

Strategizing Positive Interaction in the Bay of Bengal Interaction Sphere

Kalyan Kumar Chakravarty

Introduction

Woven into this volume on the pan Asian context of the Bengal Basin is an insistent plea for positive interaction in terms of cooperation rather than competition in the Bay of Bengal Interaction Sphere. The plea is backed up by an analysis of the history, cultural amalgam, commercial exchange, migration and geopolitics of the bay. The analysis demonstrates the positive and dynamic role which India is poised to play for ensuring this interaction.

Need for Cooperation, Intrinsic to the Hydrography of the Bay

The need for India to awaken to this task is substantiated by the growing importance of the Bay of Bengal, with its transformation, from an international migration highway till late 20th century, into an area of migration and trade in the 21st century, thanks to a sea bridge, connecting South and South East Asia, and a long coastline, with deep inland penetration. The largest Bay in the world, fed by large rivers, dotted by ports, its economic and geo political importance as a source of water, salt, energy, fish, minerals, transport, business, naval mission, scientific research and power politics, has grown exponentially. A focus has been placed on the Bay providing the main shipping channel through the Malacca strait between the Indian and Pacific Ocean. The growing need of Sino Indian cooperation over land and sea has been stressed, to dredge oil and natural gas deposits, as also the cooperation of Sri Lanka and India for harvesting hydrocarbon, titanium, rare earth, mineral sands and gems, in the Bay. The importance of cooperation among the littoral countries has grown over the years, for linking Indian and Pacific Ocean countries by shipping through the Malacca strait, and, for using the Andaman and Nicobar Islands near the Malacca strait, for coastal radar surveillance, trans shipments, ship repair, shore bunkering, regulation of piracy, drug traffic and gun running. India has entered naval cooperation agreements, to resolve disputes over oil and gas block rights and maritime boundaries with its South East Asian neighbours, and, with USA, Japan and Australia in Andaman, for dealing with the strategic encirclement, created by China through port and naval bases, in a maritime silk route, euphemistically called a string of pearls, around India's coastline. Sino Indian cooperation rather than competition will obviate the need for such strategic challenges and responses. Such

cooperation across the Bay will also facilitate overland transit, for both India and China, to their less developed regions, through Myanmar for India to its North East, and for China to Yunnan. Multipolar Indo Pacific cooperation is also vitally required for dealing with climate change, natural disaster, terrorism, refugees, drugs, piracy, especially in low lying regions like Bangladesh, threatened by submergence, under sea surge. The need for cooperation rather than conflict is substantiated by the way the hydrographic limits of the bay have been defined in the Christian era by different regional powers in India, by calling it the Chola lake, Kalinga Sagar, Ganga Sagar, and, by the international trading community, as Sinus Gangeticus (Sujan Ghosh).

Bay ports as Commercial and Cultural Channels of Contact

An account has been provided of the way the British demand for salt petre for its imperial objectives restored the importance of the northern Bay of Bengal, lost because of Mughal imperial policy (Shreyashi Paul)

Commercial cooperation rather than competition has also been elicited as the lesson from the history of the port of Chittagong. A suggestion for collaborative archaeological research emerges from the Moroccan, Arab, Persian, Portuguese travel accounts, textual, epigraphic, numismatic evidence, marshalled in this volume about the maritime and coastal link between 800 to 1500 AD, established through the Chittagong port, connecting Ganga and Brahmaputra valley, Northern Bay of Bengal, South and South East Asia, Pala and Shailendra empires, China and India, after the decline of Tamralipta in the 8th century AD. Chittagong port was endowed with the name of Samandar in Harikela in course of China India trade. Agarú/Aloeswood, used as a medicinal, aromatic incense, yaktail, porcelain jars, trident marked Chandra coins found a place in the trade through this port. Sufism also reached Chittagong through Arab Dervishes and Pirs, before it came to be controlled by Muslim rulers. (Suchandra Ghosh)

Effective bilateral Indo Bangladesh collaboration, multisectoral, polycentric technical and economic cooperation have been emphasized in the circular economy of Bay of Bengal, in a closed loop approach, across national boundaries, specially for the mangrove microcosm of Sundarbans (Rakhi Mitra). Such collaborative action, supported by Forest Department and forest based communities, would guard Sundarbans water ways and Bay of Bengal estuaries against piracy and infiltration. It would save and sustain mangrove habitats against aggressive shrimp farming, provide sustenance to coastal communities through aqua culture, fisheries, honey manufacture and tourism, and, guard them against cyclones, storm surges and tsunamis. Such collaboration will also help the marginalized denizens of Sundarbans by stopping their migration for employment, by ensuring their participation in ecotourism, and, by reducing their life threats in a hunting gathering economy in a

dangerous terrain, subject to the tidal cycle. Similar cooperation in skill development in drying or salting of fish for later sale or conversion into fertilizer, will improve their livelihood opportunities. Collaboration is also essential for improved disaster response, waste minimisation, climate change mitigation, early warning systems, and coastline protection, to arrest irreversible changes in sedimentation patterns caused by cyclones in the Sundarbans. Such international cooperation will bolster a blue economy in a sensitive zone of the Bay, by boosting ecological stability, biodiversity and shared environmental health.

Indigenous Knowledge for Conserving Biocultural Diversity

The value and validity of a variation of the Apatani agro ecosystem, based on zero tillage, combined with mechanical rice transplantation, in wet paddy fields, and with direct seeded Kharif and Rabi crops, have been advocated in situations of labour scarcity, for small and marginal farmers. Its viability has been reinforced by a field survey of its cost effectiveness in machine and human efforts, and beneficial socio economic impact, in the Punjab and Haryana states of India, and, in South and South East Asia (Rana Rohit).

Cooperation for solving problems of Trans Border Migration

Cooperation rather than conflict has also emerged as the necessary solution for the security threat posed by unregulated trans border migration in South and South East Asia. The maritime migration of Rohingya Muslims due to ethnic cleansing and violence, from coastal Arakan in Southern Myanmar, has posed unprecedented problems of demographic explosion, security and humanitarian crisis in the Bay region. A summary dismissal of these problems under the name of Boat Crisis has hidden the extent and depth of the tragedy. The Rohingya Muslims have been denied citizenship by the Buddhist majority in Burma, persecuted by the Burmese army in Rakhine in Arakan, and subjected to ethnic violence, incited by Buddhist monks after the rape and murder of a Buddhist woman. Bangladesh, Indonesia, Malaysia and Thailand have given shelter to Rohingyas but denied them formal asylum, employment, education or health care, as illegal immigrants. Not being a party to the 1951 Refugee Convention, India has ordered their deportation. Rohingyas have died in sea journeys, and, in refugee camps, due to abysmal living conditions, inadequate food, malnourishment and health hazards. They have also been subjected to human trafficking and sex racket. The solution of such problems demands cooperation from the regional economic blocks of SAARC, the South Asian Association for Regional Cooperation, and the Association for South East Asian Nations, across the Northern extension of the Indian Ocean. These regional associations need to get together to create adequate record for these refugees as a positive response to UNHCR appeals to coastal authorities for compliance with the UN

Convention on the Law of the Sea, and, with the directions of the UN office on Drugs and Crime. (Swagata Sarkhel)

This humanistic and cultural perspective about transborder migration in the Bay of Bengal region, has been reinforced by countering the view of the Bengal Delta as an isolated region, hermetically sealed from the wider geographical terrain. An empathetic analysis has been provided about the problems arising from continuous demographic movement, through porous boundaries of the Bengal delta, steered by a market economy, which has been grinding localities and identities under a new globality. It has been demonstrated that the delta was the conduit of a continuous flow of people, commerce and culture from Burma and North West Asia through North East India to South East Asia. It has been pointed out that the city of Kolkata was settled, despite being in a pestilential swamp, because of the fertility, resources and strategic location of the region between the Bay and the mountains. The search for trade and livelihood has been identified as the motive for the journey via silk route, from the Himalayan Tibetan plateau, or to Mongolia via Myanmar, leaving behind a trail of graves, shrines and resting points. This trail has been reinforced by a flow of human genetic, agricultural, faunal and cultural material, and by trade in wool, salt, rice and sugar, minerals, elephant tusks, opium and timber. During the colonial period, the British conducted trade in Pashmina wool, borax and tea across the Himalayas, accompanied by construction of roads and rail roads. In this transcontinental movement, the peripheral zones, designated as Zomia, comprised the Bengal delta and Chittagong hill tracts. In course of this movement of people and commodities, the Rohingyas moved from Bengal to Burma with the British conquest, and turned into a Muslim minority in Buddhist Burma, after the departure of the British. Santhals, Oraons and Mundas came to Assam from Bengal for rice cultivation, and Bengalis came back to Bengal after Japanese occupation of Burma. Sharatchandra's Sri Kanto series speaks about free minded women like Abhaya among the Bengali expatriates in Burma. Films like Bisarjan and Sankhchil have shown continuous border crossings from Bangladesh to West Bengal. Irawati Karve, the anthropologist, who took her name from Irawati River, came from Burma. The mingling of French, Portuguese and English cultures became evident in the linguistic fusion in the poetry of Anthony Kabyal, use of eggs benedict, plum cake, women's under attire, sherbet, kebab and curry. The influence travelled back from the Bengal Delta to England, with a display of the Hindu myth of Samudra Manthan at the base of the statue of Sir William Jones in St. Paul's Cathedral in London, with Jones holding a Manusmriti in his hand. Gosain traders carried Buddhism from Bengal to Tibet, while Buddhism returned to India with Dalai Lama in the 20th century. The boundaries of peasant and tribe land remained amorphous in Bengal, until the parcelling of land under the Zamindari settlement. The 1942 Bengal famine, depicted by Satyajit Roy in his film, the Asani Sanket, was a direct result of 2nd World War. The Greater Naga Lim, visualized in the Naga liberation movement,

showed Burma, Manipur and Assam as part of Nagaland. The forest dwellers were deprived of their habitats and livelihood in the Bengal Delta with the colonization of forest under industrial capitalism. The Rabhas were evicted for rhinos and tigers from Jaldapura, while the Tripuris, Lodhas and Lepchas were marginalized through adverse inclusion as members of urban and coal mine slums. The alignment of the neo liberal global market economy with a post colonial definition of national interest furthered the eco politics of domination, exclusion and suffering. An understanding of the economic and cultural history of migration has been emphasized in this manner to reinforce the argument of international cooperation in the Bay of Bengal region for alleviating its tragic dimensions (Subhadra Mitra Channa).

Demographic and Cultural Links as a background to Cooperation

International cooperation rather than competition in the Bay of Bengal interaction sphere has also been advocated on the ground of the prehistory of migration. It has been suggested that an Austronesian dispersal took place from Africa, via Southern route along the Indian coast, across the Bay of Bengal, through the Indo Pacific region. It has been proposed that this demographic movement took place through littoral, near shore gateways in the Indian Ocean, to reach the Sahul landmass, comprising Australia and New Guinea, which had been separated 8 millennia back from the South Asian landmass, by rising sea level. This postulate for ancestrally North Indian (ANI) or ancestrally South Indian (ASI) settlement has been backed up by genetic, molecular, anthropological, archaeological and linguistic data. This theory of Out of Africa dispersal and colonization of the New World and the Pacific, has served as the background to an Out of India hypothesis, about India serving as a crossroad for the migration of Austroasiatic, Indo Aryan, Dravidian and Sino Tibetan linguistic groups (Banrida T. Langstieh). It has also been suggested that sea faring expeditions took place across the Bay of Bengal and the Eastern Indian Ocean Littoral, 60 thousand years ago, when the sea level was lower. This suggestion has been based on applied navigational technology and nautical networks of the Bengal Basin. It has been proposed that floats or rafts with names like Mehrli, Goluiya, Paukia, Patia, Suntani, Khoro Kisti, Betnai, Chhot and Bachhari were used for this purpose (Kaustav Ghosh Roy). Shared ethnographic study has been suggested for the reconstruction of the riverine and maritime technology, etymology, nautical networks and history of boats, in the port towns of the Bengal region. Illustrative examples for such study have been provided through Patia, in a river Clinker tradition, and Balagarhi Dingi, water tight dug outs, personified with an eye and treated as sacred (Swarup Bhattacharya). The coir cushioned, buoyant and water resistant coconut palm has been flagged as an amphibious, pan tropical invader of eco cultural landscapes, for establishing a link between the Bay of Bengal region, South East Asia and Pacific Islands, in the Austronesian dispersal (Shreyashi Chaudhuri and Kuntal Narayan Chaudhuri). In this connection, it can be mentioned that India, Australia, New Zealand and South East Asia have been connected in recent history through organizations like

the Anglo Indian Research Association, Melbourne, and the New Zealand Indian Central Association. The reference in Kalidasa's *Raghuvamsam* to the King of Kalinga as Mahodadhipati and to the Bay of Bengal as Kalinga Sagar, the continuity of Khukuni Osha and Boita Vandana maritime festivals, and their visual representation in medieval Odisha temples, provide literary and visual evidence of the contact of the Bay region with South East Asia. Such evidence needs to be verified and supplemented by an archaeological examination of diagnostic potteries, ancient ports, jetties, stone anchors, and, of the objects excavated at Tamralipta, Saptagram, Bangarh and Mangalkot in Bengal, Sishupalgarh in Odisha or Mahasthangarh in Bangladesh.

Cooperation for International Security

International Security has been addressed as a further plank for cooperation rather than competition among nations in the Bay of Bengal interaction sphere. Souradeep Sen describes the growing geo strategic and economic importance of the Bay of Bengal vis a vis the Atlantic region in the Indo Pacific maritime domain. He emphasises the need for reviewing India's strategy of engagement with China, by sharing its security concerns with South and South East Asian countries, and, by substituting global and geo centric politics for nation centric and international politics. He points out the paramount need for such a policy review by India in the background of the growing tussle for dominance between USA on the one hand, and China, Russia and Iran on the other. He thinks that India is poised to use the Necklace of Diamonds in the ANI island chain in the Pacific to counter Chinese encirclement in naval port access. He shows that this is necessary in view of the maritime competition for trade in oil, weaponization of supply chains, choke points, and, in the light of the China's Belt and Road, String of Pearls, Maritime Silk Road initiatives, its use of the debt trap to tighten control over countries like Nepal, and its proposal for the China Thailand KRA Canal. He feels that India has to take such precautions against the escalation of tension from troubled regions, armed with nuclear weapons. As the Basin country with the largest land border and share of territorial waters, its Look East policy, its geo strategic network of the QUAD, BIMSTEC, SAARC, IORA (Indian Ocean Rim Association), India is advantageously poised for opening up bilateral and plurilateral realms of cooperation in the Indo Pacific region. India can promote such cooperation for training in disaster management, security deployment, as well as in creating infrastructural linkages in ports, roads, pipelines and railways, or in creating agreements for trade liberation, nuclear non-proliferation, human rights and climate change (Souradeep Sen). The political situation in Bangladesh has to be discussed in the light of the need for energy security, because it assumes importance, in view of the ouster of Shaikh Hasina, whose presence was considered useful, at the time of the writing of the article, with respect to traditional security issues of border dispute, migration and terrorism (Ankhi Sen/Sanyal)

Commercial Considerations, for Cooperation

A few other presentations emphasize the convergence of geo archaeological, epigraphic, numismatic archaeological evidence, trade history and geopolitics in the Indo Pacific region, to reinforce the need for cooperation rather than conflict in the Bengal delta. It has been suggested that such study has to encompass three contiguous areas of the Delta, one mature Dum Dum, and two intermediate and active tidal estuary belts, to explain the environmental and settlement history of the region and its close connections with the surrounding region of South East Asia (Durga Basu). Such analysis has to take into account the numismatic evidence of the hybrid Khlong Thom pendants with a Satavahana portrait, used as a die, opposed to a Roman reverse device (Susmita Basu Majumdar). Such analysis can be supplemented by the evidence of the late medieval urbanization of the Bay of Bengal littoral region through the development of the Portuguese trading ports like Bandel of Ugolin, into fortified urban settlements in the 16th century (Priscilla Namrata Rozario). The development of FDI movement, accompanied by the formation of RTAS and FTAS, heralded by trade in organic cosmetics, further reinforces the logic of regional cooperation in South East Asia, especially under the BIMSTEC (Kallol Banerjee). Regional cooperation has been also stressed as being of paramount importance for the management of coastal heritage and ecology, along with coastal fisheries, industries and ancient urban centres, which have developed since the first millennium BCE, connecting South and South East Asia (V. Selvakumar).

Collaboration for Harvesting Historic Links and Protecting Environment

The outstanding papers presented in this seminar open up certain dimensions of the Bay of Bengal as an interaction sphere for Asia. One such dimension is to look for and chart the archaeological evidence of the cord impressed pottery and shouldered celts of the Neolithic period, shared between North East India and South East Asia. This is also to be linked with an investigation of their connections in the deep water, waterlogged rice ecosystems. The Hoabinhian industries connect the two regions from the Pleistocene to the Holocene period. These industries comprise lithic cromlechs, unifacial, centripetal, circumferential; cobble reduced flakes and debitage, found in Jaintia and Garo hills, as well as in Laos, Cambodia, Sumatra, in late Pleistocene and early Holocene period. These have been found in Irrawaddy Valley, Chao Phraya, Mekong and Hong in Myanmar, Bangladesh, Tripura, Daojali Hading, Assam, Kamla Valley, Arunachal, Garo Hills, Meghalaya, Phunan Hills, Manipur, as well as in Laos, Cambodia and Sumatra. The routes of dispersal of this lithic industry appear to coincide with the migration routes of Sino-Tibetan, Tibeto-Burman, Austro-Asiatic families of languages. These provide evidence of early dispersal of human beings and their tools in the region. Such evidence can be reinforced by regional cooperation for an examination of the ramifications of the Sino Tibetan,

Austro Asiatic, Austronesian families of languages in the linguistic fusion of the region, and, of the path of their migration. Such cooperation is also needed in the region for examining the ecological adaptations of deepwater, waterlogged rice eco systems, slash and burn and shifting cultivation, use of bamboo in ceremonial, ritual cremation, and, in the spread of megalithic traditions.

Sino Indian cooperation for developing cooperative geo strategic networks in shared interest maybe worth pursuing, because of the immense cultural links between India and China, which have hardly been harvested in multilateral interactions. For this to materialize, there is a need to emphasize regional cultural and ideological links between India and China, rather than the overarching spiritual or ideological umbrella, held by China or India, over the countries in the region. There is ample evidence of the trade, which was conducted through central Asian cities under the northern Wei and Sui dynasties between the 3rd and 6th centuries AD. This evidence can be reconstructed through joint Indo Chinese study, from oasis towns in Central Asia like Chang-an, Loyang, Yeh and Ping Cheng. The marriage of Kumarajiva from Kashmir with a Chinese lady, the rock carvings with inscription in Sanskrit or in Chinese scripts, dotting the route through Ladakh and Central Asia, the continuing vogue of Lokapala and Devaraja cults in China, bear ample evidence to the role played by the Bengal basin in maintaining commercial and religious link with China through centuries. The near mirror image of the 5th century AD Pasupati image at Tala, Bilaspur, Chhattisgarh, which was administratively connected with the Bengal provinces in British days, at Longman cave 16 in China, with an inscription tracing the principle to its source, reinforces the evidence of the strong link maintained by the Bengal Bay region with China. In consolidating such links, it is necessary to recognize the remnants of their contacts, like the surviving farewell rituals of the trans Himalayan trade, conducted from Himachal Pradesh, through Dooars passes and Tibet, by Bhotia farmers, organized in Ranth lineage structures in Munshiari. Likewise, it is necessary to work jointly with the Dard people of Ladakh, who arrived from Central Asia via Gilgit and Sindh, and adopted Buddhism under Tibetan rule around 10th century AD. Similarly, it will be rewarding to undertake a collaborative study of Brokpa traditions, reflected in the artefacts in villages like Garkon in Kargil. A joint Indo Chinese study of the 1st century AD chronicle Ch'ien Han Shu will provide insights into the demographic movements between China, Khotan, Afghanistan and India, through Khyber, Gomal and Mula passes. This study should cover the Kharosthi and Brahmi inscriptions in Central Asian Museums in order to chart such movements. The memorial monuments created for Dharmarakshita or Dharmaratna in China in 2nd century AD, the 2nd century AD 36 line Sanskrit inscription from Ushnisha Vijaya Dharani Sutra near the 17th gate of the Great Chinese wall, the travelogues of inter cultural translators or lotsavas, like Fahien, Xuan Zang, Itsing, will also help chart the routes of Indo Chinese interaction in the Bay of Bengal interaction sphere. It remains for China and India to follow up on the evidence, recorded by Chinese travellers,

about flourishing Buddhist Sanghramas in Tamralipta or Tamluk in Midnapur between the 4th and 2nd century AD. The Chinese traveller Seng Chi visited Samatata, around 672-73 AD. He mentioned the Khadga dynasty ruler Raja Bhata, who was making gifts of thousands of earthen Buddha images to Buddhist monks and disseminating knowledge about the Mahaprajnaparamita Sutra. As late as the 14th and 15th century AD, during Muslim rule in Bengal, Chinese ambassadors of the Ming Dynasty like Fei-Shan, Ma-Huan and Gong-Jan described the magnificence of river port towns of Bengal like Chittagong and Sonargaon, markets, palaces and towns of Pandua and Hooghly, and, the cotton, silk and woollen fabric being traded by them with China. One of the Muslim envoys to China, during the Ming dynasty, between 1409 and 1420, served under five Sultans of Bengal. Ample evidence of continuing Indo Chinese contact is provided by the survival of terms, used today in Bengal, like Chini for sugar, Chinamati for porcelain, of musical tunes like Mera Nam Chin Chin Chu, tanneries manned by Chinese shoe makers from Gung Dong, and, of Lion and Dragon Boat dance in the Hakka Chinese settlement in Kolkata in Tiretta bazar, known also as Tangara and China Town. There is a recent memory from the 18th century A.D., about the arrival of the Chinese pioneer Tang Acheus in 1780, after a shipwreck near Hooghly, to work at a Sugar factory at Budge Budge.

There is still a lot of ground work to be done about the Bay of Bengal ramifications of India, South and South East Asia links. The Indo Sri Lankan connection across the 22 miles, separating Tamilakam and Lanka, was preceded by a migration from the Bengal Odisha coast, the memory of which is preserved, as pointed out earlier, in Kuduru Kuni Osa festival and depiction of sea going vessels in Bhubaneswar temples. Literature like Nouka Dubi or Padma Nadir Majhi, produced in recent years, will reward study, for furthering South, South East Asia contacts. Such contacts will also be promoted by the Joint Indo Korean study of the early record of the shipwrecked Ayutthaya/Ayodhya princess, marrying the Silla prince in Korea, and converting Korea to Buddhism, through the Buddhist sutras carried by her and Buddhist Shramanas accompanying her. The Bay of Bengal ramifications of India South East Asia links should also be explored in the expeditions described in Mangal Kavya stories, use of royal and official titles, terms like Basa or Bhasha Kavi, the Dutch translation of Ramayana in Java, in the affinity of the characters of the Sanskrit rock inscription of Purna Varman to Pallava Grantha script in Java, the depiction of scenes, described in Lalita Vistara or Aryasura's Jatakamala, and, in the Borobudur Chandi temple. The description of Shiva as Bhatara guru, depiction of Rama Reliefs in the sculptures of Prambanam, the equation of King Airlanga in 10th century AD Java, King Kreta Rajasa and Kings of Majapahit Kingdom, between 1200 and 1500, with the Shiva Buddha incarnation, provide further evidence of links that remain to be pursued, for building cultural platforms for cooperation, between the Bay, South and South East Asia region.

Cooperation in the management of Environment and Resources in the Bay Region

In the Bengal Bay interactive zone of mountain and the sea, cooperation rather than conflict is required to ensure the water flow from valley to valley, from valley to ridge, and, to maintain the springs connected with fractures, faults and karsts, which create perennial water sources known as Jhora, Dhura, Kholcha. Since such flow of waters does not recognize political boundaries, international cooperation is vital for the appropriate management of waters. Collaborative action on the conservation of the aquifers, and the observance of customary laws regarding such conservation, will be essential to arrest the ongoing depletion of the water table, loss of keystone species, and anthropogenic mal adaptations like monoculture, invasive, extractive trawling of the shallow coastal waters. Sharing of research and application among the nations in the region is vital to stop the steady erosion of biodiversity, which cannot be replaced by bio variety, artificially introduced through plantation, germicide, herbicide, pesticide, to replace organic agriculture, for quick yield. Collaborative action in the Bay is necessary to stop the wholesale destruction of inter tidal forests and mangroves in the Sundarbans for invasive fish farming. Such forests being difficult to replenish, their loss, combined with trawling and acidification has accelerated the disintegration of life support systems of the coastal flora and fauna and other eco system species. It is possible to reverse such loss caused by human mal adaptation to environment, not by artificial plantation, but through a comprehensive, cross border plan to establish an interactive soil, moisture, vegetation, land use regime, to lower evapotranspiration. In view of the integral connection of the Himalayas and the Bay of Bengal, multinational action is essential to stop invasive tourism with reckless construction on hill slopes, and, to create thermally efficient structures, using ductile, malleable, pliant material, from forests across the borders. The traditional Bugyal mountain pastures have to be restored through such action, with community cooperation, to keep the Himalayas alive as a Vavilov centre of biocultural diversity. Such collaboration will also be required, to substitute, energy efficient micro hydro, photo voltaic, geo thermal applications, for large hydro thermal projects, to stop submergence. Regional networks like the BIMSTEC, SAARC and ASEAN, have to get together to introduce a seamless, multisectoral web of road transport, energy grid, disaster management, free trade, and security against cybercrime and terrorism. The Bay nations have to put together a non-extractive, self-equilibrating sustainable materials economy, functioning like a heating unit with a thermostat, based on a cybernetic, bio geo chemical cycling, recycling, flow and exchange of energy and materials, in order to maintain the Bay of Bengal interaction sphere, as a self-regulating biological Holon. An integrated regime of synergistic attention to atmosphere, geosphere, pedosphere, hydrosphere, biosphere and lithosphere has to be put in place, not through the use of most materials, but by making the most of existing materials. This will help the Bay nations to generate low carbon, micropolitan developments, and minimize pollutants and soil pathogens. It is time to combine the

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local knowledge of communities in the Bay region about geology, botany, entomology, bacteriology, soil chemistry, treatment of compost and waste, for water shed protection, photosynthesis, pollution free agriculture and climate regulation.

Bio Profile of the Author :

IAS (retired in the rank of Secretary, Govt of India)

M.A. (History), M.P.A., Public Administration (Harvard)

A.M. & Ph.D., Fine Arts (Harvard)

Advisory Board Member of Kolkata Society for Asian Studies.