



# WRI INDONESIA



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## **RENEWABLE ENERGY ACCESS MARKET MAP**

Leveraging Geospatial Analysis in the Renewable Energy  
Data and Information Infrastructure Development



WORLD  
RESOURCES  
INSTITUTE

## TRANSFORMING DATA AND INFORMATION INTO ACTION



WRI INDONESIA

# GLOBAL FOREST WATCH

### FOREST CHANGE

- Tree cover gain (12 years, 30m, global, Hansen/UMD/Google/USGS/NASA)
- Tree cover loss (annual, 30m, global, Hansen/UMD/Google/USGS/NASA)

Displaying loss with **> 30 %** canopy density.

Tree cover loss is not always deforestation.

View country data

SELECT COUNTRY



Map navigation controls: zoom in (+), zoom out (-), share, print, refresh, search.

Tree cover loss (zoom in for most accurate viewing)

Lat/long: 0.275966, 117.175781

Timeline slider from 2001 to 2014.

# CAIT CLIMATE DATA EXPLORER

## CAIT Climate Data Explorer

Paris Contributions Map



- Dashboard
- Map
- Detailed View
- View Pre-2020 Map**



Search for a country...

INDCs Submitted: **120**

Global emissions covered by countries that submitted an INDC [i](#)

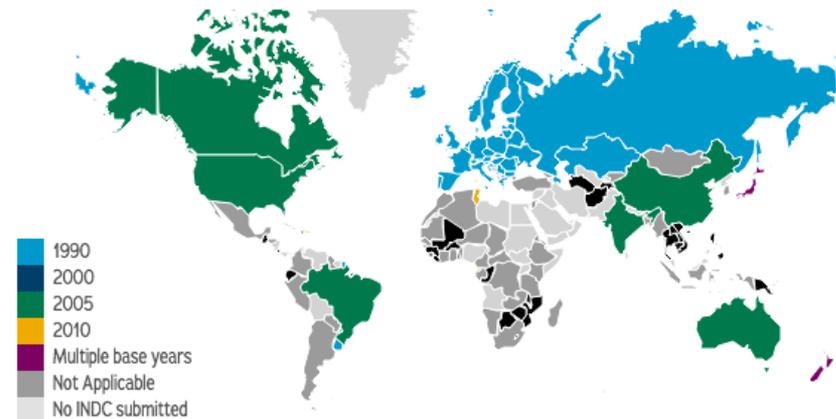
85.4%

### Latest Submissions:

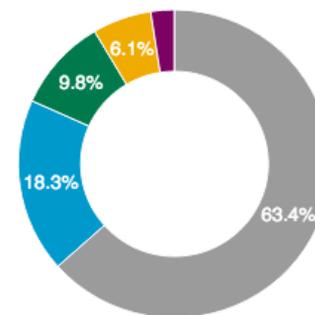
120. Afghanistan	October 06, 2015	Analysis in progress
119. Argentina	October 01, 2015	
118. Mozambique	October 01, 2015	Analysis in progress
117. Ecuador	October 01, 2015	Analysis in progress
116. India	October 01, 2015	<a href="#">Read WRI Blog</a>
115. Belize	October 01, 2015	Analysis in progress
114. Paraguay	October 01, 2015	
113. Botswana	October 01, 2015	Analysis in progress
112. Sierra Leone	October 01, 2015	Analysis in progress
111. Honduras	October 01, 2015	

Base year(s)/period

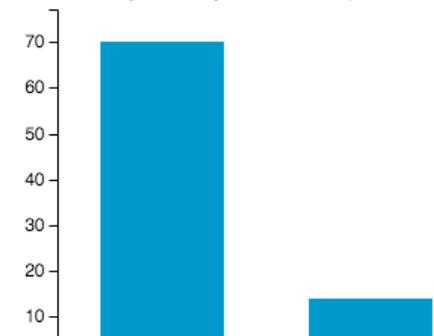
[Expand Map](#)



Base Year(s)/Period



Coverage of Mitigation and Adaptation



# AQUDEUCT

These maps show where water-related risks are most severe.

### Map Transparency

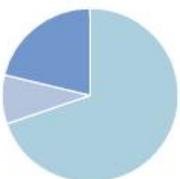
100% none

### Weighting Scheme:

Default

Customize Weights

### Weight Distribution



Physical Risk Quantity  
Physical Risk Quality

▲ 1/3 ▼

### Overall Water Risk

### Physical Risk Quantity

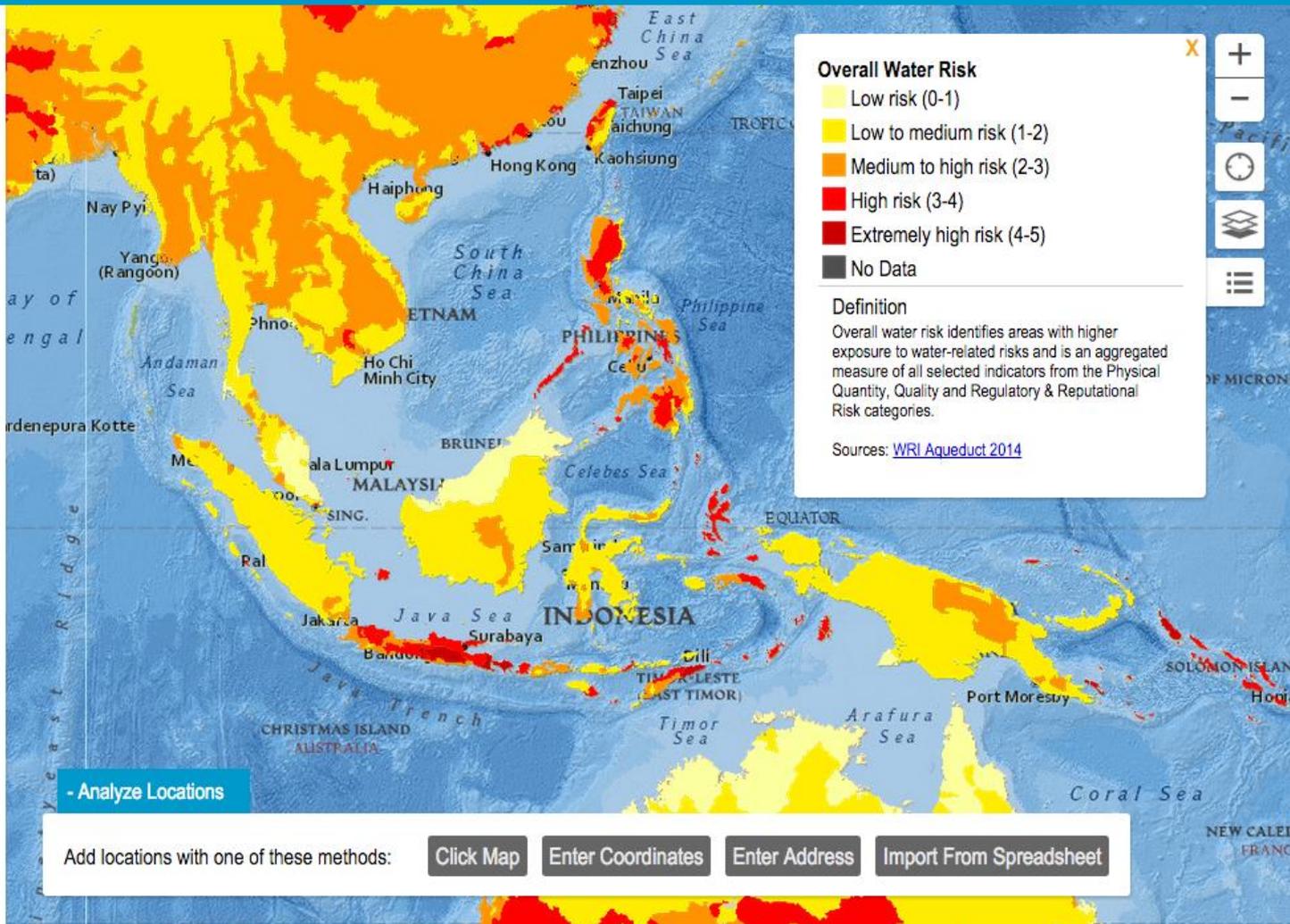
### Baseline Water Stress

### Inter-annual Variability

### Seasonal Variability

### Flood Occurrence

### Drought Severity



- Analyze Locations

Add locations with one of these methods:

Click Map

Enter Coordinates

Enter Address

Import From Spreadsheet



# WHY MAPS FOR RENEWABLE ENERGY?



## LOCATION, LOCATION, LOCATION

Different from traditional energy resources that could be transported, renewable energy technologies should be deployed where the demands are.



## SPATIAL INFO FOR LONG TERM VIABILITY

Need for weather, social, as well as landscape monitoring to ensure long term viability of deployment for renewable energy technologies.

“Geographic mapping facilities are important to **support initial feasibility studies** and for **long-term monitoring and evaluation.**”

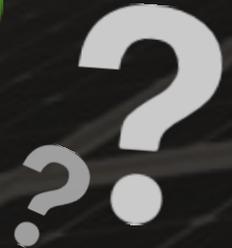


# KEY QUESTIONS IN RENEWABLE ENERGY DEVELOPMENT



Where's area with medium to high RE potential?

Will RE technology's price in one area compete with diesel generator / grid expansion?



Where's area available, legally + environmentally, for RE development?

Will people in one area afford the RE technology?

Where's existing gaps of energy access?

How far infrastructure readiness will affect the RE development cost?



# IDENTIFIED CHALLENGES



## Policy

- Complicated exploration permits
- Land tenure issue
- Limited share on foreign investment availability



## Technology

- Limited technology advancement
- Limited number of networks off-grid
- Poor management on RE data



## Capacity Development

- Poor maintenance and management of RE technologies
- Lack of capacity in risk calculation associated with RE investments
- Lack of capacity in RE investments viability assessment



## Funding

- High risks in RE investments
- Insufficient assessment on long-term RE technologies deployment viability





**Renewable Energy Access Market Map** identifies energy access gaps, provides relevant ground-level data to help identify business-model options for renewable energy services development to these areas, as well as facilitates the betterment of human well-being.



**DATA** ○ — ○ **RENEWABLE ENERGY ACCESS MARKET MAP** ○ — ○ **USERS**

National institutions

Regional institutions

Civil Societies

Public

Easy-to-understand data  
visualization

Interactive platform

Analysis capability for  
decision making

Governments

Business

Civil societies

Communities

transforming **information** into **transparent & informed decision**



# 3 CORE FUNCTIONALITIES

## Of Renewable Energy Access Market Map



Identification of energy-access **gap** & socio-economic **data**



Identification of renewable energy **hotspots**



Identification of renewable energy's **market competitiveness**





## IDENTIFICATION OF ENERGY-ACCESS GAP & SOCIO-ECONOMIC DATA

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### Questions Answered

Where's existing gap of energy access?

Will people in one area afford the RE technology?

### Data Used

Current grid expansion

Electrification rate

Population

Economy growth

*(To be identified as part of the project)*





## IDENTIFICATION OF RENEWABLE ENERGY HOTSPOTS

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### Questions Answered

Where's area with high RE potential?

Where's area available, legally + environmentally, for RE development?

### Data Used

RE resources potentials

Legal protection

Forest extent

Natural disaster vulnerability

*(To be identified as part of the project)*





## IDENTIFICATION OF RENEWABLE ENERGY'S MARKET COMPETITIVENESS

### Questions Answered

Will RE technology's price in one area compete with diesel generator / grid expansion?

How far infrastructure readiness will affect the RE development cost?

### Data Used

RE technologies development cost

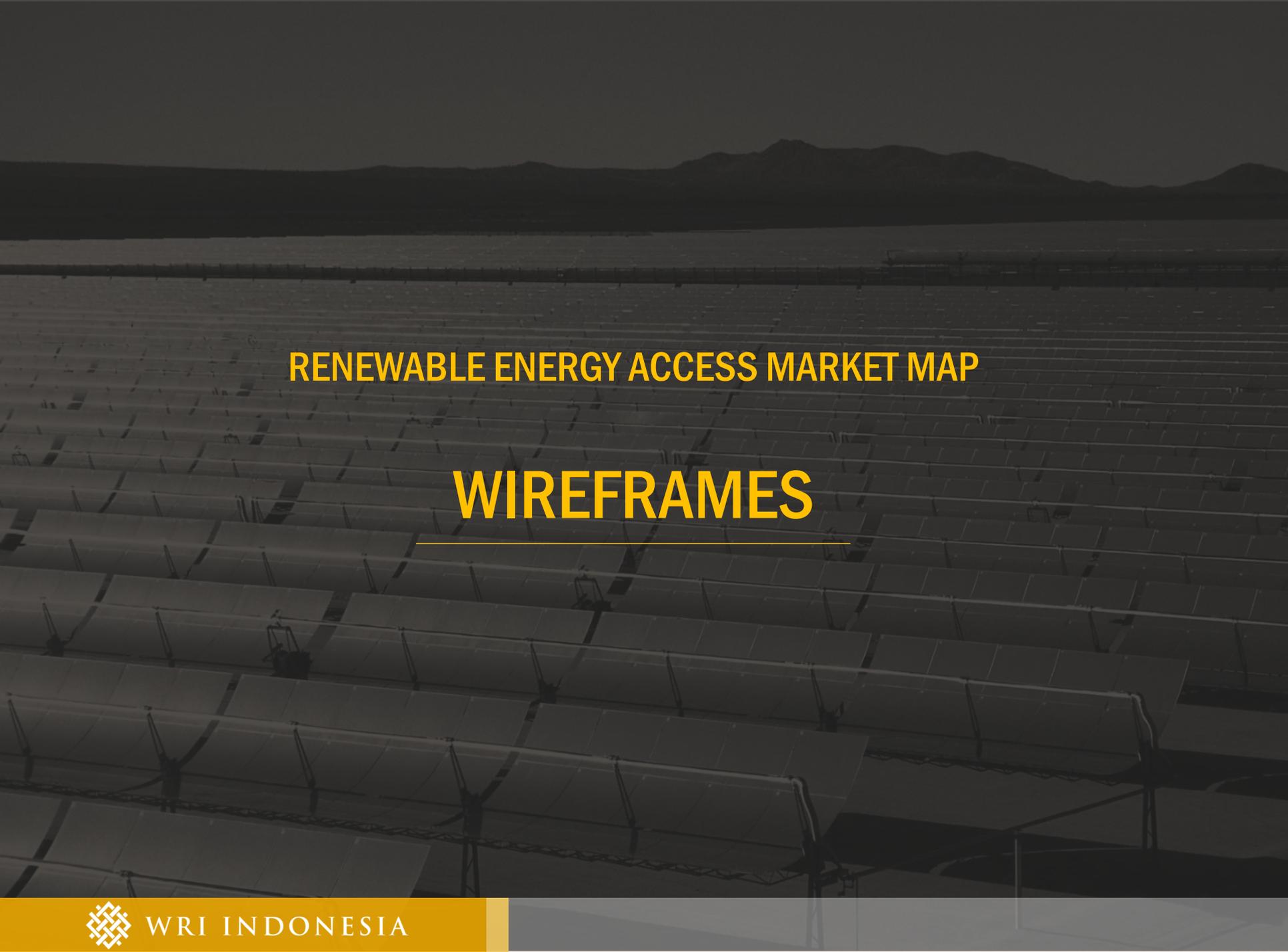
Grid expansion / diesel generator cost

Raw material price

Infrastructure readiness

*(To be identified as part of the project)*





# RENEWABLE ENERGY ACCESS MARKET MAP

# WIREFRAMES

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LEGEND

- 
- 
- 

- Electrification rate
- Grid Distribution
- Population
- Economy growth

SUB-NATIONAL LAYERS | ANALYZE | BASEMAP

SELECT PROVINCE/DISTRICT/VILLAGE

INFORMATION SUMMARY

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Map navigation controls: zoom in (+), zoom out (-), pan, and search (magnifying glass).





DEMANDS

AFFORDABILITY

POTENTIALS

LEGAL &  
ENVIRONMENTAL

MARKET  
COMPETITIVENESS

LEGEND

- 
- 
- 

Economy growth

Asset ownership

Layer 3

Layer 4

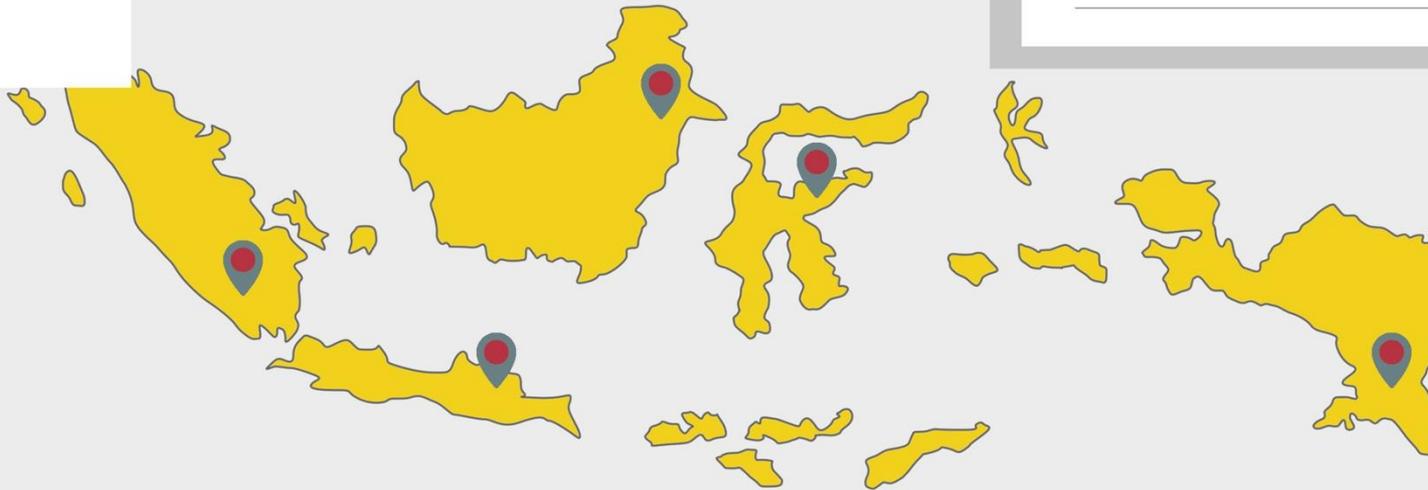
SUB-NATIONAL  
LAYERS

ANALYZE

BASEMAP

SELECT PROVINCE/DISTRICT/VILLAGE

INFORMATION SUMMARY



2000 2001 2002 2003 2004 2005 2006 2007 2008 2009

- Solar energy
- Wind energy
- Geothermal energy
- Ocean energy

SUB-NATIONAL LAYERS | ANALYZE | BASEMAP

SELECT PROVINCE/DISTRICT/VILLAGE

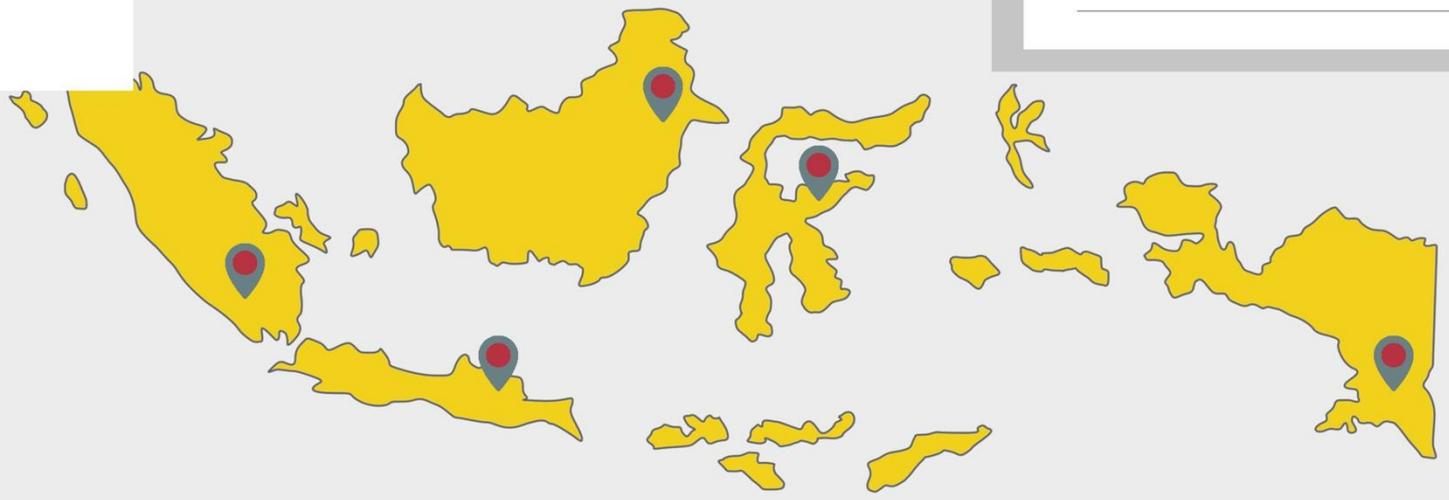
INFORMATION SUMMARY

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LEGEND

- 
- 
- 



Map navigation controls: zoom in (+), zoom out (-), pan, and search (magnifying glass).



LEGEND

- 
- 
- 

Forest moratorium

Protected area

Hazards risk

Layer 4

SUB-NATIONAL

BASEMAP

DISTRICT/VILLAGE

SUMMARY



Map navigation controls: zoom in (+), zoom out (-), pan, and search (magnifying glass).



LEGEND

- 
- 
- 

SUB-NATIONAL LAYERS | ANALYZE

SELECT PROVINCE/DISTRICT/VILLAGE

INFORMATION SUMMARY

RE technology cost

Grid expansion cost

Diesel generator cost

Infrastructure



Map navigation controls: zoom in (+), zoom out (-), pan, and search (magnifying glass).



LEGEND

- 
- 
- 

SUB-NATIONAL LAYERS | ANALYZE | BASEMAP

-  IDENTIFY ENERGY-ACCESS GAP & SOCIO-ECONOMIC DATA
-  IDENTIFY RENEWABLE ENERGY HOTSPOTS
-  IDENTIFY RENEWABLE ENERGY MARKET COMPETITIVENESS



Map navigation controls: zoom in (+), zoom out (-), pan, and search (magnifying glass).





**GLOBAL  
FOREST  
WATCH**

**PLATFORM DEMO**



# TIMELINE

## Phase 1

(Oct 2015 – March 2016)

- Staging version of REAM Map Platform
- Provincial level database on 1 pilot province
- Policy recommendation

## Phase 2

(April – September 2016)

- Beta version of the platform with online analysis tool
- Documentation of data analysis methodology
- Capacity building for stakeholders through FGDs

## Phase 3

(Oct 2016 – February 2017)

- Identified strategies to scaling up
- Enhanced beta version of the platform based on inputs and new data

