



# Bengaluru is hot. Steel flyover will make it hotter, it needs to be dropped

STEEL FLYOVER AND ENVIRONMENTAL IMPACTS

January 10, 2019 Nirmala Gowda

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Smog-filled skyline of Bengaluru, as seen from Srirampuram metro station.  
Pic: Shree D N

The steel flyover project is an ugly manifestation of our unbridled urbanisation mindset. This is yet another myopic economic proposal to exacerbate urbanisation; it seems to us, and is mindlessly espousing the following:

1. Covering the soil which has lower heat conductivity, with an impermeable layer of concrete which has much higher capacity to conduct heat.
2. Replacing life sustaining trees with air conditioners
3. Spewing billions of tons of toxic gases into air by vehicular movements and industrial activities, so as to choke the city.
4. Generating colossal quantities of solid waste to convert the garden city into a garbage city
5. Facilitating concentration of human population to such an extent, that human excreta float in the lakes and other water-bodies, in horrid proportions.
6. Producing myriad varieties of industrial effluents which are rendering lakes to froth dangerously and to catch fire frequently.
7. Enacting complex laws and regulations, which are exposing the citizens to several types of toxins, rather than protecting them.

*Advertisement* With this clear background, please allow us to explain with ample evidence and proof, as to how this project will further endanger public health with no tangible benefits to the citizens at large.

## The Hot Dome

Materials like concrete and steel absorb and hold heat significantly when compared to soil and vegetation. The urban built-up area with its impermeable layer of concrete is hotter than the surrounding rural areas. This creates an umbrella of hot air over the built-up area of the city and is called the 'climatological dome' or 'urban heat-island'. Air pollutants, vehicular movements, loss of tree cover and other metabolic processes add to the heat increasing temperatures in the dome.

A mobile survey of air temperatures discovered heat islands in Bengaluru way back in 1977 as documented in the Bangalore Gazetteer of 1990, of Government of Karnataka. The built areas of Rajajinagar were found to be warmer than

the vegetated Cubbon Park and Lalbagh. Another survey in 1985, which is also documented in the same Gazetteer, found the built-up areas to be 2.5oC to 3.2oC warmer than Lalbagh and Cubbon Park.

Bengaluru has come a long way since that survey. In 2012, IISC study found the land surface temperature to have increased in the range of 3o C to 4o C between 1989 and 2010.

In 2016, a study by Harini Nagendra, a renowned ecologist from Azim Premji University, found persistent increase in temperatures with Northern and Eastern regions of Bengaluru showing higher temperature ranges. Heat conducting steel flyover with the cutting of 812 trees in the north and north-eastern parts will certainly render the dome hotter and un-breathable.

## **The health effects**

The steel components of the steel bridge, insulated with rust proof paint will progressively release deadly particulate

matter into the air. The increased vehicular movements, especially the diesel vehicles will not only intensify but also add to the particulate matter.

With raising temperatures, we have created perfect conditions for the more insidious ground-level ozone to form and amplify to fatal levels.

In 2017, Experts and Scientists from the Indian Council of Medical Research, Public Health Foundation of India and Institute for Health Metrics and Evaluation along with other Indian collaborators released the shocking data that 'one in eight deaths in India is attributed to air pollution'. Tangibly, the death ratios for urban areas are even more freightening.

Again in 2017, Bengaluru's disease burden study, funded by the Bill & Melinda Gates Foundation, Indian Council of Medical Research, Union health ministry and the World Bank was released – establishing the fact that 'Coronary heart disease topped the list and beat the national average with a wide margin'. Now, what is connection between Coronary heart disease and air pollution especially particulate matter of 2.5 microns?

According to peer reviewed scientific research published by National Institute of Health (under the aegis of United States Government), 'People exposed to high levels of particulate matter pollution resulted in an increased likelihood of coronary heart disease'.

Bengaluru-based paediatric pulmonologist Dr Paramesh has published several studies in peer-reviewed medical journals on 'how people, especially children are suffering from chronic cough and respiratory ailments because of air pollution'.

Thousands of peer-reviewed scientific papers are out there on health impacts of bad air quality. Blockage of tear ducts, sleeping disorders, COPD, exercise intolerance, heart diseases, diabetes, stress, decreased cognitive function,

autism, attention deficit disorder, strokes.... and the list is endless.

Escalating air pollution is not a rocket science for people to understand. To tell the truth, when our children are being compelled to depend on artificial inhalers, we as parents don't need any peer reviewed papers or pollution control board notifications to inform us that air quality is deteriorating. Nonetheless, we are being compelled to live with its consequences every day.

## **Load shedding and other ironies**

Higher air temperatures inside the deadly dome increase energy demand for cooling. As the temperature increases, the electricity demand also increases. Load shedding is already a common phenomenon in Bengaluru during peak hours in summer. Are our grids ready to provide for that extra load?

It has been a nightmare for frequent flyers with the smog-filled skyline of Bengaluru obscuring visibility. Flights delayed, re-routed. Last week, a member of our trust was forced to lie around tarmac for four hours in the morning waiting for the smog to clear. A few minutes saved during transit on the steel flyover is lost by the endless hours of waiting on the tarmac and the runways, for the smog to clear. It is the same smog for which the steel flyover contributes.

## **In an airtight silo**

Our urbanisation and the resultant economic activities are operating in an airtight silo, ignoring realities like climate change, air pollution and urban heat islands. These are treated as supplementary issues and seldom incorporated in diacritical policies or pivotal projects. Cumulative impacts of any project on public health will not be understood when these elementary realities are ignored. Ignoring will not make the problem to disappear, but will massively fuel public health emergencies.

## The case of Delhi and Beijing

The air quality in Delhi is at emergency level even with the so called drastic measures. According to the emission inventory, 40% of the pollution is attributed to automobiles. Restriction of private vehicles activity has started to make way into the discussion. What is in discussion in Delhi is a reality in Beijing. To combat air pollution, Beijing now sets a quota for new private vehicles. In 2017 the quota was 150,000 cars annually and in 2018 it was reduced to 100,000.

## Leapfrog towards solution

In Bengaluru, the citizens are now more or less accustomed to wearing masks as the air is not fit for breathing directly. The pollutants need to be filtered and kept out. There are several experiments happening in the city to install gigantic German manufactured air purifiers. If what's happening in the national capital Delhi, Beijing and in our own backyard is any lesson to us, then building steel flyovers for the privileged few to roam about freely in their flamboyant automobiles, is not at all the solution we should be thinking about.

As a matter of record, cities like San-Francisco, Milwaukee, Madrid, Seattle, Portland and Seoul are dismantling freeways, even as we discuss this. By doing that, these cities are moving towards a smart and healthy future for its residents and economy. We can stay far behind and try to feign catch up or we can leapfrog to building a smart city.

For Bengaluru to be a smart city, embracing public transport is perhaps the smart thing to do. This is not the time to re-invent recipes on how to build roads, but to change the whole menu of transportation itself for the betterment of the citizens of Bengaluru, who are hoping against hope for a pollution free environment.

**Note:** *This text is a part of an open letter written by A N Yellappa Reddy, Chairman of Bangalore Environment Trust*

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*(BET), to Karnataka Chief Minister H D Kumaraswamy and shared by BET members for publication.*