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Panacea for Karachi`s water woes?

YOU should be suspicious if > someone tries to sell you Clifton Bridge at a bargain price.

But what if they claim they can recycle Karachi`s seaand wastewater at a mass and affordable level to practically end the city-wide water shortages once and for all? Your answer should depend on whether the guy offering a panacea for all water woes is a telemarketer holed up in a dingy call centre or Pakistan`s highest-paid CEO running the largest electricity-producing company in the private sector.

Hub Power Company (Hubco), a listed entity that contributes around 10 per cent electricity to the national grid, has promised its shareholders that it will transform itself into the country`s first independent `water` and power producer by 2025. In simple words, the company with an asset base of Rs132 billion is going to shift its focus to water provision in Karachi.

In a recent interview with Dawn, Hubco CEO Khalid Mansoor said the company is working on multiple projects that aim to end the severe water crisis in Karachi a city of over 20 million people that receives hardly half the water it needs to meet its industrial and household requirements.

His plan to bring affordable water to our taps can be divided in small-, mediumand large-scale components. Let`s first look at the medium-scale project that involves turning sewage into industrial-grade water.

Every drop matters In ballpark terms, Karachi`s households and industry collectively need about 1,100m gallons of water per day (MGD). This includes industrial demand of around 200MGD.

Besides groundwater, the city receives bulk suppliesfrom two sources of sweet water: Hub dam in Balochistan and Keenjhar Lake in Thatta. But the total supplies amount to barely 550MGD.

Currently, the city`s sewage (470MGD)and industrial waste (90MGD) are being dumped into the sea largely without treatment.

Hubco initially plans to set up a recycling plant that will make 50MGD of household wastewater fit for industrial consumption. But the plan will work only if the Sindh government holds its end of the bargain by ensuring that its wastewater treatment plants, operated by the Karachi Water and Sewerage Board (KWSB), stay up and running.

Treatment Plant 1 (TP1) is in the SITE industrial area, TP2 is in Mehmoodabad, TP3 is in Mauripur and TP4 will be set up in Korangi. Until recently, none of the KWSB`s three water treatment plants, each having the installed capacity of 50MGD, were operational.

The Sindh government sprung into action when the Supreme Court constituted a Judicial Commission on Water and Sanitation in 2016.

Rehabilitation work on TP1 (SITE) is likely to end in the first half of 2020 as the government is increasing its capacity to 150MGD. TP2 (Mehmoodabad) is permanently closed because of a land-related dispute, so the government is setting up a 180MGD plant in Korangi instead (TP4).

TP3 (Mauripur) became functional last year. The Sindh government first increased its capacity to 73MGD and is now taking it to 180MGD.

These three plants will do primary and secondary treatment of wastewater, which will let the KWSB discharge it into the sea in line with the National Environmental Quality Standards (NEOS).

`We studied the whole process and wondered why throw that sweet water into the sea? Why not recycle it because it is a lot less challenging to clean than seawater?` said Mr Mansoor.

The government is betting heavily on K-IV a decade-old Rs75bn water project that federal and provincial govern-ments are funding to arrange additional 260MGD to end Karachi`s water shortage. But the Hubco management believes recycling 480MGD of wastewater at a fraction of the K-IV cost makes a lot more economic sense.

Hubco has formally submitted an unsolicited proposal (USP) to the Sindh Public-Private Partnership Unit (PPPU) to set up a recycling plant at TP1 (SITE).

`There`s no point in throwing sweet water into the sea. We can install a 50MGD plant for tertiary cleaning at the SITE unit to make all the sewage fit for industrial use. We will give that water to factories in SITE after installing our own pipe network. The government can then divert the sweet water, which the industry is currently using, to households,` said Babar Mahmood Siddiqui, head of projects at Hubco.

The USP promises to convert 47.5MGD for industrial reuse a quantity that amounts to almost 10pc of the bulk supplies that the city currently receives every day. It can be increased to 150MGD as KWSB expands the primary and secondary treatment capacity of TP1.

But the submission of the USP doesn`t mean Hubco is getting the contract. Any private investor can seek the provincial government`s support to build an infrastructure project through a USP that lists technical, financial and commercial details of the proposed project. If the PPPU finds it viable, it takes the proposal to its policy board for approval. Then it develops a request for proposal (RFP) or a tender and publishes it to seek bids from potential investors.

The original party that came up with the USP takes part in the bidding process along with other potential investors. The former reserves the right to match the bid and receive the contract in case another bidder comes up with a better price.

According to the Hubco CEO, the selling price of this water is expected to be 35-40 paisa per gallon. In contrast, the commercial rate of a sweet water tanker of 3,000 gallons is Rs6,000 or Rs2 per gallon.

Speaking to Dawn, PPPU Director General Khalid Mehmood Shaikh said the policy board has approved the proposal and the bidding phase will begin in three months. `The contract will be awarded in about six to seven months to either Hubco or some other company.

He added that the PPPU is considering projects to convert wastewater into potable water.

`We expect to make some headway in six to nine months,` he said, adding that a potable water plant will likely be installed at TP3 (Mauripur). `I believe there is simply no solution other than that. We should generate 70-80MGD clean water at TP3. This will take care of District West at least, which is currently facing a heavywater shortage.

Mr Siddiqui of Hubco said the company is looking into the possibility of setting up a sewage-topotable water plant, but refused to divulge the expected cost.

Talking to Dawn, urban planner Arif Hasan said recycling sewage in Karachi will be challenging because a lot of wastewater goes directly into natural drains that end up at sea. `First they have to ensure that sewage goes to treatment plants.

He also expressed reservations about the increasing role of public-private partnerships in Sindh. `I call it unequal partnership. The public is mostly missing from this equation. Everything is loaded in favour of the private sector,` he said.

Water for DHA Hubco is in advance stages of developing a small-scale water solution for the residents of Phases Vll and Vlll of DHA Karachi, Mr Mansoor said.

The company has received a two-acre plotfrom DHA on a 10-year lease near the sea where it is building a seawater reverse osmosis (RO) plant that will initially have a capacity of 5MGD. This technology is more expensive than that of wastewater recycling. The cost is almost double. But Hubco is betting on the fact that the consumer price will still be less than the rate that DHA residents are currently paying for tanker water.

Its plant will take seawater, pass it through the cleaning process and pump it to the already existing pipe network of DHA. This means that readyto-drink water will be directly available in taps for residents of the two phases of DHA at a considerably cheaper rate.

But DHA faces the same problem that the KWSB faces in the rest of the city: leakages, theft and poor recovery in the absence of water meters.

One option on the table is for Hubco to take over water distribution and bill collection tasks as well. If that option materialises, the company will install water meters in every residential and com-mercial unit in the area. The Hubco board of directors has yet to take a final decision in this regard.

Water for entire Karachi The country`s largest independent power producer has four fully functional furnace oil-based power plants with a total capacity of 1,200MW in Hub, Balochistan. These plants are now lying idle because the federal electricity purchasing authority has shifted the power mix away from expensive furnace oil. (It makes little difference to Hubco`s financial performance because the company continues to receive `capacity payment` from the government regardless of its plants` operational status.) Mr Mansoor has formally requested the power ministry to let it convert two of these four power plants to coal. All that the company will need to invest in is a new boiler and coal-handling equipment. Thanks to a brand-new coal jetty built especially for Hubco`s nearby 1,320MW coalbased power plant inaugurated last month, thecompany has access to coal supplies.

The seawater RO process is highly energy intensive. The cost of pulling water from the sea constitutes 20-25pc of the final price. Pumping water through the membrane also requires a lot of electricity.

Mr Mansoor wants to use cheap electricity produced by the two coal-based power plants to suck water from the sea, pass it through the membrane and pump it to the Hub dam for onwards supply to Karachi. The whole infrastructure of water intake and outfall already exists at the site because the furnace oil-based plants would use as much as 925MGD to cool machines off as part of electricity generation.

The going rate for setting up a seawater RO plant is $5m per MGD. Even if the existing infrastructure saves one-fifth of the cost, installing a 100MGD plant will still cost about $400m.

`It`ll be expensive water,` said Mr Siddiqui of Hubco. But it provides a `competitive alternate` in case the government ever considers setting up a seawater RO plant in Karachi to rid the city of water shortages, he said.