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At least 80% of the world's electricity must be low carbon by 2050 to keep the world within 2°C of warming, according to the IPCC. This is a massive global challenge that requires the use of all available low-carbon energy technologies. Nuclear energy is recognized by the IPCC as “an effective greenhouse gas mitigation option” with life cycle emissions “comparable to most renewables”. We need to take immediate steps towards reducing greenhouse gas emissions, as the world has already used up most of its carbon budget. Nuclear energy is low-carbon, available and competitive in the time frame required. It has avoided the release of 56 gigatonnes of CO₂ since 1971, two years' worth of emissions at current rates. Additional nuclear energy capacity can be built up in the world's largest emitting countries: there are more reactors under construction today than at any time in the last 25 years, with BRICS countries leading the way. Existing nuclear power plants are the largest low-carbon electricity source in OECD countries. Operating them for longer is one of the most effective ways to keep greenhouse gas emissions down. Moreover, nuclear generation can operate with renewables energy in order to adapt generation to electricity demand, taking into account variability of certain renewable energy sources. As countries are pursuing different energy policy goals, with different constraints, they should be free to choose from the full portfolio of energy technologies, including renewable energies and nuclear energy, to reduce CO₂ and meet other energy objectives. Very few scenarios have been investigated with mitigation requirements to limit warming to 2C and implementation of a nuclear phase out. While they need the largest portfolio now, countries will also need the largest portfolio tomorrow: nuclear research should receive support to develop future reactors (generation 4) that will make better use of the Uranium resources, will operate in a safer way, and produce less waste. Renewable energies and Nuclear have to be considered together as part of the electricity mix on the low carbon pathways.

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