JEDI, and communications strategies to concisely relay critical information to policymakers about the possible impacts of proposed policies. CEEZ was able to use I-JEDI to model and display the economic value of the NAMAs proposals for Zambia's energy sector. Overall, five of the proposed NAMAs put forward by CEEZ were prioritized and deployed by the government of Zambia. Based on this information, policymakers could further understand the social and economic impacts of key climate actions, which were then integrated with Zambia's Nationally Determined Contribution (NDC) for climate mitigation.

CEEZ also used I-JEDI to help the Zambia Rural Electrification Authority come up with the monitoring and evaluation framework for grid extension, solar minigrid, and hydropower projects. Within this framework, they used I-JEDI to estimate the number of local jobs that would be created throughout the construction and maintenance of these projects. Finally, CEEZ participated in the Africa Low-Emission Development Strategy Partnership, where they used an enhanced version of I-JEDI to model long-term employment implications for different low-emissions scenarios.



South Africa
[Council of Scientific and Industrial Research \(CSIR\)](#)

Team members of CSIR participated in a fellowship at NREL to receive training on the I-JEDI model and have since adapted the model in various ways for the South African context, such as expanding it to be capable of modeling economic impacts for their entire power sector including coal. Because South Africa relies heavily on coal, the country sought to better prepare itself for the transition to renewable energy and needed an improved system for tracking the co-benefits of renewable energy deployment. CSIR used the I-JEDI model to perform an annual snapshot of the entire power sector and understand how jobs would be created as more renewable energy projects came online. The CSIR team even began using the model to understand how many jobs might be lost as coal plants are decommissioned. I-JEDI was used together with other models to understand South Africa's optimal least-cost technology mix, considering employment impacts, to inform which technologies were best to build and which were best to decommission. Because many coal plants are set to be decommissioned in the next two to three years, the model has been instrumental in informing policymakers on how many new clean energy jobs could replace those lost from coal plant decommissioning.

CSIR also used I-JEDI to develop economic baselines at the regional level, such as for the Ngala district, which houses the bulk of South Africa's coal production. Going forward, CSIR would like to further expand the model to incorporate new technologies such as battery storage and nuclear energy.

"The tool has been incredibly important for the work CSIR has done," noted Ruan Fourie, a researcher at CSIR. "It's formed part of a critical research and innovation plan for the energy industry here."



Mexico
Ithaca Environmental

Ithaca Environmental, a local consulting company in Mexico, with support from German Corporation for International Cooperation (GIZ), performed an assessment of the possible co-benefits of two renewable energy deployment scenarios in Mexico. Jose Castro, the director and founder of Ithaca Environmental, and the Ithaca team were able to access and learn to use I-JEDI online and then apply I-JEDI Mexico to model year-by-year estimated employment generation based on new installed renewable energy capacity through 2050 for both scenarios. The goal of this modeling was to demonstrate how renewable energy could compete with fossil fuels in terms of delivering quality employment.

These results were presented at the United Nation's 2019 Conference of Parties in Germany. GIZ has since requested Ithaca begin assessing co-benefits on the project level, and Ithaca plans to continue using the I-JEDI model to do so. Ultimately, GIZ hopes to create a portal where any project can assess their various co-benefits using a combination of modeling tools, including I-JEDI. Additionally, Ithaca has also used the tool on an ad-hoc basis and recommended the tool to other private sector companies who use it for the social impact assessments required for permitting energy projects prior to construction.

"This tool has been critical to this work we have been doing and we plan to continue using I-JEDI," Castro said.



Global
Climate Investment Fund, World Bank

The Climate Investment Fund's (CIF's) Clean Technology Fund (CTF) is empowering transformation in developing countries by providing resources to scale up low-carbon technologies with significant potential for long-term greenhouse gas emissions savings. The program supports investments in renewable energy, energy efficiency, and low-carbon transport projects in more than 20 countries.

CIF wanted to examine the social and economic outcomes of CTF's investments that go beyond climate benefits, including job creation, improved health, increased economic activity, market development, and gender equality impacts. Following exploration of potential outcome pathways and available assessment methodologies, the team applied the I-JEDI model to understand topline employment benefits of the CTF portfolio in Colombia, Mexico, the Philippines, and South Africa, which represents 10 projects valued at \$5.82 billion (11% of CTF's total portfolio) and approximately 3,200 MW of planned installed capacity. Explore the full-length publication and learn more about how I-JEDI was used: [Estimating the Social and Economic Development Impacts from Climate Investments: Initial Findings from CIF's Clean Technology Fund.](#)

These use cases were gathered across a series of interviews between I-JEDI model users and NREL staff in 2020 and 2021.



Image from iStock, 853256042

Explore more about I-JEDI, and access the model, on the [I-JEDI website](#).

www.i-jedi.org | www.nrel.gov/usaid-partnership

This work was authored, in part, by the National Renewable Energy Laboratory (NREL), operated by Alliance for Sustainable Energy, LLC, for the U.S. Department of Energy (DOE) under Contract No. DE-AC36-08GO28308. Funding provided by the United States Agency for International Development (USAID) under Contract No. IAG-17-2050. The views expressed in this report do not necessarily represent the views of the DOE or the U.S. Government, or any agency thereof, including USAID.

The International Jobs and Economic Development Impacts (I-JEDI) model is a free, online tool for analyzing the potential economic impacts and job benefits from wind, solar, biomass, and geothermal energy projects around the world. I-JEDI was developed by the National Renewable Energy Laboratory and is supported by the U.S. Agency for International Development.

The USAID-NREL Partnership addresses critical challenges to scaling up advanced energy systems through global tools and technical assistance, including the Renewable Energy Data Explorer, Greening the Grid, the International Jobs and Economic Development Impacts tool, and the Resilient Energy Platform. More information can be found at: www.nrel.gov/usaid-partnership.

