

Addressing world needs

Ian Hore-Lacy

Ian Hore-Lacy is a biologist and environmental scientist who is a Fellow of ISCAST and Director of Public Communications with the World Nuclear Association.

Abstract

God has made abundant provision for our needs. We must not only be environmentally conscious, but overcome political obstacles and technological challenges to deploy that abundance effectively. Norman Borlaug's work on high-yield wheat varieties transforming India's food situation is an inspiring example.

Key words

World needs, God's provision, environment, resources, food, Borlaug, high-yield wheat, inorganic fertilisers.

A list of world needs would become very long, but what are the main needs as perceived by Christians in a country such as Australia or UK? Poverty is the first to come to mind, with its subsets of hunger, poor health, educational deprivation, lack of potable water, inadequate shelter, etc. And what causes or perpetuates poverty? Another long list, but along with drought and flood, there is greed, corruption and exploitation at all levels from personal to political, affecting access to resources such as arable land and the means to farm it, energy, minerals, and technology. And what about the huge chronic waste of human and natural resources caused by warfare, terrorism, and the \$320 billion per year drug trade? These manifestations of our fallen nature make technological challenges like increasing food production and replacing oil seem modest.

Christians understand that God created the Earth as a significant part of the whole creation, that while part of our identity is integral with that creation, he has made humans in his image and given to us the responsibility of caring for the Earth and also making it productive. Also that he is at least as concerned for the welfare of all people on Earth as any of us might be. So how does all this fit together?

If we go to Deuteronomy 8:6-9 we get a picture of what is in front of those about to enter the promised land: abundant water, crops, fruit provided by God so that they would lack nothing. Hills with copper and iron providing for the bronze and iron ages and more, given a measure of technological creativity arising from being created in God's image.

Is this vision simply one for those people at that time, or is it relevant to all people today? Someone said that for everyone today to live with a reasonable standard of living we need about 3.5 Earths. So has God short-changed us? Has he left us with inadequate resources on this one Earth to provide for 6.5 billion people? I suggest that there is ample evidence that he hasn't,¹ in terms of agricultural potential as well as mineral and energy abundance, that those preaching ecological catastrophe and chronic resource limitation are wrong, both theologically and empirically.

That is not to imply that there are not a lot of resource and environmental problems and challenges to address right now, simply it is to say that the citizens of planet Earth who have the benefit of education and access to technology have a lot to do, and any limitation or shortage is due to our slackness, not inadequacy in God's provision. Becoming fixated on issues like global warming and the need to reduce carbon emissions takes the focus off the more intractable world needs. As stewards of God's wonderful creation we need to have much more than the popular issue of the day on our agenda.

This was brought home starkly in the coincidence of Norman Borlaug's death with a London church's World Needs Sunday in 2009. From the pulpit we were urged to be environmentally conscious and responsible, to be aware of the wonderful Earth God had created, and to look after it. So far so good, and for anyone with a very reductionist mindset that would be valuable. But not a word there about how to address those widely-agreed needs sketched above. So how do we approach the task of meeting them?

First we need to understand something of the nature of God, that he is bountiful, and that what he has provided on and in the Earth is abundant beyond measure. If we cannot see that, or understand it from reading of people like Borlaug and from learning about mineral and other resources, then at least trust in God's nature that it is so! Secondly, understand that it is up to us to access, mediate and deploy that bounty to those in need - that is the fundamental role of humans as stewards of creation. To expound that challenge it might have been better to have a senior mining or energy company executive preaching that Sunday than a birdwatching parson.

This is certainly not to suggest that because of this abundance it is acceptable for us to be careless or irresponsible. Quite the opposite! It is in being responsible, careful, and not wasteful that we can find God's abundance and live sustainably. Christians should be among the main critics of fashion, consumerism, extravagance and other culturally-affirmed forms of waste.

After a life of great achievement in addressing world needs, Dr Norman

¹ My 2006 book *Responsible dominion - a Christian approach to sustainable development*, addresses this (Hore-Lacy 2006).

Borlaug died early in September. He arguably did more to counter world poverty, through the so-called Green Revolution of the 1960s and 70s, than any other individual, and he was recognised with a Nobel Peace Prize in 1970 for it. His main influence was in Mexico and India - international politics and western environmentalism largely barred him from Africa. In a 1998 TV series *Against Nature* he was shown telling a US Congressional hearing how this opposition to transferring high-yield farming techniques to Africa, made him 'angry and sick'.

But hundreds of millions of people benefited hugely from his work in developing new crop varieties. *The Times* obituary (14 September 2009) said that he had:

in the opinion of many experts, saved more human lives than any other individual in history

echoing the citation of his 1970 Nobel Peace Prize and 2007 Congressional Gold Medal. What a contrast to some of the platitudes about poverty, aid, and environment that we are so comfortable with!²

The church in this regard is often characterised by lots of folksy and feel-good stuff which has little impact where it is needed, though I don't mean to disparage all grassroots virtue. Instead of affirming God's perspectives on human need and pointing to his provision shown so clearly by the achievements of people like Borlaug, Christians lend their weight to populist policies which are wasteful and ineffective, for example, mandated renewable energy targets for electricity generation, 'sustainable agriculture' defined so as to be unsustainable and wasteful of land, conservation policies which lock up resources, and opposition to vital God-given technologies such as genetic engineering and nuclear power. Christian input is disabled because we have become caught up with the spirit of the age in respect to environmentalism. We accept the populist nostrums with little question.

Environmental care and the avoidance of waste are always necessary, but getting on the bandwagon of ideological (and sometimes human-stigmatising) environmentalism is not. The question of environmental consideration in major development projects was largely settled in the 1970s—no reputable company or government agency would neglect attention to environmental aspects since then, and few communities would be passive or apathetic. This decade we have focused constructively on the question of escalating carbon emissions from diverse sources, and some action is commencing. The challenge is great, but not overwhelming. However all this tends to be a preoccupation with global housekeeping rather than global economy in the sense of providing food and other human needs. Housekeeping is important and not trivial, but as a corollary and consequence of life, not its purpose. It is implicit but not the point of the Genesis 1 mandate. In the real world of business and government enterprise which provide for everybody's food, fibre, energy

² A more technical obituary is in *Nature* (Swaminathan 2009).

and minerals, these things—environment, social responsibility, etc—are side issues, albeit significant ones. While lack of attention to them would certainly be disreputable, in the church they tend to be prime issues. A high-profile UK bishop sees 'the environment as central to the mission of God'. I beg to differ.

We need to assert strongly that *prima facie* God's creation includes all that is needed for all 6.5 billion of us to enjoy good standard of living, health etc. He created people with the intellectual resources to access and mediate those Earth resources to all who need them, despite great challenges. Also we need to assert loudly that God did not create 'the environment' (a modern and ultimately meaningless abstraction), he created a bountiful Earth which we need to use with care, but use more fully and sensibly than we have.³ At the personal level we need to develop a culture that stigmatizes waste—whether it is fashion, more blatant consumerism, extravagance, or whatever.

Also we need to understand science properly as part of God's provision, rather than putting up with sections of the church driving a wedge between science and scripture, stigmatising science as somehow 'atheist' simply because some atheists use extrapolations from it to attack Christians.

Back to Borlaug. *The Times* obituary said:

He was the grandfather of the 'Green Revolution' in which, between 1961 and 1980, wheat crop yields doubled, tripled and sometimes quadrupled around the world. His experiments with hybrid wheat strains and nitrogenous fertiliser created strains of the staple food impervious to pests, bad weather and poor soil, enabling the world to support a far greater human population than many thought possible after the Second World War. Yet his methods and message fell out of favour, to the detriment of millions — especially in Africa. In the mid-1950s Malthusian doomsayers saw the contrary trajectories of population growth and food production in South-East Asia and the Indian sub-continent and predicted catastrophic worldwide starvation, the denudation of forests and seas followed by an inevitable population crash. The reversal in the Third World's agronomic fortunes was so sudden and so miraculous that many have since forgotten the holocaust forestalled.

Borlaug's work in the 1950s resulted in a hybrid semi-dwarf wheat variety which was immensely productive. By 1970,

40 million hectares of land worldwide were being used for semi-dwarf wheat cultivation, comprising the most productive 10 per cent of the planet's agricultural land.

While the Indian sub-continent benefited and continues to do so,

³ These questions are much more fully addresses in my book *Responsible dominion - a Christian approach to sustainable development*, (Hore-Lacy 2006).

The revolution was confounded in Africa, however, first by warfare and political instability, and then by Western environmentalism.

Times obituary 14 Sept 2009

Sharad Pawar, the Indian Agriculture Minister, said that his country and many other nations owed '...a debt of gratitude to this outstanding personality...' for helping to forge world peace and saving the lives of 245 million people worldwide.

In the death of Norman Borlaug, the world today has lost not only an eminent agriculture scientist but a man dedicated to the cause of humanity

he said.

Having known him since 1974, it is with a profound sense of personal grief that I mourn his passing away.

He said that Borlaug would be '...a source of inspiration and sustenance for all of us...' as India moved towards a second Green Revolution. The first Green Revolution quadrupled India's food production through high-yield grains and turned it from a starving nation into a self-sufficient food exporter (quoted in Page 2009).

In April 2002 Borlaug signed a declaration with several environmental experts, including Patrick Moore, the co-founder of Greenpeace, in favour of 'high-yield conservation'. The movement against trendy agricultural primitivism has since gained pace, yet the lack of respect paid to Borlaug's teachings in recent years is astonishing in relation to his impact on human society.

Times obituary 2009

Patrick Moore commented to me:

He was indeed a great man, who had to suffer the indignities of fools who never grew a field of wheat in their lives. I am proud to have met and spoken with him. He taught me that four billion of us depend on the nitrogen extracted from air via the Haber process to make ammonia for fertilizer. There is only enough organic nitrogen in soil, agricultural residue, and manure to supply food for two billion people.

This raises the matter of supplying inorganic fertilizers to support the 'Green Revolution'. They are certainly necessary, and have been a point of criticism from Borlaugs' detractors. But this is exactly the kind of challenge that God, in creating us in his image, has equipped us to meet! German scientist Fritz Haber invented the eponymous process in 1909 and received the Nobel Prize for chemistry in 1918 for creating

an exceedingly important means of improving the standards of agriculture and the well-being of mankind

Nobel citation

which seems a considerable understatement. Some 100 million tonnes of nitrogen fertilizer is now produced annually by the Haber process, using

about half the world's hydrogen production.

The Haber (or Haber-Bosch⁴) process combines abundant atmospheric nitrogen with hydrogen, and the resulting ammonia is then oxidised to nitrates. But the hydrogen has to be made from fossil fuels, largely methane, i.e. natural gas. This is costly and it gives rise to substantial carbon dioxide emissions.⁵ If the hydrogen can be made simply from water, the CO₂ is avoided and a valuable organic chemistry feedstock is conserved. Nuclear power, now a mature technology, can produce hydrogen by high-temperature electrolysis, and in the future it may be made thermochemically using nuclear heat at about 950°C. An abundant supply of low-cost hydrogen would greatly boost world agricultural productivity through increased availability of nitrogen fertilizers.

A more recent initiative with huge implications for feeding people is genetic engineering of food crops, but these are opposed trenchantly by many environmentalists who are, basically, anti science. Golden Rice incorporates two genes (from daffodils and a micro-organism) to synthesise beta-carotene and enhance vitamin A levels to counter blindness in children. This has profound relevance to the health of one third of the world's population, especially since the variety is not patented or restricted in its availability to all.⁶ Hundreds of millions in Africa and Asia suffer from vitamin A deficiency and many children lose their sight from it. With an improved strain, a mere 75 grams of Golden Rice would provide all of a person's daily need of vitamin A, but its use is blocked by anti-GM campaigning and ensuing regulation. Apparently Professor Ingo Potrykus, the Swiss who developed golden rice, had to grenade-proof his greenhouse, but the main opposition has been political, fomented by Greenpeace et al.

I suggest Borlaug as a role model for Christians and others interested in addressing world needs: He grappled valiantly with political structures and leadership which sometime had a cynical disregard for the welfare of its citizens, and he managed to carve out some opportunity for radical change. Secondly, he used science and technology to provide practical and very effective means for people to feed themselves very much better than before. He was convinced that people were 'hungry for bread and peace', and therefore must resolve politics and poverty together.

National politics and fatalistic cultures are perhaps the most intractable challenge. How can Africa's productive potential start to be realized without enormous political change? Who is going to sort out this, and

⁴ Carl Bosch scaled it up to industrial level and received a Nobel prize for this in 1931.

⁵ Each tonne of hydrogen gives rise to 11 tonnes of CO₂.

⁶ The developers made use of 70 Intellectual Property rights belonging to 32 different companies and universities in the making of golden rice. They needed to establish free licences for all of these so that golden rice could be used in breeding programs and development of new crops. Free Humanitarian Use Licences were granted quickly due to positive publicity, and also farmers are permitted to keep and replant seed without charge.

how? While he succeeded in India, it was Africa that was a bridge too far for Borlaug, and the scale of political and cultural change required there seems vast.

Borlaug's crop varieties certainly gave rise to demand for inorganic fertilizers, underlining the fact that no strategy, however good and effective, can be applied alone, without much else. In this regard we note that 78% of the atmosphere is nitrogen, and getting that into a form suitable for applying to crops without a large carbon 'footprint' is simply one more challenge.

We can always do things better, and the basis of our confidence in grappling with world needs should be knowledge of God's provision and an understanding of our role in mediating that abundant provision. But the question is: how is an 'environmental' focus going to help alleviate poverty and hunger in any way comparable to Norman Borlaug's achievements under God, and secondly, where is there a single example of Christian approbation of people grappling effectively with these challenges? If we cannot focus the church's attention on the many positive real-world things that are being done to address world needs and establish universal justice, we should cease the Christian environmental waffle purporting to address the Genesis 1 mandate.

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