2023

Energy Data and Analytics

Underpinning WB Operations with Reliable Analytical Tools and Data Sources

CONTEXT

2023

Energy Data and Analytics – Convening, Evaluating, and Leading Global Progress towards SDG7

- At the current pace, the world **is not on track to achieve the SDG 7 goals by 2030**.
- ESMAP Energy Data and Analytics Program's **key partnerships** with the UN and other institutions is critical to undertaking a **comprehensive and holistic approach to the midterm review** of SDG progress held in 2023
- ESMAP's **convening power** is critical to engaging multiple partners to work together towards SDG7
- The current engagements of the Energy Data and Analytics Program provide important **knowledge, data, and opportunities for collaboration** with key partners globally
- Tools under this program are **a public good** enabling **assessment, tracking and understanding of the global scenario** and they provide operations with a comprehensive analytical approach to **understand and formulate solutions**
- The Hubs have established collaborations with many **ESMAP windows (Access, clean cooking, Foundations) and other GPs (Poverty, Data)**

World Health Organization · UNITED NATIONS · WORLD BANK · 7 AFFORDABLE AND CLEAN ENERGY · ESMAP Energy Sector Management Assistance Program · IRENA International Renewable Energy Agency · IFC · iea International Energy Agency · SUSTAINABLE ENERGY FOR ALL · ENERGIA

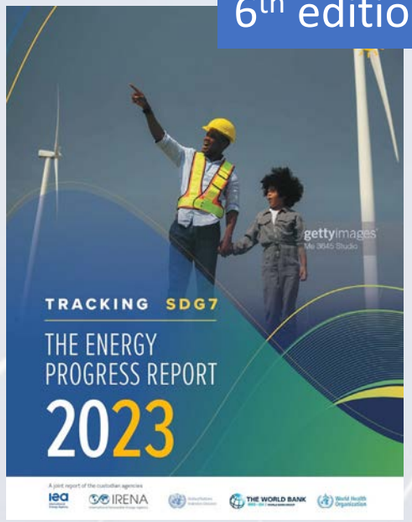
+ 33 partners to leverage data and technology

ESMAP ENERGY ANALYTICS HUB

Key Tools to Support SDG7

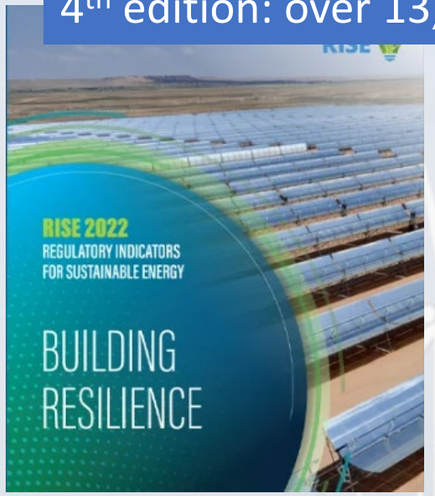
2023

6th edition

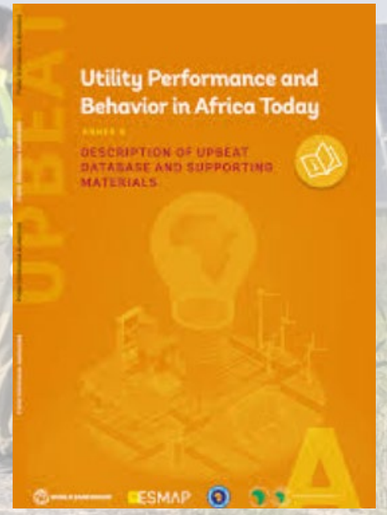


13 reports published : over 12,000 views

4th edition: over 13,000 downloads



Looking Forward



TRACKING SDG7
THE ENERGY PROGRESS REPORT

2023

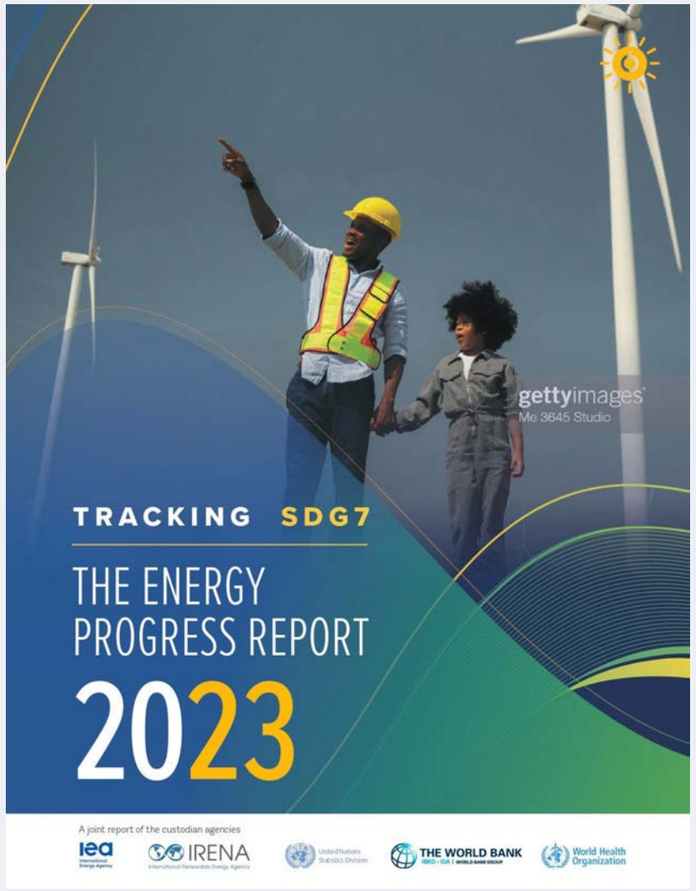
- Tracking SDG7 is **a joint effort by international agencies**, to track global progress on the energy pillars (access to electricity and clean cooking, renewables, efficiency, and financial flows).

- **The World Bank is the custodian agency on access to electricity indicator (SDG 7.1.1).** It tracks the historical trends in the global, regional and national electrification status from the household perspective.

- The World Bank **acts as secretariat** to the Tracking SDG 7 Report and manage the production.

- This edition **Tracking SDG7 2023** will be launched **at the HLPF on July 11 2023** with a soft launch on June 6

- Currently published annually **under severe budget constraint.**



Partners

International Energy Agency

International Renewable Energy Agency

United Nations Statistics Division

THE WORLD BANK IBRD • IDA | WORLD BANK GROUP

World Health Organization

ESMAP Energy Sector Management Assistance Program | THE WORLD BANK IBRD • IDA

TRACKING SDG7
THE ENERGY PROGRESS REPORT

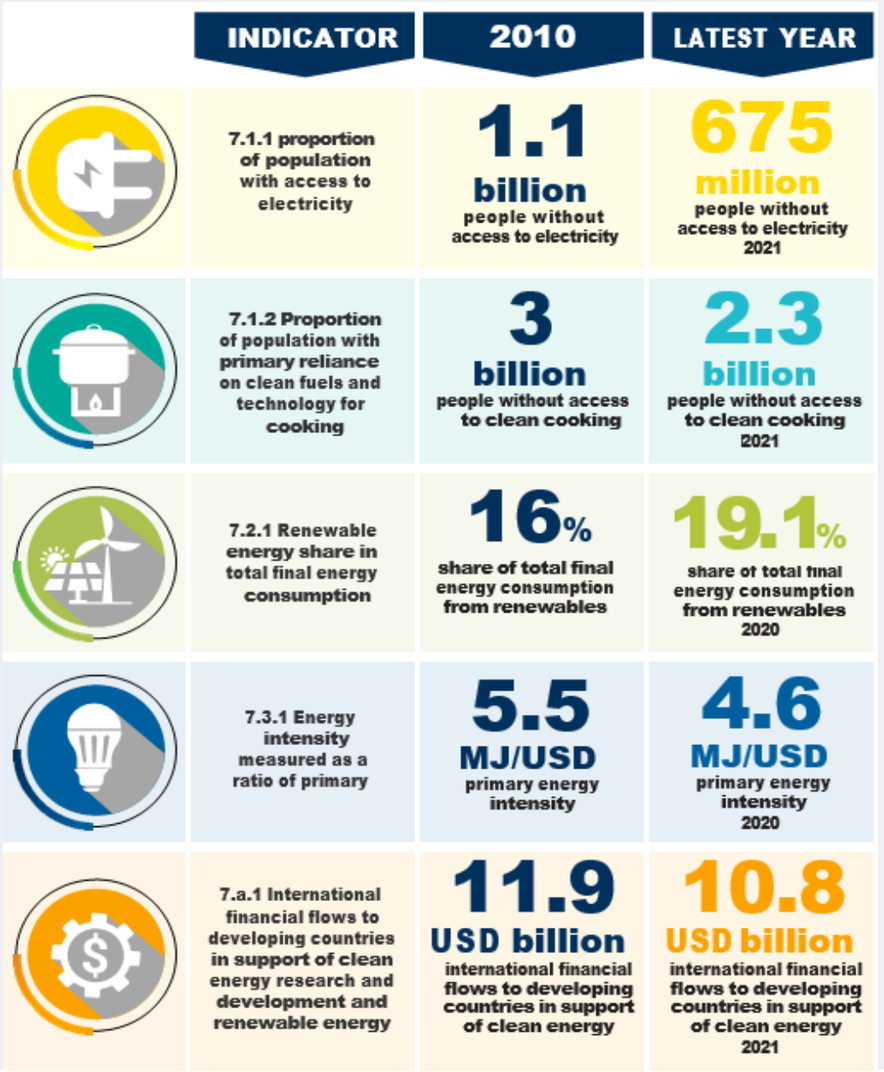
2023

- In 2021 still **675 ml people are lacking access to electricity and 2.3 billion don't have access to clean fuels**. Without stepped-up efforts, about **660 million** people and **1.9 billion** will not have access to electricity and clean cooking respectively in 2030.

- **Renewable energy consumption made modest progress since 2010.** An acceleration of renewable deployment across all sectors is required to reach the SDG 7.2 target.

- The **improvements in energy efficiency slowed in recent years** due to a shift in economic structure during the COVID period.

- The **downward trend in international financial flows** is expected to continue for the next few years.



ESMAP Energy Sector Management Assistance Program | THE WORLD BANK IBRD • IDA

TRACKING SDG7

2023

Major Collaborative Achievements and Contributions

- **UN - SDG7 policy briefs** in support of the High-Level Political Forum including the Regional Policy briefs
- **Synergies among all the Hub programs:** Multi-tier Framework Global Survey; RISE Global Rollout ; Data and Innovation Hub
- **Mini Grids for Half a Billion People Handbook 2022**
- **Off-Grid Solar Market Trends Report 2022**
- **Rethinking Energy Access programs in Displacement Setting**
- **The Atlas of Sustainable Development Goals 2023** produced by the World Bank Data and Research department
- **2022 State of Climate Services**

Partners

International Energy Agency

IRENA International Renewable Energy Agency

United Nations Statistics Division

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World Health Organization

TRACKING SDG7

Support and Inputs to WB Operations

2023

- **Regional Emergency Solar Power Intervention Project (P179267):** SDG7 data points were used to understand regional contexts and engage dialogue with clients on how to improve grid-connected renewable capacity and regional integration.

- **Côte d'Ivoire National Electricity Digitalization and Access Operation (P176776):** SDG 7 data were highlighted in the Project Appraisal Document to monitor the current status and progress of electricity access toward the SDG 7 goal.

7

MTF – MULTI-TIER FRAMEWORK

Measuring energy access on every dimension

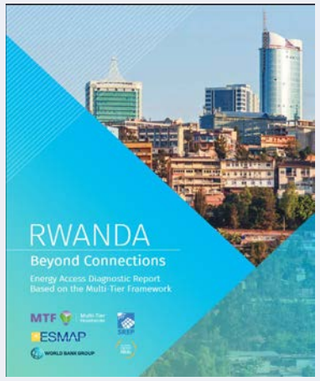
2023

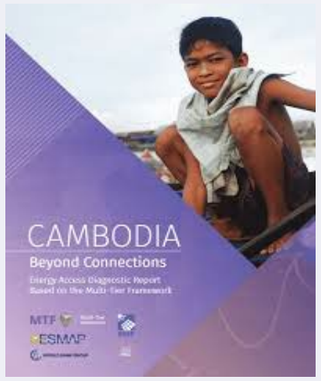
- MTF captures the missing dimensions of energy services (**reliability, affordability, quality, availability**) for electricity and cooking services in the household and for community services (Health and education facilities) and productive uses

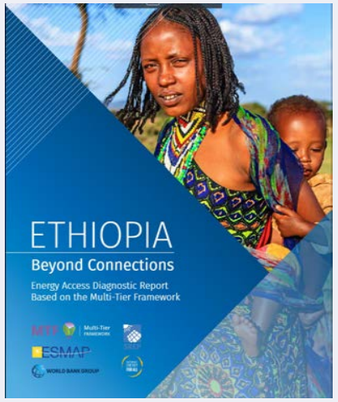
- MTF helps understand the current energy service situation from an end-user perspective and identify a possible solution to increase the tier level om both access to electricity and clean cooking

- Energy surveys are implemented in **25 access deficit countries**

- **13 country reports** have been published, **11 country reports including 8 household surveys and 3 enterprise surveys** are under approval and **4 country reports** are under finalization. **5 countries** are in the pipeline for the next FY.







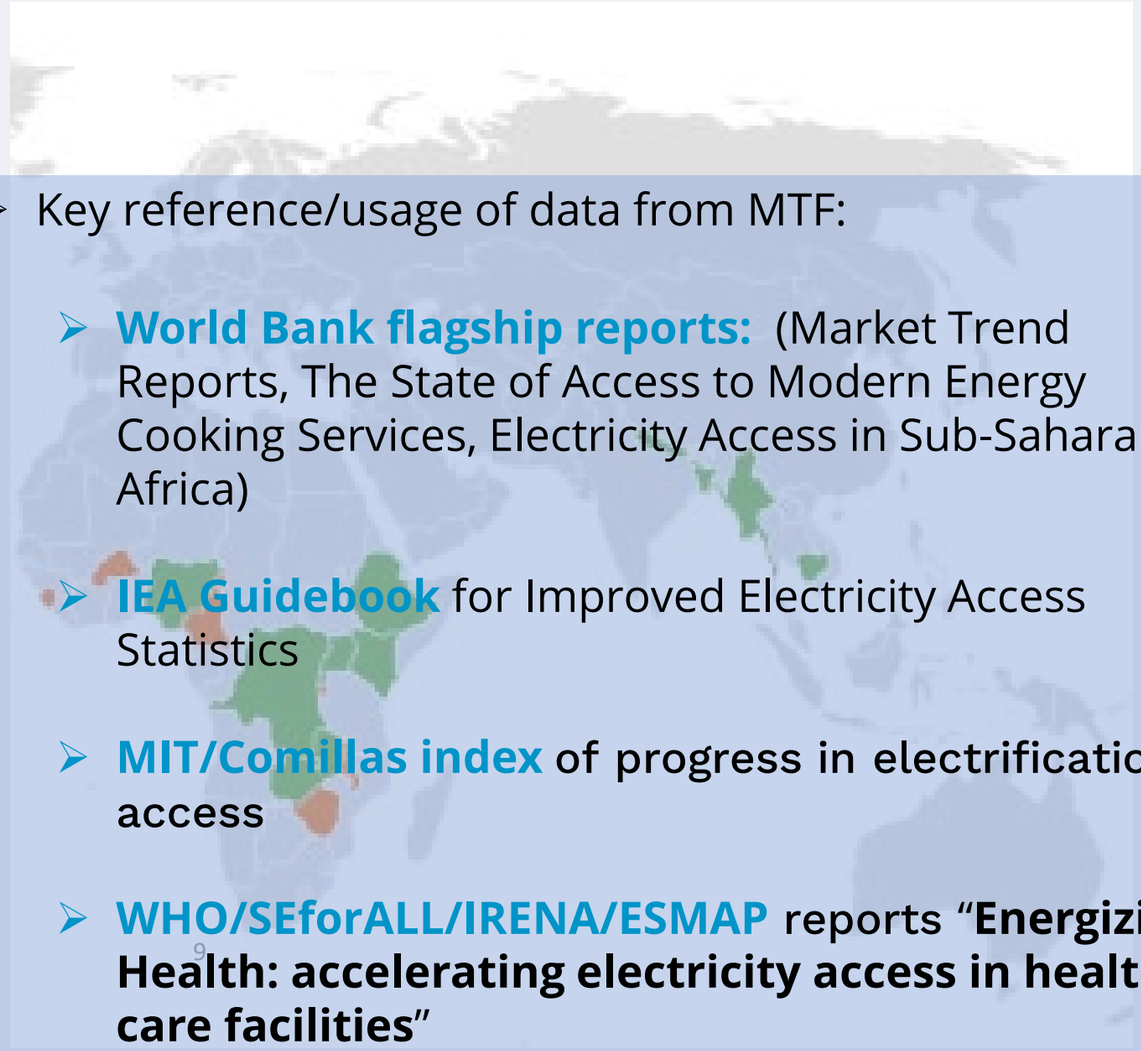
WEBSITE:
data available on ENERGYDATA.INFO

MTF – MULTI-TIER FRAMEWORK

Major Collaborative Achievements and Contributions

2023

- MTF **Household** surveys in 25 countries; MTF **Enterprise** surveys in Kenya, Nepal, STP, Pakistan, and Eswatini
- In-depth analysis using MTF results (**gender, clean cooking, off-grid**)
- **Energy Survey Guidebook** (Poverty GP and WHO) launched in April 2022
- Survey methodology and implementation for **refugee and Displaced People** under the Leaving no One Behind program
- **Data support:** Chad, Pakistan, Democratic Republic of Congo (IFC), Papua New Guinea, Eswatini, South Sudan, Sudan, Benin, and Haiti
- **Pipeline (ongoing discussion):** Angola, Malawi, Senegal, Namibia, Botswana



- Key reference/usage of data from MTF:
  - **World Bank flagship reports:** (Market Trend Reports, The State of Access to Modern Energy Cooking Services, Electricity Access in Sub-Saharan Africa)
  - **IEA Guidebook** for Improved Electricity Access Statistics
  - **MIT/Comillas index** of progress in electrification access
  - **WHO/SEforALL/IRENA/ESMAP** reports "**Energizing Health: accelerating electricity access in health-care facilities**"

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MTF – MULTI-TIER FRAMEWORK

Support and Inputs to WB Operations

2023

Inform the access project design

Papua New Guinea: MTF survey has informed the discussion with the government of the baseline of the investment project.

Pakistan: MTF Analysis supported the energy team to have a dialogue on the access status and future intervention with the government.

Sierra Leone: MTF analysis facilitated the sector dialogue and informed the energy access program.

Affordability and economic analysis

Madagascar and **Rwanda** gained insights on economic implications and affordability issues by using the MTF survey results.

Technical support

Supported **Malawi** and **eSwatini** to design and implement the national energy baseline survey.

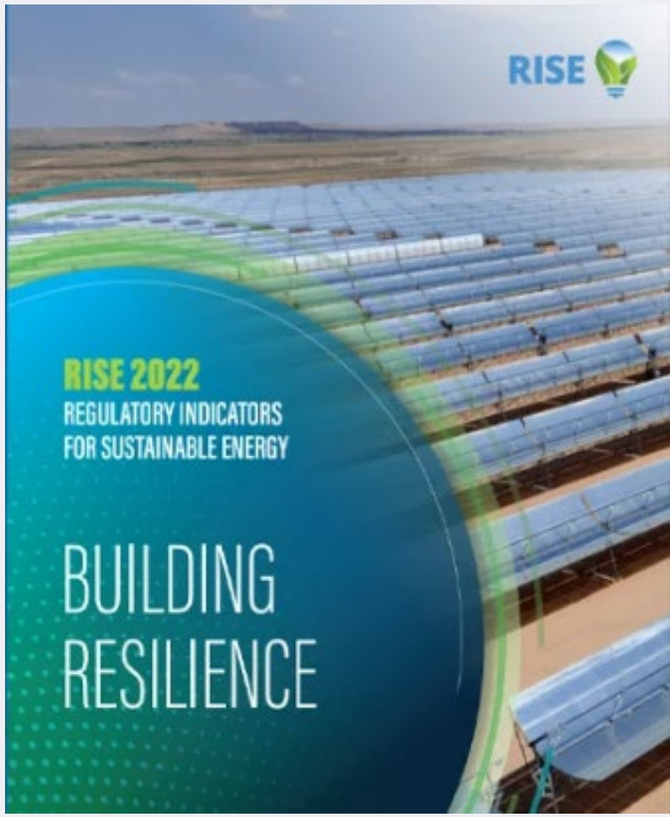
Helped the field survey for off-grid sector assessment in **South Sudan**.

RISE – REGULATORY INDICATORS FOR SUSTAINABLE ENERGY

2023

Enabling Policies to Achieve SDG7

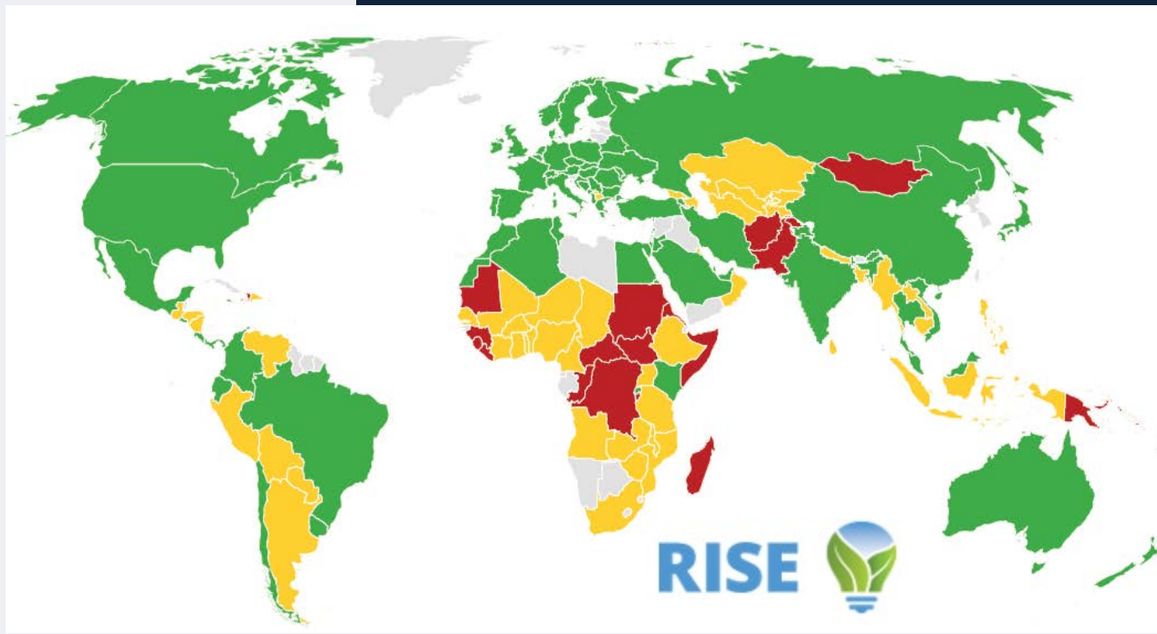
- Tracking SDG7 and MTF are tracking the outcomes tools but **what policies must be in place to enable outcomes?** RISE is a global inventory of policies and regulations to support the achievement of SDG7.
- **4 SDG7 pillars, 30+ indicators**, and 160+ questions that can be compared:
  - across **140 economies**—from Afghanistan to Zimbabwe
  - and over time – **from 2010 to 2021**
  - RISE scores them between 0-100 with traffic light system (red – yellow - green)
- Launch of the 4th edition was completed in December 2022
- **Features:** Gender focus, Market trends, COVID19 response database (Access and clean energy)



RISE 2022 RESULTS

2023

- **Nearly half of all countries** surveyed have advanced policy frameworks **scoring in the green zone since 2010**
- Globally, **electrification plans, off-grid access, and utility transparency policies** have improved the most since 2010
- **Expanding Off-grid access policies remain a key priority** for the large majority of countries with electricity access deficits
- A notable exception to these positive trends is **utility creditworthiness, which has deteriorated** across several regions due possibly to the effect of COVID19 pandemic



- Energy **efficiency policies are not receiving adequate attention** amid unprecedent energy price hikes
- Renewable technologies have become cost-competitive with traditional baseload energy sources over the past decade, and many countries have **phased out incentives that compensate renewable energy** production
- Good practice policies, particularly for strengthening electricity access, have been **embedded in COVID recovery stimulus** packages to help minimize market disruptions in the energy sector

RISE – REGULATORY INDICATORS FOR SUSTAINABLE ENERGY

Major Collaborative Achievements and Contributions

2023

- RISE included in **WEF Energy Transition Index** scoring annually since 2018
- RISE results spotlighted in **REN21 Global Status Report**
- **IFC Infrastructure team** has requested collaboration on data collection and validation in 2022
- **IEA** now using RISE to complement their tracking on EE policy
- **SEforAll** using RISE indicators as basis of their Sustainable Energy Policy Hub launched in 2023
- Gender and Energy Indicators Database created in 2022-23 in partnership with **ESMAP Gender Program**

RISE – REGULATORY INDICATORS FOR SUSTAINABLE ENERGY

CG 2023

Support and Inputs to WB Operations

- **Sub-Saharan Africa Regional Unit:** RISE Clean Cooking Country Summaries included in all Sub-Saharan African countries' Country Climate and Development Report (CCDR) submissions
- **Nigeria Multi-Phase Approach (MPA) Health GP operation:** RISE clean energy indicator data was used to determine net metering regulations, tariffs and incentives for ROI which were used to calculate energy savings and payback periods for RE/EE interventions in primary health clinics, and health warehouses in Nigeria as part of the Nigeria Improved Child Survival Program for Human Capital MPA Project (P167156 - $487.5M) which ESMAP supported
- **Morocco Maximizing Finance for Development (MFD) Energy operation:** RISE clean energy scores used as inputs for GDP outcome indicator comparisons for the energy sector as part of the Morocco Maximizing FinanceforDevelopment:PolicyEnvironment Enabling Program (P169488 - $) project preparation

ELECTRICITY DEMAND ESTIMATION PROGRAM

2023

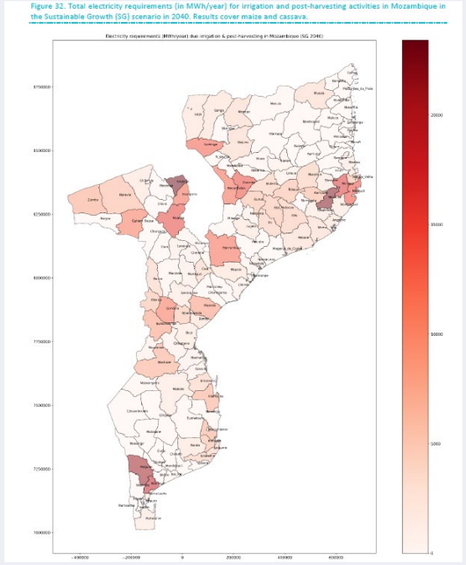
Innovative data-oriented approach to estimate electricity demand from the agriculture sector

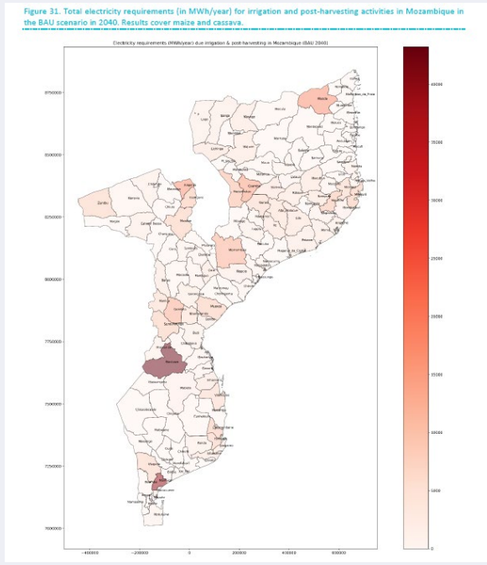
Operational support

- **Uganda**
  - Estimate electricity demand from the agriculture sector using both **primary data collection (microdata) and geospatial data as well as a machine learning technique**
  - Identify the challenges and opportunities of electrifying the agriculture sector from **(1) demand-side and (2) supply-side perspectives**
  - Inform the implementation of the energy project (Electricity Access Scale-up project) and the preparation of the agriculture project (Agriculture Cluster Development Project phase 2).
- Pipeline: **Central African Republic** and **Madagascar**

Knowledge product

- **Fieldwork toolkit**
  - Open-source toolkit to estimate electricity demand from the agriculture sector, particularly, irrigation.
  - Survey toolkit: Piloted in Uganda study.





Sample Outputs of Mozambique geospatial demand analysis

UNITED NATIONS ENGAGEMENT

- Co-custodian of SDG7.
- Permanent Secretariat/ publisher of its Annual Energy Tracking Report
- UN Energy (UN agency member only focus on energy issues)
- SDG7 Technical Advisory Group (multi-stakeholder group under UN DESA)

2023

May

11 - 12 | Global Expert Group Meeting to prepare for SDG7 review at the HLPF 2023 - UNHQ, NY

June

6 | Joint Global Soft Launch of Tracking SDG7 and the SDG7 Policy Briefs 2023

July

- 10-19| 2nd Global Review of SDG7 at HLPF - UNHQ, NY
- 11| Launch SDG7 Policy Briefs – UNHQ, NY
- 11| SDG7 TAG meeting UNHQ, NY
- 11 | Joint Global Launch of Tracking SDG7 2023

September

- 18-19| SDG Summit UNHQ, NY
- DATE TBC | Climate Ambition Summit UNHQ, NY

Nov - Dec

30 Nov to 12 Dec | UNFCCC COP 28 Dubai, UAE

2024

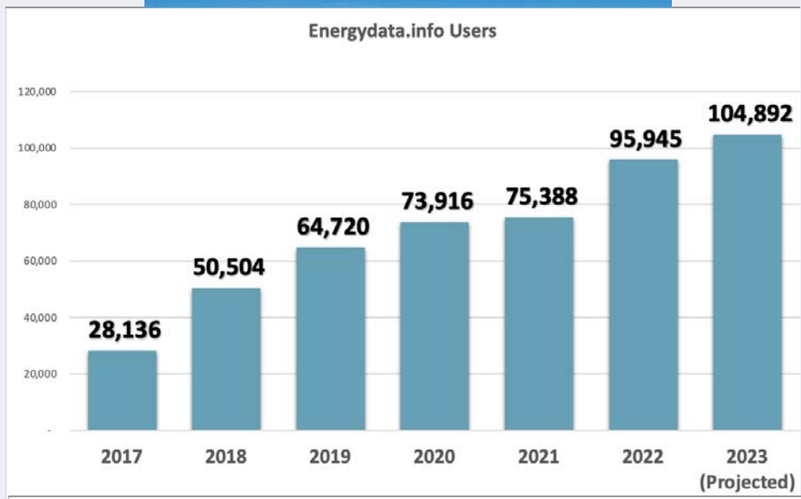
- Summit of the Future
- Global Stocktaking on SDG7 Implementation

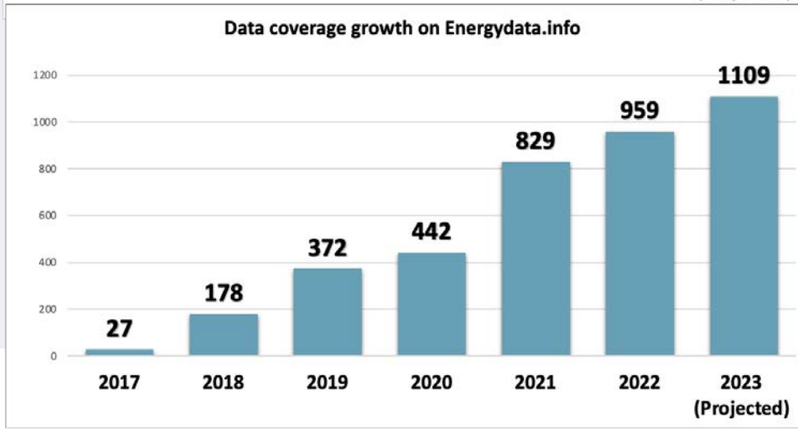
ENERGY DATA HUB

2023

Trusted timely data for country operations

- Nearly **1,000 datasets covering 193 countries** and all ESMAP programs. Data coverage doubled within current BP.
- Growing use in LMICs with **India, Kenya, Nigeria, Pakistan, and South Africa** among top-10 user countries.
- Increased demand for country-specific data to support operations eg. **energy access**, **transmission** and **power systems planning.**
- Major update planned for EnergyData.info 2.0 in FY24.
- Growing coverage of Energy Data Hub by the media, think tanks and academia - used & referenced by:





McKinsey & Company

Bloomberg

WORLD ECONOMIC FORUM

nature scientific data

ENERGY DATA HUB

Growing demand for data tools & applications

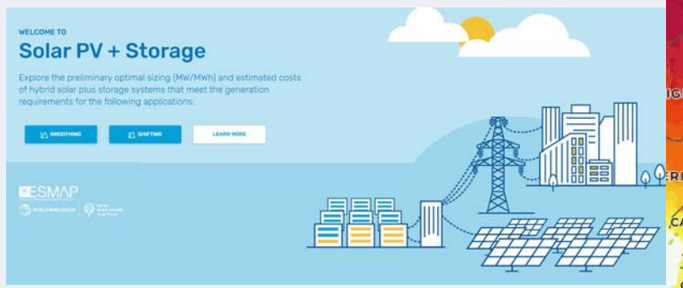
2023

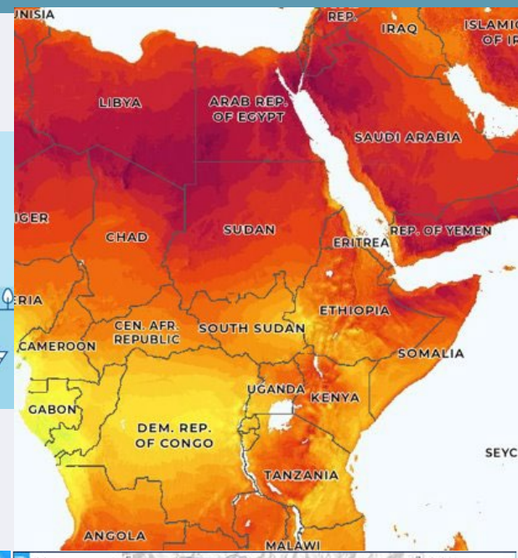
- Host of 23 tools and applications developed by ESMAP programs and partners.

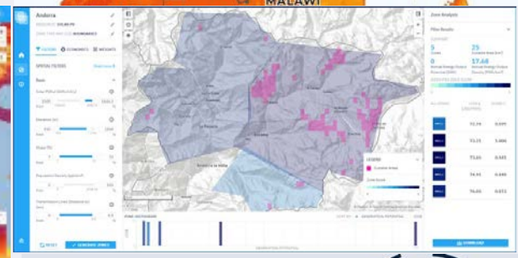
- Growing partnership with WB regions to host applications including East Africa (Africa Electrification Platform) & South Asia (WePower Network).

- 33 partners across multilaterals, academia and technology companies in a growing global network.

- Meeting growing demand for more customized tools eg. renewable energy planning Global Solar Atlas, Global Wind Atlas, Solar PV + Storage ReZoning, and Rooftop Solar Potential Tool.







Partners

WORLD RESOURCES INSTITUTE · iea · GitHub · esa · GIZ DATA LAB · IRENA · UNEP International Resource Panel · Meta

ENERGY DATA HUB

Data tools informing country operations

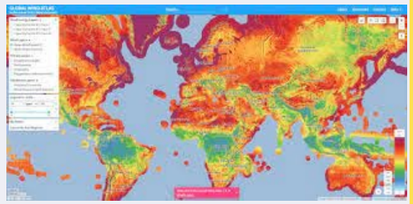
2023

Global Wind Atlas

Renewable energy

Wind model and measurement data is needed to inform upstream studies, site selection and investment decisions.

- Providing open on- and offshore wind modeling data for country operations and partners.
- Informing TA or operations in Azerbaijan, Botswana, Ethiopia, Namibia, Tanzania, the Philippines, Pacific Islands, Southern Africa, and East Africa Region.



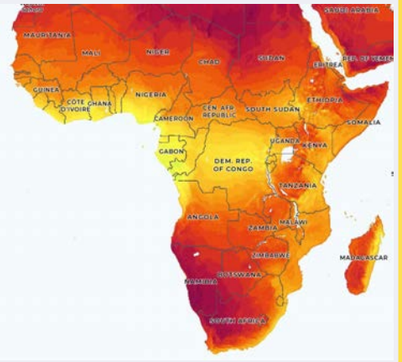
DTU Technical University of Denmark

Global Solar Atlas

Renewable energy

Investors and client governments need access to global GIS solar modeling data.

- Combination of global solar GIS layers and 100 local measurement sites provides a comprehensive map for decision makers and analysts who design feasibility studies for IPFs.
- Increased accuracy from local measurements contributes to reduced investor risk in project design.



Transmission grid mapping

European Space Agency (ESA)

Transmission system operators often lack access to granular geospatial data about their grid limiting ability to plan.

- Using satellite imagery and AI transmission grids can be mapped bottom-up based on individual power towers, substations and power plants.
- Utilities will be able to establish new geospatial monitoring systems or strengthen existing O&M planning.

Rooftop Planning Tool

Innovative Solar

Rooftop solar has significant potential to scale, but lack of credible estimates which limit deployment.

- The tool provides first of its kind estimates of rooftop solar potential for every building in 15 cities leveraging satellite imagery.
- Estimates provides certainties to governments on the city-level and investors gain certainty at individual property level.
- Scaling now planned with Innovative Solar.

ENERGY DATA INNOVATION

2023

Ensuring equitable access to artificial intelligence for energy planning , real-time energy data, and cybersecurity

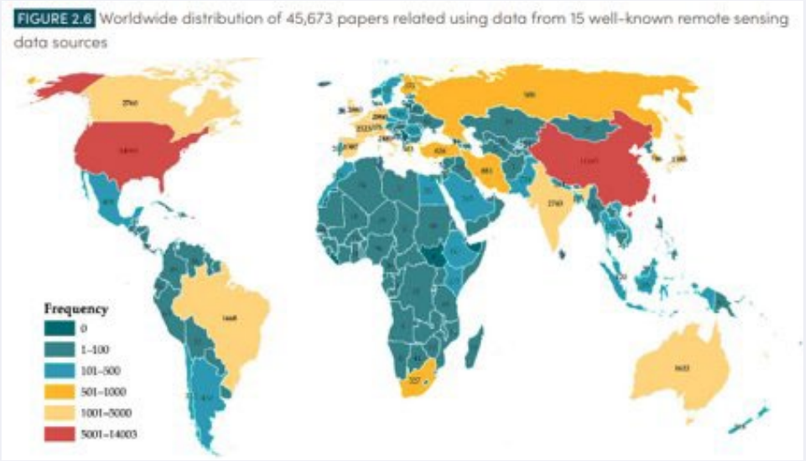
- AI and satellite imagery has truly democratizing potential for energy sector management and innovation. Yet, use of AI is often constrained in LMICs due to lack of tools and technical capacity.

- Artificial intelligence (AI) has the potential to strengthen energy management, resilience planning, and contribute to grid decarbonization.

- Real-time data sharing can unlock innovative business models eg. time of use rates and demand response.

- Global knowledge and technical assistance to strengthen enabling environments of client countries across digital, AI, and cyberresilience.

Current activities of Energy Innovation Hub



ENERGY DATA INNOVATION

2023

Country engagements with ESMAP programs & partners

Nigeria | Responsible data sharing for mini grids

Energy Access

Data sharing - Investors, utilities and government lack access to mini grid data to inform investments and grid planning.

- Responsible data sharing can unlock mini grid insights while protecting data privacy and personal data.
- Prototyping through DARES Nigeria will enable scale to multiple countries through the DARES partnership.

Maldives | Energy data sharing for innovative business models

SIDS

Data sharing – Lack of availability timely energy data limits the opportunity for deployment of innovative models such as demand response and time of use rates.

- Platform for real-time energy data will enable grid decarbonization and unlock innovative market tools.
- Platform and technical helpdesk to be included in additional financing package.

Vietnam | Ensuring cybersecurity

Utilities for the Energy Transition

Cybersecurity - EVN (utility) is seeking to strengthen cyber resilience of transmission grid and SCADA infrastructure.

- Cybersecurity assessment to inform investments in grid infrastructure and strengthen standards equipment purchases.

Georgia | AI for hydropower forecasting

Hydropower Development Facility

Use of AI – Data gaps and limited access to modeling tools limit performance of dispatch and load balancing in Georgia's hydropower sector.

- AI for hydropower forecasting to improve grid decarbonization and inform new IPF.
- Improved measurement stations and capacity building can enable analytical capabilities of Georgian State Electrosystem (TSO).

ENERGY DATA INNOVATION

AI for climate resilience of transmission grid in Bangladesh

2023

Challenges

- Transmission grids are exposed to risks from heat, flooding and weather hazards.
- O&M planning requires localized data on vegetation and land use along transmission lines.

Activities

- New AI-based approach to mapping of transmission grids combined with climate models to identify points of risk along the Bangladesh transmission grid.
- Geospatial climate risk data science capacity leveraged with European Space Agency (ESA).

Expected results

- Climate risk analysis to support Power Grid Company of Bangladesh and resilience recommendations to inform new Transmission Grid Enhancement & Modernization Project ($680M IPF, board March '24).
- Seek scale across countries through TA and CCDRs.

Image: Pioneering method for mapping of transmission grids using satellite imagery piloted in Bangladesh

NEO For earth observation

esa European Space Agency

ENERGY DATA INNOVATION

2023

Ensuring cybersecurity for Moldova's transmission grid in a rapidly changing energy landscape

Challenge

- Rapid integration with European grid means need to align Moldova on EU and ENTSO-E cybersecurity standards and procedures.
- Moldelectrica (TSO) needs regular vulnerability assessments, and address gaps in transmission grid security, eg. Communications protocols.
- Skill gaps among key cybersecurity staff.

Activities

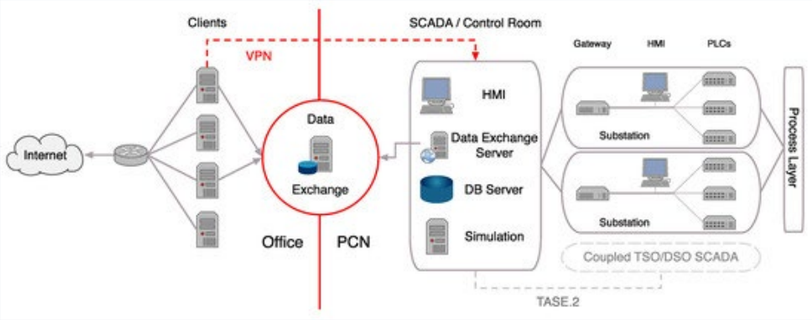
- Technical assistance to Moldelectrica to obtain ISO certification, improve staff capacity, and enhance security standards for forthcoming transmission grid investments.

Expected results

- Moldelectrica will become cyberresilient and aligned with EU standards with established procedures, trained personal and required certifications.

Recent energy cybersecurity events:

- Indonesia (2022): Data breach of personal information from utility
- South Africa (2019): Cyber-attack
- Ukraine (2015, 2022): 225,000 costumers left without power due to outage



LOOKING FORWARD

Supporting the WB's Evolution

2023

- The World Bank Group's recently published Evolution Roadmap includes an additional extension on **climate change** and a strong focus on **global public goods.** Extensions are intended to be priority areas for development to dig deeper into each of the building blocks of growth

- ESMAP's Energy Data and Analytics Program is well placed to support the WBG and client countries on key climate and growth priorities, especially as a primary source for Country Climate and Development Reports (CCDRs) which are now the basis for creating **Country Partnerships for Climate and Development** with clients going forward.

- In addition to the current engagements of the analytics and data hubs, a number of additional programs are planned for **FY24 and beyond** including on innovation

GERI – GLOBAL ELECTRICITY REGULATORY INDEX

2023

Establishing Good Practice for Regulators

The way forward

- Complement RISE database with de jure and de facto data on economic and technical regulation
- Focus on governance practices (autonomy, accountability) for regulators as well as actual content of regulation (tariff setting, quality of supply and market entry) in over 80 developing countries through RISE data collection
- Mainstream the use of GERI now in core diagnostic World Bank InfraSAP to enable , and to inform energy sector reforms and policy making.

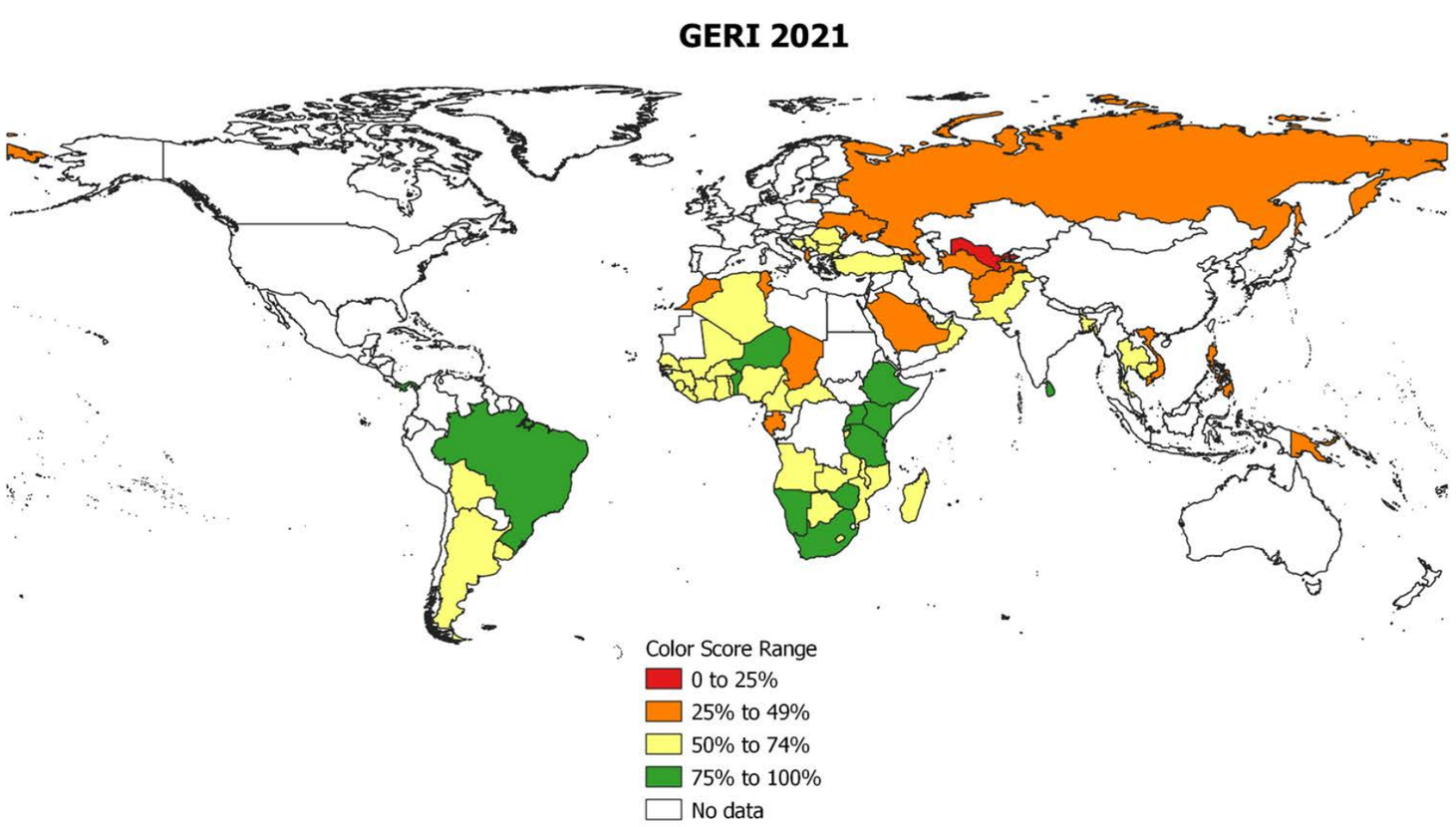
Enhance collaboration among the World Bank and AFDB (ERI) to produce the Global Electricity Regulatory Index (GERI)

- **Take GERI to a global level:** Plans in motion with AFDB to formalize GERI into a global bi-annual index, including a dedicated website of country scores and reports.

GERI – Highlights of key results

2023

- **The global GERI average score was 59% in 2021**.
  - ❖ About half (54%) of the countries fell in the intermediate stage range (50%-74%);
  - ❖ with only 17 ranked above (75%-100%).



- **Globally, countries performed poorly on regulatory substance due to poorly developed tariff methodologies (37 %).** The low score reflects poorly specified tariff methodologies rather than an absence of tariff methodologies.
- **Lack of regulatory independence is a challenge faced under Regulatory Governance (RG) in almost all countries (29%).** Many countries lack provisions in the electricity laws to prohibit the regulatory authority head and board members from taking up employment in regulated utilities at any point in their career.
- **Financial remuneration of regulators was another area of weakness under RG** (59%). Particularly, attracting and retaining talented staff of regulatory authorities remains a challenge in many countries (average score 31%).

Global Tracking Framework

Building on UPBEAT, A New Framework for Utility Performance

2023

Objectives

- Assess and understand the performance of power sector utilities, through **financial**, **operational**, and **transparency** indicators
- Support utility dialogue and preparation of utility recovery operations

Rationale

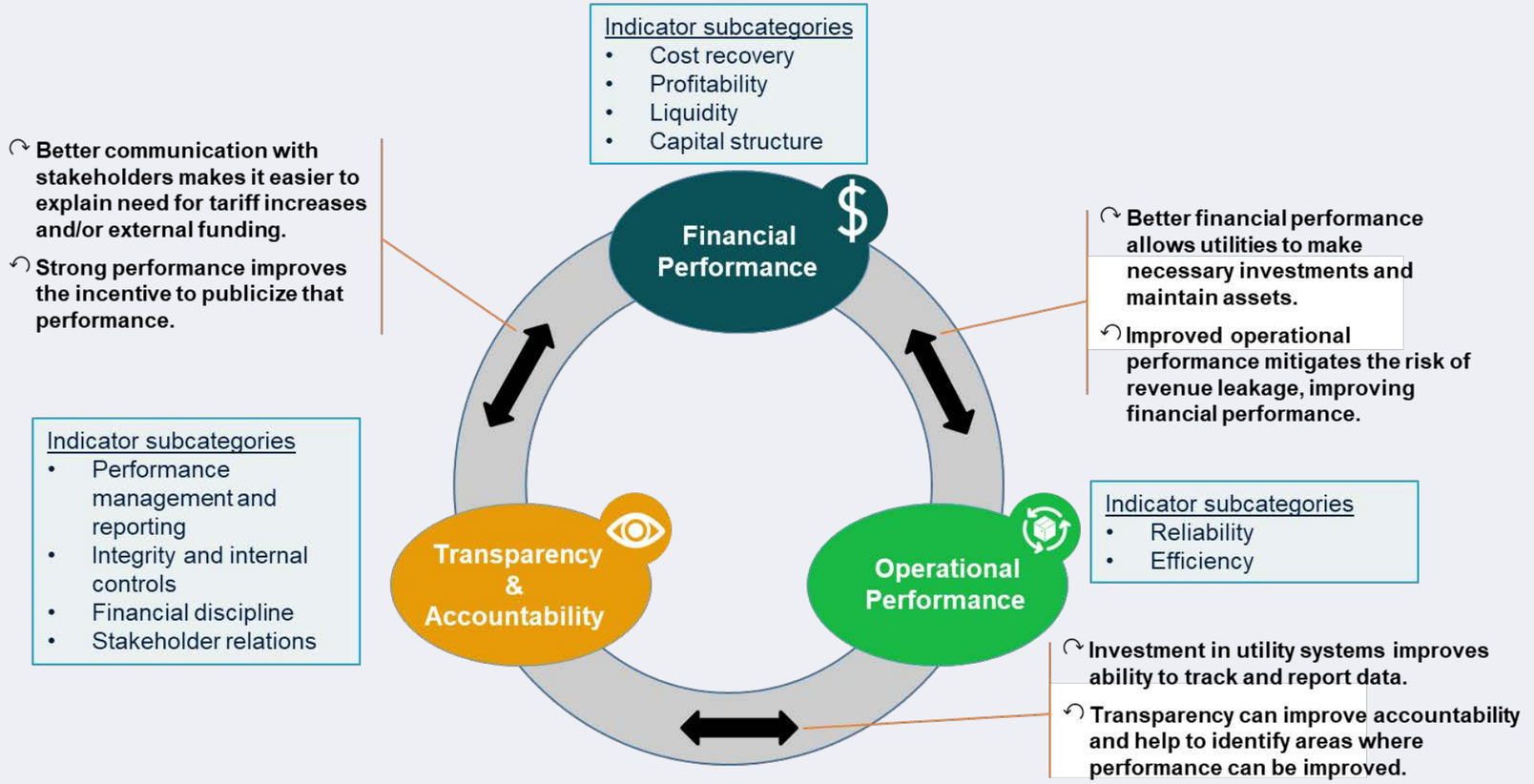
- Hard to diagnose problems, and find solutions, without accurate measuring and reporting
- Data transparency can motivate improvement

Methodology

- Focus on **individual utilities**, rather than the power sector
- Focus on **public data** wherever possible

Database

- 20+ financial, operational, & transparency indicators as well as supporting data

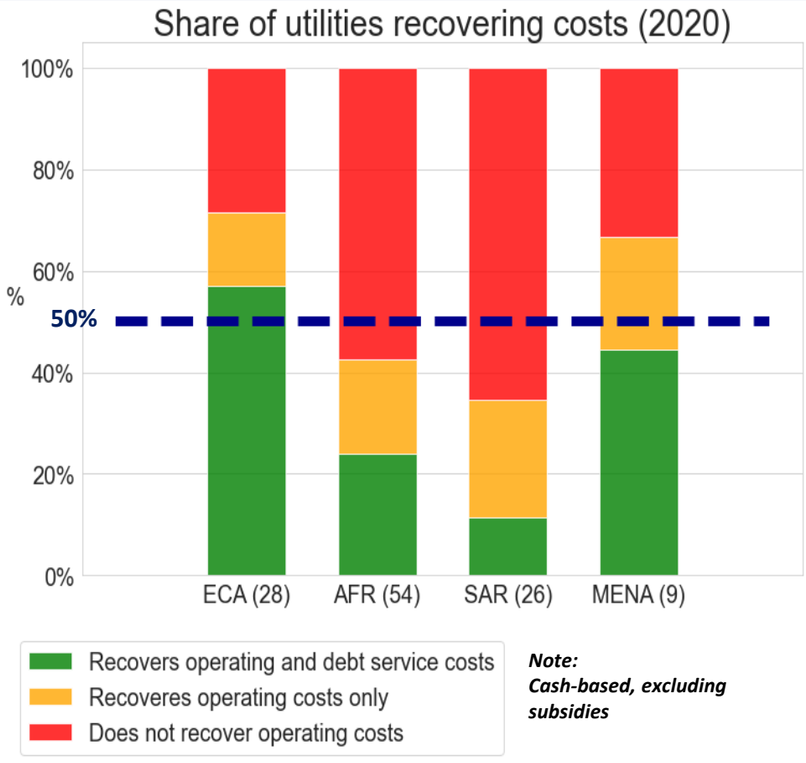


Global Tracking Framework

Online dashboard and series of reports launched for SSA, currently extending to ~160 utilities in all WB regions

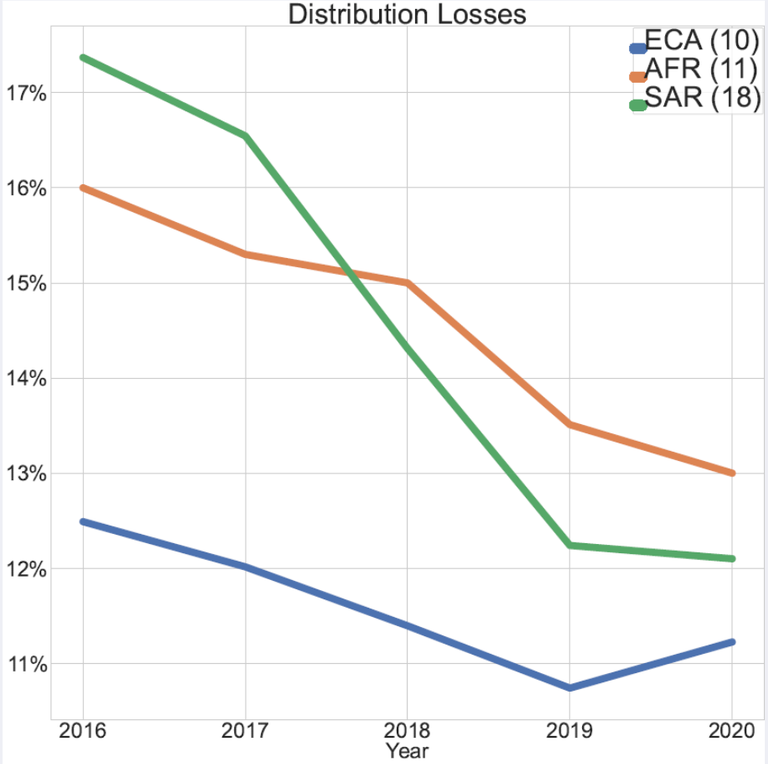
2023

Example finding: ECA is the only region with more than half of utilities recovering operating & debt service costs

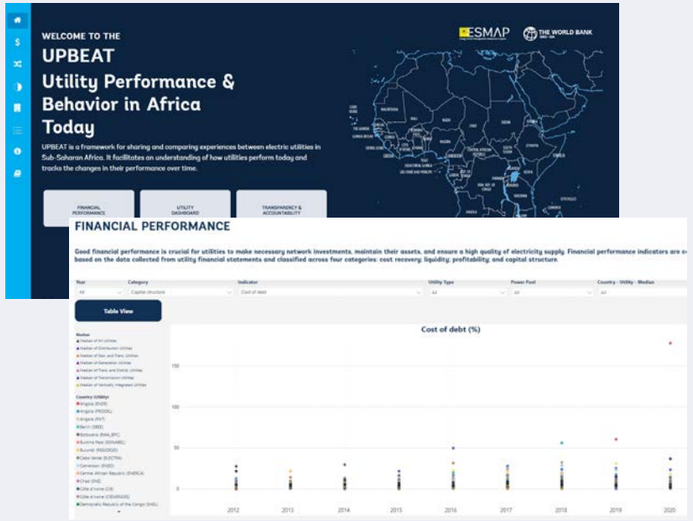


Note:
Cash-based, excluding subsidies

Example finding: Distribution losses show a more encouraging trend, having decreased across regions



Indicators for SSA published on updated online dashboard, other regions to follow



More insights at: utilityperformance.energydata.info

Global Tracking Framework

Global Tracking Framework and UPBEAT data are gaining increasing traction among a range of audiences

2023

WB project design and dialogue with client utilities, examples include:

- Benchmarking of utility costs and cost recovery as part of utility reform engagements in Kenya, Malawi, Ghana, South Sudan
- Financial performance gap analysis of utilities in Zambia and Zimbabwe
- Comparative analysis for new regional energy access project in East and Southern Africa
- Assessment of impact of utility unbundling on energy crisis in Uzbekistan

EEX regional strategy and analysis

- UPBEAT is informing new analytical work on utility performance in Western and Central and Africa, providing both the conceptual framework and foundational data for deep dive on specific utilities' performance issues
- UPBEAT data used to provide overview of utilities and potential performance issues in southern Africa as part of regional EEX planning

Workshops and conferences with client utility management

- UPBEAT data and analysis used to convene roundtable discussions on utility performance with utility executives from across Africa (including Association of Power Utilities of Africa annual meetings, Powering Africa conference, Africa Energy Forum)

Academic research

- Early interest from academia to use data in research on infrastructure economics and public policy

2023

THANK YOU.

Contact – Phone – Email

RISE – NEW FEATURES ENHANCING THE LATEST 2022 EDITION

2023

Electricity Access

- New sub indicators focused on modern solar-hybrid **minigrids** in consultation with Access CoP
- **COVID-Energy Access** Module: separate survey focused on **access scale-up for health** service providers and beneficiaries

Clean Cooking

- New subindicators focused on **last mile distribution** barriers
- Expanded subindicators on **financing** options and incentives for clean cooking products, fuels, and consumers

Clean Energy

- New and updated **fiscal incentives for renewable energy** projects
- New subindicators on **net-zero energy buildings** and energy efficiency in buildings
- **COVID Response Database:** new online product of 2020-2021 COVID response policies in clean energy sectors

Other New Features

- **Gender and Energy indicators:** 30+ question survey assessing gender roles in energy access, clean energy, and overall female participation in the energy sector. All 140 countries covered
- **MARCOT** survey assessing electricity market structures, sector regulation, and energy mix statistics

RISE 2022 RESULTS

Indicators in Latest RISE Index

2023

Pillar	Indicators			
ELECTRICITY ACCESS	• Electrification planning	• Grid electrification framework	• Framework for off-grid systems	• Utility transparency and monitoring
	• Scope of the electrification plan	• Framework for minigrids	• Consumer affordability of electricity	• Utility creditworthiness
CLEAN COOKING	• Clean cooking planning		• Standards and labelling	
	• Scope of planning		• Financial lincentives for clean cooking solutions	
RENEWABLE ENERGY	• Legal framework for renewable energy	• Incentives and regulatory support for renewable energy	• Network connection and use	• Carbon pricing and monitoring
	• Planning for renewable energy expansion	• Attributes of financial and regulatory incentives	• Counterparty risk	
ENERGY EFFICIENCY	• National energy efficiency planning	• Incentives and mandates: Public sector	• Minimum energy performance standards	• Transport sector energy efficiency
	• Energy efficiency entities	• Incentives and mandates: Energy utility programs	• Energy labeling system	• Carbon pricing and monitoring
	• Incentives and mandates: Industrial and commercial end users	• Financing mechanisms for energy efficiency	• Building energy codes	

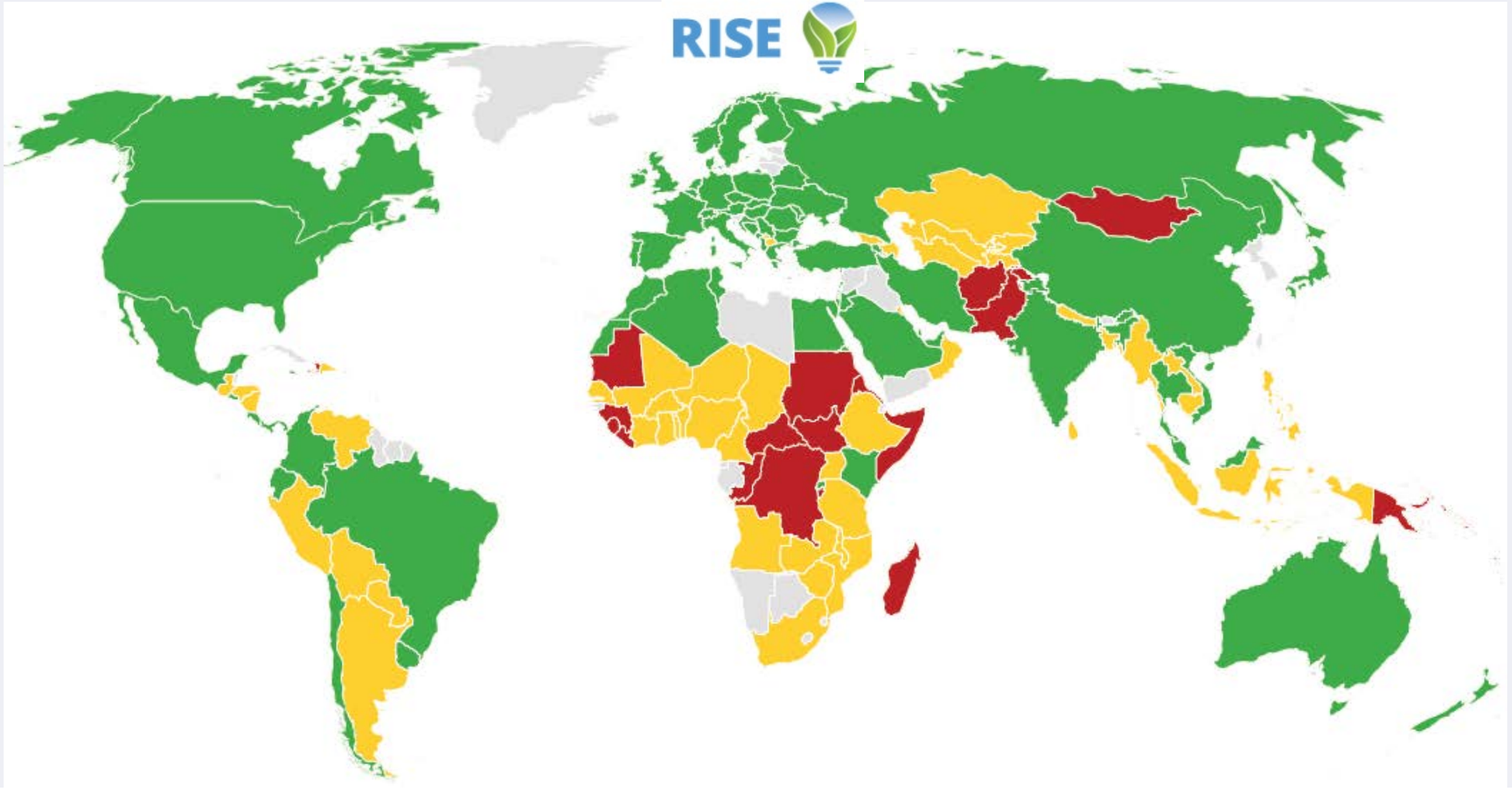
RISE

*Indicators in **red** were updated in RISE 2022 to increase stringency by reflecting recent changes in good practice and energy market development*

RISE 2022 RESULTS

2023

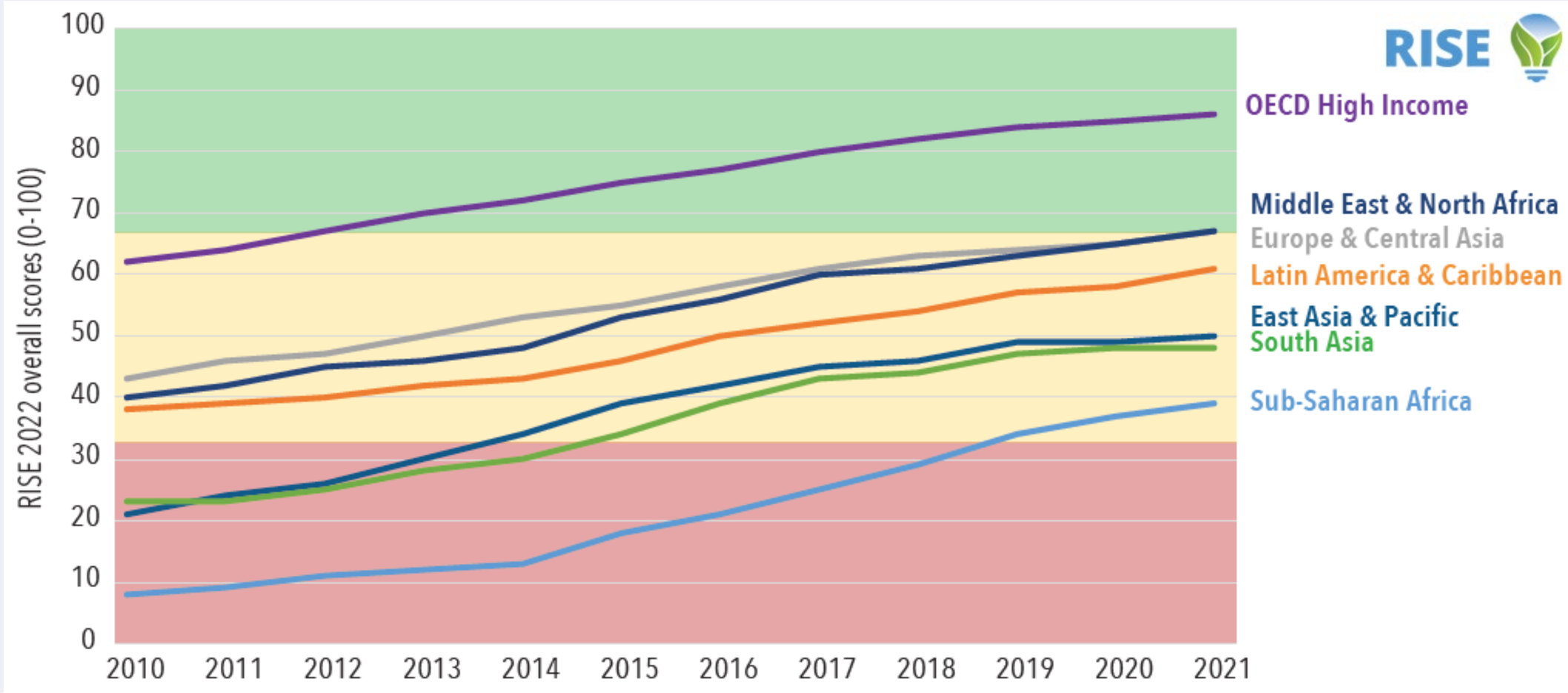
Nearly half of all countries surveyed have advanced policy frameworks scoring in the green zone



RISE 2022 RESULTS

2023

All country groupings saw advances in the Latest two-year period, but consistency of progress remains uneven across regions

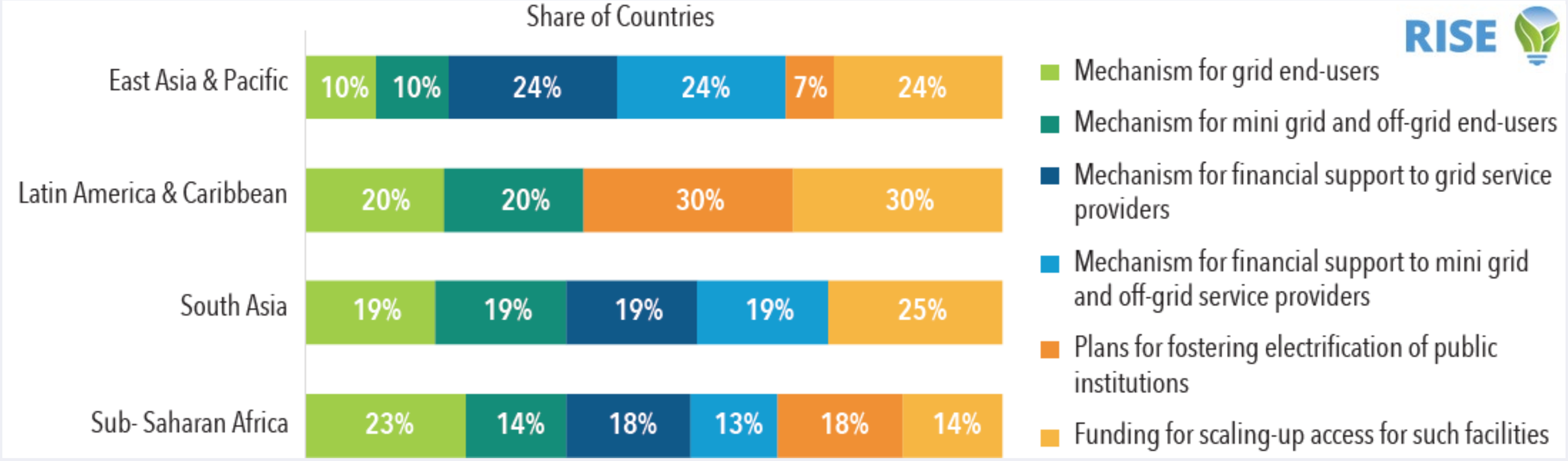


RISE 2022 RESULTS

2023

The RISE COVID-19 Module revealed regional differences in support for electricity consumers and healthcare Infrastructure, but energy access was a clear priority worldwide

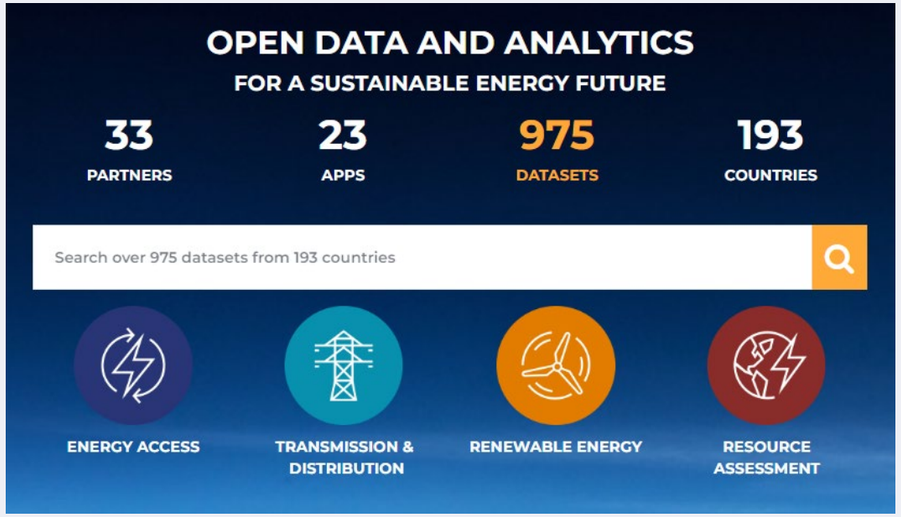
Policy Support for electricity access to end-users, electricity suppliers, and public institutions in 2020-2021

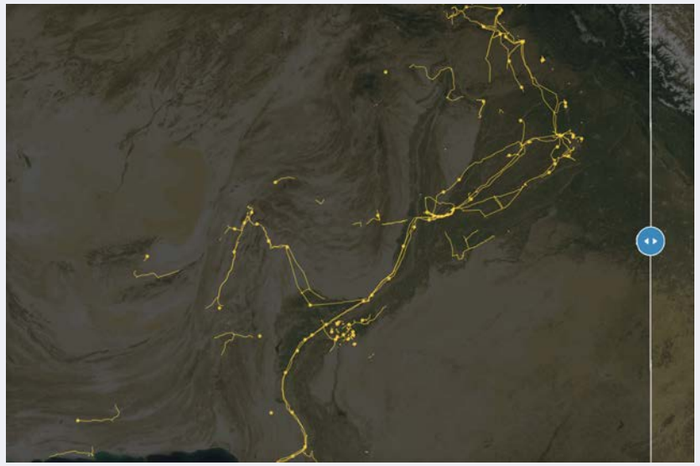


ENERGY DATA HUB

2023

Expanding data coverage





ENERGY DATA HUB

2023

A growing set of data & technology partners

Bloomberg NEW ENERGY FINANCE

GIZ DATA LAB

BERKELEY LAB

DEVELOPMENT DATA PARTNERSHIP

IRENA International Renewable Energy Agency

iea

KARTOZA OPEN SOURCE GEOSPATIAL SOLUTIONS

GitHub

WORLD RESOURCES INSTITUTE

UNEP International Resource Panel

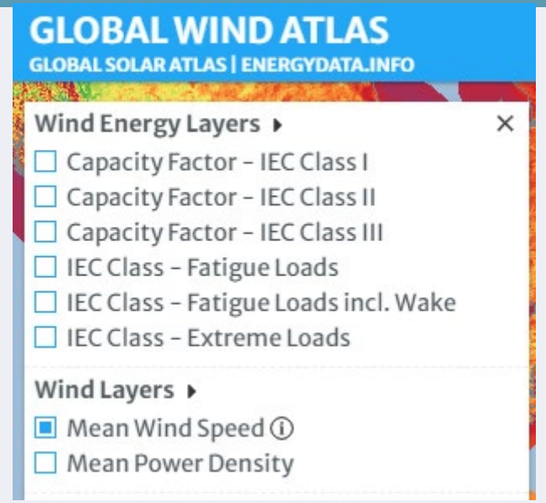
esa

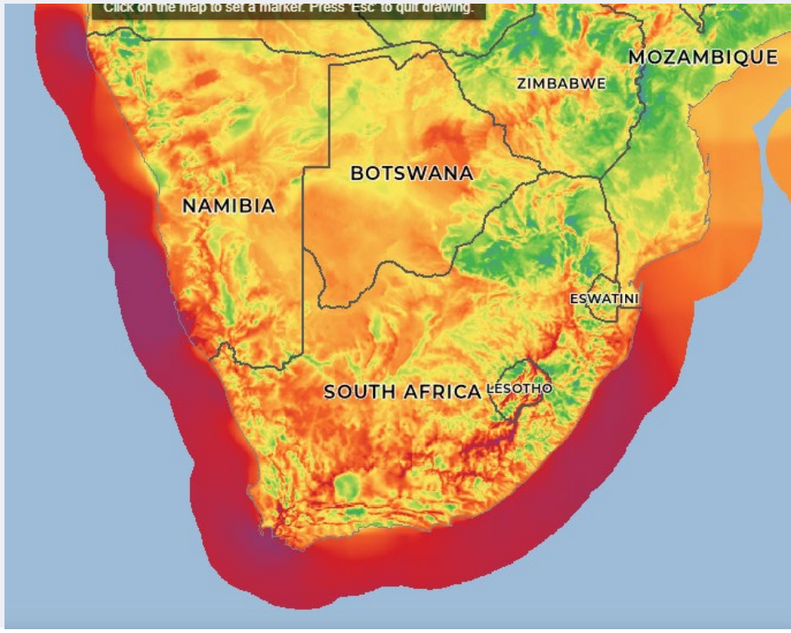
Meta

ENERGY DATA HUB

2023

Global Wind Atlas 3.2 & 3.3





New features

- Full translation of the site into Arabic, Chinese, French, Russian and Spanish.
- Possibility to view combine layers in a user-friendly way (e.g. view mean wind speed map with data from bathymetry map).
- Download a GIS file of a custom area.
- Introduction of three new wind turbine map layers.
- It is now possible to view the result of the Energy Yield Calculator on the map.
- Performance improvement of the site.

Strong demand from country operations

- Informed Offshore Wind Roadmaps in Philippines (P175004), Ethiopia (P151309), East Africa Region (P174175) and Azerbaijan (P175716).
- Informed technical analysis of Liberia Electricity Sector Strengthening and Access Project (P173416), Sustainable Energy Industry Sector Development Project: Pacific Islands and PNG (P152653), Assessment of the Impact of Renewable Energy on the Operations in the Southern African Power Pool, National Renewable Energy Strategy and Roadmap for Tanzania.

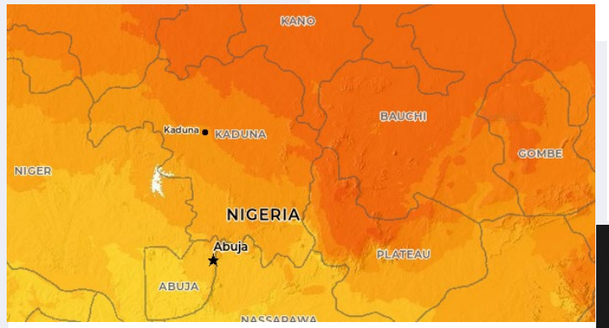
ENERGY DATA HUB

2023

Global Solar Atlas 2.7 & 2.8

New updates include

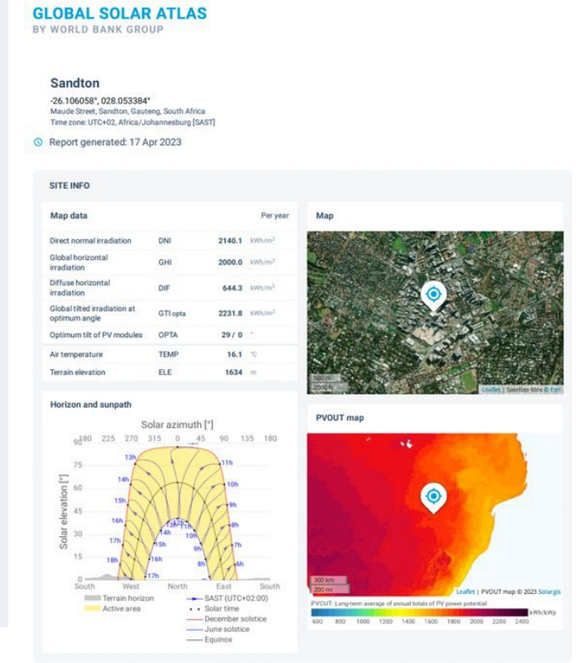
- Updated solar radiation and meteorological database.
- Interactive maps PV energy calculator
- Solar data area analysis for regions and custom areas
- Global GIS data layer download
- Database of 100 solar measurements on EnergyData.info

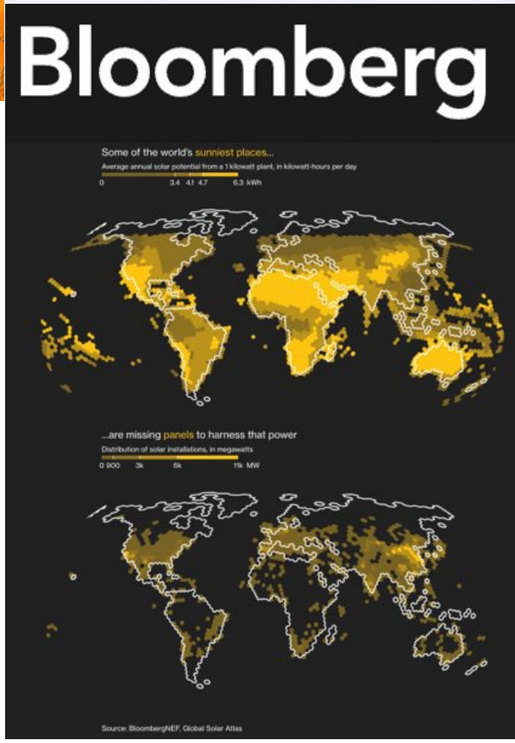


SDG 07: AFFORDABLE AND CLEAN ENERGY

Africa is leading the way in solar power potential

WORLD ECONOMIC FORUM





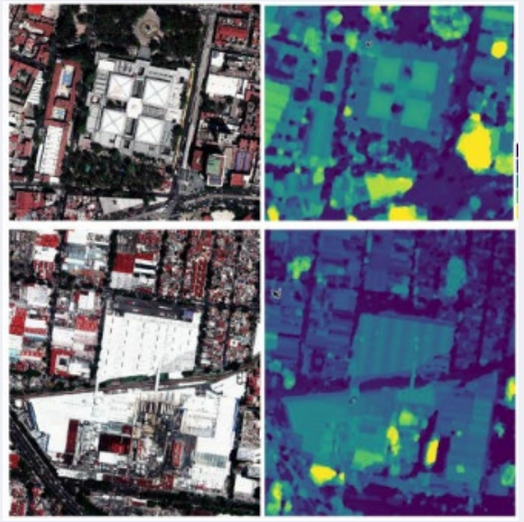
ENERGY DATA HUB

2023

Global Rooftop Solar Tool

- Rooftop estimation tool piloted for 15 cities
- Metrics include estimated yearly potential power generation, and installable capacity across various building types

- Scaling with Innovative Solar



ENERGY INNOVATION

2023

AI FOR ANALYSIS OF CLIMATE RISK TO ENERGY ASSETS

- Data on energy assets (transmission grids, substations power plants) combined with climate risk data (natural hazards, temperature) can inform climate resilience planning including CCDRs
- Decision makers e.g. regulators, utilities and ministries lack information on energy assets and capacity to analyze the impact of climate risk
- Country-level high-level analysis does not provide the required level of detail needed for informing investment decisions

ENERGY DATA INNOVATION

2023

FY24 Country pipeline

- Bangladesh: Use of artificial intelligence for climate risk resilience planning
- Georgia: Use of artificial intelligence for hydropower forecasting
- Maldives: Energy data sharing for utility data sharing
- Moldova: Cybersecurity technical assistance and capacity building for the TSO
- Nigeria: Providing a Responsible Data Sharing Framework for Mini Grids
- Tajikistan: Cybersecurity capacity building of DSOs and TSOs
- Uzbekistan: Cybersecurity technical assistance and capacity building for the TSO
- Vietnam: Cybersecurity assessment and technical assistance