

Keynote address: Renewable Energy Futures

Abstract

The world is transitioning from fossil fuels to renewable energy, especially for electricity generation. In the evolving renewable energy future, a much greater proportion of energy will be used in the form of electricity. In 2016 the installation of 138.5 gigawatts of new (i.e. excluding large hydro) renewable electricity was equivalent to 55% of all the generating capacity added globally, while annual new renewable electricity generation is now greater than that of nuclear power. Annual global financial investment in new renewable electricity capacity is greater than total annual investment in fossil + nuclear electricity.

In general, new renewable energy (except some bioenergy) has low life-cycle greenhouse gas emissions; low air and water pollution and land degradation; very low operating costs and rapidly decreasing capital costs. In addition, renewable energy can contribute on small, medium and large scales, providing energy security for as long as the Sun shines. The available mix of renewable energy sources varies with location – some regions will need to supplement local sources with imports, either as renewable electricity by transmission line or as renewable fuels by tanker ship.