IRENA's global Renewable Energy Roadmap 2030 (REMAP2030)

Discussing Key Insights

Abu Dhabi, 12-13 November 2013

1. Introduction

REMAP2030 is roadmap that explores doubling the global renewable energy share by 2030.

REMAP 2030 demonstrates possible pathways for countries, regions and sectors to double the share of renewables by 2030, identify and characterise technology options to meet the objective, and suggest opportunities for international cooperation to realise this vision. REMAP 2030 reflects collaborative efforts with regions, countries and other stakeholders. It will remain a living document, to be continually expanded and updated in years to come.

The aspirational target for REMAP2030 is derived from the Sustainable Energy for All Initiative (SE4ALL) launched by the UN Secretary-General in 2011. The aim of this global partnership is to support the 2014-2024 as the Decade of Sustainable Energy for All as declared by the United Nations General Assembly. The SE4ALL initiative has three objectives for 2030:

- Ensuring universal access to modern energy services;
- Doubling the global rate of improvement in energy efficiency; and
- Doubling the share of renewable energy in the global energy mix.

REMAP2030 derives its aspirational target from the third objective on renewables. IRENA is also the renewable energy hub for this initiative, and supports the efforts of SE4ALL partners and the energy efficiency and regional energy access hubs through REMAP2030.

2. REMAP2030 Activities so far

IRENA started its global renewable energy roadmap activities in 2012 with two workshops for IRENA Members and other stakeholders. Based on their inputs and an analysis of global energy scenarios, IRENA published a working paper to explore the feasibility of the doubling target in January 2013.

IRENA's working paper on REMAP2030 showed that a doubling of the renewable energy share is technically feasible but that all countries and sectors will have to accelerate their efforts in deploying renewables to achieve a doubling. Furthermore, the working paper suggested that country engagement was crucial to learn from each other's experience, understand the opportunities and activities in national and regional systems, connect technology developments across the globe, and provide a forum for global dialogue.

Based on these initial insights, IRENA invited its Members to identify national REMAP experts. Furthermore, IRENA organised its activities across two parallel tracks:

- Country-based analyses on technology development, infrastructure investment needs, cost reduction potential, and policies, conducted with national REMAP experts;
- Sector-based technology roadmaps based on stakeholder workshops and research in key sectors of energy consumption.

IRENA has started its country analysis with 26 countries, including those seen as the largest energy consumers in 2030 and others from different regions that have advanced the deployment of renewables. Together with national REMAP experts, IRENA is translating existing plans and options on renewable energy into a common framework. A REMAP tool helps national experts from IRENA member countries conduct the necessary analysis. IRENA is also working with the modelling community to verify its country analyses with national models developed by research institutions and academia.

IRENA's sectoral-based technology roadmaps for renewable energy development are developed for four thematic areas: cities; electricity storage; global manufacturing; and grid integration. Each thematic area is linked to one or more end-use sectors. The roadmap is being discussed in stakeholder workshops to receive critical input from industry, local governments, consultancy firms, academia and non-governmental organisations.

In total, IRENA organised 14 REMAP workshop or REMAP discussion panels and 3 global REMAP webinars throughout 2013.

3. The Workshop

The aim of the workshop was to discuss the key insights and associated messages for the report, and share the detailed results at global, sector and country level based on these 26 country studies. Furthermore, IRENA shared an overview of the existing policy frameworks and barriers for increased RE use based on the country studies.

In preparation for the workshop, IRENA send out the first draft of the REMAP 2030 to all the countries that have assigned national REMAP experts. All focal points and national REMAP experts are invited to the workshop to comment on IRENA's first draft. Furthermore, IRENA invited all focal points to follow the two-day workshop via webinar.In total 19 participants attended from 15 countries. A number of countries followed the workshop via the webinar.

In total, five documents were tabled for this meeting:

- DRAFT REMAP2030 report main text
- Room paper: DRAFT REMAP2030 report key points and executive summary

- Issues paper: Biomass in the REMAP2030
- Issues paper: A roadmap for doubling the global RE share
- Issues paper: Country write-ups

These were discussed in four half-day sessions. The issues were introduced through a presentation by the secretariat staff, followed by a roundtable discussion.

4. Technical feedback on the draft report

The first day of the workshop focused on the technical results of the draft report. In the morning, IITC Director Dolf Gielen presented the global results. In the afternoon, Deger Saygin and Nicholas Wagner presented the results on the four end-use sectors: buildings, industry, power and transport sector.

The results for REMAP2030 are based on three sets of analyses:

1. An analysis of existing national renewable energy plans in place (the 'reference case') in the 26 countries;
2. An analysis of additional renewable energy potential realisable between 2013 and 2030 (the 'REMAP options') in the 26 countries;
3. Regional and global analysis of renewable energy options in the different end-use sectors, as well as an analysis of the impact of energy efficiency, early retirement, and breakthrough technologies on the deployment of renewables.

There is a general agreement that the approach is sound and a lot of valuable data have been generated. A number of valuable comments have been made how to improve the report. Some of the major points that were raised include:

- Explain country differences/try to group countries in the
- Include energy demand projections to allow a better understanding of country differences;
- Include a more explicit discussion of fossil fuel price projections;
- Include a table of factors that have an important impact on the outcome, and indicate their potential impact;
- Clarify definitions of terms and indicators throughout. Apply a more systematic structured sectoral discussion
- Add a box on energy exports and consequences for country RE production
- Elaborate further on grid/power systems issues for high shares of variable power
- Explain REMAP option potentials in more detail. Elaborate technology projections in more detail (eg for PV and CSP)
- IRENA's role as the renewable energy hub for the SE4ALL initiative should be mentioned in relation to the discussion of the importance of energy efficiency

5. Responses to the three issue papers

On day two of the workshop, the morning was reserved for the discussion of the three issue papers. Furthermore, IRENA provided some more detailed

5.1 Country write-ups

IRENA has prepared 26 country write-ups during the course of 2013, which form the basis for the global REMAP results. All follow a standard format allowing for transparency and comparability. The global REMAP results has been built based on the country results. These country write-ups have been discussed with country experts and revised based on comments that have been received. So far country write-ups have only been shared with the countries themselves, not with broader membership and not with the general public.

There was general agreement that the country write-ups are a core part of the analysis and add substantial value to the main report. The conclusions were to:

- Make them public following country agreement that the data are correct.
- Consider them "living documents" that need updating as policy changes.

5.2 Transition roadmap from now to 2030

REMAP discusses in detail the technology options for 2030, which show that the doubling objective is feasible and attractive from a cost-benefit analysis. However, from these results recommendations for global action need to be derived. There are a number of different ways in which the next steps for action can be displayed, such as a list of different indicators, a list of different actions, or a specific framework for measuring, reporting and verifying progress.

The outcome of the discussion was that:

- It is not possible to have a meaningful discussion on global numbers. Therefore a set of country specific numbers should be developed to complement the global numbers. To some extent this is covered by the country write-ups.
- Roadmap indicators should cover physical capacities, investment flows and policy framework indicators.
- Consider project pipeline as one of the possible indicators for the roadmap to bridge the gap with actual deployment/measure the seriousness of the policy framework.
- IRENA should consider development of an MRV framework with regular reporting on progress.
- Identify and promote best practice in energy transition (activity for REMAP 2014)
- Consider interaction or renewable energy with energy efficiency (activity for REMAP 2014, in cooperation with EE hub)

5.3 Biomass prospects

With 60% of the REMAP options based on biomass as the renewable energy source, IRENA has developed a detailed analysis of biomass supply and demand across the globe as a basis for its REMAP2030 analysis. Considering the importance of biomass, the discussion paper presented the most salient results and asked the workshop participants for feedback.

There was general agreement that biomass is key in the analysis and should receive sufficient attention:

- Biomass should first be viewed from a domestic supply potential, the opportunities for global supply and trade are less certain and create supply security issues.
- Make more data available from the background analysis and present them in a transparent way. Make the methodology document available
    - Unit conversion (tonnes of biomass to complement EJ values) – add clarification on heating value of biomass potentials
    - Elaborate key uncertainties in supply and deployment. Which shares of residues are harvested, agricultural productivity growth, etc.
    - Elaborate trade in more detail. Split local use/global commodities more clearly.
- Group countries in terms of biomass relevance
- Explain difference between traditional/modern biomass in more detail
- Make a graph of supply/demand showing primary vs. final biomass consumption
- Add ranges for total supply to allow for supply sensitivity

6. Policy recommendations and key messages

In the morning and afternoon of day 2, IRENA also presented an overview of policies and barriers available in the 26 countries that form the basis of the REMAP2030 analysis. Furthermore, the draft key messages and executive summary was shared among the participants.

6.1 Policy recommendations

These policies and barriers are discussed in the draft report, but are also summarised in a separate policy overview table. The following feedback was provided:

- Shale gas can have an important impact on the renewable energy policies and activities in a country and should be considered under energy pricing and subsidies section;
- Focus on meta data/concepts/patterns instead of country specific policies;
- The policy overview table is useful but it would be useful but should be augmented to include quantitative/qualitative data. It would be useful to indicate how challenging the targets are.
    - Consider an actor field as 5th policy area in policy table overview (eg the importance of communities)

- Send a blank table around to REMAP countries for completion
- Expand cost and financing discussion (eg discuss in the roadmap who should fund learning investments);
- Indicate what progress countries have made in the last five years. Develop an indicator methodology to monitor recent progress;
- Try to extract best policy practices and provide examples;
- Re-consider the relevance of number of ministries as a policy framework indicator;
- Avoid representing countries only based on absolute energy amounts, the efforts and potentials should be related to the country size and it should be stressed that all must contribute to meet the aspirational objective;
- The policy analysis should also focus on results and try to identify if policy frameworks are delivering in practice.

6.2 Key Messages & Executive Summary

The following comments were received on the drafts sections on 'Key Messages' and 'Executive Summary':

- Key Messages are intended for policy makers. They should be kept high level without going into too many technical details
- REMAP is unique in that it is a technology based bottom-up analysis of countries on a global level and this should be emphasized
- The key graph for REMAP2030 shows the different steps in increasing the global renewable energy share. It would be helpful to include a table that summarizes the figures that support the findings ;
- Biomass plays a very important role and should be emphasized in the key messages;
  - However the emphasis on biomass should be presented in the light of the fact that some potentials and trade are uncertain and they countries should also focus on developing local sources of renewable energy
- Renewable energy deployment is also dependent on non-RE aspects, such as fossil fuel price, supply or variability, this should be noted.
- Consider inclusion of indicators for the drivers of RE deployment
- Comparisons of countries and numbers should be explained in relative terms
- Consider a side event during the council in December to discuss revised report to allow more time to discuss
- The collection and comparability of statistics is an area where methods could be improved
- A systematic approach is required to develop renewables that include: Identify technologies, Determine targets, Establish monitoring systems, Identify barriers
- Do not specify direct policies but keep it general as tailored policies are required for each country, there is no "one size fits all" solution
- Fair comparison of technologies requires the development of concepts, KPIs, to ensure RE can be compared to nuclear and FF, which often operating in subsidy environments

7. Final Session – Next Steps and Future Activities

The Director General joined the discussion and wrapped up the workshop. He mentioned the country reports are quite unique, and could be applicable for the IRENA knowledge gateway - consider them one part of the Gateway that becomes a living set of documents for REMAP. Over the coming months and years, important next phases must be considered

- Short-term (by Assembly in Jan. 2014)
    - o Additional feedback should be received by 18th from experts regarding the country reports and these will be taken into account into the REMAP report
    - o A new draft report will be shared before Monday 25 November, and will form the basis for the REMAP workshop on 29 November in Brussels;
    - o Feedback for the next revisions should be send to IRENA by 1. Dec.
    - o The report will go to the printer on 15 Dec.

- Medium-term
    - o REMAP will have a global campaign to promote the report but IRENA would also welcome country level outreach and engagement to increase local outreach in their countries
    - o is going to be an important platform moving forward for IRENA. There are four important features:
        - It is the first global roadmap for RE
        - It is based on what countries are seeing and saying
        - It is based on the best technology data and forecasts
        - It has a broad economic context.
    - o REMAP should be a reference document for RE industry going forward

- Long-term (2-3 years)
    - o It is important to consider how REMAP can serve as an organizing principle of the SE4ALL hub activities
    - o REMAP can also provide input on other high impact opportunities, such as renewable energy on islands, the water/energy nexus
    - o In the course of 2014-2015, IRENA will create Action Teams of interested countries and other stakeholders to work together under the REMAP2030 umbrella on specific issues such as transportation, joint strategies for renewables and energy efficiency, and other areas that could have a transformative impact on the deployment of renewables.
    - o IRENA will also expand the range and scope of technology, geographical and topical work to provide a sound knowledge base for efforts made toward sustainable energy for all.
        - Countries are invited to engage in the proposed action teams
    - o Post 2015
        - REMAP, including country write-ups, will remain as living documents
        - Consider publishing a REMAP report every two years
        - Explore how REMAP could inform the discussion around energy and GHG mitigation

Participants

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