Towards a better tomorrow

A showcase thru Lighting

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Skeleton

- Urbanization
- Vision – a decade ahead
- Learn from Best Practices
- Adapt and Apply - Indigenize
- Put to practice – Masterplan approach
- Case Study - Lighting

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Issues facing Indian cities

Rapid urbanization and rapid urban transformation [linked with pace of globalization]

- Urbanization of poverty [incl. widespread informal economy]
- Climate change
- Demographic pressure

Sustainable Development…?

To meet the basic needs of people today without ruining the chances of future generations to do the same

Between 1950 and 2010 the following has taken place globally:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>INCREASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>World population</td>
<td>2.5 x more</td>
</tr>
<tr>
<td>Energy use is now</td>
<td>4.5 x more</td>
</tr>
<tr>
<td>Number of automobiles</td>
<td>12 x more</td>
</tr>
<tr>
<td>Paper use</td>
<td>8 x more</td>
</tr>
<tr>
<td>Wood use</td>
<td>4 x more</td>
</tr>
<tr>
<td>Water use</td>
<td>4 x more</td>
</tr>
<tr>
<td>Fish catch up</td>
<td>6 x more</td>
</tr>
<tr>
<td>Disaster relief budgets</td>
<td>13 x more (due to global climate changes)</td>
</tr>
</tbody>
</table>
We are living in a time where **Energy and Climate Challenges** are increasingly capturing the world’s attention.

Currently 50% of the world’s population live in cities. By 2050, this figure will reach 75%.

**Impact of buildings**
- In the United States alone, buildings account for:
  - 72% of electricity consumption,
  - 39% of energy use,
  - 38% of all carbon dioxide (CO2) emissions,
  - 40% of raw materials use,
  - 30% of waste output (136 million tons annually)
  - 14% of potable water consumption.

**Role of cities**
- Cities have a central role to play in tackling climate change, particularly as cities bear a disproportional responsibility for causing it.
- In fact, cities consume 75 per cent of the world’s energy and produce 80 per cent of its greenhouse gas emissions.
- That is why it is so important for cities to work together, set the agenda on this issue and show leadership on this issue.

**Energy offenders in buildings**

Source: USGBC

Source: Department of Energy
Urbanization has advantages

Centers of:
- Economic development
- Innovation
- Education
- Technological advances
- Employment

Urbanization has disadvantages

Huge ecological footprints
Lack of vegetation
Water problems
Concentrate pollution and health problems
Excessive noise
Different climate and experience light pollution

Human beings are a plague

- Sir David Attenborough

- Both climate change and "sheer space" are looming problems for humanity.
- Either we limit our population growth or the natural world will do it for us, and the natural world is doing it for us right now.

More probably, he was thinking of a plague of locusts, who multiply relentlessly, consuming every resource, destroying everything they touch, and then perishes.
Fort William (Kolkata) 1900

New Delhi, 2012
Gurgaon, 2011

Chennai, 2012
Mumbai, 2012

Indian Megapolis, 2020 ??

Necropolis
the city of the dead
What does the future hold for us?

What will a sustainable city of 2020 look like?
Lets review…

- **Accessibility/Mobility** - Major rebalancing of transport system in favour of public modes and/or pedestrians and bicycles
- **Green spaces and biodiversity** - Enhanced residential values. Well-being. Greater climate change resilience – copes with run-off, rising temperatures
- **Educated population**
- **Healthy population**
- **Attracts and retains investment**
- **Local ‘ownership’** - Greater resilience and more manageable exposure to external economic drivers
- **Resources Conservation** - Less use of resources, including energy and water.
- **Safe and secure** - Sense of community. Ability to manage everyday risks. Raise a family with confidence.

The city must be socially, economically and environmentally sustainable; this will require new approaches to living, travelling and working.
Cities to Watch…

and learn from too…

Curitiba, Brazil
Bogotá, Colombia

Tokyo, Japan
London, United Kingdom

Rotterdam, The Netherlands
The races of mankind will never be able to go back to their citadels of high-walled exclusiveness.

- Rabindra Nath Tagore

What to DO?

Should not ape the West,
BUT
CAN Adapt and Apply

Time for indigenous solutions

- Think globally, act local
- Recycle and Reuse
- Innovation AND Jugaad
Planning, as a discipline is well placed to facilitate a harmonious balance between the economical, environmental, social, cultural and spatial dimensions of development.

Plan that involves all…

- The Big(ger) Picture: Integrated Master Planning Works
- Involvement is required from
  - Government – Policy makers
  - Authorities – Enforcement agency
  - Specialists – Professionals
  - Academics – Contrarians
  - Financiers – Investors, PPP
  - Community – Beneficiaries
Planning is not enough! Implementation is needed

- Planning should go along with **management**
- **Integration** of strategic plan and plan of action
- The planning process should follow the **pace** of urbanization
- Need of **quick solutions** to keep credibility

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City.People.Light

- The city.people.light awards are run by LUCI (the Lighting Urban Community International Association) and supported by Philips. This award represents a significant step towards promoting the use of light as an essential component in urban development.
- LUCI is a unique international network bringing together 95 cities and lighting professionals engaged in using light as a major tool for urban development, with a concern for sustainability and environmental issues.
Sustainability as a desired trend

- The need for energy management
- Contrasting challenges in advanced and emerging economies
- Digitalization
- New approaches to design in sustainable cities
- Visions of wireless, personalized lighting solutions
The need for energy management

Contrasting challenges in advanced and emerging economies
New approaches to design in sustainable cities

Visions of wireless, personalized lighting solutions
Visions of wireless, personalized lighting solutions

Case Study - Beijing

Project info
Client - Beijing Capital Highway Development Company (BCHDC) – China

Objective - Improving streetlight quality and reducing energy consumption

Results - Energy savings; easier maintenance, full streetlight status visibility

Challenge
The BCHDC is in charge of the construction and operation of the capital’s expressways. Acutely aware of the necessity for energy savings, it’s working hard to meet the carbon emission reduction targets.

As part of this effort, BCHDC sought to reduce streetlight energy consumption and improve its central monitoring and control facilities.

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Solution

- BCHDC chose AmpLight to manage, monitor and control its streetlights. This includes the need for energy saving facilities in order to meet BCHDC’s tough targets.

Advantages

- Centralized streetlight control
- Low-cost, intelligent agents
- Energy Savings Mode
- Flexible control

Results

AmpLight has delivered energy savings of 28% due to:

- Precise, optimized & centralized streetlight control
- Energy Savings Mode during off-peak traffic hours
- Reduced maintenance costs

The Smart Grid

AmpLight is an intelligent streetlight management and control system that can reduce energy used for streetlights 35%, reducing the total carbon footprint of major cities as much as 10%.

Are we ready for the connected age?

<table>
<thead>
<tr>
<th>Traditional lighting operations</th>
<th>Intelligent lighting operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical failure inspection</td>
<td>Remote monitoring</td>
</tr>
<tr>
<td>• A scouting team drive during night to visually spot failures</td>
<td>• The lighting failures are automatically reported by the system, saving time and costs</td>
</tr>
<tr>
<td>Paper based mapping &amp; archiving</td>
<td>Smart asset management</td>
</tr>
<tr>
<td>• Use of paper maps and files to manage the maintenance of the lighting stock</td>
<td>• The digital system smartly plans and routes the maintenance works to minimize street blockages</td>
</tr>
<tr>
<td>Undifferentiated lighting levels</td>
<td>Smart dimming &amp; scene setting</td>
</tr>
<tr>
<td>• Lights burn uniformly throughout the night</td>
<td>• Lights are dimmed during low traffic hours to save energy or enhanced in problematic neighborhoods to improve safety</td>
</tr>
<tr>
<td>Estimation based metering</td>
<td>Intelligent energy metering &amp; billing</td>
</tr>
<tr>
<td>• As multiple entities are connected to the grid, the energy consumption is roughly estimated by the utility</td>
<td>• A smart meter accurately calculates the energy consumption taking into account the varying rates and automatically bills all entities</td>
</tr>
</tbody>
</table>

Source: Philips and Cisco, 2012
Key Take-aways…

- Vision to be ahead of future problems – Planning for at least two level above the problem
- Tools for tomorrow would be different from tools of yesterday
- Chosen strategy should be scalable.
- Measurement, validation and Service level Transparency

Simply enhancing life with light
The Philips Lighting difference

People focused + Partners in innovation = Meaningful solutions