

CLIMATE CHANGE AWARENESS

the ability to factor climate change into decision making

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Every day people make decisions – what house to buy, what kind of job to apply for, what kind of garden to plant, whether to have children, where to go on holiday, what kind of bank account to open, what business opportunities to seize. Climate change is becoming an increasingly important factor in more and more of these decisions, from both the ethical perspective of engaging in actions which contribute to a crisis that could disrupt or end the lives of millions, and the practical perspective of preparing for life in a world where the climate system is no longer stable. Climate change is an emergent property of complex ecological and environmental systems, which in turn are influenced by complex human systems, including cultural, social, economic and political systems. The level of awareness of climate change therefore needs to reflect that complexity and be multi-dimensional and multifaceted, rather than focusing only single variables such as carbon dioxide emissions. Above all, climate change awareness needs to be the kind of practical awareness which can help learners deal with uncertainty and make decisions that are aligned both with the most reliable available information and their own ethical values. This chapter describes some possible dimensions of climate change awareness - not as an exhaustive list, but as an illustration of some of the aspects of climate change that are relevant to everyday decision processes.

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Richard Heinburg coined the phrase “the Party’s Over” to describe the end of the brief period which saw humanity using up fossil fuels like there was no tomorrow. Oil production is now set to peak and begin its inevitable decline, at the same time as the climate becomes increasingly unstable. There is so much that depends on oil, from transportation and plastic to food and medicine, that for some vulnerably communities the decline in the production of fossil fuels may mean there really will be no tomorrow. Peak oil offers an opportunity, since many of the measures taken to address climate change, such as energy efficiency, can help reduce dependence on oil, making them highly attractive for their own sake as well as for combating climate change. Peak oil is also a threat, however, because as oil runs out we might turn to biofuels, tar sands, liquefied coal and other fuels which have a much greater impact on climate change than conventional fossil fuels. The relationship between peak oil and climate change is one of a series of relationships that learners need to be able to think and reason about in order to act appropriately in the face of climate change.

Given the direct benefits of reducing energy and fossil fuel use for survival in the future, both in terms of climate change and peak oil, it is surprising that so little action is occurring. It is proffered that people do not know who to trust and that individuals tend to trust their own

peers rather than politicians, scientists or environmentalists. On one side there is peer reviewed science conveying depressing news that would require an examination of personal behaviour. On the other, there is cherry-picked or obsolete data or simple lies delivered by deniers who communicate a message that people want to hear in a far more erudite and charismatic manner than scientists, allowing people to carry on carrying on. The deniers have been ably abetted by the media, who have wilfully or naively perpetuated the confusion between average global temperature and localised weather and provided a platform to deniers. Ironically, and, it could be argued, inexcusably, the media claim 'objectivity' as the reason for pleasing the commercial interests of their advertisers by sowing confusion about climate change. In his book 'The Sane Society', Erich Fromm proposed that entire societies "may be lacking in sanity" - he concluded that Western society was indeed insane and this insanity threatened the survival of the human species. This might explain how our broadsheets can lead with the most shocking global warming stories, but the rest of the paper appears to contradict the seriousness of the situation with advertising for cars and foreign holidays and entire sections on business, travel and sport, not to mention innumerable column inches on celebrities. This is the end of the story - the discourse never progresses. The ability to analyse the media critically is therefore an important aspect of climate change awareness. Useful concepts are John Pilger's (2009) idea of 'censorship by omission' and the hidden role that corporate and government interests play in 'filtering' the news (Chomsky 1989).

One way of viewing the current situation is that we are at war with the planet we live on. As James Lovelock has pointed out there will only be one victor – the planet will survive but in a new stable state, one that may no longer be able to support human life. Our politicians are only too well aware of the planetary emergency, and our educators should be, but the response to climate change so far seems to show an abdication of responsibility. Although the ethics of climate change are complex, those who have sought to subvert the truth, prevent action or do nothing when they have the power to implement change could be considered to be sharing in the culpability for the death and displacement of those affected by climate change, and the loss of biodiversity as we hasten the sixth mass extinction. Learners will therefore need skills in ethical reflection to gain an idea of where they consider responsibility and culpability to lie, and skills in engagement at all levels to expose dereliction of duty on one hand, and positively encourage change on the other. They will need skills in persuasive speaking and writing to get their message across and the strength of character to resist the marginalisation that may occur when speaking inconvenient truths.

An extremely important factor in climate change awareness is social justice, since those who are the most vulnerable to changes in climate, those who are already suffering from the impacts of climate change, are the populations which contributed least to the problem. When considering global reductions in emissions it is essential for learners to consider exactly which countries are being asked to reduce and by how much. Contraction and Convergence is one method for sharing the burden of reducing fossil fuel reductions fairly by requiring those countries with excessive emissions to reduce significantly, but allowing countries with very low emissions to increase, up to the point where all countries have the same per capita emissions. There are many other aspects of social justice, such as compensation from the countries that caused the problem to those damaged by it, and the responsibility of rich countries to help vulnerable countries adapt to the inevitable impacts of climate change.

One problem with general climate change awareness is that it tends to focus narrowly on the single variable of carbon dioxide emissions rather than taking into consideration the wide range of factors which have an impact on climate change. It is important for learners to gain a holistic understanding of the many drivers of climate change, for example, understanding the idea of CO₂e - carbon dioxide equivalent – which takes into account other greenhouse gasses. This has an impact on daily decisions because other gasses like methane can have a far greater impact on climate change than CO₂ (per tonne released). Methane in particular is emitted in large quantities by the meat industry, so an understanding of CO₂e can help learners make the necessary decisions in terms of what kind of food to buy or promote. There are also many other complicating factors such as the ‘multiplier effect’ for aircraft – emissions at altitude have as much as three times the impact on climate change, something which is often ignored when it comes to conscience salving tree planting.

As well the *sources* of greenhouse gasses, it is important that carbon *sinks* are included in climate change awareness. Approximately half of man-made emissions are currently absorbed by soil, vegetation, plankton and the oceans, but the capacity of these systems to absorb carbon dioxide is being reduced by a number of factors from deforestation to acidification of the ocean. Deforestation not only reduces the ability of forests to absorb CO₂, it is also a major source of emissions in its own right, and so is a major focus for efforts to address climate change. Deforestation can be reduced by tackling its drivers which include logging, ranching, foodstuff, feedstock crops, biofuels, oil and ore extraction, as well as giving rights to indigenous people. Indonesian peat lands that were drained to grow rice and then palm oil can be re-flooded, restoring a massive carbon sink.

Learners will need to treat figures which look only at carbon dioxide emissions with suspicion, particularly in national statistics which ignore contributions from shipping and aviation, the embedded carbon in imported goods and damage to carbon sinks. The atmosphere is less than unimpressed by creative accountancy and the global commons is not influenced by political posturing and projection. China may now be the biggest global emitter, but its per capita emissions are still half that of the UK. It is the UK who has historically created the most global warming and our current emissions are increased significantly if we include embedded carbon from imported goods manufactured in China.

For a long time, environmental groups and governments have peddled light green solutions, such as recycling and turning electronic devices off stand-by, which trivialise and confuse people as to the enormity of the response that is required. This is compounded by a whole series of advertisements which make it seem as if consuming more is actually benefiting the environment, for example, buying a new efficient hybrid car. The advertising fails to take into account the the embodied carbon in the products it is selling, and convinces people that they are doing their ‘bit’ and contributing to a larger solution through little actions. However, an awareness of positive feedback and trigger points would make it completely clear that ‘every little helps’ is a slogan that does not apply to climate change.

One positive feedback loop consists of the Arctic tundra thawing as the world gets warmer, releasing methane which increases global warming, thus increasing thawing and releasing more methane. Another is the loss of Arctic ice, which reduces the ability of the Earth to

reflect back heat, warming it further and melting more ice. A very significant positive feedback loop is the die-off of forests – if the temperature of the Earth reaches a certain point, tropical forests start to die, releasing huge amounts of carbon, raising the temperature, and causing more forests to die. All of these greatly accelerate climate change and are non-linear. Any one of these could lead to a tipping point of the whole earth system. If we go beyond that point no amount of human intervention can stabilise the system and we will have been propelled into a world of runaway climate change. It won't matter what sort of light bulb we use or that we only boil enough water to make a cup of tea. We are perilously close to these tipping points. If learners can understand the concepts of positive feedback and trigger points they will understand that nothing short of an entire reorganisation of society and a reduction in consumption on an enormous scale will have any impact at all in stopping runaway climate change, if, that is, it is still possible to do so. If we reach the point of no return, then a new set of skills will become necessary – skills for, as far as possible, adapting to a changing climate, at least up until the point when the changes become so rapid and severe that it is no longer possible to adapt.

As Churchill once said 'It's not enough that we do our best; sometimes we have to do what's required.' Nothing else is acceptable. Anything less consigns millions of people and countless species to death. There can be no compromise with the Earth's systems since they are not interested in political expediency. Fiddling with false solutions whilst the planet burns, like Carbon Capture and Storage (when coal needs to stay underground – James Hansen has called coal-fired power stations, 'death factories'), carbon offsetting, green consumerism, biomass and biochar, are a dangerous distraction that provide a false sense of security at best or are deeply deceitful and exacerbate the problem. There is no technological holy grail, and the imaginative ideas for 'geo-engineering the planet' could be the quickest way to destabilize the ecosystems that regulate the climate as well as our water and the ability to grow food. The situation is extremely serious and the trajectory of society is, at present, the opposite of what is required to deal with climate change.

Fully gaining climate change awareness means that learners will begin to live in two parallel worlds - the day-to-day world of 'business as usual' where transnational capitalist structures revolve around profit, and value is measured only in financial terms. And the 'new world' where they look at every object around them and everything they use in our day-to-day lives and understand that it all comes from the natural world, and all has an impact on the future ability of that world to support human life. This understanding may give them back a connection to nature that we in the over-developed west have lost since the Industrial Revolution. We are already altering the ability of ecosystems to function and replenish themselves and are fast approaching the day when climate change combined with the many other deteriorating conditions of the world leads to a planet which is inhospitable for human life. To live in the 'old world' and think 'new world' can be uncomfortable, and everyone has different ways of coping with this daily dilemma. For some, dealing with climate change at a personal level involves a constant daily attempt to reduce their own carbon footprint, followed by periodic lapses into hedonistic consumerist binges when they realise how little they are contributing to solving a huge global problem, or how few others are prepared to follow suit. It is, in fact, impossible to live in the 'old world' and act in 'the new world' 100% of the time.

One practical exercise that learners could become involved in to gain support from people around them and feel that they are not battling on their own is to form a Carbon Reduction

Action Group (CRAG). CRAGs provide an active learning method for gaining climate change awareness, and there are many forms that such a group could take. One example of a CRAG is the One Tonners group in Cheltenham (<http://theonetonners.blogspot.com>) which aims to raise awareness of social justice aspects of climate change. The group is based around the Contraction and Convergence model, and uses the figure of one tonne of CO₂ per person per year to represent an amount which is fair (if everyone in the world had the same share) and would offer a chance of mitigating climate change. Importantly, this figure is realisable. The group demonstrates the realisable aspect by creating concrete and practical steps by which its members could (hypothetically) reduce their carbon footprint to one tonne, with members putting these steps into practice to a greater or lesser extent.

There is, of course, a danger that CRAGs focus only on reducing personal reduction of emissions, as if this was a target in itself. However, it is also possible to use personal reductions as a springboard for political action where learners gain skills in insisting on a wide range of measures that go beyond voluntary reductions. Consciousness about the impact of consumption can also help learners appreciate humanity's interdependence and the delicate balance of nature, its interwoven biodiversity, and the importance of ecosystems. Most important of all in groups such as this is that learners can realise that emissions can be reduced in ways which simultaneously increase wellbeing and quality of life, for example, by reconnecting with friends and nature, reducing consumerism and the necessity for overwork to fuel it, and finding meaning in working towards something positive rather than the empty promises of shopping. A CRAG can provide experiential learning of what it may be like to enter a low-carbon, post-fossil fuel society and how it could be better than the current consumerism-based societies.

There are many different reactions to discovering the seriousness of the situation in which humanity finds itself in, from total denial on one hand to total despair on the other. Learners will need to be emotionally literate to move beyond both denial and despair towards positive action which can help them gain a sense of meaningful purpose and discover ways to improve their own lives and the lives of others even in the deteriorating conditions of the world. They will need to face the truth head on and not let it paralyse them because the most important skill they will need is that of maintaining their own levels of hope in the face of the massive challenge that the 21st century represents. Educators need to be able to engender hope in their learners and help them gain the emotional resilience to deal with each new piece of scientific evidence, each new piece of bad news, and turn challenges into opportunities for building a better future.

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