

# ADVANCING DATA-DRIVEN CLEAN ENERGY AND GREEN GROWTH IN VIETNAM

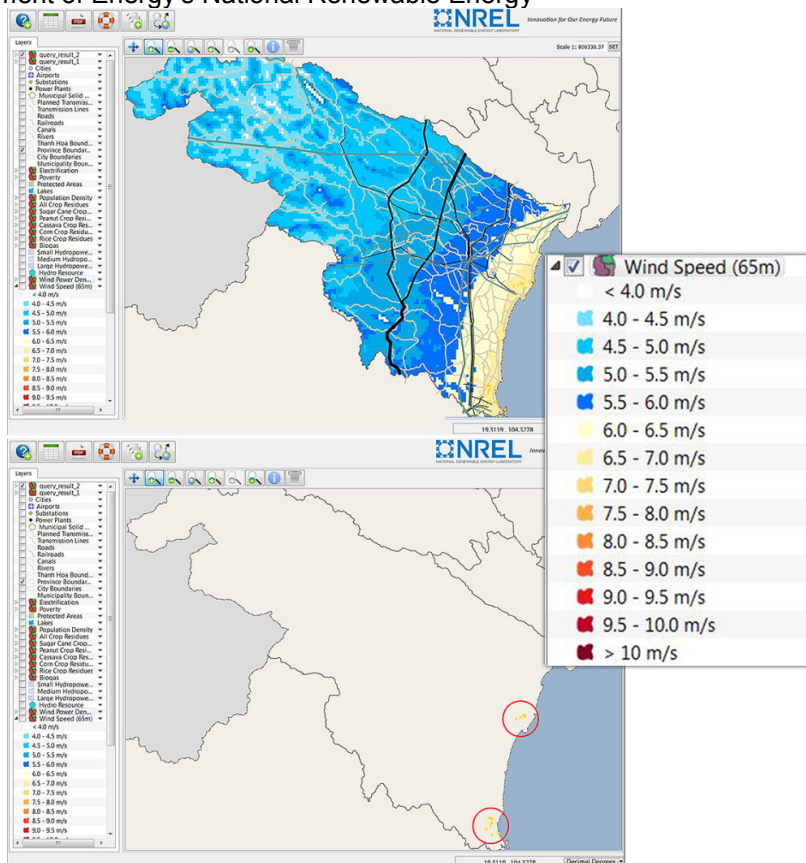
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In 2014, Thanh Hoa province in Vietnam established a Green Growth Task Force to guide its action in support of Vietnam’s National Green Growth Strategy. The country-wide strategy establishes a vision to advance low-emission, climate-resilient development and encourages all provinces to develop their own action plans. Thanh Hoa’s Task Force worked with U.S. partners under the leadership of the U.S. Agency for International Development (USAID) to formulate realistic, data-driven renewable energy targets for its own provincial Green Growth Action Plan.

To help Thanh Hoa develop these targets, the U.S. Department of Energy’s National Renewable Energy

Laboratory (NREL) developed a Renewable Energy (RE) Data Explorer tool (see Text Box) for Thanh Hoa. The tool provides a platform to visualize and analyze province-specific geospatial data on wind, solar, and biomass resources alongside locations of transmission lines, protected areas, and other land and infrastructure features. Thanh Hoa’s Green Growth Task Force and its analysts used the RE Data Explorer to estimate generation potential for solar, wind, and biomass energy, identify the most promising locations for new renewable energy development in the province. Figure 1 illustrates how the RE Data Explorer was used to assess wind potential using locally relevant criteria.



**Selection Criteria**

Wind resource:  $\geq 6$  meters per second at 65 meter hub height

Suitable areas:

- Wasteland with flat topography and with road and grid access.
- Distance from main road:  $\leq 5$  kilometers
- Distance from transmission grid:  $\leq 5$  kilometers
- Land slope:  $\leq 5^\circ$

Figure 1. These graphics illustrate how the Thanh Hoa Green Growth Task Force used the RE Data Explorer to assess wind potential. The top image shows Thanh Hoa’s wind resource relative to roads (light gray lines) and transmission lines (black lines). The circles in the bottom image show the areas with the best potential for wind energy based on the Task Force’s rigorous selection criteria (red box).

Source: Khanh Nguyen, USAID/LEAD program

These data and analyses were used to shape the province's renewable energy targets. The Green Growth Task Force announced Thanh Hoa's Green Growth Action Plan in August 2016 which establishes a target for more than 140 megawatts of renewable energy installed by 2030. Combined with other economy-wide low carbon actions, the Action Plan seeks to reduce greenhouse gas emissions by 14% by 2020 and 23% by 2030, compared to a baseline scenario.

#### Text Box: The RE Data Explorer

The RE Data Explorer is an open-source, map-based web application that provides an intuitive, user-friendly interface for visualizing data and estimating renewable energy potential. The RE Data Explorer is a location-specific tool that maps renewable energy resources (like solar, wind, and biomass) in relation to enabling infrastructure like roads and transmission lines. The RE Data Explorer provides necessary information to help deploy new clean energy generation.

The RE Data Explorer is available for the Lower Mekong region of Asia and is being developed for a number of additional countries and regions. The Lower Mekong RE Data Explorer is available at [maps.nrel.gov/gst-lower-mekong](https://maps.nrel.gov/gst-lower-mekong).

Additional RE Data Explorer tools are available. Visit [re-explorer.org](https://re-explorer.org) to access the tools.

#### Capacity Building to Support Analytically Based Decision-Making

Broad USAID support has enabled in-depth analysis for decision-making. In early 2015, NREL, with support from USAID's Low Emissions Asian Development and Vietnam Forests and Deltas programs, led an in-depth workshop for the Green Growth Task Force and other policymakers and analysts. At the workshop, stakeholders learned to apply and customize the RE Data Explorer to evaluate renewable energy opportunities. During the training, participants identified and assessed renewable energy scenarios, with the goal of providing a basis for Thanh Hoa renewable energy targets for 2020 and 2030. RE Data Explorer outputs were validated with the Green Growth Task Force and other stakeholders to ensure incorporation into the final renewable energy targets. The team developing the Green Growth Action Plan for Thanh Hoa then used these targets as inputs into the Long-range Energy Alternatives Planning (LEAP) Model

<http://www.energycommunity.org/default.asp?action=40>], the platform used to develop Thanh Hoa's economy-wide emissions scenarios under business-as-usual or a green growth pathway. U.S. partners followed up with remote assistance after the workshop to support the ongoing use of the RE Data Explorer and refining of renewable energy targets by Thanh Hoa stakeholders.

#### Thanh Hoa's Green Growth Action Plan Targets

Using the RE Data Explorer outputs and other analyses such as the LEAP model and a marginal abatement cost curve assessment, the Green Growth Task Force prioritized low emission development options in the energy sector and finalized renewable energy targets for the Green Growth Action Plan:

- **Ground mounted solar PV:** 20 MW by 2020, 100 MW by 2030
- **Rooftop solar PV:** 40 buildings each 20 kW by 2030
- **Wind power:** 20 MW by 2020 and 40 MW by 2030

Thanh Hoa's Green Growth Action Plan seeks to reduce the province's greenhouse gas emissions by 14% by 2020 and 23% by 2030 as compared to a baseline scenario. Renewable energy development will play an important role in achieving these overall targets.

Thanh Hoa policymakers are now shifting focus toward implementing critical actions articulated in the Green Growth Action Plan. In particular, renewable energy project concept notes are being developed to catalyze renewable energy investment based on the robust geospatial analysis undertaken through the partnership activities highlighted above.

Scaling up clean energy is an essential part of Vietnam's national and provincial green growth plans. Thanh Hoa's experience and partnership with the United States government provides a strong model of data-driven decision-making and leadership to support effective clean energy investment and green growth in other Vietnamese provinces and around the world.

#### More Information on the Thanh Hoa Green Growth Action Plan

Webinar – Assessing renewable energy potential using the Geospatial Toolkit: Applications in Vietnam's Thanh Hoa Province. LEADS Global Partnership. [ledsgp.org/resource/assessing-renewable-energy-potential-using-geospatial-toolkit/?loclang=en\\_gb](https://ledsgp.org/resource/assessing-renewable-energy-potential-using-geospatial-toolkit/?loclang=en_gb).



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