Standards are to be complied by every polluting entity. However, as these standards are concentration-based, even if every individual is complying with prescribed standards, the overall pollution load emitted by the sum total of polluting entities could still lead to deterioration of the environment. The best example is dangerous levels of air pollution in Delhi, as a result of exhaust from millions of automobiles, which has led to increase in cancer incidences in that city. This finally has led to the introduction of compressed natural gas (CNG) and mandatory technological adoptions like Bharat II in automobiles.

All our pollution control legislations have recommended standards only for point sources like industrial units or automobiles and are silent on non-point sources like agricultural run-off, domestic sewage, etc.

Ever since their notification for the first time way back in 1974, none of the standards were updated, despite most water bodies are dropping to lower quality across the country. Similarly, ambient air quality standards are also kind of fossilized from 1981.

Due to paucity of time between the Stockholm Conference on Human Habitat in 1972 and enactment of the first central legislation dealing with resource protection in the form of the Water Act in 1974, the Indian Standards Institution (the then Bureau of Indian Standards) prescribed effluent standards which were human health centric, ignoring ecological service aspects.

Success or failure of our legislations is directly dependent on the monitoring network. In contrast, SPCBs and monitoring network form another weak link. For instance, the number of Red category of industries alone will run into thousands in every state of India, apart from units belonging to 'highly polluting industries'. However, manpower trained to conduct either stock monitoring or effluent collection in SPCBs hardly touches two digits.

Though founding objectives of SPCBs clearly spell out the need to develop cost-effective technologies suited to local conditions, none of the SPCBs nor the CPCB has developed any indigenous technology. Most of the pollution control technologies were adopted from elsewhere.

With a number of units both in secondary and tertiary sectors bound to take the lion's share, with existing legislations and state of their implementation, natural resources, be it our finite water resources or ambient air quality, are bound to degrade, reducing productivity rates and threatening livelihoods of those who constitute more than 65%.

Simple, but not so simple, is to apply standards that are applicable to Delhi to the entire country, like supplying CNG to achieve higher energy efficiency and reduction in pollution. Alternately, one should supplement the 'concentration-based standards' with technology and nature of the receiving body. To develop this, SPCBs may need to invest financial resources (most SPCBs have sufficient financial resources) and constant revision of pollution standards, which integrate the number of polluting sources and integrating aspects of 'cradle to grave' during the stage of 'consent of operation'. Liasioning with organizations like Non-Conventional Energy Departments to promote adoption of clean technology is the need of the hour for better resource use and conservation.

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Sponges: An invertebrate of bioactive potential

The marine environment is a major sustaining part of ecosystem processes, distinguished by unique biodiversity and being the source of interesting structures. Sponges (phylum Porifera) are a significant component of this environment. They are the most primitive multicellular invertebrates representing the phylogenetically oldest metazoans that evolved 750–570 million years ago[1]. Sponges fascinate scientists from different disciplines that vary from chemical ecology, physiology and morphology to isolation of promising bioactive compounds and association with a wide variety of marine microorganisms in their tissues. Sponges have been considered as a gold mine for the chemist[2]. More than 12,000 compounds have been isolated from marine sources with hundreds of new compounds still being discovered every year, with respect to the diversity of their secondary metabolites, which range from derivatives of amino acids and nucleotides to macrolides, porphyrins, terpenoids to aliphatic cyclic peroxides and sterols, the majority of which are related to sponges and associated microorganisms.

In spite of the developments in medical science, there are no comprehensive cures for AIDS, cancer, arthritis, other inflammatory conditions, and a large variety of viral and fungal diseases. Marine natural products could yield new drugs to cure such diseases. The quest for drugs from the sea has yielded an impressive list of natural products mostly from invertebrates such as sponges that are either in the late stages of clinical trials, or have already entered the market. Some of the sponge-derived bioactive compounds presently available in the market are Ara-A (antiviral), Ara-C (anticancer) and Manoalide (phospholipase A2 inhibitor), while IPL512602 (anti-inflammatory), KRN 7000 (anticancer), LAF389 (anticancer), Discodermolide (anticancer) and HTI286 (anticancer) are under clinical trial[3]. Secondary metabolites in sponges are produced in trace amounts and exploitation of sponges from natural resources in bulk is an ethical issue. To overcome this serious problem for sustainable use of marine resource, the following are suggested: (i) chemical synthesis; (ii) cultivation of sponges in the sea (mariculture); (iii) growth of sponge specimens in bioreactors, and (iv) cultivation of sponge cells *in vitro* in a bioreactor[4]. *Luffariella variabilis*, *Cryptotethya crypta*, *Discodermia dissolute*, *Aplisina aerophoba*, *Spongia* sp. and *Isodyctia* are some sponges known for their bioactive compounds.

Besides their pharmaceutical potential, sponges are an important source of compounds used to explain classification patterns and phylogenetic relationships[5]. They are under investigation to understand their basic cellular and skeletal organization that will help to understand the evolution process and establishment of Porifera as a model organism for the understanding of the metazoan body plan, immune systems and diseases. Analyses of the genome organization of marine sponges led to the elucidation of selected genes and gene arrangements that exist in gene clusters[6] (e.g. the receptor tyrosine kinase cluster and the allograft inflammatory factor cluster). They add knowledge to our fundamental understanding of marine organisms and oceanic processes comprising marine ecosystem, structure, dynamics and resilience. This advanced genetic study deciphers evolutionary processes at the molecular level and builds a platform in order to obtain gene processes and approaches for the benefit of the industry, research and to support sustainable management of the world's ocean.

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Conserving Deepar Beel Ramsar Site, Assam

Wetlands serve as suitable habitats for a variety of amphibians, fishes, reptiles, waterfowls and migratory birds[1]. Depending on the water requirement and the relative position of the various parts of the plants in water, a wide variety of aquatic plants exist. Along with the aquatic plants, some non-aquatic marshy or amphibian plants are found in the catchment area, making a unique ecosystem around the wetlands[2]. Assam is a part of the Indo-Burma biodiversity hotspot[3] with unique floristic and faunal wealth and has a great number of wetlands.

Deepar Beel (26°03′26″–26°09′26″N and 90°36′39″–90°41′25″E) is situated in lower Assam. It is the lone Ramsar Site of the state and the second of its kind in Northeast India, after Loktak in Manipur. It plays a vital role in sheltering waterfowls of residential and migratory nature[2] (P. Saikia and P. C. Bhattacharjee, unpublished). The Beel has a perennial water-holding area of about 10.1 sq. km (Figure 1 *a*), which extends up to 40.1 sq. km during floods. The depth increases up to 4 m, and drops to 1 m during winter. This large water body is not only a food source and breeding ground for a large variety of aquatic birds (Figure 1 *b*), but it also houses a wide variety of amphibians, reptiles, insects, macrophytes, terrestrial weeds, lianas and tree species of ecological and economic importance[2] (P. Saikia and P. C. Bhattacharjee, unpublished).

The Government of Assam declared 10.1 sq. km area of Deepar Beel as the 'Deepar Beel Wildlife Sanctuary' in 1989. It was also proposed that the 4.1 sq. km core area be designated a 'Bird Sanctuary'; about 122 species of seasonal, migratory and residential birds visit the Beel every year[2] (P. Saikia and P. C. Bhattacharjee, unpublished). Considering the importance of the wetland, Deepar Beel has been included in Asian Wetland Directory[4] and has been also declared as a Ramsar Site[2] (No. 1207) in 2002.

In view of these, Deepar Beel Ramsar Site was selected to explore and evaluate its botanical wealth, in order to work out the baseline information needed for conservational strategies to save the wetland from degradation and destruction. About 435 species were documented under 305 genera and 103 families of angiosperms and 13 species belonging to 12 genera and 11 families of pteridophytes. Out of the total 114 families, 82 were dicotyledons, 21 monocots and 11 pteridophytes. Among the total 448 species, dicotyledons represented 65.62%, monocotyledons 31.47% and pteridophytes 2.9% of the flora. Herbs comprised 334 species (74.55%), shrubs 51 (11.38%), climbers 28 (6.25%) and trees 35 (7.81%). The dominant families of Deepar Beel were Poaceae (28/46), Cyperaceae (11/36), Asteraceae (25/31), Scrophulariaceae (7/19) and Fabaceae (7/13). The dominant genera of the wetland were *Cyperus* (12), *Lindernea* (9), *Persicaria* (7), *Desmodium* (5) and *Fimbristylis* (5). Within the flora, 11 species were of rare and threatened categories, along with six species endemic to northeastern India[2].

A majority of the biological wealth in the wetland is in a state of gradual depletion due to the increased impact of human interference[2] (P. Saikia and P. C. Bhattacharjee, unpublished). Although the area has been declared as Ramsar Site/ Wildlife Sanctuary, it has not received much attention regarding conservation. The area is not well protected and there is no enforcement of strict laws of wildlife protection. Regular fishing both in the buffer and core zones also contributes to the degradation of the wetland[2,4]. Release of toxic pollutants from a nearby woollen mill is a serious threat to the plants and fishes; this is a major cause for the disappearance of many avian species from the area (P. Saikia and P. C. Bhattacharjee, unpublished). Bodo paddy cultivation during winter season and different construction activities in the periphery are destroying natural habitats leading to rapid invasion by the Invasive Alien Species (IAS), by creating havoc for less competitive native species[2,5]. Indiscriminate felling of trees in the catchment zone has changed the overall physiognomy of the area, thereby decreasing the shelter/nest-forming plants for the birds. There is an urgent need to save the diversified life forms of the area. For