Advanced Energy Partnership for Asia

Enabling Floating Solar Photovoltaic (FPV) Deployment:

Renewable Energy (RE) Data Explorer as a Tool for Data-Driven Decision Making

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Image: iStock 12776646

What are key energy sector objectives for countries and stakeholders in Southeast Asia?

Clean energy transformation that aligns with key development, resilience, energy security, and environmental objectives.

Democratizing Renewable Energy (RE) Resource Data

Challenge: Lack of access to high-quality, publicly available, time series RE resource data to inform decisions that will transform energy sectors in Southeast Asia.

Floating PV array on a water retention pond. Photo by Dennis Schroeder, NREL

Solution: Level the playing field by offering free, high-quality, robust RE resource data to inform private sector investment and policymaking:

- Leverage deep NREL expertise in atmospheric science, wind and solar resource assessment, high- performance computing, and cloud-based data dissemination
- Produce and validate high spatial and temporal resolution wind and solar resource data
- Make data available on the USAID-funded global Renewable Energy Data Explorer platform
- Provide capacity building for data and applications
- Inform future demand-driven tool development

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Data Access and Download

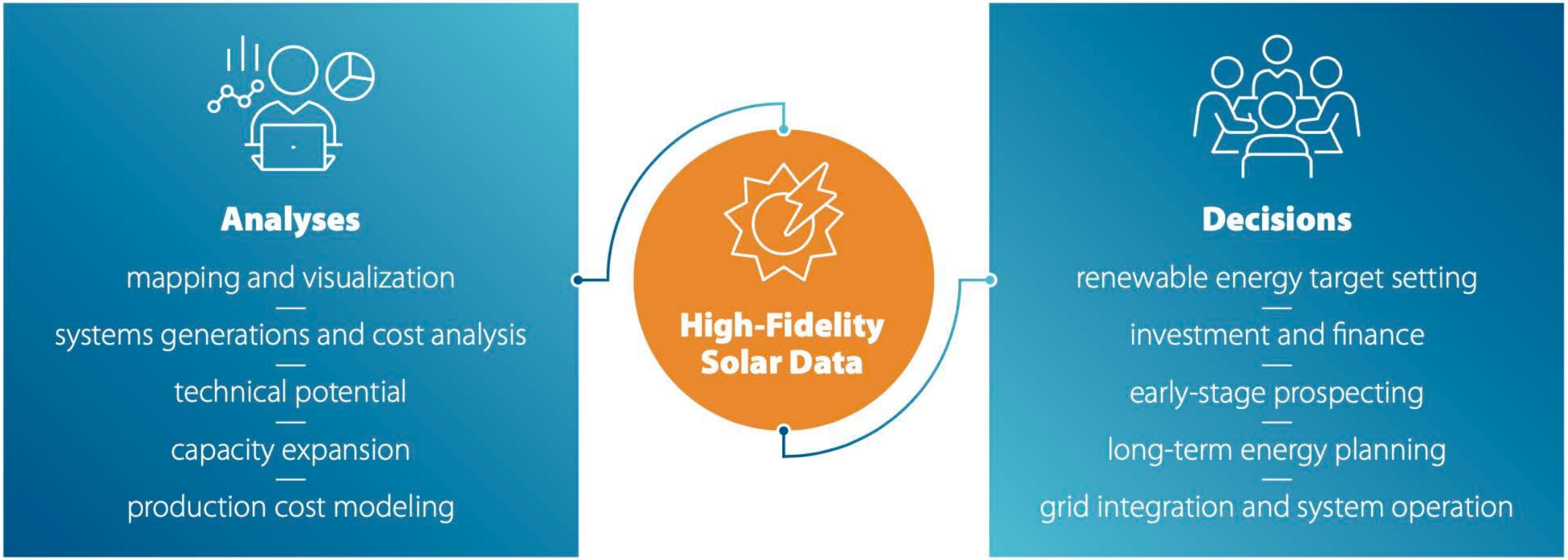
The updated RE Data Explorer provides access to several data sets.

- A user-friendly geospatial analysis tool for analyzing renewable energy potential and informing decisions.
- **New addition: Floating solar technical potential and wind resource datasets**

www.re-explorer.org

- Performs visualization and analysis of renewable energy resource that can be customized for different scenarios.
- Repository for download of high-quality data and integration with other analytic tools.
- Supports prospecting, integrated planning, policymaking, and other decision-making activities to accelerate renewable energy deployment.

High-Quality Data for Decisions



High-quality, reliable data are at the core of critical decisions to enable energy transitions. Illustration by Christopher Schwing, NREL

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Example: Floating Solar Technical Potential

Waterbodies

Reservoirs (hydropower and non-hydropower)

Global Reservoir and Dam Database (GRanD)

Natural Waterbodies (e.g., inland lakes, ponds, etc.)

HydroLAKES Database

Infrastructure

Transmission lines, major roads, and protected areas

RE Data Explorer

Stimson Mekong Infrastructure Tracker

Solar Energy Resource

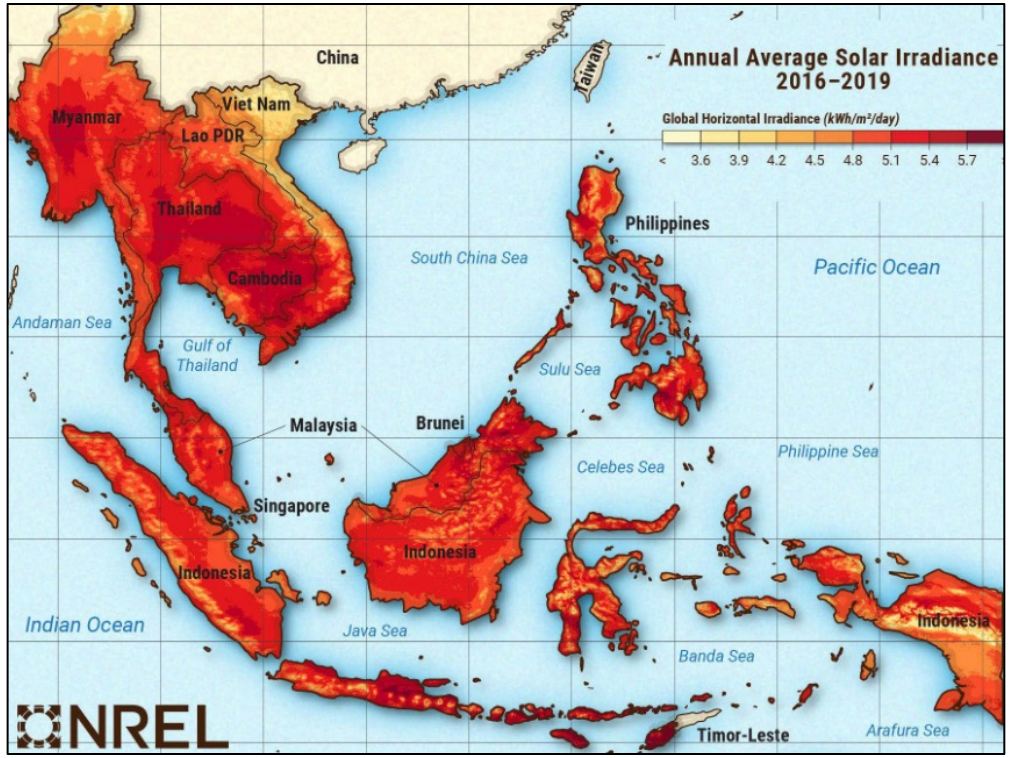

Figure. High-resolution solar resource data available for SE Asia

Source: Maclaurin et al. 2022

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Technical Potential: Natural Waterbodies

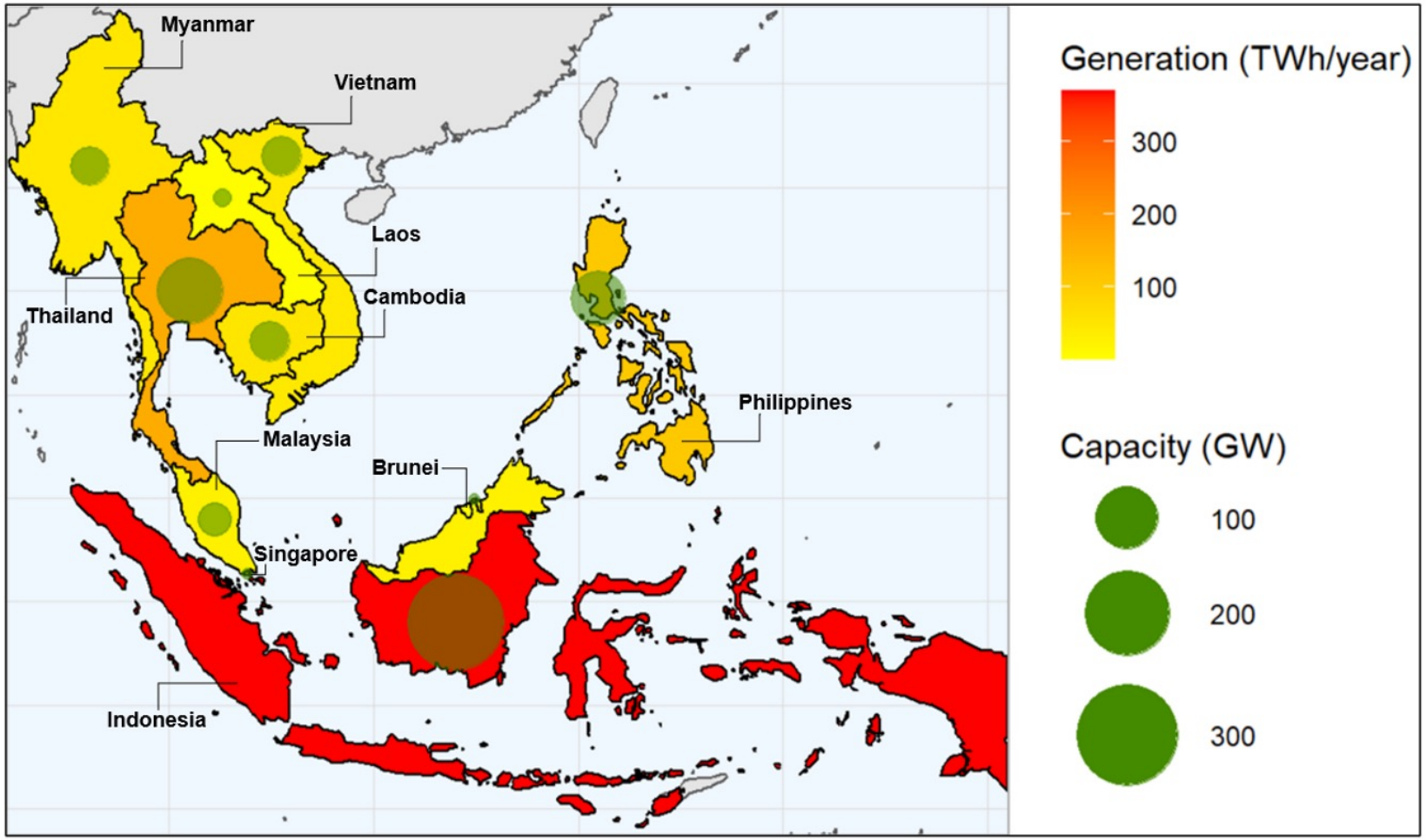

Figure. FPV generation and capacity technical potential for natural waterbodies in SE Asia

Note: These results assume fixed-tilt monofacial FPV panels, with a 50 m minimum distance-from-shore and 1000 m maximum distance-from-shore buffer. The dataset excludes waterbodies that are more than 50 km from major roads and waterbodies that are within protected areas. These results do not reflect a filter for distance-from-transmission.

SE Asia Regional Results:

Waterbodies: 7,213

Area: ~3,427 – 7,676 km^2

Capacity: ~343 – 768 GW

Generation: ~476 – 1,062 TWh/yr

Ranges in results are due to different distance-from-shore assumptions.

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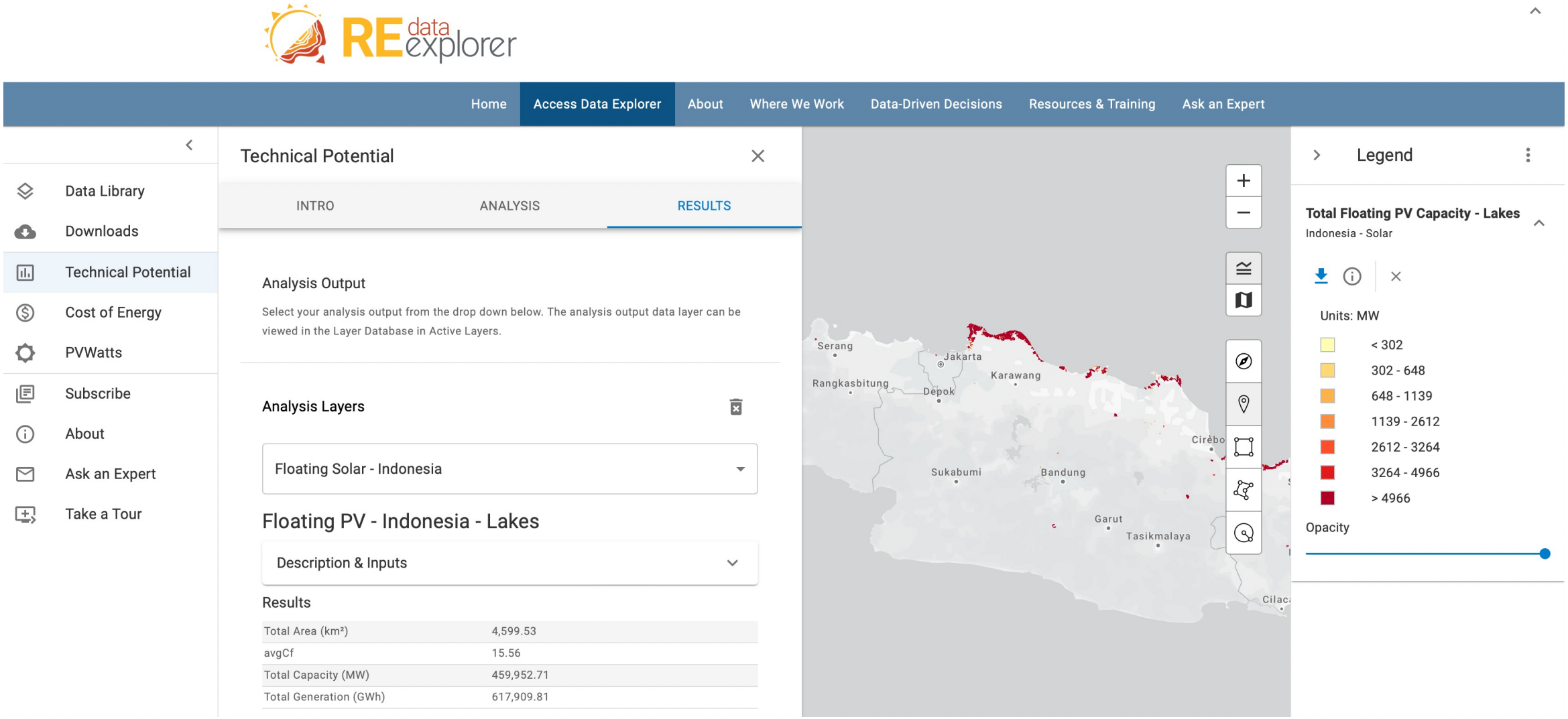
RE Data Explorer



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Additional Data Download Options and Resources

In addition to the RE Data Explorer (www.re-explorer.org), we provide three other data download options:

1. Data for point locations or small areas can be downloaded through the NSRDB Data Viewer (https://maps.nrel.gov/nsrdb-viewer/).
2. NREL provides an Application Programming Interface (API) to access larger quantities of data through automated approaches (https://nsrdb.nrel.gov/data- sets/api-instructions.html).
3. NREL also provides access through the Highly Scalable Data Service (HSDS) hosted on Amazon Web Services (https://nsrdb.nrel.gov/data-sets/nsrdb- data-hsds-demo.html).

For more information on the new data sets:

1. Floating Solar: Technical potential report (https://www.nrel.gov/docs/fy23osti/84921.pdf).
2. Wind: Fact sheet (https://www.nrel.gov/docs/fy23osti/85089.pdf).

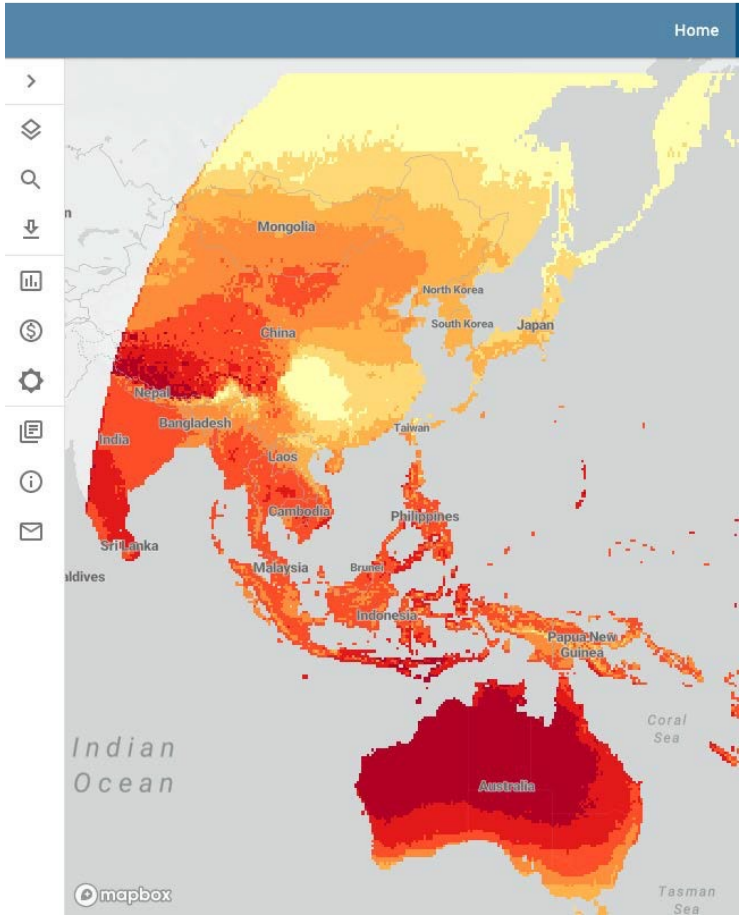

Image from www.re-explorer.org

Thank you!

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