



La vision de...

Kirsty GOGAN

Cofondatrice et directrice de l'ONG Energy for Humanity

My daughter will be 42 in 2050, which is the age I am now. How will the world have changed? How will she look back upon the efforts and errors of her parents and grandparents' generation? What challenges will she face, and what miracles of science and technology will she witness? Progress is possible, but it is not inevitable. Every day I am imagining this future. Now is the time to shape it.

First, we should take stock of the legacy left to us by our parents and grandparents. By any measure, there has been astonishing progress. Today, humans live safer, more comfortable, longer, healthier lives than ever before. Between 1990 and today, the number of people living in poverty has been cut in half. Six million fewer children die every year. Literacy rates have risen, and the global well-being of women and children continues to rise. Although family sizes are falling, by 2050, the global population could grow from 7 billion today to 10 billion, and the global economy could triple in size.

But progress comes at a price. Already, average global temperatures have already risen by 1 degree since the industrial revolution. By 2050, the world needs to cut emissions to around half of today's levels to have a chance of keeping global mean temperature increase to 2°C. Beyond that threshold, scientists say severe and irreversible changes are likely. In practice this is nothing short of disaster on an epic, heart-breaking scale. Because of fossil fuels, the Earth is set to cross a 'threshold of catastrophe' mass extinction by the end of this century.

Modern life depends on massive amounts of electricity. Today, half of the people in the world still lack access to electricity, depending on smoky fuels for cooking and light in their homes, causing millions of deaths every year, especially amongst women and children. Outside the home, towns and cities in lack electricity-powered infrastructure needed to live long, safe, secure, healthy and productive lives that people fortunate to live in modern economies take for granted.

Enabling a rising global population to achieve higher living standards could double or even triple world electricity demand by 2050. Meeting humanitarian development needs whilst protecting the environment and preventing climate change is one of the great challenges in our century. Vast amounts of highly resource efficient new energy sources are needed to replace fossil fuels and meet rising global demand.

Is it physically possible to meet our climate targets and ensure everyone has good living standards by 2050?

I believe that yes: it is physically possible for all 10 billion people in the world to live safe, comfortable, healthy lives, whilst at the same time reducing greenhouse gas emissions to a safe level.

But to do so, we need to transform the technologies and fuels we use. For example, the amount of CO<sub>2</sub> emitted per unit of electricity globally needs to fall by at least 90% by 2050. We also need to make smarter use of our limited land. In particular, we must protect and expand our forests. Protecting land for food, forests, and habitats is critical to preserving wildness in a world dominated by humans. Above all, we must transform our world with a speed and urgency that is almost unimaginable in order to drive CO<sub>2</sub> emissions out of the atmosphere by 2050.

In light of this reality, people are starting to talk about what trade-offs they're prepared to make in order to tackle climate change. Some are reconsidering nuclear energy, alongside wind and solar, as a proven, large scale source of emissions-free electricity.

So how much nuclear might be needed? Dr James Hansen, the world's most renowned climate scientist, has calculated that, alongside renewables, a build rate of 115 new reactors per year would be needed in order to entirely replace current fossil fuel electricity generation by 2050, whilst meeting increased global electricity demand. This would mean a ten-fold increase in nuclear energy – from around 430 today to 4,000 in future. This sounds like a lot, but we know this build rate is achievable because Sweden did it. In fact, no other carbon-neutral electricity source has been expanded anywhere near as fast as nuclear.

It may be possible, but will it be acceptable? For everyone to feel really comfortable living in a 4,000-reactor world, nuclear energy will need to restore trust and credibility to win public support a political mandate and investor confidence. To be acceptable alongside renewables, nuclear power needs to align with society's values, and provide more democratic products that serve everyone from villages to large cities. Nuclear will need to fit the needs of every community, providing emissions free, reliable electricity so more people in the world can breathe clean air, and benefit from an improved quality of life.

Will my daughter look back upon the fear and loathing often associated with 20th century attitudes to nuclear energy as an illusion rooted in the fossil fuel era?

All sources of clean power are needed to achieve deep decarbonisation: not just in the electricity sector, but across every aspect of society, including heat and transport. The socio-economic benefits of tackling traffic pollution alone will be transformative, for public health, and for the regeneration of towns and cities around the world. For my daughter in 2050, the noise and pollution of the combustion engine will be an antisocial antiquity; a memory from her own childhood. She will ask me what on earth we were thinking breathing in those exhaust fumes.

By 2050, even if we manage to stem the worst effects of climate, my daughter will be part of a larger global population, more exposed to more frequent natural disasters. Resilient infrastructure will be needed. Even my mother's generation of nuclear plants generally withstand natural disasters better than most infrastructure. My daughter's generation technology will need be even more versatile, scalable, flexible and competitive.

For my daughter, coal will be history. As with all previous energy transitions – from wood to coal to gas – the trend is towards increased energy density. Uranium is one million times denser than coal, meaning less mining, less waste, a smaller ecological foot print, clean air, more power, and more space for nature. By 2050, new reactors will be more efficient and will recycle spent fuel. Today we are already disposing of former nuclear warheads designed to blow up our cities, by turning them into electricity to light up our cities.

I imagine my daughter's world in 2050 will be cleaner, quieter, more prosperous and more connected. But whilst progress is possible, it is not inevitable. We are at a watershed moment in protecting the earth's climate. Our response to climate change today will have far-reaching implications for all of our children so we must choose our path wisely. We need to go beyond wishful thinking and crunch the numbers properly if we are to succeed globally in making a rapid and meaningful transition from fossil fuels. Hard-headed economics and sound analysis are just as important as following our hearts.