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INTERNATIONAL RENEWABLE ENERGY AGENCY

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Report of the Director-General on the Implementation of the Work Programme and Budget for 2013

1. The IRENA annual report is being submitted pursuant to Article XI/E.3 of the IRENA Statute. It provides an account of the Agency's performance in 2013 and presents an overview of the progress made and results delivered. The impact of efforts to date is evident through the growing recognition of the Agency worldwide, the current strength and focus of IRENA's substantive capacity, the steady rise in membership, and increased calls for IRENA to engage with countries, regions and institutions. By the fourth session of the Assembly in January 2014, IRENA is expected to have more than 120 Members, with over 40 additional states at various stages of accession.

2. Through its growing global, regional and country engagement, IRENA has gained unprecedented opportunities to build new partnerships to advance the deployment of renewable energy. IRENA is implementing its programmatic activities in partnership with stakeholders including regional entities, policy-makers, technical experts, the private sector, international organisations, R&D institutions, academia and civil society. Forging partnerships with these vital actors remains central to IRENA's efforts to accelerate the global uptake of renewable energy and contribute to the sustainable development agenda.

3. The 2013 Work Programme was implemented in the context of two defining milestones for the Agency. First, at the third session of the Assembly, Members provided strategic direction and guidance to IRENA through its Medium-term Strategy 2013-17 (MTS). The MTS defined the strategic vision that underpins IRENA's programmatic activities: to be the principal platform for international cooperation, a centre of excellence on renewable energy and a repository of policy, technology, resource and financial knowledge, and to support countries in their transition to a renewable energy future. The MTS served as a point of reference in the implementation of the programmatic activities and helped maintain focus on key emerging issues over the course of 2013.
4. Secondly, the third Assembly decided on a refined structure for the Agency, to better enable strategic selection and alignment of activities, and efficient implementation. Through its Knowledge, Policy and Finance Centre (KPFC) and the IRENA Innovation and Technology Centre (IITC), IRENA undertook a range of analytical and advisory activities aimed at providing accurate information, sound advice and a broader knowledge base to assist countries to make informed renewable energy policy decisions. The Country Support and Partnerships (CSP) division supported countries in translating these decisions into action-oriented strategies and plans. CSP also provided a platform for countries to cooperate, share experiences and best practice, and enhance their capacity to plan, manage and regulate strategies as well as projects.
5. With the MTS as the guiding framework, streamlined implementation of the work programme through the refined structure, and a growing partnership base, IRENA was able to identify the priorities and needs of countries and regions, capture global trends and changes and to leverage IRENA's strengths and resources with those of other partners. This experience served as a basis for defining programmatic focus and priorities for the upcoming Work Programme and Budget 2014-2015.
6. As envisaged by its Members, IRENA is becoming an authoritative voice for renewable energy. The achievements highlighted below reflect some of the efforts to effectively implement the programmatic activities, deliver services, and efficiently administer the resources entrusted to the Agency.

I. Programmatic highlights

“...the principal platform for international cooperation” (IRENA MTS)

- **REMAP:** The development of IRENA’s roadmap for doubling of the share of renewable energy by 2030 – REMAP 2030 – in 2013 included a 26-country analysis, 12 workshops and 3 global webinars. This work was undertaken with support from a network of 82 national experts from 42 countries. At the time of the writing of this report, the REMAP 2030 conclusions were being discussed with participant countries in a two-day workshop in Abu Dhabi.
- **Clean Energy Corridor:** In June 2013, IRENA hosted a stakeholder meeting to discuss the Africa Clean Energy Corridor (CEC), which introduced critical insights into the needs and priorities of countries of the East and Southern Africa Power Pools. The meeting provided a unique opportunity for an open dialogue among 60 government officials, technical experts, utilities, the private sector, international and multilateral institutions. The outcome of these discussions was used as a basis for the development of IRENA’s programmatic work on the Africa CEC.
- **Geothermal:** To facilitate cross-regional cooperation and best practice sharing, a series of workshops on geothermal energy in the Andean region brought together stakeholders from government, the private sector and other interested institutions. As a result, some leading countries in the field of geothermal energy deployment – France, Iceland, Japan, Mexico and New Zealand – committed technical expertise to help build the capacity of the Andean countries, including the formulation of geothermal laws and regulations that will attract investments.
- **International standards** analysis identified some 570 standards related to renewable energy. This analysis has been welcomed by a wide range of stakeholders who are increasingly turning to IRENA for assistance and support, such as the ISO Strategic Advisory Group on Renewable Energy and Energy Efficiency which requested IRENA’s support to map renewable energy standards requirements, and Regional Centre for

Renewable Energy and Energy Efficiency (RCREEE) and the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) seeking support in advancing quality assurance in their member countries.

- **RD&D:** IRENA's analysis of the cooperative system for RD&D in Latin America and the Caribbean brought together over 20 institutions who provided data and other information. The findings triggered significant institutional interest worldwide, including by Mexico and Brazil, who requested further assistance from IRENA to facilitate regional RD&D cooperation. Similar requests for cooperation were received from Africa, Asia and Eastern Europe.

“.... a centre of excellence on renewable energy and a repository of policy, technology, resource and financial knowledge” (IRENA MTS)

- In 2013, IRENA has released over 25 publications and organised around 40 programmatic events, including webinars. Records to date show that there have been more than 12 million page views for the IRENA website and more than 5 million page views for its publications.
- **IRENA's costing studies** have generated wide recognition, and the unique approach to analysis based on practical projects has stimulated interest of private and public sector alike. IRENA's efforts to create a Costing Alliance to broaden access to this information resulted in 51 entities - 28 private and 23 public - expressing interest in engagement in the Alliance. While the Alliance is yet to be formally established, contributions to IRENA's database are already being made. At present, it contains information on over 9,000 projects, making it the largest single source of such information. This provides an authoritative base for costing analysis as well as demonstrating the interest and confidence in IRENA's work in this area.
- **The Global Atlas** contains over 400 solar and wind datasets received from the current 39 partners, which can be accessed through 25 thematic maps. The Atlas has had almost 50,000 visits since its launch and already has 600 registered users. Discussions are underway with 20 additional countries who have expressed interest in partnering with

IRENA to contribute to the Global Atlas. In 2013, the Atlas was used to develop a zoning proposal for photovoltaic programmes in ECOWAS countries.

- **Value Creation:** IRENA is leading and coordinating the econValue project, a partnership platform to gather data and evidence on the value creation of renewable energy to support the business case for renewable energy deployment. At present, 14 partners participate in the econValue project, including the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), the Spanish Institute for the Diversification and Saving of Energy (IDAE), the National Directorate of Energy of Uruguay (MIEM DNE), among others. This cooperation leverages the respective strengths of policy-makers, experts and researchers to provide state of the art knowledge, empirical evidence and best practice on the social and economic impacts as well as the appropriate mix of policies required to maximise benefits from renewable energy deployment.

“...to support countries in their transition to a renewable energy future” (IRENA MTS)

- **Renewables Readiness Assessments:** RRAs are assisting countries to take concrete steps to accelerate the deployment of renewables. For example, following the RRA process, Niger has created a rural energy agency, and is in the process of enacting renewable energy legislation. Zambia is developing a framework for the development of small, mini- and micro-hydro generation projects. To date, the RRA process has been completed in 14 countries and is ongoing in an additional 4 countries.
- The RRA process is also creating new and innovative partnerships. In The Gambia, it led to a partnership with Siemens, United Nations Environment Programme (UNEP) and Frankfurt School of Finance to assess the commercial feasibility of hybrid diesel mini-grids. In Mauritania, IRENA partnered with the United Nations Development Programme (UNDP) to use the RRA methodology for Sustainable Energy for All (SE4ALL) country assessments.
- **Grid Stability:** A pilot grid stability study in Palau, which concluded that a 30 percent share of renewable generation could be readily integrated into the island's power grid, was

presented to the island's utility and political leaders. This has triggered a number of requests for grid stability assessments in different islands, and three studies are currently underway with an additional 10 planned for the near future.

II. Management highlights

7. Strong management and administrative foundations made the Agency's programmatic achievements possible. A transparent, accountable, efficient and responsible functioning of the Agency remained a priority in 2013, with a focus on further consolidating policies and processes to strengthen effectiveness and efficiency.
 - At the time of the writing of this report, 94% of the Agency's resources have been either utilised or committed for the implementation of remaining activities.
 - The total approved budget of IRENA for 2013 was USD 29.7 million, of which USD 18 million was assessed through contributions from all Members; USD 7.4 million from the Government of the United Arab Emirates; and USD 4.3 million from the Government of Germany. As of 31 October 2013, USD 17 million had been received under the core budget from 68 Members, representing about 95% of the anticipated income through assessed contributions (including cash surplus from previous contributions carried over and credited to 2013 assessments due from Members).
 - Additional voluntary contributions amounting to USD 3 million have been received from the UAE, Germany, Japan, Iceland and Sweden which provides valuable support in meeting the overall objectives of the Agency.
 - Out of the total 81 approved posts, 76 are currently either filled or under active recruitment. 27 vacancy announcements were issued attracting over 4,000 applications. Staff on board are from 42 nationalities, of which 46% are females and 54% are males.
 - The Agency received a clean unqualified audit opinion from external auditors for 2012. The internal oversight was further strengthened in April 2013 with the establishment of the Internal Auditor function.

- IRENA's ICT services up-time is 99.9%. Since 2011, the IRENA website was down for 14 hours, while the internal portal was down for only 4 hours.
 - The Agency has thus far entered into 13 Long Term Agreements, as well as three project agreements with international institutions to increase efficiency and cost effectiveness of its procurement processes.
8. A detailed account of progress on the implementation of the 2013 Work Programme to date and plans for the remainder of the year 2013 is outlined below. Information on the Agency's financial and human resources is also detailed.

III. Strategic Management and Executive Direction

9. IRENA's increasing capacity has enabled the Agency to develop and consolidate its position as the principal platform for international cooperation and a centre of excellence on renewable energy. As renewable energy gains prominence in the global agenda, the Agency is increasingly being called upon to participate in a broad number of events around the world. This, along with the growing support the Agency is providing to countries in their transition to a renewable energy future, has increased the demand for IRENA and the Director-General to engage in cooperative efforts and contribute to events around the world. Some events stem from common regional efforts while others, such as the Director-General's meetings with national renewable energy representatives, as in Rome, Italy or the 5th Eco-Forum Global Conference convened in Guiyang, China, have allowed IRENA to engage and exchange insights gained through different perspectives. These are only illustrative examples. All these events enable the Agency to showcase its work and to interact with countries, organisations, and the private sector while increasing awareness of IRENA's role and its work.
10. The United Nations Secretary-General invited the Director-General of IRENA to join the SE4ALL Advisory Board, which has been established to provide strategic direction to the Initiative. The Advisory Board consists of representatives from the private sector, civil society, financial institutions, governments, the UN and international organisations. As IRENA develops its function as the Renewable Energy Hub within SE4ALL, the Director-General's role in the Advisory Board will be a significant avenue for promoting the Agency's work with other SE4ALL stakeholders and for ensuring the complementarity of efforts. As the SE4ALL effort accelerates, and with the establishment of its Global Facilitation Team, IRENA continues to engage with different SE4ALL stakeholders.
11. In this context, IRENA's presence in New York is ensuring that the Agency is actively involved in the renewable energy and related debates, kept abreast of developments, and is actively present during relevant events. The IRENA Liaison Office has already contributed to nurturing strategic partnerships with representatives of the UN, its Funds and Programmes, and other international organisations, as well as Members without representation in Abu Dhabi.

The office has placed a particular focus on the promotion of IRENA as the SE4ALL Renewable Energy Hub, the activities in support of the UN Decade of SE4ALL (2014-2024), the on-going discussions on the post-MDG goals, and the preparations for the Climate Leaders' Summit in September 2014.

12. On the occasion of the World Environment Day, the Renewables Club was launched in Berlin, Germany on 1 June 2013, with the participation of 10 countries. The Director-General was invited by the German Minister for Environment, Nature Conservation and Nuclear Safety, along with Ministers and high-level representatives from China, Denmark, France, Germany, India, Morocco, South Africa, Tonga, the United Arab Emirates, and the United Kingdom, to establish the Renewables Club. This high-level political alliance will support the work of IRENA, as well as secure further high-level political support, with a view to “scale up renewable energy deployment as an essential element of a sustainable and more prosperous future”. The next Renewables Club meeting is expected to be hosted by the United Arab Emirates on the sidelines of the fourth session of the IRENA Assembly in January 2014.
13. The wider energy sector recognizes the necessity of including renewable energy in forward looking energy debates alongside other energy sectors. The Director-General actively participated in a number of events including the Oslo Energy Forum on “Creating New Growth – the Energy Choices” and the Singapore International Energy Week. During these events, he reinforced the increasingly competitive business case for renewables, as well as the opportunity for renewable energy to address the existential challenges the world faces such as increasing energy demand, energy access, and environmental and social development. Contribution to such events has added to IRENA’s growing reputation as the source for information and support for the deployment of renewables.
14. The heightened understanding of the role that renewable energy can play in sustainable development and especially in mitigating carbon emissions has also led to the greater inclusion of renewable energy in these agendas. The Director-General took part in a thematic debate on “Sustainable Development and Climate Change: Practical Solutions in the Energy-Water Nexus” held under the auspices of the President of the United Nations General Assembly in

partnership with the United Arab Emirates. His active presence at the opening session of the United Nations Economic and Social Council (ECOSOC) in Geneva both confirmed the relevance of renewable energy, as well as provided an opportunity for reinforcing its importance. He also participated in the 44th meeting of the Pacific Islands Forum in Majuro, Marshall Islands, on “Marshalling the Pacific Response to Climate Change”, which resulted in a decisive and action-oriented agreement that included ambitious plans for deployment of renewable energy.

15. The experience that IRENA gains through its work, and its increasing interaction and participation in a broad range of events, enables it to identify trends and emerging issues which can inform the Agency’s work and the development of new partnerships. Mobilising finance is one of the biggest challenges constraining the up scaling of renewable energy deployment. The Director-General participated in high level, multi stakeholder events focused on identifying ways to overcome existing barriers to finance, such as low carbon and climate finance. On the margins of the 68th Session of the United Nations General Assembly, the Director-General set the scene for the UK-UAE Low Carbon Roundtable Meeting. During the Copenhagen Climate Finance meeting, the Director-General moderated the panel convened to look at the role of governments in scaling up green investments. The insights gained and connections made during these events have, and will continue to strengthen and shape the Agency’s work.
16. As part of its outreach, IRENA has been active in working with countries and organizations to maintain and expand the scope of the Agency’s engagement. This included, among others, participation in the Annual Event of the European Wind Energy Association (EWEA) in Vienna, the International Parliamentary Forum on International Cooperation for Renewable Energy Revolution in Brussels, Belgium, the 65th session of the United Nations Economic Commission for Europe, the Annual Energy Forum of Sabanci University’s International Energy and Climate Center in Istanbul, Turkey, and the OECD Round Table for Sustainable Development in Paris, France. IRENA was also invited to contribute to a number of private sector conferences and meetings, including at the Renewable Energies Forum at the Hannover

fair, Germany, EREC Board Meeting in Brussels, Belgium, and AREVA Executive Forum in Paris, France.

17. IRENA participated in the Pacific Leaders' Energy Summit, organised by the Tongan Government in Nuku'alofa, Tonga. The event enabled leaders from the Pacific islands to share their experience in their efforts to accelerate the deployment of renewables, and to hear in more detail the lessons Tonga has learnt from TERM, the Tonga Renewable Energy Roadmap. The Director-General addressed the Summit and shared with the leaders the progress in IRENA's engagement in the Pacific and plans for the future. Following the Tonga Summit, the New Zealand Government hosted the Pacific Energy Summit in Auckland, which offered an opportunity to further discuss IRENA's engagement in the region.
18. IRENA continues to implement the IRENA/Abu Dhabi Fund for Development (ADFD) project facility for renewable energy in developing countries comprising of USD 350 million in concessional loans in seven funding cycles. In the first funding cycle, IRENA received over 80 project summary applications for the first tranche of USD 50 million. Following scoring and review by a Panel of Experts and a further review by the IRENA/ADFD Advisory Committee, 19 shortlisted applicants were invited to submit full project proposals, 16 of which were received. The short-listed projects are from various regions, represent a diverse mix of renewable energy activities, address energy access and energy security, and offer innovative and potentially replicable solutions. The ADFD is expected to make the final selection in December 2013. The selection of the first tranche of innovative, sustainable and replicable projects will provide a major impetus to the work of the Agency.
19. The Secretariat continued to support Members' decision-making processes by organising the Agency's intergovernmental meetings and providing substantive inputs to these meetings. In 2013, the Secretariat organised the third session of the Assembly attended by heads of state and governments, Ministers, and other representatives of 137 countries, as well as 122 observers. By the end of 2013, the Secretariat will have organised two Council and five Committee meetings, one of which was successfully held on-line thus contributing to the cost

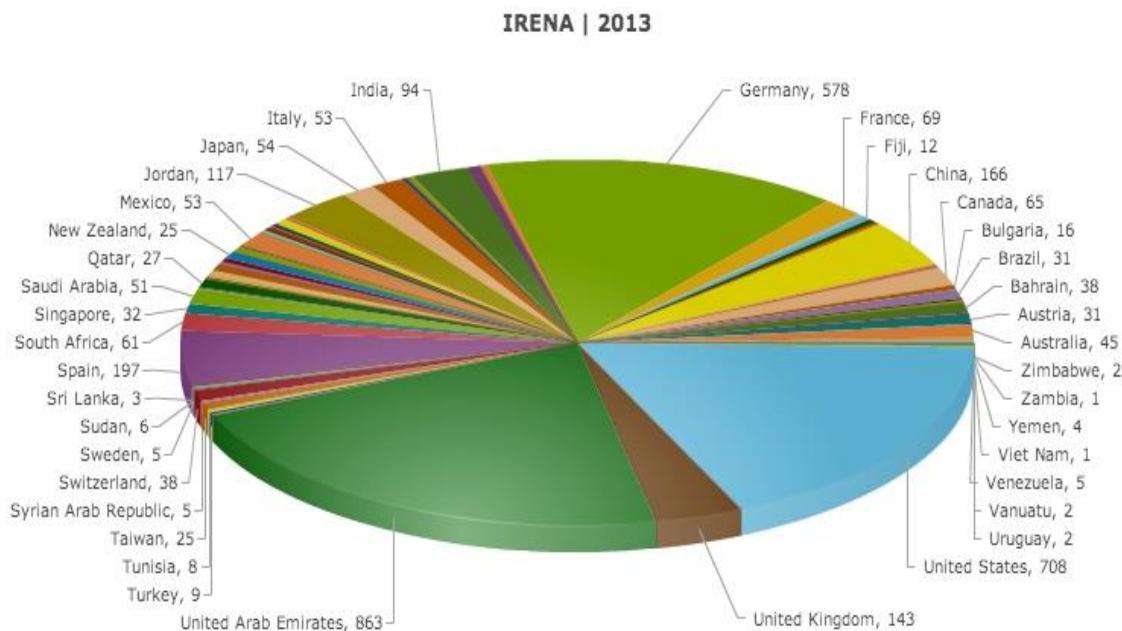
saving measures of the Agency. Plans are in place to launch an electronic meeting documentation system at the fourth Assembly in the form of an online application for mobile devices. This new system will consolidate sessional documents into one virtual location, reducing paper consumption and costs, and increasing user ease in all IRENA governing body meetings.

20. The Secretariat reviewed the cost and administrative requirements for interpretation and translation related to programmatic and communications activities and for translation of major sessional documents. Costs associated with the use of languages, based on real need of target users on a case-by-case basis, are included in the proposed Work Programme and Budget for consideration at the fourth Assembly, with the objective of expanding the Agency's reach.
21. With a view to enhancing the communication and cooperation between the Secretariat and the membership, especially on programmatic matters, periodic IRENA Bulletins continue to be disseminated. Based on the positive feedback received from countries, the Secretariat continues to provide these concise updates on a regular basis and has added a section dedicated to upcoming IRENA events. An initial demonstration and testing phase of the platform REmember (Renewable Energy Member) is being piloted. REmember will replace the current Delegates' Area on the IRENA website, as an enhanced avenue to facilitate communication with Members. This web-based, interactive communications and cooperation tool will increase Members' involvement in IRENA activities, *inter alia*, through: the creation of online workspaces for thematic discussions and collaboration; an IRENA documents library; alert functions for the latest news and announcements; a global renewable energy events calendar; and information on membership and IRENA's governing bodies.
22. The IRENA Fund for Developing Country Representatives (FDCR) was established at the second session of the Assembly in order to ensure inclusiveness in Agency activities by enabling the fullest possible participation, based on available funds, of Least Developed Countries (LDCs) and Small Island Developing States (SIDS) in the meetings of IRENA's governing bodies. By the time of writing of this report, the Fund supported participation of 70 delegates and it is expected that an additional nine will be supported for the upcoming

Committee and Council meetings. A total of USD 811,052.82 has been received in 2013, representing contributions from Sweden (USD 25,000) and the United Arab Emirates (USD 786,052.82). Based on the current status, it is expected that the Fund will face shortfalls after the fourth session of the Assembly.

23. In the context of the MTS, and empowered by the goal of becoming an authoritative global voice for renewable energy, IRENA took a number of steps to develop robust and resilient institutional messaging. Awareness about IRENA among key stakeholders and the general public is on the rise around the world, while the core message that renewables are feasible and cost-effective has been actively disseminated through print, video, outdoor and other marketing and communications channels. A well-received Financial Times – IRENA “Question Time Debate”, held during the third session of the IRENA Assembly, stimulated discussion among the high-level participants and audience in attendance, and triggered robust online engagement.
24. In 2013, IRENA released some 20 press releases which, coupled with outreach activities, attracted considerable media attention, resulting in international media outlets coverage including CNN, CNBC, Bloomberg, the Financial Times, Xinhua, Reuters, The Guardian (UK), Wall Street Journal, and Deutsche Welle, among others. IRENA’s also strengthened its presence in social media with dedicated Facebook pages for the Agency and some of its projects, YouTube videos, and participation in new media outlets such as TED Talk.
25. The Agency's ability to meet its ambitious communication objectives has been limited thus far. As IRENA’s growing portfolio of products and activities gathers momentum, the Agency has sought to further develop its institutional communications capacity to match the growing need, including to strengthen and expand its position in media markets, develop and capitalize on synergies with like-minded organisations, and support Member communications efforts. As a response to Member demand for more robust communications in support of its global mission, the Agency has engaged a global communications consultancy to support the launch of its communications strategy.

Number of articles in each country discussing IRENA until 14 November 2013.



26. On 7 October 2013, the Headquarters Agreement between the Agency and the United Arab Emirates entered into force. The Agreement provides the framework for the relations between the Government and IRENA, and facilitates the functioning of the IRENA Headquarters. In preparation for its entry into force, IRENA, in close cooperation with the Host Country, developed guidelines for Permanent Representation, which will further facilitate the Members' engagement in the Agency through the accreditation of Permanent Representatives and establishment of Permanent Missions. The Secretariat has put the necessary preparations in place for the accreditation of Permanent Representatives and for the establishment of Permanent Missions, and has issued 'Protocol Guidelines' to the Members to assist them during the process. Progress has also been made towards ensuring that IRENA is granted the privileges and immunities it requires to conduct its work. The Secretariat has engaged with Members to advance the ratification of the Agreement on Privileges and Immunities or the establishment of other methods for recognizing IRENA's status under national law.

27. Pursuant to the Staff Regulations, staff have formed a staff representative body, rendering staff/management relationship and interaction formal. The staff representative body is consulted on relevant issues, including the selection of arbitrators for the administration of justice, composition of different committees, as appropriate, and issues related to staff welfare.
28. Furthermore, pursuant to the Financial Regulations, the office of Internal Auditor has been established, with the auditor assuming her functions in April 2013. An account of the Internal Auditor's activities is outlined in her report to the Council in C/6/8. The establishment of this function is further assisting the Director-General in his efforts to maintain efficient, accountable and transparent administration and management structure and processes.
29. The total approved budget of IRENA for 2013 is USD 29.7 million, of which USD 18 million has been assessed through contributions from all Members, in addition to the voluntary contributions USD 7.4 million from the Government of the United Arab Emirates and USD 4.3 million from the Government of Germany. As of 31 October 2013, USD 17 million has been received under the core budget from 68 Members, representing about 95% of the anticipated income through assessed contributions.

Programme of work

IV. Planning for the global energy transition

30. Over the course of 2013, IRENA's divisions worked on the implementation of the programmatic activities in a collaborative manner, with the aim of maximizing both the Agency's impact and the use of its limited resources. A number of cross-divisional taskforces were created to facilitate cooperation and ensure consistency. This included IRENA's work on REMAP, cities, islands, and rural energy. The Agency achieved successful outcomes across programmatic areas: from development of roadmaps, through global trends to country support in their efforts to transition to sustainable future.
31. IRENA's global roadmap for renewable energy, REMAP 2030, is designed to demonstrate possible pathways and priority actions for meeting the aspirational target articulated in the SE4ALL initiative of doubling the share of renewables in the global energy mix by 2030, and has the potential to become the authoritative tool for renewable energy planning. In 2013, REMAP focused on two areas of work: a country-based analysis to identify actions on technology deployment, investment and policies; and sector-based technology roadmaps to identify the sector-specific opportunities across multiple countries and regions required to achieve the doubling target. In cooperation with country experts, it undertook a detailed assessment of renewable energy potentials in 26 countries, which account for more than 70% of global energy use. REMAP2030 ascertained that doubling the share of renewables is achievable and can be cost neutral. It gives a positive outlook on the potential of renewables in addressing the challenges ahead, and highlights the possibilities where progress can be accelerated.
32. REMAP2030 is a result of a collaborative process between IRENA, countries and other stakeholders. It was developed in close collaboration with over 80 national experts and REMAP focal points. IRENA organized 26 workshops, 15 country visits, and 3 global webinars to discuss the methodology and interim results with a range of stakeholders increasing visibility of the REMAP 2030 initiative. This process is establishing it as a credible

tool for renewable energy planning. REMAP2030 was also discussed in various fora such as the International Energy Agency (IEA) Renewable Energy Working Party, the IEA Energy Technology Systems Analysis Programme, the World Business Council for Sustainable Development, the UNFCCC Ad-hoc Working Group on the Durban Platform for Enhanced Action, the Renewables for Cities workshop, the Singapore International Energy Week, and the International Energy Modelling workshop in Paris. The level and scope of REMAP, and IRENA's ability to engage with countries, greatly benefitted from the additional voluntary contributions provided by Japan and Germany.

33. An important part of REMAP is the identification for deployment of renewable energy use in the end-use sector. In this context, IRENA is developing a number of roadmaps to inform REMAP. Representing a third of global energy consumption, the manufacturing industry is a crucial sector for achieving a doubling of the renewable energy share by 2030. Based on a detailed quantitative analysis of renewable energy potential in the global manufacturing industry and two stakeholder workshops, IRENA launched its first technology roadmap "Doubling the global share of renewable energy by 2030: The crucial role of the global manufacturing industry". IRENA is also analyzing the socio-economic impacts and, this year, specifically looked at job creation.
34. IRENA continues to collaborate with IEA-RETD (International Energy Agency-Renewable Energy Technology Deployment). At the IEA-RETD Executive Committee Meeting, IRENA initiated a new collaborative project called "Factor 2", which aims to analyse energy system evolutions towards doubling of the renewable energy share by 2030, complementing the work done in the context of REMAP. IRENA and IEA-RETD also co-organized a global renewable energy scenarios workshop, which will take place in Brussels following EREC 2013 (Europe's Renewable Energy Policy Conference) in November.
35. As a background document to IRENA's technology roadmaps on electricity storage and renewable energy integration, IRENA published a guidebook for decision makers on smart grid technologies, "Smart Grid and Renewables: A Guide for Effective Deployment". This

publication provides a step-by-step guide for decision makers on how to enable higher shares of renewable power generation through smart grid technologies. The report also provides an easy-to-read overview of all smart grid technologies available to support renewable energy integration into the grid, positioning IRENA as an authoritative source of information on grid solutions.

36. IRENA's planning activities have included an examination of cities. With unprecedented population growth, the number of people living in cities is expected to increase from 3.5 billion in 2011 to 6.3 billion in 2050, and with economic growth and rising income levels, energy use in cities is projected to surge from some 67% of world's primary energy demand today to 73% by 2030 and account for 70% of CO² emissions. IRENA collaborated with the International Council for Local Environmental Initiatives (ICLEI) to publish the 'Renewable Energy Policy in Cities: Selected Case Studies', a series of seven case studies covering diverse themes ranging from renewable energy potential analysis to the establishment of local renewable energy industries and the creation of cluster initiatives. The publication was featured alongside IRENA's work on renewable energy roadmap for cities during ICLEI's Resilient Cities conference in Bonn in May 2013. As part of its Renewable Energy Policies in Cities series, IRENA published additional case studies this year including different applications (transport, biogas) as well as policy level analysis around the interaction between state and national level policies and public-private-partnership to promote renewable energy deployment.

37. During 2013, the first phase of a power sector planning tool was completed for all continental African countries. The tool – EREP (ECOWAS Renewable Energy Planning) - identifies maximum cost effective renewables deployment potentials in the long-term regional energy mix. EREP was integrated with IRENA's renewables power generation potential and cost database, showcasing IRENA's expertise on these subjects. IRENA consulted with African power pools, regional organizations, as well as energy planning offices in the governments and utilities in order to promote inclusion of renewables in energy master plans. The publication of "Planning and Prospects of Renewable Energy" reports for the ECOWAS and SADC regions resulted in a number of requests for follow up action. ECREEE requested IRENA's

support in creating National Renewable Energy Action Plans in fifteen ECOWAS Countries using EREP.

38. Collaboration with regional organizations such as the Asian Development Bank and OLADE was initiated to promote assessments of renewable deployment potentials in South Asia and South East Asia, as well as in Latin America and the Caribbean. IRENA also contributed to discussions on the integration of renewables into energy systems at various fora, such as the International Energy Workshop and Energy Modelling Forum. These discussions will continue to improve the representation of renewables in key global energy scenarios.
39. IRENA's mandate calls for recognition of the connections between the three pillars of sustainability – social, economic and environmental – and a move towards a holistic approach to resource management to achieve green growth. In this context, IRENA is finalizing a study that reviews existing knowledge on the topic and highlights the important role and benefits of renewable energy in management of the water, energy and land use. IRENA is also collaborating with the governments of Germany and the UAE as well as Texas A&M and the Qatar Environment and Energy Research Institute (QEERI) to develop an energy-centric tool that can inform policy making by empirically assessing the impact of renewable energy deployment on the different elements of the Nexus.
40. IRENA has initiated an activity to evaluate and address current and potential environmental impacts of the use of renewable energy technologies. IRENA focused on gaining a clear overview of potential environmental impacts from each technology, which included a lifecycle-based visual map to assist policy makers and project developers to clearly understand areas that require attention. In the course of 2013, IRENA investigated the impact on migratory species which led to a fruitful partnership with conservation experts such as the Convention on Migratory Species (CMS) and BirdLife International. In addition, to increase the understanding of the full life cycle of renewable energy technologies, Germany provided a voluntary contribution for a study on the environmental aspects of PV modules at their end of life. IRENA is looking into existing practices and policies in this area with plans to create a forum

where policy makers can exchange best practices and lessons learnt from the end-of-life management of other technologies such as electrical and electronic equipment.

41. As policy makers strive to achieve a greater share of renewables, it is increasingly vital for both public and private stakeholders to understand the technologies being deployed. For this reason, IRENA is developing technology roadmaps and briefs, to help guide decision-makers in the advantages and uses of existing renewable technologies. IRENA's technology briefs complement the technology roadmaps, providing concise, up-to-date information on various renewable energy technologies. Technology briefs have proven to be a useful reference in the consideration of technology options. From January to September 2013, technology briefs have been downloaded some 88,000 times. IRENA is continuing to develop technology briefs, with several in the final stages of preparation, including on algae for biofuels, wave energy, ocean thermal energy conversion, salinity gradient, tidal energy, and biogas for transport. In cooperation with IEA/ET SAP (Energy Technology Systems Analysis Program), IRENA is also finalizing technology briefs on biomass logistics, solar heating and cooling for industry and buildings, renewable energy integration, and waste-to-energy. In addition, IRENA is finalizing overviews of the six forms of renewable energy, to provide user-friendly, easily understood essential information to a wide range of users.
42. In 2013 IRENA, through the implementation of the Renewables Readiness Assessments (RRA) methodology, continued to provide countries with increased capacity to identify gaps and frame actions to accelerate deployment of renewables. The RRA process yielded significant results in a number of countries. Niger established a rural energy agency with a mandate to provide electricity access to rural areas using renewable energy technologies, among others, as well as to initiate the process of drafting a renewable energy law. In Peru, IRENA provided advice on front-line issues such as the design of auctions. In The Gambia, and in collaboration with a number of partners, the process led to the assessment of the commercial feasibility of hybridising diesel mini-grids. In Grenada, the RRA process led to the review of the current concession agreement with GRENLEC, Grenada's electricity provider, and is expected to pave the way for an increased share of renewable energy in the

electricity mix. In Kiribati, the RRA process helped identify key factors to consider while integrating renewables into the grid and the impact on grid stability. Finally, a workshop in Mongolia highlighted the country's ability to develop renewables for cross-border export as well as to supply electricity to new mines developed in off grid areas. A voluntary contribution from Japan facilitated this process.

43. Interest in RRAs continues to grow, with requests from Fiji, the Marshall Islands, and Vanuatu among others, all of which are in the pipeline for future RRAs. In order to ensure global complementarity of effort, IRENA is collaborating with UNDP in the RRA process in Mauritania. The Mauritanian RRA will be used to develop a template for partnership with the SE4ALL country assessments. Further, IRENA has organised an RRA expert workshop in Nicaragua to provide input for the renewable energy component of the Action Plan for SE4ALL. The workshop will identify and address barriers and legal regulations for wind, biomass and solar, grid integration of renewables, geothermal energy, grid connection of small hydro projects, biofuels and energy access, with a special focus on solar power, efficient cooking and productive uses of energy.
44. In June 2013, the 'Renewables Readiness Assessment: Design to Action' was published incorporating experiences gained from countries that had already conducted RRAs. This refined guide for conducting RRAs streamlined the process and provides more in-depth guidance on data metrics to be collected during the process. In addition, the RRA webpage is being developed to facilitate information sharing and the dissemination of IRENA's work on the initiative. Within the webpage, a web-based tool is being developed to help interested stakeholders familiarise themselves with the RRA process and provide a platform for countries, development partners, and regional and sub-regional entities to access information on the outputs of RRAs, best practice, follow-up activities and advisory services in the area of resource assessment, legal and regulatory frameworks, finance, capacity building, etc.
45. In order to facilitate sharing of experience and maximum use of local capacities, IRENA is developing a network of country practitioners experienced in the RRA methodology and able

to engage in RRA countries. These experts are forming a part of the Renewable Energy Policy Advisory Network (REPAN), developed in cooperation with the Clean Energy Solutions Center. REPAN was also used to respond to several requests for advice received from countries.

46. Post RRA, the National Strategies project provides advisory services on renewable energy development, including assistance to countries with capacity needs and resource assessments, technology roadmaps, local content creation, and finance. An advisory service workshop on small hydro was organised and hosted in Zambia in May 2013. The participants were policy makers, researchers, regulators and utilities from Mozambique, Swaziland, The Gambia, and Zambia. Participants formulated draft strategies to develop small hydropower and engage Independent Power Producers (IPPs) in their respective countries. Mozambique is in the process of drafting their strategy for promoting small hydro development.

V. Gateway to knowledge on renewable energy

47. The Agency has the unique opportunity to act as a gateway to knowledge on renewable energy, connecting stakeholders, decision-makers and the public at large. Over the course of 2013, IRENA has made significant progress towards becoming the global voice of renewables. The Agency is finalizing its institutional publication, “REthinking Energy”. Further, it has developed a statistical and costs database, worked on enhancing and proliferating renewable energy messages to dispel myths and increase knowledge of the benefits of renewables worldwide.
48. IRENA’s first institutional publication - “REthinking Energy” – will address topical issues that are of vital importance to Members and other stakeholders. It will provide a useful reference for policy makers and assist in the dissemination of impartial knowledge, data and analysis on renewable energy and the global transition towards future sustainable energy systems. The development of the publication was supported in part by a voluntary contribution from Japan.

49. IRENA made significant efforts to gather key statistical and costs data vital to decision making and to the development of other areas of the Agency's work. To provide reliable global renewable energy statistics, IRENA broadened its Renewable Energy Country Profiles series with global coverage expected by the end of 2013. A working paper on statistical issues relating to bioenergy and distributed energy was issued, which identified gaps in existing data-collection methodologies. The conclusions fed into the development of an IRENA statistical questionnaire which will be used for the annual collection of data. The questionnaire builds on the existing efforts of other agencies active in the field of energy statistics. The yearly data collection cycle commenced in 2013, while the internal data management system is in the process of being finalised.
50. IRENA's Global Atlas continued to grow in membership, and in the scope and size of information it contains. At present, the Global Atlas has 39 signatories who have supplied wind and/or solar datasets, or are in the process of doing so. The Global Atlas contains more than 400 solar and wind datasets and 25 thematic maps. It has 600 registered users and has received 44,000 site visits from over 150 countries. IRENA is also engaged with an additional 20 countries who have expressed interest in participating in the Atlas project. IRENA and its partners have defined the work plan for the next version of the global interface and established a consortium agreement regulating the intellectual property regime. Also a data quality information framework for the solar and wind components was developed, and plans for the integration of geothermal and bioenergy components into the Global Atlas have been established.
51. In partnership with ECREEE and GEOSS, IRENA utilised the Global Atlas consortium to develop a zoning proposal for photovoltaic programmes in ECOWAS countries. This activity, to be replicated in other regional initiatives in the coming biennium, demonstrates that the Global Atlas is the largest freely accessible information node on renewable energy resources and a useful tool for regional planning for grid-connected and off-grid applications.

52. Since 2012, IRENA has been working with the IEA to provide up-to-date information on renewable energy policies and measures worldwide through the IEA/IRENA Policies and Measures Database. In the course of 2013, work was undertaken to increase the number of countries, policies and measures covered by the database. This resulted in the expansion of coverage of more than 1,500 entries from over 100 countries. The Agency, in coordination with the IEA, is ramping up targeted dissemination of the database to further increase its impact.
53. To better understand investment trends relevant to its membership and other renewable energy stakeholders, IRENA has initiated the mapping of financial flows from multilateral and bilateral public and private sources. While this work has just begun, it will fill data gaps in commercial renewable energy project databases, and will constitute a basis for regional investments in small and medium-sized projects. IRENA has taken part in global discussions on renewable energy finance and risk mitigation, with a particular focus on cost-of-capital and renewable energy-specific risks. An expert meeting with the European Bank for Reconstruction and Development (EBRD) will provide expert inputs and set the scene for a series of meetings to be held in early 2014 on risk mitigation instruments.
54. IRENA is establishing itself as a leader in renewable energy cost information. In January 2013 the report “Renewable Power Generation Costs in 2012: An Overview” was published. It is one of the Agency’s most downloaded publications in 2013 with some 491,375 downloads. The report was widely cited in the media as well as used in the development of the REN21 Global Status Report 2013 and the IPCC’s 5th Assessment Report. In July 2013, new analysis of the costs of conventional and advanced biofuels, biogas and electrification options for transport was released in the margins of the ECOSOC meeting in Geneva. The findings suggest that the outlook for renewables in transport to 2020 could see an increasing range of advanced biofuels and electrification options for cars becoming competitive with fossil fuels, if current policy support is enhanced and expanded.

55. Building on the success of cost data collection and analysis to date, IRENA has initiated the establishment of its Renewable Costing Alliance to systematize the collection of costs data and provide Members with real-time analysis on the true costs of renewable energy technologies. Providing data on the true costs of real-world renewable projects reduces a significant information barrier while allowing powerful messages to be communicated to stakeholders and persistent myths about the costs of renewables to be dispelled. The IRENA Renewable Costing Alliance reaches out to governments, industry, businesses, utilities, project developers, and other private institutions to share, confidentially, their real-world project data to create a unique database to assist Alliance members to accurately assess industry averages and allow IRENA to shift the focus of the costing work onto analysis that provides targeted advice to its Members. Engagement with potential members is well advanced and the Alliance will be officially launched at the IRENA Assembly in January 2014.
56. IRENA has developed a methodology to assess biomass cost supply curves. Based on the FAO's (Food and Agriculture Organization) data, the methodology has been utilized to derive biomass cost supply curves for some 160 countries, for their resource production capacity, trade, production price and delivered cost of biomass resources, and for eight different biomass product groups such as energy crops and agricultural residues. This has yielded detailed biomass cost supply curves for 2,560 different market segments and is the first detailed view of global biomass cost supply curves. These cost curves provided vital inputs into the REMAP process, as well as valuable insights into the critical role of biomass in any scenario with rapid growth in renewable shares. This work was made possible with the voluntary contribution of the Government of Japan.
57. IRENA is finalizing a report on biomass waste to energy potential and deployment strategy, with the focus on Nigeria and Cameroon. This study, undertaken in cooperation with the Japan International Research Centre for Agricultural Sciences (JIRCAS) and the UK Energy Research Centre (UKERC) has highlighted the significant potential of the agro processing sectors in Africa to contribute to energy access and income generation from the productive uses of energy from biomass residues, especially in off-grid areas. An inventory of agricultural

production in Africa as well as a template for detailed on-the-ground data collection as a pilot demonstration framework for three countries in Africa has been prepared. It is being deployed to support the full project report and framework for replication and scale-up scheduled for launch and dissemination in early 2014. Presentations at a number of workshops, including the Potsdam Spring Dialogues 2013 and the IEA Bioenergy How2Guide inception, have stimulated cooperation with various organisations to form the advisory group for the production of a multi-stakeholder “how-to” guide for bioenergy in developing countries.

58. The IRENA Renewable Energy Learning Partnership (IRELP) was established as the central hub for renewable energy education and training, offering free access to a global database of more than 2,500 workshops, courses, degree and certificate programmes, webinars and training guides. In order to complement these education and training opportunities, IRELP also launched a global internship database in July 2013, with the intention of helping students, aspiring professionals and future decision makers to embark on renewable energy careers. On average, IRELP now receives over 20,000 visits per month with active users in more than 190 countries, and has more than 100,000 followers through social media networks. In October 2013, IRELP hosted its first webinar series in partnership with the European Energy Centre, Alingho and EWEA, which addressed skills needed in the renewable energy sector and education necessary for the development of a strong renewable energy workforce.
59. In addition, the first class of 18 IRENA Scholars graduated from the Masdar Institute of Science and Technology in Abu Dhabi, United Arab Emirates in June 2013. The third class of IRENA Scholars, comprising 20 students originating from 11 countries, has recently started their two year study programme at the Institute.
60. Building on the success of the 2012 report “Renewable Energy Jobs and Access”, IRENA developed the report “Renewable Energy and Jobs” to cover employment aspects of renewable energy deployment. The study assessed the employment impacts of renewable energy deployment across different segments of the value chain and presented various methodologies that can be used to measure renewable energy job creation. Conclusions drawn revealed global

renewable energy employment, direct and indirect, at 5.7 million in 2012. The report will form the basis of discussions at IRENA's International Renewable Energy and Jobs Conference to be held during the World Future Energy Summit on 21 January 2014. The study also provided the basis for the sidebar on jobs that IRENA contributed to the REN21 Global Status Report 2013. The regular monitoring and assessing of job creation will be one of IRENA's essential contributions to address the existing knowledge gap in the field.

61. As highlighted by Ministers at the third session of the Assembly, social acceptance is a key driver in the deployment and uptake of renewables. Information today is not only communicated widely, but at increasing speed, rendering accessible, clear and concise information invaluable. IRENA launched a global effort to disseminate renewable energy facts and improve social acceptance in response to the proliferation of public concerns and misunderstandings on renewable energy technologies. Based on an analysis of 79 materials in the public domain that contained 345 negative statements on various aspects of renewable energy, 10 of the most common concerns have been identified. To build on the work done by many industry and civil society entities, IRENA hosted a workshop on social acceptance of renewable energy in October 2013 where 40 leading renewable energy advocates from both industry and civil society shared experiences on efforts to dispel misconceptions, and discussed strategies for common action. As a result of this discussion, a Coalition for Action on Public Support to Renewable Energy was formed.
62. In order to actively engage the private sector, a number of IRENA projects, such as the Renewable Costing Alliance, the Global Renewable Energy Atlas, renewable energy finance and the public-private partnership for the hybridisation of mini-grids, are being advanced in close cooperation with the private sector. A series of webinars, multi-stakeholder and expert meetings have strengthened the Agency's inclusive approach to the full range of private sector organisations. In addition, the Agency will engage with a wide range of stakeholders to maximise the effectiveness and efficiency of global collaboration on substantive issues, strategy and outreach in relation to IRENA's work. Over 600 organisations active in the field

of renewable energy have been identified from diverse stakeholder groups as potential partners for engagement.

VI. Enabling investment and growth

63. IRENA's in-house expertise and cooperation with a wide range of partners strengthen its ability to bridge knowledge gaps and thereby enable investment and growth. Achievements in 2013 include the development of various policy assessments, regional market analysis, standards and innovation studies, the establishment of a knowledge platform on socio-economic and environmental impacts, and the creation of project development tools.
64. IRENA's econValue project, which analyses the value creation of large-scale solar and wind deployment, has set the foundation for a partnership platform to help bridge the knowledge gap from direct and indirect socio-economic benefits of the development of a domestic renewable energy industry. The analysis identified policy design options to optimise economic value creation effects and assesses existing tools to measure them. Case studies have been developed to illustrate the value creation of large-scale deployment of solar and wind energy in India, Malaysia, Mexico, South Africa and the region of West Africa. Part of the analysis evaluated the socio-economic impacts of renewable energy deployment roadmaps within REMAP.
65. The econValue project is a multi-year initiative that will expand to include different technologies, geographies and selected impacts, such as trade balance and energy security. The project, which currently includes several organisations, aims to provide an inclusive platform for institutions and experts addressing the socio-economic impacts of renewable energy deployment. EconValue supports countries to account for the potential economic value creation that results from the adoption of renewable energy while planning their energy mix, designing policies with the aim to maximise economic value, and adopting appropriate tools to assess the socio-economic impacts of renewable energy deployment.
66. IRENA is also evaluating the economic impacts of current energy policies in the context of renewable energy deployment in response to an invitation by the fifth Middle East North Africa

Renewable Energy Conference (MENAREC5). This project explores the potential for renewable energy deployment in the presence of an energy pricing regime that rectifies some of the market distortions by developing options for energy pricing, with a special focus on selected countries of North Africa and the Middle East, namely Egypt, Jordan, Libya, Morocco and Tunisia. In addition, Germany has provided a voluntary contribution to support a study to evaluate the economic impacts of current energy policies in the context of renewable energy deployment in the above five countries. The outcomes from both studies will be presented at MENAREC6 in Libya in 2014. In addition, IRENA completed the MENA Renewables Status Report 2013 in cooperation with REN21 and the UAE's Ministry of Foreign Affairs. IRENA is also preparing a joint publication with RCREEE and the League of Arab States on "Ways toward the implementation of the Arab Renewable Energy Strategy 2030".

67. To date, renewable energy targets have been set in 138 countries worldwide. While such targets are useful instruments to guide policies and send medium to long-term signals to stakeholders, the target setting process has not always been backed by appropriate assessments and strategies. IRENA's report "Critical Success Factors for Renewable Energy Target Setting" addresses this obstacle and examines optimal renewable energy target designs, with a particular focus on the necessary technical and policy requirements while taking into account factors from outside the direct scope of the renewable energy sector. Supported by eight case studies selected from diverse regions and contexts, the report will represent a useful reference for policy makers globally to effectively design and review renewable energy targets.
68. The dynamic nature of renewable energy markets and the technology learning curve requires timely and effective policy adaptation mechanisms to ensure that renewable energy support measures are able to meet sector needs. IRENA's report on key renewable energy policy adaptation challenges provides advice on how policy makers can best address the challenge of policy adaptation while minimising the cost of public financial support as well as policy uncertainty for investors. The report addresses pertinent issues such as rapidly falling costs of renewable energy technologies, approaching or existing grid parity, and integration of rising shares of renewable energy in energy systems.

69. As part of the effort to build user-friendly tools to assist countries in the development of renewable energy technology projects and investments, IRENA has developed the “Project Navigator” which aims to assist developers in the development and implementation of renewable energy projects. Together with “Renewable Energy Technology Project Development Guidelines”, the Navigator will guide project developers through a pre-defined process, providing the tools, case studies and best practices needed for successful completion of the project development. It will contain technical concepts for specific technologies, with off-shore wind and PV concepts already under development, as well as a financial component. The Guidelines have been piloted in the development of a wind farm project in the MENA region. The Guidelines are also being piloted in the context of the ADFD/IRENA project facility and the UAE Pacific Fund.
70. In order to address the foundations of renewable investment and growth, IRENA has also focused programmatic activities on renewable standards, quality assurance and patents. In the first quarter of 2013 IRENA launched a study on needs and gaps in renewable energy standardization. IRENA’s analysis has identified more than 570 international standards relevant to renewables. The results of this study were presented in different fora, including a webinar organised by the Clean Energy Solutions Center in May 2013. Following this report, ISO’s Strategic Advisory Group on Renewable Energy and Energy Efficiency (SAG-E) has requested support in the further development and deployment of their energy standards programme. The work on standards continues in cooperation with other organizations, including UNIDO, RCREEE, ECREEE, the International Electrotechnical Commission (IEC), and the Germany Metrology Institute (PTB).
71. Furthermore, IRENA is finalizing its study on quality assurance mechanisms for small wind turbines and solar water heaters. The study, undertaken in cooperation with a number of national and regional experts, will provide guidance and recommendation on how countries can implement national quality mechanisms, adapted to their national context, to support growing markets for these technologies. Furthermore, to facilitate access to information concerning available international standards for renewable energy technologies, IRENA is developing a web-based platform for quality and standards which will be piloted in early 2014.

The platform will also include information concerning relevant patents in the field of renewables, enabling a better understanding of the latest technology trends in the field.

72. IRENA's working paper, "Renewable Energy Innovation Policy: Success Criteria and Strategies", was developed to assist countries to strengthen renewable energy innovation policy development, primarily through a discussion of design criteria for innovation policy frameworks. The working paper identifies broad success criteria for innovation policy in the sector and suggests strategic policy approaches to advance renewable energy technology innovation in the context of feasible options, competition for resources, and national economic development goals.
73. IRENA has also conducted a comprehensive study on the current development trends and market status of ocean energy technologies, focusing on the analysis of their patents landscape as well as an assessment of the opportunities and barriers to the promotion of innovation and the deployment of ocean energy technologies and possible solutions to overcome those barriers. The report, to be released in early 2014, will support policy-makers and investors in assessing the potential for investment and strategic development of ocean energy technologies.
74. Finally, to support national and regional innovation efforts, IRENA developed a methodology to examine how cooperation contributes to innovation, with particular focus on research, development and demonstration (RD&D). The methodology has been applied to several case studies in Latin America and the Caribbean (LAC) resulting in recommendations to innovation stakeholders on harmonizing the existing efforts and overcoming RD&D barriers. The recommendations are devised to boost RD&D initiatives, which can stimulate the technological advancement in the region. This work has resulted in a number of invitations to present the studies and main findings. In addition, IRENA has been requested to undertake a similar overview in other regions.

VII. Renewable energy access for sustainable livelihoods

75. Decreasing costs have led renewable energy technologies to become the most cost-competitive option for off-grid electrification. The key findings and recommendations derived from the first International Off-grid Renewable Energy Conference (IOREC), co-organized by IRENA in Accra, Ghana, were published in June 2013. Following the success of the first conference in promoting dialogue between the public and private sector as well as in facilitating cross-regional exchange of best practices, IOREC is planned to be held on a biennial basis in different regions of the world. Furthermore, the work on deployment of renewable energy towards achieving energy access will be extended in the future to cover other essential aspects, such as the analysis of mini-grid business models and various financing models.
76. Despite declining technology costs, the deployment of renewables at scale is still facing barriers that require capacity building. In 2013, IRENA put its capacity needs assessment into practice in several initiatives.
77. IRENA has received substantial voluntary contributions from the UAE and Germany that has enabled the implementation of two regional capacity building initiatives in West Africa and the Pacific. In partnership with the Economic Community of West African States (ECOWAS) Centre for Renewable Energy and Energy Efficiency (ECREEE), a capacity building initiative aimed at policy makers, utilities and regulators from the ECOWAS region is expected to enhance the rate of implementation of the ECOWAS National Renewable Energy Action Plans. The practical trainings, involving 15 countries, aim to enable entrepreneurs to develop bankable proposals for solar PV projects and for financial institutions to increase financial lending to small and medium entrepreneurs (SMEs). Furthermore, and in cooperation with the Secretariat of the Pacific Community (SPC), IRENA's regional capacity building initiative in the Pacific has been formulated to address the requirements of the islands through a more country-specific approach.
78. IRENA partnered with the New Energy and Industrial Technology Development Organization (NEDO) of Japan to deliver a two-week intensive practical training programme focusing on

solar PV Project Planning and Engineering, Procurement, Construction and Operation and Maintenance. A group of 40 professionals from 27 countries were selected from over 300 applications to receive training on technological advancements in the solar PV industry, successful promotion policies for solar energy deployment and to enhance their understanding of affordable quality assurance standards for solar PV systems.

79. In Latin America the seminar on “Renewable Energies: Challenges and Opportunities in Latin-America IRENA-OLADE”, held in Montevideo, Uruguay in June, 2013 provided inputs from the Latin American countries to the capacity building strategy for the region.
80. Within the objective of engaging with the private sector, IRENA is partnering with UN Global Compact and the Climate Group in an initiative launched by IKEA to solicit 100 large multinationals to go 100% renewable by 2020. IKEA plans to create an advisory or steering group with IRENA’s participation to provide guidance for this campaign.

VIII. Islands: lighthouses for renewable energy deployment

81. Pacific leaders requested IRENA’s support in the development of roadmaps for the region. In response, IRENA has completed fifteen Pacific Island Country overviews and developed a roadmap for the Pacific. The report, “Pacific Lighthouses: Renewable Energy Roadmapping” was launched at the Pacific Islands Forum in Majuro, Marshall Islands in September 2013. This report identifies key concepts, challenges and best practices for the increased deployment of renewable energy in the Pacific Islands Countries and Territories. It provides baseline information to assist in the development of national renewable energy deployment roadmaps or action plans, identifies challenges and proposes solutions and possible roles for IRENA. The report has been well received by policy makers, as well as various development partners in the region. It is also a key input in the development of RRAs. In addition, IRENA, in cooperation with GIZ, is supporting the development of the Nauru renewable energy roadmap. A voluntary contribution from Germany has enabled IRENA to expand this work to other islands, and additional roadmaps in other Pacific and Caribbean islands are currently under development.

82. The Global Renewable Energy Islands Network (GREIN) was launched at IRENA's third Assembly in January 2013, following a call from ministers and other officials from 48 countries at the "Renewables and Islands" high-level meeting in Malta in September 2012. GREIN provides a platform for pooling knowledge, sharing best practices and seeking innovative solutions to accelerate the uptake of clean and cost-effective renewable energy technologies on islands. GREIN has established interest clusters on renewable energy grid integration and roadmaps and is working to establish interest clusters on tourist industry applications, resource assessment, desalination, and waste-to-energy systems.
83. A guidebook on wind resource measurement for islands has been commissioned to assist islands to produce the data they need to finance wind turbines. A cross-cutting review of six settings for success is being prepared to show how a mix of political will, market opening, technical planning and capacity building can accelerate the deployment of renewables on a variety of islands. Partners are being sought to perform renewable energy audits for selected island hotels that can be used to demonstrate the cost-effectiveness of solar hot water systems, solar-assisted chilling and rooftop photovoltaic (PV) and to stimulate private sector investment. This activity has been supported by voluntary funding from a number of Members.
84. Grid stability was identified as one of the main concerns for island policy makers and utilities. IRENA conducted technical training on dynamic modelling for the Pacific Power Association and then conducted a pilot study on the main island of Palau. The findings were presented in a workshop. Subsequently, several requests for grid stability studies have been received and preparations are underway to undertake additional studies in the Pacific, Caribbean and AIMS regions. In order to ensure long-term sustainability of this work, methodological guidelines for grid stability assessments are being developed.
85. IRENA partnered with the Pacific Power Association (PPA) and the Sustainable Energy Industry Association of the Pacific Islands (SEIAPI) to support the development and implementation of an industry-based certification programme for technicians in on-grid solar PV systems. This has attracted a positive response from both public and private sector from

Fiji, Kiribati, Papua New Guinea, Samoa, Tonga, Tuvalu, and Vanuatu. IRENA provided expert assistance to Samoa and Tonga for formulating their power purchase agreements and it is now in the process of addressing a similar request from the Marshall Islands. IRENA collaborated with organizations in Vanuatu to build the capacities of village entrepreneurs in setting-up and operating the value chain for solar home systems in rural areas. The initial phase has revealed that the innovative financing model, being implemented by the local entrepreneurs, has attracted twice as much the expected end users for solar home systems.

86. IRENA is also supporting activities to assure the deployment of reliable and safe PV systems in the Pacific Islands through the adoption of harmonized technical guidelines by national utilities and energy regulatory bodies. In collaboration with the Sustainable Energy Industry Association of the Pacific Islands (SEIAPI), the Pacific Power Association (PPA) and the Secretariat of the Pacific Community (SPC), IRENA conducted a series of workshops and expert meetings on “Harmonized Technical Guidelines for Photovoltaic (PV) Systems in the Pacific Islands”. Participants in the three events included representatives of national electricity utilities, government departments, financing organizations, training institutions, development partners and private business. As a result of this effort, a number of utilities have agreed to adopt technical guidelines regionally developed for PV systems in islands.

IX. Regional action agenda

87. To catalyse multilateral cooperation on renewable energy technologies, IRENA partnered with the Latin America Energy Organization (OLADE) and the International Geothermal Association (IGA) to support Andean countries to evaluate the institutional, regulatory and legal landscape, as well as the status of geothermal exploration and the status of incentives for investments, capacity-building needs and market structure. A workshop on geothermal energy development in the Andean Region was organised in Iceland in March 2013. As a result of the workshop, five country status reports were produced and three areas were identified for potential support. As a follow up on the needs identified, IRENA organised a two-day workshop in Peru on legal and regulatory frameworks, bringing together stakeholders from

government, private sector and supporting institutions. Members from France, Iceland, Japan, Mexico, and New Zealand as well as representatives from OLADE and the IGA shared experiences in geothermal development. A voluntary contribution from Iceland has provided momentum to the geothermal initiative.

88. IRENA has launched the Africa Clean Energy Corridor initiative for the countries of the Southern and East African Power Pools as a unique opportunity to meet future growth with renewable sources. An executive strategy workshop, hosted by IRENA in June 2013, assembled representatives from countries, power pools, utilities, IPP, regional organisations, financial institutions and donors to suggest elements for an action agenda for consideration by ministers at the Fourth Assembly in January 2014. The participants agreed that a Clean Energy Corridor with a greater share of renewables would promote regional economic growth, goals for better health and education, and poverty reduction.
89. IRENA initiated a study to assess the readiness of the power pools to realise the potential of the Africa Clean Energy Corridor; to identify the critical transmission and interconnection gaps and actions with an impact on the corridor; to raise the profile of projects that are ready for investment; and to identify stakeholders who can assist in building capacity for financing and developing projects. The study highlighted that the Africa Clean Energy Corridor would rely upon the development of a strong high-voltage transmission corridor from Egypt to South Africa. A key building block would be the North-South Transmission Corridor already identified under the African Union Commission's Program for Infrastructure Development in Africa (PIDA), which at present prioritises transmission networks and large-scale hydropower generation projects.
90. IRENA has initiated dialogue with countries within the Clean Energy Corridor, to identify zones with high renewable power resource potential and the ability to offload the electricity generated in these zones through high-voltage transmission links to cities, mines and other load centres. IRENA is working with the Lawrence Berkeley National Laboratory in the United States to elaborate a zoning methodology. IRENA organised a workshop on integrated resource planning (IRP) processes with nine countries in the Corridor during the Windaba Conference

that took place in South Africa in September 2013 and is planning a workshop on regional IRP processes with the Regional Electricity Regulators Association of Southern Africa (RERA) in April 2014. Actions aimed to put in place market-opening measures and financial risk mitigation measures that will enable renewable power investment include New Zealand hosting a visit for experts and officials from ten countries along the corridor in November 2013, to see first-hand how grids can be planned and operated with a mix of hydro, geothermal and wind power facilities. In this context, IRENA is undertaking work on issues related to renewable energy financing.

91. IRENA has partnered with the Economic Research Institute for Association of Southeast Asian Nations (ASEAN) and East Asia to conduct a joint study of how increased shares of renewable energy could be integrated into the expanding ASEAN Power Grid. Wind and solar power could make cost-effective additions to the ASEAN Grid. The “Energy Market Integration in East Asia: Implications for Scaling up Deployment of Renewable Energy Sources” study aims to improve understanding of the cost-effective potential for deploying wind and solar generation facilities from a regional perspective. The study provides recommendations on how the ASEAN Power Grid can best incorporate higher shares of renewable energy sources to enhance energy security, environmental sustainability and economic growth. This publication was presented and distributed during the 31st ASEAN Ministers on Energy Meeting.
92. The countries of South East Europe have substantial renewable energy resources and are developing National Renewable Energy Action Plans (NREAPs) to comply with the Renewable Energy Directive of the European Union. IRENA is organising a workshop in December 2013 to identify synergies among these Action Plans; to examine practical policies for financing the required renewable power investments; to discuss strategies for ensuring that high-priority transmission links are built to expand renewable power flows within and beyond the region; and to consider how best to overcome administrative and regulatory barriers to authorise renewable power plants and associated transmission infrastructure.

X. Administration and Management Services

93. In 2013, Administration and Management Services (AMS) continued its work in ensuring the delivery of concerted support services for the Agency's substantive activities that includes the efficient, transparent and accountable functioning of Human Resources, Finance, Information Communication Technology, Procurement and Travel. All policies, procedures and related forms have been made available to staff on IRENA's intranet, RSource, and staff are being provided with training to ensure proper application and accountability. In the effort to rationalise administrative processes in the Agency, the Director-General promulgated a revised Delegation of Authority Manual in February 2013. The Manual defines the principles under which authority is delegated to senior Secretariat staff and ensures accountability at all levels.
94. Recruitment of staff remains a priority. Out of the total 81 approved posts, 76 are currently either filled or under active recruitment. Staff represent 42 nationalities, 46 % are female and 54 % are male. In addition, there are three staff on loan to IRENA, two from the United Arab Emirates and one from Japan. The Agency has also established Internship and Junior Professional Associate programmes to enable young professionals to gain renewable energy and administrative experience.
95. More than 4000 applications were received in response to various vacancies announced during 2013 with the average number of applicants per vacancy continuing to increase compared to previous years, demonstrating continuing interest in employment with the Agency. To ensure a transparent process and selection of the best candidates for the vacant positions, candidates are being assessed through a standardised process involving a panel of staff members at appropriate levels. All recommendations are reviewed and approved by the Director-General before the final selection and appointments are made.
96. Pursuant to the Staff Regulations, the Staff Performance Appraisal System has been successfully completed with timely delivery of 2012 performance appraisals and establishment of 2013 performance indicators. A Training needs Assessment Survey was conducted for all IRENA staff, and a number of training sessions have been conducted on various subjects such

as ethics, health insurance, Windows 8 and Microsoft office applications as well as writing skills.

97. The 2012 financial statements were finalized and received a clean unqualified audit opinion from the external auditors. The External Auditor issued five recommendations, all of which were fully implemented and reported to the Members. With the aim to improve efficiency and further streamline processes, and as well as ensuring effective internal control, the Finance Policy Manual was revised to incorporate the provisions of the Directive on Delegation of Authority and accommodate new features of the Budget Planning Application and the Project Management Office.

98. The Enterprise Resource Planning system (ERP) is being implemented to automate the approved policies and procedures of Finance, Human Resources, Procurement and Travel, along with the promulgated of the delegation of authority for smooth, efficient, transparent and auditable functioning of the administrative processes. Requirement analysis, functional requirement mapping documents and functional design documentation phases have been completed successfully while development of the application is in progress. While it was initially envisaged to go live with ERP in 2013, the launch has been delayed due to the acquisition of the company selected for this project, which caused a delay of few months. The launch is now scheduled for mid-2014.

99. IRENA's Information and Communication Technology (ICT) Office provided a broad range of Agency-wide solutions and services to IRENA offices, which operate in a single virtual office environment. To date, ICT launched ten external portals and some fifteen in-house developed applications including for recording personal international calls, real-time budget application, and correspondence systems. In order to benefit from the latest technology, and improve overall efficiencies of the Agency, all IRENA computers have been upgraded with Windows 8, Office 2013 and Lync 2013, which provide a number of new features, performance enhancements, improved security storage spaces, and innovative and dynamic desktop applications.

100. In 2013, the Agency institutionalized a procurement plan to ensure the coordination and cost-effectiveness of its activities across all divisions. Some 250 contracts and purchase orders were successfully processed in the amount of USD 5.5 million. In order to ensure transparency and competitiveness, procurement opportunities are being posted on IRENA's website and the United Nations Global Market (UNGM) and to enter into Long-Term Agreements where appropriate. As of 31 October 2013, 13 Long Term Agreements have been concluded, as well as three project agreements with international institutions.

101. The Travel & General Office facilitated the travel of staff and delegates, as well as participants in workshops and conferences, both in IRENA offices in Abu Dhabi and Bonn, as well as worldwide. Over 500 travel and accommodation arrangements have been made so far in 2013. Furthermore, safety and security plans were finalized and staff briefed on actions to be taken for emergency evacuations.

102. Work is ongoing to prepare for the Agency's move to the permanent Headquarters offices provided by the host country at the new complex in Masdar City. The floorplan of IRENA's new Headquarters' was approved by the Director-General in September 2013. Several meetings have been held with the UAE authorities regarding sustainability and energy targets, ICT requirements and interior designs to ensure high efficiency in the overall functioning of the new Headquarters. A committee has been established to coordinate various operational requirements and ensure that the new Headquarters is ready for occupation by IRENA staff.

Annex

Table 1: Components and 2013 approved appropriations in thousand USD as of 31 October 2013

Component	2013 Approved Appropriation	Commitments and Expenses	Estimated Planned Requirements	Commitments, Expenses and Planned requirements	Utilisation Rate
A. Strategic Management	5,780	4,253	519	4,772	83%
Governing Bodies	1,600	1,217	210	1,427	89%
B. Programme of Work					
Country Support and Partnerships	6,600	5,937	596	6,533	99%
Knowledge, Policy and Finance	6,100	5,000	833	5,833	96%
Innovation and Technology	4,300	3,627	634	4,261	99%
Subtotal	17,000	14,564	2,063	16,627	98%
C. Administration and Management Services	5,320	4,728	323	5,050	95%
Total	29,700	24,762	3,115	27,877	94%
Total Core Budget	18,000	15,214	1,122	16,336	91%
Total Voluntary Contributions	11,700	9,548	1,993	11,541	99%
GRAND TOTAL	29,700	24,762	3,115	27,877	94%

Table 2: 2013 resource requirements by objects of expenditure in thousand USD as of 31 October 2013

Object of Expenditure	2013 Budget			Commitments, Expenses and Planned requirements	Utilisation Rate
	Approved	Adjustments between Objects of Expenditure	Adjusted Budget by Objects of Expenditure		
Total Staff Costs	15,690	-	15,690	14,053	90%
Total Non-Staff Costs	14,010	(0)	14,010	13,824	99%
Consultants, Interns, Project & Seconded Personnel	4,910	(2,599)	2,311	2,310	100%
Programme and Expert Meetings	4,470	(380)	4,090	3,916	96%
Travel of Staff	690	(227)	463	462	100%
Contractual Services	2,290	3,261	5,551	5,542	100%
General Operating Expenses	1,570	(50)	1,520	1,519	100%
Furniture and Equipment	80	(5)	75	75	100%
GRAND TOTAL	29,700	(0)	29,700	27,877	94%

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Table 3: Additional voluntary contributions in 2013 in USD

	Voluntary Contributions Commitments	Received Contribution
Fund for Developing Countries Representatives		
Sweden	25,000.00	25,000.00
UAE	486,052.82	786,052.82
SUBTOTAL	511,052.82	811,052.82
Contributions to projects		
Germany	581,370.42	581,370.42
Japan	807,229.00	807,229.00
Iceland	300,000.00	300,000.00
SUBTOTAL	1,688,599.42	1,688,599.42
Other Voluntary Contributions		
United Arab Emirates	500,000.00	500,000.00
SUBTOTAL	500,000.00	500,000.00
TOTAL ADDITIONAL CONTRIBUTIONS	2,699,652.24	2,999,652.24

* *USD 300,000 pertinent to 2012 commitment was received in early 2013*

Table 4: Budgeted voluntary contributions in 2013 in USD

	Voluntary Contributions Commitments	Received Contribution
GERMANY		
Innovation and Technology Capacity Building	4,300,000.00	4,300,000.00
Capacity Building	-	-
SUBTOTAL GERMANY CONTRIBUTIONS	4,300,000.00	4,300,000.00
UAE		
Operations	2,900,000.00	1,000,000.00
Research	2,900,000.00	1,000,000.00
Workshop and Conferences	1,600,000.00	1,200,000.00
Capacity Building	-	-
SUBTOTAL UAE CONTRIBUTIONS	7,400,000.00	3,200,000.00
TOTAL BUDGETED VOLUNTARY CONTRIBUTIONS	11,700,000.00	7,500,000.00

Figure 1: Value of contributions to the 2013 core budget, (amounts received and outstanding)

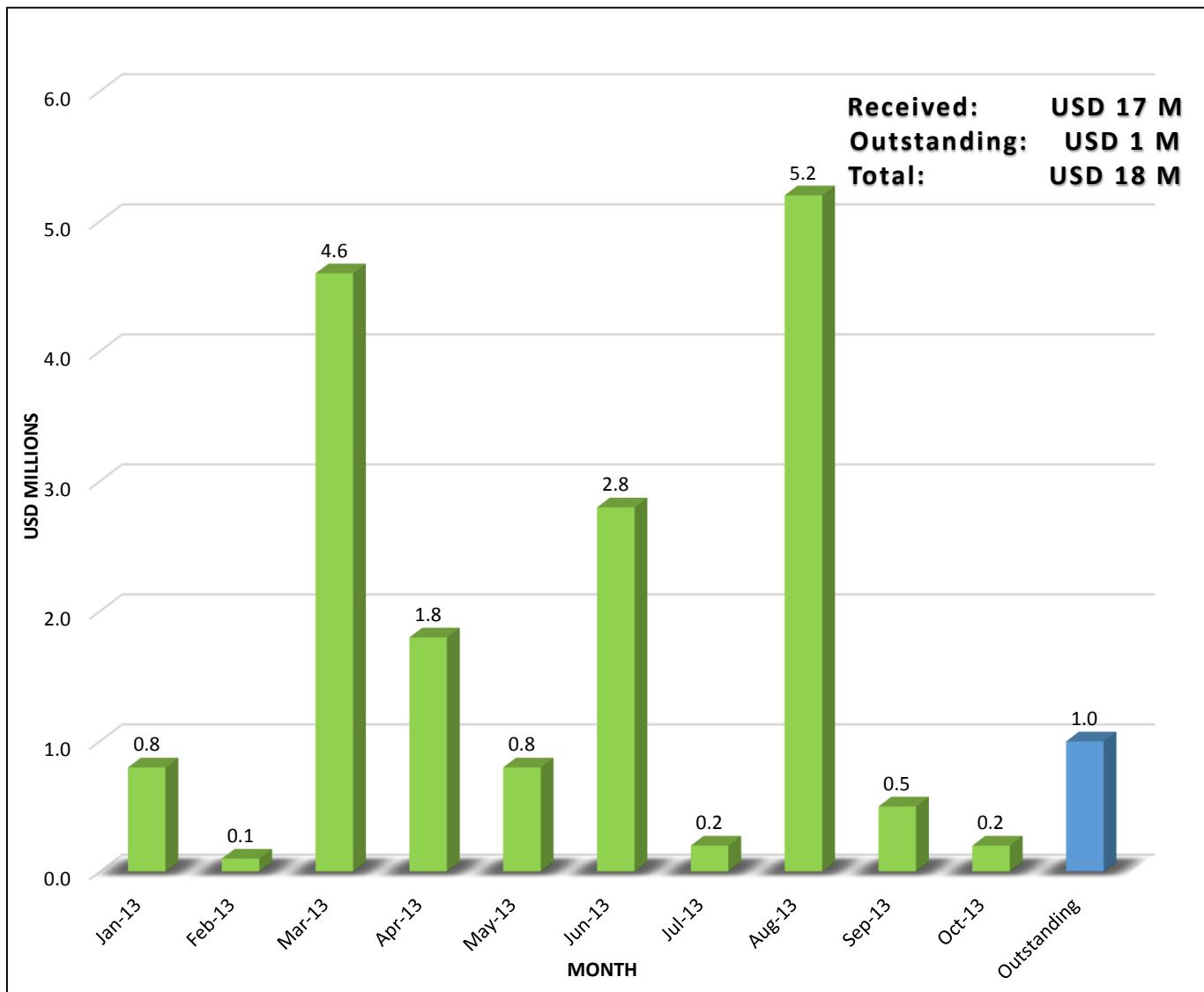


Figure 2: Number of countries contributing to the 2013 core budget, (contributions received and outstanding)

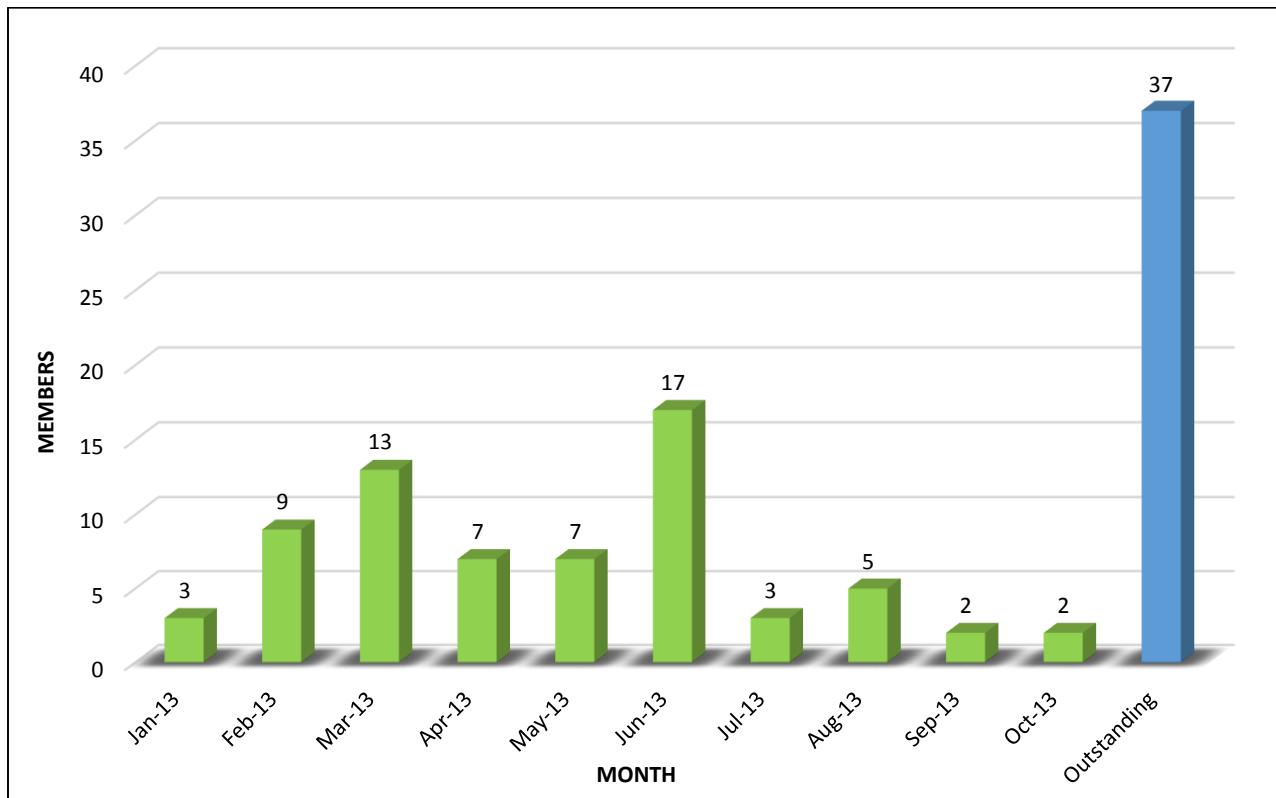


Figure 3: Value of contributions to the Working Capital Fund, (amounts received and outstanding)

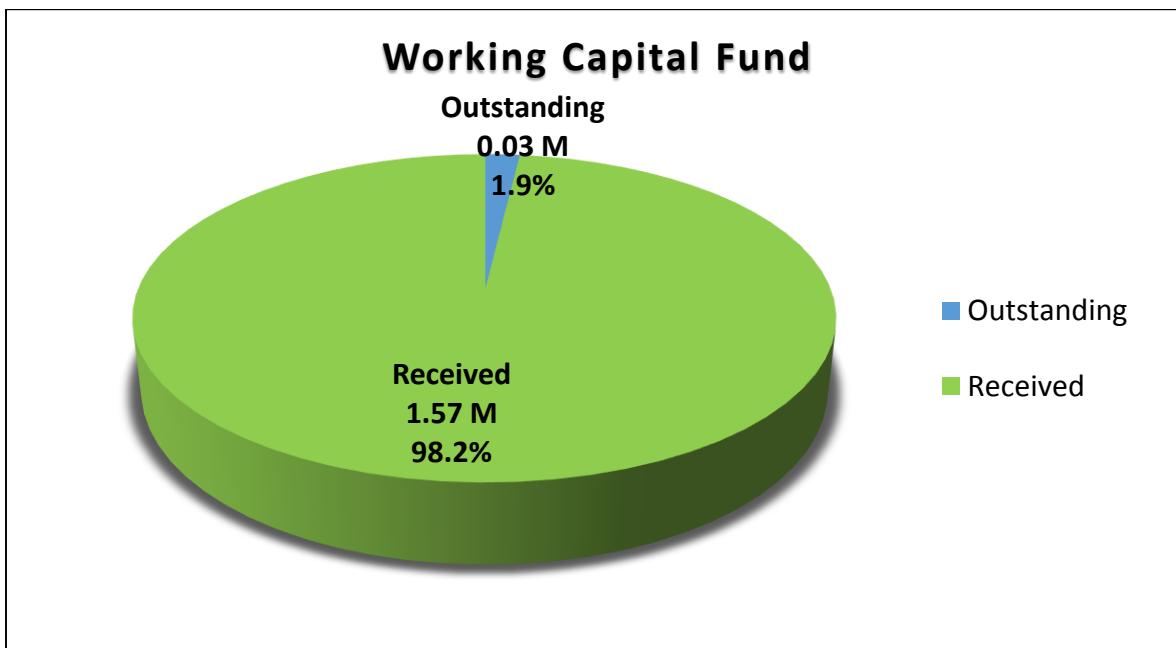


Table 5: Approved and filled / under recruitment posts by level as of 31 October 2013

Level	Approved	Filled or under recruitment
ASG	1	1
D-2	1	1
D-1	4	4
P-5	17	16
P-4	12	11
P-3	21	21
P-2/1	2	1
<i>Sub-total Professional and above</i>	58	55
General Services	23	21
Total	81	76

Figure 4: Staffing status as of 31 October 2013

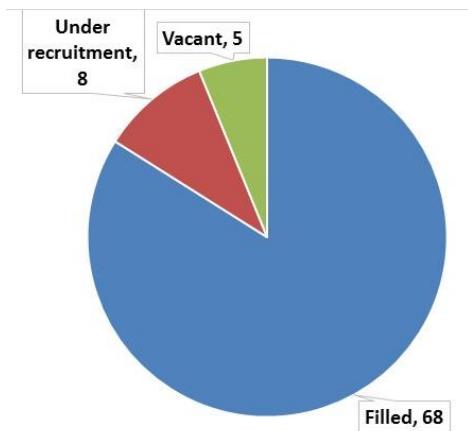


Figure 5: Gender balance (based on filled posts) as of 31 October 2013

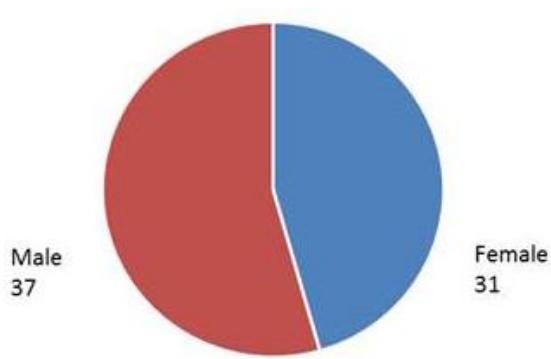
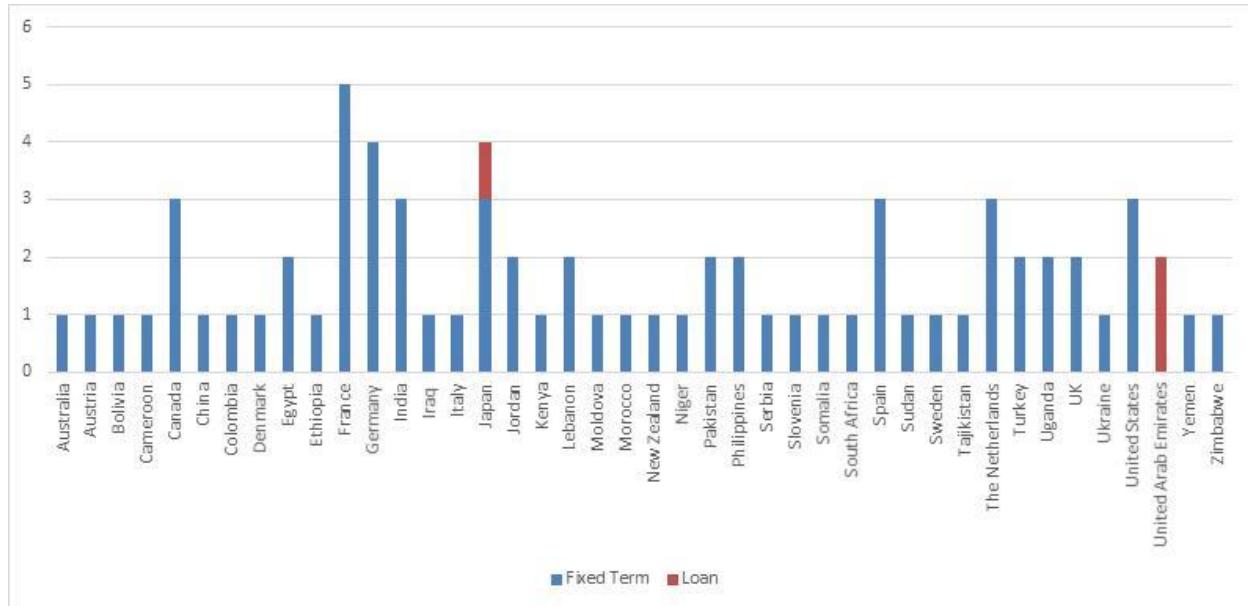


Figure 6: IRENA staff nationalities (based on filled posts) as of 31 October 2013



IRENA Staff Members (Fixed Term, On-loan) come from 42 different nationalities

Table 6: Loaned Staff

Division	Title	Loaned by
SMED	Liaison and Protocol Officer	UAE
IITC	Bioenergy Analyst	Japan
AMS	Human Resources Officer	UAE