

## So what is so unsustainable about the global economy?

*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*

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In 1987 the World Commission on Environment and Development published *Our Common Future*.<sup>1</sup> This report attempted to reconcile the ecological 'limits to growth', articulated by the northern green movement since the early 1970s, with the need for growth to eliminate poverty, as articulated by developing countries in the south, many of whom had recently broken free from colonial control. The most frequently quoted definition of sustainable development originated in this report: 'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.' Although this is a definition that is highly contested,<sup>2,4</sup> this extremely influential report provided the strategic foundation for the 1992 Earth Summit in Rio, the World Summit on Sustainable Development, which took place in Johannesburg in 2002, and numerous international sectoral policy conferences between 1972 and 2002.<sup>5</sup> These global events put in place the fragile multilateral, global governance system, which is all we have today to face our collective global 'polycrisis'. Since the release of *Our Common Future* we have learnt much about the challenges we face: numerous crises that were predicted – but little done to avoid – are starting to be noticed by mainstream centres across many nations in the developed and developing world.<sup>6-9</sup> This has given rise to a new literature on sustainability/sustainable development, and the emergence of a field formally designated as 'sustainability science'.<sup>3,4,10-15</sup> The first synthesis of a southern African perspective on sustainability science has also recently been published.<sup>16</sup>

### The second Copernican revolution

Seven globally significant, mainstream documents will, in one way or another, shape the way our generation sees the world which we need to change. These are as follows:

- **Ecosystem degradation.** The United Nations (UN) *Millennium Ecosystem Assessment*, compiled by 1 360 scientists from 95 countries and released in 2005 (with virtually no impact beyond the environmental sciences), has confirmed for the first time that 60% of the ecosystems upon which human systems depend for survival are degraded.<sup>7</sup>

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- **Global warming.** The broadly accepted reports of the Intergovernmental Panel on Climate Change confirm that global warming is taking place due to release into the atmosphere of greenhouse gases caused by, among other things, the burning of fossil fuels, and that if average temperatures increase by 2°C or more this is going to lead to major ecological and socio-economic changes, most of them for the worse, and the world's poor will experience the most destructive consequences.<sup>17</sup>
- **Oil peak.** The *2008 World Energy Outlook*, published by the International

Energy Agency, declared the 'end of cheap oil'.<sup>18</sup> Although there is still some dispute over whether we have hit peak oil production or not, the fact remains that mainstream perspectives now broadly agree with the once vilified 'peak oil' perspective (see [www.peakoil.net](http://www.peakoil.net)). Even the major oil companies now agree that oil prices are going to rise and alternatives to oil must be found sooner rather than later. Oil accounts for over 60% of the global economy's energy needs. Our cities and global economy depend on cheap oil and changing this means a fundamental rethink of the assumptions underpinning nearly a century of urban planning dogma.

- **Inequality.** According to the UN *Human Development Report* for 1998, 20% of the global population who live in the richest countries account for 86% of total private consumption expenditure, whereas the poorest 20% account for 1.3%.<sup>19</sup> Only the most callous still ignore the significance of inequality as a driver of many threats to social cohesion and a decent quality of life for all.
- **Urban majority.** According to generally accepted UN reports, the majority (i.e. just over 50%) of the world's population was living in urban areas by 2007.<sup>6</sup> According to the UN habitat report entitled *The Challenge of Slums*, one billion of the six billion people who live on the planet live in slums or, put differently, one-third of the world's total urban population (rising to over 75% in the least developed countries) live in slums or what we refer to in South Africa as informal settlements.<sup>20</sup>
- **Food insecurity.** The International Assessment of Agricultural Science and

Technology for Development<sup>21</sup> is the most thorough global assessment of the state of agricultural science and practice that has ever been conducted. According to this report, modern industrial, chemical-intensive agriculture has caused significant ecological degradation which, in turn, will threaten food security in a world in which access to food is already highly unequal and demand is fast outstripping supply. Significantly, this report confirmed that '23% of all used land is degraded to some degree'.<sup>21</sup>

- **Material flows.** According to a 2011 report by the International Resource Panel (<http://www.unep.org/resourcepanel>), by 2005 the global economy depended on 60 billion tonnes of primary resources (biomass, fossil fuels, metals and industrial and construction minerals) and 500 exajoules of energy, an increase of 36% since 1980.<sup>22</sup>

The above trends combine to conjure up a picture of a highly unequal urbanised world, dependent on rapidly degrading ecosystem services, with looming threats triggered by climate change, high oil prices, food insecurities and resource depletion. This is what the mainstream literature on unsustainable development is worried about. This marks what is now increasingly referred to as the *Anthropocene* – the era in which humans have become the primary force of historico-geophysical evolution.<sup>23</sup>

Significantly, although these seven documents are in the policy domain they reflect the outcomes of many years of much deeper research on global change by scientists and researchers working across disciplines and diverse contexts on all continents. Although this process of scientific inquiry leading to policy change is most dramatic with respect to climate science,<sup>24</sup> it is also true for the life sciences that fed into the outcomes expressed in the *Millennium Ecosystem Assessment*, the resource economics that has slowly established the significance of rising oil prices and, most recently, of all the rise of material flow analysis (more on these later). The rise of our ability to 'see the planet' has given

rise to what Clark *et al.* have appropriately called the 'second Copernican revolution'.<sup>25</sup>

The first, of course, goes back to the publication of *De Revolutionibus Orbium Coelestium* by Copernicus in 1530, but only 'proven' a century later by Galileo, who established by observation that Copernicus was correct when he claimed that the sun rather than Earth was the centre of the universe. This brilliant act of defining the planetary system through observation was a – perhaps *the* – defining moment that paved the way for the Enlightenment and the industrial epoch that followed.

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Clark *et al.* date the second Copernican revolution to the meeting in 2001 when delegates from over 100 countries signed the Amsterdam Declaration which established the 'Earth-System Science Partnership'.<sup>25</sup> The logical outcome of this profound paradigm shift is an increasingly sophisticated appreciation of what Rockstrom *et al.* have called our 'planetary boundaries' which define the 'safe operating space for humanity'.<sup>26</sup> The significance of the Rockstrom article is that it managed to integrate, for the first time, the quantifications of these 'planetary boundaries' that had already been established by various mono-disciplines. These included some key markers, such as not exceeding 350 parts per million of CO<sub>2</sub> in the atmosphere; extracting 35 million tonnes of nitrogen from the atmosphere per year; an extinction rate of 10; global freshwater use of 4 000 km<sup>3</sup> per year, and a fixed percentage of global land cover converted to cropland.<sup>26</sup> Without the 'second Copernican revolution' a new science appropriate for a more sustainable world and the associated ethics would be unviable.

### Global warming

The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) published in 2007 confirmed the general trends of the previous assessment reports, namely that global temperatures are rising, and that these temperature increases are due to an increase in concentrations of greenhouse gases in the atmosphere caused by human activities.<sup>17</sup> The International Energy Agency forecasts that if policies remain unchanged, world energy demand is set to increase by 45% by 2030.<sup>18</sup> At the same time, since 1988 the IPCC has warned that nations need to stabilise their concentrations of CO<sub>2</sub> equivalent emissions, requiring significant reductions in the order of 60% or more by 2050. In the latest report the IPCC argues that dangerous climate change global emissions need to start declining by 2012 - 2013, and that by 2020 global cuts of 25 - 40% are needed. By 2050 cuts of at least 80% are necessary. The main human activities that have resulted in a 70% increase in greenhouse gas emissions since 1970 are the burning of fossil fuels, deforestation and agricultural production. The projections for the future suggest that even if we act now to build low-carbon

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economies, temperatures will still rise by 2°C. If we make moderate changes along the lines envisaged by the Kyoto Protocol, we could face runaway global warming with devastating consequences. Either way, it may be worth quoting a conservative source on the impact on the poor, namely Sir Nicholas Stern, who wrote in his report to the UK government:<sup>27</sup>

*'All countries will be affected. The most vulnerable – the poorest countries and populations – will suffer earliest and most, even though they have contributed least to the causes of climate change.'*

The latest IPCC report suggests that the African continent, which has contributed least to global warming, will be drastically affected by climate change. The main findings are that between 75 and 250 million people will suffer the consequences of increased water stress by 2020; by the same date productive outputs from rain-fed agriculture could drop by 50%, with obvious negative consequences for food security; by the end of the twentieth century sea level rise will have negatively affected most of the low-lying coastal cities around the coast of Africa; and by 2080 arid and

semi-arid land areas will have increased by between 5% and 8%. There is little evidence that researchers and decision-makers in Africa have registered the full implications of the multiple impacts of global warming for the way in which development policies are designed in Africa.

### Sustainability, inequality and the limits of ecological modernisation

After all is said and done, the challenge of sustainable development in the current global conjuncture is about eradicating poverty, and doing this in a way that rebuilds the ecosystems and natural resources on which we depend for our collective survival.

It has been argued elsewhere that poverty eradication through a more equitable distribution of the world's resources can only be achieved if ways are found to restructure the global economy.<sup>28</sup> To do this, we will need to consider ways of achieving what Gallopin has called 'non-material economic growth'.<sup>29</sup> Whereas economic growth is traditionally associated with an increase in the size of material stocks (buildings, infrastructures) and the per capita consumption of material goods, this can be changed by introducing indicators of progress (such as, for example, a Happiness Index) that values well-being over personal wealth accumulation including, for example, improvements in public health, restored natural environment, greater choice of cultural activities, less inequality and more personal security. Non-material growth is about improvements in well-being without a growth in material infrastructures and goods. Gallopin makes useful distinctions between *development* (improvements in well-being plus material economic growth), *maldevelopment* (material economic growth with no improvements in well-being), *underdevelopment* (no material economic growth and no improvements in well-being), and *sustainable development* (improvements in well-being plus non-material economic growth). The challenge for many developing countries may well be conventional development for now to create the material basis for a transition later on to sustainable development. Developed

countries can make that transition now. Gallopin argues as follows:<sup>29</sup>

*'In the very long term, there are two basic types of truly sustainable development situations: increasing quality of life with non-material growth (but no net material growth) and zero-growth economies (no economic growth at all). Sustainable development need not imply the cessation of economic growth: a zero-growth material economy with a positively growing non-material economy is the logical implication of sustainable development. While demographic growth and material economic growth must eventually stabilize, cultural, psychological, and spiritual growth is not constrained by physical limits.'*

For many in the developed world, the sustainability crisis is synonymous with global warming. However, an exclusive focus on global warming runs the danger of reinforcing the notion that global warming is just a hitch along the path of progress that will be resolved by some kind of grand techno-fix (legitimised by a narrow conception of 'mitigation'). Global warming is, in reality, not just an unfortunate side-effect of the global industrial system, it is an intrinsic part of how this system is constituted, fuelled and financed. As argued by Sachs *et al.* in their influential paper published in the lead-up to the World Summit on Sustainable Development in Johannesburg in 2002, unless we are prepared to deal with the root causes in the way our economic system is configured, solutions to global warming and ecosystem breakdown will elude us.<sup>30</sup> This means recognising that the most powerful corporations in the world profit from value chains that contribute directly to the worst aspects of global warming: mass private transit, oil production, cement-based building construction, energy production and distribution, large-scale commercial agriculture and deforestation. Very few of the mainstream global reports blame the core structure of this capitalist economic system and the over-riding logic of capital accumulation for the mess we are in and the implications for billions of people who will suffer the consequences.

The 2008 - 2011 financial crisis might raise some awareness about the linkages, but it is too early to tell. It is time, however, for the world's corporate elites to account for the products they produce, and the impacts of the sources of raw materials and processes of transforming these materials into final products.

## Conclusion

In light of the massive expansion of our scientific knowledge about our natural resources and ecosystems, it may be necessary in future to accept what the Brundtland Report rejected, namely that there are indeed 'absolute limits' that should not be breached. This would mean endorsing, for example, the IPCC recommendation that average CO<sub>2</sub> emissions per capita should be 2.2 tonnes rather than the current 4.5 tonnes; or the suggestion by the International Panel for Sustainable Resource Management that the average consumption of extracted materials should be 6 tonnes per capita rather than the current 8 tonnes. Furthermore, it is not just about the biophysical limits to *absorption* of the effects of human activities that matter, but also limits to the quantities of remaining strategic non-renewable resources (such as oil and metals) and limits to how far ecosystems such as fisheries, water cycles, soils and atmospheres can be exploited and modified.

References available at [www.cmej.org.za](http://www.cmej.org.za)

## IN A NUTSHELL

- Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
- Our global community is faced with seven major challenges to sustainable development:
  - degradation of eco-systems that support human life
  - climate change
  - peak oil
  - inequality
  - urbanisation and informal settlements
  - food insecurity
  - material flows.
- All of these, and not just climate change, will have an impact on our health.
- A fundamental change in our understanding of development and the global economic system is required.