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Water supply in Bangladesh

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A.W.TURNER

water supply in bangladesh

CHAIRMAN: B M U BENNELL, BSc FICE
Principal Engineering Adviser
Ministry of Overseas Development

THE CHAIRMAN introduced Mr TURNER who was formerly Chief Engineer with the Metropolitan Water Board and had recently been employed by WHO as Consultant concerned with the water supply problems in Bangladesh, particularly Dacca and Chittagong.

2. Mr A W TURNER said he was a "pure water man" who had just paid his first visit to Asia, accompanied by the former Chief Accountant of the Lee Conservancy.

3. Dacca was the capital of Bangladesh with a population of one and a half million which was increasing rapidly. Chittagong was a sea port with a population which was probably 500 000. Both cities were almost entirely dependent for their water supply on tube wells which had to be over 100 feet deep to get through clay into the aquifer. There had been an IDA tube-well programme since 1964 and they had now got to the stage where they needed to develop surface supplies. Dacca had a water works which must be one of the oldest in S E Asia; it was just over a hundred years old and had sand filters and sedimentation tanks and so on, but only provided three million gallons per day.

4. In Bangladesh there were a lot of consultants including Russians, Americans and Germans. It was important to provide facilities which the local people could operate. At Dacca and Chittagong the equipment being installed was not as sophisticated as the oil-rich countries.

5. Mr TURNER then showed slides of the

Himalayas where he had spent a few days. Katmandu had great poverty and in need of development. Bangladesh was about the same area as Britain, half of it being not more than twenty or thirty feet above sea level. Every bit of land was taken up in the delta which is very fertile, but the paddy fields were far too small for economic development of crops.

6. Demra on the river Lakha outside Dacca had been suggested as a site for a new source treatment works. IDA-funded sewers and water mains were being built all over the city to cope with the increasing demand. Inevitably population increase had overtaken them and certain parts of the city only had a few hours' supply per day. Water towers with a capacity up to about a quarter million gallons were dotted around the city but unfortunately there was not enough water to fill them. Tube-well water went straight into the system.

7. Chittagong was hillier than Dacca and the land rose to about 200 feet above sea level. A booster station was being built on the site of the old waterworks. Water was pumped from about sixteen bore-holes supplying a city of 300 000 and a typical production was about fourteen million gallons per day. In both cities, waste amounted to 35-40% of the supply. Ground water was running short because the pieometric level of the water was getting lower and there was an increasing content of iron in the water from certain wells in the Chittagong area. IDA had funded an iron removal plant, which included teak racks over which the water dripped before

going into two lagoons. The water was also chlorinated and there were some small gravity filters.

8. The main troubles on the engineering side were financial. Expenditure and income did not balance. In Chittagong some of the water rates had not been collected since the War of Independence in 1971.

9. In Dacca there were 200 000 water bills to get out twice a year. They had asked for a few simple calculating machines to ease the problem.

10. The waste of water was very high. They had 1400 street hydrants which wasted a lot of water and there were many illegal connections. They had a crash programme of replacing the hydrants with a new type of pressure-reducing valve which operated when the person leant on it. It was made out of ferrous material rather than brass, so was less suitable for the scrap market. They were concentrating on publicity and had a travelling waste prevention unit.

11. There was a lot of argument about metering. In Dacca there were 40 000 meters to put in. 20 000 were installed but meters were going out of action more quickly than they were being put in. A meter repair shop had been built from IDA funds. Mr TURNER was not in favour of meters particularly in developing countries.

12. There was lack of staff to maintain plant and at pumping stations in Dacca, 40% of the meters were out of action at one time.

13. Mr S C DUTTA GUPTA said that in Calcutta 30 000 gallons per hour was obtained from a 6 inch tube well, 100 feet deep with a strainer. What was the figure for Bangladesh?

14. Mr TURNER replied that some of the tube wells in Chittagong gave over a million gallons per day.

15. In the IDA programme linings of wells were being extended from about 90 feet to 100-120 feet to restrict pollution.

16. Mr E J FELTS had been faced with the problem of 20 000 services, some of them laid in electricity conduit and a wastage of 60% to 70%. Metering each connection was the only satisfactory method of control because of the large number of unauthorised connections in the urban areas. Mr FELTS had faced the same problems in Malaysia, and from the point of view of management of water supply in developing countries, metering was essential in order to establish the percentage of unaccounted water. Any

financial institution approached for loan funds always asked what was the position with regard to unaccounted water.

17. The CHAIRMAN said that the subject of metering or reading meters and even the mechanical design of meters seems to be something which might be the topic of another seminar. The IRC might do something on these lines. He felt metering had been accepted rather readily and had produced many problems which ought to be aired.

18. Mr TURNER suggested that measurement of unaccounted water did not require a meter on every supply. Measurement of night flows, when the mains were full of water, was useful.

19. Mr S PRAKASH said that in Delhi they had 200 000 meters, of which 30 - 32% were out of order. Reading meters and sending the bills every two months was more expensive than a flat-rate system where the bill was sent every year on the basis of property values.

20. Mr TURNER said that the practical business of collecting water rates was the trouble. Water was a public service and perhaps the poor should get it free, but that was a political decision. Whatever system of charging was adopted somebody had to pay for the whole of the cost and there was always grumbling and arguments about individual water rate bills by the consumer.

21. Mr A W SHILSTON asked whether it was desirable to chlorinate bore-hole water before it went into supply and what was the difference between a tube-well and a bore-hole.

22. Mr TURNER said there was no difference between a tube-well and a bore-hole. The only chlorination in Dacca was to the hospital supply and the river-water supply. Only about 15% of water was chlorinated. None of the Chittagong supply was chlorinated at present but sterilisation was planned for the future.

23. The CHAIRMAN said that we had seen a very wide spectrum of engineering problems associated with water supply and sewage disposal ranging from the astronomically luxurious to the pitifully poor.