

# CROSSTALK

BY ANDREW McBARNET



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## Energy transition requires critical thinking

‘This too shall pass’ or some version of this adage has been coined over many centuries to describe the ephemeral nature of the human condition with a nuance of optimism about the future. Sufi poets of 13<sup>th</sup>-century Persia are said to have been the first to adopt the exact phraseology although one can imagine the sentiment has been in every culture from time immemorial.

The expression is particularly apposite as the world struggles with the impact of the Covid-19 virus. Despite all the current catastrophizing, there is an assumption that this global health and economic crisis will come to a conclusion at some point.

Yet, in these calamitous times, we are apt to forget some fundamental issues in the human predicament that regrettably have a much longer life cycle than a viral pandemic. Energy poverty would be one such issue.

It is a cause that has increasingly preoccupied Scott Tinker, a well-known geologist, academic, public educator and documentary film-maker. More’s the pity, then, that *Switch-on*, his latest film co-produced with director Harry Lynch, was unknowingly launched in January just as the Covid-19 virus threat was beginning to dominate our lives.

The film provides a humane perspective on the world that we share with one billion people without any electricity and a third of the global population impacted by what Tinker calls energy poverty. In his view most of the major global ills in the world – hunger, clothing, shelter, immigration and migration, population growth, healthcare and even empowerment of women – cannot be addressed without adequate access to energy.

He visits and talks with the men, women and their families in impoverished areas of, among others, Colombia, Nepal, Vietnam, Kenya and Ethiopia about how they make do with no, or limited access to, the electricity that we take for granted.

Striking vignettes include a moving sequence showing a Nepalese baby in a hospital with an apparently quite common, often lethal respiratory condition. It is caused by smoke inhalation from

burning biomass to cook inside primitive accommodation. Tinker visits a rundown Nairobi outskirts where the very basic available electricity supply is openly and dangerously hijacked by cartels. A continuing toll of accidental deaths is seemingly a tolerated risk.

More optimistically, Tinker takes a crew of volunteers to a remote spot in the Colombian Andes to install a modest-sized solar panel system for a small village that previously had no power supply. A successful irrigation project in Ethiopia is also featured.

A point that Tinker makes is that locally motivated projects will gradually make a difference. He also wants us to understand that people in places like Vietnam, where he visits, put up with pollution. The choking smog from coal-fired electricity generation is the accepted price for jobs and a lifestyle otherwise unachievable.

Just as in *Switch*, the previous documentary made with Harry Lynch directing, released in 2012, Tinker brings a much-needed sane voice to the discussion on climate change, energy transition and the world economy. It is something he has been doing with increasing commitment and authority for the past two decades since he became director of the Bureau of Economic Geology at the University of Texas in 2000. He is also state geologist for Texas, professor and endowed chair in the Jackson School of Geosciences at The University of Texas at Austin, and has been president of a number of American geoscience professional societies.

Tinker and Lynch founded the Switch Energy Project over a decade ago and it has since morphed into the non-profit Switch Energy Alliance (SEA). The rationale has remained constant. It is to provide a ‘non-partisan energy education’ that tries to cut through the entrenched views on either side of the climate change/fossil fuel/energy transition debate to reach what Tinker refers to as the ‘radical middle’.

It is impossible to judge how effective he has been with his basic message. What can be said without fear of contradiction is that his presentations in one form or another have reached a phenomenal number of people. *Switch* has been screened in more

‘Providing  
a non-partisan  
energy education.’

than 50 countries to some 15 million viewers and is part of the curriculum in thousands of US schools and college campuses. Tinker himself does more than 60 lectures a year, contributes a regular podcast on US public broadcasting, has visited 65 countries and consulted with governments and major corporations. In February he was guest speaker at the annual meeting of the International Association of Geophysical Contractors.

A recent article in *Scientific American*, questioning the value of carbon tax in reducing CO<sub>2</sub> emissions, provides an excellent summary of how he views the world's energy transition/climate change dilemmas. The Switch Alliance website provides extensive back up with explanations on all energy sources of power and how they fit into energy transition. The shameful statistics of energy poverty are there too. Everything is laid out in easily digestible segments with optional audio. As such, they are a valuable resource for the classroom, industry, politicians, and indeed anyone who cares about the environment we live in.

The virtue of Tinker's approach is that he sticks to some very basic, observable data and doesn't push an agenda. He takes it as read that the world wants to reduce CO<sub>2</sub> emissions from fossil fuels. For his purpose there is no need to argue the whys and wherefores of climate change.

What makes Tinker's view distinctive is that he underscores the scale and time required to effect change. Most importantly he shows why the less developed world is unlikely to go along with solutions promoted by energy-rich countries that will diminish further their hopes of escaping energy poverty. Carbon taxation is a case in point. There are, he says, billions of people in the countries of Africa and South East Asia that want to grow and industrialize. That cannot be done without the kind of power that fuelled the prosperity of the developed world.

You then have to confront what Tinker calls 'the data', in this case that half the energy for four billion people in South East Asia comes from coal. And how did that happen? In a nutshell, the western industrialized countries built their initial wealth largely on coal power. But now the basic manufacturing capability of earlier generations has effectively been exported to China and its neighbours. It is why carbon emissions have been more or less stable for a generation in Western Europe and North America but have risen so significantly in the Far East. We get to point a finger at China while at the same time stocking our homes with its merchandise.

Those looking for some immediate change in our dependence on fossil fuels need to consider the current world energy mix, which according to the BP Statistical review in 2018 showed 34% oil, 28% coal, 23% natural gas, 7% hydropower, 4% nuclear and 4% renewables. These percentages are of course changing with increased growth in natural gas and declines in oil and coal, which do have a favourable environmental impact. The fastest growth rate has been in solar and wind power, but this is still miniscule in

terms of global energy supply. The fastest growth in absolute terms is in natural gas.

Tinker undermines the comfortable public assertion reinforced in schools ('I have seen the lesson plans', he says) that coal, oil and natural gas production has a negative impact on the environment while renewables and battery power do not. There is of course no denying the downside of fossil fuels, even if the emission issue is being addressed somewhat. Advocates of renewable and battery power, on the other hand, don't mention the apparent contradictions such as mining for precious metals, manufacture of turbines, panels and batteries, extensive use of land, electricity transmission and disposal of worn out materials like wind turbines and batteries, which have a limited lifespan. Tinker wonders at the staggering number of batteries required if car manufacturers are quickly going to scale-up production to effect a global conversion to electrical vehicles.

Well intentioned policies go wrong too: for example, Germany's rush to windpower and reduction of its nuclear and natural gas use actually halted the country's steadily declining carbon emissions, much to the government's embarrassment. The problem: there has to be a reliable back-up source of power to support wind and solar downtime when the weather doesn't comply, and that back-up came from coal.

Energy consumption patterns are changing too. We may think we are using energy more efficiently, but how many people realize that after the US and China the biggest consumer of electricity is the technology that drives all our computer devices. On an individual scale, can

it be efficient for us to order individual items online for delivery to our homes?

In the end, Tinker argues, energy transition is not about fuels, it is about improving the human condition while minimizing the impacts of all forms of energy on the atmosphere, local air, land and water. Global poverty issues cannot be addressed without adequate energy.

Meantime, we have to work with how the world is today to achieve the most realistic, least disruptive transition and reduce energy poverty. The combination may change over time but as of now Tinker has a list in order of immediate impact. It starts with increased use of natural gas with carbon capture, utilization and storage (CCUS), nuclear power (no emissions but well known concerns), cleaner coal with CCUS and coal substitution, geothermal and hydro (if available), centralized wind (again if available), and distributed renewables. In addition, energy conservation and improved efficiency will make a contribution.

That is not the pragmatic formula a lot of people want to hear, quite likely because alleviating global energy poverty is not on their radar. Tinker urges critical thinking. That is certainly a good mantra to keep in mind as the world copes with Covid-19 and its aftermath.

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