
Climate Change and Security

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1 Introduction

The effects of climate change are already so apparent that those who doubt the existence of the phenomenon are now in a minority. There may still be controversy over the cause or causes, but evidence of substantial change is building at a remarkable rate. In Britain, winters are shorter and agricultural patterns are changing. There are now commercial vineyards in the north of England and gardeners experiment with subtropical exotics across much of the country. In the subarctic regions such as Alaska, changes are especially obvious as large areas of permafrost begin to melt and ice-free sea passages increase each winter, and even in the tropics, Mount Kenya and Mount Kilimanjaro now look likely to lose their snowfields. This article analyses why the implications of these changes have, for the most part, not been seen as a security issue, or even ones that have much connection with development. The article suggests this is due to the fact that the first decade of climate science focused on likely changes in the northern hemisphere rather than the tropics and the modelling was based on a view of climate change as a slow and steadily advancing phenomenon with potential benefits for the northern hemisphere and limited impacts in the tropics. More recent research has changed this picture: substantial impacts are expected in the tropics and there is greater awareness that climate change may produce abrupt changes and shocks as well as gradual changes. To the extent these occur in fragile societies with limited coping capacity, both could trigger increased crime, social unrest and pressure for large-scale migration. These have implications for global security that are not well understood providing an additional reason why climate change has low priority on international and national political agendas.

2 Climate science: the first decade

In the ordinary way, climate change has been a concern mainly for the wildlife enthusiasts and for those who see a risk of a runaway and irreversible

greenhouse effect developing – a climatic disaster ending up with the Earth having a hothouse atmosphere like Venus. In other respects, many have welcomed the onset of climate change, with these ranging from ordinary people in countries such as Britain, Canada or Russia, to convinced free-marketers who believe that climate change will produce new economic opportunities.

Occasionally, there is an unexpected warning signal. A recent study done for the Pentagon talked of the risk of rapid climatic changes affecting regions such as the USA and Western Europe, leading to major events such as droughts, violent storms and sudden changes in temperature (Schwartz and Randal 2003). One concern is that the melting of arctic ice deposits could affect the circulation of warm Atlantic currents with a massive impact on North America and Western Europe. On such rare occasions, attention may be drawn to possible links with security, but for the most part, climate change has simply not been seen as a security issue or even one that has much connection with development.

One of the principle reasons for this is that most climate change models have tended, in the past, to predict that the major changes would affect the temperate regions of the world, both north and south, with the overall effect being one of *slow steady warming* together with the risk of some changes in rainfall patterns and a certain increase in storm intensity. For two quite different reasons, these possibilities have caused relatively little concern.

One is that any change in climate that leads to a slow increase in temperatures in North America, Europe and North Asia was generally seen as something of an advantage – allowing arable and pastoral farming to thrive further north, improving the living conditions of many millions of people and even leading to a decrease in energy requirements. Moreover, these regions include the most powerful economies with a dominant political influence in international affairs.

Second, if climate change was to increase in speed so that there were substantial impacts, then

since its effect would be disproportionately on the richest countries, it can be argued that these would be the countries best able to cope. The tropical regions, by contrast, include almost all the less developed countries. While these would be far less able to handle rapid climate change, the early evidence seemed to suggest that they would be far less affected.

There were certainly some caveats to this broad characterisation of such a generally optimistic view of early climate science. One was that some substantial economies, such as those of Spain, Italy and Australia, had agricultural sectors that were heavily water-dependent in regions of increasing water scarcity. Just about any change in climate involving a decrease in rainfall could have a substantial effect. Another problem was that if climate change was eventually to involve substantial increases in sea level, then this would be on a global scale and would seriously affect a number of island states and also some heavily populated deltas such as the Ganges/Brahmaputra and the Mekong and major conurbations such as those centred on Shanghai, Mumbai and Calcutta.

Furthermore, while the El Niño effect may not be directly related to human-induced climate change, one of the experiences of recent El Niños has been the global impact, with this east Pacific maritime phenomenon having an effect stretching right across South and South East-Asia and across the Indian Ocean to Africa. At the very least, this has been an educative experience for many in terms of the dynamic nature of the global climate.

These exceptions apart, climate change was not widely thought to be a problem that would greatly worry the body politic in the elite world of the northern industrial states. The general view was that climate change might happen, it might affect the temperate latitudes, but slow improvements in carbon emission controls coupled with the responsive potential of powerful economies would be a sufficient reply.

3 Climate science: subsequent developments

What has changed and has given climate change a much greater security dimension, is a recognition in the Intergovernmental Panel on Climate Change (IPCC)'s Third Assessment Report and more recent research is that the patterns of future change are likely to be quite different from those predicted by

the early climate change research of ten years or more ago, and this relates specifically to the impact on the tropics.

One of the core reasons why this has only recently come to the fore is that there appeared to be good evidence for the view that the impact of climate change on the tropics would be limited, because this appeared to be the pattern with previous natural climate cycles. In the last Ice Age, for example, Britain was largely glaciated as far south as the Thames valley, and much of North America, Western Europe and North Asia were similarly affected. But while this was going on, only 1,000 miles or so to the south, there was relatively little change.

The reasons for this were not fully understood, nor was it clear that what was true for natural climatic cycles would also be true for human-induced climate change. Indeed, some of the early computer-generated climate models did actually predict an impact on the tropics, but climatologists were somewhat reluctant to accept this modelling in the face of some pretty strong evidence from a range of historical records. If, in the broad sweep of history, there were unknown climate factors that tended to "buffer" any global effects on the tropics, then one had to be cautious in suggesting that such factors could not also respond to human-induced climate change, thereby moderating its impact.

What is now becoming apparent is that human-induced climate change is likely to have a substantial impact on the tropical regions, that this impact should be expected to be thoroughly unhelpful and that the political and security implications are potentially immense. At the core of this reasoning is that human-induced climate change is likely to have a profound impact on the global distribution of rainfall, and that the impact will have four elements.

One is that there may not be major changes in rainfall patterns in the more northerly latitudes, between 50 and 60 degrees north. The second, though, is that there will be an increase in precipitation (rain and snow) in the northern and southern polar regions and the third is that there will be more rainfall over the oceans. The fourth and crucial element is that there will be much less rainfall over the tropical landmasses. In short, the tropical regions will tend to dry out (for an early account of this, see Rind 1995).

There may be some mitigating factors, in that the main greenhouse gas, carbon dioxide, will tend

to enhance crop yields as it increases in concentration in the atmosphere, and there is still a large element of caution about the impact of this tropical “drying-out”, with some differences of opinion among specialists.

There are, though, three further issues to factor in. The first is that most climate change research has tended to concentrate on assessing the impact on advanced economies, since these are the economies that finance most of the research. While modelling might necessarily be done on a global scale, scenario generation is disproportionately directed towards the North, to the partial neglect of the tropics. Thus, our understanding of the details of the impact of climate change on the tropics is inadequate.

The second issue is that even natural climate cycles can be much more rapid than was previously thought. The last Ice Age in Europe, for example, now appears to have receded in decades rather than centuries, and the implication of this is that human-induced climate change may also be similarly rapid.

The third issue is that increases in temperature in the tropics are likely to lead to more intense tropical storms, yet it is apparent that such storms have a much greater human impact in poorer countries than those that are better able to cope. In 1992, Hurricane Andrew hit parts of the southern USA. A total of 52 people were killed and the damage was estimated at US\$22 billion, over 70 per cent of it covered by insurance. Six years later, Hurricane Mitch hit Nicaragua and Honduras. A total of 11,000 people died and only 3 per cent of the US\$7 billion damage was covered by insurance (see also Hamilton, in this *Bulletin*).

4 Security and development linkages: crime, migration and social unrest

Taking all of these issues together, we are left with the strong possibility that the real social, economic and political significance of climate change will be its impact on the tropical regions, including those regions characterised by population density and impoverishment that would be least able to cope.

We are already in a global economy that has major problems of socio-economic division, with an elite of around one billion people doing conspicuously well, while an increasingly knowledgeable majority tending to be marginalised. These elites may be concentrated principally in the countries of the Atlantic community and the West

Pacific, but they are present, to an extent, in most poorer countries. The divisions have the potential to fuel what has been described as a “revolution of frustrated expectations”, which in turn has several expressions.

One has been the pronounced tendency towards high crime rates, especially in urbanising areas, and another has been the development of radical social movements such as Sendero Luminoso, the Nepalese Maoists, numerous secessionist movements and a range of movements arising from fundamental religious beliefs, not least within Islam, Hinduism and Christianity. In the current context, though, perhaps the most significant trend has been the changes in patterns of economic and political migration, especially where relatively wealthy regions are in proximity to those that are distinctly less so.

What has to be faced is the possibility that environmental constraints relating to climate change will have a further substantial impact on both of these latter trends – radical social movements and migration. The reasoning here is that if there is a substantial “drying out” of the tropics in the next three to four decades, then this will have an impact on the ecological carrying-capacity of a range of productive tropical croplands that currently support a substantial part of the entire global population, often still by subsistence farming.

If such a carrying-capacity is decreased, then a substantial increase in migratory pressures is to be expected. Given that there is already a marked antagonism to such trends in countries such as Australia, as well as many Western European states, such pressures will be resisted, with force if necessary. In this context, it is relevant to note the re-orientation of the maritime forces of countries such as Spain, Italy and France away from the east–west axis of the Cold War era to the north–south Mediterranean axis of the new century.

Resisting such migratory pressures is likely, in turn, to fuel a social and political radicalisation in those regions most under stress, with that potentially expressing itself in anti-elite movements that may be transnational in impact. In essence, the impact of climate change on the tropics may not be so much a case of having entirely new social and security consequences, but more of enhancing existing instabilities.

Although there remain some uncertainties, the current fragile state of international security would indicate that it will be wise to assume that there

will indeed be an additional and substantial impact of climate change on the poorer societies in the world community, with the probable consequences outlined above.

5 Future actions

Responses would appear to be required at three levels. The first is to greatly increase the research devoted to climatology and closely related fields such as oceanography and global ecosystem studies, with the emphasis being placed on tropical systems and their likely modification. The second is to work on the assumption that such climate change will happen, at least to an extent, and fund those adaptations that might somewhat ameliorate the effects (discussed in more detail by Huq and Reid, Hamilton, Denton and Scoones in this *Bulletin*). These would include substantial efforts to orientate agricultural systems in general, and crop breeding in particular, to lower levels of rainfall in given areas (see Devereux and Edwards this *Bulletin*).

References

- Rind, D., 1995, 'Drying out the Tropics', *New Scientist*, 6 May
- Schwartz, P. and Randal, D., 2003, 'An abrupt climate change scenario and its implications for United States National Security', *Pentagon Report*, www.ems.org/climate/pentagon_climatechange.pdf, accessed April 2004

Finally, the likely impact of climate change on the tropics will be such that there is a requirement for a much greater effort to control greenhouse gas emissions, with most of the effort necessarily undertaken by those states that are the most substantial polluters. Given the recent withdrawal of the USA from the rather modest Kyoto Protocol on climate change, this is a tall order. Even Britain, which is rather better than some other industrial states, is far behind what is required. It is probable that Britain will cut greenhouse gas emissions by around 10 per cent over the next decade or so. The requirement, if Britain was serious in controlling climate change, is a 60 per cent reduction.

Thus, the political will is currently not in evidence, either in Britain or elsewhere. Perhaps if it becomes more apparent that climate change is likely to contribute to producing a highly unstable and insecure international system, then the issue might rise rather higher up the political agenda.