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International Renewable Energy Agency

MARTINIQUE CONFERENCE ON ISLAND ENERGY TRANSITIONS:
PATHWAYS FOR ACCELERATED UPTAKE OF RENEWABLES
Martinique, 22-24 June 2015

MARTINIQUE ACTION PLAN
FOR RENEWABLE ENERGY DEVELOPMENT ON ISLANDS

We, the participants of the Martinique Conference on Island Energy Transitions, have met in Martinique on 22-24 June 2015 to advance the goal of unlocking and mobilizing the human, financial and technical and natural resources that are needed to transition the energy systems of small island developing states (SIDS) to a sustainable energy future.

We note that SIDS face significant economic and social challenges, including those arising from climate change, energy price and supply volatility, and energy insecurity stemming from the reliance on imported fossil fuels. In this context, we underline that many islands are global leaders in the promotion of renewable energy but much remains to be done to reach set ambitions.

We further note that SIDS possess immense renewable resource potential, including biomass, geothermal, hydro, marine, solar and wind. We recognize that rapid progress to diversify the energy mix by accelerating the use of domestic renewable energy sources, coupled with energy efficiency measures, is an essential element of a safer and more prosperous future.

We recall the *SIDS Accelerated Modalities of Action Pathway* (SAMOA pathway), adopted in September 2014 at the Third International Conference on SIDS, which stresses the importance of renewable energy and requests a strategy for deployment of renewable energy resources, development of sustainable energy roadmaps, and access to increased capital flows for sustainable energy projects.

We emphasise that renewable energy is one of the key means for mitigating climate change and strengthening resilience against its impact. The upcoming UN Climate Change Conference in Paris (COP21) will be an opportunity to showcase the progress in deployment of renewable energy to date and to renew commitments to act in the years to come.

We recognise that the *SIDS Lighthouses Initiative*, launched at the UN Secretary-General's Climate Summit in 2014, provides a holistic framework for action to support the transformation of island energy systems, and a means for communication through its Global Renewable Energy Islands Network (GREIN). We acknowledge that partners of the SIDS Lighthouse Initiative continue to grow, a testament to the commitment of partners to accelerate an energy transition in SIDS.

We recognize also that the existing SIDS-led programs and strategies provide orientation for the SIDS Lighthouse Initiative and other global partnerships to support the transformation of island energy systems.

We note that public-private partnerships can be instrumental in unlocking the investment capital that islands require to fully exploit their renewable energy potential and acknowledge that this exploiting potential will require focused and targeted action to improve access to capital at affordable rates.

We acknowledge that community engagement and support of civil society is critical for the long-term success of the transition process.

We welcome the opportunity for dialogue in Martinique that has provided a platform for exchange of views and experiences of many stakeholders and, based on this dialogue we recommend to:

- Support the energy transition of SIDS through concrete actions to open island markets and planning processes to renewable energy options in a fair and systematic way, facilitate the financing of such options, and build human and institutional capacities to exploit them effectively.
- Facilitate the implementation of programmes and projects to achieve concrete outcomes through:
  - Enabling policy and regulatory environments to attract renewable energy investment, supported by strengthened independent regulatory authority and including ambitious renewable energy targets, fair returns on capital investments, and incentives for future projects which can support the energy transformation of SIDS while helping to ensure reliable, affordable energy services to island citizens.
  - Encouraging the use of financial risk mitigation instruments and blended public-private financing structures to reduce the cost of capital.
  - Dissemination and promotion of successful business models.
  - Strengthening of technical and institutional capacities to assess and develop renewable energy potentials, generate proposals for bankable renewable energy projects, and manage their integration into energy systems.
  - Intensifying efforts to assess and develop all sources of renewable energy including those not commonly considered in islands settings, such as biomass, geothermal and marine, that can have a transformative impact to countries and regions.
  - Accelerating deployment of solar and wind, with solutions to integrating these resources into the energy system, considering both the need for system flexibility due to their variability as well as the transformational deployment of decentralised solutions.
  - Enhancing the application of solutions such as waste-to-energy systems, renewable energy desalination systems, hybrid systems, to fully benefit from the potential renewable energy offers to the power sector, and exploiting opportunities to use renewable energy in end use sectors such as transport that can constitute up to 50% of the primary energy demand of some SIDS.
  - Regional and international cooperation including among SIDS to encourage the exchange of experiences, accelerate the learning process, and facilitate coordination of effort.
- Contribute, where applicable and appropriate, to the development of concrete actions and the realization of projects outlined below with a view to demonstrating progress at COP-21 in Paris.

We encourage the continuing focus on the deployment of renewable energy in SIDS and welcome the upcoming Lighthouses events in Hawaii, Bangkok, and Cape Town [supported by USA, Japan and Germany, respectively] in the lead up to COP21 to maintain the momentum for action.

Wind Power Development for Islands:

- Share information on detailed wind measurements that have been undertaken on various islands.
- Share information on legal and regulatory frameworks to advance wind project development.
- Undertake wind measurement campaigns on islands and off-shore.
- Develop a working group between financing partners and wind resource practitioners to speed up the financing and development of SIDS' wind projects.
- Cooperate with development partners and investors to finance wind measurement campaigns and wind projects.
- Explore different models for financing measurement campaigns and wind projects including setting up a regional fund and LIDAR/MET-Tower loan programs.
- Explore the use of new or existing regional cooperation centers for sharing resources and facilitate training exchange programs.

Geothermal Energy Development for Islands:

- Information gathering and knowledge sharing, including:
  - Collection of resource data, , including seismic and telluric data, and related assessment studies;
  - Share results from geothermal surface studies and exploration drilling on islands which indicate promising sites and procedures for developing geothermal resources;
  - Where applicable, identify additional sites on islands for consideration of surface studies and exploration drilling;
  - Share experiences lessons learned from islands in addressing geothermal resource development challenges relevant to the islands context;
  - Information on qualified and experience technology developers and providers.
- Tailored support, including:
  - Custom-build geothermal resource development planning based on country specific needs and priorities and resource-service pairs taking into account resource characteristics (incl. high and low enthalpy resources, shallow and very shallow resources) as well as local needs for power generation and direct use of heat in end-use sectors for residential, industrial and commercial applications;
  - Establishing regulatory frameworks and a policy environment that are open for geothermal development, for example through the Global Geothermal Alliance;
  - Capacity building and training to workforce and institutions.
- Regional cooperation, including:
  - Explore regional approaches for development of geothermal resources customized to regional contexts (for example, for interconnection) and in compliance with regional economic development strategies;
  - Attract investment by ensuring bankability and acceptability;
  - Provide attractive financing options for collaboration between the public and private sector.

- Engage and develop partnerships through the Global Geothermal Alliance to help create necessary enabling policy, regulatory, and institutional frameworks, develop new financing and risk mitigation tools and mechanisms geared to the islands context to accelerate resource exploration and assessment, and reinforce technical and institutional capacities at regional and local level.

Marine Energy Development for Islands:

- Identify the key parameters required to evaluate the resource potential for deployment of different marine energy technologies around the **globe** with a view to include the related maps in IRENA's Global Atlas for Renewable Energy.
- Foster availability and sharing of data to support identification of **areas** adequate for marine energy development in Small Island Developing States.
- Foster availability and access to data, methodologies, and tools that need to be applied to evaluate marine energy resources at **specific sites**.
- Develop global and regional partnerships for marine energy resource assessments, with particular focus on spatial planning of islands' extensive marine development zones.
- Share the latest analyses of current and projected costs for marine technologies that have been developed to the stage of pilot projects but have not yet been widely commercialized, such as Ocean Thermal Energy Conversion (OTEC), SWAC (Sea Water Air Conditioning), and wave power, as well as those that have reached a commercial stage such as tidal power.
- Share information on learning curves for different marine technologies and accelerate cost reductions that have the potential to transform island economic systems through global strategies and partnerships for upscaling deployment.
- Identify and help kick-start promising opportunities for additional marine energy pilot projects on islands.
- Accelerate experience sharing from marine energy projects that are under development through partnerships and training.

Sustainable Biomass Energy Development for Islands:

- Derive a replicable methodology for biomass resource assessment on islands, building upon work by IRENA and others on sustainable biomass resource development, including assessment of biomass/waste quantities, qualities, seasonality and long term development.
- Identify islands which would be suitable candidates for detailed evaluation of biomass resources.
- Share basic and advance knowledge on technology options and pathways including costs, capacities, maturity, resilience, feedstock requirements and products.
- Share best practices and blueprints on cascading use and combining biomass and waste-to-energy systems with heat processes and desalination to maximize use of energy potential.
- Develop replicable island value chains considering the various biomass feedstocks, different conversion technologies and possible (combined) outputs according to island needs.
- Share information on islands with sufficient potential to cultivate rapidly growing grasses or other energy or short rotation crops on idle/marginal land or on land that is ill-suited to food production.

- Share best practices for the logistical management of biomass resources to produce electric power on a reliable basis, including production, trade and transportation strategies to bring together a variety of complementary feedstocks that grow at different times of year.

Biomass and Waste-to Energy Systems for Islands:

- Identify islands which are in most urgent need of waste-to-energy systems in view of the limits on land available for waste disposal and the current and anticipated volume of waste streams.
- Perform pre-feasibility studies on a number of such islands to identify suitable technology options for waste-to-energy conversion in view of the organic waste streams present, taking due account of both the volume, composition and calorific value of the waste streams available in both the wet and dry seasons.
- Fund pilot projects on these islands to establish the optimal value chains identified.
- Exchange of experiences and best practice including through the waste-to-energy interest cluster of the Global Renewable Energy Islands Network (GREIN).[1]
- Share best practices on regulatory issues around biomass and waste-to-energy systems, including construction permitting, provisions for public private partnerships, IPPs, PPAs, waste management, standards, logistics and further involved issues.
- Support decision makers in defining the role of biomass and waste-to-energy systems in broader energy systems, considering issues that cut across different sectors (agriculture, forestry, food and wood processing, livestock, fisheries, waste separation, electricity, heating and cooling, and fuel production) and products (electricity, heat, cooling, biogas, biomethane, ethanol, charcoal, fertilizer, ash, pellets, briquettes, biofuels, hydrogen, and slurry).
- Share available methodologies and tools for evaluating the added value of biomass and waste-to-energy pathways (such as internalizing energy production, avoided environmental damage and landfill use, avoided imports through byproducts, provision of flexible power) and sustainability of such pathways (such as life cycle analysis of greenhouse gas emissions).

[1] As of the launch of the waste-to-energy interest cluster on the margins of IRENA's Fifth Assembly on 18 January 2015, these included Bangladesh, Barbados, Cabo Verde, Cuba, Cyprus, Fiji, France, Germany, Greece, Japan, Kiribati, Mauritius, Nauru, Netherlands, New Zealand, Palau, Philippines, Saint Vincent and the Grenadines, Samoa, Thailand, Tonga, United Arab Emirates, United Kingdom, United States and Vanuatu.

Boosting Renewable Generation on Island Power Grids:

- Map which islands have grid integration studies completed, underway or planned to pave the way to increased generation from renewable technologies, including solar and wind which are variable in nature.
- Support the development of strategic holistic road maps for renewable generation on island power grids.
- Identify win-win models to commit the various stakeholders to the process of renewable power generation development.
- Share findings from completed grid integration studies.
- Undertake grid integration studies to understand the options for expanding the share of renewable generation, taking into account the current and future potential energy mix scenarios and the variable nature of some resources such as wind and solar.
- Share information on smart grid applications within an island context.
- Assess the socio-economic and environmental impacts of renewable generation in island settings.
- Reinforce capacity building support for islands to plan, build and operate renewable energy systems, including through the creation of training hubs and exchange programs.
- Identify and share successful utility business models to enable transformation.

Renewable Desalination Systems for Islands:

- Identify islands in most urgent need of desalination systems in view of the amounts of fresh water available, the cost of water to households, and projected population growth.
- Perform pre-feasibility studies on a number of such islands to identify the best available combinations of renewable and desalination technologies, considering local renewable resources.
- Fund pilot projects on these islands to build the best renewable desalination options.
- Facilitate experience sharing and dissemination of knowledge on renewable desalination including studies and pilot projects for renewable desalination in countries that have joined the desalination interest cluster of the Global Renewable Energy Islands Network (GREIN).[2]

[2]As of the launch of the desalination interest cluster on the margins of IRENA's Fifth Assembly on 17 January 2015, these included Barbados, Cabo Verde, Comoros, Cuba, Cyprus, Fiji, France, Germany, Greece, Grenada, Japan, Kiribati, Maldives, Marshall Islands, Mauritius, Nauru, Netherlands, New Zealand, Palau, Philippines, Saint Vincent and the Grenadines, Samoa, Tonga, United Arab Emirates, United Kingdom, United States, Vanuatu and Yemen.