

## River diversion schemes and waste water recycling for Bangalore city

Harsha<sup>1</sup> in his efforts to put forth his point of view for consideration of river diversion schemes to Bangalore city has misconstrued and misinterpreted certain important suggestions and recommendations made by us in our paper<sup>2</sup> to counter the shortage in water supply. He has with improper argument termed our suggestions as 'false complacency created in meeting the demand of 95 lakh people by 2020'. Our replies to some of his comments are as follows:

(1) When we have assertively and emphatically stated in our paper<sup>2</sup> that the city aquifers may go barren with the prevailing situation of over-exploitation of groundwater resources at 378% (12,451 ha-m/yr) or nearly four times more than the annual estimated groundwater recharge (3,290 ha-m/yr), Harsha has grossly misquoted and misrepresented it as 'the authors' figure of groundwater overdraft of 12,741 ha-m/yr as an assured source of water for Bangalore is unreliable'. We have never stated that groundwater is an assured source of water for Bangalore. We have without any ambiguity made our point clear that in the event of the city aquifers going dry, nearly 24.38 lakh people in Bangalore who are dependent on groundwater resource will be badly affected. This condition of over-exploitation of groundwater is in fact due to the failure to provide assured and protected water by the civic administration in certain pockets away from the core area and more so to the population in the peripheral parts of Bruhat Bangalore. As a result, people had to rely only on groundwater, irrespective of its quality. Harsha has referred to the PDS groundwater quality study of Bangalore city, published by the Department of Mines and Geology, wherein one of us (Hegde) was in the study team and thereby we are aware of the quality situation. Thus, Harsha's statement that we have ignored the quality aspects is incorrect. Also, we have clearly stated in our paper<sup>2</sup> that the

groundwater as of now has not been a sustainable resource and hence we have suggested considering it only as a standby resource during the period of scarcity or drought till such time the water table is allowed to revive. Thus the comment made by Harsha in this regard is not relevant.

(2) Harsha has commented upon our suggestion to protect and conserve the precious storm-water discharge of about 17,040 ha-m/yr (which is being wasted by letting it drain along with sewage water) as 'outdated "silo" approach of water management that does not take into consideration river basin perspective'. He further states that if this water is used it will be 'a loss to the Cauvery basin water budget'. He suggests that this loss needs to be augmented from the other diversion like the Nethravathi-Hemavathi link. Probably, no person of knowledge and reasonable thinking can accept such a statement and suggestion. Is Karnataka not authorized or permitted to use the rainwater received within the city limits of Bangalore? It shall be pertinent for us to draw the attention of Harsha to the Bangalore Water Supply and Sewage Board (Amendment to BWSSB Act, 1964) Act, 2009, where under '72A-Obligation to provide rainwater harvesting structure' every owner or occupier of a building having a site area of 2,400 sq. ft and above or every owner who proposes to construct a building should install rainwater harvesting structure. Further, attention is also invited to the subsection 3 of Section 22 of Karnataka Groundwater (Regulation and Control of Development and Management) Act 2011 which states, 'In urban areas, falling in notified areas, the Authority shall issue directives for constructing appropriate rainwater structures in all residential, commercial and other premises having an area of 100 square meters or more....' In this context, 'other premises' implies rest of the part of city limits. This being the case, the huge quantity of 17,040 ha-m/yr of precious storm-water

discharge of Bangalore (which is being wasted by letting it into the sewage carrying streams within the city limits) when protected and conserved can meet the requirement of 23 lakh people, i.e. nearly 24% of the Bangalore city population, and there should not be any objection from any authority for such utilization. Bangalore Urban District has now been a notified area and city residents are enforced to go in for rainwater harvesting structures.

(3) We are aware of the type of technology and treatment for converting the sewage water load into a potable level. When most of the developed countries have resorted to providing safe water to their people by treating the waste water, why not it be made practical in the case of Bangalore? In this regard Porst<sup>3</sup> may be referred to for input of any updated technology.

(4) We are firm in our suggestion that a cumulative approach to conserve all the available resources within Bangalore as already put forth by us will prevent the much advocated proposal like diversion of west-flowing Nethravathi river water in the Western Ghats to the east. The proposed diversion is estimated to cost Rs 60,000 crores.

1. Harsha, J., *Curr. Sci.*, 2012, **103**, 144-146.
2. Hegde, G. V. and Subhash Chandra, K. C., *Curr. Sci.*, 2012, **102**, 1102-1104.
3. Porst, J. H., In Proceedings of the Workshop, Dayananda Sagar College of Engineering, Bangalore, 21/22 March 2012, pp. 32-63.

G. V. HEGDE<sup>1,\*</sup>  
K. C. SUBHASH CHANDRA<sup>2</sup>

<sup>1</sup>Department of Mines and Geology,  
Kandaya Noukarara Bhavan,  
Karwar 581 301, India

<sup>2</sup>No. 17, Ganga Block,  
Goodwill Apartments, Chandra Layout,  
Bangalore 560 040, India  
\*e-mail: hegdegv@gmail.com