

## The Deteriorating balance between Nature and Economics

Alem Ao

Planet Earth is dying. With changes in the atmosphere, waste of resources and the consequent pollution, ongoing deforestation and the destruction of fisheries, the rapidly spreading deserts and the mass extinction of species, biological life arrayed in complex ecological splendor that set the conditions for life is threatened as never before.

Globally air, water, land and ocean ecosystems are collapsing. Global inequities in human wealth, health and justice continue to soar. A recently released World Wild life Fund (WWF) report indicates that "a third of the natural world has been destroyed by humans over the past three decades."

Several recent scientific studies indicate that rates of human consumption have surpassed the rates whereby the Earth can replenish itself - a condition termed "ecological overshoot".

The world population has trebled in the last hundred years. With increase in global population there is a corresponding increase in demand for natural resources. Environmental degradation resulting from increase in population has had an impact on many of the resources that we take for granted. If the resources available today are far greater than those in the past, the threats we face are also far greater.

With the dynamic interplay of socio – economic, institutional and technological activities, the cause for environmental degradation is the magical 'human touch', which invariably leads to the deterioration of the environment across all verticals of water, land and energy.

Humans have altered the planet more violently and rapidly in the past 50 years than in any comparable time in human history. With accelerated technology and the given continuation of current trends the impending global ecological collapse is inevitable.

### **Stress on Food**

The United Nations World Food Programme (WFP) and the Food and Agriculture Organization (FAO) insist that there are a significant number of people at risk of food insecurity. Global food security will remain a worldwide concern for the next 50 years and beyond. Recently, crop yield has fallen in many areas because of declining investments in research and infrastructure, as well as increasing water scarcity. In 1990 a total of 780 million people out of 4 billion in the developing world are living on diets that are not sufficient to maintain a healthy life (FAO).

Demand for food is influenced by a number of forces, including population growth, income levels, urbanization, lifestyles, and preferences among others. Almost 80 million people are likely to be added to the world's population each year during the next quarter century, increasing world population by 35 percent from 5.7 billion in 1995 to 7.7 billion by 2020 (UN 1996) which suffice to say would only increase the demand for food. In the 1990s global poverty fell by 20%, but the number of hungry people rose by 18 million.

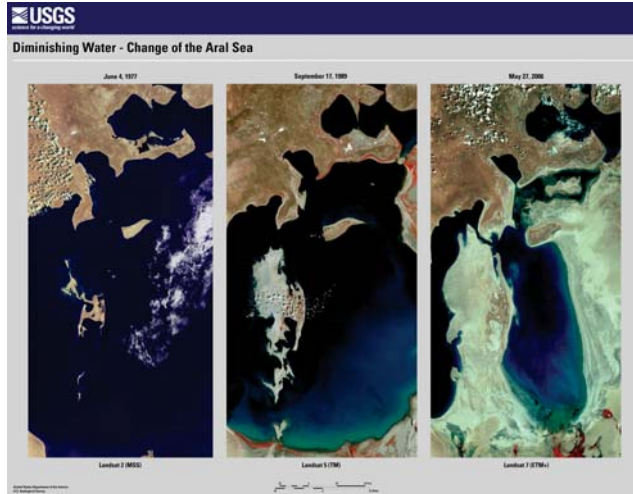
Much of the world's best cropland is already in use, and farmers have to turn to increasingly marginal land. And the good land is often taking a battering - soil degradation has already reduced global agricultural productivity by 13% in the last half-century. This gives rise to an externalization of scarcity: the quantity of available fertile land cannot be augmented by human actions; it is determined externally.

With excess fertilizers running off farmland, from livestock manure, and from other human activities, it is changing the composition of species in ecosystems, reducing soil fertility, depleting the ozone layer, intensifying climate change, and creating dead zones in the Gulf of Mexico and other near-coastal seas. The sheer amount of the Earth we need to produce our food has an enormous impact.

### **Stress on Water:**

A study of the global water inventory shows that a very minute portion of the global water is actually needed for humans. But with over six billion people living on the planet this makes the per capita availability of water very low indeed. Adding to the stress on water is the fact that most of the water resources have been used wastefully.

The world is running up a water deficit. Some of the most wide spread indicators of the water scarcity are rivers running dry, wells going dry and lakes disappearing. Water tables are falling on every continent as the demand for water outruns the sustainable yield of aquifers. The development of diesel and electric pumps has led to a phenomenal increase in the amounts of water being extracted from ground water sources. As water tables are falling through out the globe the springs that feed rivers go dry, reducing river flows.



The changing faces of the once mighty Aral Sea

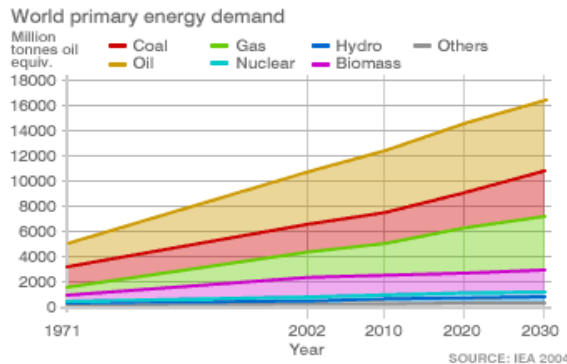
A third of the world's population lives in water-stressed countries now .By 2025, 1.8 billion people will live in countries or regions with absolute water scarcity.

**Stress on Energy:**

In an energy starved, searing and polluted Planet, with inadequate water, unproductive lands and military resource grabs; we are running out of cheap energy despite our best intentions. Peak oil is expected in no more than thirty years, or likely much sooner.

The industrialized world's prosperity is based upon unsustainable rates of energy consumption. Americans are 4% of the world population, yet consume about 25% of the world's petroleum - much going towards feeding their automobiles. If every last bit of oil is to be ripped from the Earth and burned before alternatives are seriously pursued, large natural ecosystems and the global atmosphere will cease to function in the manner they have throughout history. A post-petroleum World will face widespread poverty, persistent environmental problems and a dearth of energy adequate to meet basic needs.

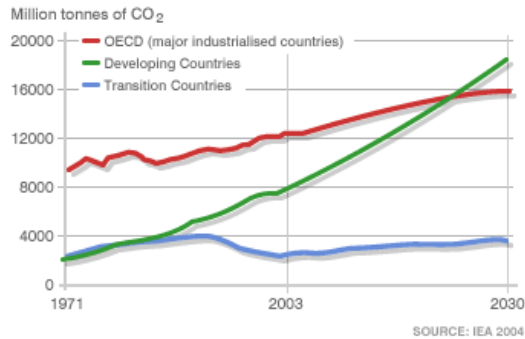
Fossil fuels – coal, oil and natural gas -- currently provide more than 85% of all the energy consumed in the world. Moreover, it is likely that world's reliance on fossil fuels to power an expanding economy will actually increase over at least the next two decades even with aggressive development and deployment of new renewable and nuclear technologies.



Global energy demand is projected to increase by 60% in the next 25-30 years as developing countries industrialize and rich countries continue to guzzle power, according to the International Energy Agency. Fossil fuels will continue to dominate, estimated to account for 85% of new demand.

The global rise on temperatures is a well documented fact and point towards an enhanced greenhouse effect. The all-time high in 1998 was 14.69 degrees Celsius. Over the last century, the average global temperature climbed from 13.88 degrees Celsius in 1899-1901 to 14.44 degrees in 1999-2001, an increase of 0.56 degrees. But four fifths of this gain came in the century's last two decades. By 2100 global temperatures are expected to increase in the range of 1.4 to 5.8 degree Celsius and the sea level is expected to rise about 9-88 cm.

The world community faces many risks from climate change. Emissions of long-lived greenhouse gases into the atmosphere are predicted to lead to a significant anthropogenic influence on the climate; repercussions of the climate effect with the oceanic circulation and the dynamic of the polar ice-masses are to be expected.



**Carbon-emissions**

Carbon emissions - a major cause of global climate change - are set to increase by 60%. As developing countries' share of world energy demand surges from 38% to a predicted 48%, poor countries are expected to contribute two-thirds of the projected increase in carbon emissions.

Over the 20th century sea levels rose between 10 and 20 centimetres (4-8 inches). There are many variables – including how much the expected increase in precipitation will add to snow packs and most importantly, our greenhouse gas emissions over the next decades. Even a small amount of sea level rise will have profound negative effects.

Potential global change from increasing Ultra Violet rays and glacial retreat may have heterogeneous effects on subarctic marine systems. Projected climate change over the next century will further affect the rate at which glaciers melt. Simulations project that a 4°C rise in temperature would eliminate nearly all of the world's glaciers (the melt-down of the Greenland ice sheets could be triggered at a temperature increase of 2 to 3°C). The report published by IPCC (TAR 2001) projected that the small glaciers will disappear entirely while the larger ones will shrink to about 30% of their current size.



Glacier melt in the Himalayas is projected to increase flooding, rock avalanches from destabilized slopes, and affect water resources within the next two to three decades. This will be followed by decreased river flows as the glaciers recede.

Gaumukh glacier

Melting glaciers and permafrost may be at a stage where there is no turning back. As they contribute their fresh water to the oceans and as methane gas is released these events will further accelerate global warming.

**Stress on Environment**

For a few tenths of a point of economic growth forests are being traded daily, and there is a bounty on free green or any other kind of thinkers.

Globally, we have taken over about 26% of the planet's land area (roughly 3.3 billion hectares) for cropland and pasture, replacing a third of temperate and tropical forests and a quarter of natural grasslands. Another 0.5 billion ha has gone for urban and built-up areas. Habitat loss from the conversion of natural ecosystems is the main reason why other species are being pushed closer to the brink of extinction. Forest and natural vegetation covers all over the world are shrinking at an alarming rate. While they still cover 1/4<sup>th</sup> of the planets area, they are being lost at the rate of 11.30 million ha every year.



Extraction of wood for fuel and commercial logging has also led to the shrinking of forest areas. The World Resource institute estimates that 40 % of the world's intact forests will be gone in less than 20years. This will generically lead to reduced precipitation, rise in temperatures, changes in climatic conditions, increase in GHG etc. By 2020, plantation production is projected to meet 44 percent of global wood demand

According to a recent report in Science, the Amazon rain forest has lost nearly two million acres to logging each year since 1996. This alarming loss of trees in the world's largest rain forest could increase the amount of atmospheric carbon dioxide by roughly 200 tons each year.

The destruction of forests means destruction of habitat for wildlife. Species of all kinds are threatened by habitat destruction, principally through the loss of tropical rainforests and this rate will only accelerate species and habitat loss.



The unique Royal Bengal tigers are also on the list seriously endangered species. Most species in the region of the Sundarbans face threat of extinction form global increase in sea levels.  
(Pic courtesy Sanctuary Asia)

According to the World Conservation Union – IUCN Red List of Threatened Species (2000) 12 percent of the world's nearly10, 000 bird species; 24 percent of the world's 4,763 mammal species; and an estimated 30 percent of all 25,000 fish species are vulnerable or in immediate danger of extinction. Diseases and death due to toxins has also increasingly become a common cause of loss of biodiversity. The most publicized example is DDT, an insecticide that was used all over the world. These toxic substances (along with others like Polychlorinated Biphenyls) have caused eagles and peregrine falcons to produce eggs that had shells so thin that they broke just from the mother sitting on them.



The primates are one of the most critically endangered species. Habitat destruction is the main cause for its decline. The Bush meat trade is another major factor for the extinction of primate species, especially for the east and West African countries.

Golden Langur (pic courtesy Sanctuary Asia)

Water pollution and increased water temperatures have wiped out endemic species of fish in many habitats. Oil spills destroy birds, fish, and mammals, and may contaminate the ocean floor for many years after the event. Acid rain, the toxic result of extreme air pollution, has been known to kill organisms in freshwater lakes and destroy large tracts of forested land.

Among the three ecosystems that supply our food – croplands, rangelands, and fisheries – the excessive demand on fisheries is perhaps most visible. In the last fifty years, accelerating population growth and steadily rising incomes drove the demand for seafood upward at a record pace. At the same time, advances in fishing technologies, including refrigerated processing ships that enabled trawlers to exploit distant oceans, dramatically boosted fishing capacity. If the present pace of the fishing continues around the world there is more chance that more and more species will vanish and there will be a global collapse in already declining fisheries.



Fishing in the Sundarbans  
(Pic courtesy Sanctuary Asia)

**Stress on Population:**

Current trends of population growth which stands at about 80 million people per year is projected to reach an astounding rate of about 50 million by 2050. Today it stands some 6.6 billion people and with such a projection population will hit an estimated 9.2 billion by 2050. With this surmounting increase, population would only be tantamount to the ever increasing stress on all verticals including food, water, energy and the environment. The core of the tremendous stress as aforementioned can only be traced back to the human factor. More people would lead to more consumption of food, water and energy which would further lead to depleting the environment of its resources which then leads to drastic climatic changes.

Within the biosphere there exists a sort of steady state, maintained by the various cycles and feed back mechanisms that are operating within it. Behind every cause, there is an effect and behind every effect, there is a cause. As it is, the system tries to remain causeless and "effect-less". But when we human beings, out of ignorance produce causes, it manifest as effect that further fuel new causes till it reaches certain maximum where it collapses and reverses. This cause and effect flows from the minutest organism to infinity and a decline on any one vertical is not isolated but affects the equilibrium of every existential value chain. The cycle does not restrict itself to parameters.

## *NaturalGist*

- 🍃 The Dying Earth: Biological life arrayed in complex ecological splendor that set the conditions for life is threatened as never before with dramatic changes over air, water, land, and environmental verticals. The cause for such environmental degradation is the magical 'human touch' with human population surpassing the rate at which the Earth can replenish itself leading to ecological overshoot*
- 🍃 Stress on food: Demand for food influenced by a number of forces, including population growth, income levels, urbanization, lifestyles, and preferences among others.*
- 🍃 Stress on Water: With over six billion people living on the planet the per capita availability of water is very low. Adding to the stress on water is the fact that most of the water resources have been used wastefully.*
- 🍃 Stress on Energy: We are running out of cheap energy despite our best intentions The industrialized world's prosperity is based upon unsustainable rates of energy consumption.*
- 🍃 Stress on Environment: Habitat loss from the conversion of natural ecosystems is the main reason why other species are being pushed closer to the brink of extinction.*
- 🍃 Stress on Population: Today population stands at 6.6 billion people, which is projected to hit an estimated 9.2 billion by 2050. With this surmounting increase population would only be tantamount to the ever increasing stress on all verticals including food, water, energy and the environment.*
- 🍃 To sum up: All the natural resources are under severe strain with the increasing parasitical footprint that the human race is leaving on Planet Earth.*