



Energy Leaders Summits, Regional and National Forums and build consensus on required policies and strategies.

## 2011 Results and Interpretation

In 2011, the critical uncertainties space is dominated by climate framework uncertainty, political instability in the Middle East / North Africa region and, uncertainty regarding the nuclear renaissance post-Fukushima. In comparison to 2009, macroeconomic risks related to the financial / economic crisis have lost their dominance as key concern for the energy sector; however, the crisis is still looming and issues including energy price volatility, commodity prices and capital market access remain in an alert position, similar to 2010.

The absence of a global climate framework post 2012 and the lack of progress towards a significant agreement between the big blocks have kept this issue a dominant critical uncertainty for the sector. The “political spring” in the Middle East / North Africa region with its impact on Libyan oil supply has affected energy markets globally, added volatility and triggered the second IEA stock release in the institution’s 30 years history. The Fukushima event has pushed the nuclear renaissance from consensus to a critical uncertainty. Taken together, last year’s Macondo oil spill and Fukushima have put large-scale accidents on the top of Energy Leaders’ agenda.

Our nuclear survey on short-term policy impacts indicates that the leading nuclear nations (except Japan) do not signal change in their nuclear outlook. Russia, China, and Korea, representing two-thirds of the 61 projects underway, have not changed their nuclear ambitions. Countries that have changed their attitude with respect to nuclear include Germany, Switzerland, Italy and Japan. Time will have to show how increased safety costs affect the competitiveness of the technology and whether the aging nuclear park can be replaced in the given context. Our survey indicates that natural gas is the most likely substitute for not-built nuclear plants, followed by coal, then renewables.

On the need-for-action front renewable energies and efficiency remain dominant issues, with their perceived impact further increased. However, we note that also uncertainty around these issues has slightly increased compared to 2010. For energy efficiency this may be explained by the growing understanding that progress does not simply come with capital investment, but equally depends on investment in education and institutional frameworks to promote adequate

### **The World Energy Council: a brief history**

*In 1923, a small group of energy experts came together in London to plan a conference which would bring together experts from around the world to help consider how to rebuild the electricity grid in Europe following WWI. The first World Power Conference was then held in London in 1924. It was so successful that the meeting has taken place every three years ever since. Over the years the original purpose was widened, the organisation grew, and the name changed, eventually, to become the World Energy Council. The World Power Conference has evolved into the World Energy Congress and gathers every three years 3,000 energy leaders from 100 countries to assess the state of the energy world.*

*WEC’s work is governed and legitimised through its Executive Assembly (with the principle of “one country one voice”, forming an “Energy UN”) and its Officers Council, presided by WEC’s Chairman, with the Secretary General in the executive function. Our national committees are chaired by energy ministers, leading CEOs or experts. Our studies are complemented by views from a global energy business leaders group (Patrons Roundtable) and ministers (Ministerial Roundtable) which we facilitate during our Energy Leaders Summits.*

behaviour and solutions. The on-going looming economic outlook keeps investors prudent on the renewable energies side. Last year’s jump of the quartet of smart grid, storage, electric vehicles and sustainable cities is reconfirmed in 2011: These issues have progressed their way to solid presence on the global energy agenda.

Overall it strikes us that the very issues that in previous years were seen as a substantial part of the solution (energy efficiency, renewables, nuclear) are all taxed with higher uncertainties. The risks associated with these issues, ranging from physical accidents over regulatory to financial risks, have increased and have become a growing concern. This indicates that managing relevant risks will be an important part of the agenda going forward.

Carbon capture and sequestration (CCS) was among the highest uncertainties in the last two years: in the absence

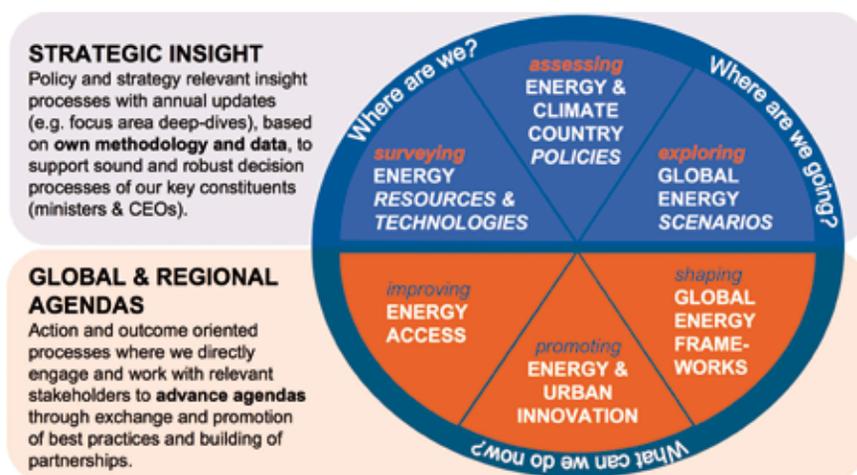


Figure 2 - six activities - WEC's 'activities wheel'

of a climate framework there will be no effective financing mechanisms and incentives to develop this technology beyond the pilot stage. In 2011 we see both the perceived impact and uncertainty decrease. A plausible interpretation is that energy leaders do not trust CCS to be at scale in a desired time horizon – an observation that we may not want to leave unchallenged, given the rapid growth in global coal consumption.

### 2011/12 World Energy Leaders Summits (WELS)

World Energy Leaders Summits are generally held in countries of critical interest to the global energy situation and are co-hosted with the Energy Minister of the host country. Participation is by invitation only and includes WEC's Patrons' and Global Partners' CEOs, a select number of Energy Ministers, WEC Officers and Chairs of National Committees as well as selected guests and experts (60-80 participants). The agenda of the WELS addresses critical issues identified through WEC's issues surveys, and draws insight from WEC's scenarios, policy assessment and resources and technology work.

#### Dates:

**Rio, September 14-15, 2011**

hosted by Brazil's Minister of Energy

**Houston, November 1, 2011**

within WEC's Houston Energy Business Forum

**Istanbul, April 19-20, 2012**

hosted by Turkey's Minister of Energy

Other notable issues include the energy-water nexus as a rapidly growing concern. The position of unconventional remains unchanged, still with significant uncertainty. Hydrogen is not believed to play a big future role as a clean energy vector. Lastly, it surprises that currency uncertainty is not perceived to be of any importance in a context of eurozone instability and dollar downgrade.

### The World Energy Council's Activity Areas and Knowledge Networks

The World Energy Council addresses these challenges by developing content in three Strategic Insight areas and by building

partnerships around three Global & Regional Agendas. In Strategic Insight we survey resources, and technologies; we assess national energy policies across the world and identify which policies are effective and transferable to other countries; and, we explore possible global energy futures and analyse critical uncertainties. In Global & Regional Agendas we look at how energy access can be improved; we promote best practices in the field of energy and urban innovation; and, we contribute to the dialogue on global frameworks, be it in the context of rules of energy trade or with respect to the global sustainable energy and climate frameworks.

In order to develop expertise on cross-cutting strategic issues WEC has built up a number of Knowledge Networks (see Figure 3). WEC's national Member Committees have nominated 400 experts from over 50 countries into these Knowledge Networks. It is the objective of the World Energy Insight to provide an annual update on these activities and complement it with perspectives from Energy Leaders.

#### Surveying Energy Resources & Technologies

When will the world run out of oil? What is the status and the potential of shale gas, biomass, wind, solar and other renewable and fossil energy resources? What are the issues with smart grids, energy-water linkages, carbon capture and sequestration, clean coal technologies, generation IV nuclear or the e-mobility? How much difference can benchmarking and improving performance of existing power plant make? The World Energy Council has been

conducting the Survey of Energy Resources since 1934 and now also assesses current and emerging technologies and resources to provide a solid basis for policy and strategy decision processes.

### Assessing Energy & Climate Country Policies

We live in a world of change and energy and -related policy innovation will affect our energy future in many ways. In the aftermath of the financial and economic crisis, the world places more emphasis on policy than on Adam Smith's "invisible hand" to guide us towards a sustainable energy future. Which policies balance cost-effectiveness, social equity, environmental viability and effectively enhance the general welfare of the citizens of a nation or region? In the interest of our sustainable energy future, the World Energy Council has developed a methodological framework to identify effective policies around the world and how they can be transferred from one country to another. The methodology is founded on an index based on 22 indicators, an industry executives' survey, a review of over 200 individual policies in over 40 countries, as well as a survey conducted with our Member Committees in over 90 countries.

### Exploring Possible Global Energy Futures (2050 Scenarios)

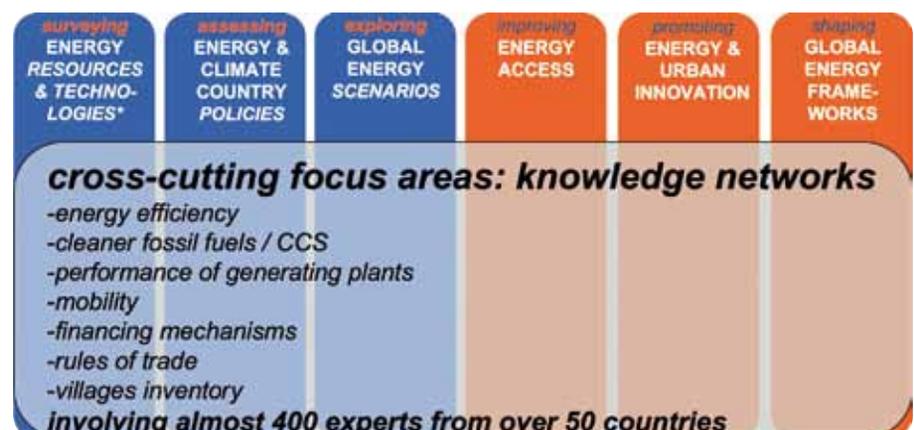
What if...? We live in a time of increasing volatility and extraordinary changes, driven by new uncertainties and ambiguous value systems. The financial crisis, the technological shift from conventional to unconventional resources, shifting geopolitics, climate change and the likely future carbon price, the changing water footprint and its impact on the energy value chain, the urbanisation trend and new forms of mobility, competing value systems, armed conflict and ideological extremism ... how will all these issues affect our future energy system and what will be the critical drivers to watch? The extrapolation of the past into the future is not a meaningful approach when trying to improve our understanding, especially in terms of effective energy policy and leadership. By drawing on the wisdom and experience of its global membership to develop a small set of distinct but consistent scenarios – "plausible stories of pathways into the

future" – the World Energy Council enables decision makers to test the robustness of their own assumptions and to validate policies and strategies.

### Shaping Global Energy Frameworks

Resources and skills are unevenly distributed across the world and are not often at the places where they are most urgently needed. Energy access, energy security and climate change are global challenges and therefore have no economic and efficient solutions within national boundaries. This underlines the role of trade in goods and services and makes the global frameworks and rules that govern it an essential building block of the global public good. Nationalistic solutions that lose sight of the global picture delay the necessary international policy convergence. Many international organisations have promoted coordinated and collaborative approaches and have been working on the necessary international policy convergence, but the progress is slow. The resulting highly uncertain investment framework makes infrastructure investments unnecessarily risky and we will all pay the risk premium as part of higher energy prices and further delay in climate change mitigation. Critical issues in this context include defining "green goods and services", the legitimacy of "border tax adjustments" to avoid carbon leakage, or the promotion of technology transfer to developing countries. The World Energy Council promotes dialogue, develops constructive proposals, and shares these with the relevant international organisations and processes including WTO, UN, COP and G20.

Figure 3 - WEC's Knowledge Networks on cross-cutting strategic issues



### *Promoting Energy & Urban Innovation*

Today, 50 per cent of the world's population lives in cities and by 2030, this number will grow to over 60 per cent. Key concerns for the people leading cities include security, pollution, health, wealth and broader well-being for their citizens. These issues directly or indirectly link to energy and resource efficiency: transportation and traffic management, building heating and cooling, sanitation and waste management, and communication networks are among the key processes that determine the energy pattern of a city. Innovative approaches are being implemented in a number of cities across the world. The World Energy Council plays a constructive role through the facilitation of the best practices dialogue and the delivery of expertise to leaders, city planners, managers and leaders.

### *Improving Energy Access*

With only four years left until the 2015 deadline to achieve the Millennium Development Goals, the world is on a path to an "unacceptable failure, both moral and practical." None of the MDGs can be delivered without access to modern energy services for the 1.5 billion people who today live without it. A lack of basic energy service impacts all aspects of these people's lives, from healthcare to clean water, safe housing, education and the potential to earn a living. In recognition of the importance of energy for sustainable development, the United Nations defined in 2011 three major goals by 2030: 1) Ensure universal energy access to modern energy services; 2) Reduce global energy intensity by 40 per cent; and 3) Increase renewable energy use globally to 30 per cent. To achieve these goals, the UN has designated 2012 as the International Year of Sustainable Energy for All.

Rural communities account for 85 per cent of energy poor. Institutions, including the International Financial Institutions (IFIs), and also most governments focus on grid-expansion and densely populated urban areas. This simply leaves the rural poor perpetually exposed and in the dark. Key challenges include the lack of adapted financing mechanisms that can deliver on rural energification schemes; poor education and shortage of local skills for project initiation, implementation and system operation; the absence of easy local access to components for equipment maintenance and enhancement; the lack of understanding and political support necessary to replicate enduring local ownership models. The World Energy Council works with other relevant stakeholders on pragmatic approaches to promote energy access. □

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