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Introduction to the workshop

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Workshop on Energy Planning
10 December 2012
Abidjan, Cote D'Ivoir

Topic of the workshop

- **Energy planning approaches**
  - What is the role of energy planning in energy sector development
  - IRENA's modeling approach (mid- to long-term investment planning)
  - Hands-on session
- **Gap analysis**
  - How to make the methodology more relevant
  - How to establish a relevant process
- **Roles of IRENA and partners**
  - Training support?/Data support?/Analysis support?/Dialogue support?

Mandate

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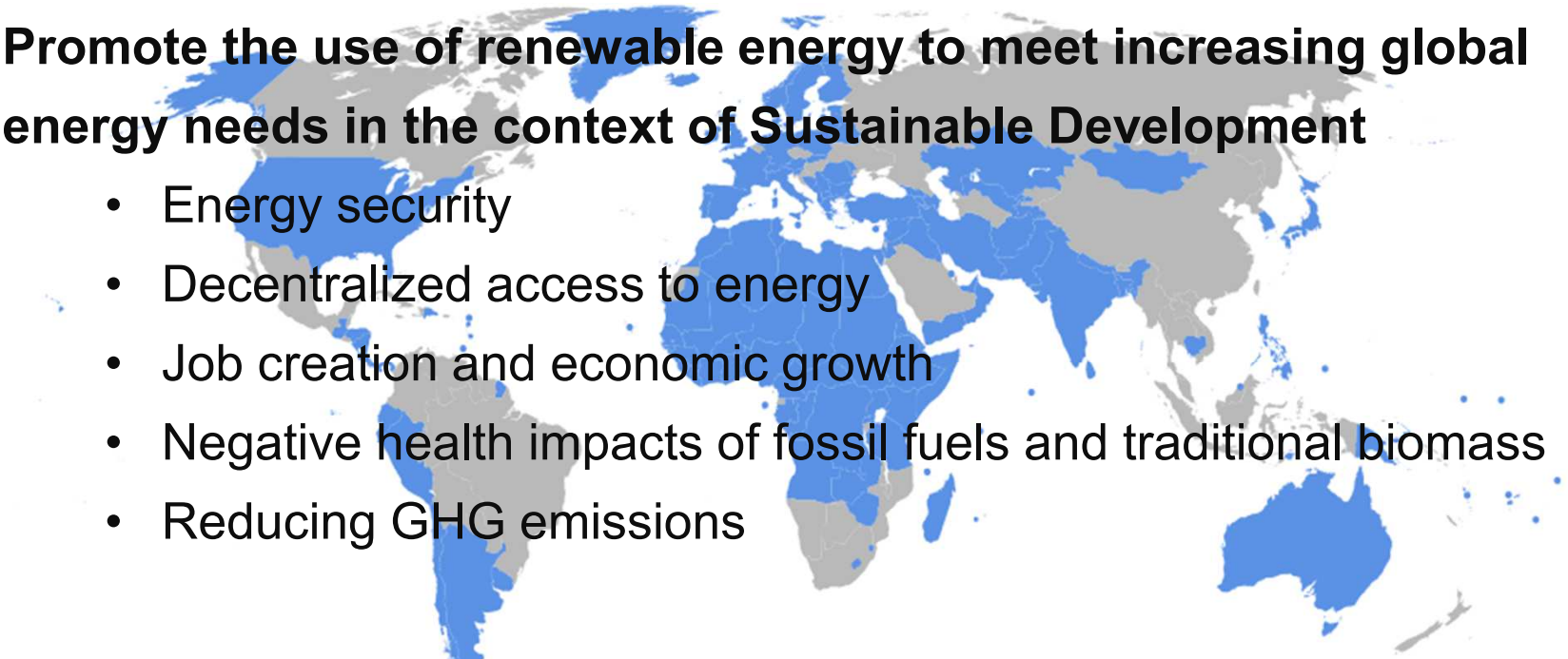

Promote the use of renewable energy to meet increasing global energy needs in the context of Sustainable Development

- Energy security
- Decentralized access to energy
- Job creation and economic growth
- Negative health impacts of fossil fuels and traditional biomass
- Reducing GHG emissions

Renewable energy sources supported:

Modern biomass, Geothermal, Hydro, Ocean, Solar, Wind

IRENA Activities

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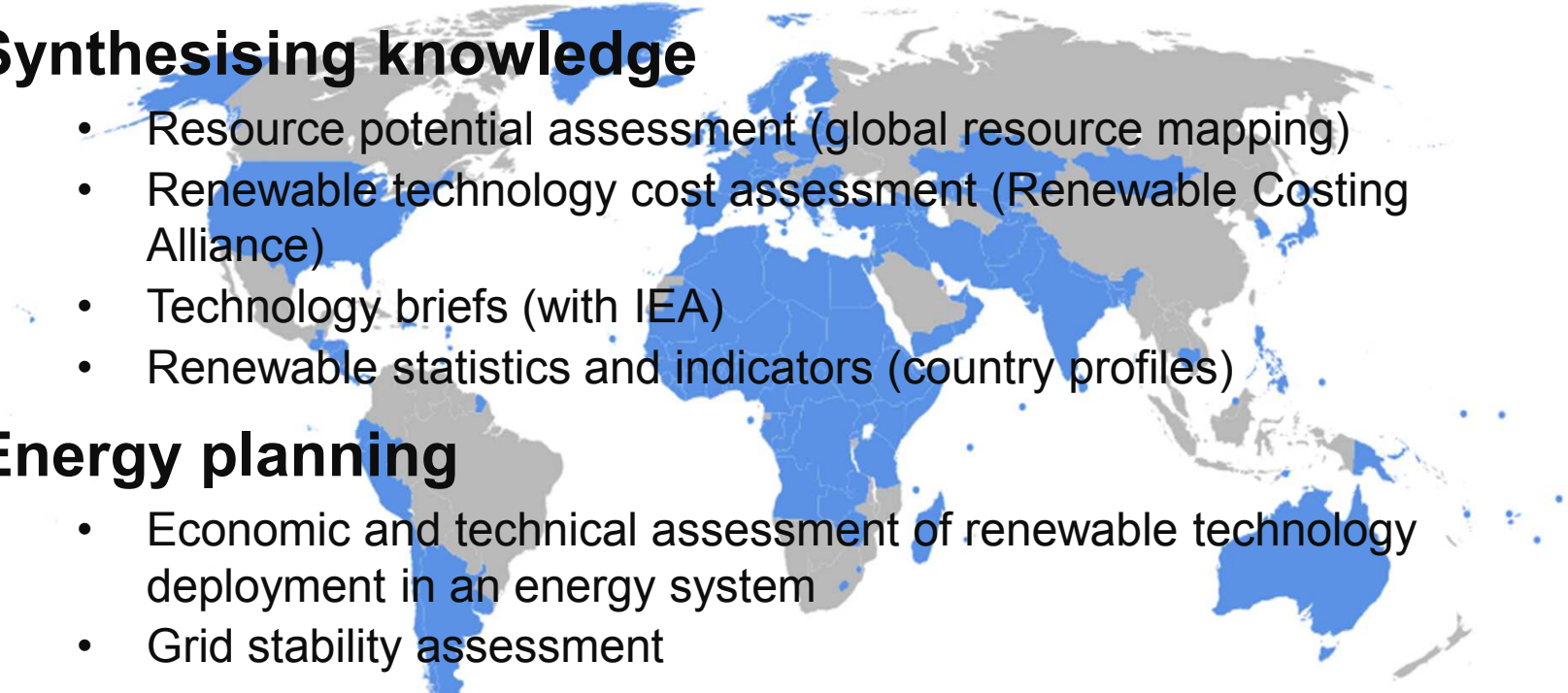

Synthesising knowledge

- Resource potential assessment (global resource mapping)
- Renewable technology cost assessment (Renewable Costing Alliance)
- Technology briefs (with IEA)
- Renewable statistics and indicators (country profiles)

Energy planning

- Economic and technical assessment of renewable technology deployment in an energy system
- Grid stability assessment

Promotion of dialogue for renewable deployment

- Renewable readiness assessment (Mozambique, Senegal)
- Sectoral renewable deployment roadmap (manufacturing sector, building sector, tourism sector, grids and storage)
- UN's Sustainable Energy for All
- Business council

IRENA Activities

Technology development and transfer

- Technology standardization (with UNIDO and ISO)
- Patent database (with WIPO)
- Project development support
- Promotion of local value chain

Education and training support

- IRENA Renewable Energy Learning Partnership (IRELP)
- Capacity building agreement with ECREEE

Abu Dhabi Fund for Development

Sustainable Energy for All

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IRENA Initiatives – based on the WP

- Modern cooking appliances and fuels
- Distributed electricity solutions
- Grid infrastructure and supply efficiency
- Large scale renewable power
- Industrial and agri-cultural processes
- Transportation
- Buildings and appliances

- **Energy planning and policies**
- Business model and techn. innovation
- Finance and risk management
- Capacity building & knowledge sharing

Scenarios and Strategies Project

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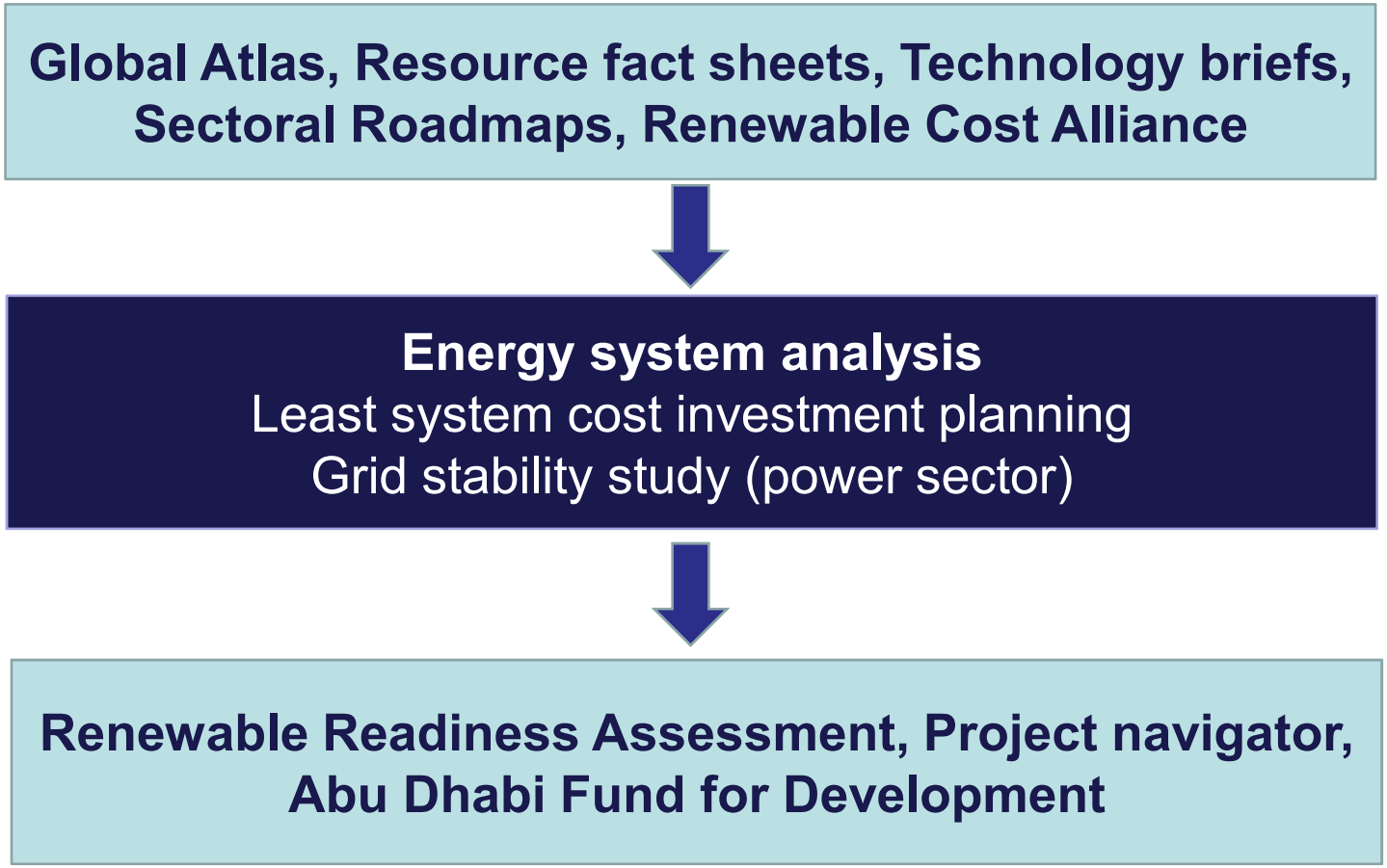
- Methodologies
  - Mid- to long-term investment strategy
  - Grid stability assessment
- Regions
  - Africa, Pacific Islands, Latin America, Caribbean, South East Asia
- Modalities of member states engagement
  - Publications, workshops, training courses, and more

IRENA activities



Scenarios and Strategies Project

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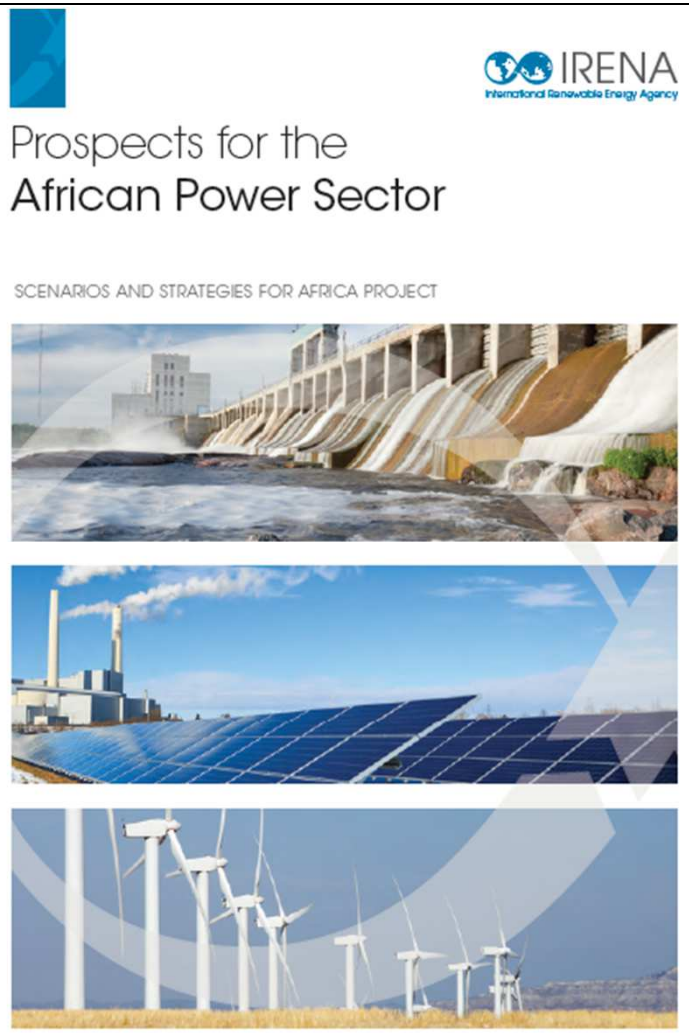

Renewable resource potential

- **Theoretical potential**: Physical resources (Global atlas)
- **Geographic potential:** Geographic and socio economic constraints (in collaboration with KTH, Sweden)
- **Technical potential:**: spacing factors and conversation efficiencies

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Scenarios and Strategies for Africa Project

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- Renewable resource potential
- Cost development
- A bottom-up technology model
  - Reference energy system
  - Technology parameters
- Economic optimization
  - Long-terms energy sector development vision
  - Prioritization of investment decision
  - Policy analysis
  - Assessment of financial needs

Opportunities offered by renewable technologies

Power generation in 2008 620 TWh 616 kWh per person		**Universal access in 2035** 1670 TWh 1100 kWh per person

- Abundant resource potential for grid-connected system
- Cost-competitive off-grid system
- Flexible mini-gird system
- Community development and job creation

Scenarios and Strategies for Africa Project

Sub-regional power pool modeling – in collaboration with the IAEA's Planning and Economic Studies Section

- 5 African regional power sector models with all countries modeled individually based on regional power pool master plans/data in public domain
- With IRENA's data/insights on renewable technology developments and resource potential assessment
- Incorporating the latest methodological development for better assessment of roles of renewables in power systems
- Providing 'robust' starting points for further analytical use by interested member states

EREP

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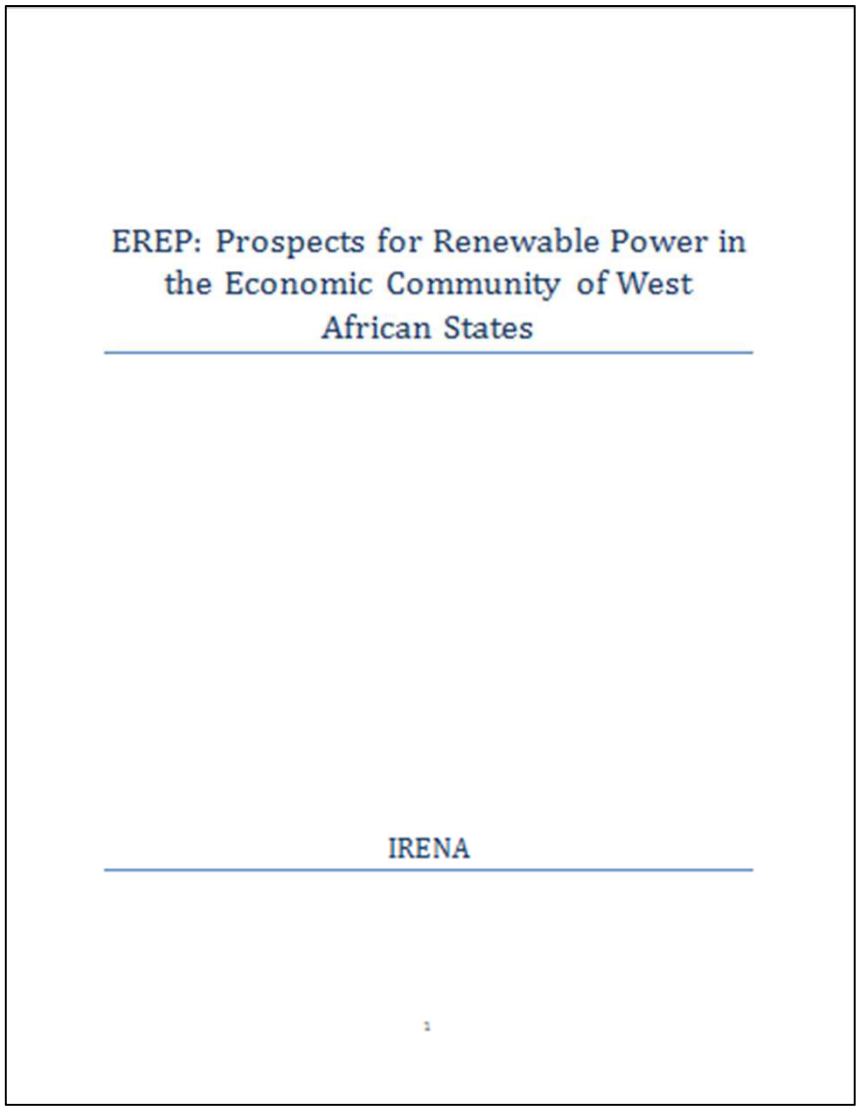
ECOWAS Renewable energy planning tool (**EREP**)

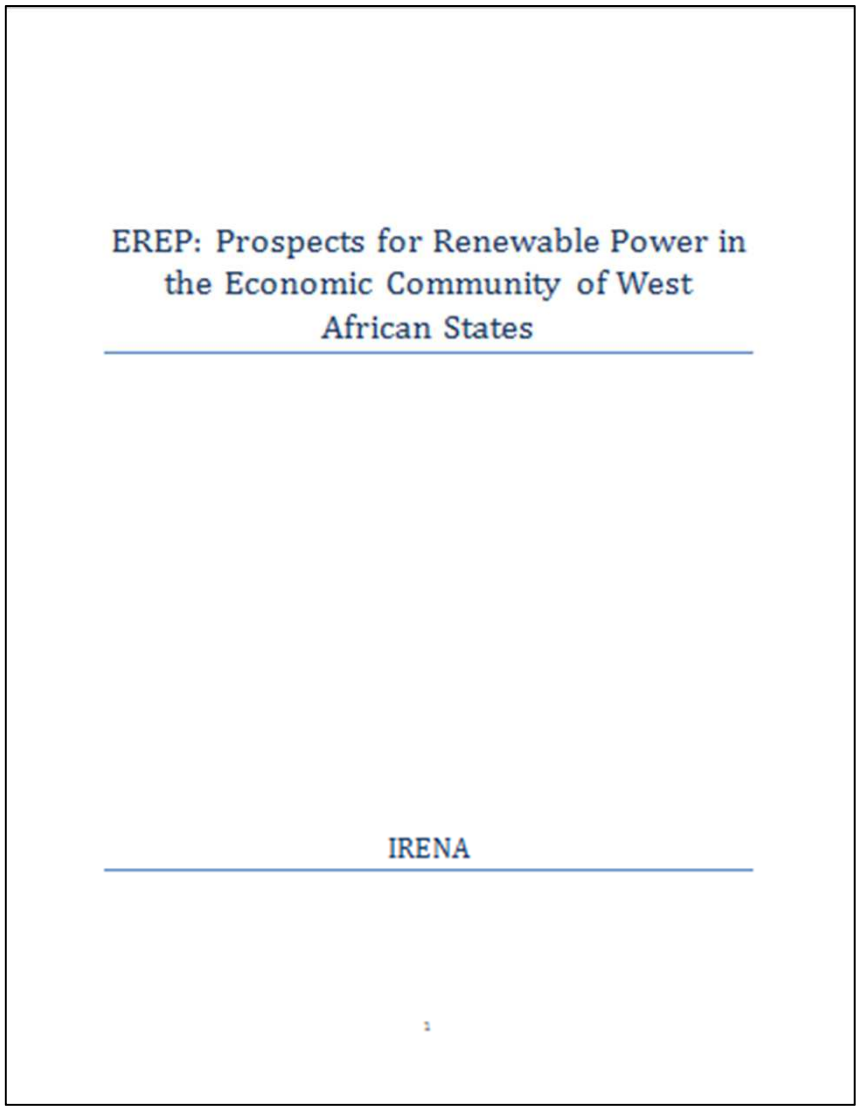
- Model set up for all the ECOWAS countries using the MESSAGE framework
- MESSAGE training course (starting from scratch): 2 years +
- Energy planning is an continuous process
  - Needs to be updated
  - Needs to be locally owned
  - Needs institutional arrangements

Report



- Presentation of four scenarios for all WAPP countries
- Explores renewable oriented power system outlook
- Investment needs
- Financial needs

Ideas for follow-up


EREP: Prospects for Renewable Power in the Economic Community of West African States

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Ideas for keeping it alive and modalities of follow up

- Further model enhancement
- Data update
- Model maintenance
- Model transfer and training
- Further analytical use by member states and partners
- Joint publication with the member states

Agenda

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Day 1

- Energy planning methodologies
- IRENA's EREP (ECOWAS Renewable energy planning tool)
  - Modeling platform (MESSAGE)
  - Model structure and input data
  - Selected results

Discussion

- Role of energy planning in energy sector development
- Validation of IRENA tool (modeling approach, model structure, data, input assumptions, results)
- Usage for policy analysis

Agenda

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Day 2

Demonstration and interactive hands on sessions

- Database structure
- Sensitivity analysis
- Developing alternative scenarios

Agenda

Day 3

- Energy planning practices

Discussion

- Modality of follow up
- Assessment of gaps
- Roles of IRENA and partners
- Areas of collaboration

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WWW.IRENA.ORG/PUBLICATIONS

Renewable Energy Technical Potentials

620 TWh generation
150 GW capacity (2010)

Geothermal
88 TWh/yr (7-15 GW)

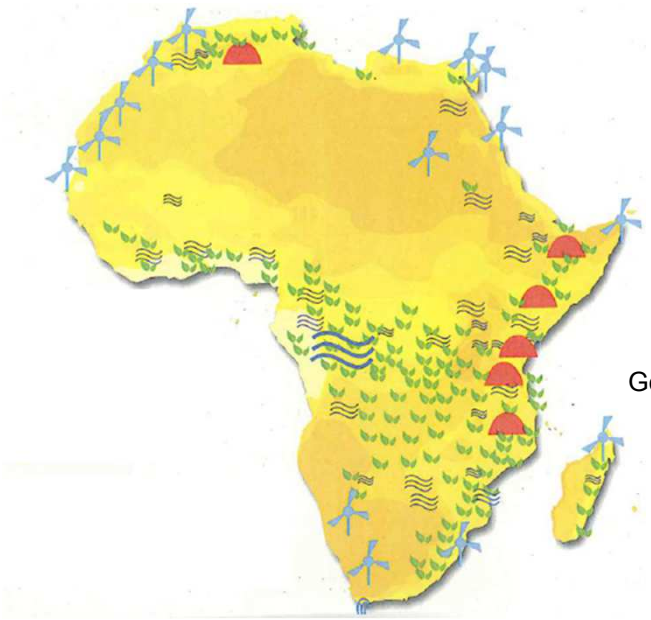
Wind*
3800 TWh/yr (1750 GW)

Concentrated Solar Power*
6600 TWh/yr (2150 GW)

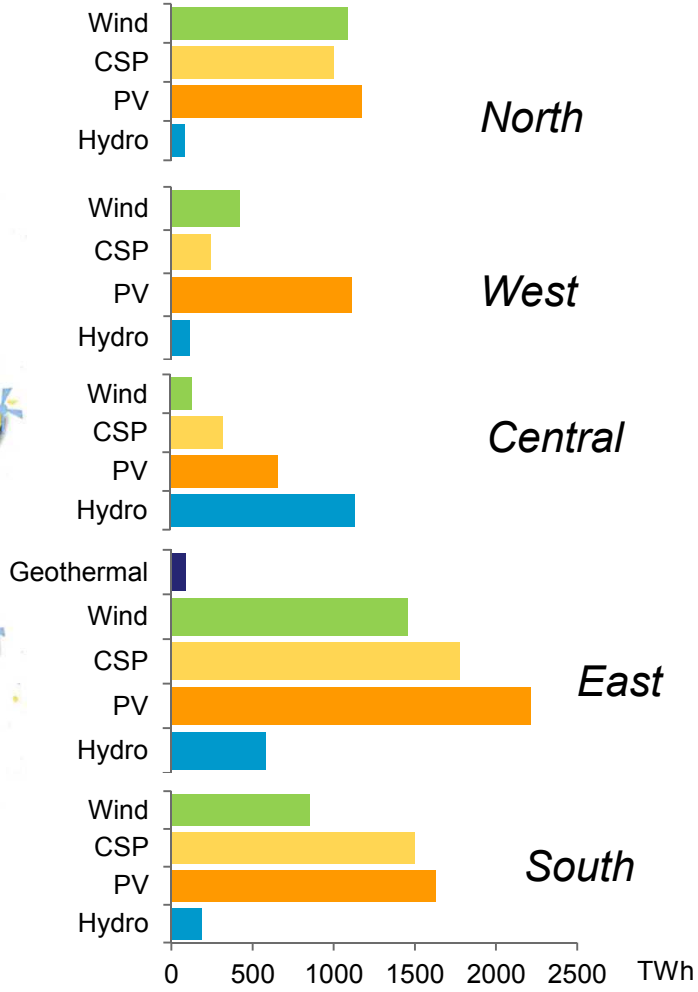
Solar Photovoltaic*
4720 TWh/yr (2700 GW)

Hydro
1850 TWh/yr (400 GW)

*land availability adjusted



Map: BMU, 2009



Levelised cost of electricity