Warning on Climate Catastrophe
Natural Resources available for 2009 exhausted by September 25th!

by Asoka Abeygunawardana

The Global Footprint Network (GFN), an international think tank working to advance sustainability through use of the concept "Ecological Footprint", has announced this year's Earth Overshoot Day as September 25th. The Earth Overshoot Day unlike other international days cannot be fixed to a particular date in the calendar year as the overshoot changes with human activity occurring each year. Before 1986 the global community consumed resources and produced waste at a rate consistent with what the planet could produce and reabsorb. The first Earth Overshoot Day was witnessed at the end of December 1986. Since then the Earth Overshoot Day gradually advanced: in 1990 - early December, 1995 - mid November, 2000 - early November, 2005 - early October and by 2009 it has advanced to September 25th. What is this Earth Shoot Day and why it is advancing?

The Earth Overshoot Day is the day when humanity begins living beyond its ecological means in a calendar year. Beyond that day, the resources we utilize cannot be regenerated by the planet. Overshoot happens when the Ecological Footprint exceeds available bio-capacity. Hence the Earth Overshoot Day year marks an unfortunate milestone each year. In 2009 humanity finished its natural resources quota by the 25th of September. What happens after 25th September? From now until the end of the year, we will meet our demand for ecological services by depleting resource stocks and accumulating waste in the surrounding - air, water & land. For example we will cut trees faster than they re-grow; catch fish at a rate faster than they repopulate and emit CO_2 faster than it can be absorbed. We currently maintain this overshoot by liquidating the planet's natural resources.

Exploitation of natural resources by humankind is increasing at the same rapid rate as the rate of economic development. That is the reason for the Earth Shoot day to advance annually. Unlike governments, nature doesn't do bailouts. This can be done for a short while but overshoot ultimately leads to catastrophe. GFN calculations show that if human beings continue with "business-as-usual", according to moderate U.N. projections, in less than 25 years humanity will require the regenerative capacity of two planets – a level of demand that is likely to be physically impossible to meet: The catastrophe! More than two decades since humankind first went into overshoot the process has become irreversible now and we are currently witnessing urgent threats in climate change, biodiversity loss, shrinking forests, declining fisheries, soil erosion and freshwater stress. The signs are clear: Nature is running out of credit to extend. It is quite very apparent that modern day economic development has a direct impact on world overshoot. With the ultimate (foolish and misguided) objective of people living in the developing world to keep advancing as quickly as possible towards the lifestyles of the developed world, everyone will live like an American citizen, Earth Overshoot Day will be in March and we will require the regenerative capacity of four planets!

Every year, GFN calculates humanity's Ecological Footprint (the amount of productive land and sea area required to produce the resources we consume and absorb our CO_2 emissions) and compares that with bio-capacity (the ability of ecosystems to generate resources and sequester CO_2). The ecological footprint defined by GFN provides one indicator of the relative utilization of environmental space by measuring per capita consumption of renewable natural resources. All human activities on earth are categorized under six headings: built-up land, energy, cropland, grazing land, fisheries, and forest.

For the survival of the 6.5 billion population living on earth at present:

- *Built-up land*: provide accommodating infrastructure for housing, transportation and industrial production.
- *Carbon uptake land:* gives provision to emit CO_2 while producing energy by burning fossil fuels (coal, oil and natural gas)
- *Cropland:* provides food, animal feed, fiber, oil crops and rubber
- *Grazing land:* produces meat, hides, wool and milk
- *Fishing grounds:* for consumption of fish and other marine products
- *Forest*: for harvesting timber, fuel wood and wood fiber for paper

The area of land or sea available to serve the human being is called bio-capacity, and represents the biosphere's ability to meet human demand for material consumption and waste disposal. The Ecological Footprint measures human use of ecosystem products and services in terms of the amount of bio-productive land and sea area needed to supply these services. Overshoot is calculated by subtracting bio-capacity from the Ecological Footprint. The biologically productive physical land is converted to global hectares using yield factors and equivalence factors so that Ecological Footprint can be directly compared to bio-capacity. Further it will allow comparisons between various land use types with differing productivities.

The bio capacity of Sri Lanka is calculated at 0.4 global hectares (gha) per capita in 2008 and the global corresponding figure is 2.1 gha per capita. As the population density in our country is high the global hectares available per person in Sri Lanka is low. The ecological footprint in Sri Lanka is 1 gha per capita and the global figure is 2.7 gha per capita. Accordingly Global average overshoot and the Sri Lanka overshoot are the same (0.6 gha per capita). To put this simply, for an average Sri Lankan, the land available in Sri Lanka is not sufficient and each person needs to have an additional land of 0.6 global hectares to maintain his or her lifestyle. The global situation is exactly the same.

The results of overshoot are already visible. The International Union for Conservation of Nature (IUCN) says that 75% of genetic diversity of agricultural crops has been lost due to human interventions; 75% of the world's fisheries are fully or over exploited by the human; 90 percent of all large fishes have disappeared from the world's oceans in the past half century, the devastating result of industrial fishing. Every second a parcel of rainforest the size of a football field disappears. Every year between 17,000 and 100,000 species vanish from the planet. 1/3rd of reef-building corals around the world are threatened with extinction. As a result of the damage done it is not possible to avoid a global temperature increase of 2 degrees Centigrade.

Globally the major component of the overshoot is nothing else but burning of fossil fuels. The situation with respect to climate change is much more serious than what Global Footprint Network claims. The GFN assumes that all fossil carbon emitted by burning fossil fuels can be stored as bio carbon if the land is available for planting trees. The global carbon cycle can be divided into two categories: the geological/ancient (fossil-carbon), which operates over large time scales (millions of years), and the biological/modern (bio-carbon), which operates at shorter time scales (days to thousands of years). So it is practically impossible to store all the fossil-carbon released to the atmosphere by burning fossil fuels as bio-carbons in vegetation as there is no land left on earth for carbon sequestration and the Carbon emissions overshoot does not start on September 25th but on January 1st. The world leaders are supposed to meet at Copenhagen to tackle the most prominent consequence of our ecological overspending: climate catastrophe.