NEWS AND NOTES

Geoscience in Global Development – *Subhajyoti Das (Email: gsocind@gmail.com)*

An International Conference on Geoscience for Global Development (GEODEV) was organized jointly by the Association of Geoscientists for International Development (AGID), Bangladesh Geological Society (BGS), Geological Survey of Bangladesh (GSB), International Geoscience Education Organisation (IGEO) and International Union of Geological Sciences (IUGS) at Dhaka in Bangladesh between 26 and 28th October 2009, followed by field excursions to the 'Sunderbans' (29-31st October 2009). Prof. Chris King, former Chairperson, IGEO, Keele, UK, in his message to the Conference set out the principal objectives and agenda of GEODEV as:

" …..developing understanding of 'Industrialisation, urbanization, exploration and exploitation of natural resources and construction' and their impact on 'global warming, air and water pollution, health hazards, and….degrading the natural environments necessary for survival and welfare of mankind' are all educational issues. …This involves educating curriculum writers, teachers and the general public in vital importance of geosciences to the education of every child and promoting geosciences understanding, wherever possible."

Delegates from thirty five countries including R.H. Sawkar, K.R. Gupta and Subhajyoti Das from the Geological Society of India, attended the conference, and participated in the deliberations on a wide range of topics mainly dealing on georesources, geosciences development, energy security, natural resource, ecology, radioactivity in beach sands, coastal hazard preparedness, geochemistry of aquifers, arsenic pollution of groundwater, palaeo-environment of deposition, groundwater modeling and artificial recharge, and cooperative management of natural resource.

Inaugurating the seminar Tawafiq-e-Elahi Chowdhury, Advisor to Bangladesh Prime Minister, emphasized that geoscientific knowledge is essential for sustainable development of a country, as it deals with energy, mineral resources, and environment. In her welcome address Afia Akhtar, Convenor of GEODEV and President of AGID, hoped that the conference would provide a platform to exchange ideas and share knowledge to successfully handle problems and issues linked with geosciences education, as also natural resources development and management. The deliberations were organized into three parallel sessions: Geoscience Education (Session A), Natural Resources (Session B), and Development Activities (Session C). Summaries of some of the key issues are presented below.

In the keynote address in Session A, Mike Katz of Australia, stressed the need for capacity building through geosciences education for sustainable development. He stressed the vital role the Academia should play in geosciences education and awareness programs. Afia Akhtar spoke at length on spreading the geosciences awareness among the masses through various programs like (i) informal geosciences awareness programs including lectures and workshops on Earth's Life Support System; (ii) demonstrative geosciences awareness programs like radio and TV talks, distribution of leaflets, handouts etc; (iii) formal geosciences awareness programs to inform the masses about the changes in nature caused by the human activities, consequent concerns, and initiatives for survival and protection of mankind. Elaborating further Afroz Akhtar of Bangladesh dwelt on air and water pollution, soil erosion, extinction of many species of plants and animals, depletion of natural resources and degradation of landforms in the wake of development processes. Raising the societal issue of gender equity in geosciences, O.P. Varma from India dealt with the challenges and opportunities faced by women geoscientists during the discharge of their duties. He suggested legislations and regulations to promote feminism or gender equality in geosciences for optimal harnessing of human resources interlinked with geosciences development. Anwar Zahid of Bangladesh dwelt on the model simulation as tool to understand systems such as recharge and discharge processes of deep aquifers, seeking remediation of environmental fallouts. The deliberations brought to the fore the status of geosciences awareness , need for expanding knowledge base among the masses and the various issues related to geoscience education, harnessing human resources for optimal geoscience development.

In Session B, presentations mainly dealt with the crisis and conservation of energy resource, and issues related to optimal development of natural resources, but without endangering ecology and environment. Rafidul Islam Khan in his keynote paper, reflecting on the energy security of Bangladesh, informed that notwithstanding very low per capita consumption of energy and lack of access of 60% of population to electricity and gas, the country is still short in supply of gas and electricity, and hence needs appropriate management strategy. In another paper Contantine Faillaice of Italy spoke about impending global water crisis, being a threat to peace. More than one billion people are without potable water and more than double do not have sewerage. To avoid wars between interested countries on water and land shortage, the only solution would be regional management of their surface and groundwater resources in an integrated manner. Shreerup Goswami of India highlighted a scenario of utmost concern. Large-scale mining activities in Orissa state of India have multiple fall outs on environment and ecology like land subsidence due to excessive excavation, dumping of solid waste, disruption of existing drainage pattern, acid mine drainage, deterioration in quality of atmospheric air, apart from excessive noise affecting health of the locals leading to ecological imbalance and serious public health risk. Groundwater pollution from arsenic and other contaminants is also

'Sunderbans' (**a**) Water Channel and Forest - the tiger hide out. (**b**) Inter play of ocean and beach. (**c**) 'Mangrove' with 'Sundari' tress in the background. (**d**) Mud bank (Photo: B.K. Saha, Kolkata).

burning issue of the day threatening safe and pure water supplies. Sadaf Naseem of Pakistan presented a case study in the deltaic aquifers around Thatta in Sind province tracing various geological, geochemical and anthropogenic processes responsible for mobilization of the contaminants. The papers raised global issues and concerns in the matter of equitable and sustainable development and conservation of natural resources which only can ensure a healthy growth of economy and society. Economic growth should not be at the cost of sacrificing environment.

In Session 'C', K.R. Gupta from India highlighted how developmental activities have adversely affected environment and natural resources leading to global warming. Major initiatives recommended by Gupta included 'One Geology-One Globe' for equitable sharing of geological data of Planet Earth; Teaching with GIS; Topics of Global Warming, Ozone Depletion and Over-utilisation of Resources; Current Environmental Issues like emission of green house gases, solid waste disposal, alternate energy resources; Relevance and importance of Geology to the Society to generate awareness to save Earth from severe exploitation. B.K. Saha of India in a significant paper suggested creation of geoscientific data base on coasts and adjoining offshore for demarcation of areas prone to coastal hazards. The paper assumes significance in the wake of recurrent incidences of tsunami and cyclones in the countries encircling the Indian Ocean. Asish Sarkar in his work based on the study of micropaleontology of core sediments collected off Marmagoa, Goa, India, unraveled the monsoonal intensity in the last 300 years BP, as the monsoon has been steadily decreasing ever since. This scientific data -based interpretation assumes significance in the face of raging controversy of climate change marred by paucity of supportive scientific data and inaccuracy of interpretation. In another significant paper R.H. Sawkar and Subhajyoti Das from India touched upon the issue of community management of water resources through watershed treatment and rainwater harvesting, citing example from a drought prone district of Karnataka, India – a model replicable in other rain deficient areas. In general, the papers presented the adverse impacts of resource development and geohazards, man-made or natural, and strategies to cope with it.

The Conference brought out global issues and concerns regarding sharing of resources by all as global citizens having rights to equitable access to resources with a sense not to over-use or abuse resources to the detriment of others and future generation . The deliberations gave a clear

view of development in the backward and wealthy parts of the world. The seminar emphasized the role of S&T in conservation of resources and the need for geosciences awareness among people at large. The Conference succeeded in broadcasting a message of the crucial role played by geosciences in achieving progress. The deliberations upheld the central theme of energy sustainability, equity and security, and protection of environment and ecology.

Excursion to the 'Sunderbans'

The Conference was followed by field excursion to the World Heritage Sites in the 'Sunderbans'. With its swamps, mangrove forests, tidal bays, sun-bathed sandy beaches and rich geobiodiversity, 'Sunderbans' which means 'beautiful forest' (or 'forest of *Sundari* trees'), form the delta mouth of the Ganga–Meghna distributaries debouching into the vast Bay of Bengal. It is a reserve of famous Royal Bengal tigers, sanctuary of crocodiles, and home for endangered mangrove and other rare plant species, as also aquatic fauna. The varied land- and forest-scapes of 'Sunderbans' are a rare treat only to be seen to be enjoyed.

Marked by fluvio-tidal deltaic morphology with characteristic mudflats, sand banks, dune ridges, mangrove swamps, natural levees, flat beaches and water channels, it is underlain by fluvio-tidal deposits of silt, clay, sand, and peat. Thick forest with mangrove swamps form a protective cover against tidal surges and cyclones which often sweep the territory inflicting heavy damage. 'Sunderbans' is a huge storehouse of natural resources like timber, honey, widely varied flora and fauna, natural gas and beach sands.

The excursion led the delegates from Mongla Port to Hiron Point cruising in the river and water channels. Disembarking at places, the delegates made forays into the dense forest , and had unique views of the Sunderbans, - '*Sundari'* trees and endless diversity, - beaches in the making, emerging sand-bar islands, fleeting herds of silken deers, colorful butterflies, cute humming birds flying past in the sky, tiny dolphins sporting in the river, crocodiles lazing out on the sand banks, canopy of trees and tiger hide outs. A majestic dawn advancing into a sunny day, a mellowed evening fading into the stillness of the starry night, – are all but enjoyable. Here Silence, too, has voice, eloquent and precious, - but for the murmurs of the river and occasional honking of the ships renting the still air.

We cruised in luxury vessels in the river with winds sweeping the deck, presenting an interplay of continental rivers and oceanic currents, -tides and ebbs, - a delta in formation. Hiron Point, was spectacular with fresh pug marks of a tigress and its cub on the wetty soil, – enough for a sensation. Who knows a tiger might be lurking behind the trees, might be on its prowl for its umpteenth prey?

'Sunderbans' – it is God's own country.

If Bangladesh is impoverished lacking in mineral resources, its Sunderbans are a treasure trove of nature with rich bio-diversity, natural gas, forest wealth and g lass sand in beaches.

After the brain storming sessions in the conference halls at Dhaka, and relaxed three days in nature's cradle, delegates returned with enduring memories of the unique geobiodiversity of Bangladesh, and the warmth and hospitality of the host country soon to return to know more about its beauty and splendour.

' *Amar Sonar Bangla, Ami Tomaye Bhalobasi*,
Chirodin tomar akash, tomar batas amaar pranay bajay bansi'.

My Golden Bengal, I love thee,
Thy skies, thy breeze flute in my heart ever and ever.

(Rabindranath Tagore - *National anthem of Bangladesh*)