

Minutes of the 2nd Meeting of the Committee – XII: Geoscience for Sustainable Development held in Aluminium Room, Ministry of Mines, Shastri Bhawan, New Delhi on 18th January, 2010

- 2.1 The second meeting of the Committee – XII: Geoscience for Sustainable Development of the Central Geological Programming Board (CGPB) of the Geological Survey of India (GSI) was held under the Convenership of Smt. Ajita Bajpai Pande, Joint Secretary (Minerals & Regulations), Ministry of Mines at 3.30 P.M. in the Aluminium Room, Ministry of Mines, Shastri Bhawan, New Delhi. The list of members who attended the meeting is given in the annexure.
- 2.2 The Minutes of the First Meeting held on 12th August, 2009 were confirmed.
- 2.3 The Convener observed that it is important that States respond with their proposals of demand for fresh/modified geological investigations that is needed for the States and also the comments on the Minutes of the 1st Meeting of the Committee. The matter should be vigorously pursued with the State Governments.

(Action: Member Secretary)

- 2.4 The Convener wanted to know the progress on the Memorandum of Understanding between GSI and the Central Ground Water Board (CGWB). Sri A K Bhandari informed that a concept note on the MoU was circulated. CGWB has an all India presence and has a wealth of borehole and resistivity survey data. Similarly, GSI has its data on geology and structural details. The commonality of the two organisations and the main thrust of activities of these two organisations will be considered in the MoU and areas of overlapping interests/activities needs to be eliminated to avoid duplication.

(Action: GSI/CGWB)

- 2.5 It was felt that the MoU between GSI and CGWB should examine the possibility of including the studies on (i) Trace element study of Groundwater, (ii) Variation of temperature in Groundwater, (iii) Geogenic part of the minerals in the Groundwater, (iv) Off-shore aquifers below the seabed, (v) Joint study on resistivity and deep seismic surveys and (vi) Need for equipment for deep geology surveys (including drilling). The Convener also desired that the said MoU between GSI and CGWB should be signed by the time the 46th meeting of the Central Geological Programming Board meets in February, 2010 in Delhi. CGWB informed that the draft MoU has been approved by the Chairman, CGWB and sent to the Ministry of Water Resources. However, necessary amendments will be made for inclusion of the above mentioned joint activities. CGWB informed that they would welcome collaboration with GSI in the areas of

data sharing, training and publication. A joint study on deep seismic, aeromagnetic surveys and potential of freshwater content in off-shore seabed aquifers needs to be examined.

(Action: Committee no. VI, CGPB/GSI/CGWB)

- 2.6 In the meeting of the Committee held on 12.8.2009, Dr Mishra, Joint Secretary, MoWR desired for a better synergy between GSI and MoWR. In this connection, Dr Wadhawan informed that Geohydrology is being revived in GSI under Mission – II (Natural Resources Assessment). As GSI is planning to carryout various projects under this mission head, a collaborative programme with CGWB of MoWR is envisaged and suitable action has been taken by posting a Director level officer in the GSI Faridabad office for interaction with CGWB that has its headquarters at Faridabad. It has further informed that CGWB has been jointly working on specific projects with Northern Region of GSI but the collaboration has to be expanded to include the work all over the country.

(Action: CGWB/GSI)

- 2.7. The Convener cited printed media reports (**Hindustan Times: 17th January, 2010**) mentioning problems caused by excessive usage of fertilisers, pesticides and extensive irrigation. The Green Revolution that started in the mid 1960s has turned Punjab into the breadbasket of India — contributing more than 95 per cent of the food grains that feed deficit areas in other states — but it has also turned the water table into a poisonous aquifer. Punjab's land is so addicted to fertilisers — consumption in the state is at 177 kg per hectare as compared to 90 kg at the national level — and pesticides that even cattle fodder can't be grown without their application. The report says that chronic toxins are present in these pesticides and fertilisers but there is no proof that these pesticides trigger cancer. Malwa consumes 75 per cent of the pesticides used in Punjab, according to a 2007 State of Environment Report. An epidemiological study done by the Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh, concluded the incidence of cancer is higher in this area than elsewhere in the state. GSI and CGWB may conduct surveys of these areas where the problem is very serious and suggest means of mitigating pesticide impact on soil and ground water.

(Action: GSI/CGWB)

- 2.8. On the issue of chemical data available on water resources in mineral free area and also in disaster prone areas as required by Voluntary Health Association of India in the last meeting, Dr Wadhawan informed that study of organic content of water is not carried out in GSI. Institutions such as National Environmental Engineering Research Institute (NEERI), Nagpur may be

approached for analysis of organic materials. Prof Mukherji of Jawaharlal Nehru University, Delhi was of the opinion that the graduate/post-graduate students of Chemistry can also be considered to be employed for sample analysis in case of shortage of personnel in Government departments.

(Action: CGWB)

- 2.9 On the issue of aquifer geometry and record hydrostatic pressure which would enable in understanding the declining groundwater resources, the effect of artificial recharge should be ascertained. Examination accordingly of the matter in a specific strata/area was required for developing water resources for agricultural purposes.

(Action: Min. of Agriculture/CGPB)

- 2.10 The observations made by Sri Areendran of World Wildlife Fund about the routine monitoring of the high altitude lakes especially in relation to the sustenance of the people living in those areas needed action on the part of GSI. Sri A K Bhandari observed that this forms a part of Medical Geology which is actively pursued by GSI.

(Action: Committee no. X, CGPB/GSI/WWF)

- 2.11 Prof Mukherji observed that the remote sensing using satellite data have been carried out by his research team in Assam State in connection with geomorphology/hydrogeology. He wanted Hyperspectral Survey (HS) of designated areas to be taken up. Dr Wadhawan informed that the HS data are chiefly procured from foreign agencies and that it should be ascertained if such data is available for the target area that Prof Mukherji wanted. It is also quite expensive to procure the HS data though USGS has put out some data free in the public domain.

Prof. Mukherji insisted that "geodiversity" should be given preponderance over 'biodiversity'. He cited *Mimosa pudica* (sensitive plant) is rich in Potash as a biomarker for the richness of Potassium minerals in the soil, thereby, suggesting the occurrence of such wild plant is primarily dependent on ground conditions. GSI has taken up Hyperspectral Survey of Hatti-Muski Gold Belt in Karnataka as a pilot study. GSI may consider use of Hyperspectral mapping of clay minerals rich in Potassium and other elements for use in agriculture on specific request in a limited area as a pilot project.

(Action: Committee No. VII, CGPB/GSI/JNU)

- 2.12 In the eastern Ganga Basin, the groundwater development is associated with the mobilisation of geogenic arsenic element. Similarly, in many places the quality of groundwater is affected by the presence of other elements. Prof Mukherji desired for collaboration with the Agricultural Ministry on the study of

geogenic minerals and the quality of groundwater and their combined effect on agricultural activities in crop production and crop diseases.

(Action: JNU/Ministry of Agriculture)

- 2.13 Prof Mukherji recounted about an area in Jabalpur where the groundwater Table fluctuations were seen which can be correlated to seismic activity. If a continuous record of Water Table in an area is maintained every month, the possibility of occurrence of seismic movements of the crustal segment in that area could be predicted. The Normalised Different Vegetation Index (NDVI) with drastic variation on account of fluctuation in Water Table can also be accounted for in such a study. Prof. Mukherji was requested to send the relevant literature on this aspect to all members through electronic media. Sri Bhandari observed that piezometers are employed for the collection of such data and presently, satellite system may be employed.

(Action: JNU)

- 2.14 GSI has been carrying out microzonation of 30 cities/towns and will be adding to the already existing data on Delhi and other metro-cities. Dr Wadhawan informed that active fault mapping programme is an ongoing project of GSI. GSI may also take up jointly with other organisations on microzonation study if specific request is made.

(Action: GSI)

- 2.15 The patches of palaeochannels in Delhi should be used for developing greenery because they are the locales for recharge of groundwater and the soft/porous soil is unstable for foundation of buildings. The Department of Urban Development should collaborate with GSI in identifying these areas around Delhi and take appropriate measures.

(Action: GSI/Dept of Urban Development)

- 2.16 The Convener advised that Remote Sensing through Satellite data is of prime importance and a joint study between GSI and DST should be considered. NRDMS has the data on Natural Resources Database Management System which may be of immense help in such a venture. A representative of DST should be present in this committee meeting for better coordination. It was informed that GSI is conducting free training on landslides in Sikkim for State DGMs. GSI regularly conducts training courses with DST sponsorship.

(Action: DST)

- 2.17 In the proposal for creation of National Geological Congress Sri Bhandari stated that the Memorandum of Association has been developed. However, the Terms of Reference have still to be framed. It is proposed that the Congress will be funded by the

Government which will cater to the annual meetings and TA/DA. The Convener observed that this Congress should have technical sessions for specific geoscience disciplines and also bring out publications and exhibition for common man.

(Action: Advisor, TPPC/GSI/Member Secretary)

- 2.18 It was decided after deliberation that dialogue with Academic Institutions through this committee should be increased so that they develop their curricula to impart quality teaching in their respective institutions. The lack of expertise in Marine Geology is frequently cited as one area where more opportunities are likely to arise once the off-shore mining activities begin all over the world.

(Action: GSI/MoM)

- 2.19 Representative from the Ministry of Land Resources needed the Hydrogeological maps of CGWB which they felt would be useful in their work. CGWB informed that the data on Groundwater is collected from 15600 observation sites, that include about 70-80 sites per district and the data can be provided for any specific area and would be made available on demand. In addition, District Groundwater User Maps of all the districts of the country are available in the digital and paper formats. These maps have been prepared using the data from 1:250,000 scale and are represented in approximately 1: 1 million scale.

(Action: Min. of Land Resources/CGWB)

- 2.20 The Convener desired that the output of work of GSI should be given wide publicity and the knowledge should be shared between GSI, States and stakeholders. She observed that various kinds of maps (geological, geophysical, geochemical and geomorphological), reports and special and miscellaneous publications are being uploaded in the GSI Portal and wanted GSI to give a presentation on GSI Portal- on Phase I and II for the benefit of the Committee members. Accordingly, Sri Tapan Chakarbarty of GSI presented the salient features of Phase – I and Phase – II projects showing the nature of content and the retrieval links created for easy dissemination among stakeholders. The GSI Portal is being planned for operations on 24x7 mode and as of now GSI have started separating contents (data) from infrastructure (connectivity, etc) which will be independently governed by Mission – III (Geoinformatics) and Support System respectively. He informed that bandwidth is a problem now, which will be taken care of in the Phase – III of the Portal Project in which National Informatic Centre, Delhi will advise.

(Action: Committee No. XI, CGPB/GSI)

The meeting ended with a vote of thanks to the Chair.

The following members attended the meeting:

1. Smt Ajita Bajpai Pande, Joint Secretary
Chair
2. Dr. S. K. Jain, CGWB, Faridabad
3. Sri A K Bhandari, Advisor, TPPC, MoM
4. Dr S K Wadhawan, Director, GSI, Kolkata
5. Sri A K Malaviya, Director, GSI, Faridabad
6. Ms Arti Chaudhary, Dept. of Land Resources, Delhi
7. Sri T. Chakrabarty, Director, GSI, Kolkata
8. Dr K Ayyasami, Director, MoM
Secretary

In the

Member