



What does the future hold for energy? It's an important question, because the world needs energy to prosper. Furthermore, the need for energy heavily influences international relations, public debate, government policies and technology choices.

Many economic experts believe that the world's economy will grow at about 3 percent a year through 2020, more slowly in developed countries and faster in developing ones. Because there is a proven link between economic growth and energy demand, we expect that worldwide energy use will grow about 2 percent a year, reflecting long-term trends for improving energy efficiency.

Conventional fuels such as oil, gas and coal have aided both growth and human comfort, and have been affordable. Consequently, their use has expanded rapidly over the last century and they now account for about 80 percent of the energy used today.

And the future?

Numerous experts assess the costs of different energy types and the potential impact of technological changes.

The consensus is that oil, gas and coal will remain cheaper than alternatives for the foreseeable future. Public opposition and lack of suitable sites limit nuclear power and hydropower. Others and we project much faster growth from solar and wind, reflecting both government policies favorable to them and niche market opportunities.

The result of our assessment to 2020 is seen in the three-panel chart. Overall, energy shares will not change much. Because solar and wind power start from such a low base, and are expensive, even with enormous growth they may provide only one-half of one percent of the world's energy in 2020.

It is possible to argue around the edges of this outlook about higher or lower energy efficiency, the impact of unanticipated technologies, and fuel mix. But the enormous size and the capital-intensive nature of the world energy economy mean that changes will not happen quickly.

Yet changes will come, based, we believe, on cost-effective technology advances in the service of consumer needs.

