Damage to Ecology and Mangrove Forests

Next to human lives the forests (trees) have in fact taken the worst battering and fallen the biggest victims to the super cyclone. Even the density of the protected reserve forests has thinned with over 100,000 trees destroyed there. And once the picturesque stretch of casurina plantation along the entire 480 km coastline is almost gone.

In nutshell :

- 90,00,000 trees along the entire coastline have been damaged
- 1,00,000 trees in the protected or reserved forests have been destroyed
- 1,500 km - 2000 km of roadside plantations, including 480 km of casurina fields have almost vanished from the landscape
- 37 percent of Orissa's geographical area comprised of forests in 1981. It is now down to 19 percent (India Today, December 13, 1999)

The super cyclones not only ravaged the forests in that area but also very badly affected the livelihoods of the local people. The rural population not only needs fuelwood for their day to day energy use, but also the non-timber forest produce like roots, tuber, leaves, fruits medicines and even leaves for plate making to earn their livelihoods.

To regain the trees lost in the cyclone, the state needs to plant 23 crores saplings (1 crore = 10^7) to cover the losses.

18000 ha of coastal shelter-belt plantation, 7000 ha of plantations, 18000 ha of mangrove forests have been completely ravaged by the super cyclone. An estimated **90 million trees have been damaged or uprooted**.

The destruction of mangrove forests have serious ecological implications in the coastal areas. These mangrove forests acts as a wind shield, prevent damage due to storm surge. The destruction of coastal mangrove forests due to human intervention e.g. spread of agricultural farm, ports and infrastructure, industry also aggravated the impact of the super cyclone.

Mangrove forests are the unique ecosystems. It offers significant and unique habitat to birds, mammals, fish populations by establishing a complex marine food chain, creation of breeding habitat (Figure 6). In addition, the anchoring root system of mangroves contribute to improved water quality by filtering and assimilating pollutants, stabilising bottom sediments and protecting shorelines from erosion (Vandana Shiva & Ashok Emani, March, 2000).

Some Other Aspects of the Human Dimensions of the Orissa Super Cyclone as Reported by the Media

"For Orissa's weeping millions, there may not be life after the disaster. Battered and benumbed, they have been orphaned and forsaken....."

Some interviews by the media with the affected people are really very touching.

"I wasn't poor, but I am now. Overnight the storm has turned me into a pauper" (a villager from ERSAMA - a worst affected block).

"My family (wife, three sons and two daughters) was drowned. My land is gone. My cattle are dead. I have lost everything (a villager from JHATIBARI).

"As Orissa weeps India must ensure it does not weep alone. As a nation we can be remarkably indifferent, too caught up in our lives to find time to grieve. But adversity brings with it opportunity and the super cyclone in Orissa offers us one..... If we fail them we would have failed ourselves".[1]

The media coverage depicts very clearly the human dimensions of the Orissa Super Cyclone. It also brings out that such a calamity cannot be tackled by the State of Orissa alone, it is a calamity for India and infact a global calamity and must be tackled as a global efforts to redress the suffering of the weeping millions of Orissa.

Conclusion

It is not clear to what extent the effects of Climate Change, global warming, sea level rise contributes to the development of such tropical cyclones, their intensity and damage. A considerable in depth research would be needed to establish clear linkages between climate change and the intensity of the tropical cyclones. It is a clear area where international joint efforts are needed of the organisation like WMO, UNEP, IPCC, UNFCCC to take up a **short term as well as long term research to understand the linkages between such extreme events like the Orissa Super Cyclone and Climate Change**, and to recommend to the cyclone prone states to take up preventive measures to reduce the sufferings of people and loss of lives, property, to the economy.

Besides such scientific research and investigation the main issue of world concern is how to bring down the human suffering from such extreme events.

Can we in retrospect **analyse the lessons learned** during such extreme events and incorporate such lessons learned in response strategies and state policies to address to mega disasters like the Orissa Super Cyclone in the future ?

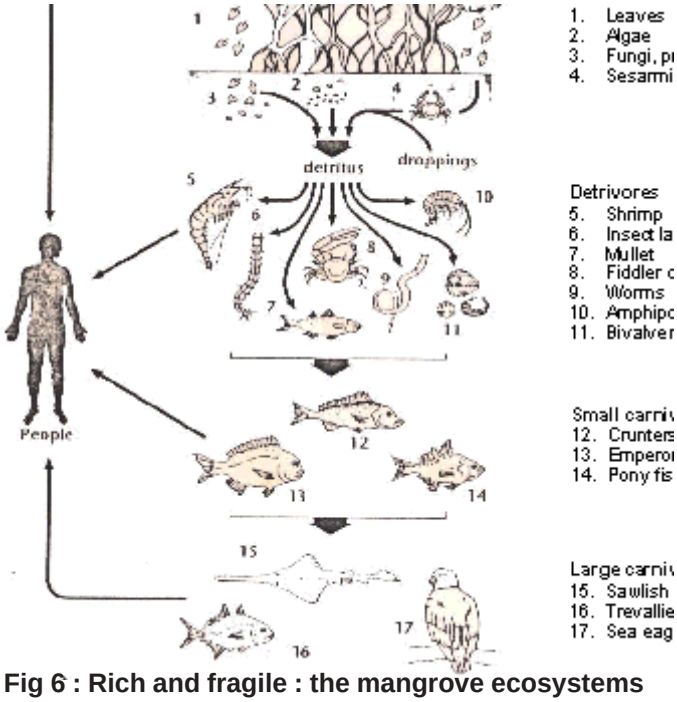

Fig 6 : Rich and fragile : the mangrove ecosystems

Source : Berjak et at (1977), in *Oil and Gas Exploration and Production in Mangrove Areas*

The Orissa Super Cyclone that ravaged the Orissa coast reminds us the need for the industrialised countries to speed up the implementation of the Kyoto Protocol. This will start the process of attaining the ultimate objective of the United Nations Framework Convention on Climate Change (UNFCCC) for stabilisation of the green house gas concentrations particularly of CO_2 in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

[1] *India Today, Nov 29, 1999*