



USAID CLEAN POWER ASIA

# Introduction to the Renewable Energy Data Explorer: Southeast Asia and Nepal

Asia EDGE Competitive Procurement Dialogue

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# Objectives

- Introduction to Renewable Energy (RE) Data Explorer
- Present possible functionality that could be adapted to promote RE auctions
- Summarize data and tool functionalities available for Southeast Asia and Nepal

# Solution: Data-driven analysis and decision-making

High quality, robust, and reliable data is at the core of decision-making for energy transitions

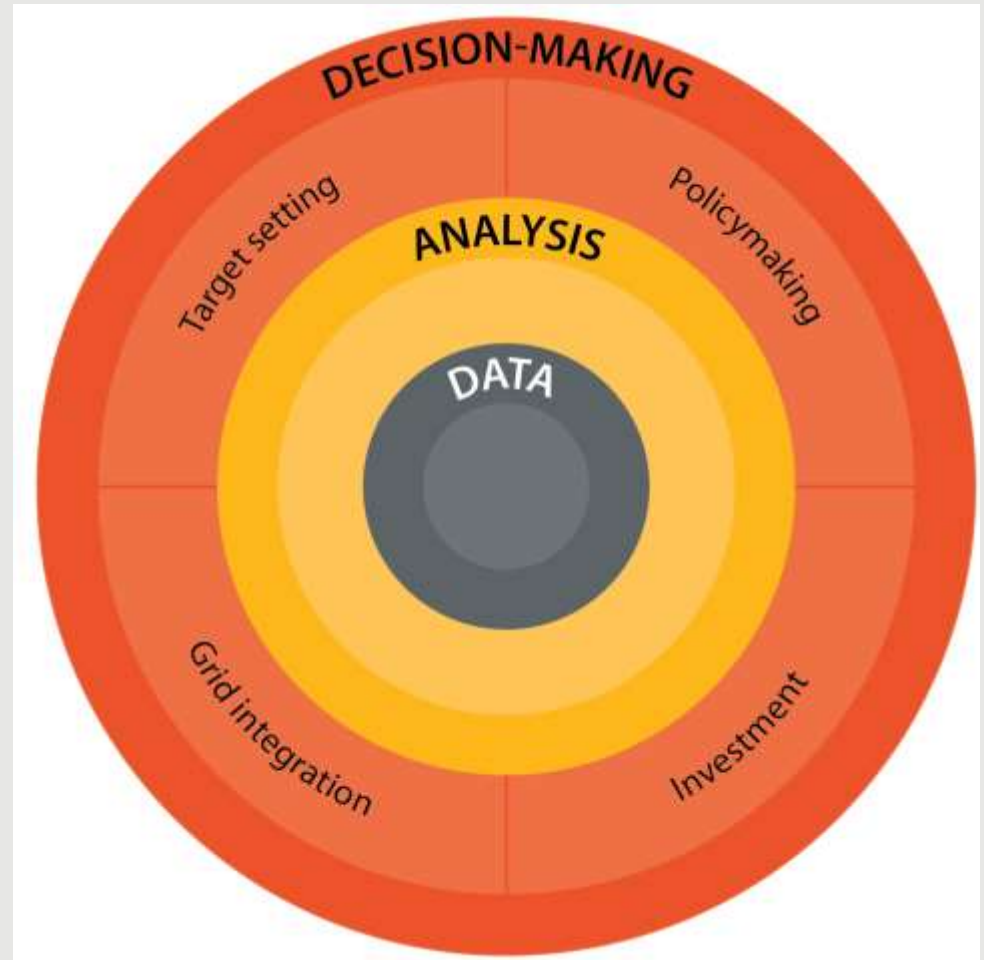
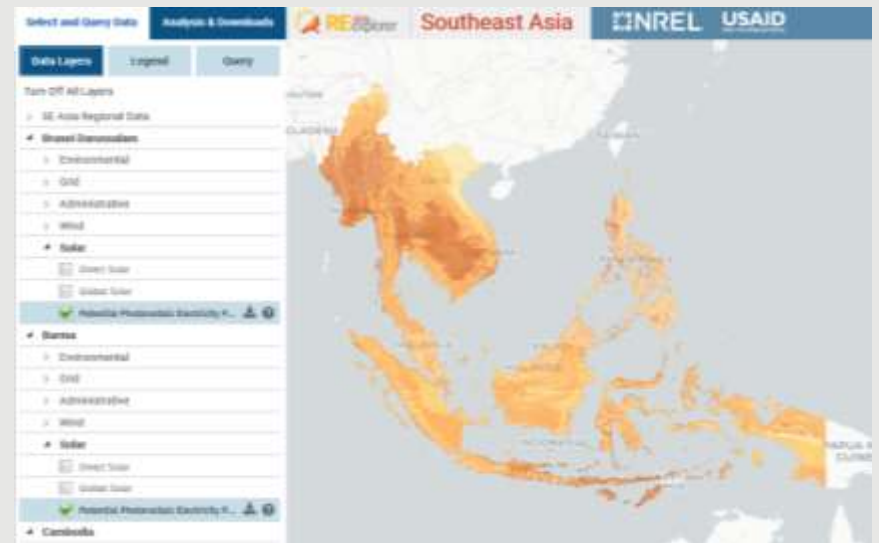


Figure. Decisions-data-analysis nexus  
[Renewable Energy Data, Analysis, and Decisions: A Guide for Practitioners](#)

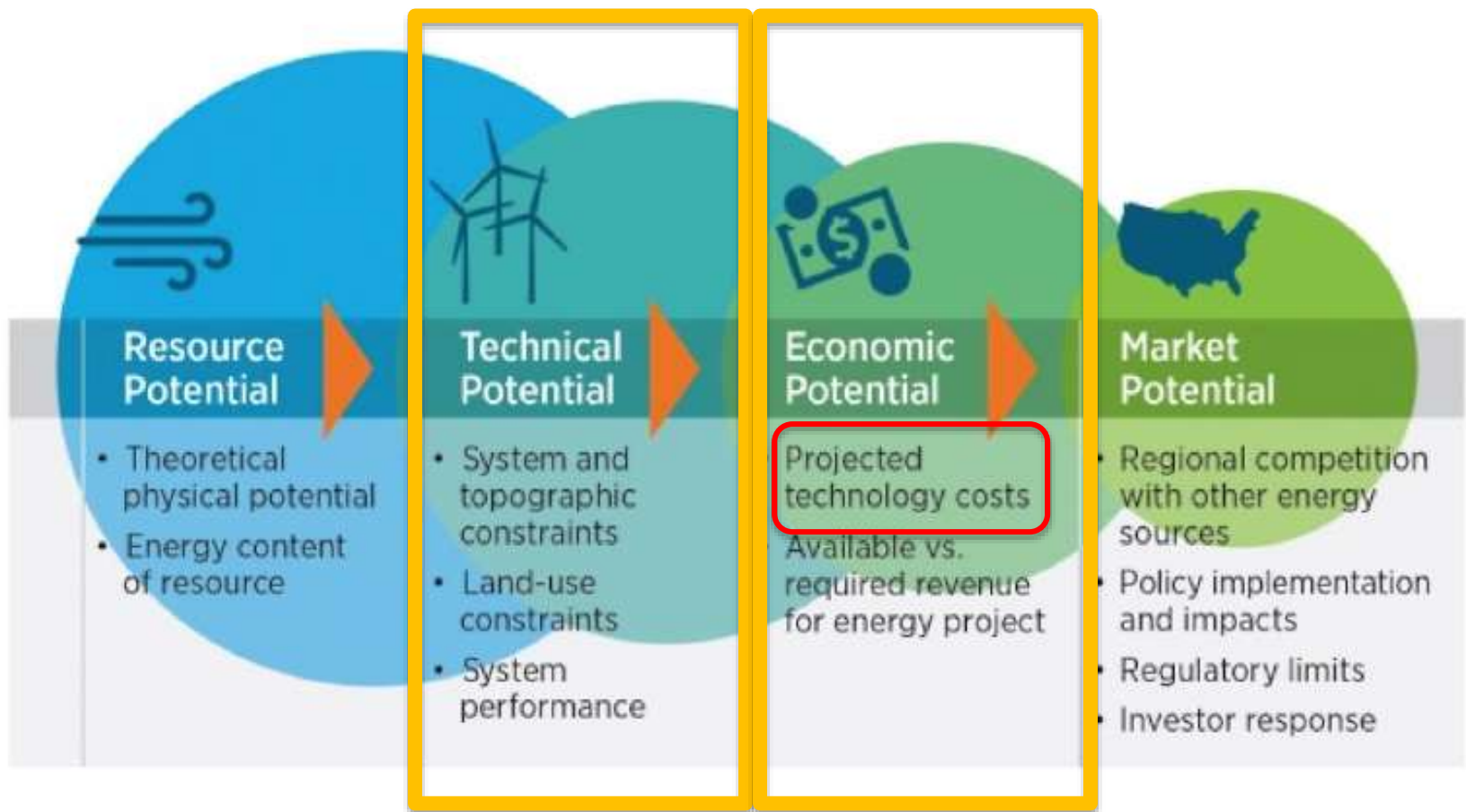
# What is RE Data Explorer?

- No-cost, web-based application that enables energy resource exploration and decision-making for non-GIS experts
- Map-based platform for data visualization, geospatial analysis, and discovery to inform energy policy, planning, and investment
- Platform for distributing publicly available GIS data (many layers are downloadable)



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

# Definition of renewable energy potential



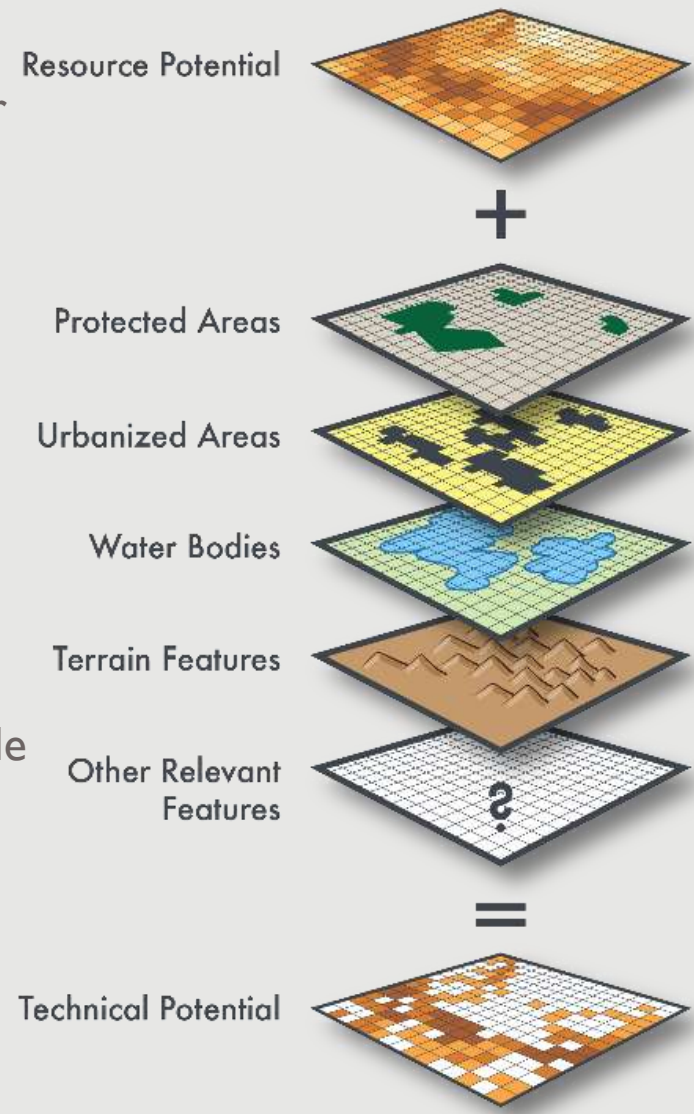
# Technical potential

## Definition:

Achievable energy capacity and generation of a particular technology given system performance, topographic limitations, environmental, and land-use constraint – *not considering technology costs*

## How to support/inform decision-making:

- Early-stage RE target setting
- Site screening and zoning (land-use policy)
- Identifying favorable sites as technically feasible resources, e.g. renewable energy zones
- Input for power sector modeling (as generation profile and dispatch pattern)
- Support early stage (proactive) transmission planning
- **Identify RE economic potential in areas considered for competitive procurement and identify potential sites**



# Economic potential assessment: Evaluating costs

## Definition of levelized cost of energy (LCOE)

A standardized method for comparing the costs of producing electricity across various technologies, life spans, project sizes, and capital costs based on the net present value of a unit-cost of electricity (\$ U.S. Dollars (or other currency) / MWh)

$$\text{LCOE (\$ USD/MWh)} = \frac{(\text{Fixed Charge Rate} \times \text{Capital Cost} + \text{Fixed O\&M Cost}) \times 1,000 + \text{Variable O\&M Cost} + \text{Fuel Cost}}{\text{Capacity Factor} \times 8,760 \text{ hours/year}}$$

Capacity Factor x 8,760 hours/year

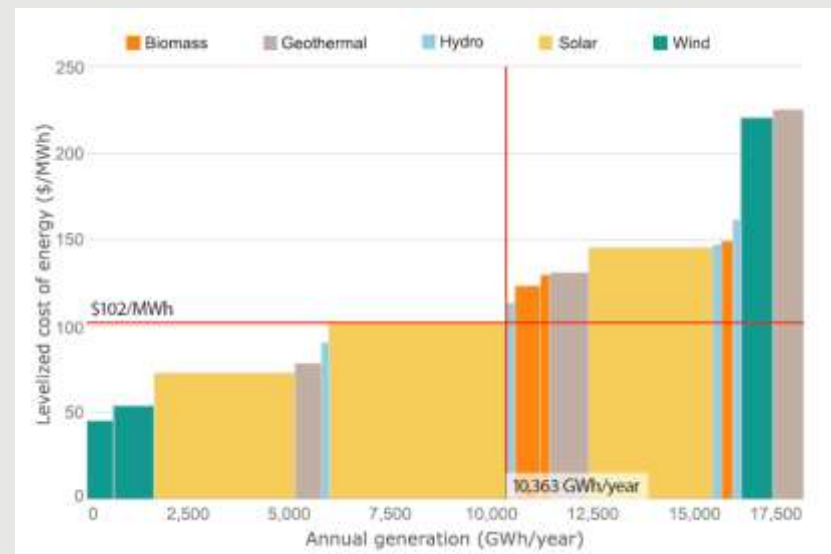
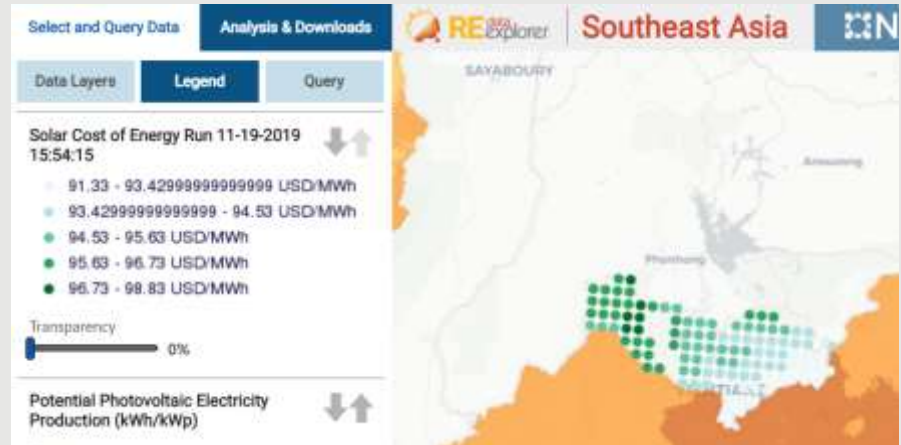


**Capacity Factors from Technical Potential**  
(locations where it is technically feasible to develop)

(Excluding transmission cost and road cost)

# Decisions that economic potential analyses support

- **Target Setting:** build on technical potential analyses to support more robust renewable energy targets through consideration of LCOE and supply curves
- **Policymaking:**
  - design the right incentives based on the cost of technologies by each area/zone
  - Use LCOE in setting auction ceiling price, and auction volume and site selection (if govt sited)
- **Investment:**
  - Pre-feasibility analyses for developers
  - Reduce the cost of identifying favorable sites (incl. developer sited auctions)
  - Support the development of RE Zones





# Data and tool functionalities available

	<b>Map-based platform and downloadable GIS data</b>	<b>Technical potential analysis</b>	<b>LCOE mapping*</b>	<b>Excellent time-series solar and wind (hourly and downloadable) data</b>
Southeast Asia	Yes	Yes	Yes	Only the Philippines
Nepal	Yes	Yes	No	Yes

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