

Content

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Terms of Reference 2013-2016

Global Frameworks

The new suggested activities for the Global Frameworks network build on the success of the 2013 World Energy Congress and recent developments in relation to WEC's engagement with the United Nations bodies and other global platforms.

These suggested Terms of Reference (ToR) are currently work in progress for validation by the programme Committee. A more complete and up to date set of ToR will then be developed and approved by the members of the knowledge network following the nominations process that will take place in June 2014. This version provides an indication of what the knowledge network activities would look to achieve in the period 2013-2016?

Mission

The mission of the Global Frameworks activity is to ensure that the insights from the WEC have an impact on global organisations and processes in order to ensure that global decisions are made to secure the sustainable supply and use of energy for the greatest benefit of all.

These draft ToR are based on the following three activity areas:

- A. Assessing WEC's Impact
- B. Provide expert analysis of global framework processes to WEC
- C. Provide WEC insights to global framework processes

A. Assessing WEC's Impact

WHY? We believe that the WEC produces well regarded work; however the evidence for this statement is often anecdotal. It would therefore provide value feedback to our organisation for an assessment to be undertaken to identify how WEC's views and positions relate to those of key high level stakeholders in international organisations, which represent a priority target audience for our work.

WHAT? Run a global feedback survey based on the official statement issued by the WEC ahead of the 22nd World Energy Congress and the 2014 World Energy Issues Monitor report.

HOW? In this pilot stage we would invite a limited target list of leaders of International Organisations to provide structured feedback to the points identified in the official statement issued by the WEC ahead of the 22nd World Energy Congress and the 2014 World Energy Issues Monitor report. We would invite the target audience to provide feedback based on three questions:

- I. Are the points set out in the statement and critical uncertainties identified aligned with your assessment of the challenges facing the energy sector? Whether you agree or differ, we invite you to provide us with your position regarding specific myths or solutions proposed.
- II. What areas do you believe are missing from the WEC assessment as set out in the statement and report?
- III. What role do you believe the WEC membership – a network of over 3000 organisations represented close to 100 national member committees

representing the entire energy sector - can play in addressing these priorities and how can the WEC best engage?

- IV. Are you likely to be using the content of this statement to support your own national or advocacy strategy?

WHO? Using the list of speakers and attendees of the World Energy Congress 2013 from International Organisations, plus a limited number key additional figures a target list will be developed.

The Communications team will project manage this initiative under the leadership of the Chair of the Global Frameworks programme.

WHEN? Tentative timeline would be to send the survey to stakeholders in May 2014 – pending approval from programme committee in Astana meeting - to collect views and compile them by June 2014 for outcomes to be presented to new knowledge network members on first introductory call.

B. Provide expert analysis of global framework processes to WEC

WHY? The World Energy Issues Monitor consistently highlights that the lack of a formal climate framework is one of the highest critical uncertainties for the energy sector. Therefore the main objective is to better inform the WEC network and the WEC study groups and knowledge networks of key decisions and negotiations taken during major global processes and provide analysis of their relevance to the energy sector.

HOW? It is recommended that as a pilot this work should focus on the UNFCCC process, with potential to include other processes such as the UN SE4All. Ultimately it is hoped that this work could be extended to include global groups such as the G20 or more regional integrations groupings such as the Asia-Pacific Economic Cooperation (APEC). WEC will invite its network to nominate members to the Global Frameworks knowledge network who are already part of global processes for their countries. Many of our members either have “Party” status in the UNFCCC process, via their own governments, or closely follow the various aspects of the negotiations. The knowledge network would be invited to pool their analysis of the negotiations to inform the WEC network and study groups.

WHAT? The knowledge network members would be invited to produce a series of short briefing papers highlighting the aspects of the negotiations that have relevance to the energy sector. These papers would be fact based with an analysis piece which would be shared with the network and study groups but not published in report form.

WHO? The composition of the knowledge network will inevitably inform the scope of work. The WEC member committees would be invited to recommend experts involved in the UNFCCC process as part of the pilot phase. If those with direct

involvement or expertise in the SE4All are identified this would also be encouraged although this is as a secondary priority.

The WEC London team will project manage this initiative under the leadership of the Chair of the Global Frameworks programme. The team will also facilitate meetings between the Chair and the UNFCCC Secretariat in Bonn.

WHEN? ToR for this specific deliverable to be agreed by the programme Committee at the Executive Assembly in Cartagena, October 2014. Team to be in place also by October 2014 so that the first paper can be distributed Q1 2015 following COP20 in December 2014.

C. Provide WEC insights to global framework processes

Building on discussions between the Executive Director of the UNFCCC and the Secretary General of WEC we will investigate the possibility of using the analysis provided in the papers produced under item 2 above to inform WEC member committees as they communicate with their national governments. It is envisaged that an informed, fact based discussion within WEC could provide member committees with guidance and position points to be communicated to national governments ahead of COP21 in Paris. The objective would be to provide pragmatic advice, encompassing the perspective of WEC's unique bottom up network of energy leaders, to inform decisions so that the final agreement has the best chance of delivering on the agreed goals relating to the energy sector.



Terms of Reference 2013-2016

Performance of Generating Plant (PGP)



Introduction

Implementation of best practices in power generation with respect to efficiency and availability improvement can bring substantial benefits, in terms of reductions of both GHG emissions and costs of electricity production. It is estimated that by improving availability of all generating plants in the world to the levels reached by the best performing 25% of power plants, the world could each year save over 80 billion dollars and avoid emitting 1Gt CO₂.

Mission

To promote best operational practices for the existing power generation assets around the world using plant KPI for plant benchmarking to identify and communicate key success factors

The two recent decades have transformed the electricity sector in many countries from a state-controlled domestic industry focused primarily on security and reliability rather than profitability of supply to a cut-throat competitive business with high stakes at play. The WEC Knowledge Network (Committee) on the Performance of Generating Plant has for nearly 40 years monitored the evolution in the operation of power generating assets around the world and evaluated its implications for technical and economic performance of power plants.

Evolving market structures, emerging regulation, more efficient modern technologies and growing environmental concerns, along with other factors are changing fundamentally the way the electricity sector operates. These developments are posing new challenges for power plant operators but also opening new opportunities. Different strategies, greater collaboration within the industry and new tools are required for an assessment of plant performance in the new industry paradigm. The PGP Knowledge Network will continue its work on improving understanding of the factors shaping the future of power industry.

To streamline the delivery process and benefit from synergies emerging between different WEC activities in the electricity sector, PGP KN and other relevant Knowledge Networks will operate under the umbrella of the Global Electricity Initiative.

Objectives

The main objectives of the PGP Knowledge Network are:

- Promote international data and information exchange
 - The KN will continue its unique work on the impact assessment of the ongoing technological, market and regulatory developments around the world on the performance and efficiency of generating assets using advanced methodologies, models and other tools
- Reach out to and communicate with the main stakeholders to promote the KN messages and recommendations
 - Through dedicated workshops held under the umbrella of GEI promote and communicate the benefits, messages and

recommendations developed by the KN to improve power generating plant's effectiveness, efficiency and profitability.

- Further develop the PGP database of key performance indicators and update the existing data
 - Using a variety of sources, update and expand the number of participants reporting their performance indicators to the WEC database, based on guidance from the GEI board
- Provide insights and data to GEI.
 - Align the planning of case studies, CEO interviews, surveys and further research activities with other relevant WEC projects by conducting joint surveys, presentations and workshops with GEI and in line with GEI objectives.

Work Programme 2014-2016

Work Group 1 (WG1): International Data Exchange, Workshops and Communications. WG1's primary focus is to analyse the best ways to measure, evaluate, and apply power plant performance and availability data to promote plant performance improvements worldwide. Various communication strategies would be implemented to enhance the visibility of this mission and seek cooperation opportunities, including workshops, joint technical conference sessions, etc.

Work Group 2 (WG2): Power Plant Availability Statistics. WG'2 main task is to collect and input power plant performance data (unit-by-unit and aggregated data) into the WEC PGP database. The statistics will be collected for steam, nuclear, gas turbine & combined cycle, hydro & pump storage plant. Data on efficiency of power plants will be collected when available. WG2 will also oversee the availability statistics database, including the contents, the required software, security issues and other important information.

Work Group 3 (WG3): Renewables. WG3 will focus on covering the generation part of the renewable energy value chain. It complements activities of another WEC KN which is focusing on the integration of renewables in grids.

The PGP Knowledge Network will organise power plant performance and energy efficiency benchmarking workshops in alternating WEC regions back-to-back or in coordination with GEI as appropriate.

Deliverables

The main deliverables are:

- Continue to collect statistics and update the WEC Power Plant Performance Indicators Database and expand them to include energy efficiency.
- Prepare articles for ad hoc WEC media releases or for inclusion in WEC publications.
- Provide information and support for intergovernmental initiatives, in particular the UNSE4ALL.
- Improve visibility for the KN's work and output through a higher number of marketing activities (press releases, presentations, outreach using specific events, etc.)
- A high-quality informative report as part of a broader GEI report to be prepared in 2016 and brief annual reports when feasible.

Modus Operandi

WEC will manage the study in alignment with its governance. The WEC Programme Committee will monitor overall compliance of the project with the WEC governance processes. The data collected in the survey will be accessible to the Knowledge Network members free of charge subject to confidentiality issues. The methodology will rely on an on-going collection of power plant performance statistics using the WEC Member Committees network and other expert organisations. Workshops, conferences and meetings organised by WEC and other organisations will be an integral part of the process to facilitate information exchange, dissemination of best practices and benchmarking activities.

Roles and Responsibilities

The overall organizational structure is in line with the general WEC project structure. Individual KN members will be expected to comment on position papers, fact sheets and draft reports in the respective focus and activity areas.



Governance

All-member representative body; the ultimate governing authority of WEC.

Board of WEC; responsible for overall governance of the organization.

Balancing the interests of all stakeholders, providing internal controls and overseeing the management framework. Sets the Terms of Reference for the respective initiative, advises them as the work evolves, and provides feedback on draft reports and signs off final work outputs.

Execution

Day to day management of the PGP KN work, methodology, report writing, and event management will reside with the Core Team and will be overseen by the GEI Executive Chair. The PGP KN Leader serves as the preferred public spokesperson. Project execution by the Core Team through provision of set out deliverables. The Director Technical Programmes, is responsible for WEC processes including governance and network.

The Knowledge Network is organizing workshops and conferences in WEC regions whenever possible and feasible be combined with other events. The nominated experts participate in meetings and contribute their own expertise, data and case studies and/or chapters to the report.

Team Resources

The PGP Knowledge Network Team consists of the WEC Secretary General and WEC Programme Committee Chair (ex officio), the Director Technical Programmes, the PGP KN Leader, 1.5 full time WEC staff members (a Project Manager reporting into the Project Director).

Terms of Reference 2013-2016

Renewables Grid Integration Knowledge Network (under GEI)



Introduction

The overall mission of the Global Electricity Initiative (GEI) is to promote international cooperation and best practices between utilities around the world to meet the challenges of sustainable supply of electricity, universal access and climate change. To enhance the GEI value proposition, the World Energy Council is establishing a Knowledge Network (KN) to address the challenges of integration of volatile and intermittent renewables in electricity systems (for schematic overview see Annex 1).

The share of volatile and intermittent renewables in electricity production and transmission is a critical issue for technical, economic and environmental performance of an electric power system. The level and the implications of increasing the share of renewables depend on the overall nature of the specific electric system.

Objectives

- Increase awareness about the implications of integration of intermittent and volatile renewables into grid and to highlight with simple case studies/examples their impacts on grid operation to ensure maximum deployment and smooth integration of renewables into electrical power systems.

A key issue is to avoid bottlenecks on the Transmission & Distribution (T&D) system by adequate planning of the capacity, location and timing of renewables deployment and identify optimal solutions and share best practices in a number of priority areas.

- Highlight the importance of appropriate regulation to avoid market distortions where electricity markets are in place or under development.

Conclusions will help decision-makers to define what actions should be undertaken taking into account the complexity of the system operation process, and what needs to be done “a priori” before formulating the policies and strategies for volatile and intermittent renewables development.

Work Programme 2014-2016

The KN will focus on the following aspects:

- increased demand for spare capacity of conventional plants used for backup
- primary frequency regulation
- additional demands on conventional plants, simple technology plants in particular, for greater flexibility which they were not designed for but which is necessary for managing varying loads of renewables
- balancing problems & costs in countries with electricity market (actual electricity supply different from the forecasted in the day ahead market due to unexpected changes in weather conditions)
- distortion of the market conditions

- overcapacity
- reduction of the system ability to withstand unplanned events and manage their impacts on the network (the risk of cascading effects) and reduction of quality of supply

Deliverables

The main deliverables are:

- Case studies on best practices. Clear examples of different categories of systems taking into account their conventional generation mix and their share of volatile renewables.
- Identify key countries of interest and get buy in from their Member Committees, e.g. Germany, Italy, Saudi Arabia, Japan, Korea, Brazil, New Zealand, South Africa, China Egypt and the United States, which will represent all regions.
- Provide an overview of present and expected development of volatile and intermittent renewables based on the answers to a questionnaire distributed to the WEC Member Committees, including brief description of the existing and planned generation mix.
- Formulate country/system specific (not general) conclusions
- If possible provide recommendations based on country/system specific conclusions and validate them in a broader set of countries by analyzing additional systems.

With intermediate reports on the above, the KN will provide input to the overall GEI work and will support the GEI objective to deliver critical output for the 2016 World Energy Congress and – if applicable – to the WEC's World Energy Leaders' Summits/Dialogues in the years before the Congress. The GEI surveys and reports of the KN will feed into other WEC projects, e.g. the World Energy Resources, World Energy Scenarios, World Energy Trilemma, Energy Efficiency Technologies and Performance of Generating Plant Knowledge Networks.

Modus Operandi

The work will be separated in two phases:

Phase I

1. Identify key countries of interest and get buy-in from specific MCs (Germany, Italy, Saudi Arabia, Japan, Korea, Brazil, New Zealand and others to cover all regions) to nominate key utility experts to provide case studies.
2. CESI as Project Supporter or Partner to facilitate overall coordination of case studies with the objective to formulate country/system specific (not general) conclusions.

3. Deliver these as input to the overall GEI work.

Phase II

1. Formulate general recommendations from Phase I and verify them in a broader set of countries.
2. This can be done by analyzing additional systems.

Roles and Responsibilities

The overall organizational structure is in line with the general WEC project structure.



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Board of WEC; responsible for overall governance of the organization.

Balancing the interests of all stakeholders, providing internal controls and overseeing the management framework. Sets the Terms of Reference for the respective initiative, advises them as the work evolves, and provides feedback on draft reports and signs off final work outputs.

Execution

Day to day management of the overall GEI and KN work, methodology, report writing, and event management. The GEI Executive Chair serves as the preferred public GEI spokesperson. Project execution by the Core Team through provision of set out deliverables. The Project Manager, overseen by the Director Technical Programmes, is responsible for WEC processes including governance and network.

The Knowledge Network is organizing workshops and conferences in WEC regions whenever possible and feasible be combined with other events. The nominated experts participate in meetings and contribute their own expertise, data and case studies and/or chapters to the report.

Team Resources

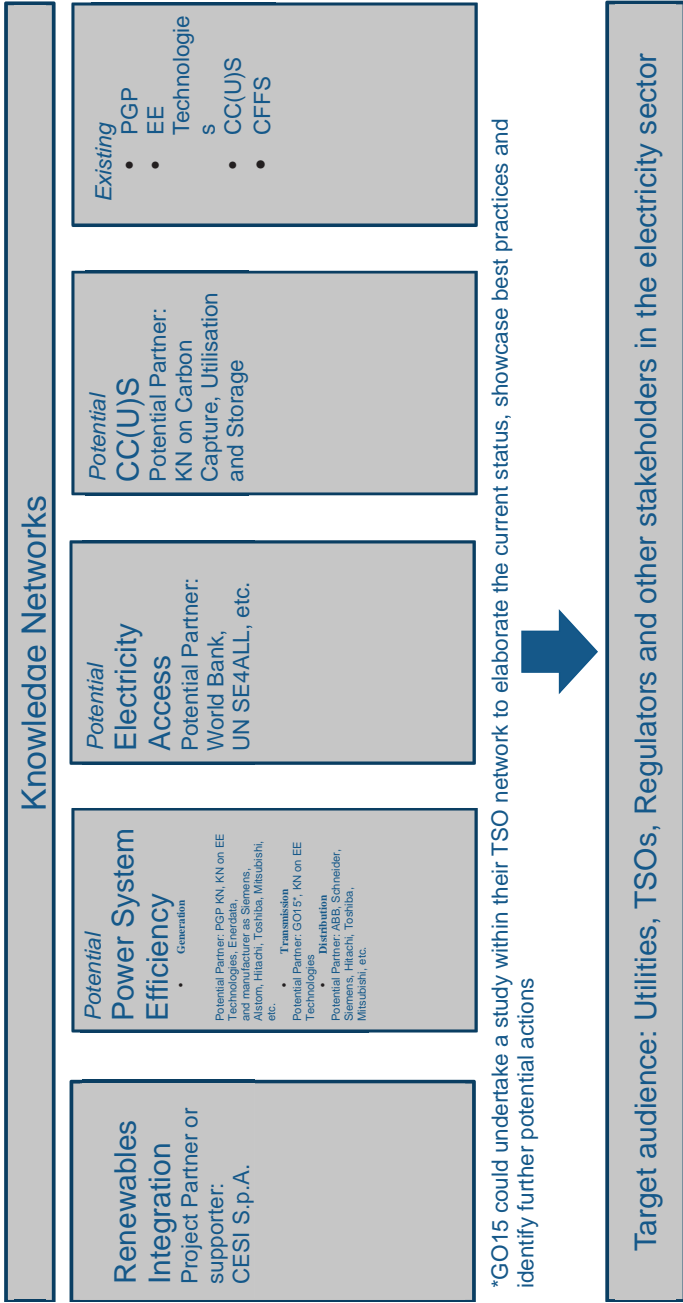
The KN Project Team will include the GEI Core Team and the KN Leader: the WEC Secretary General (ex officio), the Director Technical Programmes and one full-time WEC staff member responsible for the overall GEI project (a Project Manager reporting to the Programmes Director) and the necessary support from the KN Project Supporter CESI S.p.A.

Project Partner/Supporter

Deloitte South Africa is currently serving as the overall GEI project partner and is responsible for the general GEI industry survey and all the work linked to this. Specific deep-dives with KNs can have individual Project Partners or Supporters. In this context CESI S.p.A. from Italy will serve as a Project Partner or Supporter with special dedication to this KN.

Global Electricity Initiative

Overall survey/best practices/etc. (Project Partner: Deloitte South Africa)





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Terms of Reference 2014-2016

Financing Resilient Energy Infrastructure

Mission/Vision

Determine ways to de-risk energy investments in order to liberate and mobilise capital to accelerate the transition to a resilient global energy economy.

1. Introduction

The WEC recognises the importance of the interaction between the energy and the financial sector. In its key messages to the participants at the 22nd World Energy Congress it highlighted the fact that capital is extremely sensitive to perceived political and regulatory risks. Moreover, due to the growing pressures on public finances in most countries, public funds will not be available to substitute or augment the private financing of energy initiatives. As a consequence capital is not cheap or abundant on a global scale. The WEC's analysis reveals that there is little agreement between investors and governments on the nature, price, and value of risks. It is therefore critical to improve the understanding of the nature of risk and the way to price it. In the absence of such understanding, investment will not flow.

As part of the WEC's effort to improve the shared understanding among finance and energy sectors, the WEC has decided to establish a Knowledge Network (KN) on financing future energy, bringing together leaders and experts from finance to interact with leaders and experts from the energy industry.

Context: Uncertainty and Emerging New Risks for Energy Infrastructure

The recent World Energy Congress in Korea took place in a context of unprecedented uncertainty for the energy sector. Energy demand will continue to increase, driven by non-OECD economic growth. The pressure and challenge to further develop and transform the energy system is immense. To make things more daunting, policy makers and business leaders today have to take critical decisions on our future energy infrastructure in a context of unprecedented uncertainty. Over the last five years we have seen the acceleration and increased complexity of various energy policy drivers and investment signals. The latest World Energy Issues Monitor illustrates that uncertainties on future CO₂ prices, recession and energy prices continue to be the issues that most keep energy leaders awake at night.

We are all struggling to take long-term investment decisions that are robust and that deliver the resilient energy infrastructure we will need. We will lock ourselves into the energy infrastructure that we build today for the next half-century – for good or for bad. Physical assets with long lifetimes therefore need to be robust with regard to different possible futures driven by technology innovation or global policy developments and emerging risks.

We expect emerging risks including the increased water stress, the accelerating energy-water-food nexus, extreme weather events or cyber risks to challenge our current understanding of infrastructure resilience and the need to adapt our energy systems to a new normal. Further risks that have changed in their nature and importance over the past decade include social media driven activism and terrorist threats.

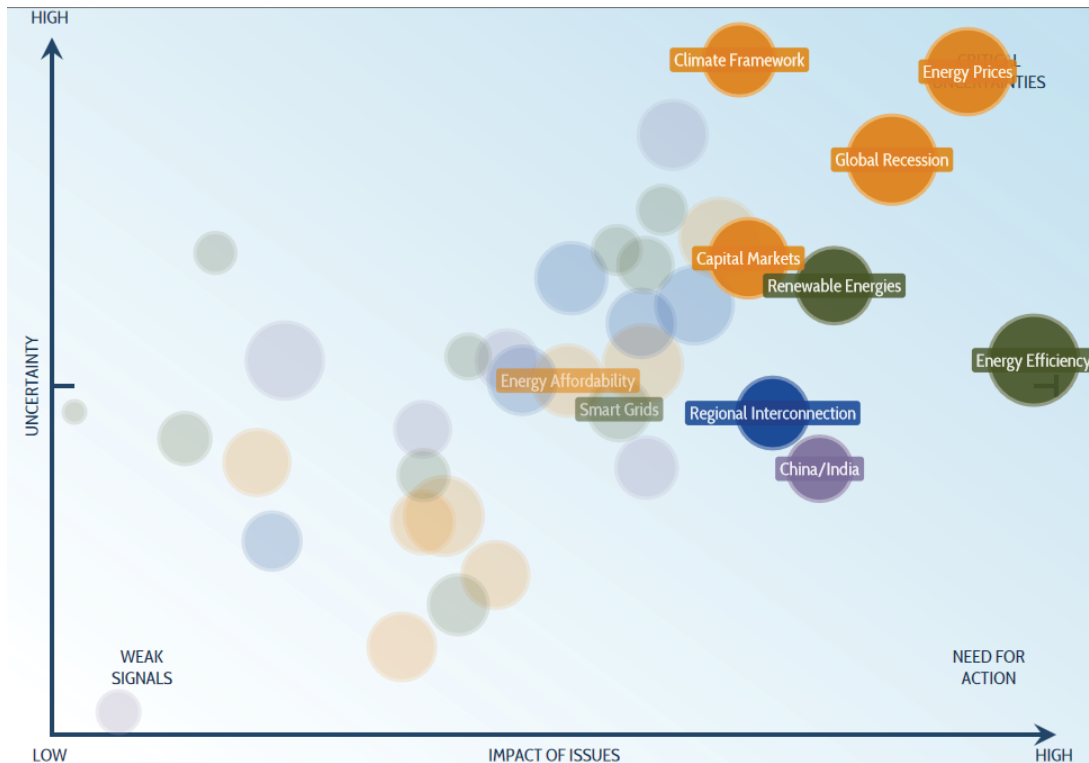


Figure 1 – WEC’s 2014 World Energy Issues Monitor: highlighting insomnia issues (energy prices, global recession, climate framework, capital markets) and the most important action issues (energy efficiency, renewables, regional interconnection, growth in China/India).

The 2014 Issues Monitor also illustrates the high concern of energy leaders that access to capital to finance large infrastructure projects has become increasingly complex. This is due to the fact that a number of classical infrastructure investors have suffered from financial, then economic crises, on the government side from lower tax revenues and on the private sector side from eroding margins and burnt fingers with stranded investments. The question of how large energy infrastructure projects will be financed and how relevant risks can be managed and mitigated in the future is therefore of critical importance.

2. Objectives

The objective is to identify concepts that Mobilise Capital to Accelerate the Transition to a Resilient Energy Economy; concepts that help define resilient infrastructure, that provide an overview on financial instruments and that enable the segmentation of and coping with different types of risk.

Main tasks are to:

- Provide the context of the over-riding issues and objectives being addressed by the world’s leading institutions.
- Describe the risk landscape and establish the domains of new emerging risks that are relevant to future energy infrastructure [such as energy-water-food nexus, extreme weather events, cyber or other terrorist risks, social activism]. This also includes a description of the nature, frequency and severity of these risks.
- Define resilience: arrive at terminology and definitions that add precision to the definition of the resilience objective. What severity of reversal at what

frequency is a project's or a national energy economy's risk tolerance and appetite? How is the potential downside to be expressed?

- Define options and financial instruments for de-risking, segmenting and managing the various parts of these risks.
- Develop concepts that help guide the design of resilient energy infrastructure by mitigating the relevant risks.
- Define what is needed to implement and distribute the findings and facilitate dialogue and consensus building among finance, energy and policy leaders.

This work will provide critical input to the 2016 World Energy Congress and to a number of World Energy Leaders' Summits in the years leading up to the Congress. It will feed into the WEC's Scenarios work and the outcome will contribute towards solving the Energy Trilemma and achieving sustainable growth for the planet.

3. Work Programme 2014-2016, Deliverables, Modus operandi, Roles and Responsibilities

Subject to further discussion.

4. Governance and team resources



Governance

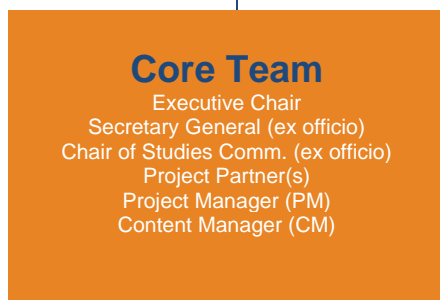
All-member representative body; the ultimate governing authority of the WEC.



Board of the WEC; responsible for overall governance of the organisation.



Balancing the interests of all stakeholders, providing internal controls and overseeing the management framework. Sets the Terms of Reference for the respective study groups and knowledge networks, advises them as the work evolves, provides feedback on draft reports and signs off final work outputs.



Execution

Project execution by the Core Team through provision of set deliverables. The PM is responsible for WEC processes including governance and network while the CM is responsible for the content management process including the report writing, methodology development, and analysis.



Members of the KN participate in meetings and contribute their own expertise, case studies and/or chapters to the project; they may be asked to review and provide input for the final outcomes.

5. Project partner

Two superlative companies have agreed to become project partners for the Knowledge Network on Financing Resilient Energy Infrastructure



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Terms of Reference 2014-2016

World Energy Scenarios

1. Introduction

Following the well-received launch of its most recent set of world scenarios, “World Energy Scenarios: Composing Energy Futures to 2050”, in October 2013, the World Energy Council (WEC) is now launching the next round of its scenario activities.

2. Objectives

The overarching aim of the WEC scenarios effort is to ensure that its world energy scenarios are the leading, robust, most independently informed and most oft quoted and used source of scenarios in the energy field.

Complementary objectives are to:

- a. Service broad WEC membership needs: that is, the ability to address themes of national and regional interest, with global relevance.
- b. Develop partnerships and sponsorships: which implies the ability to address issues of strategic interest to key partners and potential sponsors.
- c. Ensure that WEC’s scenarios and model are used by third parties, be they members, national committees, partners, sponsors, or governments.

The WEC’s Scenarios Study Group will pursue the above objectives in order to ensure that the scenarios have the highest benefit to WEC’s members, national committees and other interested parties.

3. Work Programme 2014-2016

The WEC core team undertaking scenario activities consists of a Scenarios Executive, the Scenarios Study Group, and a modelling partner, the Paul Scherer Institute (PSI).

As outlined in Annex A the team will undertake two regional scenario projects (Latin America and Africa) and produce a new set of world energy scenarios for the World Congress in 2016. Additional projects will be considered if sufficient interest and funding are available.

In developing scenarios the team will examine certain themes, which provide partial guidance to the forthcoming work programme. Since these themes are based on topics that are of strategic importance to our clients, they would require in-depth and expert insight and analyses that would mostly likely not exist in the Scenario Study Group. In establishing Knowledge Networks for these themes, they would help the scenarios SG to have a deeper understanding in areas that are particularly complex.

1. Theme 1, aligned with interests in Latin America (EA/WELS 2014) and Africa (EA/WELS 2015): **energy-water-food (EWF) nexus, with special focus on bioenergy and hydro, and energy access**. Evaluation of the potentials of bioenergy and hydro; assessing opportunities/limitations with regards to these potentials; assessing the relevant aspects of the EWF nexus with specific focus on the region(s). and refining the WEC/PSI energy model capabilities with regards to the EWF nexus;
2. Theme 2, aligned with interests in Asia, notably: **urbanisation, e-mobility, distributed generation and the system defining role of e-storage**. This is also of interest outside the region, for example, by Hydro-Quebec (e-mobility) and Aramco (e-storage). There is wide interest in a deep-dive into e-storage innovation potential and the potential system changing character of any substantive break-through; assessing potential implications for e-mobility, and

effects on electricity versus liquid fuels demand; assessing the opportunities/limitations with regards to these potentials. This would include assessing the regional implications of shifting technology and demand patterns; refinement of the WEC/PSI model to handle innovation in e-storage, e-mobility and consequent system implications. (A possible alternate regional focus of this theme could be EU/Russia.)

3. Theme 3, with an eye on the Istanbul Congress theme (2016) which, on a preliminary basis, could be **'redefining resilience of energy infrastructure'** against both old and new risks including, for example, extreme weather events, cyber-attacks, and accelerating EWF nexus dangers. This would require identifying a set of key risks which define the new requirements for energy infrastructure, as well as potential responses to improve infrastructure resilience; studying regional potentials of identified risks and of responses; assessing opportunities/limitations with regards to these potentials; and refining the WEC/PSI model capabilities with regards to the handling of risks and system implications of related innovations.

The above three themes would provide a phased build up towards the production of world energy scenarios, with a 2060 time frame, for the 2016 Congress. This development is outlined in Annex A. and a summary outline of WEC scenario development from 2014 until 2016 is shown in Annex B.

4. Modus Operandi

The Scenarios core team will continue to use data and information obtained from the WEC membership network, expert international organisations and other sources, e.g. dedicated project partners. Also other WEC databases and knowledge networks will be used as required. It is envisaged to work closely with other WEC flagships, such as the World Energy Resources and the World Energy Trilemma work to ensure greater consistency and alignment across WEC work streams.

In order to provide quantification of the scenario stories, WEC will pursue the concept of an 'open source model'; that is using a web-accessible global energy model, which can be used by third parties such as companies, governments, and experts. This aspiration will be shaped by available resources and feasibility of employing such an approach.

The Study Group will meet 4-6 times per year, physically and/or virtually.

5. Deliverables

During 2014 the WEC scenarios project team will conduct scenario presentations of the current global scenarios results, hold regional workshops and expert meetings on topics of special interest. Every effort will be made to encourage broad use of the scenarios by members, governments and others.

This will be followed by a period of analysis and regional scenario building, with initial focus on producing Latin American energy scenarios for presentation at the Executive Assembly in Cartagena in October 2014. The final deliverable for 2014 will be in the form of a new energy scenario publication based on the existing energy model with a clear regional and thematic focus.

Additionally, input from regional workshops will be used to challenge and assess the validity of the current scenario stories (Jazz and Symphony), and if needed provide the basis for a realignment of the scenario quantification with modified scenario narratives.

Activities for 2015 and 2016 will be planned in line with the scope of work identified in Annex A, with room for changes and amendments if needed.

6. Project Partners or Project Supporters

WEC is committed to continue the successful cooperation on energy modelling with its project partner, PSI in Switzerland, and is in discussion with industrial partners, research institutions and member committees to obtain additional resources, both funding and secondees, for the scenario processes.

7. Roles and Responsibilities

There are two key bodies that participate in the development of the World Energy Scenarios report 1) the Study Group and 2) the Project Team. Several other WEC groups support the work.

a. The Study Group:

- i. The Study Group consists of approximately 30 Member Committee representatives, an Executive Chair and the Project Team.
- ii. Study Group members commit to regular, prepared participation in meetings.
- iii. The Study Group will provide overall guidance and input to the Project Team and give project support where appropriate (e.g. contribute country examples and short summaries).
- iv. At key report milestones, the Study Group members provide feedback on key conclusions, recommendations, messages, and draft reports.
- v. Study Group members agree to support outreach activities to own stakeholders / network where possible.
- vi. Study Group members will be recognized for their support in the final report.

b. The Project Team:

- i. The Project Team consists of the WEC Secretary General and WEC Studies Committee Chair (ex officio), the Director of Studies, the World Energy Scenarios Executive Chair and the Project Director / Manager as well as 2-3 team members from project partners.
- ii. The Project Team is responsible for conducting the research, subsequent analysis, and preparing various versions of the report leading to the final version.
- iii. The Project Team will provide information on meetings as well as supporting material in a timely fashion.
- iv. The Project Team may call upon other groups within WEC such as other WEC flagships and WEC Knowledge Networks, WEC Standing Committees and other experts to provide feedback and guidance in their area of expertise on the work and its conclusions, and to ensure conclusions are consistent with or shapes the WEC position on the specific subject matter.
- v. The Project Team will engage the WEC Communications Team in the process, and jointly plan and prepare the release of the reports.
- vi. Project Team members will be recognized in the final report.

c. The Executive Chair:

- i. The Executive Chair serves as the preferred public spokesperson of the World Energy Council's scenarios.
- ii. As the interface between the Studies Committee Chair and the Study Group, the Executive Chair will lead the work of the Study Group within the bounds of the Terms of Reference and is responsible to the Studies Committee Chair for ensuring that the work is completed on time, meets the expectations of the Studies Committee, ensures an optimal and balanced participation from WEC regions and across energy sectors, is technically robust and credible, is reflective of the work done by the Study Group and is consistent with or shapes the WEC position on the specific subject matter.
- iii. The Executive Chair facilitates meetings, considering various cultures and backgrounds and achieving consensus.
- iv. The Executive Chair will be recognized in the final report and has the opportunity to provide a foreword to the World Energy Scenarios report.

8. Governance and team resources

The Scenarios Executive consists of two full time staff members in London (a Project Manager reporting into the Deputy Director, Scenarios), supplemented by 6-8 regional members, a Senior Director and an Executive Chair, Scenarios.

Executive Assembly

WEC Chair
Secretary General

Officers Council

WEC Chair
Secretary General

Studies Committee

Executive Chair
Secretary

Core Team

Executive Chair
Secretary General
Project Partner(s)
Project Manager (PM)
Content Manager (CM)

Study Group / Knowledge Networks

Nominated Experts

Governance

All-member representative body; the ultimate governing authority of the WEC.

Board of the WEC; responsible for overall governance of the organisation.

Balancing the interests of all stakeholders, providing internal controls and overseeing the management framework. Sets the Terms of Reference for the respective study groups and knowledge networks, advises them as the work evolves, provides feedback on draft reports and signs off final work outputs.

Execution

Project execution by the Core Team through provision of set deliverables. The PM is responsible for WEC processes including governance and network while the CM is responsible for the content management process including the report writing, methodology development, and analysis.

Members of the SG and KN participate in meetings and contribute their own expertise, case studies and/or chapters to the project; they may be asked to review and provide input for the final outcomes.

Annex A: Early draft schedule for WEC scenarios activities

Overall Vision: “To develop WEC to become the leading, most independently informed and most oft-quoted source of scenarios in the energy field.” In line with WEC’s overall mission of: “promoting an affordable, stable and environmentally sensitive energy system for the greatest benefit of all.”

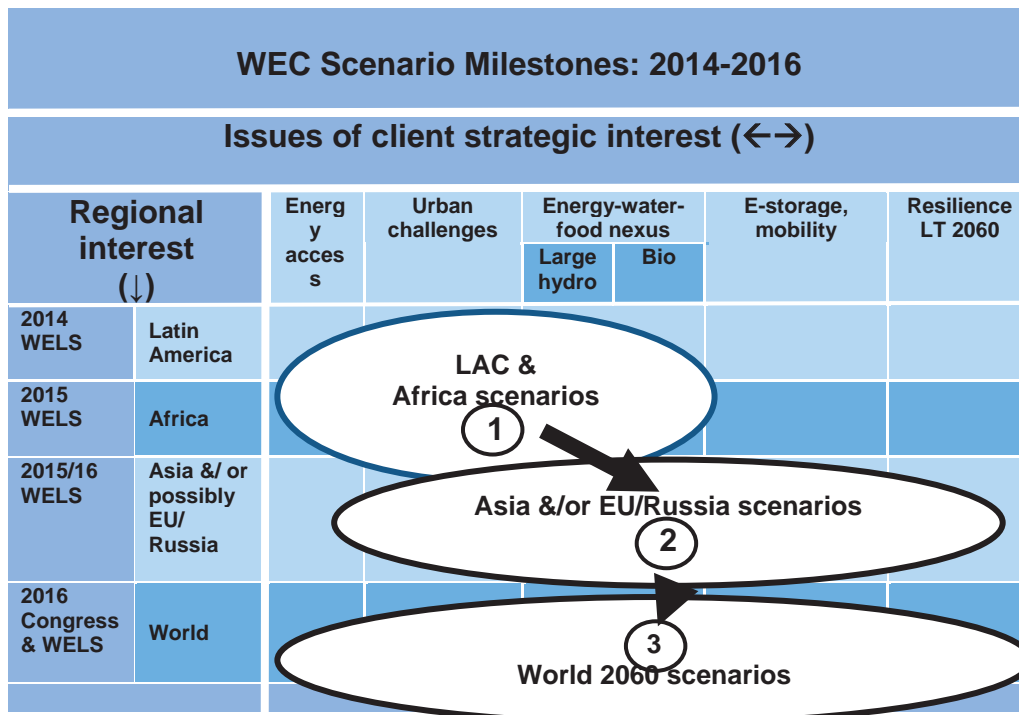
Schedule for illustrative purposes and subject to approval from WEC governance:

Year	Synergy rationale	Possible scenario activity
2014	<ul style="list-style-type: none"> Executive Assembly in Cartagena, Colombia New Latin American Regional Manager; strong Regional Vice Chair; Enel seconding scenarios project manager to WEC, with interest in scenarios (tbc) Interest in getting Petrobras & Eletrobras deeper involved; possibly CAF and IADB Interest in further strengthening Latin American MCs 	Latin America regional deep-dive ready for the EA/WELS
2015	<ul style="list-style-type: none"> Executive Assembly in Ethiopia (President is President of African Union) Studies Chair South African; Africa Regional Manager in place; new regional Vice Chair Interest in getting more Corporates deeper involved; opportunity to deepen relationship with Eskom (is Patron); Sasol and possibly ADB Possibly of interest to UN SE4All follow up process Interest in further strengthening African MCs 	Africa regional deep-dive ready for the EA/WELS
2015/16	<ul style="list-style-type: none"> Possible WELS co-hosted with Asian Development Bank Possible WELS in St Petersburg Further National Scenario Exercises 	Possible Asia and/or Europe/Russia regional deep-dive for the WELS (subject to available funding)
2016	<ul style="list-style-type: none"> World Energy Congress & Executive Assembly in Turkey 	<p>New global scenarios launched at Congress, 2060 time frame</p> <p>Session on National Scenarios</p>

Additional signals received, for potential further deep-dives:

- Electric vehicles/storage: subject to specific company support
- A North American deep-dive exploring radical change in the regional energy landscape

Annex B: Summary outline of WEC scenario development



Member committees of the World Energy Council

Albania	Lebanon
Algeria	Libya
Argentina	Lithuania
Austria	Luxembourg
Bahrain	Mexico
Belgium	Monaco
Bolivia	Morocco
Botswana	Namibia
Brazil	Nepal
Bulgaria	Netherlands
Cameroon	New Zealand
Canada	Niger
Chad	Nigeria
China	Pakistan
Colombia	Paraguay
Congo (Democratic Republic)	Peru
Côte d'Ivoire	Philippines
Croatia	Poland
Cyprus	Portugal
Czech Republic	Qatar
Denmark	Romania
Egypt (Arab Republic)	Russian Federation
Estonia	Saudi Arabia
Ethiopia	Senegal
Finland	Serbia
France	Slovakia
Gabon	Slovenia
Germany	South Africa
Ghana	Spain
Greece	Sri Lanka
Hong Kong, China	Swaziland
Hungary	Sweden
Iceland	Switzerland
India	Syria (Arab Republic)
Indonesia	Taiwan, China
Iran (Islamic Republic)	Tanzania
Iraq	Thailand
Ireland	Trinidad & Tobago
Israel	Tunisia
Italy	Turkey
Japan	Ukraine
Jordan	United Arab Emirates
Kazakhstan	United Kingdom
Kenya	United States
Korea (Republic)	Uruguay
Kuwait	Zimbabwe
Latvia	

Patrons of the World Energy Council

Alstom	Korea Electric Power Corp.
American Electric Power	Oliver Wyman
Bloomberg New Energy Finance	PricewaterhouseCoopers
Electricité de France	Saudi Aramco
Emirates Nuclear Energy Corporation	Siemens AG
Eskom	SK Innovation
GDF SUEZ	Tokyo Electric Power Co.
GE Power and Water	Verbundnetz Gas AG
Hydro-Québec	

The World Energy Council (WEC) is the principal impartial network of leaders and practitioners promoting an affordable, stable and environmentally sensitive energy system for the greatest benefit of all. Formed in 1923, WEC is the UN-accredited global energy body, representing the entire energy spectrum, with more than 3000 member organisations located in over 90 countries and drawn from governments, private and state corporations, academia, NGOs and energy related stakeholders. WEC informs global, regional and national energy strategies by hosting high-level events, publishing authoritative studies, and working through its extensive member network to facilitate the world's energy policy dialogue.

Further details at www.worldenergy.org and [@WECouncil](https://twitter.com/WECouncil)