

Surviving the *Tipping Points*

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What we proudly called as 'modern civilisation' is being slowly rechristened by many as the 'fossil energy civilisation'. Beyond the short-lived glitz and glamour of our numerous artefacts, we are moving towards slow death by suffocation from the fumes spewed by our smoke-belching industries, power plants, and automobiles. We are altering the chemical constitution of the earth's atmosphere on a planetary and geological scale, in a manner never witnessed before. The concentration of carbon dioxide in the atmosphere which was 270 parts per million (ppm) in the early nineteenth century, is today about 375 ppm. The evidence of warming of the planet is available in plenty. There are scientific reports on glacial melting from the Arctic to the Himalayas, increased frequency of cyclonic storms in various parts of the world, vast and erratic changes in micro-climates in various regions, leading to heat-stroke deaths in Europe and California, droughts in certain regions, and floods in others – neither experienced earlier or in recent history by these habitats.

The most alarming is the recent revelation by University of Pennsylvania researchers, about the possibility of climatic catastrophes like glacial melting visiting us much earlier than originally predicted. Richard Alley, scientist from the university says: "We used to think that it would take 10,000 years for melting at the surface of an ice sheet to penetrate down to the bottom. Now we know that it does not take 10,000 years; it takes 10 seconds." This quote is an indicator to why scientists are panicky about the sheer speed and violence with which climate change could take hold. Fred Pearce, the famous environmental author of 'The Last Generation', reported this possibility of an alarming 'global meltdown' in the 'Guardian', London, dated 30 August 2006. Glaciologists have now discovered the role of 'crevasses'. It has been observed that ice melts at the surface and forms lakes that drain down into the crevasses. In ten seconds the water is at the base of the ice sheet where it lubricates the joint between ice and rock. Then the whole ice sheet starts to float downhill towards the ocean. Scientists observed that during the summer of 2006, lakes several kilometres across formed on the Greenland ice sheet, and drained away to the depths. They have also taken measurements of how, within hours of the lakes forming, the vast ice sheets physically rose up, as if floating on water, and slid



towards the ocean. As a result, average sea level rise in the Atlantic Ocean has increased from 2 mm a year in the early 1990s to more than 3 mm a year now. Soon it could be much more. George Bush's top climate modeler Jim Hansen of NASA, predicts that sea level rise will be ten times faster within a few years, as melting of Greenland glaciers accelerate.

The August 2006 issue of 'Scientific American India' reported the new studies connecting climatic change and crustal geology. It is a well established fact that there is a relation between climate and surface topography; new findings connect it with depth geology also. Crustal geology of the Himalayas has a role in facilitating monsoons! The web of life is really complex. Evidence of massive glacial melting in the upper Himalayas are now available. All this sounds alarming. Hence, the foolishly optimistic have constructed a huge denial industry. Beyond differing news, there is a consensus that we are about to return to a world of climatic turbulence. The impacts are not going to be gradual; sudden changes will happen when we cross 'tipping points'. Climate destabilisation can result in several other related tipping points, viz. sudden destruction of rain forests, sudden release of massive amounts of methane stored in permafrost and ocean bed sediments, etc... Such sudden changes have happened in the past and are likely to occur again in the future.

The issue is whether we have already past the point of no return or we have some more time to turn things around. Here again, opinions differ vastly. But one thing is sure. The time available to us for restoring our ecosystems to health is as short as ten to twenty years. Still, there is very little public debate or education on the subject. We can forgive the 'Page 3' obsessed media for their neglect. But what about the rest of civil society? I am an optimist and I wish to remain one. So, amid the chaos, I look for signs of positive change. At least we need to project that whatever happens will be for the good! Like the famous Christian philosopher Teilhard de Chardin, we could see all this as the inevitable process of evolution and change for the better. But optimism has to be supported by a large body of positive action. There is a lot happening, but we need to do much more. There is certainly life after the fossil energy civilisation and the *tipping points* created by it.