

# INTERNATIONAL JOBS AND ECONOMIC DEVELOPMENT IMPACTS (I-JEDI) MODEL



**Figure 1.** The NorthWind Bangui Bay project in the Philippines comprises fifteen 1,650-kW turbines.

PHOTO COURTESY OF FLICKR/DYOSA\_MAYUMI

## THE EC-LEDS PROGRAM

Low emission development strategies (LEDS) are national development plans that promote sustainable human and economic development while reducing greenhouse gas emissions.

Enhanced Capacity for Low Emission Development Strategies (EC-LEDS) is a U.S. government program that supports partner countries in their pursuit of LEDS. EC-LEDS enhances other LEDS efforts by (1) providing technical assistance to develop and implement LEDS and (2) building a shared LEDS knowledge base.

EC-LEDS country partners include Albania, Bangladesh, Colombia, Costa Rica, Gabon, Indonesia, Kenya, Macedonia, Mexico, Moldova, the Philippines, Serbia, and Vietnam.

### I-JEDI OVERVIEW

International Jobs and Economic Development Impacts (I-JEDI) is a freely available economic model that estimates gross economic impacts from wind, solar, biomass, and geothermal energy projects. Building on a similar model for the United States, I-JEDI was developed by the National Renewable Energy Laboratory under the U.S. government's Enhancing Capacity for Low Emission Development Strategies (EC-LEDS) program to support partner countries in assessing economic impacts of LEDS actions in the energy sector.

I-JEDI estimates economic impacts by characterizing the construction and operation of energy projects in terms of expenditures and the portion of these expenditures made within the country of analysis. These data are then used in a country-specific input-output (I-O) model to estimate employment, earnings, gross domestic product (GDP), and gross output impacts. Total economic impacts are presented as well as impacts by industry. Example model outputs are presented in Figure 2.

Countries included in the 2016 version of I-JEDI include Colombia, Mexico, the Philippines, South Africa, and Zambia. Additional countries will be added to the model over time.

I-JEDI - Biopower				
Estimated Gross Economic Impacts				
Mexico				
Nameplate Capacity (MW)	500			
Annual Generation (MWh)	3,506,400			
Boiler Type	Stoker boiler			
Fuel	Forest Residues			
Dollar Year	2014			
Impact Totals				
Construction Phase (Single Year Equivalent) (\$ 2014 US)				
	Jobs	Earnings	Output	GDP (Value Added)
Direct	18,740	\$ 75,899,339	\$ 614,846,376	\$ 155,094,659
Indirect	10,848	\$ 39,884,287	\$ 421,885,927	\$ 198,833,228
Induced	13,693	\$ 57,836,941	\$ 859,841,478	\$ 213,906,899
Total	43,281	\$ 193,620,567	\$ 1,896,573,782	\$ 567,834,787
Operations and Maintenance Phase (Annual, Ongc) (\$ 2014 US)				
	Jobs	Earnings	Output	GDP
Direct	10	\$ 131,548	\$ 1,090,150	\$ 367,755
Indirect	24	\$ 162,077	\$ 1,254,142	\$ 707,101
Induced	30	\$ 125,186	\$ 1,861,097	\$ 462,994
Total	64	\$ 418,811	\$ 4,205,389	\$ 1,537,851

**Figure 2.** Example I-JEDI outputs

### EC-LEDS

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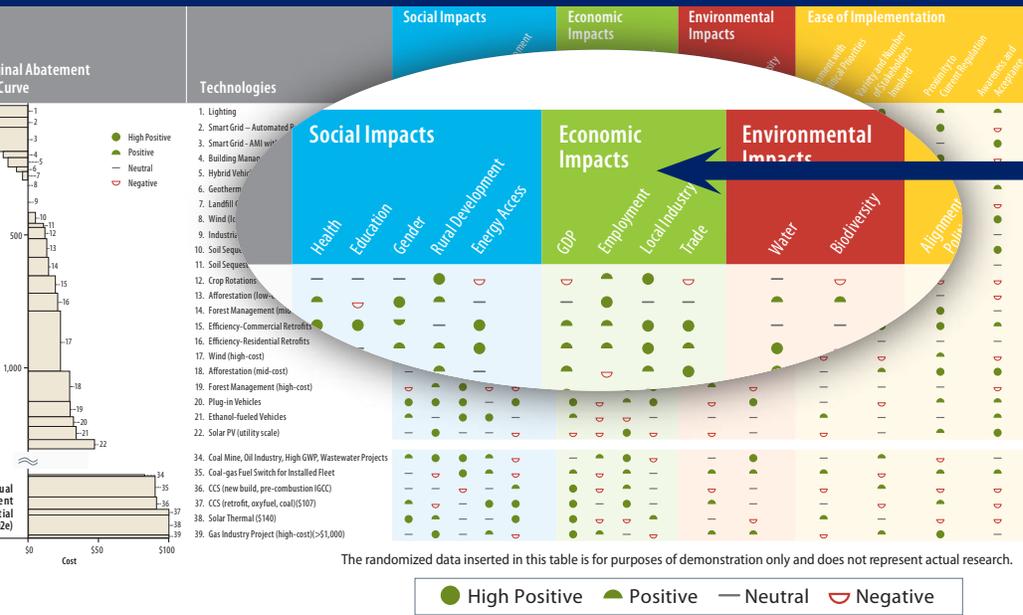


Figure 3. Development impact assessment framework with inputs from I-JEDI analysis

### I-JEDI AND DEVELOPMENT IMPACT ASSESSMENT

Development impact assessment (DIA) supports countries in understanding the impacts of low emission development strategies on broader development goals. Within this framework, specific analytical tools are used to assess certain types of impacts. As highlighted in Figure 3, I-JEDI outputs can feed into a broader DIA framework and provide valuable information on job and economic impacts of specific LEDS actions to support informed decision-making.

### I-JEDI ACTIVITIES THROUGH EC-LEDS

#### Colombia

I-JEDI Colombia supports actions to enable implementation of the country's low carbon development strategy. In 2016, an in-depth training was held with various stakeholders to build capacity on use of the model to enable low carbon action in the energy sector. Following the training and based on feedback, a Spanish version of I-JEDI was developed for Colombia and Mexico. The Spanish version incorporates tabs to add custom data for specific regions in Colombia or other data. Discussions are underway on potential use of I-JEDI Colombia to support prioritization of Nationally Determined Contribution actions.

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#### Mexico

The government of Mexico, through the Ministry of Energy and the state utility, has developed a version of the JEDI model that builds on the U.S. version and incorporates local data to estimate economic impacts of wind and hydropower development. In addition, this version of the model also calculates greenhouse gas emission reductions and Human Development Index impacts associated with renewable energy development. Impacts are calculated at the national, state, and municipal levels. The government of Mexico plans to expand the model to include biomass, geothermal, and solar development.

#### South Africa

The USAID South Africa Low Emission Development program is exploring use of I-JEDI to inform assessment of municipal-level solar projects that will support the country's broader low emission development efforts.

#### LEDS Latin America and Caribbean (LAC) Platform

The LEDS Global Partnership LEDS LAC Platform, the National Institute of Ecology and Climate Change in Mexico, and the EC-LEDS program will collaboratively host a LAC regional training on DIA and I-JEDI in Mexico City in

I-JEDI can feed into a broader DIA framework through providing analysis of job impacts

late 2016. The train-the-trainer event will bring together practitioners from around the region engaged with LEDS planning and policymaking to build capacity on use of the tools to enable informed decision-making.

### I-JEDI SUPPORT RESOURCES

The I-JEDI model is available for download on the EC-LEDS Development Impact Assessment webpage at [ec-leds.org/tools-page/development-impact-assessment-tools](http://ec-leds.org/tools-page/development-impact-assessment-tools). The webpage also provides a downloadable I-JEDI user guide and an online I-JEDI training tutorial is under development. For more information on the model, please contact [jedisupport@nrel.gov](mailto:jedisupport@nrel.gov).

### FOR QUESTIONS ABOUT EC-LEDS

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