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REexplorer
MAPPING OUR ENERGY FUTURE

Renewable Energy (RE) Explorer and RE Data Explorer

Mapping our Energy Future

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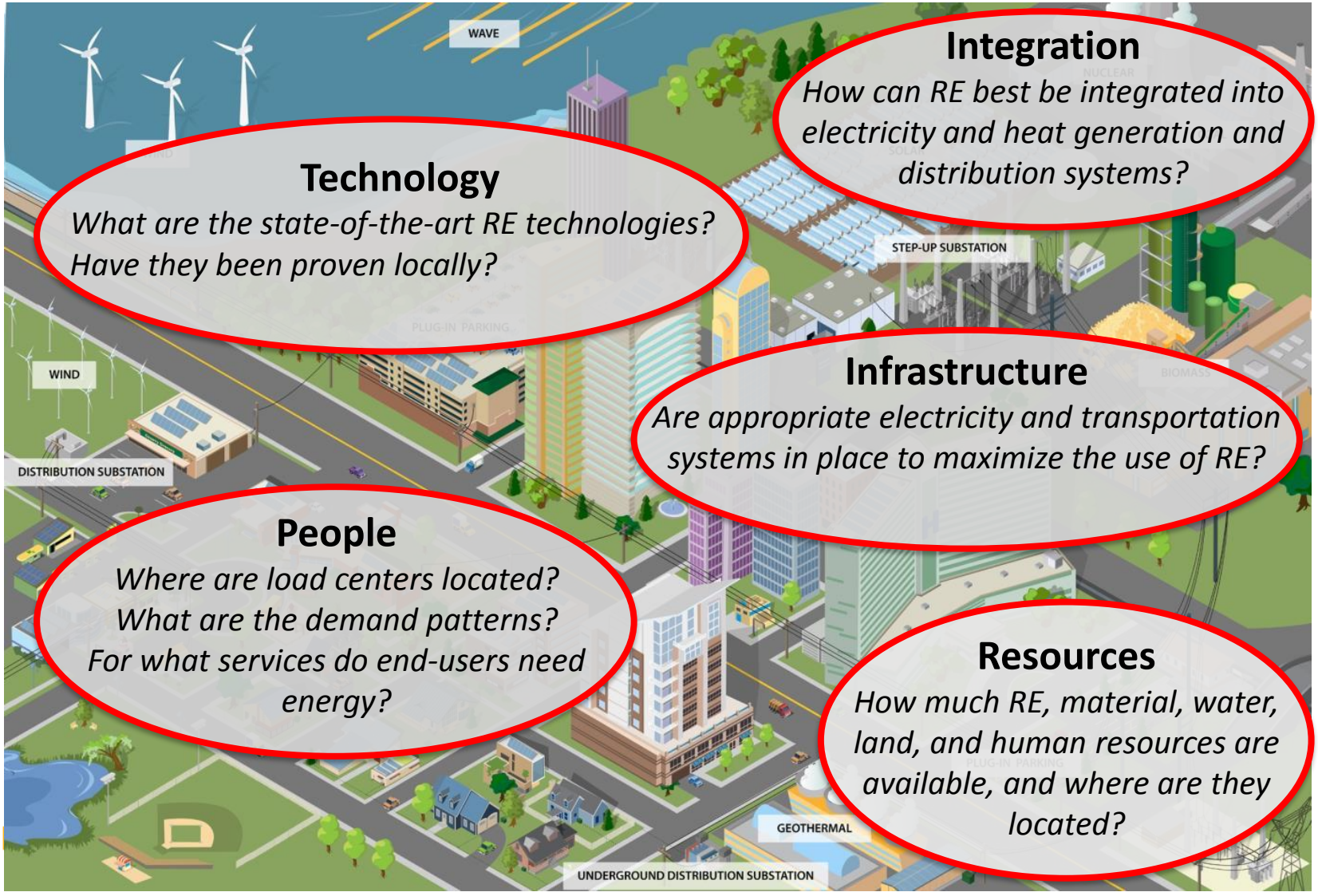
Learning objectives

- Understand the importance of renewable energy resource data for strategic energy planning and decision making

- Understand the difference between resource, technical, economic, and market potential for RE deployment

- Understand the process for using geospatial analysis tools to identify candidate **Renewable Energy Zones** by applying the Renewable Energy Data Explorer (RED-E) to estimate renewable energy potential

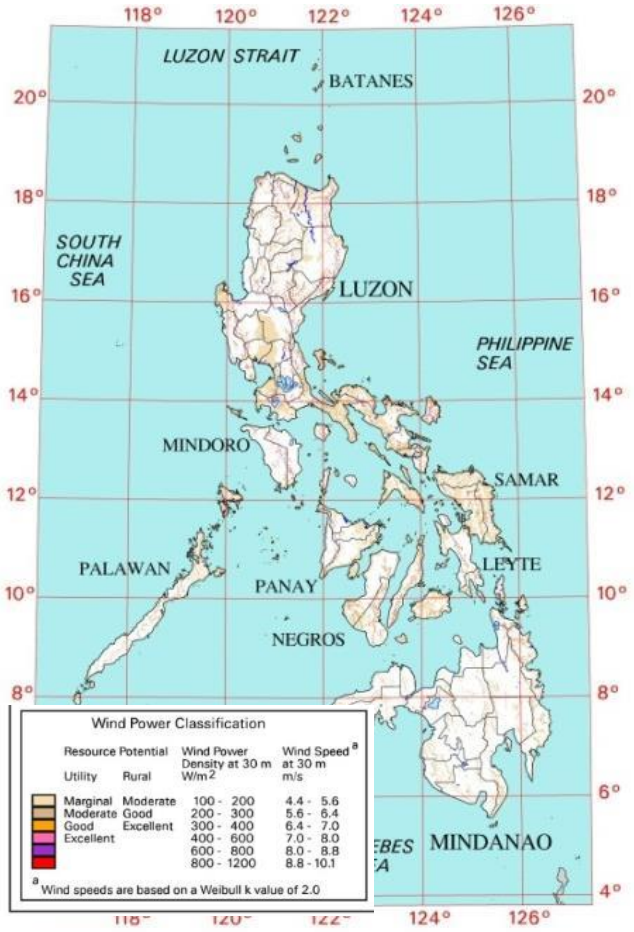
Many variables influence the deployment of renewable energy (RE)…



Resource potential is dynamic: more than a map

2001 Wind Energy Atlas

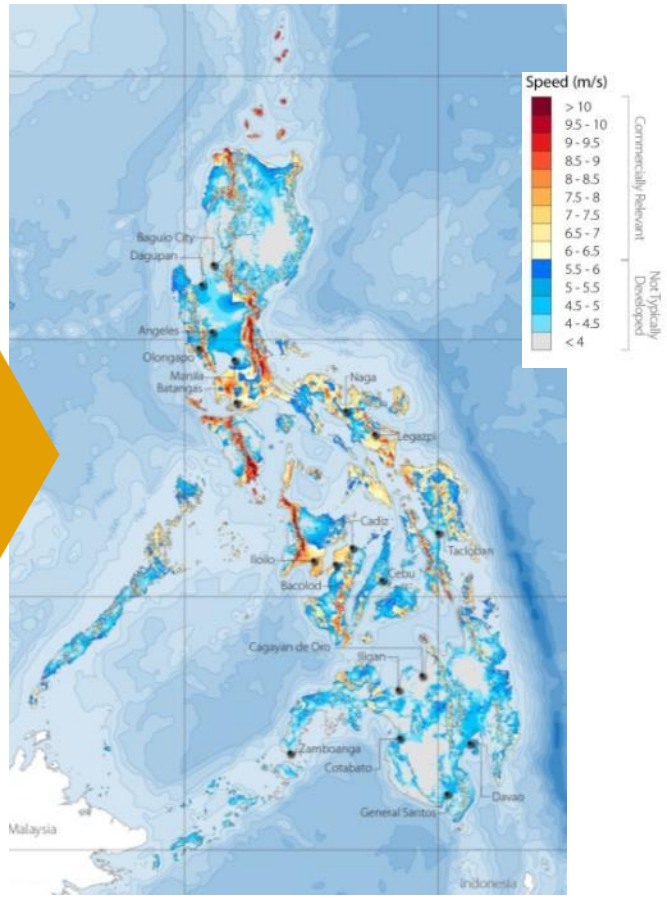
Max total potential capacity: 44.2GW



- ***New RE technologies***
- ***Better resource assessment methods***
- ***Big data capabilities***

2014 RE Data Explorer

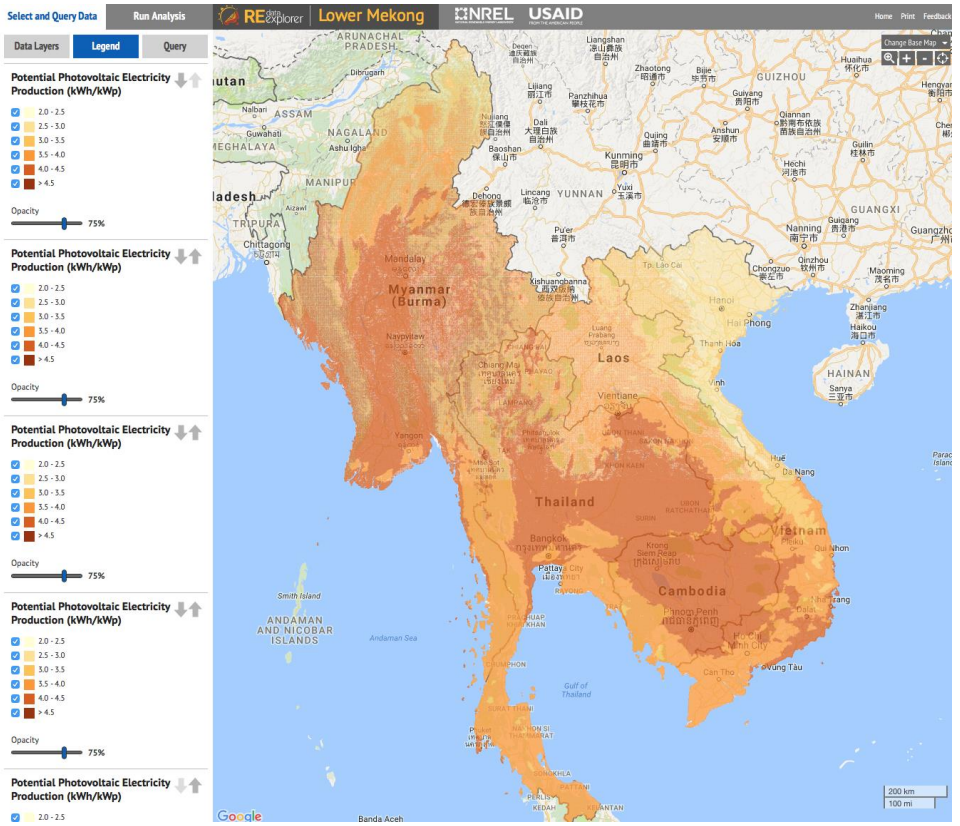
Max total potential capacity: 247.9GW



For more information: http://www.nrel.gov/international/ra_philippines.html

What is the RE Data Explorer (RED-E)?

- No-cost, web-based tool for energy resource exploration and decision-making
- Platform for exploring energy resource and other base and infrastructure data visually, and with targeted quantitative geospatial analysis functionality
- Tool that wraps complex spatial analysis techniques in an easy-to-use interface targeted at non-specialists
- Platform for distributing publicly available GIS data (many layers are downloadable)



Available online at http://re-explorer.org

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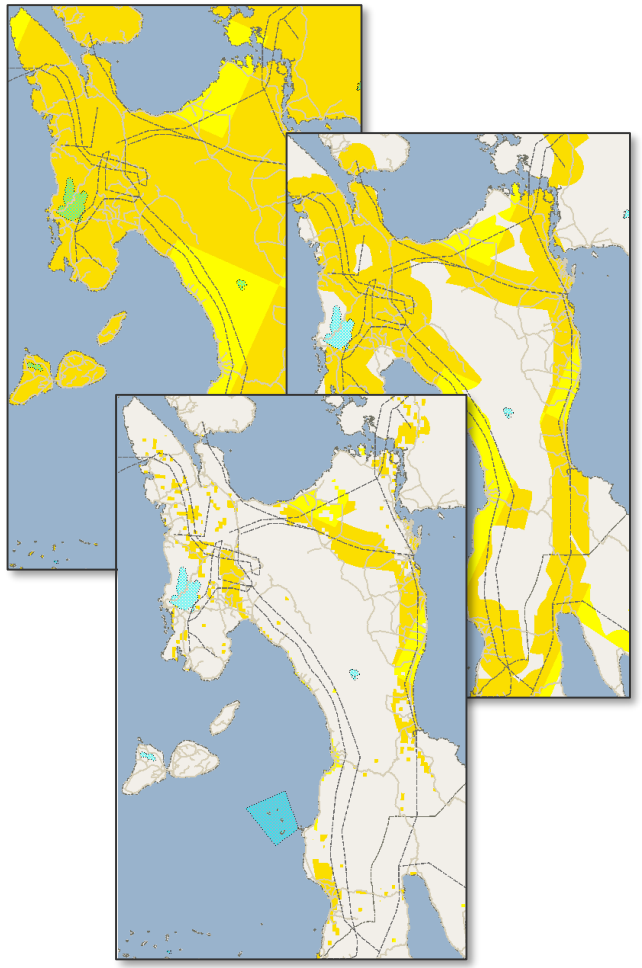
Types of questions the RE Data Explorer can help answer

- **For planners and policymakers:** High-level prospecting and integrated resource planning questions
  - How does resource potential vary at the province level?
  - Where might transmission or other infrastructure enable energy resource development (e.g., Renewable Energy Zones)?

- **For developers and investors:** Where are the most appropriate areas to site utility-scale solar, wind, and other facilities based on:
  - Resource quality?
  - Proximity to load centers, transmission lines, and/or roads?
  - Site suitability? (e.g., terrain, protection status, current land use?)
  - Which sites may offer the best possibilities for investment in long-term measurement stations?



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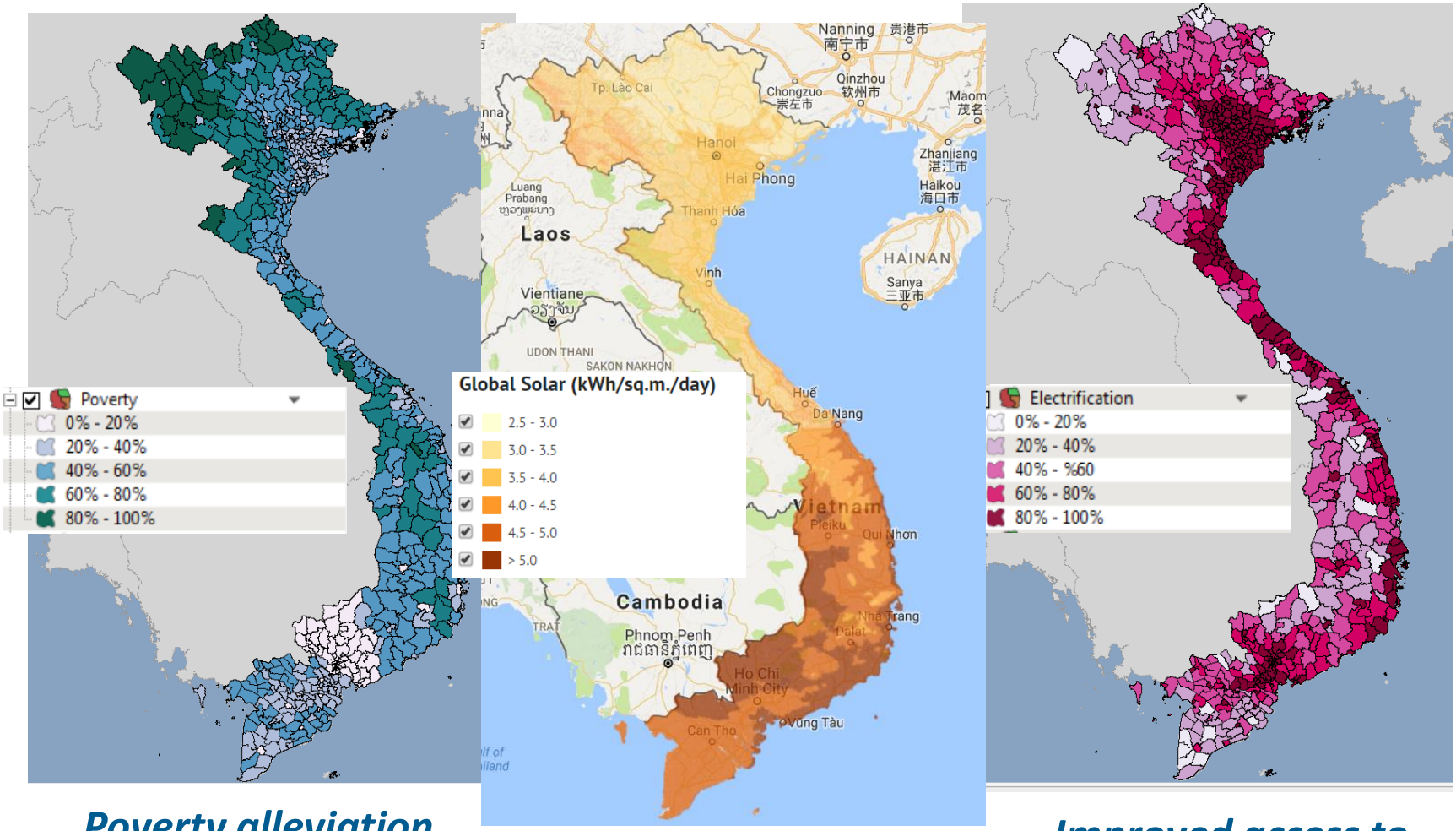
Good answers depend on good data!

Capabilities of RED-E

- Visualization
  - Explore spatial relationship between renewable energy resources and relevant
- Analysis
  - Get quantitative results for technical and economic potential of renewable energy deployment
- Data discovery
  - Find, view, and download data that is crucial for strategic energy planning

RED-E for Visualization



Poverty alleviation

Solar PV development

Improved access to electricity

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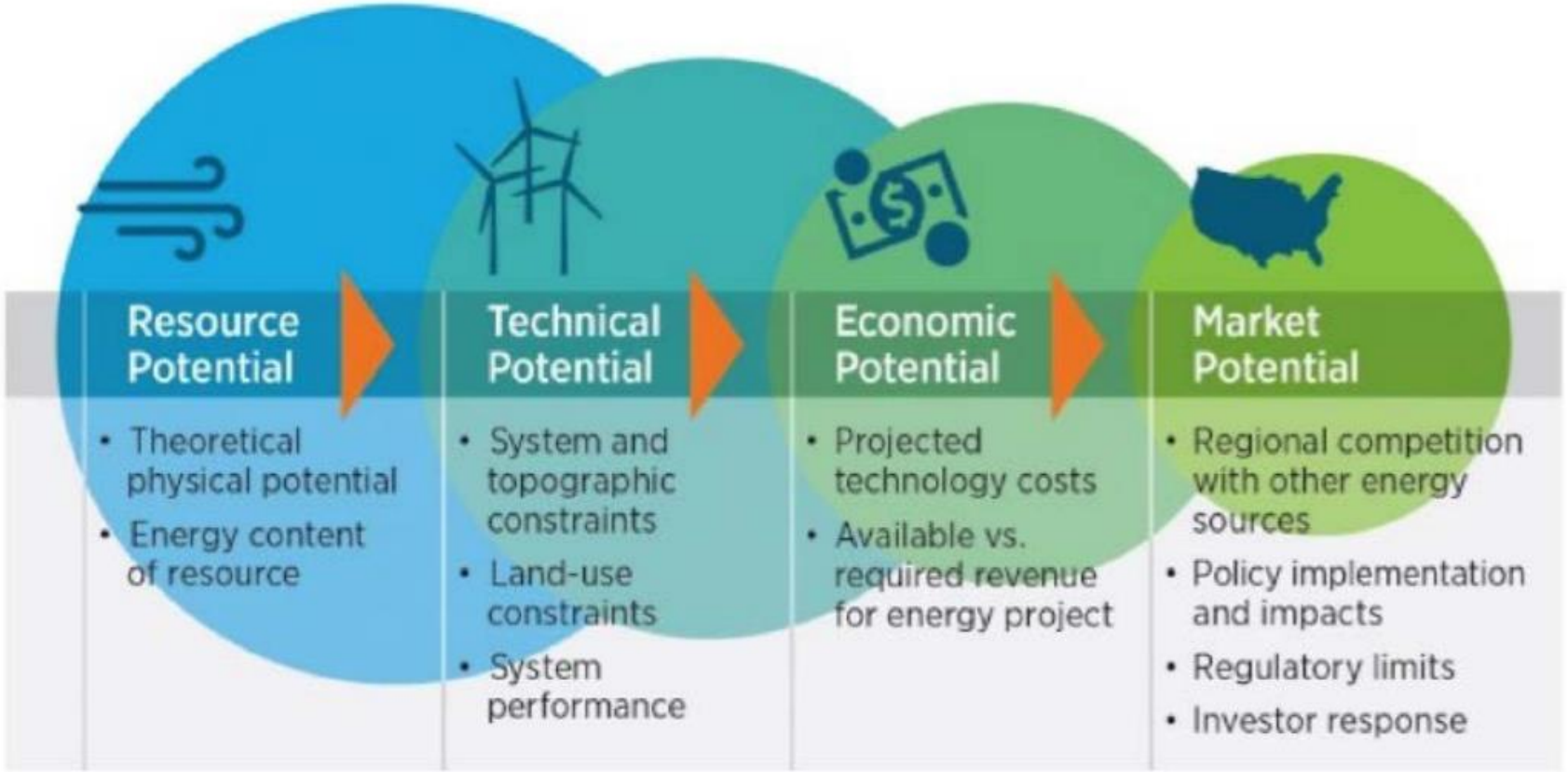
RED-E for Analysis

Types of Renewable Energy Potential



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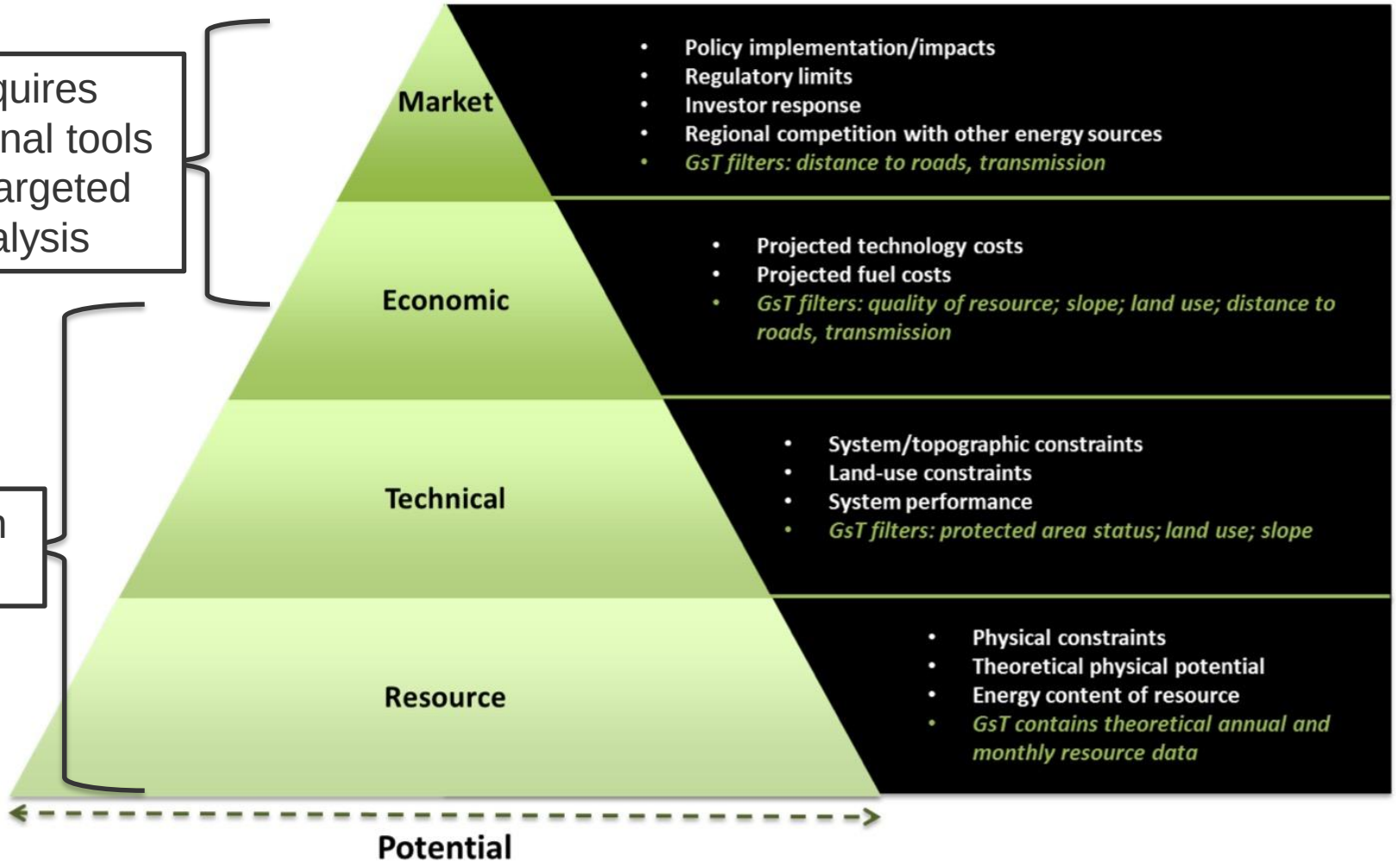
RED-E for Analysis: Uses and Limitations

Requires additional tools and targeted analysis

RED-E can do this



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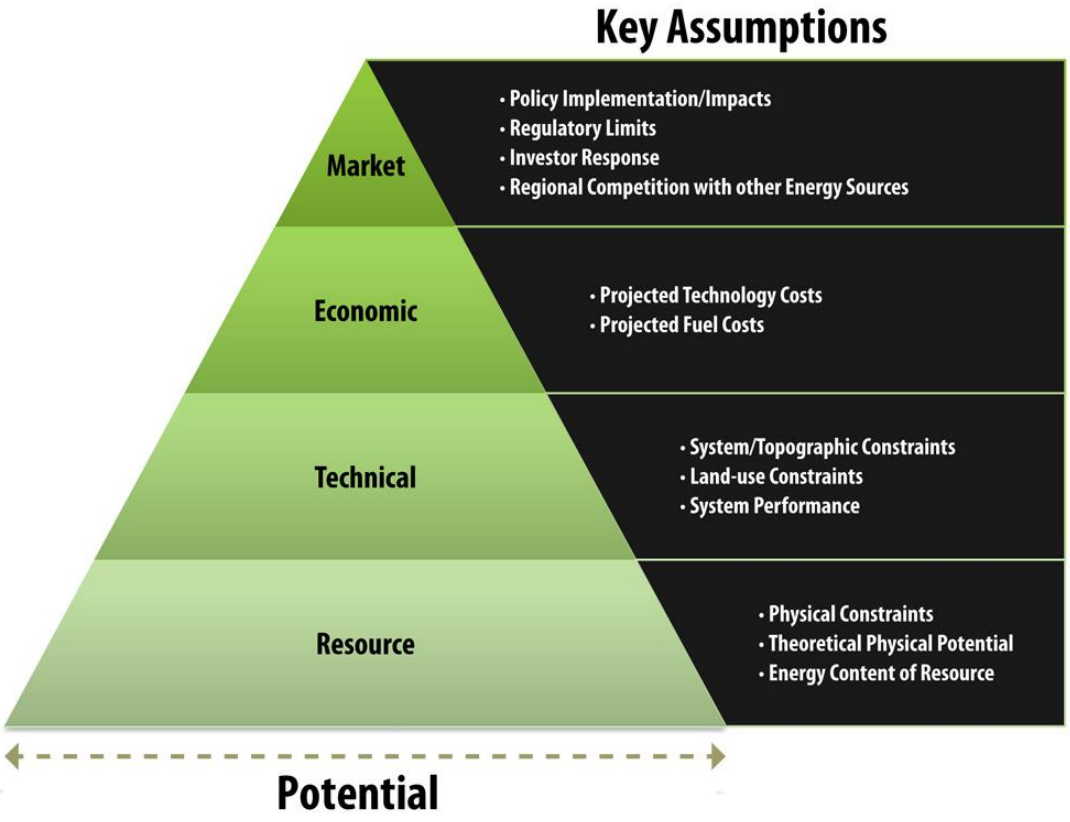
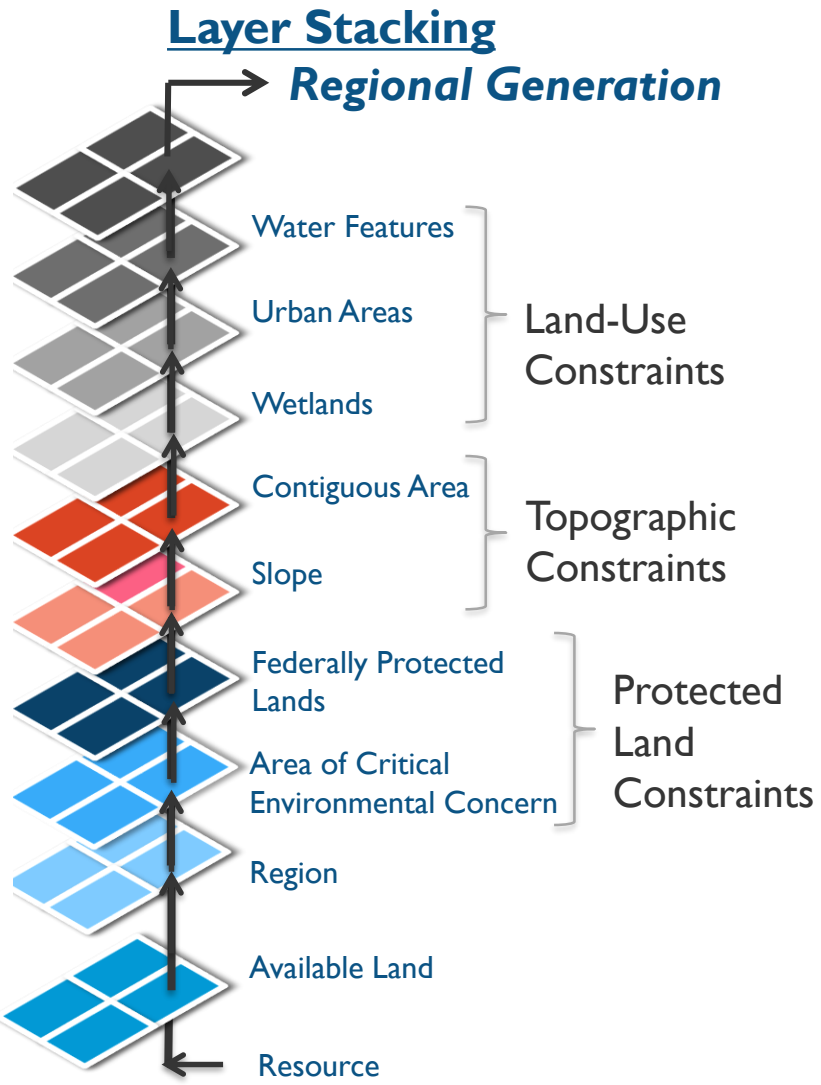
RED-E for Analysis: How Does it Work?





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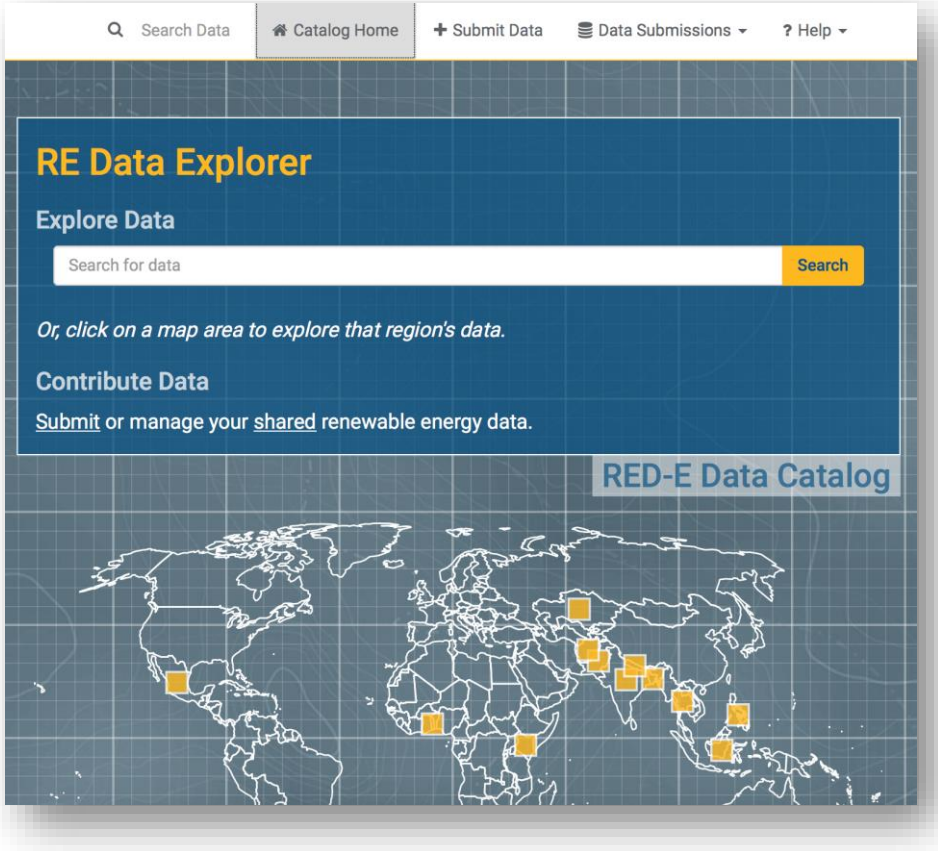
Data Exploration:
The RED-E Data Catalog

- Provides a central location for research and discovery of GIS data that informs decision-making on energy alternatives
- Robust search mechanism for users to find records of relevant data – *without storing the data itself*
- Enables analysis & tool development by enabling easy determination of data availability



Access directly at https://data.re-explorer.org/

Or via RE Explorer: https://www.re-explorer.org/launch.html.

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Coming soon to RED-E

Visualization

- New data layers and countries

Analysis

- Improved ability to change more assumptions in the dynamic technical potential tool

Data Catalog

- Online form for metadata submission

Current countries in Asia

- Currently available:
  - Afghanistan, Bangladesh, Ghana, India, Indonesia, Kazakhstan, Kenya, Lower Mekong Region, Mexico, Nepal, Pakistan, Philippines

- Countries coming soon:
  - Central Asia (Uzbekistan, Tajikistan, Kyrgyz Republic, Turkmenistan)

Visit www.re-explorer.org for additional resources

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