Who will the Police The Protectors?

By Bittu Sahgal, Editor, Sanctuary magazine

Ecosystem services have been used by humans to great advantage since the beginning of human history, not only have economists failed to evaluate such services effectively but also they have failed to understand the complexity and integrity of these services that interweave our lives with nature, and as a result, these vital public assets have consistently been taken for granted and utilized for personal gains. This error of judgment on the part of economists has resulted in the mass destruction of forests, coasts and corals, mountains, grasslands and wetlands.

Apart from helping to moderate climate and to harvest the rain, such ecosystems have also feed millions of humans on a daily basis -- for instance the fish in our rivers, lakes and coasts. The consequence of such destruction is evident all around us in the shape and form of climate change.

To take just one specific example, for centuries, the Sundarbans has served as an enormous sponge-like buffer against the often-savage storms and tidal surges of the Bay of Bengal. It is a refuge to countless and, in many cases, rare species of flora and fauna. It is an astonishingly productive marine nursery. And it is a green cathedral for nature-starved humanity. Now, in an era of climate change, the Sundarbans offers the greatest service of all: along with the remnants of what were once unbroken forests the length and breadth of India, in its storage of carbon, this mangrove forest provides the key to India's agriculture, food and economic security. Elsewhere throughout the world, tiger-and-wildlife-inhabited forests perform these same vital, unsung climate control services.

The science, and now even the financial benefits, of the role of forests in reducing greenhouse gas emissions are incontrovertible. Compromising the health of forests such as the Sundarbans would release large amounts of carbon dioxide into the atmosphere. Preserving them would ensure that they would continue to remove Co2 from the atmosphere, and sequester or "lock it up", as all forests do. How does this work? Through photosynthesis, trees and plants absorb carbon dioxide (the most dominant greenhouse gas), from the atmosphere, and then release the oxygen after storing the carbon as wood and leaves. This is 'carbon storage' mechanism, an ingenious plan of nature. Depending on the species, trees can be about 20 per cent carbon by weight, and they and the overall biomass of forests act as a 'carbon sink.' The organic matter in forest soils, such as the humus produced when dead plant material decomposes, also acts as a carbon store. Coal and oil are part of the planet's biomass – when we burn them, we release their carbon stores, when we don't, they continue to retain their carbon.

According to the U.N.'s Food and Agriculture Organization (FAO), the world's forests and forest soils store more than one trillion tons of carbon, twice the amount in the atmosphere. On the other side of the coin, destruction of forests releases almost 7.5 gigatonnes of Co2 into the atmosphere each year. The FAO urges not only reduction in deforestation, but afforestation (new plantings) and reforestation (replanting of deforested areas). A vital caveat is that simply replacing biodiverse forests with monocultures – a common (mal)practice of World Bank forestry projects – is far less effective in stemming climate change (and protecting local wildlife and human populations) than protecting forests in the first place, or allowing biodiverse forests to re-grow.

In 2006, a study on the Economics of Climate Change was commissioned by the U. K. Treasury. Led by Sir Nicholas Stern, Head of the Government Economic Service, it suggested that reducing deforestation offers a major opportunity to reduce emissions at relatively low cost. The study found that in the eight countries responsible for 70 per cent of emissions from land use, just 1.5 acres of forest land could be worth as much as $2,500 to 3,200 in terms of carbon storage at a carbon price of $35-$50. This same land would provide a return of just $2 for pastoral use, $1,000 for soy and palm oil conversion and a one-time return of $236-$1,035 for timber sales. Of course, the valuation of other ecosystem services such as soil conservation, food production and flood and drought control should drive the value of forest lands much higher.

The study's researchers found that for an average price of $27.25 per ton of carbon dioxide in the emissions exchange market, "deforestation can potentially be virtually eliminated." The study concludes that there is a significant potential for reduced deforestation to mitigate the costs of cutting greenhouse emissions. As for the wood we need for our daily living, timber, like any other food or cash crop, can easily be grown on farms set aside for the purpose.

As great a role as the Sundarbans has to play in combating climate change, its vulnerability to its effects are just as great. It has been estimated that rising sea levels have already flooded 7,500 hectares in the Sundarbans. Two islands – Lohachara and Suparibhanga – have been submerged, a third – Ghoramara – is two-thirds submerged, and a dozen more are under threat. Along with the threat to the forest itself, are the attendant risks to the tiger and all of the other wild animals that rely on its protection.

Even if we are thoughtful enough to protect this mangrove wonderland from all of the other threats we pose to it, we will have failed the Sundarbans and its tigers if we allow climate change to progress unchallenged. Caught between inhospitable agricultural and urban areas to the north, east and west, and the rising seas to the south, tigers and other wildlife will literally have nowhere to run. Millions of humans living in the 24 Parganas District, of course, will probably end up as urban refugees in Kolkata.

Even as we speak, scores of industrial projects wish to turn the Sundarbans mangrove ecosystem to non-forest, commercial use ranging from international steamer channels, mega-tourism projects, nuclear reactors to -- in one unbelievable case -- a thermal plant fed by mangrove wood.

No one has thus far tabulated the true financial cost of such decisions. If Naturenomics™ results in a better understanding of such costs and benefits, it could prove to be the most significant work in the development history of India.

Natural Gist

- **Priceless Ecosystem**: Although ecosystem is complex and an integral part of life on earth and its assets vital, we have used it for personal gains without trying to understand its implications.
- **Natural Sink:** According to Food and Agriculture Organization, forests alone account for storing one trillion tons of carbon, twice the amount in the atmosphere.
- **Stern's Report**: The study's researchers found that for an average price of $27.25 per ton of carbon dioxide in the emissions exchange market, "deforestation can potentially be virtually eliminated." Apart from the price based on Carbon storage capacity, which is just $2,500 to 3,200 for 1.5 acres of forest land at a carbon price of $35-$50, the valuation of other ecosystem services such as soil conservation, food production and flood and drought control should drive the value of forest lands much higher.
- **Immediate Actions:** Drastic measurements are required to avoid further deforestation, and derive a methodology to evaluate the cost and implications of the economist's decisions which are driven mainly and mostly by market.