

Delhi-Mumbai Corridor

A Water Disaster in the Making?

ROMI KHOSLA, VIKRAM SONI

Coming out of a key recommendation of the McKinsey Global Institute report on India's urbanisation in the coming decades, the Delhi-Mumbai Industrial Corridor project envisages the establishment of several new cities, industrial nodes, ports, airports and high-speed rail and road lines over six states. However, as is typical of such research and policy vision documents that have been farmed out to international corporate consultants, the project analysis relies on several arguable assumptions about resource availability, especially of water in a severely water-deficit region.

The union cabinet has moved a note to divert \$90 billion for the Delhi-Mumbai Industrial Corridor (DMIC) project, according to an August 2011 report in *The Hindu*.¹ The project will be implemented in collaboration with Japanese investment. Conceived some five years ago, the project has been endorsed by the McKinsey Global Institute in their report "India's Urban Awakening", which has recommended the construction of 19 such industrial corridors in order to fast-track India's urbanisation. One of these 19 corridors, the DMIC, the subject of another report by the infrastructure consultant Scott Wilson India, envisages the establishment of several new cities, 24 industrial nodes, three ports, six airports and a 1,500 km high-speed rail and road line. The project footprint stretches across six states. The population in the region is expected to grow from 231 million in 2009 to 320 million in 2019 and 524 million in 2039 (Scott Wilson India 2009).

This is first of the mega-projects that McKinsey has predicted India will need in the coming decades. For the first time in history, consolidated global census data shows that a majority of people around the world now live in cities. If the trend continues, by 2050, some 55% of the entire Indian population could be urban dwellers (United Nations 2009). Urban research institutions, corporate entities and governments have received this as "fate foretold". For governments facing the immediate pressures of this urban onslaught, it is clearly a nightmare. For the corporate sector, on the other hand, this is exciting news since it promises vast new opportunities for investments and returns and they have provided us with the answers to our impending urbanisation disasters in two reports – from McKinsey and Scott Wilson.

Urban Research and Its Problems

In India, due to the complexity of the current political situation, the government

has found it convenient to farm out research and policy projects to project managers or global policy institutions. In this article, we will review the "fate foretold" in the research publications of some of these institutions and analyse the consequences of the proposed urbanisation policies of the government. The emphasis is on the role of the private sector and could possibly lead to damage to the environment, if the approach is not transparently managed and discussed in the public realm. Some of these proposals, after all, are going to decide the political, economic and social fate of India in the coming century.

In order to find out just how hopeless the situation is in our metropolitan cities, we can conveniently turn to the findings of the McKinsey Global Institute, an arm of McKinsey and Company, a global management firm. The report's database is derived from 2,000 metropolitan areas. This exhaustive report has become something of a bible for government policymakers and is leading to some highly questionable planning proposals, as we show later.

Using 2001 Census data, the McKinsey report proposes that the urban population of India will rise from 340 million in 2008 to 590 million in 2030. The report proposes that while urban India contributed to 58% of GDP in 2008, this figure should rise to 70% by 2030. In order to evaluate the quality of life of urban India, the report considers six key indicators – water supply, sewage treated, solid waste collected, slum population, private and public transport and parks and open spaces. It concludes that India needs \$1.2 trillion of additional capital investment by 2030. We do not, in this article, question the outdated criteria for the sole selection of indicators for GDP, prosperity and the quality of life. Instead, by remaining within the parameters set by the report, we can observe the consequences of these projections on government policies.

Two of the 34 McKinsey recommendations concern us here (2010: 35):

- Facilitate 20 to 25 new cities near the largest 20 metropolitan areas by providing adequate infrastructure such as water, electricity and transportation links.

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• Seed future urbanisation by building 19 transportation corridors linking Tier 1 and Tier 2 cities.

It is our contention that of the six indicators selected by the report to evaluate quality of life, it is water supply that is most crucial since it is a natural resource whose supply cannot be increased by technology, except at enormous cost. The entire available supply of water in the DMIC region is already being shared between farmers who use 83%, industry that uses 10% and cities that use the balance (Vyas 2003).

For the purposes of our analysis, we have chosen the DMIC as the testing ground for the conclusions of the McKinsey Global Institute report. The DMIC is a direct outcome of the second recommendation above. Both recommendations seem implausible, and yet their untenable conclusions are likely to guide government policies and investments in the next decade.

The Delhi-Mumbai Industrial Corridor

The most critical resource for industrial or urban development is the availability of water. The two sources for inland water are rivers and underground aquifers. The ambitious urbanisation and industrialisation project of the DMIC being planned for the future will have to extract two-thirds of the total water need from rivers and the rest from severely stressed groundwater aquifers, which are already polluted and overexploited.

The Scott Wilson DMIC report has a listing of total flows and extractable utilisable flows in each state in the DMIC region. In order to evaluate the real situation of water availability, we shall use the criterion used in the Scott Wilson DMIC document – an ecological flow imperative of allowing 50% of the river water to remain in the river to enable it to live and clean itself.

The data implies that the DMIC can share and extract water from this 50% utilisable flow. Unfortunately this is not the case, since all the “utilisable flow” in the rivers of the region is already fully utilised by current users. Developing the DMIC will overdraw the water and impact the health of the rivers.

All the rivers in the DMIC region already have multiple barrages and dams to divert their flow. Clearly there is no possibility of building more dams without seriously disturbing the ecological flow. The Chambal, for instance, already has four dams that divert almost half the river flow. The international norm for ideal utilisation laid down by the International Centre for Water Technology (ICWT) is 25%. Even accepting the higher utilisation of 50% of total flow, we find the region is already water deficit.

Table 1: Water Resource Potential of Rivers Passing through DMIC Region (Water Volume in Billion Cubic Metres (BCM))

River Basin	Total Flow	Minimum Flow 50%	Already Utilised	Balance Available for Utilisation
Yamuna (till Etawah)	13	6.5	9	-2.5
Chambal (till Etawah)	31.4*	15.7	15**	+0.7
Mahi	11	5.5	5	+0.5
Sabarmati	3.8	1.9	1.4	+0.5
Narmada	45.6	22.8	23.6	-0.8
Tapi	14.9	7.5	10.3	-2.75
Seasonal west flowing rivers of Kutch and Saurashtra including Luni	15	7.5	6	+1.5
Total	134.7	67.4	70.3	-2.85

Data from the Central Water Commission archives.

* From P K Jha, V Subramanian and R Sitasawad (1988). ** Based on only storage capacities of the dams Gandhi Sagar, Rana Pratap Sagar, Jawahar Sagar and Kota Barrage. Does not include the 150 small-scale irrigation projects on the Chambal.

Table 1 shows that there is no water left for diversion in the rivers that fall in the region of the DMIC. This should be an overriding concern for any large-scale project. The Scott Wilson report implies that further diversion of these rivers is necessary as the area faces a groundwater deficit. This would result in irreversible damage to these rivers leading finally to their demise. Unfortunately, this is the likely scenario in most of the country, except for the water-surplus north-eastern states and the ghats.

If we consider the data in the DMIC report in further detail and look at Haryana, for example, we discover that out of the total flow of 5.88 BCM in the Yamuna, 4.05 BCM in the Beas, 4.94 BCM in the Ravi and Sutlej, the flow available for diversion (50%) is already totally utilised. There is no water available for further diversion. In reality, the conditions of these rivers is not unlike that of the Yamuna where the quantum of water being diverted is closer to 70% and hence already much above permissible limits.

There is thus a danger that the data being used in the DMIC report does not coincide with the data from established

national water monitoring research institutes such as the Central Water Commission. The justifications for these enormous projects in the future may be coming through a subterfuge of language, suggesting the utilisable flow is available flow. It is highly questionable to how such multimillion urbanisation and industrial projects are being proposed on the basis of interpretation of unreliable data.

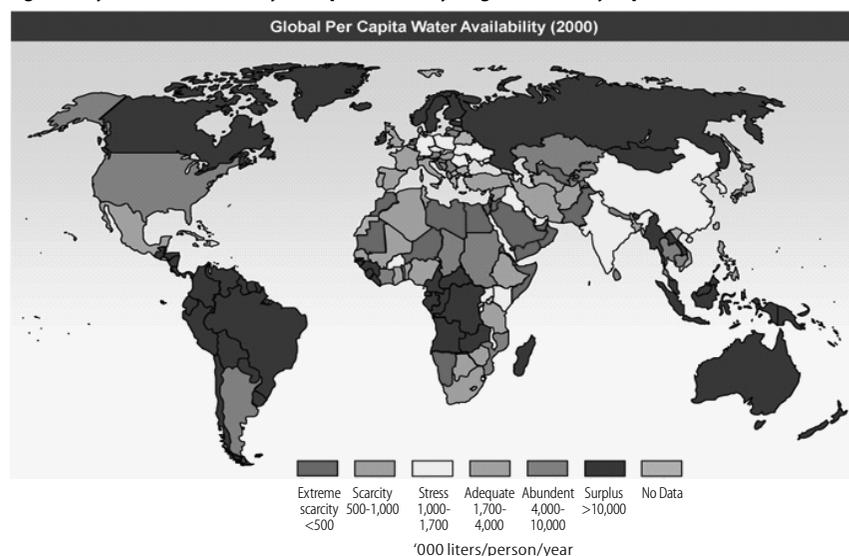
The International Water Management Institute (IWMI), to which India is a donor, has categorised India as a “water

stress zone” (Figure 1, p 17). In addition, the IWMI has indicated that 33% of India’s rivers are severely or moderately polluted across their entire lengths, that 69 districts in 14 of our states have high fluoride levels in the groundwater, and that 40 districts in 13 of our states have high heavy metal pollution levels in the groundwater.

IWMI Data

The authors of the Scott Wilson DMIC report have further assumed that east-flowing rivers outside of the DMIC region also provide water for the DMIC. They suggest that if and when an engineering solution becomes available, the water of these east-flowing rivers be transferred large distances by lifting waters over heights of 600 metres across the Western Ghats. The less said about this proposal the better.

The water of Godavari and Krishna Rivers that flow east is shared between Maharashtra and Andhra Pradesh, where there is intense interstate conflict over river water sharing and where agriculture demands have already prompted farmer suicides. It is unlikely that these states

Figure 1: By 2000, Water Scarcity Had Spread to Many Large and Densely Populated Countries in Asia

Source: Reproduced from *IWMI Water Policy Briefing Volume 15 on Environment Flows*.

will surrender any of their precious river waters to the DMIC as the DMIC document assumes.

Precautionary Principle

It is therefore apparent that before this enormous investment of billions of dollars is made across the terrain of the DMIC, a proper evaluation of the availability of water should be completed. Going by announcements in the financial press, it would seem that investment in the project is awaiting government willingness to undertake the necessary infrastructural investment. Private investors contend that the government should invest in power, roads, water, land acquisition, etc, since these give no direct returns but facilitate other investment.

Of all the infrastructure requirements, water and land are the most critical because they are finite resources. The DMIC project cannot proceed without usurping the water that the farmers need for growing precious food and having an adverse impact on villages in the area. Such land and river acquisition will only create conflict.

It is our contention that the urbanisation process being planned in the wake of the McKinsey and Scott Wilson reports for the next decade, indeed for the rest of this century, is based on mistaken assumptions. The enormous footprint and mega presence of new projects does not address the critical factor of ecological

balance through self-sufficiency in a global environment which is struggling to fight climate change. The implementation of these projects in the form planned in these reports will destroy precious natural environmental resources, while at the same time snatching what remains from existing users by impoverishing villages and farms. The resource use, data and assumptions outlined in the DMIC report need careful scientific scrutiny and public awareness which can only be done if an independent water commission is established for the regions of the DMIC across the six states. No aspect of this mega project should proceed without the authorisation of this commission and without all due unified environmental clearances. In the absence of such a unified authority, each state could randomly clear proposals.

It is not too late to learn from the Chinese experience, where a chronic drought is destroying farmland in North China as the Gobi Desert expands southwards (Wong 2011):

The Yellow River, the so-called birth place of Chinese civilisation, is so polluted it can no longer supply drinking water. The rapid growth of mega-cities – 22 million in Beijing and 12 million in Tianjin alone – has drained underground aquifers that took thousands of years to fill.

Environmentally sustainable cities in the future should adopt a different model from the one championed by the DMIC.

The metropolises of today cannot be sustained without preying on the natural resources of the surrounding region, and impoverishing these neighbourhoods. The cities of the future need to be radically different: significantly reduced in size and ecological footprint and increased in absolute numbers so as to become self-sufficient units. As decentralised democratically governed cities of the future, such “natural cities” could secure prosperity for the economic, social and political fabric of India.²

NOTES

- 1 See for example, Mehduia (2011).
- 2 Preliminary blueprints for such natural cities, with populations ranging up to one million were presented by the authors at the Future World Council (*Telegraph* Special Correspondent 2011). These cities would be relatively self-sufficient in their requirements of water, power and food.

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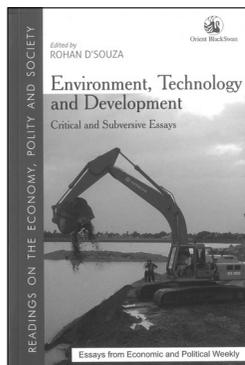
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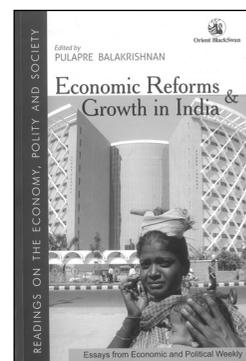
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