

# Is the energy transition really happening?

Climate change is the great issue of this century and solving its challenges is the infrastructure investment opportunity of our generation. The energy transition to a decarbonised and electrified society – from a fossil-fuelled one – is central to tackling climate change. The transition is accelerating.

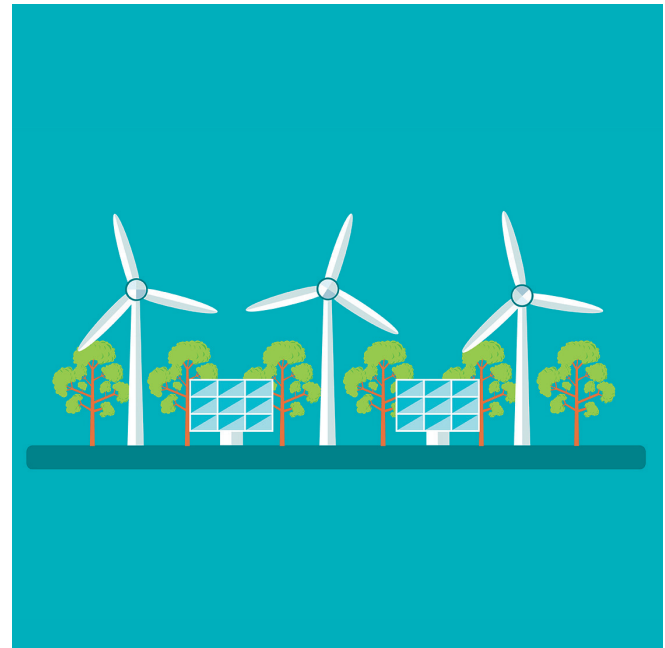
By Mark Gilligan

Annual investments in clean energy will soon be double those of fossil fuels (\$ 1.75 trillion versus \$ 1 trillion in 2023). This shift in annual investment is also reflected in annual power capacity installation where, in 2022, new renewable energy capacity represented 83% of total capacity additions (see Figure 1).

## Renewable energy now cheaper than fossil fuel

The levelised cost of energy is the average cost per unit of energy generated across the lifetime of a new power plant. It includes upfront capital expenditure, intermittency for renewables, and operating costs, which are generally higher for fossil fuelled plants which must continue to purchase fuel, whereas wind and sun are free. Renewable energy now costs less than fossil fuels.

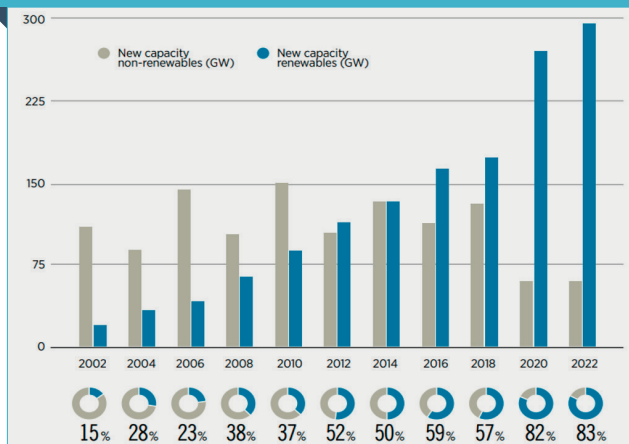
The last decade has been nothing short of spectacular in driving down the costs of renewable energy. Onshore wind and solar photovoltaic



is now cheaper than the low end of the price range for fossil fuels, after allowing for intermittency when the wind doesn't blow and the sun doesn't shine. We do not suggest that the challenge has been fully met, but the data and the trends indicate that ongoing investments in renewable energy generation, electricity grids and energy storage will deliver the energy transition.

One further datapoint deserves consideration. The world economy's primary energy input from fossil fuels, despite remarkable progress in renewable energy, has remained stubbornly constant at over 80% for decades (International Energy Agency, 2024). This statistic demonstrates the importance of distinguishing between primary energy inputs and secondary work outputs, and it's all about efficiency.

**FIGURE 1: ANNUAL POWER CAPACITY INSTALLATIONS (GW/YEAR)**



Source: International Renewable Energy Agency, Dec 2023.

# ‘The benefits of avoiding the worst outcomes of runaway climate change are profound.’

Consider this:

- An average petrol-powered internal combustion engine (ICE) vehicle is around 20% efficient. This means that the primary energy input produces 20% equivalent kinetic energy (the motion of the car), with the remainder lost as heat and noise.
- An average electric vehicle (EV) is 85-90% efficient in converting electrical energy into kinetic energy.

## An electrified economy is more efficient

These statistics are simplified headlines belying a deep underlying complexity related to energy transmission and storage and the significant capital costs of replacing ICE vehicles with EVs. They do, however, demonstrate that an electrified economy has the capacity to be far more efficient than a fossil fuelled economy. Over the medium

term, as our economies are electrified, this means that we should expect to see primary energy input remaining flat before beginning to fall, as less energy input is required for the same level of economic output. This is one of the many economic blessings embedded in the energy transition and suggests that over the course of the next decade, as electrification accelerates, we will see the percentage of primary energy input from fossil fuels begin to decline markedly.

## What it means for investors

The energy transition requires significant investment – around € 4 trillion per annum over the next 25 years – to deliver a decarbonised and electrified world. We believe private capital has a central part to play in delivering this

transformation. Since the global financial crisis, public spending on infrastructure as a share of GDP has steadily declined. This has created a funding gap. Private investments will be needed to close this gap if we are to reach a decarbonised and electrified economy. This offers significant opportunities for private investors.

The data cited demonstrates – and we acknowledge that it is inherently simplified here – that there is cause for optimism that the transition is both deliverable and capable of producing a more efficient and more cheaply powered global economy.

The infrastructure needs are immense, but the benefits of avoiding the worst outcomes of runaway climate change are profound. We will continue to embrace the challenge and the opportunity. ■



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## SUMMARY

The energy transition to an electrified society is central to tackling climate change.

Since 2012, the majority of new annual power capacity installations comes from renewables.

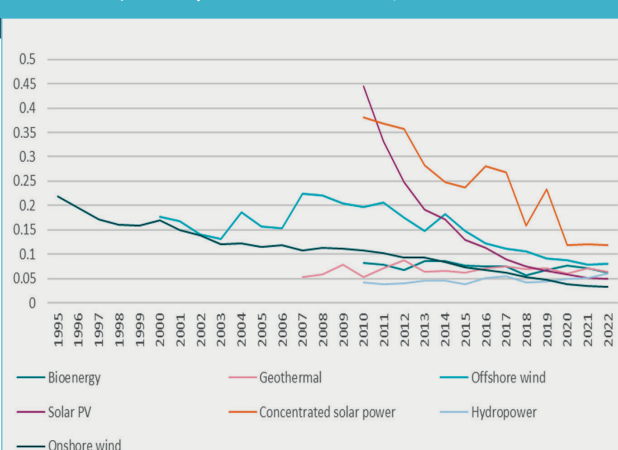
Renewable energy is now cheaper than fossil-fuel energy.

An electrified economy has the capacity to be far more efficient than a fossil fuelled economy.

Primary energy input should soon begin to fall, as less energy input is required for the same level of economic output.

Private capital is essential to continue the acceleration to an electrified and decarbonised economy.

**FIGURE 2: WORLDWIDE LEVELISED COST OF ENERGY (\$/KWH, \$ CONSTANT 2022)**



Source: Our World in Data, Dec 2023

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