

Time to reassess energy cards

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Prologue

This is a time of unprecedented uncertainty for the energy sector

Energy demand will continue to increase, driven by non-OECD economic growth. According to WEC's latest 2050 scenarios demand growth will not be fully covered by CO₂-free energy supplies and fossil fuels still grow in absolute terms from today's 10 mtoes to between 10 and 16 mtoes. The outlook for individual fossil fuels types is however very different. Natural gas may double by 2050 while on the oil side we see an outlook uncertainty of plus/minus 15% over the same time horizon, compared to today's output. The range of uncertainty is much higher in coal with a plus/minus 40% outlook.

The pressure and challenge to further develop and transform the energy system is immense

With current technologies, policies and extrapolated rates of innovation we see the World failing 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 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.

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 drive increased requirements for storage and backup capacity, enhanced regional interconnection, more decentralized 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, technology at competitive costs is 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. As an example, China will ask for a place at the head table of what it will consider legitimate institutions. This changing energy map has profound regional and geostrategic implications.

First, the US has potential to be energy self-sufficient by 2035, but will remain exposed to global oil price volatility. Hence, the exposure to global market disruption risks remains high unless there is a full decoupling of WTI/Henry Hub and Brent markets. Such decoupling does not seem plausible in the long-run given the potential to derive benefits from arbitrage between the two. Meanwhile, moderate but increasing LNG exports to Europe and Asia will lower the dependency of Europe from Russian gas and create opportunities for new partnerships between North America and Asia. The moderate European gas market outlook and the increased competition in international LNG markets will also drive Russia's focus east and enhance Asian opportunities for *upstream* partnerships.

Second, China's agenda is shifting to address its environmental problems after a decade with a focus on energy security. China's continued capacity

to deliver strong economic growth will depend internally on its capacity to mitigate environmental stress and internationally on its capability to satisfy its thirst for additional resources. In particular, China's demand for non-coal energy resources cannot be satisfied domestically for a foreseeable future and international acquisitions will remain of strategic importance, yet slowed down by local content and protectionist national agendas. The latter drives increased Chinese interest towards international institutions indirectly promoting its trade and acquisitions agendas.

Finally, Europe's lack of own cheap energy sources has already started to weaken its competitiveness against North America. In the absence of low cost labour and energy Europe's success to globally compete will critically depend on its capability to train and attract high-quality skills that drive technology and systems innovation on the one side, and on its capacity to maintain strong institutions and infrastructure that deliver high political, economic and energy security with positive effects on capital costs on the other side. None of these come without clear political focus, consensus and cooperation. A litmus test will be the question whether phase II of the German Energiewende can be embedded in a well-functioning European framework and market concept.

The unprecedented uncertainty, the need to redefine infrastructure resilience on the basis of emerging risks, the expectation of changing market designs and evolving business models, and the changing geopolitical balance as a result of the shifting energy map place energy among the top geostrategic issues globally at least for the decade to come. Cards are not evenly distributed in and where cards are weak the need to play smart is even greater. Clearly, energy is a game that no country can afford to lose. It is time now to reassess own cards, evaluate options, and get on top of smart strategies.