



A time of uncertainty, a time to embrace change

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This is a time of unprecedented uncertainty for the energy sector. Secure, affordable and clean energy supply is fundamental to economic prosperity and human development and presents huge challenges for us all. 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, it is in the context of this uncertainty that today's policymakers and business leaders have to take critical decisions on our future energy infrastructure.

Ahead of the World Energy Congress we brought together the findings of our flagship studies and exposed a number of myths which influence our understanding of the global energy landscape. If not addressed, these misconceptions will lead us down a path of complacency and missed opportunities. The myths are published again in this edition of *World Energy Insight*. We now need to use these findings to define our energy future.

With current technologies, policies and extrapolated rates of innovation we see the World fail its climate objectives. Energy access will not be solved by 2050, but the number of energy poor will continue to decrease from today's 1.2 billion to between 300 and 500 million and mostly reside in the African continent. Further, we expect emerging risks including 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.

Business as usual is not an option. The share of renewables will continue to grow – solar electricity by a staggering factor of between 100 and 200 between now and 2050 – and will drive increased requirements for storage and backup capacity, enhanced regional interconnection, more decentralised production, a greater need to manage data, which also come with a greater exposure to cyber risks. These developments will challenge current market designs and lead to the emergence of new business models. Also, with decreasing renewable technologies prices the renewables deployment will further shift beyond Europe or North America to emerging and developing countries.

The energy transformation is the backdrop of a changing energy map. Large amounts of unconventional oil & gas are produced outside OPEC producers, notably in North America; the renewables supply is building up in sun-rich Middle East and Africa; the global demand centre is shifting from OECD to Asia; and, technologies at competitive costs

are produced in countries with low labour costs including China and other emerging economies. International institutions related to energy, trade, or safety no longer reflect this new reality and will either adapt or become irrelevant as they will fail to deliver on the objectives they were created to pursue.

To further help inform the debate, the World Energy Council (WEC) has, for the last five years, produced our *World Energy Issues Monitor* to provide an annual snapshot of the landscape of uncertainties, leveraging the insights of energy leaders and experts from our independent and impartial network across more than 90 countries. The report draws on the commonalities and differences for leaders at the global, regional and national level, and also provides a perspective from our community of young energy professionals – our Future Energy Leaders.

Over the last five years we have seen the acceleration and increased complexity of energy drivers, as well as policy and investment signals. Today, the primary global issues that keep energy leaders awake and active are as follows:

- Energy prices, and high associated volatility, have become the most critical uncertainty for energy leaders for the first time this year, surpassing the global climate framework.
- The lack of global agreement on climate change mitigation remains a key issue, for the fifth consecutive year, without a clear path for the future of CO₂ prices.
- Access to capital has an increased uncertainty this year, demonstrating the difficulties in the matching of capital with the necessary demand for energy infrastructure in a context of high political risk.
- Carbon capture, utilisation and storage (CCUS) is perceived with rapidly diminishing impact, continuing the clear trend of the past three years and reinforcing the reality check needed around our ability to deliver on climate objectives by 2050.
- Energy efficiency remains stable in its positioning as an action priority for the fifth successive year and continues to present an immediate opportunity, but will only be realised with a longer-term approach to financing.
- Energy affordability, the issue of growing concern of consumers facing increasing energy costs that puts pressure on low-income household budgets, is on the rise in many parts of the world.

It is with the consideration of such outlined complexity and uncertainty that the WEC promotes the energy trilemma approach with the objective to deliver balanced, predictable

and stable policy frameworks. It is this balance that mitigates political risk, which too often keeps the necessary investments from flowing.

With the urgency to take critical decisions, more than ever we need an impartial, inclusive and fact-based dialogue on our future. We need to improve our common understanding of the implications of today's decisions and actions so we can make them the ones that deliver the future we want. A key foundation for policy and investment decisions is a thorough understanding of critical drivers and uncertainties, which will define our future. Our *World Energy Scenarios* provide a set of plausible and coherent stories of how our future may unfold, based on a systemic analysis of critical drivers and uncertainties – offering a reference point against which to strengthen the foundation for our capacity to define balanced policies and take informed investment decisions.

I would personally like to take this opportunity to thank the more than 800 energy leaders, including ministers, chief executives and the chairs of our national committees, for their time in contributing to this initiative. In particular, those 24 national committees that have dedicated much effort to ensuring the voice of their national network can contribute directly to the energy debate, by way of the national monitors.

Many of the insights highlighted in our annual *World Energy Issues Monitor* were also to the fore during the discussions at last year's World Energy Congress. Over the four days of the event we welcomed 7,560 delegates from 123 countries, including 52 ministers. 267 speakers addressed this high level audience during 62 sessions and the results of the deliberations are highlighted in this publication. I would like to thank all of those being the staging of this event which provided such important insights.

Our host President Park Geun-hye highlighted "As the World Energy Council points out, the Energy Trilemma is the most significant challenge." "Korea will play a leading role in resolving the Energy Trilemma facing the world," based on the policy of promoting a creative economy. Secretary General Ban Ki-moon also

told delegates that "Energy is the golden thread that connects economic growth, environmental health, social fairness and opportunity." "Clean, modern and affordable energy services are essential for sustainable development and achieving the Millennium Development Goals."

However, perhaps the most uplifting statement came from our Future Energy Leaders who opened their address to the closing ceremony of the Congress by saying "Embrace the change." This so gracefully encapsulates the approach that the members of the World Energy Council address the triple challenge that lies behind the Energy Trilemma. For 90 years the WEC has been at the forefront of the energy debate through times of certainty and times of uncertainty.

Now, in a world becoming even more interconnected, where new technologies foster faster innovations and demand changes in our behavioural responses, the task of understanding the issues that will shape our future becomes ever harder. I hope you will join me in using the insights from the World Energy Congress and the latest version of the *World Energy Issues Monitor*, to challenge our own assumptions of what is of the highest importance as we set the fundamental dialogue that energy leaders must address in the year ahead. □

