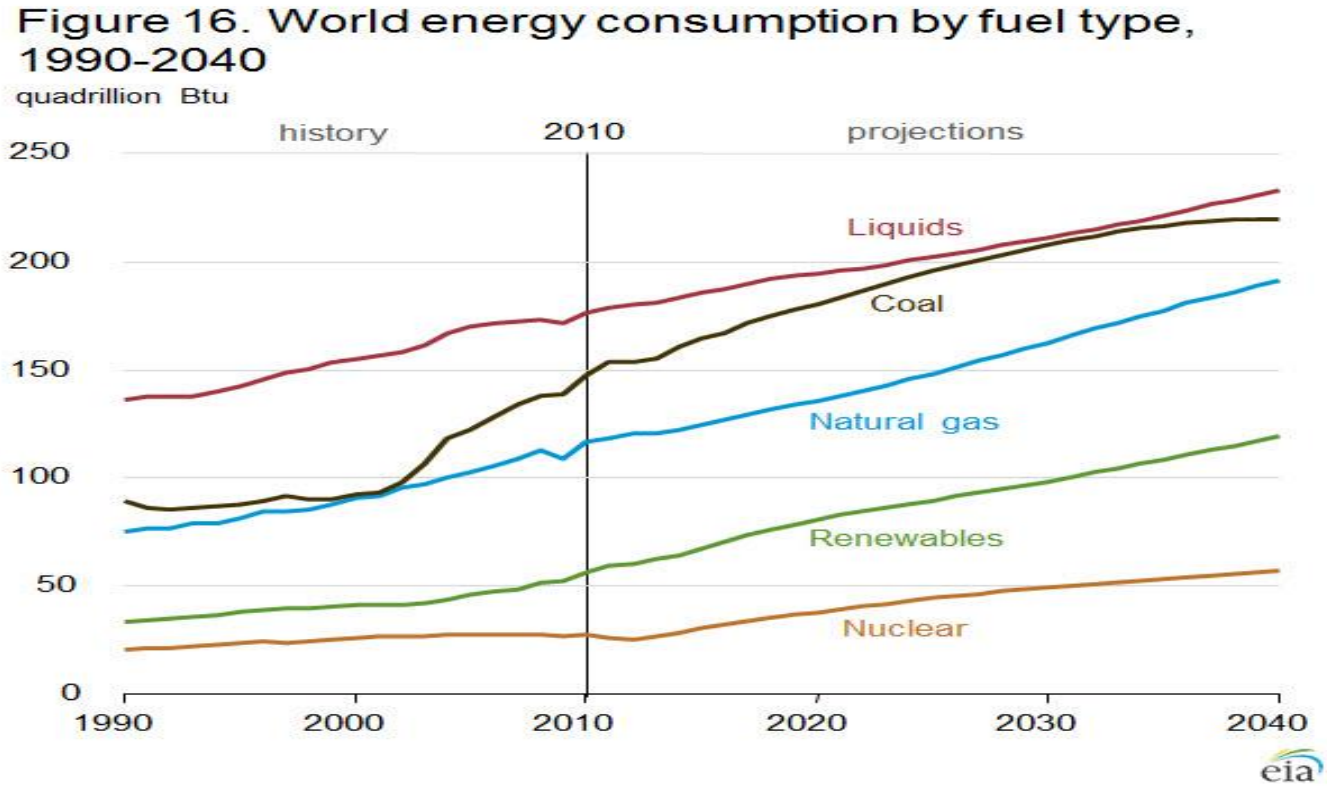
Summary of Energy Resources by WEC Members, 2013

(pages 23-24)

The road ahead

Demand for energy will continue to grow for decades to come. Population increases and a growing rate of electrification will place huge requirements on energy supplies. Global primary energy demand could increase by 50% by the middle of the century. At least 80% of this increase is expected to come from developing countries. The total primary energy demand of China alone is expected to double by 2035, and that of India to increase by almost 150% during the same period. Both countries with huge populations and high economic growth are expected to dominate the global consumption of energy resources in the coming years.



Key messages

The key messages emerging from the World Energy Resources survey 2013: The changes in the energy industry over the past 20 years have been significant. The growth in energy consumption has been higher than anticipated even in the high-growth scenarios. The energy industry has been able to meet this growth globally assisted by continuous increases in reserves' assessments and improving energy production and consumption technologies. The results of the 2013 WEC World Energy Resources survey show that there are more energy resources in the world today than 20 years ago, or ever before.

It is obvious that moving away from fossil fuels will take years and decades, as coal, oil and gas will remain the main energy resources in many countries. Fuel-switching does not happen overnight. The leading world economies are powered by coal: about 40% of electricity in the United States and 79% of the electricity in China is generated in coal-fired thermal plants. These plants will continue to run for decades. The main issue for coal is the CO2 penalty.

Contrary to the expectations of the world running out of **oil** within a few decades, the so called notion of 'peak oil' which prevailed 20 years ago, has almost been forgotten. The global crude oil reserves are almost 60% larger today than in 1993 and the production of oil has gone up by 20%. If the unconventional oil resources such as oil shale, oil sands, extra heavy oil and natural bitumen are taken into account, the oil endowment of the world could be quadrupled. An increasing share of oil will be consumed in the rapidly growing transport sector, where it will remain the principal fuel.

Natural gas is expected to continue its growth spurred by falling or stable prices, and thanks to the growing contribution of unconventional gas, such as shale gas. In addition to power generation, natural gas is expected to play an increasing role as a transport fuel.

The future **of nuclear energy** is uncertain. While some countries, mainly in Europe, are making plans to withdraw from nuclear, other countries are looking to establish nuclear power generation.

The development of **renewables**, excluding large hydro, has been considerably slower than expected 20 years ago. Despite the exponential growth of renewable resources in percentage terms, in particular wind power and solar PV, renewable energy still accounts for a small percentage of Total Primary Energy Supply in most countries. Their contribution to energy supply is not expected to change dramatically in the coming years. The continuing growth of renewables strongly depends on subsidies and other support provided by governments. Integration of intermittent renewables in the electricity grids also remains an issue, as it results in additional balancing costs for the system and thus higher electricity bills.

Energy efficiency helps address the "energy trilemma" and provides an immediate opportunity to decrease energy intensity. This will achieve energy savings and reduce the environmental impacts of energy production and use.

Finally, **demand for energy will continue to grow**. Even if global energy resources seem to be abundant today, there are other constraints facing the energy sector, above all, significant capital investment in developing and developed economies is needed. The environment and climate, in particular, pose an additional challenge. Clean technologies will require adequate financing, and consumers all over the world should be prepared to pay higher prices for their energy than today. Energy is global and to make the right choices, decision makers should look at the global picture and base their decisions on a thorough life cycle analysis and reliable energy information. World Energy Council has been and remains the prime reference institution for energy resource assessments, independent of geopolitics.