

IEA runs rule over fossil fuel costs

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THE latest report from the International Energy Agency (IEA) considers the costs of remaining reliant on fossil fuels in the face of accelerated global warming.

According to the study, it would cost the world \$44 trillion to wean itself off fossil fuels by 2050 and switch to cleaner energy sources. This is \$8 trillion higher than the Paris-based agency's previous estimate, published two years ago. But as the IEA has continually stressed "the longer we wait, the more expensive it becomes to transform our energy system".

The good news is the world can save \$115 trillion in fuel costs by 2040 if it shifts away from dirtier energy sources, resulting in a net saving of \$71 trillion.

Energy Technology Perspectives 2014 shows that while clean energy technology deployment has rallied in emerging economies over the past year – making up for declines in the industrialised world – the overall picture remains bleak.

Problem solving

Electricity will increasingly power the world's economies in the 21st century, rivalling oil as the dominant energy carrier and while this offers many opportunities to decarbonise, it does not solve all our problems. "Indeed, it creates many new challenges," Maria van der Hoeven, the IEA's executive director, said at the launch of the report during the fifth clean energy ministerial meeting in Seoul.

The growing use of coal globally is overshadowing progress in renewable energy deployment, and the emissions intensity of the electricity system has not changed in 20 years, despite some progress in some regions, she added.

In fact, since 2010, the expansion in coal-fired power has been greater than that of all non-fossil sources combined. Coal now supplies about 40% of the world's electricity needs. Six out of 10 coal plants built over the past decade use the least efficient combustion technology, which means they emit more pollution and carbon emissions than they should. A continuation of this trend will drive up electricity-related emissions.

But the report focuses on



harnessing electricity's potential, reflecting the convergence of two trends: rapidly rising global electricity demand and the evident need for increased system integration. Electricity's overall share of total energy demand has roughly doubled over the last 40 years, but the bulk of power generation today is hardly "low-carbon".

Electricity production uses 40% of primary energy and produces an equal share of energy-related carbon dioxide emissions. However, cost-effective, practical solutions can increase efficiency, moderate electricity demand and decarbonise almost all power generation by 2050.

The IEA offers three scenarios to show how the global energy system – and especially electricity production and use – could evolve between now and 2050.

In all of its scenarios, the agency sees electricity's role in the energy system growing faster than any other source.

The main scenario, 2DS, which would limit global warming by no more than two degrees Celsius from pre-industrial levels, reflects a concerted effort to drastically cut dependence on fossil fuels. Under

A new mindset: The IEA points to a rethink of energy policy

the 2DS, electricity overtakes oil products to become the dominant final energy carrier. But oil's share of primary energy supply remains above 40%, reflecting its particularly important role for use in industry, transport and electricity generation.

Global energy mix

The deployment of renewable technologies is beginning to shape a substantially different future in supply. This is true even though fossil energy carriers still amounted, in 2011, for two-thirds of primary fuel in the global electricity mix and covered most of recent demand growth, says the IEA. Double-digit growth rates for wind and solar photovoltaic electricity generation over the last several years helped push the global share of renewables to 20% in 2011; the 2DS shows that renewables could reach 65% by 2050. In the 2DS-high renewables scenario, solar becomes the dominant electricity source by 2040, providing 26% of global generation by 2050.

But, the IEA warns, without the stimulus of carbon pricing, alternative policy instruments will be necessary to trigger low-carbon investment in competitive markets. ●