

## Getting Past the Challenges

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Sustainability is beginning to get onto the political agenda in New Zealand. The Prime Minister placed some variant of environmental sustainability as a top priority in her Parliamentary Address last week. She sought to commit New Zealand to a track of serious carbon dioxide reduction. Climate change is also a lively media and political talking point.

But in both cases, the real messages of the sustainability transition are not yet in place. Sustainability means living within the means for what natural functions can tolerate in order to maintain a habitable planet. This covers giving value to the life support and environmentally useful functions of ecosystem processes that we have heretofore taken for granted.

So one real push for sustainability science is to get to know far more about the limits of nature, and the tolerances of soils, waters, seas and biota that clothe the spaces where we all live and play. In many cases, those who live and work by nature maybe the best to advise on these thresholds and to offer the best monitors of change.

So sustainability science is a science of exploration with those also in a position to explore where we have to fit in with, and not simply exploit, the natural world.

Sustainability also embraces people, their livelihoods, their relations with each other and the respect and dignity with which they are treated. So sustainability has to create a fair and tolerant society. For it is only such a society that can begin to treat natural processes and resources in the manner of equal respect and dignity. This point was missing in the Prime Minister's statement.

The third element of sustainability is paying our way. We pay lip service to this feature. Frankly there is no case of economic activity which does not carry with it uncompensated social and environmental costs. We are kidding ourselves when we try to raise levies on carbon trading and vehicle fuels, as these levies are what the power brokers can stomach, not what the sustainability outcome demands.

So a third element of sustainability science is the fearless calculation of these costs tracked remorselessly over the globe. One good case in point would be the proper audit of bio-fuel extraction, transport and processing.

It is one thing to add ethanol or bio-diesel to a vehicle. It is quite another to do this via sustainability accreditation. Sustainability science may have as one of its virtues the accreditation of a series of tasks, such as bio-fuel prospecting and carbon offsets.

For sustainability science to work, it will need to

1. Plan for four generations ahead when the "winners" are not born and the "losers" have long passed away. This will call for an ecological democracy to overtake electoral democracy the like of which escapes us for the moment. And we will also have to redefine "winners" and "losers", or we will be in deep trouble.

2. Define natural limits of ecosystem functioning and technology audits. Where it is not possible to be sure, then offer the precautionary principle where the burden of moving forwards lies on the instigator, not the objector. This could be the focus of a fruitful association between business, university, and government with civil society acting as commentators and monitors.

3. Recognise that we cannot be sure of any outcome. So work with stakeholders and artists and narrators to tell convincing stories of plausible options of future states and then get the public to work out how best to walk through the best pathways, This would be a good opportunity for a sustainable, carbon neutral energy debate for New Zealand.

4. Recognise and help shape new forms of organisation to handle the transition to sustainability. These are sometimes called "boundary organisations". They are different for they act at the margins of familiarity, and push people into new alliances, fresh ways of thinking and measuring, and of monitoring performance. This is a very exciting arena for sustainability science and engineering, for it combines science, technology, organisational behaviour, economics, psychology and spirituality.

These then are the minimum conditions for a true sustainability science. I hope that this conference can push the centre of gravity of this emerging style of learning and feeling, to a very different approach to scientific training and output. It would resonate with the scope for establishing boundary organisations throughout the nation that should genuinely help nudge the country to a full blown sustainability transition.