

Key Implications for Policymakers

- ▶ Rebalance strategic ambitions in light of energy sustainability goals, through a transparent consideration of policy trade-offs (for example, consumer affordability versus emissions reduction, incentives for policy preferences versus economic distortions).
- ▶ Develop policy frameworks that are sufficiently flexible to respond both to strategic market disruptions (e.g., emerging gas supply opportunities) and tactical developments in fast-moving areas (e.g., renewable energy installation).
- ▶ Encourage technology transfer and partnership arrangements by leveraging foreign expertise and financing to support the long-term success of domestic energy industries.
- ▶ Strengthen regulatory frameworks that support the development of new infrastructure to reduce construction lead times and ensure the reliable connection of new generation assets to transmission grids.
- ▶ Plan for the completion of economic-crisis stimulus funding and the gradual removal of subsidies for thermal generation, and, in due course, maturing sources of renewable energy. This will encourage ongoing investment.
- ▶ Draw lessons from the growing body of experience around the deployment of renewable energy and

energy efficiency to pre-empt potential issues in the implementation of policies and to reduce the likelihood of hesitancy about, or changes in, policy.

- ▶ Review governance structures and decision-making processes with a view to enhancing stakeholder engagement and securing greater acceptance for critical energy sector transformations.

Key implications for the Energy Industry

- ▶ Maintain or pursue diversity in the generation mix to cope with long-term disruptive changes in resource availability, the likelihood of significant regulatory impacts, changing policy priorities, and more volatile commodity markets.
- ▶ Leverage competitive technologies and strong balance sheets both to respond to the ongoing opening of energy markets across the globe, and to support the growth ambitions of non-OECD countries.
- ▶ Increase energy-efficiency efforts and identify areas of potential leadership (including through participation in cross-industry alliances) to hedge against regulatory scenarios, secure cost savings and generate revenues through ancillary businesses.
- ▶ Explore with governments how the risks of major investments can be reduced, resulting in lower costs for consumers. □



Photo: Hydro Québec

22nd WEC Survey of Energy Resources

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The 22nd edition of the *World Energy Council's Survey of Energy Resources* (SER), is the latest in the series of reports on the status of the world's energy resources. It covers 15 sources of energy, and provides the most comprehensive resource and reserves assessments and other relevant information for each of them. WEC published the first *Statistical Year Book* in 1933 which already then

included information from more than 50 countries. Nearly 80 years later, the Survey remains a unique global document and a flagship publication of the World Energy Council which also is an essential tool for governments, industry, investors, academia and NGOs.

The 22nd WEC *Survey of Energy Resources* contains a chapter for each energy resource, ranging from the conventional fossil

fuels to the renewables, both new and traditional. Generally, the coverage of each resource comprises a Commentary by a leading expert in the field, followed by Definitions, Tables and Country Notes. The tables summarise the worldwide resources, reserves, production and consumption of fossil fuels and comparable data for non-fossil energy sources, as applicable. The Country Notes aim to highlight the main features of the resource and its utilisation.

The latest edition of the *Survey* is a testament to the continued supremacy of fossil fuels and in particular oil as the price-setter in the global energy mix. The data and the commentaries in the *Survey* highlight the effects of higher oil prices experienced over the past couple of years but also increasing concerns about climate change and energy sector sustainability. Resources and technologies that were previously uneconomic to develop are today experiencing a renaissance and enjoying increased attention and R&D spending.

Despite the global economic crisis of 2008 and 2009, world primary energy demand has been growing and it is expected to continue its growth for decades to come. This is not surprising given the fact that more than a quarter of world's population, in other words about 1.6 billion people, still do not have access to commercial energy. The strongest growth in energy consumption comes from Asia, in particular from China and India. These two countries – according to the International Energy Agency's projections – will account for over 50 per cent of the total growth in global energy demand to 2030. It is important to remember that both these countries are heavy coal users. Fossil fuels currently account for about 80 per cent of primary energy demand and this figure is expected to remain largely the same through to 2030.

The expected environmental implications of the continued global energy system's dependence on fossil fuels call for immediate action across the world. Global warming and climate change are global concerns and should be treated as such. While political discussions and international negotiations continue, the industry is already working on developing more efficient and cleaner technologies. Carbon Capture and Storage (CCS) and other clean coal technologies form a vital part of global efforts to reduce CO₂ emissions. CCS is the only currently available technology that could help reduce CO₂ emissions on a large scale. Both the UN Intergovernmental Panel on Climate Change (IPCC) and the World Wide Fund For Nature (WWF) have identified CCS as a critical technology to stabilise atmospheric greenhouse gas concentrations in an economically efficient manner. The

IPCC found that CCS could contribute up to 55 per cent of the cumulative mitigation effort by 2100 while reducing the costs of stabilisation to society by 30 per cent or more.

Although the growth in the use of renewable energy sources has been spectacular, as demonstrated in the *Survey*, it will take decades before renewables will be able to provide a sizeable contribution to meeting energy demand and mitigating climate change. In the meantime, the world should focus on increasing efficiency across the entire energy value chain. Improving performance of power plants around the world can make a significant contribution to the reduction of CO₂ emissions and other pollutants. A one percentage point improvement in the efficiency of a conventional pulverised coal combustion plant results in a 2-3 per cent reduction in CO₂ emissions. Highly efficient modern coal plants emit almost 40 per cent less CO₂ than the average coal plant in service at the present time.

The overall conclusion of the 22nd *Survey* is that there is no shortage of energy resources in the world either today or for decades to come. It is the way we are using these resources that has to change in order to ensure a sustainable energy future. □

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