The best time to build a green building was 20 years ago. The second best time is now.
Yusuf Turab
Managing Director, Y T Enterprises
IGBC AP, LEED AP, GRIHA Trainer & Certified Associate in Project Management

A self motivated Ecopreneur and an accredited Green Building Consultant with a vision of a greener world and a passion for smarter living, an overwhelming desire to make Y T Enterprises a one stop shop for carbon neutral living.

Specialties

On the Web
Press Coverage: http://www.ytenterprises.com/home/inthepress
Blog: http://www.ytenterprises.com/the-blog
Facebook: https://www.facebook.com/buildscape

http://in.linkedin.com/in/yusufturab
We provide technical and strategic sustainability services to support high level of performance, quality and value in the built environment.

The company’s offerings have been divided into three primary areas of work:

- **Green Building Ratings Facilitation**
  - IGBC Green Homes
  - TERI GRIHA
  - TERI SVA GRIHA
  - LEED India
  - IGBC Green Factory

- **Green Building Architecture & Design**
  - Green Building Architecture
  - Interior Design
  - Waste Water Treatment
  - Rainwater Harvesting
  - Energy Simulation

- **BuildScape**
  - Cool Roofs
  - Living Walls
  - Landscaping
  - Green Roofs
  - Auto-Watering Pots
Green Buildings are not just the next big thing. They are the only option we have.

India is the second largest green building market in the world.

The market size including materials and services is expected to touch $100 billion by the year 2015.

Many infrastructure analysts believe that over 60% of the country is yet to be built.

Our longages in demand for resources need to be controlled urgently and green building is the most viable solution.

Green buildings are easy to design, build, operate and the do not cost significantly more.
Easy to design and construct

Don't cost much more

40% of electricity consumption

Major water consumer

Large used water and waste generator

Contributes significantly to GDP

Huge employment generator
AREAS OF FOCUS WHEN BUILDING GREEN

- Water Efficiency
- Energy Efficiency
- Site Sustainability
- Indoor Environment
- Green Materials
- Waste Management
- Durability
- Measurement, verification and action
- Make it easy for occupants to be green
- Show off
Urban areas are new users of water.
Take water give waste

Becoming urban. Remaining rural.
- Green: Agricultural use
- Red: Industrial use
- Blue: Domestic use

Pollution will add to water stress. Cannot allow it. Have to build cities without pollution.
Technology choice and distance makes for inefficiencies

Long transmission lines, higher costs of delivery + High distribution losses in water supply – between 20-50%

- Cost Recovery is difficult.

- Water costs double as half is ‘lost’.

- Full costs are high. Few can pay

INVESTMENT IN WASTE MANAGEMENT SUFFERS
<table>
<thead>
<tr>
<th>City</th>
<th>Production cost Rs/kl</th>
<th>Water charges Rs/kl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delhi</td>
<td>8.95</td>
<td>2.00</td>
</tr>
<tr>
<td>Mumbai</td>
<td>5.74</td>
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<tr>
<td>Jodhpur</td>
<td>20.00</td>
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<tr>
<td>Indore</td>
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<tr>
<td>Bangalore</td>
<td>13.00</td>
<td>5.60</td>
</tr>
</tbody>
</table>
Shouldn’t STPs be located close to sewage sources?
From linear to closed loop

CONVENTIONAL SANITATION APPROACH

- Phosphate mining
- Nitrogen in air (N2)
- Fertilizer factory
- Nitrification requiring large energy input
- Food products
- Agriculture
- High water consumption
- Refuse
- Sludge
- Wastewater
- Treatment
- Landfill
- Incineration

ENVIRONMENTAL SANITATION IN THE FUTURE

- Reduced phosphate mining
- Fertilizer factory
- Nitrogen potassium phosphorus carbon
- Mending the humus layer
- Agriculture
- Food products
- Energy supply
- Non-degradable waste
- Decentralized
- Recycling
- Disposal (incineration, landfill)
- P < K < N < C
Guiding Principles –

1) Cut / Reduce the length of pipeline
2) Water frugality is not poverty (prudent / wise use must be promoted)
3) Design systems for affordability and legal rights to ‘clean’ water for all
4) Design to treat all waste (treat waste in open drains, do not wait to build all drains)
5) Treat waste to recycle and reuse water and excreta (treat waste to generate wealth - not use water as carrier for waste disposal)
6) Treat waste locally so that reuse is possible locally (cut costs of pumping/piping, treat using microbes/separation/biotic oxidation systems etc., treat to reuse, not to waste)
Separate Water Types Based on End Use

High Efficiency Plumbing Fixtures

Introduce Waterless Technologies

Rainwater Harvesting

Decentralised Wastewater Treatment

Wastewater and Rainwater Reuse

Drought Tolerant Landscape Design

High Performance Irrigation

Measure Verify and Act

Educate, Make Water Savings Easy

AREAS OF FOCUS WHEN DESIGNING FOR WATER EFFICIENCY
Y T Enterprises Decentralised Waste Water Treatment & Reuse System

Closed Loop Used Water Treatment Using Nature in a Man Made Setting
1. Improved Septic Tank

Area Required = 0.5 SqMt / CUM
BOD Reduction = 25% to 40%

Dimensions = 2.1m x 0.7m x 1.00m
BOD reduction is 30%
2. Anaerobic Baffle Reactor

Area Required = 1 SqMt / CUM
BOD Reduction = 70% to 80%
3. Grease Trap and Bio-Gravel Filter

CPCB norms are met at this point

Area Required = 0.2 SqMt / CUM
BOD Reduction = 80% to 90%
4. Planted Filter / Reed Bed

Area Required = 5 SqMt / CUM
BOD Reduction = 90%
Removes Odour

The microorganisms in the soil kill the odour causing bacteria and the roots of the cana indica plant quickly oxidises the input water.
5. Polishing Pond

Area Required = 1.2 SqMt / CUM
BOD Reduction = 95%
Removes Odour Completely
DWWT is an approach, not a technical hardware package. This approach is practically limitless.

Further filtration is possible using:

- Chlorination
- Reverse Osmosis
- UV Filtration
- Activated Carbon Filtration
Mrs. Uma Rathnam Residence
THANK YOU