The Energy to be Different: Can Developing Countries Model Low-Carbon Prosperity?


Introduction

We are talking about developing countries. Most of us do not come from developing countries and, therefore, they tend to be missed off our perspective of both energy and climate change. The key thing is that they are developing; they are changing very fast. If they become like us [in the UK], then there will be all kinds of sticking points, particularly around energy use and around climate change. So the question we are asking today is ‘Can developing countries model some kind of low carbon prosperity? Can you develop without going down the route of oil, coal, and all the things that we have used to develop?’

As part of my role with Climate Stewards, I produce the monthly blog ‘Climate Prayer’ and I also do the ‘Climate Prayer’ on Twitter which involves quite a lot of research just around what issues should we as Christians be praying about with regard to climate change, and that immediately brings in the whole world-wide perspective. It means that I spend quite a lot of time each day just looking at the impact of energy-related, climate change-related issues on people around the world.

Ghana and Oil

I am going to hold out a couple of examples and try and draw out a couple of principles. I don’t necessarily bring out any strong answers. Ghana is my example of a developing country. I have chosen it for a couple of reasons; one is that as Climate Stewards we support projects there and the second is that I’ve actually just come back from there looking at projects. It also illustrates quite a number of some of the most useful points. This is a traffic jam [photo on slide 3]. It is probably the most civilised traffic jam that I saw in my time in Ghana, but that’s not what it feels like to be in a traffic jam in Ghana. What it feels like to be in a traffic jam is that it is very fast moving and it is incredibly skilfully driven. Ghana is a very Christian society and amazingly people invite each other in, but people are travelling fast, at small distances away from each other and it takes a long time to cross. It wasn’t like that five or ten years ago. It is changing and developing and one of the symptoms of that change is the increased use in petrol, in fuel.

This jam was down in the south of the country. If you go further north, it gradually gets drier and drier and then you end up in the arid lands up in the far north. It also turns Muslim as you go further north as well. You can see the banana sellers and the various salesmen and women talking to all the drivers in the traffic jam. It is an incredibly entrepreneurial society. Everyone, certainly in the south, is trying to make a living. They have incredible energy, finding ways to make a living. Selling bananas, selling balloons, whatever it is, everyone is trying to sell something to make a living and if people are stopped in a traffic jam you have a captive audience…it’s got to be great. They do tend to move out a little bit when the traffic starts moving!

That feeling of energy to get out of poverty is almost tangible in the south. It is very impressive and very different to the feeling you get in a Western society where we basically have got ourselves organised and we don’t rush around like that, being entrepreneurial. If
you go to India, or China, or Brazil, you feel the same kind of energy. What is driving that is
an ambition to lift a country out of poverty. That is the background and, in that context, rules
maybe matter, but they don't matter as much as they matter here. Health & Safety doesn't
matter as much as it matters here. The drive to get out of poverty, the drive to make good of
yourself is very, very strong and, as Christians, the drive to get of poverty is very important –
love your neighbour.

I talk mainly about Climate Change these days, which is not really my background. I worked
for a long time for Tearfund and my background has been in 'love your neighbour' type of
Christianity. Love God, love your neighbour, it is important to look after and help the poor,
not to be poor. That is where I have come from, so I am not really coming at this from an
environmental perspective. But Climate Change has brought those two kinds of agendas
together; the environmental and the 'love your neighbour'. And you see it in a place like
Ghana. It looks like a big drop in poverty doesn't it? It's gone from 31% to 28%, so it was a
steep drop in one year, but it is not a very big drop – there is still a lot of poverty in Ghana
and somehow they have got to find a way of getting those people out of poverty. That is their
ambition and their GDP growth has gone from 4% in 2000 and it is now a little bit higher. It is
growing but it is growing from a very low base, so there is a lot of poverty.

We can look at renewable and bio-energy, but in effect it is charcoal. As you drive along the
main roads, you see stacks of sacks all along the way – it is charcoal; it is what people burn
to cook on or boil water. Charcoal comes from trees, so you cut down the tree and you burn
it. There appear to be lots of trees, but you see lots of scrubby land with small trees in it.
Ghana has lost a third of its forest in 30 years. That is a lot and it's still going down. The
charcoal is really important socially, if you get richer in Ghana, and this is across most of
Africa too. As you get richer, you maybe buy a car, you maybe have a nicer house, but by
and large you still like to cook on charcoal. It is just an interesting social thing and that has
implications for technological approaches to energy solutions, because people just still like to
cook on charcoal, which has an impact on the forest.

This is another reason why Ghana is so interesting and so important. Ghana has struck oil,
or at least an oil company has come to Ghana and has found oil. It is a very tangible feeling
of hope in Ghana that the oil will make all the difference. The hope is, and the World Bank
says this is possible, that they can move from being a poor country to a middle income
country within maybe a decade, like Thailand or Morocco, not like a sub-Saharan African
country; that is the hope. In an article on the BBC they said "Ghana is one of the most stable
of the African countries, they hope that they are going to be able to harness the oil, without
what we saw so graphically coming with the oil in Nigeria."

It is a very common story that with oil comes corruption, because it is big money. It comes
with conflict, because it is big money. It brings in inflation because there is more money
around – big money. More money comes into the country and so things get more expensive
and the people who get hurt are the people who don't get access to the big money, just the
ordinary poor. And environmental destruction often follows as well. This is such a common
scenario associated with oil found in somewhere in African countries and the big challenge is
how to get the benefit of the oil without the curse that comes with it. It was interesting, whilst
I was there, that there were headlines saying that they were buying their first warship and the
reason is to protect their oil supplies, because at the very least the oil is going to have to be
shipped out and that is going to make their new-found wealth vulnerable to someone else
with some weapons along the coast, so they have got to have a warship. So already the
prospect of oil is disturbing, or at least changing the society.

Ghana also is very susceptible, along with the rest of West Africa, to extreme
climate/weather events. Margot [Hodson] mentioned my background in maths, which means
that I am very interested in the whole area of probability and statistics, the difference
between weather and climate and how you can describe one thing causing another. A
metaphor that I am trying out at the moment is that I regard climate as a sort of statistical
thing, much in the same way that your league position as a football team is a statistical
measure of your success. Being top of the league does not win you matches, so being top of
the league cannot cause you to win matches.

Having a particular climate can never cause a particular weather event. But, if you are top of
the league, you are more likely to win matches. It is not a causal effect, but it happens at the
same time. As climate changes more extreme weather effects are more likely. It is true, and
certainly in 2010 we had a huge number of very extreme weather events, including in West
Africa, with both floods and droughts, sometimes one coming quite soon after the other.

Development and Energy

Uganda has a very similar history. It has also discovered oil in West Uganda and yet around
this time last year they suffered some horrendous mud slides, where the rainy season had
come to an end, but the rain had continued. The land on the hillsides got water logged and,
because they had cut down the trees on the hillside, the hillside just slid down. Whole
villages, with hundreds of people in them, were wiped out and the picture that came out was
one of the most stunning I have ever seen because there is nothing to see of the village left,
it is just flat land, but underneath it is a village.

I wanted to highlight these aspects for these countries because it means you have got a very
difficult ‘catch 22’. We have to emphasise, as Christians, the importance of lifting people out
of poverty, of loving our neighbour. We need to care about those people and the
governments of those countries need to care about those people. Now whether
development is the right word for describing that I don’t know, but the normal way of
development, as people become developed, is that they use more energy and that has
always meant more fossil energy, more oil and more coal.

Here is this gift of oil that you have as a poor country. Not only can you use some of it, but
you can sell it, but if you do that, the more oil and coal consumed, the more carbon dioxide
goes into the air and that is the driver for more climate change, which means you are back to
square one because all the development you have achieved is washed away by the floods,
or just burned in the droughts. This is a very difficult question for any country in this position.

The Chinese Challenge

China is different. I call it an emerging country, like India is emerging, along with Brazil and
South Africa. These are big economies with lots of people and growing at a phenomenal
rate. China is now the biggest total emitter of carbon dioxide, of course nothing like the
biggest emitter per person, which is not always mentioned. China gets 70% of its energy
from coal, (just over two-thirds). Vice-President Lee, who is expected to be the next top man
of China, says “We get 70% of our energy from coal and it is very difficult to alter that. It is
going to be coal for the very foreseeable future that gives us our energy.”

That is why, from a global perspective, it is so important that we get carbon capture from coal
plants. You could argue that Britain might conceivably somehow manage to wean itself off
coal completely and could then look virtuously at the rest of the world on the basis that it
wasn’t using dirty coal. But that won’t actually make much difference to the future of the
world because the biggest emitters are going to be China and India and other emerging
economies and they are going to be using coal, because they cannot leave their people in poverty and retain social stability. So for them, they have got to use their coal. We have got to have a go and make it work to have carbon caption storage.

Vice-President Lee listed a number of issues around their energy policy. He said ‘energy security’ and there are two aspects to that. Can we make sure that we have got it and no one can hold us to ransom? If your economy is growing like that, and you are importing energy, if someone interrupts that supply then you are in big trouble. And that is true for China, which is why they are going out into the world, into Africa, into Asia, and trying to get as much ‘right’ to as much raw material as they possibly can and, in particular, energy. Energy security for them is really important.

Vice-President Lee also seems to have no doubt that the carbon dioxide that they are emitting is changing the climate and is a threat to them and they see this as one of the biggest threats to China, but they are also trying to lift their people out of poverty since they still have a lot of people in poverty. It is not a democracy, it is nothing like a democracy, but the will of the people still matters. There is a bargain between, if you like, the ruling classes of China and the people of China. If you give us employment and a rapidly rising standard of living, we will put up – to some extent – with the lack of freedoms. But there comes a point at which, if you don’t deliver that growth and you don’t deliver the jobs and you don’t deliver the increasing comfort, then they won’t vote the government out but they will rebel and throw the government out. So from a Chinese point of view the democracy operates at a lower level; you don’t vote people out, but you do get a revolution if the fundamental bargain is broken. And they feel very vulnerable in that sense.

Somebody commented to the top Chinese leaders, “Every empire comes to an end because the empire was guarding against the wrong thing.” This is a very perceptive comment and the person asked the Chinese leader, “What is the thing you are ignoring; the thing you are not defending against which is actually going to bring you down?” And he said, “Well up until now it has been the environment.” So from the way I would see it, the Chinese leadership is very aware of the environmental constraints and the energy implications of those environmental constraints. It is heavy metal pollution, it is air pollution and it is climate change. The Chinese are talking about a tax on fossil fuels within China to address those issues and the likelihood is that it will be in the next five-year plan. If they don’t resolve environmental resourcing and environmental problems, domestic development will be difficult to sustain and, from the Chinese point of view, that also means domestic stability will be difficult to maintain.

If Ghana goes completely wrong, it is a tragedy for the people of Ghana and that is bad news. If it goes wrong for China, then it goes wrong for all of us, so we all have a stake in their actually dealing with this problem. But they realise they are walking this same tightrope as they know they are emitting large amounts of carbon dioxide. They are also investing massively in solar and renewables; the biggest of everything now is beginning to come out of China. They are building huge dams for hydro-electric power; we’ll talk about those in a minute.

The Energy Conundrum

So, do we have any kind of magic bullets that are particularly relevant to developing and emerging countries? Solar photo-voltaic? Yes, if you have a large bit of desert and companies like Munich Re, the biggest re-insurer in the world, is putting billions into photo-voltaic. That will sit across the Sahara, but it turns out not to be for the developing countries in which it is sitting, but to power Europe. Although that may still be a good thing for all kinds
of reasons, and it does raise some very interesting questions about energy security, nevertheless people are putting money into it. It doesn't really look as though it is very appropriate for developing countries, because it is just too expensive and you don’t get enough energy out.

What about solar cooking? A friend of mine was involved in and sat on the Board of a charity that produced a million solar cookers for use in India. They were a brilliant design, they really worked. You put them in the sun and they would cook whatever you put in them and they really worked well. The only problem is, to stir the stuff you had to sit in the sun, which for anyone sitting in the sun in India is, of course, idiotic!; so nobody used a million solar cookers.

This is not just about technology, this is about the social implications of the technology which you bring about. In part of my time in Africa I came up with a wonderful design for a solar trough that would heat water very efficiently and I was just making the first prototype when I realised that during the main part of the day it would heat the water beautifully, but in the evening and the morning when the sun was low, it would fry anyone within 30 metres. It turned out to be not such a good idea, so I didn’t make it!

Wind power? Very good for some rural communities, for re-charging your batteries, for example, but it is difficult to do that on a base load and it is also difficult to distribute the energy you get from that into rural communities.

Hydro? Hydro-electric seems a good idea where you have got a waterfall, or where you can build a dam, but you need big dams to get a big impact. That may have impact in terms of water flow and siting up. It may be that there is not enough rainfall. Some of the South American countries, such as Chile and Peru, have lots of hydro and have lots of dams, but the glaciers that feed the water behind the dams are drying up. They are trying to work out how to avoid power shortages when there is nothing to go into the dam, because climate is having an impact even on something you think is sustainable, like Hydro. So they are turning to geo-thermal.

Geo-thermal is getting energy out of the ground; what can possibly be wrong with that? The problem is scale. At a small scale, burning fossil fuels is a good idea, the trouble is when it gets big. The problem is what happens when geo-thermal becomes the way the world gets heated. I got some calculations done that demonstrated that it works if you are rural, but if you are a big city and you are trying to get geo-thermal, it doesn’t work so well.

We heard a lot about nuclear this morning. I can see a lot of advantages to nuclear where there is the infrastructure to do it, but I find it really hard to see it working in Africa or some areas of South America; there just isn’t the social infrastructure to support it; at least it looks like that to me.

Bio-fuels seemed to be the magic bullet of a year or two ago, but you need a lot of ground to grow them on and it doesn’t do very much for your bio-diversity either.

President Obama’s Energy Secretary, who has a Nobel Prize in Physics, says the answer is painting your roof white! The idea is that if you are in a hot country, why turn the air conditioning on when you can just have a white roof, because it will reflect the sun’s rays back. Or maybe the answer is geo-engineering? But every kind of geo-engineering I have seen is difficult to bring to scale. I’m sure the white roof concept is useful, but I can’t see it making a really big impact as it doesn’t cook your food or do all the things that people need and it doesn’t get you from A to B.
So in terms of developing countries, some of these need a lot of capital, and they haven't got capital to actually implement them. Then there is distribution. In India they can build the nuclear power station, but most people are not connected to the national grid, so they can't get the energy out to the people who need it. As for social impacts, it is very difficult to manage the social impacts of a lot of these issues such as the traffic jams. You are getting the energy in, but actually everyone is immobile for two hours every morning and evening, because the infrastructure just isn't there to manage it.

How important is it that the energy you use is of the same kind of energy that the people you are trying to be like are using? That is a fantastically important thing. Unintended consequences? This isn't energy, but it is such a good story. A friend of mine has a friend who is a very concerned environmentalist working in Madagascar. He is a Biologist but he saw the impact of world population, so as well as looking after some particular wildlife in the area, he also had a programme handing out condoms – tackling both issues at once. The local fishermen discovered that if you put a torch inside the condom and tie a knot in it, you have got a waterproof torch – and that wiped out the population of the local squids and octopuses, because they could hunt at night.

As soon as you start bringing any of these solutions to scale, to big scale, there will be unintended consequences, which richer countries can deal with, but poorer countries can't. This is the impasse; if you develop you get climate change and social instability because (as in the case of Egypt today), one of the major drivers of the changes in Tunisia and Egypt was food prices. Why did the food prices go up? The biggest market of Russian grain was Egypt. Why was Russia no longer selling grain? Because of the drought and the hot summer last year in Russia that wiped out a third of its harvests. So you get a drought in Russia, leading to no exports. You then get food prices going up in Egypt and you get riots in Egypt that turn out a government. That is not just me saying that, that's a guy with a Nobel Prize for economics. If you don't develop, then you have inequity and if you have that level of inequity, then you get mass migration and all kinds of social instability as well.

**Theological Considerations – The ‘Energy’ of the Kingdom of God**

Some theology now; love God. We are told to love God, and Jesus, in particular said “don’t love money”. Loving God and loving money don’t go together. Our basis of development is loving money, so there is a question of what do we mean by development and how do Christians model different kinds of development that aren't based on loving money. What about loving your neighbour? I’ve talked about that a little bit and it seems to me that we have to think not just in terms of the big thing like climate change, or the big thing of overall energy policy, it has to be the people at the heart of it that we are talking about.

The Kingdom of God is something that Jesus talked about a fantastic amount and the metaphors he used are very interesting. He said the Kingdom of God is like a tiny seed that grows into a huge tree. It’s like a tiny pinch of salt that flavours or protects a whole meal. He says it is like a tiny candle seen from a long way away. He says it’s like a tiny bit of yeast that lifts the whole loaf. He even says it’s like being born again, from a tiny baby that then grows into someone else.

The whole thing about the Kingdom of God is how it starts tiny and affects everything; and that applies to you as an individual. God gets his grip on you and then it transforms your whole life, but it also applies to you within the church. That one person within the church, who manages to infect the whole church by their attitude. Or it is the church affecting the whole of its society. The Kingdom of God is about ‘small’ affecting and changing the whole ‘big’ thing.
Conclusion

Although we are small in number, our ambitions have to be large in terms of this new vision of development, not based necessarily wholly on money. You have to get out of poverty but not become rich. Zaccheus is an interesting character because his response was financial. He saw something was wrong and he gave money, and Jesus said “the Kingdom of God has come today.” That means that our generosity can be a part of our response to the Kingdom of God.

Please Note: The views expressed in this article are those of the author and do not necessarily reflect the position of Redcliffe College.

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