

MEETING OUR 21ST CENTURY CHALLENGES

PAUL ALLEN



Paul holds an Honours degree in Electronic and Electrical Engineering from Liverpool University. Following the successful design, development and operation of a community access recording studio in Liverpool, Paul joined the Centre for Alternative Technology in 1988, responsible for design, development, production of a wide range of renewable energy systems including solar powered medical systems for use in Bosnia, Eritrea and many other parts of the world. Paul worked to develop CAT's spin-out engineering company Dulas Ltd in 1990, which has now gone on to become a successful independent business.

In 1995 Paul took up the newly created position as CAT's Media and Communications Officer, this involved pro-active and re-active work with radio, television and the press, acting as principal spokesperson for the centre. 1997 Paul was a founding director of EcoDyfi, the local regeneration organisation for the Dyfi Valley, in Mid Wales. Winner of the 2002 EU Campaign for Take-Off Award, Ecodyfi has established a number of community-based water, wind, solar and wood-fuel schemes.

In 1997 Paul became the Development Director heading the strategic development of the organisation for the next decade. Recent projects include the Autonomous Environmental Information Centre, development of the 'Carbon Gym' calculator and most recently the 'Wales Institute for Sustainable Education'.

Paul is currently CAT's External Relations Director, heading the ground-breaking Zero Carbon Britain strategy programme, liaising directly with key policy makers in Government, business, public sector and the devolved assemblies to disseminate the findings of their evidence-based scenario development work.

He held key positions as UK Millennium Fellow (1996); Director 'EcoDyfi' (1998); Fellow Royal Society of the Arts (2005) Board Member Cynnal Cymru (2006); Climate Change Commissioner for Wales (2007); Presented to All-Party Parliamentary Climate Change Group (2007), Environmental Audit Committee (2008) & European Parliament (2009); Board member of the International Forum for Sustainable Energy (2008).

THE WORLD IS IN CRISIS, IN THE 21ST CENTURY WE face enormous challenges brought about by changes in the earth's climate. In Europe and the industrialised west, the well being of individuals and communities is underpinned by:

1. Climate Security – Our hospitable, reliable climate;
2. Energy Security – Access to abundant, cheap fossil fuels;
3. Economic Security – Stable economic and monetary systems.

All three of these aspects are now in crisis, and left unchecked they will compound and synergise. As we feel these impacts they bring wider issues to the forefront such as climate change and migration. A climate refugee is a person displaced by climatically induced environmental disasters. Such disasters result from incremental and rapid ecological change, resulting in increased droughts, desertification, sea level rise, and the more frequent occurrence of extreme weather events such as hurricanes, cyclones, fires, mass flooding and tornadoes. All this is causing mass global

migration and border conflicts. Furthermore displacements of peoples and reduced resources impacts on the areas where people are migrating too and consequentially social pressures.

In our report Zero Carbon Britain 2030, we took a look at the science behind our most recent understanding of these key challenges and argue that we need to rapidly decarbonise Britain now in order to do so equitably and humanely. In doing so the industrialised west and in this case Britain can accept responsibility for its carbon emissions. The full report is available free to download at www.zerocarbonbritain.com, but here below is an overview of our analysis.

CLIMATE SECURITY

Since the industrial revolution, global atmospheric concentration of carbon dioxide has increased from 260 parts per million to around 380ppm. So far, by the greenhouse effect, we have raised the average global temperature by 0.8°C. Even if we

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MARTIN LUTHER KING

were able to stick at 380ppm, we are locked into another 2 or 3 decades of warming which will take us up to around 1.5°C.

Below a 2°C rise on average global temperature we know the earth's natural 'carbon sinks' work to buffer us from the worst effects of our fossil fuel emissions, slowing climate change by helping sink around half of the carbon dioxide we release back into the earth.

Over recent years, clear and robust evidence has emerged, a global temperature rise above 2°C trigger has a high likelihood of triggering an array of much larger climate feedbacks which will runaway beyond control and unleash climate chaos. Allowing this to happen on an Earth supporting six to nine billion inhabitants would unleash widespread economic collapse, massive agricultural losses, international water shortages, dangerous rises in sea levels, food famines, widespread ecological degradation and create tens of millions of environmental refugees – basically a global catastrophe that would dwarf recent hurricanes or floods and last for tens of thousands of years.

Long industrialised countries are responsible for the majority of the problem and possess infrastructure and wealth achieved through burning fossil fuel over the past 150 years. Historical responsibility for climate change rests overwhelmingly on the long-industrialised world, but it is the majority world that will be hit hardest by the consequences. We, who have already spent so much of the global carbon budget should therefore set the pace to help foster a global agreement. All of these facts suggest that a programme to avoid a 2°C rise must aim for zero emissions as quickly as is possible.

However, even a 2°C rise cannot be considered 'safe'. It would still mean we have made the Earth warmer than it has been for millions of years. An alliance of the most vulnerable (Small Island States and Least Developed Countries) has called for the maximum to be 1.5°C. So 2°C must be considered as the very maximum absolute upper limit for an acceptable level of risk, and it is imperative that this target at least is not exceeded.

There is no time to delay. In light of the most recent evidence, the UK must aim for as close to a

100% cut as possible, as fast as possible. The Zero Carbon Britain 2030 scenario explores how this could be achieved in just two decades.

ENERGY SECURITY

Climate security is not the only reason we should embark on a transition away from fossil fuels. Our unstoppable oil economies are now being halted by the immovable facts of geology. For the first time in our history, just as demand is exploding across the globe, humanity will soon no longer be able to increase fossil fuel production year on year. No one is talking about oil "running out," but rather the realisation that despite accelerating demand, global rates of production must inevitably plateau and go into decline. What remains being dirtier, considerably more expensive and harder to extract.

Of the 98 oil producing nations in the world, 64 are thought to have passed their geologically imposed production peak, and of those, 60 are now in terminal production decline. Britain has now joined those in decline.

In 2005 the

UK again became a net energy importer, as shown in FIGURE 1. The principal reason for this is the decline in North Sea oil and gas production. Britain has been producing gas from the North Sea since 1967 and oil since 1975. The basin is now 'mature' (UK Oil & Gas 2009).

Our North Sea oil production reached its peak in 1999; UK gas production peaked in 2000, and is now declining at 2% per annum. If the UK continues to rely on gas, it will increasingly have to import it from Norway, the Netherlands, the former Soviet Union and Algeria.

If we can find or borrow the money, importing energy from overseas can for now substitute for our failing domestic production. But, due to global geological constraints they cannot offer a reliable long-term solution. There are other short-term energy security options such as a return to coal, which would of course accelerate climate change. Coal, therefore is not an environmentally sustainable option and may quickly become uneconomic if carbon pricing is deployed.

Our longer-term energy security is dependant on our development of alternative sustainable sources.

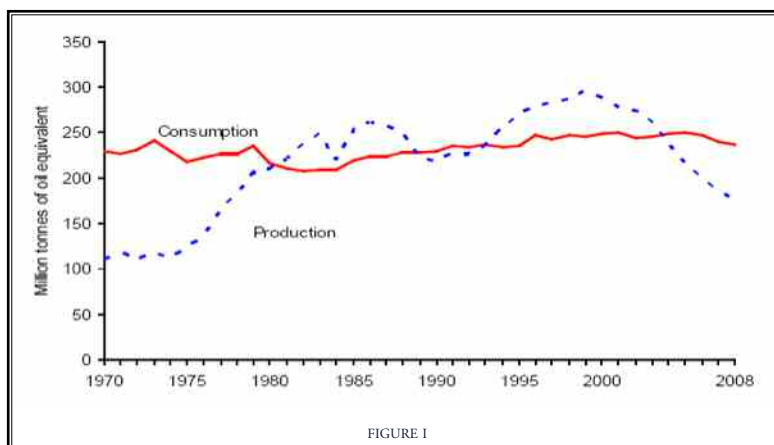


FIGURE 1

These sources can be powered up to meet the drivers of both climate and energy security.

ECONOMIC SECURITY

The rules that determine the next two decades will be very different from those that determined the previous two. Since the late 1970s the North Sea oil and gas reserves have enabled the UK to be a net energy exporter, making a significant contribution to the UK's balance of payments. It has been estimated that replacing North Sea extraction with imports would add £ 45 billion to the trade deficit, based on a rough estimate of 100 billion cubic metres of gas at 2p/kWh, 680 million barrels of oil at \$ 60 per barrel and an exchange rate of \$ 1.75 to the pound. In addition, the Exchequer raised nearly £ 13 billion in tax from the offshore oil and gas industry in 2008.

JOINING THE DOTS ON ENERGY

So what does this all tell us? Well, on numerous fronts, the consequences of the past 150

years of rapid industrialisation are all simultaneously coming home to roost. Many of us still haven't really grasped the serious nature of our predicament. Even senior experts, scientists, NGO's and political leaders fail to appreciate that the most recent evidence on both climate and energy security reveals a situation more urgent than had been expected, even by those who have been following it closely for decades.

There is a huge gulf between what the most recent climate science tells us we urgently need, present CO₂ reduction targets (80% by 2050) and the speed of which we are moving away from fossil fuel dependency.

The urgent challenges of the 21st Century cannot be solved with a 20th century mind-set; they require a smart, conscious and integrated approach.

Once we join the dots and look for the bigger picture, we find a great many solutions to climate security are the same as solutions to energy and economic security. This requires an immediate and fundamental overhaul of the way we use energy to deliver our well being, and a massive new programme to harvest our indigenous renewable energy sources.

Never has in our history has a closing window of opportunity been so vitally important to grasp. The credit crunch has shown us the consequences

of not reacting ahead of events. If we ignore the warnings and wait until the climate / energy / economic crunch is really upon us before becoming serious about scaling-up the solutions, in the ensuing chaos and dislocation we may struggle to muster the resources required.

A ZERO CARBON BRITAIN

If the problems are left un-checked they will compound and synergise, but if we act in time, the solutions will also synergise, but in a positive way. To foster debate around such a transition, CAT has developed the 'Zero Carbon Britain 2030' strategy to show how we can integrate our detailed knowledge and experience from the built environment, transport, energy industry and agriculture into a national framework offering a common, coherent vision linking government and industry and citizens – endorsing,

supporting and connecting actions across all sectors of society.

By taking the right actions now, we stay ahead of events –

through re-thinking our attitudes and taking an uncompromising new approach to energy we find we can deliver well being on with a lot less energy, and we can extract the energy we do need from our indigenous renewable energy sources.

The built environment, for example, can play a significant role in reducing the UK's greenhouse gas emissions through measuring and reducing emissions in construction and maintenance as well as regulation to enforce the reduction of emissions from both new buildings and the existing stock. Putting a price signal on carbon will further encourage businesses and individuals to upgrade their buildings, and creative business models such as 'energy service companies' plus improved design and refurbishment standards can play a vital role. Through careful selection of building materials a national campaign can enable the building stock to lock away carbon helping to reduce atmospheric levels of CO₂.

Rather than residing at the leaky end of a peaking pipeline of polluting fossil fuel imports, Britain can head its own indigenous energy-lean renewable supply chain. Every field, forest, island, river, coastline, barn or building holds the potential to be a power station, with different technologies appropriate to every scale or region.

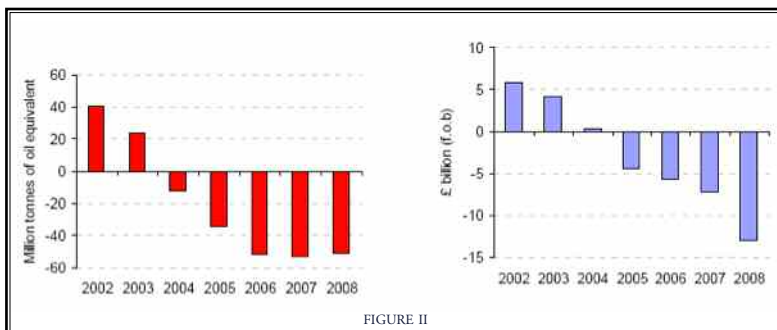


FIGURE II

By their very nature these renewable reserves will not peak, in fact as the technology matures and becomes economic in a wider range of applications, the available reserve actually increases.

This transition is the cornerstone of a new economic approach that will move society on from doing the things that got us into so much trouble in the first place. By learning the hard economic lessons of the past few decades we can re-focus the ingenuity of the finance sector on the actual challenges at hand.

and acted ahead of events and a future where we have let events overtake us.

Britain can stay ahead of events through creating a new kind of economy; stable in the long term, locally resilient but still active in a global context, rich in quality jobs, with a strong sense of purpose and reliant on indigenous, in-exhaustible energy. But the window of opportunity is closing, - now is the time to act. Such a rapid de-carbonisation will be the biggest undertaking we have made in generations, so it will require a great many to commit to



Investment in such an economic stimulus would not only create a vast carbon army of re-skilled workers, and inject money into the economy at ground level, it would also deliver very tangible returns to repay the taxpayer, or pension fund from the price of the energy saved or generated. Through this approach, we not only tackle climate and energy security, but also get the nation back to work, within a stable economy by our indigenous renewable energy sources, and heading off an escalating balance of payments crisis as North Sea exports tail off and the we pay price of imported energy goes through the roof.

A zero carbon transition will, of course, entail a challenging period in our history, requiring bold decision making and an urgent sense of common purpose, more akin to that which pertained during World War II than in any period since. There is little to be gained however by they way we live today with those of a zero carbon future, because life as we know it now must inevitably change whether we prepare for it or not. A more useful comparison is between a future where we have been proactive

the challenge, but in doing so we will find a sense of collective purpose that we have been craving for a very long time.

The full report is available free to download at www.zerocarbonbritain.com. 

