IRENA 13th Assembly Side Event

National Frameworks for Scenario Development Towards Net-Zero Target-Setting

16:00 – 18:00, Friday, January 13, 2023

Event Proceedings

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Event Summary

Around 30 delegates to the IRENA's General Assembly attended the side event in which was discussed how an effective long-term planning and use of scenarios can support in addressing the challenges of the energy transition and climate change mitigation. The presentations and the interventions from the delegates showcased the importance of using scenarios for net zero planning and the important role of collaboration amongst stakeholders in collecting data and developing long-term scenarios. Participants noted the key role of the LTES Network in convening stakeholders to allow for shared learning related to the use of scenarios when setting targets for net zero.

Key takeaways

1. Governments are increasingly recognizing the need to integrate energy policy and climate strategies. During a recent discussion, it was noted that aligning Long-Term Energy Scenarios (LTES) and Long-Term Low-Emission Development Strategies (LT-LEDS) is crucial. This integration enables unified national planning and guides financial institutions towards supporting sustainable and low-emission initiatives.

2. It was noted that there is a general lack of readiness in the financial sector for assessing climate-related risks. There are banks still heavily invested in high-emission sectors, exposing them to both transitional and physical risks.

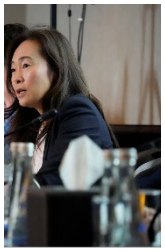
3. The session highlighted the need for scenarios that consider the entire economy and the role of finance in enabling energy transitions. Scenarios are used in risk assessment, target setting, strategy formulation, and understanding policies and practices.

4. It was noted the relevance of not only engaging with multiple stakeholders within a country, such as various ministries and agencies, but also the relevance of cross-border cooperation and regional harmonization. Such a comprehensive approach is essential for effectively navigating the challenges of energy transition and achieving net-zero goals.

Opening remarks

Roland Roesch (International Renewable Energy Agency).
During the session, Roland Roesch stressed the important role of the Long-Term Energy Scenarios (LTES) Network in promoting the development and use of energy scenarios by governments. He emphasized the strategic value of LTES as tools for proactive, long-term planning in the context of the clean energy transition. Roesch also emphasized the significance of exchanging knowledge and sharing experiences among IRENA member states, technical organizations, academia, and the private sector to facilitate informed decision-making, effective public policies, and robust strategies for the energy transition. The interdisciplinary nature of these scenarios was also emphasized, highlighting new challenges towards future issues such as stakeholder involvement in scenario development, technological innovations like green hydrogen, and digitalization.

IRENA Scene Setting Presentation



Asami Miketa (International Renewable Energy Agency).
Presented the key findings of the recent report from the LTES Network that examined the alignment between Long-Term Energy Scenarios (LTES) and Low-Emission Development Strategies (LT-LEDS). The presentation emphasized the importance of collaboration between IRENA and UNFCCC in assessing the effectiveness and significance of aligning LTES and LT-LEDS. The analysis revealed that a significant portion of LT-LEDS is scenario-based. The presentation also highlighted that many governments are integrating their energy and climate ministries into unified entities.

The analysis showed that stakeholder engagement in both LTES and LT-LEDS was robust, with a notable proportion of LT-LEDS incorporating clear net-zero targets. Although the scope of scenarios was similar, LTES provided more detailed insights into the power sector, whereas LT-LEDS had broader implications.

The session underscored the importance of aligning energy and climate policies, and it noted the general alignment in the scope and number of scenarios between LT-LEDS and LTES. However, it was emphasized that LT-LEDS tend to have broader scopes, longer time frames, and clearer net-zero targets than LTES.

Overall, the session stressed the need for increased collaboration between energy and climate policy and highlighted the key role of scenario-based planning in gaining support from sectors beyond energy and climate, thereby enhancing the quality of policy decisions.

Keynote address

H.E. Mr. Tomas Anker Christensen- (Ministry of Climate, Energy and Utilities of Denmark).
He stressed the importance of the Paris Agreement and the Glasgow Climate Pact, emphasizing the need to integrate energy strategies into wider economic plans. Denmark focuses on aligning short-term and mid-term energy goals with long-term objectives, such as achieving carbon neutrality by 2050 and reducing emissions by 70% by 2030, as mandated by its climate law. This law includes a robust annual review process to ensure progress. Denmark aims to become emission-negative by 2050, a pioneering goal among developed nations. The Danish Energy Agency also works with emerging economies, in collaboration with IRENA and Germany, to promote sustainable energy transitions through comprehensive planning and investment frameworks.

European Central Bank Presentation

Livio Stracca (European Central Bank) highlighted the initiation of sharing climate scenarios by the Network of Central Banks and Supervisors for Greening the Financial System (NGFS) in May 2022. These scenarios offer a unified framework for evaluating climate risks to the economy and financial systems, providing globally comparable outcomes based on a consistent set of variables.

NGFS has developed a set of six climate scenarios which depend on emission reduction strategies and the impacts of a wide range of variables including: Climate; Energy; Economic variables (GDP); Financial variables (Interest rates); and Political factors. The NGFS work is carried out within the following workstreams: Scenario narratives; developing short-term scenarios; physical risk; sectoral granularity; and communication and engagement.

It was noted that the November 2022 '*Climate Scenario Analysis by Jurisdictions: Initial findings and lessons*' report, jointly released by the by the NGFS and the Financial Stability Board (FSB), reviewed the use of Climate Scenarios across 36 countries and 53 institutions. Scenarios are used in multiple contexts, such as to run climate stress tests to assess the resilience of banks' capital against extreme climate events, employing both bottom-up approaches (where institutions perform their stress tests) and top-down approaches (imposed by supervisors).

A key finding from these exercises is that the financial sector is unprepared to deal with climate risk in two main ways. First, the transition risk of repurposing assets in high-emission sectors has not been addressed, and second, the physical risk of banks' lending to entities that are subjectable to disasters linked to extreme climatic events, which particularly affect the real estate sector.

It was noted that there is no consensus on the best time horizon for scenarios in the financial sector; currently, most financial institutions focus on the short term (five years to eight years maximum). To respond to the need for long-term scenarios in the financial sector, NGFS scenarios are necessary as they assess both transition and physical risk while factoring in chronic impacts. NGFS are useful when making long-term policy decisions given their comprehensive nature.

UNEP-FI Presentation

David Carlin (United Nations Environment Programme Finance Initiative (UNEP FI)) – Underscored the significance of using scenarios in the financial sector to navigate the complexities of climate risk and energy transition.
Carlin detailed the integrated assessment model approach, which combines inputs from various sub models like energy systems, climate modules, and socioeconomic assumptions, to create a comprehensive view of potential futures, highlighting the evolving application of scenarios in the financial sector.

He pointed out the critical roles that scenarios play in financial disclosures, enabling comparability and a common language among stakeholders, and in risk management, where they serve as key inputs for tools assessing climate-related financial risks. Carlin also touched on the importance of scenarios in aligning financial strategies with decarbonization efforts and in conducting stress tests to understand potential risks and necessary management actions.

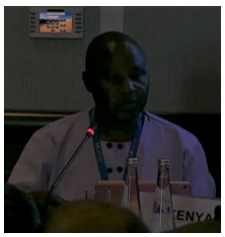
Addressing the challenges of scenario usage, Carlin stressed the need for credible national pathways that consider local policies, realities, and the varying impacts of decarbonization across sectors. He advocated for a collaborative approach involving multiple stakeholders and emphasized the value of multiple scenarios to capture the nuances of different futures and prepare for a range of outcomes.

Rishabh Jain from the Council on Energy Environmental and Water, India- inquired about initiatives that ensure financial institutions' disclosures contribute effectively to sustainability efforts.

David Carlin – Reiterated that TCFD disclosures mainly focus on the financial sector but also covers companies in the energy sector. TCFD reporting now covers scope three emissions, and indirect emissions. A recent report by CDP indicated that scope 3 emissions can be over 100 times larger for a financial institution than their direct emissions as such there are a few initiatives towards the unification of disclosure standards led by the International Sustainability Standards Board (ISSB) to provide comparability of climate disclosures and broader sustainability disclosures. The Partnership on Carbon Accounting Financials is working on a methodology of calculating financed emissions. The next major task will be to ensure that the disclosures made are useful in the same manner financial information is useful to stakeholders.

Panel Discussion

Prasoon Agarwal- What is the biggest challenge from practice in effectively creating and using long term scenarios to inform policy?



Paul Mbuthi (Ministry of Energy and Petroleum, Kenya)- Noted that long-term energy scenario planning is a critical element in policy making as it informs countries of the choices to be made when navigating the energy development pathway while also providing a choice of low carbon emission development pathways. In terms of energy planning, specifically, power planning Kenya has a least cost power planning framework which covers 20 years which is frequently reviewed in the short term to ensure accurate parameters and assumptions. It is necessary for countries to find a way to ensure long term planning is useful despite the political changes, perhaps the use of back-casting to map out previous milestones and parameters previously

used. Proper long-term energy planning in the African context will ensure proper decision making and the use of energy as an enable for development specifically in economic planning and the climate response.
Kenya has established an energy planning unit which is working to first build the capacity of key technical experts and secondly develop key planning instruments including long-term emission scenarios up to 2050 as part of Kenya's NDCs.

Prasoon Agarwal- Noted that this is a new dimension on how energy planning is linked to national developmental planning. It is very important that the two pathways of development and energy planning are used together to ensure sustainability.

Claire Nicolas (World Bank)- How do countries ensure that NDCs are jointly developed by the Ministry of Energy, Ministry of Climate and Utilities, given that the practice has often been for only 1 of these bodies to unilaterally develop the NDC? Do countries use working groups to ensure collaboration?

Paul Mbuthi - Power planning in Kenya is a stakeholder-based activity which involves all utilities that are part of the power planning process, key lead agencies in other Ministries with direct linkage to the energy utilization and a dedicated energy planning unit. During planning the needs of other sectors including the health and agricultural sectors are also factored into the planning. This approach ensures collaboration amongst all relevant stakeholders and more comprehensive plans.

Prasoon Agarwal- When examining the national LTES what emerging challenges have you identified especially given you understanding of a variety of national policies and LT-LEDS?

Livio Stracca- The main operation challenge is the lack of good data especially internationally MRIs data. Another challenge relates to the uncertainty of climate science and the uncertain physical risk of extreme climatic events, given this uncertainty energy policies are then uncertain. It is also important to account for the different country sizes, the major political incentives of influential players including China, India and the United States of America when forecasting.

Prasoon Agarwal- What the role of the financial sector when engaging with national processes, national governments and policy making. Are there any good practice examples of this engagement that we should reflect on?

David Carlin- Relating to the scenario and the pathway angles it is essential to first have a credible global scientific framework, to this end there is work ongoing with leading climate modelers who are working with the NGFS with modelers from the University of Maryland and Pacific Northwest National Labs. Secondly it is important for local input and local context to be considered and finally it is vital to ensure broad national and regional buy-in.

It was observed that the relationship of finance and country level decarbonization has typically been one of information rather than action as the finance sector has continually worked to understand climate scenarios and make disclosures however there is not enough financing for emerging technologies, which are currently not scalable but are necessary for the energy transition. National scenarios allow the private sector to identify useful renewable energy projects and the targeted financing of these initiatives. Further, scenarios ensure that national institutions are clear on the roles they play in the decarbonatization journey.

Prasoon Agarwal- As a central bank how does the ECB address issues including green bubbles, climate risk, technological developments when setting economic policy?

Livio Stracca (European Central Bank)- It was noted that 2-3 years ago climate change was not seen as an issue for central banks. A transformation of the economic system is vital and to respond to climate change it is important that investment in renewable energy amounts to between 2% - 4% of annual GDP and that Central Banks use their position at the center of the economic and financial system to support this change. Central banks cannot play the role of policy makers as they are not elected bodies, but instead must work with legislators to achieve the objectives set. When designing inflation response mechanisms, it is vital that inflation response policies account for the change in energy prices and there be a consideration of NGFS and inflation.

Interventions from the Audience

Mark Howells (Loughborough University and Imperial College, London & Programme Director of Climate Compatible Growth (CCG))- It was noted that Imperial College London is working with the University College London (UCL), University of Cambridge and University of Oxford to develop a set of national starter data kits with models ranging from Net Zero Case to a Business as Usual case to be used by countries when developing national strategies. In addition to the data kits, the three institutions are working to help countries gather relevant information to ascertain market readiness. There is ongoing with Kenya on the data kits and in Costa Rice through a $100000 study to unlock 1.5 billion dollars' worth of market readiness funds. The ongoing work is in collaboration with IRENA and the International Energy Agency.

Prasoon Agarwal- Reiterated that it is vital that impact stories and case studies are shared, as has been done by Imperial College London and by IRENA through the Scenarios for the Energy Transition: Experience and Good Practices in Africa report as these inform energy policy and planning processes.

Accounting for Changes in Technology

Rishabh Jain- Given that technology is evolving, for instance in Solar energy technology there is a shift from multi-crystalline to monocrystalline, how do modelling frameworks include account for changes in technology sub-types? Are there models for instance that will account for the sectoral share of sub-technologies in the solar and batteries sector in 2030, 2040 or 2050, and how can countries address the arising supply chain challenges?

Livio Stracca- Noted that in the NGFS scenarios sub-technology modelling questions frequently arise. There is also a discussion in the report on Carbon Direct Removal (CDR) technology regarding the factors that CDR depends on, assumptions regarding CDR availability and the progress of future technology. In the CDR case there is no modelling of the previous engineering technology as this may result in a business case for continued emissions, however given the expected progress in geo-engineering the technological aspects are not fully modelled. It was noted that there ought to be a more comprehensive response to modelling technological changes.

David Carlin- Noted that scenarios are necessary in answering what-if questions as is evidenced from the ongoing modelling work by IRENA, the IEA and other modelers within the NGFS consortium. It is possible to use models to ascertain projected technology penetration within different projected futures. The importance of technology considerations was reiterated, it is vital to factor in technology changes in the long term and account for the compounding cost effect, learning curves and further technological progression. Scenarios should be considered a dynamic tool rather than a static pathway; it is vital for modelers to consider both transition pathways and transition eliminators.

Prasoon Agarwal- Noted that additional examples include IRENA Innovation and Technology Center's Innovation Landscape briefs which discuss the technology pathways for more than 30 technologies. The IEA developed a similar report and ICL worked on modelling building technologies.

Vangelis Tzimas (European Commission) - Noted that the Joint Research Center is a technical partner of the LTES network which is a vibrant network of modelling developers and practitioners and policy planners and policy makers. The Energy Transition and Policy unit at the EC works on short term and long-term modelling and analysis and implementation. The LTES network provides a platform to share learnings on methodologies, compare different scenarios and models. Given the fact that scenarios provide policymakers with alternatives as opposed to a certain pathway, it is vital that countries continue collaborating to develop comprehensive approaches to scenarios. It was proposed that partners should develop joint studies on specific modelling topics including on modelling the penetration of renewables, impact of alternative fuels, model the impact of hydrogen energy on energy systems and aspects of the demand side of Carbon Capture Utilization and Storage (CCUS).

Prasoon Agarwal- Noted the evolution of the LTES campaign to the current LTES initiative, in future the initiative may have to evolve to ensure differentiated engagement as the energy modelling sector evolves.

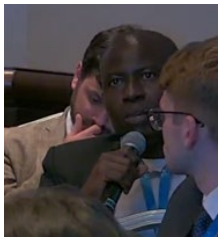
Importance of Reliable Data

Rajesh R., EMEA Power, Dubai**-** Underscored the importance of solid and reliable data. Further, it is vital for national energy planning frameworks to consider the diversification of the energy mix especially given the fact that many countries in Southern Africa and Easter Africa who rely on hydropower often go into crisis during droughts. As such is it advisable for countries model diversified energy mixes and the private sector support these efforts by collecting to the data collection efforts.

Paul Mbuthi - Noted the importance of working with the private sector to collect data. It was noted that Kenya has recently created a data collection framework through which data collected by the private sector and civil society is integrated into the national process managed by the Kenya National Bureau of Statistics, for verification and validation of the data. This data will be integrated into national planning and policy formulation processes to enrich the processes.

Isaac Kiva (Ministry of Energy, Kenya)- Reiterated the importance of sub-regional and regional forecasting given the interconnection between national energy systems. In Kenya's case, the country's power system is closely connected with Uganda, Tanzania and Ethiopia as such it is necessary to harmonize some policies related to the energy transition and ensuring security of supply whilst achieving net-zero goals.

Collaboration Within Government Institutions



Salifu Adoo (Energy Commission, Ghana)- Kenya was asked to elaborate on how the national energy planning unit is constituted to ensure adequate collaboration amongst institutions as in Ghana's case the Energy Commission has the planning mandate. The Energy Commission has established a power planning technical committee to bring together representatives from various institutions. A further question is whether it is vital to establish an independent planning unit to ensure more collaborative planning.

Isaac Kiva- Noted that Kenya's energy planning unit will be a specialized unit with the key experts from multiple sectors and shall cover multiple thematic areas. To ensure the proper engagement across different thematic areas, working groups shall be formed which include members from ministries, utilities and industry. Working groups shall meet regularly and make submissions to the energy planning unit. This approach enhances efficiency and ensures adequate stakeholder input throughout the whole planning process.

Panelists Final Interventions

Paul Mbuthi - Reiterated the importance of sharing experiences and best practice to ensure countries learn from each other and overcome common challenges. The LTES process is important and to ensure its continued success countries need to strengthen their participation and data inputs in common processes.

Livio Stracca- Note that the harmonization of the definitions of the types of projects considered renewable or green as financial institutions lack a common definition. For instance, the fact that nuclear and gas are considered green in Europe and not in the rest of the world underscores the importance of developing harmonized definitions.

David Carlin- Noted that it is vital to grow the LTES community as more countries will benefit from the knowledge sharing as it is more efficient to build capacities in this manner. Secondly, there ought to be more information collection on the implementation and impact of scenarios at the national level focusing on the outcomes from policy makers and how financial institutions set their investment and development priorities. It is vital to track how scenarios are used and use this as a basis for analyzing the success of energy planning as opposed to focusing on the number of countries joining the LTES and number of scenarios.