

About IRENA and its Work Programme 2013

Presentation to 39th Meeting of the APEC Expert Group
on New and Renewable Energy Technology
Shanghai, China
December 12, 2012

International Renewable Energy Agency (IRENA)

Established: April 2011

Mission: Accelerate deployment of renewable energy

Mid-term strategy: Hub, voice and objective information source for renewable energy

Members: 158 countries engaged; 103 ratified member countries and EU

Mandate: Sustainable deployment of the six RE resources
(Biomass, Geothermal, Hydro, Ocean, Solar, Wind)

Location: Headquarters in Abu Dhabi, United Arab Emirates
Innovation and Technology Centre - IITC, Bonn, Germany

Director-General: Adnan Amin

IRENA Structure and Governance

- **Annual Assembly of Members**
 - Next meeting 13-14 January 2013 in Abu Dhabi
 - Main decision making organ
- **Council – 21 Countries**
 - Prepares Assembly decisions; last met 12-13 November 2012 in Abu Dhabi
 - Provides guidance on managerial issues
- Administration and Finance Committee and Policy and Strategy Committee
 - Prepares Council discussions
- **Secretariat – around 100 staff – Council has approved revised structure for 2013:**
 - **Knowledge Policy and Finance Centre (KPFC)**
 - **Irena Innovation and Technology Centre (IITC)**
 - **Country Support and Partnerships (CSP)**
- Private Sector Forum, regional offices under development
- Cooperation with many regional organisations, financing institutions, industry associations.

IRENA Innovation and Technology Centre 2013

- **RE Technology Integration**
 - REMAP – exploration of pathways for the doubling of global RE share by 2030
 - Roadmaps for accelerating RE deployment in specific countries
 - Roadmaps for developing power grids and storage to integrate a higher RE share
 - Solutions: Technology briefs and perspectives, dynamic grid stability assessment
 - Scenarios and strategies – Latin America and Caribbean, Africa, Asia (starting)
- **RE Technology Costing and Markets**
 - Methodology report, RE costs for stationary applications, biomass supply curves
 - Project navigator – checklist for getting projects financed and built
- **RE Technology Innovation**
 - Standardization: platform, dissemination, testing and certification technology case
 - RD&D on conversion of biomass residues to energy in Africa & Latin America
 - Patents platform, review of the patent landscape for ocean energy

Knowledge Policy and Finance Center 2013

- **Continue Development of Global Renewable Energy Atlas (Data on RE Potential)**
 - Good quality potentials data are key for successful RE development
 - IRENA coordinates the Clean Energy Ministerial Atlas project
 - Goal is to make potentials data widely available and to facilitate their use
 - Assess data quality, identify need and gaps
 - In coalition with member countries and partner institutes
 - Currently testing beta version
 - Focus has been on wind and solar data so far
 - Effort will expand to biomass, geothermal and hydro
 - Countries are assisted to develop detailed data that can undergird investment
- **Develop Knowledge Platform (Policies and Best Practices to Accelerate RE Deployment)**
 - Draw upon best practices collected from Renewable Readiness Assessments
 - Draw upon best practices collected through Global RE Islands Network
- **Improve and Systematise Collection of Data on RE Market Deployment**

Country Support and Partnerships 2013

- **Renewable Readiness Assessments**
 - Methodology developed through RRAs in Senegal, Oman Peru, Grenada, Kiribati
 - Focus on specific actions to accelerate RE with buy-in from all major stakeholders
 - Work programme anticipates ten to twelve RRAs per year in volunteer countries
- **Regional Projects to Encourage RE Grid Integration**
 - East Africa Clean Energy Corridor
 - Latin America Andean Geothermal Power
 - Southeast Asia (ASEAN/ERIA Collaboration)
- **Establishment of New Technology Cooperation Networks**
 - Renewable Readiness Assessment Practitioners Network (RRAPN)
 - IRENA Network of Centers of Excellence (INCentEx)
 - Global Renewable Energy Islands Network (GREIN)

IRENA Network of Centers of Excellence (INCentEx)

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Renewable Energy Centers of Excellence Exist for All Renewable Energy Technologies

- Electric Power for Large Interconnected Grids
 - Wind, Solar, Hydro, Geothermal, Biomass, Marine
- Electric Power for Small and Island Grids
 - Wind, Solar, Hydro, Geothermal, Biomass, Marine
- Motive Power for Transport
 - Biofuels for cars, light trucks and heavy trucks
- Thermal Power for Buildings
 - Solar Heating and Cooling, Solar Hot Water
 - For residential, commercial, industrial buildings

RE Centers of Excellence Exist in All Regions

- Africa
- Asia and Oceania (APEC and ASEAN)
- Latin America
- Middle East and North Africa (MENA)
- South and Central Asia (India and “Stans”)
- Islands (Caribbean, Pacific, and others)
- OECD Europe
- OECD North America

Identifying Centers of Excellence for Various Regions and Countries

- **Coordinating Centers of Excellence** with institutional and intellectual capacity to act as **regional hubs** for information in one or more renewable energy end-use sectors (large power grids, small power grids, transport, buildings).
- **Cooperating Centers of Excellence** in each country would contribute as **regional spokes** for technology information.
- We will contact potential Centers of Excellence to discuss their capabilities and the value of their participation.

INCentEx Approach to Promoting Renewables

- **INCent**-ivize **Ex**cellence in deployment of RE technologies through **cooperation within and across regions**.
- Identify Centers of Excellence in two or more regions that can **join together to advance a common goal**, such as:
 - Accelerate and grow the share of RE on a grid
 - Create a business plan for integrated development of a cost-effective mix of RE technologies on a grid
 - Guide development of RE supply chains in a region

Potential Areas for INCentEx Power Grid Focus

- Identify and implement specific steps for development of an East Africa Clean Energy Corridor (Centers in OECD and Africa).
- Identify and carry out specific steps for grid integration of a greater RE generating share in Southeast Asia (Centers in North and South Asia).
- Identify and carry out specific steps for development of geothermal energy in the Andean region (Centers in Latin America)
- Develop training and education programs to build the skills to plan, operate and maintain an expanded power grid (any region).

IRENA
Renewable Readiness Assessment
Practitioners Network
(RRAPN)

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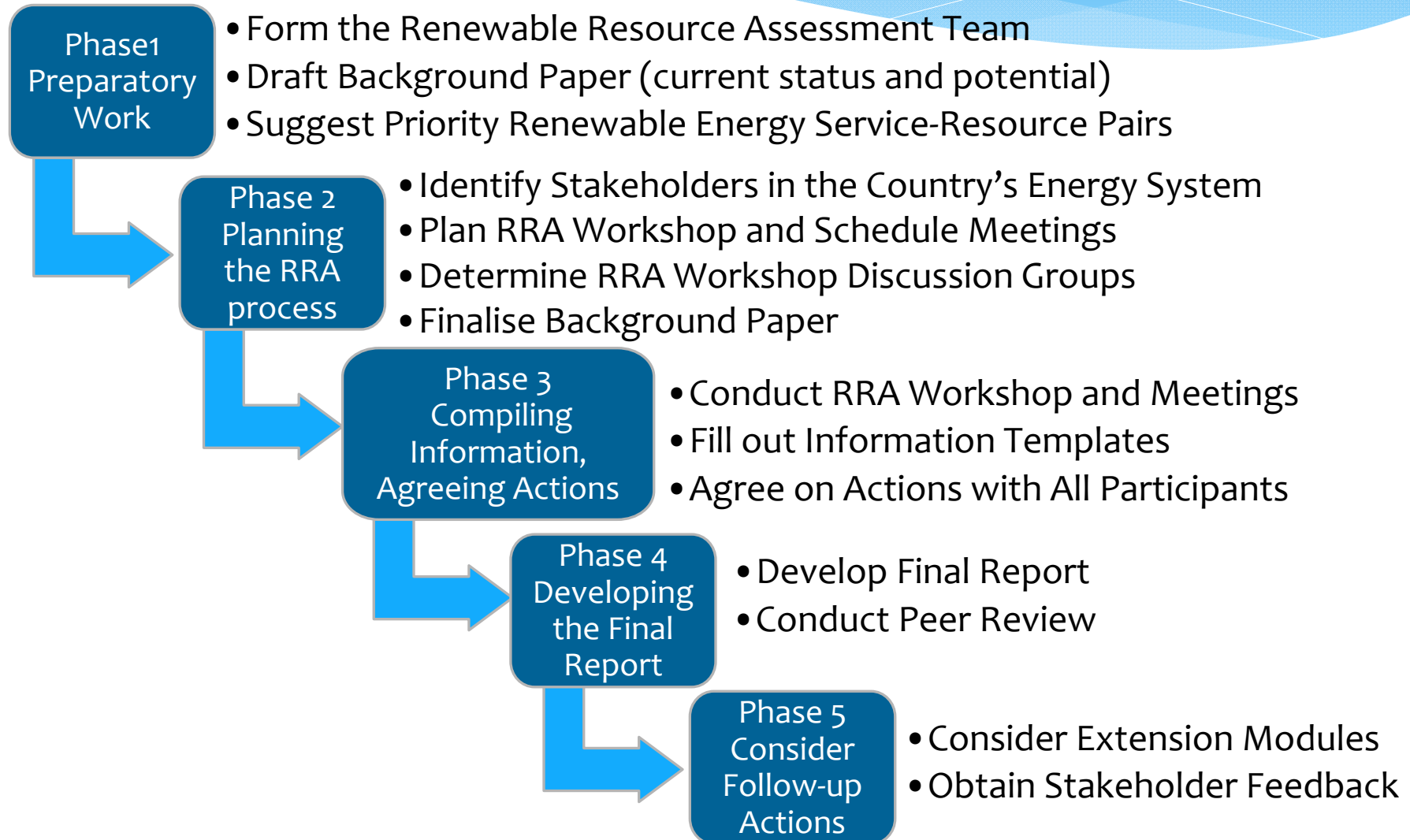
Renewable Readiness Assessments

- * IRENA conducts Renewable Readiness Assessments (RRAs) of interested countries to accelerate the deployment of cost-effective renewable energy technology through prioritized **action plans agreed to by all responsible stakeholders** in the country.

RRA Approach

- * Identify key areas for RE market deployment.
 - * Services that could be provided by RE (on-grid electricity, off-grid electricity, motor power for transport, heating and cooling for buildings)
 - * Resources that could provide these services
 - * Priority resource-service pairs for deployment
- * Develop action plans to grow these priorities, with buy-in from all relevant stakeholders.
- * Add “extension modules” for follow-up action.

Overview of the RRA Process



Possible Service-Resource Pairs

Service	Resource
On-Grid Electricity	Hydro, Solar, Biomass, Wind, Geothermal
Off-Grid Electricity	Hydro, Solar, Wind, Biomass, Geothermal
Heating and Cooling	Solar, Biomass, Geothermal
Motive Power	Hydro, Wind, Biomass, Geothermal, Solar
Transportation	Biofuels

Examples of Extension Modules

- * Supply Chain (focus on opportunities for countries to produce part of the value added domestically for priority RE technologies)
- * Demand Side Management (focus on right-sizing demand to make RE most economical)
- * Financing (focus on developing business case and locating financing for RE deployment)
- * Capacity Building (for RE system planning)
- * Sub-National Deployment (provinces, cities)

Possible RRA Team Members

- * IRENA Secretariat
 - * Country Support and Partnership Division (lead)
 - * Knowledge, Policy and Finance Center
 - * IRENA Innovation and Technology Centre
- * Additional Experts
 - * Country government contact point
 - * Hired consultant with regional experience
 - * **Volunteers from RRA Practitioners Network**

RRA Practitioners Network

- * Experts in a variety of renewable technologies:
 - * Resource based (wind, solar, hydro, geothermal)
 - * System based (smart grids, storage, integration)
- * Experts from a variety of regions:
 - * OECD (IEA Renewable Energy Working Party)
 - * Asia Pacific (APEC Expert Group on New and Renewable Energy Technology - EGNRET)
 - * Africa (ECOWAS Regional Centre for Renewable Energy and Energy Efficiency – ECREEE)
 - * Latin America (Organización Latinoamericana de Energía - OLADE)

RRAPN Modalities

- * Network members volunteer their time to participate in RR Assessment Teams.
- * IRENA may be able to support travel and per diem expenses for Assessment Team visits.
- * Each network member should be prepared to participate in at least one RRA each year.
- * **Nominations of suitable experts and organizations would be greatly appreciated.**

RRAPN Advice on Analyses

- * REMAP analysis of pathways to double the global renewable energy share by 2030
- * Roadmaps for accelerating RE in specific countries
- * Roadmaps for developing power grids and storage to integrate a higher share of renewable power
- * Project navigator for getting projects financed, built
- * Platform for standards, testing and certification

RRAPN Advice on Best Practices

- * Contribute examples of best practice for accelerating introduction of RE in their home countries/economies to be included in the IRENA Knowledge Platform.
- * Comment on assessments of best practice ensuing from examples provided to the Knowledge Platform.
- * **Best practices are an APEC and EGNRET strength, so there is a lot of wisdom to add to the global mix.**

Appendix: RRA of Senegal

Senegal Recommendation 1: Elaborate a process for comprehensive mapping of RE resources in key areas

- * Engage with existing initiatives for data collection.
- * Identify precise requirements for resource mapping, based on priority areas for RE.
- * Establish a plan for collection of data.
- * Explore potential for funding ground measurement campaigns with multilateral/bilateral organizations.

Senegal Recommendation 2

Adapt rules of intervention for the regulator to small electricity producers

- * Decentralize regulatory powers according to the national process for decentralization
- * Conduct capacity building for the Rural Electrification Agency to handle off-grid tariffs.
- * Conduct capacity building at local level to respond to tariff proposals.

Senegal Recommendation 3: Finalise policies on grid integration of electricity from renewable resources

- * Assess potential site infrastructure status.
- * Conduct studies on grid capacity to uptake variable renewable sources.
- * Strengthen human resource technical capacities at the national utility, SENELEC.

Senegal Recommendation 4: Improve institutional, legal and regulatory conditions for utilising land for biofuels production

- * Incorporate land tenure rights into land availability assessments.
- * Identify potential for higher productivity through advances in technology and agriculture.
- * Assess environmental, economic and social impacts of strategy implementation.
- * Identify the extent and basis of private company participation.

Senegal Recommendation 5: Identify conditions for increased private sector involvement in RE-related manufacturing

- * Identify priority areas for development of manufacturing capacity, including training and education requirements to build the necessary skills.
- * Create a forum to support collaboration between the private and research sectors.

Senegal Recommendation 6: Identify conditions needed for operation and maintenance of RE technologies

- * Develop and fund training programmes to address capacity gaps.
- * Define and formalise legal status and framework for service providers.
- * Incentivise deployment of hybrid technologies.
- * Introduce standards for quality control testing and service requirements.

Cooperation on Renewable Energy Grid Integration in Asia

Discussion Notes for EGNRET-39

IRENA Focus on Power Grids 2013

- Parallel exercises in different regions
 - East Africa Clean Energy Corridor
 - Latin America – Cooperation with OLADE
 - Asia – Cooperation with ASEAN and ERIA
- What might APEC and EGNRET contribute?

East Africa Clean Energy Corridor

- East Africa is growing rapidly.
- RE is well positioned to fill the need.
- Stronger transmission links are required.
- Need to raise the profile with investors.
- Similar exercise valid/worthwhile for Asia?
- How link with ongoing APEC/ASEAN work?

ERIA Research on Energy Market Integration in East Asia – Focus on Renewable Energy

- ERIA – Economic Research Institute for ASEAN and East Asia
 - 16 East Asia Summit countries
- Research proposals invited on
 - impact of energy market integration on RE development
 - subsidy removal, pricing reform, electricity/gas regulatory reform.
- Project Timeline
 - Research proposals were due 11/30; selection by 12/31
 - February workshop on literature review, methodology and data, and expected results
 - May workshop to discuss draft final report

ERIA/IRENA Study on Implications of Energy Market Integration in East Asia for Renewable Energies

- Project objectives
 - Understand how energy greater penetration of RE on power grids would improve security of electricity supply.
 - Explore options to achieve greater RE penetration.
- Project structure
 - Review ASEAN master plan for grid reinforcement, RE resource potentials, possible grid modifications for RE.
 - Analyze impacts of greater RE on grid reliability.
 - Make policy recommendations for greater RE on grid.

ASEAN Transmission Grid (Plans as of 2011)



	Expected COO
1) P.Malaysia - Singapore	Existing
2) Thailand - P.Malaysia	
• Sadao - Bukit Keteri	Existing
• Khlong Ngae - Gurun	Existing
• Golok - Rantau Panjang	Newly Proposed
3) Sarawak - P. Malaysia	2013
4) P.Malaysia - Sumatra	2012
5) Batam - Singapore	2015
6) Sarawak - West Kalimantan	2012
7) Philippines - Sabah	2015
8) Sarawak - Sabah - Brunei	2015
9) Thailand - Lao PDR	
• Roi Et - Nam Theun 2	2009
• Udon - Nabong	2011
• Mae Moh - Hong Sa	Under Negotiation
10) Lao PDR - Vietnam	2010
11) Thailand - Myanmar	2014
12) Vietnam - Cambodia	2009
13) Lao PDR - Cambodia	2010
14) Thailand - Cambodia	Existing
15) Sabah - East Kalimantan	Newly Proposed

Areas of Focus for Joint IRENA/ERIA Study

- Siting of new transmission links in relation to available renewable resources and projected centers of demand
- Integration of subgrids into an ASEAN Power Grid
 - Upgrade 300 MW Thailand-Peninsular Malaysia Link?
 - Impacts of Sarawak-PenMalaysia Bakun Hydro plant?
- Harmonization issues for ASEAN Power Grid
 - Technical standards
 - Operational procedures
 - Regulatory and policy frameworks
 - Sharing of benefits from renewable power sources