

WHAT WILL OUR 2040 ENERGY FUTURE LOOK LIKE?*

The global energy landscape is changing, and fast. But how rapidly and to what extent is still up for debate. Answers to these critical questions translate to hundreds of billions of dollars in investment decisions, city planning programs, and environmental costs. Beyond profits, millions of livelihoods are at stake.

The non-profit research institution Resources for the Future(RFF) attempts to address these questions in its flagship Global Energy Outlook (GEO) Report published July 1st.

Forecasts by the leading companies and organizations, outlined in the GEO, conclude that despite population growth, global primary energy consumption over the next 25 years will slow considerably relative to past decades. Between 1990 and 2015 global energy consumption rose by 190 quadrillion Btu (qBtu) to 550 qBtu. Forecasts suggest that the next 20 years will see growth of just 30 to 80 qBtu– and may even decline by 4 qBtu in Ambitious Climate Scenarios (ACS).

The study also suggests that oil will maintain its position as the world's most prolific single fuel source, even with aggressive fuel switching by 2040. Projections are split 50/50 over the fastest growing energy source in that timeframe, with half predicting natural gas and the other indicating renewables.

When looking at GEO's analysis of projections in terms of shares of global primary energy consumption by fuel in 2040, certain predictions stand out. Coal loses market share across all projections, while renewables – particularly wind and solar – see growth under all projections. Under business as usual conditions, renewables increase from 14% of the mix in 2015 to between 16% and 17%. Under Ambitious Climate scenarios, they become the largest source of global primary energy, overtaking petroleum to reach as high as 31% in 2040. This is the energy transformation in action. However, most of the projections do not predict a true transition away from carbon-based fuels through the use of renewable energy by 2040.

Importantly, Fossil fuels, which made up 82% of global primary energy in 2015, dominate across Reference and Evolving Policies scenarios, ranging from 74% to 79% in 2040 (above). Under Ambitious Climate scenarios, fossil fuels decline to 60% to 62%. That is why most projections predict energy additions taking place -- rather than transitions.

Emissions concerns, economic growth, demand, and trade, will mean difficult policy choices for national governments and energy majors. These decisions will come to define the globe's future energy landscape. The GEO provides a coherent compilation of these forecasts and offers us the best glimpse of that future so far.