



More Energy Please

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Good evening ladies and gentlemen, members of the IPA. My remarks will centre around five main points: scale; electricity, wealth and freedom; coal; the big fib; and how iteration means innovation.

SCALE

Since 1985, Thailand has increased its CO2 emissions by 600 per cent, Vietnam has increased its electricity generation by 2,500 per cent, and Indonesia had the biggest percentage increase in coal consumption, up by nearly 6,000 per cent.

These three countries go to the heart of the points that I'm making this evening. They have a combined population of roughly 400 million people and they have an average per capita GDP of about \$6,000. The residents of Thailand, Indonesia and Vietnam and other developing countries don't need less energy; they need more.



There are 1.2 billion people today who live without access to electricity. According to the World Bank, another 2.8 billion people are relying on solid fuels and poor cook stoves in their homes for cooking and heating. Over the past decade we have been inundated with media stories about the possibility of catastrophic climate change due to carbon dioxide emissions.

The problem, when talking about CO₂ and climate change, is the tyranny of big numbers. Over the past decade global energy consumption has increased by 28 per cent, about 56 million barrels of oil equivalent. Since the 1970s, the Saudis have been producing about 8.3 million barrels of oil per day. Total global energy use today is roughly 256 million barrels of oil equivalent from coal, oil, natural gas, nuclear, hydro, biomass, solar and wind. Of that, nearly 222 million barrels of oil equivalent a day (87 per cent) come from hydrocarbons: coal, oil and natural gas.

Is CO₂ good or bad, and what should we be doing about it? We can discuss that for a decade. But the question we do not grapple with and that the green left never want to discuss is: 'if you think CO₂ is bad, tell us where you will get that 27 Saudi Arabias of carbon-free energy that you can deliver every day at a cost that consumers can afford?' And instead of looking at the scale, the entire discussion has been 'which side are you on?'

The hard reality is that for countries like Thailand, Indonesia and Vietnam, the path to electrification—to modernity and wealth—depends on hydrocarbons, and that will remain true for decades to come.

ELECTRICITY, WEALTH AND FREEDOM

The story of today's modern economy is the story of electrification. Countries that can produce cheap, abundant, reliable flows of electrons can also create modern economies, manufacturing sectors and export economies.

The International Energy Agency (IEA) says, 'the availability of electricity is one of the most clear and undistorted indications of a country's energy poverty status'. The top twenty countries ranked by GDP and the top twenty ranked by electricity generation correlate almost one to one. So electricity is a reliable proxy for wealth and wealth creation.

Over the last three decades, Indonesia has seen its coal use grow faster than any other country. Between 1990 and 2010, 100 million Indonesians gained access to electricity.

Over that same twenty-year period, Indonesia's per capita GDP rose by 442 per cent, life expectancy increased by eight years, infant mortality fell by 45 per cent, child malnutrition fell by 65 per cent, and illiteracy declined by 77 per cent. This is not a coincidence.

For millennia, we humans were beasts of burden. But by using hydrocarbons we freed ourselves from the back-breaking labour that came from simply trying to exist. We humans today are prospering like never before.

By any objective measure, today more people are living longer, freer and healthier lives than at



any time in human history. Our ability to tap hydrocarbons has been at the core of being able to create wealth and prosperity—and that wealth and prosperity has led to more freedom.

COAL

Since 1973, the global energy story has been coal. In absolute terms, coal consumption has grown faster than oil and natural gas, and it continues to grow at a remarkable pace. No other energy form is as versatile or as powerful in terms of economic growth. Coal demand is booming because the fuel is abundant, deposits are widely distributed geographically, supplies are not affected by any OPEC-like entity and, more than any other factor, it's low cost.

According to the World Bank, in the twenty year period between 1990 and 2010, about 1.7 billion people gained access to electricity and of that number, by my calculations, about 800 million people globally gained that access due to coal. About 65 million gained access due to wind and solar.

Coal is a fuel that is easily and routinely demonised. But coal is a fact and will remain in the global energy mix for decades to come.

THE BIG FIB

The repeated claim by environmental groups is that renewable energy is enough—we don't need hydrocarbons. Greenpeace claims 'renewable energy smartly used can and will meet our demands. No oil spills, no climate change, no radiation danger, no nuclear waste'.

They're welcome to push that agenda but the reality is that renewables cannot even keep pace with the growth in electricity demand, much less displace significant quantities of hydrocarbons.

Since 1985, electricity demand globally has been growing by roughly 450 terawatt hours per year. Projections from the IEA and other forecasters are pretty uniform: roughly 450–500 terawatt hours of new electricity demand for the next 20 to 30 years.

For wind alone to meet this incremental demand, we would need to cover a land area of roughly 240,000 square kilometres every year with nothing but wind turbines.

Germany has installed more solar capacity than any other country and now has about 36 gigawatts of installed solar capacity. Last year all that solar capacity produced 30 terawatt hours of electricity.

For solar to keep pace with growth in global electricity demand we would need to install fifteen times as much PV capacity as now exists in Germany, and we would have to do so every year.

With their low power density, biofuels are even less realistic than wind energy. The power density of wind energy is roughly one watt per square metre—the power density of biofuels is measured in fractions of a watt per square metre.



But set that aside, the fact that we are burning food to make motor fuel is morally objectionable.

ITERATION & INNOVATION

Coal has been in business for a very long time and they're still improving on their processes, which is why they've been able to increase their productivity. The oil and gas industry continues to do remarkable things both on and offshore. In 1947 the first oil well was drilled out of the sight of land in twenty feet of water.

Today, companies are routinely producing oil and gas in 3,000 metres of water. In 1947 that oil and gas might as well have been on the dark side of the moon. The more you do something—the more you iterate—the better you get at it. Iteration means innovation. We need to be encouraging the most advanced combustion technologies that bring more power out of the energy we feed into our power plants.

Over the past few years we have been inundated by these ongoing claims that we are using too much energy, and in doing that we're negatively affecting the climate. But this ignores the vast numbers of people living in dire energy poverty. If we're interested in promoting wealth and freedom we should focus on providing more energy to more people everywhere.

This point was made just last month by the Indian economist Amartya Sen, winner of the Nobel Prize in economics. In an August 2014 essay published in *The New Republic*, Sen wrote,

...in thinking about expanding human freedom today, and sustaining it in the future, we have to take fuller note of the need for greater energy use for a large number of deprived people in the world. The focus has to be shifted from a single-minded concentration on reducing emissions to a broader understanding of the range of needs of people, and the demands that come from expanding and sustaining their substantive freedoms to live reasonably good lives.

The world wants and needs more electricity. We have to move beyond the obsession with reducing emissions to recognising and honouring the fact that energy availability is the key to human fulfilment and freedom.