



THEIR VIEW

MINT CURATOR

Here's how India can address the emerging scarcity of fresh water

It's time for the country to invest in future supplies through desalination plants that could be set up along our vast coastline



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In recent articles, I have often referred to three ongoing technological revolutions that will fundamentally transform the way we live: the energy transformation from fossil fuels to renewables, the artificial intelligence (AI) revolution and the biotechnological revolution (*Mint*, 31 May 2024, *Economic & Political Weekly*, 28 September 2024). But there is a fourth fundamental challenge which will also have a profound effect on our lives in India and around the world—namely, the emerging global water crisis. Or to put it more precisely, the crisis of scarce fresh water supply. This column addresses this issue.

To put things in perspective, here are some numbers. There is no scarcity of water *per se*. Accounting for over 70% of the earth's surface, the world's stock of water has been estimated at over 1.4 billion cubic kilometres—vastly in excess of our needs today and in the foreseeable future. However, only 2.5% of this is fresh water, mostly in the form of frozen polar ice-caps and glaciers (69%) and ground water (30%). Only 1% is available as surface water, mostly as ground ice or permafrost and in lakes, marshes, rivers, living creatures and as water vapour in the atmosphere. The natural supply of fresh water is not only not growing, but is likely to shrink due to climate change. Meanwhile, the consumption of fresh water has increased by 600% during the past century due to population growth and increasingly intensive fresh water use in agriculture, which accounts for 70% of total consumption, industry (23%) and home consumption (7%).

Large parts of the world are already water stressed and it is estimated that by 2030, demand for fresh water will exceed sustainable supply by 40%. This is the scale of the crisis.

The water crisis within India is a more granular though magnified version of the global picture. In my *Mint* column of 20 August 2021, which discussed what could be done to address the crisis on the demand side, I had pointed out that water tables had declined precipitously, even by thousands of feet in some parts of Punjab, Haryana and Andhra Pradesh. Some rivers have shrunk while other smaller ones have dried up, as have many wells and tanks. Water rationing is routine in many urban areas, while in many villages, women are trudging longer distances to fetch water. My *Mint* column had discussed how the crisis could be addressed on the demand side, especially conservation measures in agriculture, which accounts for 90% of water consumption in India. However, there are limits to what can be achieved by addressing only the demand side.

Today's column focuses on the supply side. The growing demand for fresh water can only be met through increased production of fresh water.

There are a number of technologies already



available for de-salination of water, mainly sea water. The traditional method of de-salination was distillation, where water was allowed to evaporate and then condensed to extract the desalinated water. A modern version of this technology, multi-stage flash distillation, is one of the two main technologies currently used to desalinate sea water. Water is made to evaporate in a flash and the energy released during condensation is used to power the next cycle of evaporation-condensation.

The other main technology in use is reverse osmosis (RO), where saline water is forced through a semi-permeable membrane that traps the salt, releasing fresh water on the other side. Many readers will be familiar with RO systems used at home to purify water.

Both flash distillation and RO are very energy intensive, but RO requires less power than flash distillation. RO is also the fastest spreading technology for desalination. Both technologies can be solar-power based, which would make them carbon neutral, but they are still very costly because of their high energy intensity. Energy cost accounts for about half the cost of desalination. Though some 177 countries have desalination plants, including India (in Chennai), this purification method has not really taken off because of its high energy cost. The exceptions are the water-

scarce countries of North Africa and West Asia, especially Saudi Arabia, Israel and the United Arab Emirates, and island economies that lack natural fresh water supply.

However, energy costs and hence the cost of desalination are declining rapidly. The cost of 1 cubic metre of desalinated water has come down from over \$1 in 2000 to less than \$0.40 now,

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Large parts of the world are already water stressed and it is estimated that by 2030, demand for fresh water will exceed sustainable supply by 40%. This is the scale of the crisis.

Many Indian cities are facing severe shortages and if we are to prevent a crisis in another decade or two, we must act now and add desalination plans to India's infrastructure blueprint.

according to some estimates. With the growing gap between demand and supply of fresh water, and rapidly declining costs, the spread of desalination is beginning to gather momentum.

Many cities in India and large parts of rural India are already facing severe water scarcity. However, India is also lucky in having a huge coastline of over 7000km along the national mainland and around its islands, which offers vast potential for producing desalinated fresh water. That potential is yet to be utilized. But if we are to avoid a severe water crisis 10 or 20 years down the road, the time to act is now.

In its two terms in power at the Centre, the Modi government has laid great emphasis on investment in infrastructure, mainly for transport, power and communications. As the government launches into its third term, it is a good time to add desalination to this investment portfolio.

These are the author's personal views.

It won't be easy for Bessent to fix US finances but he should

Trump's chosen Treasury secretary will face a daunting challenge



BILL DUDLEY
is the chair of the Bretton Woods Committee and served as president of the Federal Reserve Bank of New York from 2009 to 2018.



Scott Bessent, President-elect Donald Trump's nominee for US Treasury Secretary, will face two big challenges if confirmed by the Senate: Ensuring that the world's largest government-debt market functions properly, and pursuing a fiscal policy that doesn't send the country's debt-service costs soaring. Wish him the best. Neither task will be as easy as stock and bond investors seem to believe.

It's hard to overstate the importance of the market for US Treasury securities. It provides a benchmark for prices of stocks and bonds around the world and determines the cost of financing the US budget deficit. To those ends, it must be deep and liquid—able to handle large trading volumes without undue volatility. But it remains vulnerable to turmoil. US deficit spending has vastly increased the volume of Treasury securities outstanding, dwarfing the balance sheets of the financial institutions at the centre of the market. Meanwhile, authorities lack the proper tools to prevent dysfunction.

Usually, algorithmic firms handle most Treasury trades in a microsecond, transferring securities at prices close to previous transactions. But they lack the capital to take and hold big positions, so they often withdraw when buying or selling becomes one-sided. This puts the onus on the US and foreign banks known as primary dealers, which also don't have the capacity to provide enough "liquidity in the large" as they've already committed their balance sheets elsewhere. As a result, shocks can trigger dislocations, such as the 'flash crash' of 2014 or 'dash for cash' of 2020.

Mostly, authorities are able to respond only after damage is done, as the Fed did in 2020 by buying large quantities of Treasuries. The Fed's standing repo facility, which support liquidity *ex ante* by lending cash against Treasuries, has some crucial limitations. It's available only to primary dealers and large banks, it doesn't allow them to expand their balance sheets any more than they otherwise could, and some firms are reluctant to tap it for fear that usage would signal weakness.

The Treasury secretary has a few options to address the problem. For one, he can work with the Fed and other regulators to adjust the supplemental leverage ratio, which limits the assets banks can hold for a given amount of equity capital. If reserves at the Fed and available-for-sale Treasury securities were excluded from the asset calculation, primary dealers could increase their Treasury holdings at times of stress without breaching the ratio.

Investors seem overconfident about how US finances will be managed

Another approach would be to broaden the standing repo facility, providing liquidity to any holder of Treasuries that wants it. Primary dealers would act as conduits, but the transactions would not show up on their balance sheets. Expanding central clearing of Treasury trades could further ease the pressure on dealer balance sheets by facilitating netting of gross positions and allowing more counterparties to trade directly with one another, bypassing the dealers entirely. Bessent must also address the trend that has been putting pressure on the Treasury market: the US government's rapidly growing debts. Although he can't single-handedly put US fiscal policy on a sustainable course, he has a big role to play.

First, he should stress that fiscal imprudence will drive up debt service costs, and advocate measures to increase revenue and limit spending (not just by assuming faster growth or that tax cuts pay for themselves). Second, he should seek ways to broaden the tax base and ensure everyone pays what they owe. Third, he should be realistic about the extent to which higher import tariffs can raise revenue—and about their negative impact on growth, inflation and productivity.

Finally, he should support the Fed's independence on monetary policy. If markets begin to worry that the executive branch will push the Fed to absorb excessive debt issuance (known as monetizing the debt), they'll demand higher Treasury yields to compensate for the risk of inflation—undermining the US fiscal position by increasing its borrowing costs.

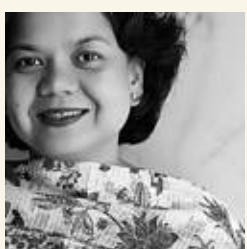
Bessent could stop advocating a shadow Fed chair to undercut Jerome Powell's authority before his term ends in 2026. A shadow chair would likely be ineffective in influencing expectations about monetary policy, because the economy is operating near the Fed's employment and inflation objectives. This makes policy dependent on incoming data rather than on other, more forward-looking considerations.

I do hope Bessent will be successful. Markets' exuberant response to his nomination certainly suggests this is what investors expect. Yet, their optimism contrasts sharply with the difficulties he'll encounter in managing the Treasury market, the country's fiscal trajectory and the broader economy.

MY VIEW | PEN DRIVE

AI effect: Business efficiency but puffed-out workers?

DEVINA SENGUPTA



writes on workplaces and education at Mint.

Upskill. Upgrade. Retrain. Reskill. Words that are sprinkled liberally in the business updates of many listed firms of India Inc. While companies have begun to boast of their fast-increasing count of workers skilled in the use of artificial intelligence (AI) tools, for us employees, the quickened pace of upskilling seems to be a race. A race that many did not volunteer to participate in, but cannot afford to watch from the sidelines. It is ironic that AI, which is expected to ease business complexities, may end up exhausting employees being pushed to Upskill, Upgrade and Retrain. The frenetic pace of AI adoption will probably extract its pound of flesh at some point, even if India Inc would rather talk about the productivity marvels of this new technology.

According to a study, 'AI at Work Is Here. Now Comes the Hard Part,' by Microsoft and LinkedIn, 75% of corporate India's business leaders have refused to hire some-

one lacking in AI skills, out-scoring the global average of 66%. "AI skills outweigh experience, with 80% of leaders in India preferring to hire a less experienced candidate with AI skills over a more experienced candidate without them," noted the study released in May this year. And 91% of the leaders in India believe that their firms need to adopt AI, versus 75% globally.

To a global analyst or an investor, or a funder of startups, these statistics are comforting. They suggest that companies in India are surging ahead on technology adoption and that India's demographic dividend of a youth bulge is paying off in terms of a quick embrace of AI. But if you are a campus graduate trained in a specific area, you will have to learn how AI tools operate in that field and how to master them. If you are already employed and do not find your name on a list of employees picked for upskilling sessions by your employer, you may wonder whether you've been judged less suitable for it. And if you are a hunting for a job and your experience lacks AI-related skills, you may find it harder to find employment. AI is fast changing prospects and hasn't been discussed enough.

Although company representatives at

panel discussions have assuaged fears of AI resulting in job losses as algorithms take over routine tasks, many top and higher-level executives are unsure of the impact of AI on modern workforces. So pacification is mostly futile. A senior executive of a large internet firm recently said in a meeting that firms are laying out road-maps for the bulk of office work to be taken over by AI.

While many are confident that the complexity of their role and analytical skills mean their jobs will not be snatched away, AI is expected to get sophisticated enough for its shadow to fall even on better-paid jobs. The 'co-pilot' model, with AI playing the role of an assistant, is reassuring, but not entirely.

AI may impact genders differently. Women who have taken a career break may find large portions of their work expunged when they return to office. Women returning to a workforce after a break are easily

accepted today, but the roles offered are often below their capabilities. Catching up can be exhausting. And some workers being asked to adopt still-evolving AI tools say it's a breathless experience. AI tools claim to be user-friendly, but are often found to be overhyped on that count. In cases where processes cannot afford AI errors or any 'hallucinations,' ensuring work accuracy can be time consuming. AI-driven exhaustion could put women at a disadvantage.

That worry is accentuated by the fact that

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Although companies try to assuage fears of artificial intelligence resulting in job losses, it has become clear that AI will have a profound impact on tomorrow's workforces

Even if AI tools are presented as assistants or 'co-pilots,' learning how to use them, keeping up with updates and supervising their output to spot errors can be quite exhausting.

AI impacts all sectors and companies, regardless of type and size. According to media reports, AI is partly responsible for layoffs over the past year or so at companies like Google, Microsoft and Dropbox. But today, even newly hatched businesses that do not employ large numbers must adapt to AI. Just this month, social media influencer Sharan Hegde, founder of The 1% Club, laid off 28 from

his 200-member team because of "some mistakes" in hiring and the adoption of AI tools to shave costs.

It's a sign of the times that online ads have been proliferating for training sessions on AI adoption for various tasks. An AI training industry has sprouted around IT-skilling centres. Ameerpet in Hyderabad, which bustles with makeshift classrooms and IT professionals imparting lessons, now has billboards that scream about the latest AI courses, even though it's unclear if paying for these will improve a candidate's chances of being recruited.

"The advent of artificial intelligence casts a huge pall of uncertainty as to its impact on workers across all skill levels—low, semi and high," the *Economic Survey* noted this year. This caution is based on the capacity of this new technology to throw spanners in the wheels of employment generation in a country that is short of jobs.

We also need to worry about where large-scale AI adoption may leave businesses. They may end up more efficient, but also find their human staff too over-stretched and exhausted to check if AI is getting it right. Unlike humans, AI tools don't get burnt out. But can AI be trusted?

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