

The Environmental OODA Loop

Colonel PK Gautam (Retd)

Global climate change may become what nuclear arms control was for the past half century.¹

Introduction

Observe, Orient, Decide, and Act (OODA) is a term well understood by the military. The term implies that to defeat your enemy you have to make him react. The OODA cycle has to be faster than that of the enemy.

In climate change terminology, something similar is now emerging. The adverse climate change which is largely due to anthropogenic reasons is performing OODA loop faster than humanity can cope with. Instead of controlling runaway climate change or "mitigation", we are witnessing a losing battle where we are forced to only "adapt" to terms being dictated by natural disasters. The intensity, frequency and consequences of the climate change are faster than the OODA loop of mankind. Rather than proactive, we are being reactive.

Another way of classifying this "threat" is to term the adverse weather events, episodes, and disasters as strategic, and tactical battle indicators. Regular onset of late winter and an early scorching summer or steady retreat of Himalayan glaciers could be called strategic indications. The fires in Iberian peninsula in the summer of 2005, the repeat of floods in the Danube in April 2006 and the famous 'shock and awe' hurricane that struck New Orleans in August 2005 could be called tactical or late indications. In a tactical timeframe and situation when disasters are "managed", not much of strategic posturing matters. This is the bitter lesson of recent disasters and extreme climate.

Climate Change as a Security Threat

The surface air temperature in most parts of India has increased by half a degree centigrade during the second half of the 20th Century. The surface air temperature in the Himalayas

Colonel PK Gautam (Retd) is a Research Fellow at IDSA.

Journal of the United Service Institution of India, Vol. CXXXVII, No. 567, January-March 2007.

has, however, increased by one degree centigrade during the same period.² The United Nations Environmental Programme conducted a recent survey covering 50 countries in which environmental experts and research scientists perceive climate change as a dominant environmental issue. The survey found that 51 per cent of scientists considered climate change as the major environmental problem facing humanity.

Climate change or global warming cuts across nearly all boundaries of conceptualisation of security. It is an international security concern. Undoubtedly, it affects human security. It impacts water, food and energy security. It affects national security where resources dwindle leading to a struggle over them in an age of rising population and expectations. Coastal areas are under threat of storm surges and rise in sea level. So are the inhabitants of the Indo-Gangetic plains and major parts of India and the entire Pakistan Indus basin, which is dependent on the Himalayan glaciers. These glaciers also feed the rivers of China and South East Asia. Any adverse impact on the glaciers would lead to a cascade of disasters on nearly half of humanity.

The adverse effect of climate change has a relationship with population of the area. More the number of people in a given area, the greater are the chances of being affected by climate change and related disasters. Briefly, two aspects are being highlighted as under:-

- (a) Human settlements and destruction of natural barriers.
- (b) The eco-politics of climate change.

HUMAN SETTLEMENTS AND DESTRUCTION OF NATURAL BARRIERS

Tsunami of 26 December 2004

The tsunami disaster which struck the Indian Ocean on 26 December 2004 made us aware of the fury of nature and our inability to be masters of it. It has humbled us. The tsunami was due to an earthquake in the ocean floor. Though the tsunami was not a result of climate change, its capacity to inflict disaster and loss of life was exacerbated due to flouting of the Coastal Regulation Zone (CRZ), and tampering with the natural eco-systems

such as mangroves, which are natural speed breakers. When a cyclone hit the Orissa coast in 1999 maximum devastation was in areas devoid of mangroves. Not many lessons from its consequences were learnt. Noted science fiction writer Arthur C Clarke who is settled in Sri Lanka criticised the plundering of coral reefs and mangroves along Sri Lanka's coast. According to him the damage caused by the tsunami may have been less if this had not happened.⁴

Post tsunami, a comparative study of the death toll and destruction on the coast of Tamil Nadu shows that the maximum damage took place where mangroves were absent. The high density of population led to disappearing of mangroves over decades. The least damage was in regions which had thick mangroves.⁵ As a measure of good environmental stewardship to enhance tourism, the Maldives purposely preserved its barrier reefs which absorbed the brunt of waves, so what hit the islands was a gentle swell, not a deadly wall of water.⁶

Mumbai Rains of July 2005

Drainage. A clear lesson that emerges from the flood related events in Gujarat and Maharashtra is complete neglect of drainage, due to rapid urbanisation, blockage of drains with waste of sorts, destruction of natural ecosystem like wetlands and ill planned construction. While these events have shifted focus away from floods in the villages to urban areas ; one factor that is common to floods in agricultural lands and urban areas is drainage congestion and the neglect of storm water drains. This happens when natural path of water flow of a river, stream or nullah is reduced or outlet of flow is obstructed by construction of infrastructure such as high embankment roads, railway tracks, urban conglomerates and so on.

Natural Ecosystems. Natural cushions or buffers such as wetlands, lakes and ponds have been encroached upon and converted to concrete construction for urban infrastructure and housing colonies. Besides problem of drainage, it has led to drastic reduction in the ground water recharge. Mithi river in Mumbai was converted to an urban drain clogged with solid waste including non biodegradable plastic.

Hurricane Katrina of August 2005

The ferocity of Katrina cyclone which hit the USA was due to global warming.⁷ According to Professor Kerry Emanuel of the Massachusetts Institute of Technology (MIT) hurricanes have become more destructive over the past 30 years as a result of ocean surfaces becoming warmer.⁸ Not unlike Mumbai, wetlands around New Orleans, which provided a vital protection against flooding and tidal surges, had been drained and built upon.

Extreme Weather Events

Other examples of extreme weather events are freezing of Moscow in late winter and early spring of February 2006; in North India, February 2006 became as hot as April while March reversed the trend and it felt like February.⁹ Local strain on crop output has been reported on this account. This adversely affects food security.

One Planet Many People

The environmental atlas of the UN titled *One Planet Many People* (June 2005) shows through remote sensing the devastation of the earth's habitat. The *UN Millennium Ecosystem Assessment Report* released in July 2005 warns that two third's of world's ecosystem are degraded. One key point is that degradation will be felt in the next five to 50 years.

Experts warn that there are too many people in nature's way. Between 1994 and 2003 more than 2.5 billion people were affected by floods, earthquakes, hurricanes and other natural disasters, which is 60 per cent increase over the previous two decades. In the 1970s, only 11 per cent of earthquakes affected human settlements, which went up to 31 per cent in 1993-2003.¹⁰

THE ECOPOLITICS OF CLIMATE CHANGE

The Kyoto protocol for members has come into force. It is considered only the first step. It is ambitious and the current state of knowledge indicates that global emissions have increased by 60 per cent over the 1990 levels.¹¹ It has been estimated that the carbon dioxide (CO₂) and the green house gases from Europe, Japan, US and other industrial countries would grow by 17 per cent during the period 2000 to 2010.¹² The Pew Centre has estimated that 60 per cent or greater reduction, will ultimately be

needed to avert serious impacts of climate change.¹³ But restructuring of the world economy to mitigate global warming "demands nothing less, an entire overhaul of the global economy, which is currently based on the very fossil fuel whose combustion we can no longer afford, but whose replacement remains technologically, economically, and politically more challenging than perhaps any transition in modern human history."¹⁴ To accommodate aspirations of developing countries, the global economy needs to expand five fold over the next 50 years, food production needs to double and energy production triple.¹⁵ In order to achieve these targets with limits of atmospheric tolerance, human induced CO₂ emission will have to be restricted. The requirement would be to increase non-fossil fuel to nearly 80 per cent by 2050.¹⁶

India is vulnerable to climate change. Climate projections indicate upsetting of rainfall patterns and variability in precipitation. Severity of drought and intensity of floods are, therefore, likely to increase, placing food security at risk. Long-term irreversible impacts on forest eco-systems and bio-diversity are predicted. Sea level rise would threaten coastal regions. Malaria will move to higher altitudes. We need strategies to adapt to the change.

Those who polluted the atmosphere historically were required to control emissions. The developing countries were exempt from obligations to reduce emissions. In short, the industrialised countries were to mitigate the drivers which were causing global warming. Mitigation was considered one step to control adverse effect of climate change. India though not bound to cap emissions by the Kyoto Protocol has taken measures to reduce harmful green house gas emissions. These include increase in use of renewable sources for energy, afforestation, switch to cleaner fuels and measures such as increased share of service sector in gross domestic product (GDP). In absolute terms our green house emissions in the year 2020 would be below five per cent of global emissions and the per capita emissions will be low compared to most of the developed countries as well as the global average.¹⁷

Unfortunately not much restraint has been demonstrated by the developed countries. We need to overcome the vicious circle of the OODA loop being delivered to us by nature.

References/ Endnotes

- 1 Thomas C Schelling, "What Makes Greenhouse Sense?", *Foreign Affairs*, May/June 2002, p.9.
- 2 J Srinivasan, Guest Editorial, *Current Science*, Vol. 90, No. 3, 10 February 2006, p.273.
- 3 NH Ravindranath et al, 'In this Issue', *Current Science*, Vol. 90, No. 3, 10 February 2006, pp. 271.
- 4 PK Balachandran, "Lanka coral mining to blame: Clarke", *Hindustan Times* (New Delhi), 16 January 2005.
- 5 Ratan Kar and RK Kar, "Mangroves Can Check the Wrath of Tsumani", *Current Science*, 10 March 2005.
- 6 Carl Pope and Bjorn Lomborg in a debate in "The State of Nature", *Foreign Policy*, July-August 2005, p.71.
- 7 As quoted by Patricia Reaney, "Fierce hurricanes", *The Tribune* (Gurgaon), 9 September 2005 and Paul Brown, "Storm threat has doubled", *Guardian*, Newspaper Limited 2005 reproduced in *The Hindu* (Delhi), 27 August 2005.
- 8 Elisabeth Rosenthal, "Global warming ; Adaptation to a new reality", *International Herald Tribune*, 11 September 2005.
- 9 The historic North Indian calendar has six seasons or *Ritus* of two months each, viz, *shishira* (*magh-phalgun*), *vasant* (*chaitra-baisakha*), *grishm* (*jyestha-assadha*), *varsha* (*sravana-bhadra*), *sharad* (*asvina-kartik*) and *hemant* (*margashuira-paus*). In practical terms these seasons have become folklores and stories which grandparents could narrate for a few more decades. Early spring and late winter is the norm now with disappearing of the six seasons.
- 10 Anon, "Too Many People in Nature's Way", *The Times of India* (New Delhi), 7 September 2005.
- 11 BBC news service (television), 18 December 2004.
- 12 Patwant Singh, *The World According to Washington: An Asian View* (New Delhi: Rupa and Company, 2004), p.159

- 13 Ibid. p.160.
- 14 Bill McKibben, "Crossing the Red Line", *The New York Review of Books*, 10 June 2004, p.33.
- 15 John Steinbruner and Nancy Gallagher, "Construction transformation: an alternative vision of global security", *Daedalus*, Summer 2004, p.88.
- 16 Ibid.
- 17 n. 3.

RATE CARD - ADVERTISEMENT IN JOURNAL

	Black and White	Coloured
Full Page	Rs. 2,500/-	10,000
Four Consecutive Full Pages	Rs. 8,000/-	36,000
Half Page	Rs. 1,500/-	10,000
Four Consecutive Half Pages	Rs. 5,000/-	36,000