



Urbanization in India is galloping ahead in leaps and bounds, taking down everything in its path, all in the name of progress. Urban India faces real challenges, some of which are alarmingly on the brink of creating a crisis which, if ignored any further, will send the immediate future catapulting into an anarchical state.

Water, energy and real estate are three main resources facing an acute shortage. Yet, without these three, there is no scope to build us a life of quality and development. But there are new technology solutions and investments that urban India can make towards dealing with these shortages.

- Reducing and recycling
- Green Buildings
- Sustainable infrastructure
- Energy conservation and the use of newer renewable energy sources
- Higher Urban Density

Cities should prioritize spaces so that its denizens are able to enjoy a better quality of life. Social gathering spaces, parks, eateries, outdoor play areas, recreation spaces and other amenities should be dominant in the larger urban scheme.

Certain aspects that merit special recognition are:

- Enhancing a sense of belonging through identity
- Prioritizing the pedestrian experience
- Setting a benchmark and leaving a legacy for the next generation
- Weaving green spaces into the urban fabric
- Creating sustainable framework through open spaces
- Celebrating heritage
- Revitalizing adjacent neighborhoods



- Promoting a society of diversity and inclusion

What should supersede all need is the requirement to have open, green spaces within the grey concrete maze we live in. And this we owe to ourselves and our children. Landscaping is a labour of love. It has such a gratifying effect on one and all. On a psychological level, these are spaces in which we need to gather, unwind, socialize, entertain, celebrate, play and relax in. To create such spaces, we need to have a goal to explore new ideas, experiment and ultimately create forward-thinking sustainable solutions for city life.

Landscape design need not be elaborate, but its success and efficiency lies in how sustainable it is. Given that key resources are scarce, one must use design innovations that are tailored as a sustainable solution to the shortages and problems being faced in India. No matter the size of the estate or park, a landscaper can use ones background, professionalism and expertise to turn it from being just 'another park' into a one that people flock to. This can be done by transforming the approach from a design, build, landscape maintenance 'vendor' into a design, build, landscape maintenance 'expert'.

Generating leads is a challenge so any strategy that accomplishes lead generation has a competitive advantage. For an expert, this underscores the need to stay on top of the ever changing trends and best practices in the industry; the need to stay current.

Another aspect of being an expert is to offer specific tailored solutions to specific problems. The subsequent interactions should help prospective customers gain a deeper understanding of the problems they face and the available solutions. Today's customers have choices and more information than ever before. So the solutions offered should be available to customers in a clear and useful format. I shall explain this with the following example that is also a tailored solution to a ubiquitous problem.

In urban India, the natural water balance is skewed. The precipitation that occurs faces reduced evaporation. The ground infiltration is further diminished due to the overuse of hard scapes, reducing the quantity and quality of the aquifer. To counter this, potable water is imported and waste water is discharged. Large volumes of poor quality runoff have changed the natural state to an altered one. To correct this, we need to ensure reduced potable water consumption, re-use of waste water, reduce waste water discharge, ensure storm water treatment and storm water re-use.



Landscaping requires large volumes of water to sustain it. However, given that water is in acute shortage, one has to look at using treated water for irrigation. Waste water treatment and re-use is the need of the hour in today's hard times. Approximately one third of energy consumption in urban areas is used for water supply and treatment. Availability of energy in most of India is inconsistent, expensive and scarce. These factors lead to a bottle neck in development of fast growing markets – lack of reliable energy supply, lack of good quality water, high infrastructure maintenance costs and lack of feasible solutions that can stand up to pollution control regulations. In the light of this, we need to follow a very different and innovative approach which will address the shortage of resources and aid development. The solution should be easy to implement, economical and a relatively low consumer of energy and maintenance while standing up to quality requirements of the regulators.

The answer lies in Phytoremediation – which essentially means, 'keeping nature's balance with plants'. This new method of waste water treatment, based on ancient science, relies on the in-situ use of plants and their microorganisms to degrade or render harmless, contaminants in soil, water and air.

Phytotechnology degrades contaminants by plants and microorganisms into products that are less toxic and less persistent. Plants provide exudates in the root zone that directly breakdown and transform organic contaminants. The co-metabolism process involving plants and their associated microorganisms can be used to degrade and transform pollutants such as:

- Pesticides
- Explosives
- Solvents
- Hydrocarbons
- Industrial chemicals
- Other xenobiotics

The advantages of Phytoremediation are many, as it is:

- quick to implement



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- efficient
- maintenance free
- dependent on little or no energy
- economical as compared to conventional systems
- devoid of harmful by products
- a system that makes use of all separate physical, chemical and biological filter processes at the same time, rather than three separate physical, biological and chemical filters in the conventional system.

Landscaped areas adjoining large campuses, institutions and homes should implant such living systems as a vital part of the concept and design. Treatment of point and non-point sources of agricultural, industrial and sanitary wastewater from adjoining buildings can be treated on-site, efficiently, aesthetically and most importantly, within densely populated urban settings.

Effective landscaping can also be used for air purification by removing aerosol pollutants using trees and other plants. They intercept and retain airborne particles on the plant surface until they are washed off by rain or degraded by symbiotic microorganisms.

While urban landscapes are generally meant to act as 'lung spaces' and to increase the quality of life, they can work for us on multiple levels:

- 'Green kidneys' – for sewage treatment and recycling
- Stabilizers of soil and river banks
- Storm water buffering, treatment and infiltration
- Heat and noise insulators
- Air purification

Phytoremediation solutions though they seemed very simple to implement, require highly experienced planners and designers to make it sustainable and efficient for short and long



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run operations. These living systems are based on highly sophisticated engineering and demand a combined knowledge of chemistry, thermodynamics, hydrology, botany, etc.

Ayala Water & Ecology has been into the science and implementation of Phytoremediation for over 25 years. The company has installed multiple systems across the country of Israel and in many other parts of the world. In India, Ayala works closely with the Indian Green Building Council (IGBC) and has installed a system at the CII/IGBC building in Hyderabad. I am encouraged by the response and belief in Phytotechnology, so much so that the IGBC is now strictly recommending it as the way forward to treating waste water.

Eli Cohen

CEO and Founder

Ayala Water & Ecology