

UNECE Workshop on UNFC & Renewables

The Global Atlas for Renewable Energy

Washington, Mar. 24th- 25th 2014.



Mission: Promote the widespread and sustainable use of renewable energy worldwide

How: Serve as centre of excellence, advisory resource, and network hub for renewable energy

Scope: All renewable energy sources



Bioenergy



Geothermal
Energy



Hydropower



Ocean
Energy



Solar
Energy



Wind
Energy

Membership: Since 2011, currently 129 Member countries

Location: Headquarter in Abu Dhabi, UAE and Innovation and Technology Centre (IITC) in Bonn, Germany

Bridge the gap between nations having access to the necessary funding, technologies, and expertise to evaluate their national potentials, and those deprived of those elements.



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- *Access to data and methods*
- *Building capacities on strategic planning*
- *Mobilizing technical assistance*





Albania, Australia, Austria, Belgium, Colombia, Denmark, Egypt, Ethiopia, Fiji island, France, Gambia, Germany, Greece, Grenada, Honduras, India, Iraq, Iran, Israel, Italy, Kazakhstan, Kenya, Kiribati, Kuwait, Lithuania, Luxembourg, Maldives, Mali, Mauritania, Mauritius, Mexico, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Peru, Philippines, Poland, Portugal, Qatar, Saudi Arabia, Senegal, Seychelles, South Africa, Spain, Sudan, Swaziland, Switzerland, Tonga, Tunisia, Turkey, UAE, Uganda, UK, United Republic of Tanzania, Uruguay, USA, Vanuatu, Yemen, Zimbabwe.

What share of my energy mix can be supplied by renewable energy?

What is the most cost-effective combination of technologies?

Where are the resources located?

What amount of investments does it represent? How many jobs ?

Is there a large enough market for sustaining a supply chain?

Global Atlas

Resource mapping

Technical and economic potentials

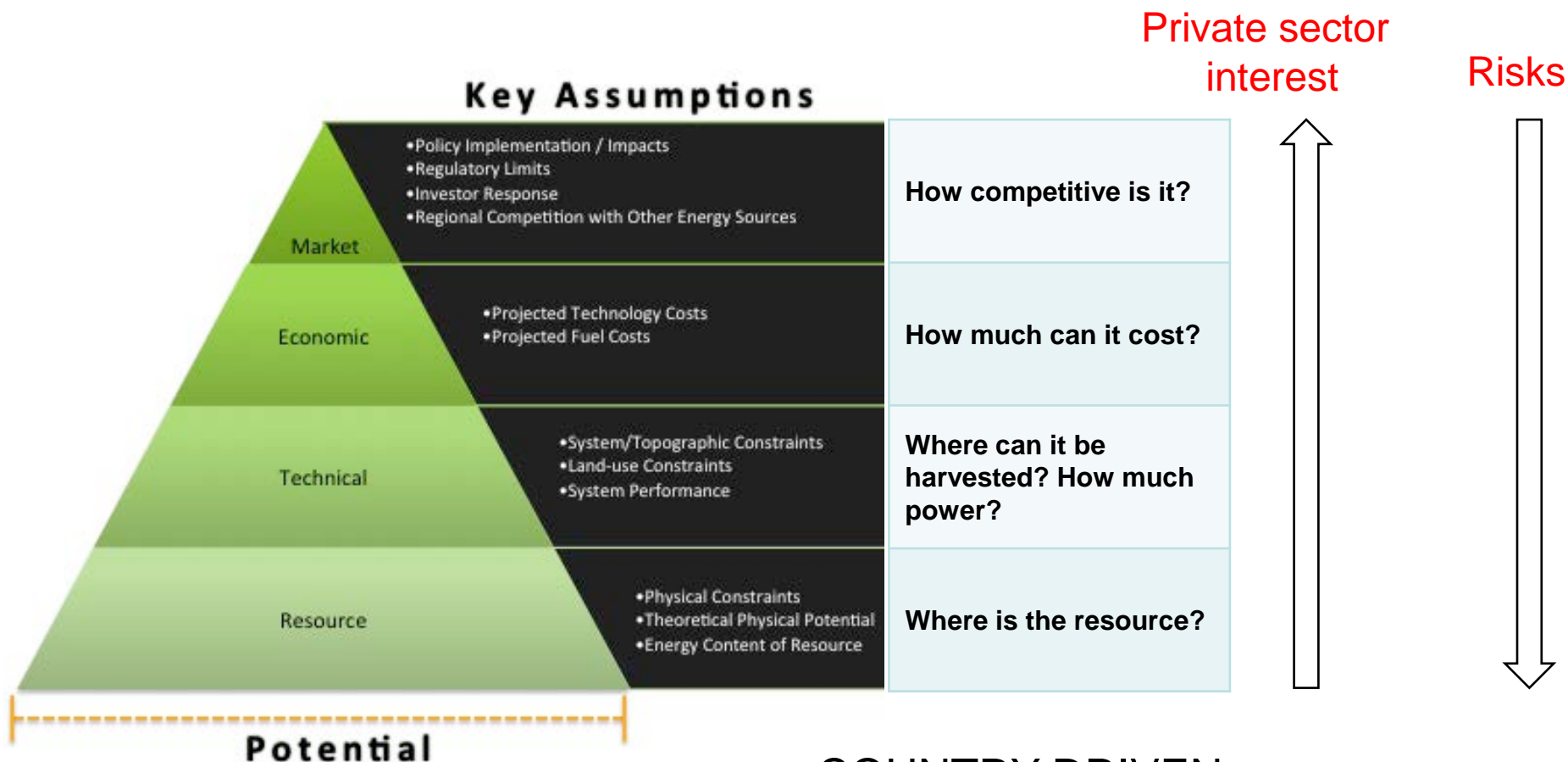
Technology data, ancillary datasets (grid, land, costs..)

Scenarios and strategies

RE-market

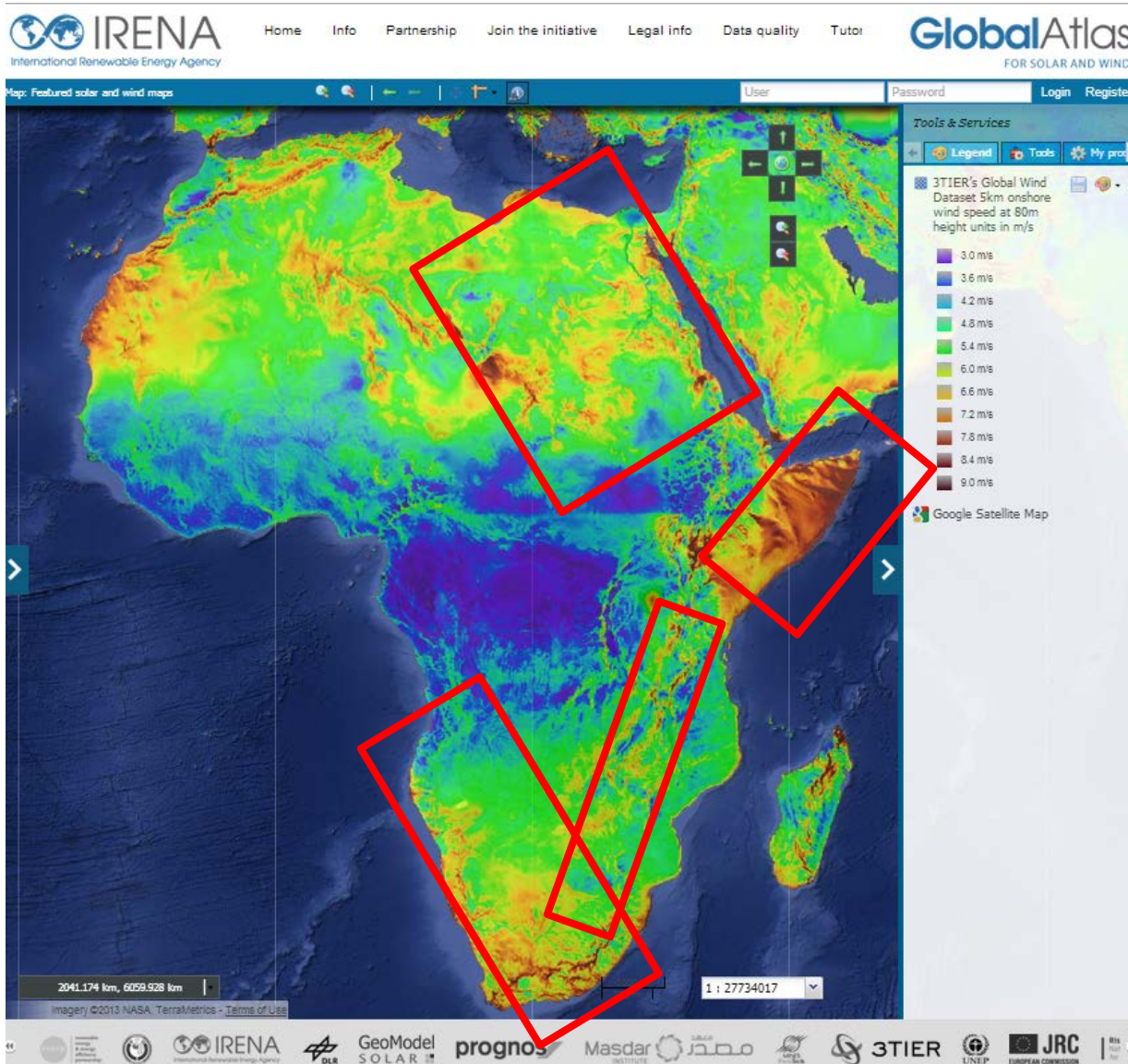


Enabling conditions: policy and financial instruments, human capacities, public awareness..



Conceptual diagram of Renewable Energy Potentials (from NREL, 2012)

- COUNTRY-DRIVEN
- LONG TERM PLANNING PROCESS
- COMMITMENT REQUIRED



Winds in Africa. Mesoscale 5km basemap from 3TIER. Average annual wind speeds at 80 m high.

The values can not be used without validation, but the wind patterns appear clearly, and are consistent with other mesoscale sources. The boxes attempt to highlight areas with possibly strong annual average wind speeds.

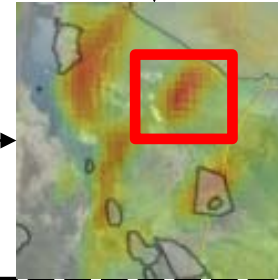
This rough approximation does not exclude the possibility of good wind sites outside the red squares, due to local effects not captured by the mesoscale model.

PRIVATE
SECTOR
EFFORT

Local
measurements

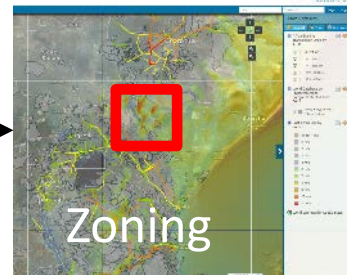
Data
bankability

Investor's
interest



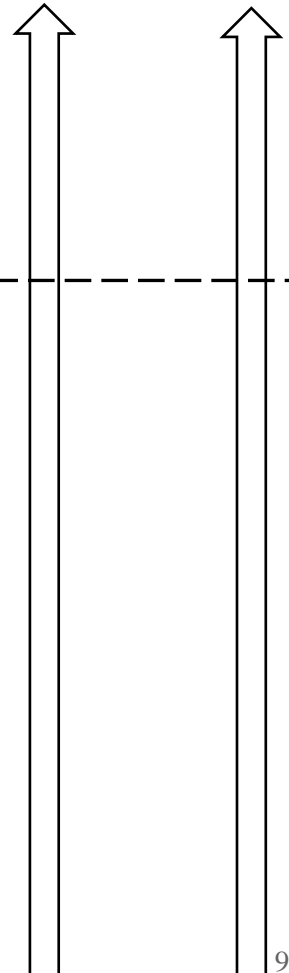
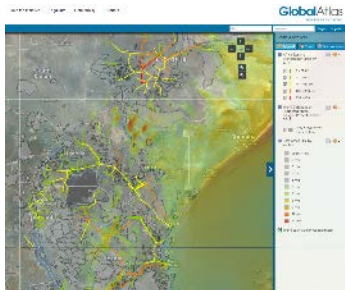
GlobalAtlas

Existing local
measurements

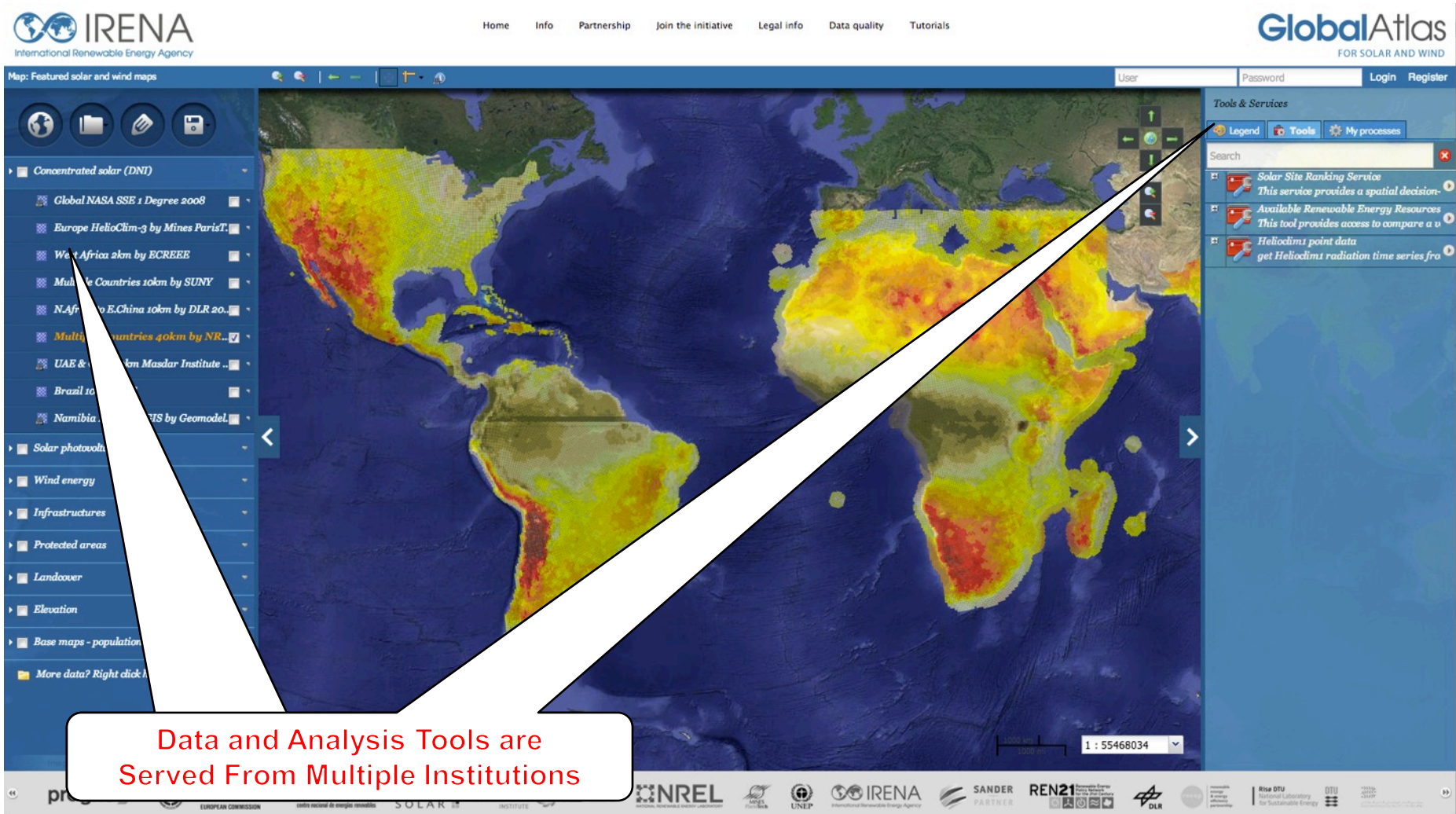


Data quality

PUBLIC
SECTOR
EFFORT



Global Atlas is an Integrated Global Spatial Data Infrastructure



The screenshot displays the GlobalAtlas web application interface. At the top, the IRENA logo and navigation menu (Home, Info, Partnership, Join the initiative, Legal info, Data quality, Tutorials) are visible on the left, and the GlobalAtlas logo with the tagline 'FOR SOLAR AND WIND' is on the right. The main area features a world map with a color-coded overlay representing solar resource data. A left sidebar contains a list of data layers, including 'Concentrated solar (DNI)' with sub-items like 'Global NASA SSE 1 Degree 2008', 'Europe Helioclim-3 by Mines ParisT...', and 'Wind energy'. A right sidebar titled 'Tools & Services' includes a search bar and a list of services such as 'Solar Site Ranking Service', 'Available Renewable Energy Resources', and 'Helioclim1 point data'. A white callout box with a red border points to the map area and contains the text: 'Data and Analysis Tools are Served From Multiple Institutions'. The bottom of the page features a footer with logos of partner organizations including NREL, UNEP, IRENA, SANDER, REN21, and DLR.

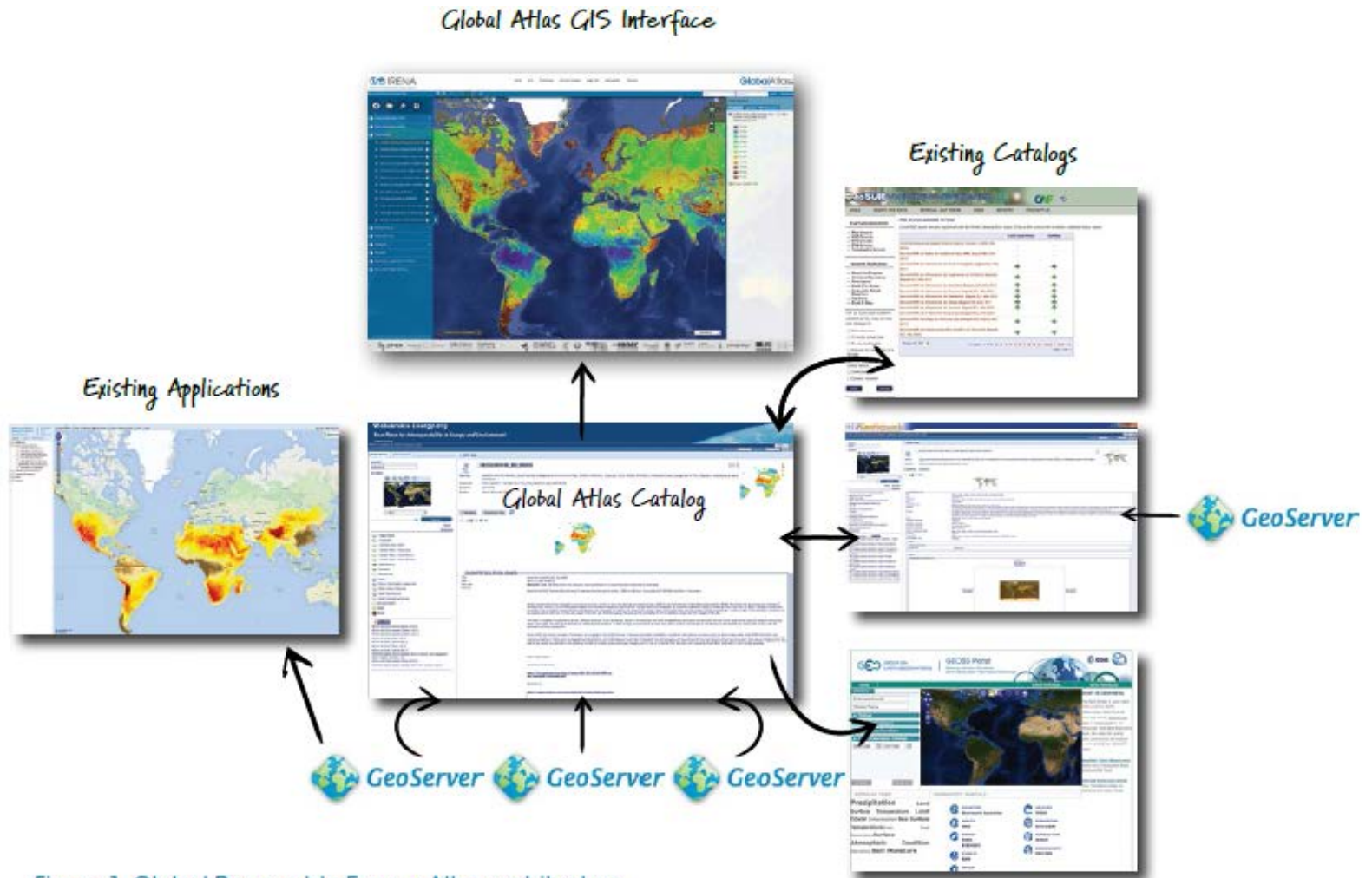
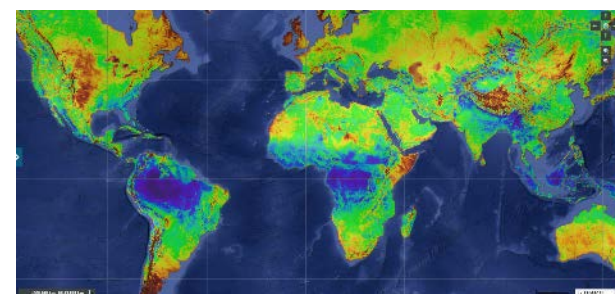
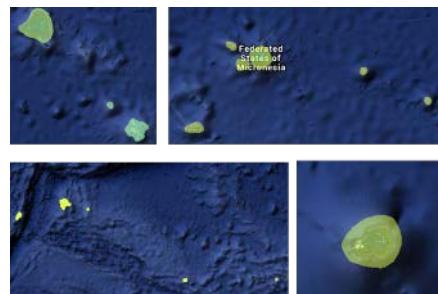
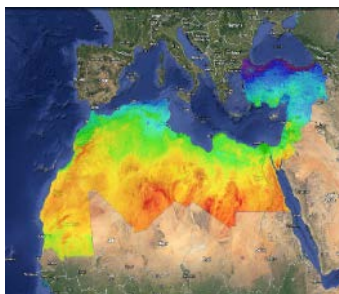
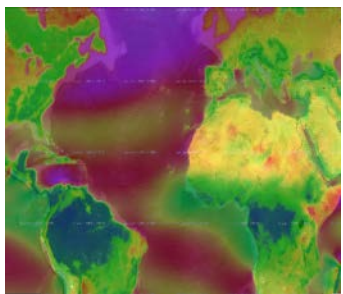
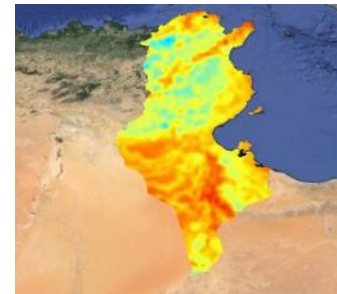
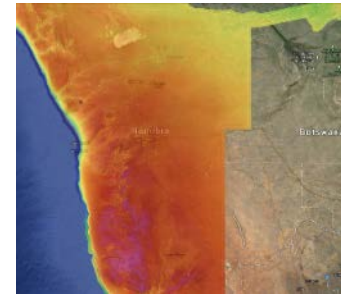
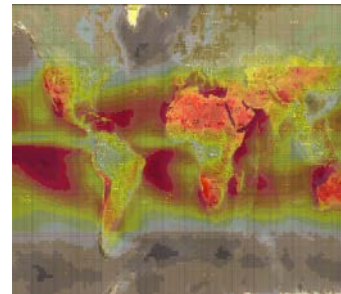
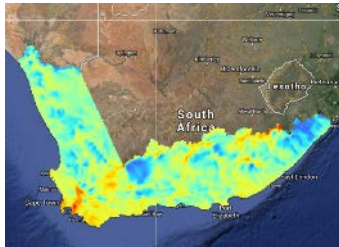
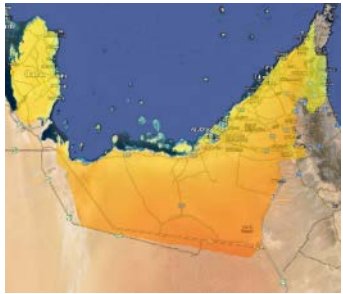
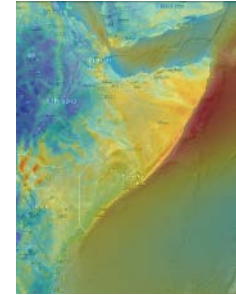
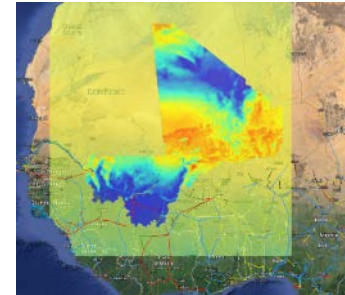
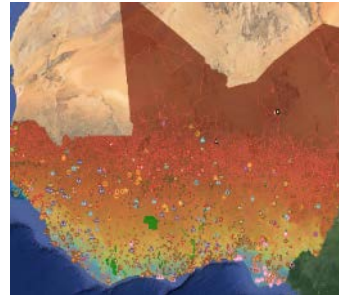
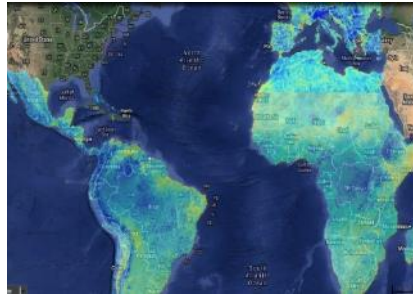



Figure 1. Global Renewable Energy Atlas architecture


Some datasets of the Global Atlas



Map gallery – information accessed easily



IRENA
International Renewable Energy Agency



GlobalAtlas
FOR RENEWABLE ENERGY

Home

Map Gallery

Catalog

Learning Center

Publication

Partnership

FAQs

Tutorials

News

The Map Gallery


The map gallery gives access to a number of map examples. The maps are thematic (ready made), covering specific regions, resources or datasets from specific projects...

➔ Read More

Data Quality

The Global Renewable Energy Atlas is providing access to a vast amount of solar...

➔ Read More



All

➔ Read More

Wind

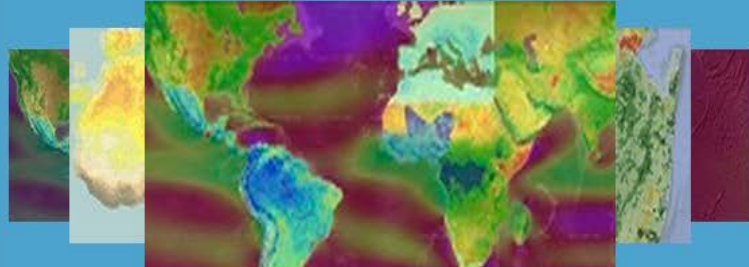
Solar

Geothermal

Bioenergy

Marine

Hydro




Wind resource maps of the Global Atlas

This map displays a collection of wind datasets registered by the Global Atlas catalogue. The datasets are grouped by geographic entity. By default the Global MERRA dataset is activated. Open the respective folders to access the individual wind maps. Users can access additional datasets by using th

➔ Launch Map

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Data quality



DTU Wind; NREL; Masdar Institute; DLR; Vortex; MINES ParisTech; Suntrace; CENER; ISES; 3Tier; Sander & Partners; NASA.

Based on: UNEP-SWERA, GEO, ISO data quality reference systems

Internal data quality – 14 unique indicators

External data quality – 4 categories

- EDUCATION
- POLICY
- POTENTIAL
- +BUSINESS

Demonstration on ECOWAS within GEOSS AIP-6 Presented at the GEO-X Ministerial Summit Geneva, Jan. 14-17th, 2014



**ECOWAS CENTRE FOR RENEWABLE ENERGY
AND ENERGY EFFICIENCY**



CENER

NATIONAL RENEWABLE
ENERGY CENTRE



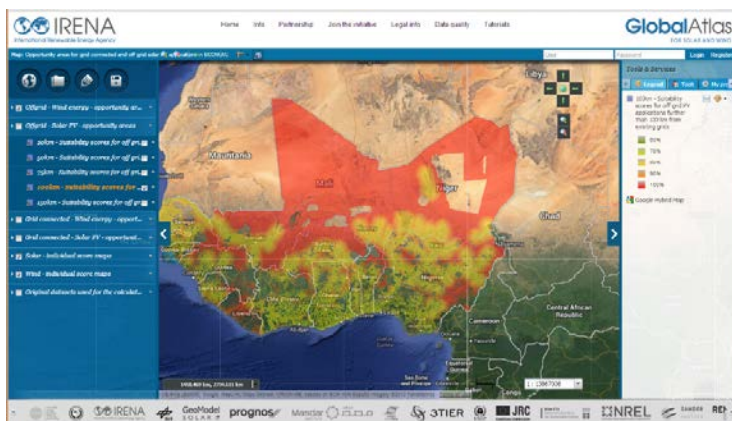
DLR

**Deutsches Zentrum
für Luft- und Raumfahrt**
German Aerospace Center



JRC

EUROPEAN COMMISSION



Upcoming developments (solar and wind)

- Implementation of the data quality information framework
- Major upcoming developments:
 - Zoning capability
 - Socio-economic data linkage - IEA-IRENA policy database; Ren21; World Bank
 - ‘Universal’ data reader – wind roses, monthly distributions
 - Proposal for analysis tools – simulators including data uncertainty
 - Language

 - Next - explore the ability to share measurement data (AIP – 7). – with ESMAP
 - Capacity building
 - Opening to all renewable energies

Bioenergy track

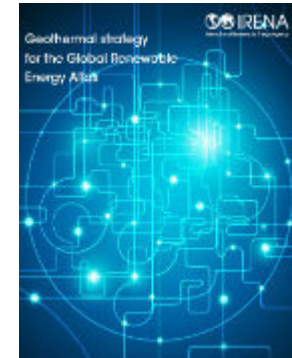
- A REPOSITORY - For each individual study, a separate map focused on the studied area, referencing each individual layer, and referencing precisely the source of information, and methodology used to create the dataset.
- The Atlas would also reference information of relevance for stakeholders interested in bioenergy. Base information such as e.g. soil maps, land cover, land use, topography, population density, water resources, others. The information would be accessible through the data catalog.
- SUSTAINABILITY? 1/ inform the users of the Global Atlas GIS of the existence of the GBEP indicators and provide the opportunity to access more detailed information currently accessible only from the GBEP website 2/ guidance document on mapping bioenergy resource [in partnership with GBEP]

Geothermal track

2 consultation workshops – co-organised with IGA, EGEC, GRC, CNR and Enel Greenpower

Strategy:

- Integrating existing and general datasets to inform policy makers – ex. Canada, Australia, Alberta, Poland, Spain, Ireland...
- Building synergies with existing data infrastructures – ex. US NGDS, EuroGeoSurvey, OneGeology
- Sharing knowledge by referencing more detailed datasets – ex. Lithology, fractures
- Promoting education by creating a section of the Global Renewable Energy Atlas website.



Training module – solar and wind

- Typical maps would need to be developed, and stored in the Global Atlas for practical illustrations.
- Take into account climatic conditions.
- To maximize its impact, the content of the training module should be disseminated, in order for universities or energy agencies to adapt the materials to their own needs and use for internal training purposes.
- Several languages should be available.

Collaborations of the Global Atlas

- **Solar, Wind** - Multilateral solar and wind working group of the Clean Energy Ministerial
- **Bioenergy** - Global Bioenergy Partnership
- **Geothermal** - International Geothermal Association, Geothermal Research Council, US National Geothermal Data System, OneGeology
- **Data standards** - Global Earth Observation, Open Geospatial Consortium
- **Datasets** – private sector, institutes, multilateral initiatives, government agencies



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