



# **GREEN BUILDINGS** **FOR SUSTAINABLE HABITAT**

**DELIVERING TRUST BETWEEN PEOPLE, ORGANISATIONS  
AND GOVERNMENTS**

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Green Building & Energy Services

WHEN YOU NEED TO BE SURE



# A BRIEF HISTORY OF SGS

- Founded in Rouen in 1878, under the name of Goldstück, Hainzé & Co.
- First registration as Société Générale de Surveillance in Geneva in 1919
- Listed publicly in 1985
- Five significant shareholder groups
  - 15% EXOR
  - 14.96% Von Finck Family
  - 7.4% Allianz SE
  - 3.51% Capital Group
  - 3.01% Bank of New York Mellon

## WORLD'S LEADING TESTING, INSPECTION, VERIFICATION, CERTIFICATION



**Agricultural Services**



**Automotive Services**



**Consumer Testing Services**



**Environmental Services**



**Industrial Services**



**Minerals Services**



**Oil, Gas & Chemicals Services**



**Systems and Certification Services**

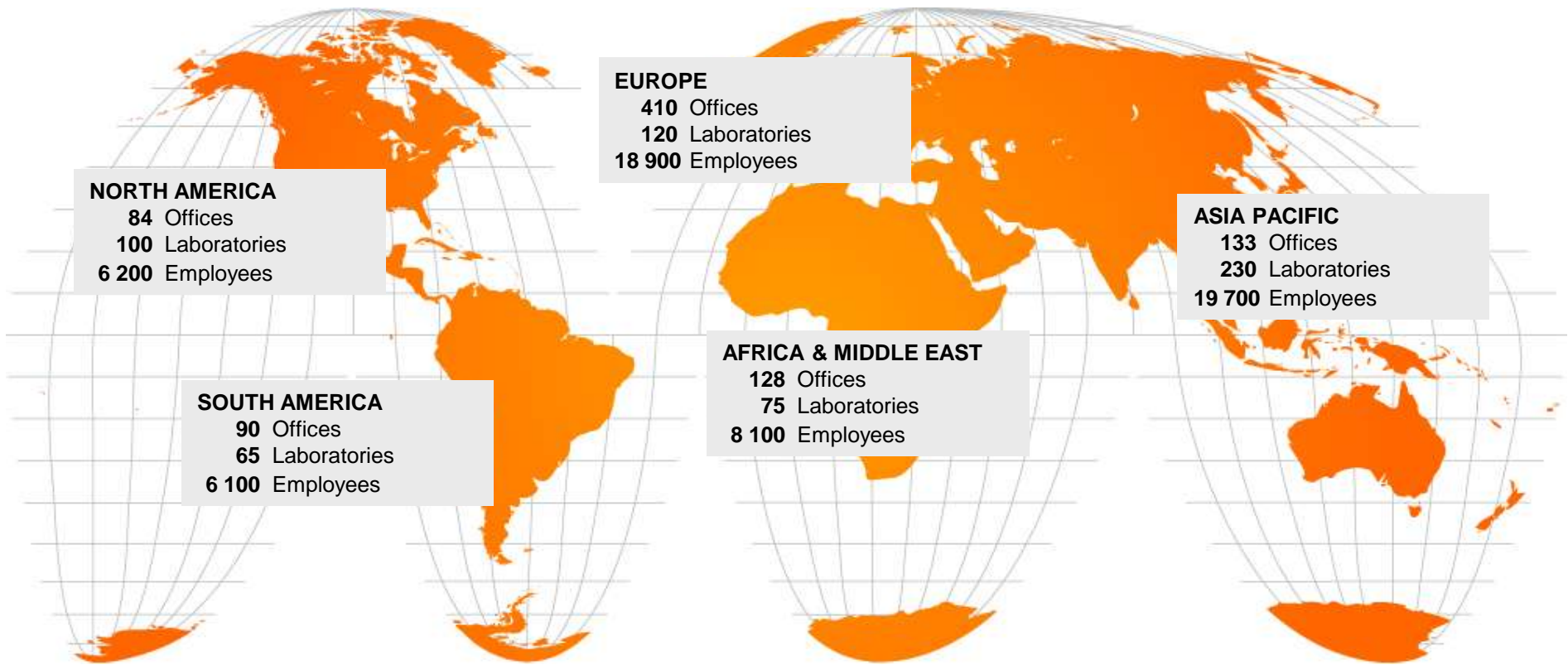


**Trade Assurance Services**



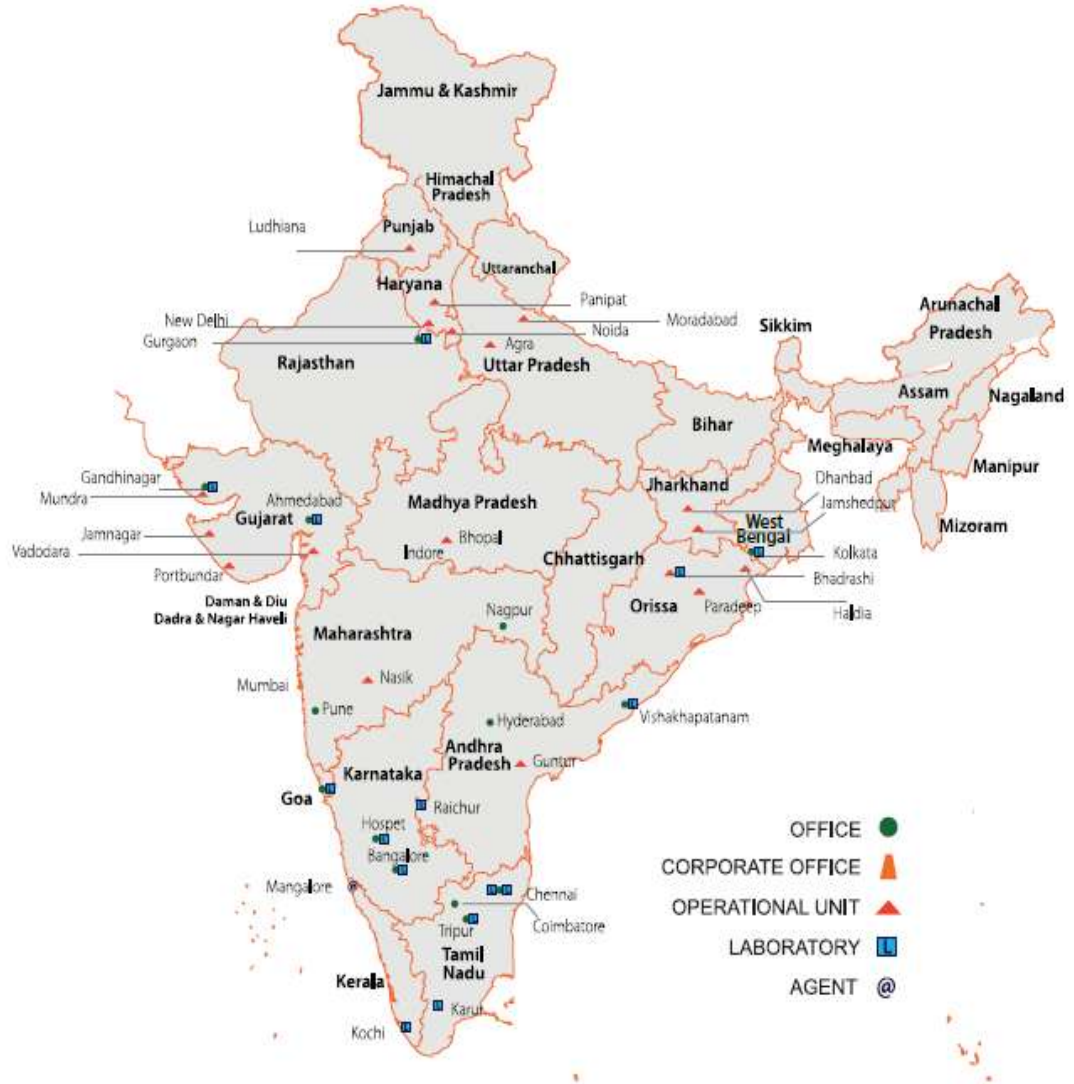
**Life Science Services**





- 67 000 employees
- Over 1000 offices and laboratories operating in 140 countries







- Parle-G: World's No 1 selling biscuit

- - *Nielsen Market Research Report*

**SGS**

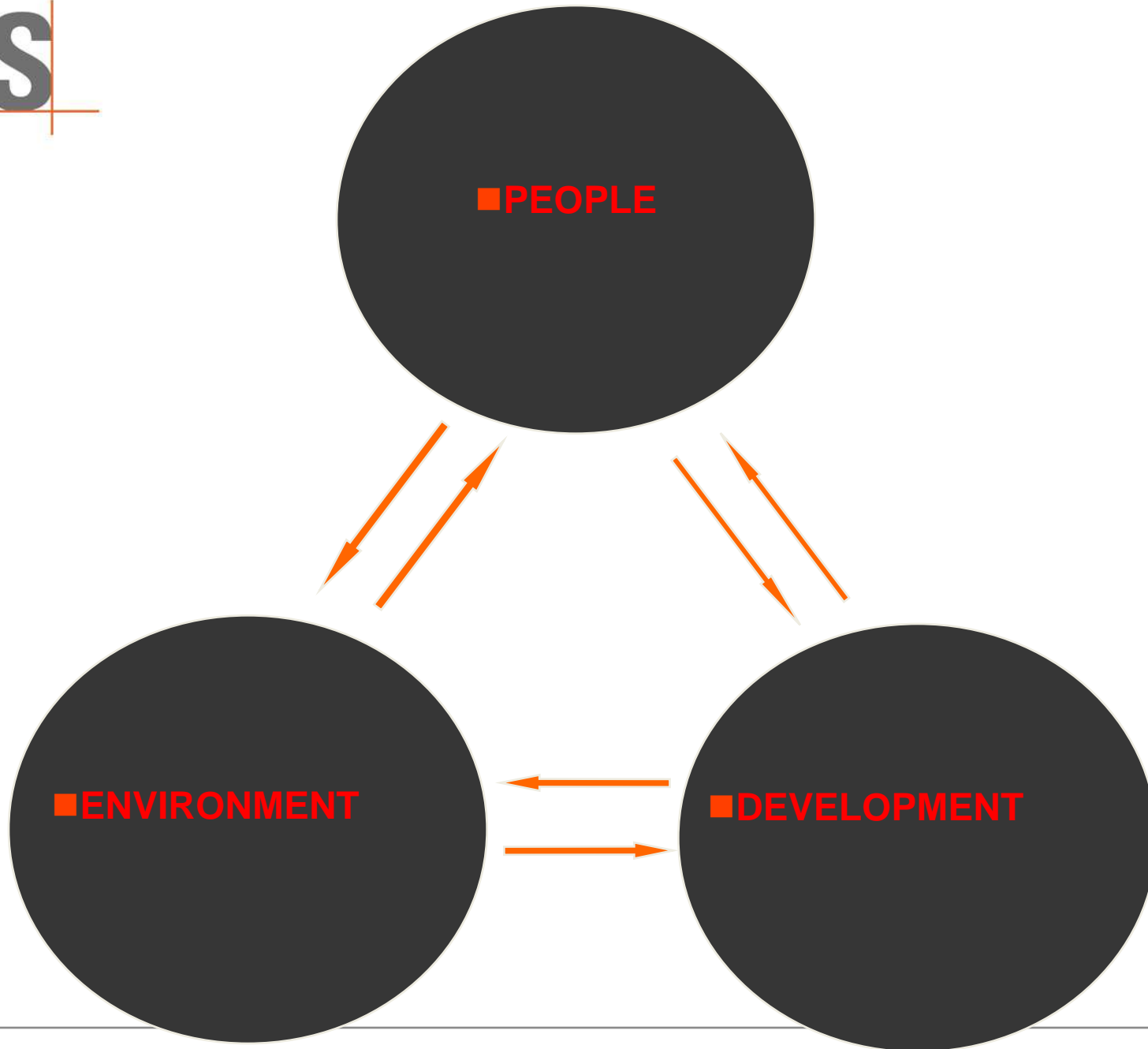
**WHY?**



# SUSTAINABLE DEVELOPMENT.....GREEN BUILDINGS.....?

**Sustainable Development = Economic Development  
+ Environment Protection  
+ Social Reform  
+ People's Empowerment**





SUSTAINABILITY REVOLVES AROUND

## LEED RATING SYSTEM

- The Leadership in Energy and Environmental Design (LEED) Green Building Rating System is a third-party certification program and the nationally accepted benchmark for the design, construction and operation of high-performance green buildings. LEED gives building owners and operators the tools they need to have an immediate and measurable impact on their buildings' performance.
- LEED is Rating system
  - 100 points/credits
  - Evaluates environmental and human benefit of each LEED credit

## LEED RATING SYSTEM

- LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health and innovation in design :

- Site Selection
- Water Efficiency
- Energy & Atmosphere
- Material & Resources
- Indoor Environmental Quality
- Innovation in Design



# GREEN BUILDING –MINIMUM & MAXIMUM POINTS WITH CERTIFICATION LEVELS

Rating	New Construction	Core and Shell
LEED Certified	40-49	40-49
LEED Certified silver level	50-59	50-59
LEED Certified Gold level	60-79	60-79
LEED Certified Platinum level	80 Points & above	80 Points & above

# CREDITS BREAK UP FOR LEED NC INDIA

Features	New Building
Energy & Atmosphere	35
Indoor Environmental Quality	15
Water efficiency	10
Sustainable Sites	26
Materials & Resources	14
Innovation in design	6



- Externally : both look alike
- Building Use: both are same



### Differences

- Concern for human comfort & indoor environment
- Operational savings



Section 1:

## SUSTAINABLE SITES

## GOOD PRACTICE

- Erosion/Sedimentation Control Plan
- Bicycle Racks and Shower Facilities
- Reflective, high-emissivity roofing
- Light-colored exterior paving (Heat Island)
- Growth near public transportation
- Alternative transportation parking, vans and hybrids







- Native, adapted plantings for landscaping
- On-site infiltration of stormwater runoff (coordinated with water efficiency category)



- Exterior lighting design to minimize light pollution



- Vegetated Roof System for reduced stormwater runoff, reduced Heat Island effect

Section 2

# WATER EFFICIENCY

## GOOD PRACTICE

- 0.5 gpm lavatory faucets, automatic shutoff
- 2.0 gpm (or less) for showerheads
- Water-efficient fixture options for toilets and urinals (e.g., 0.5 gpf urinals, waterless urinals, dual-flush toilets)





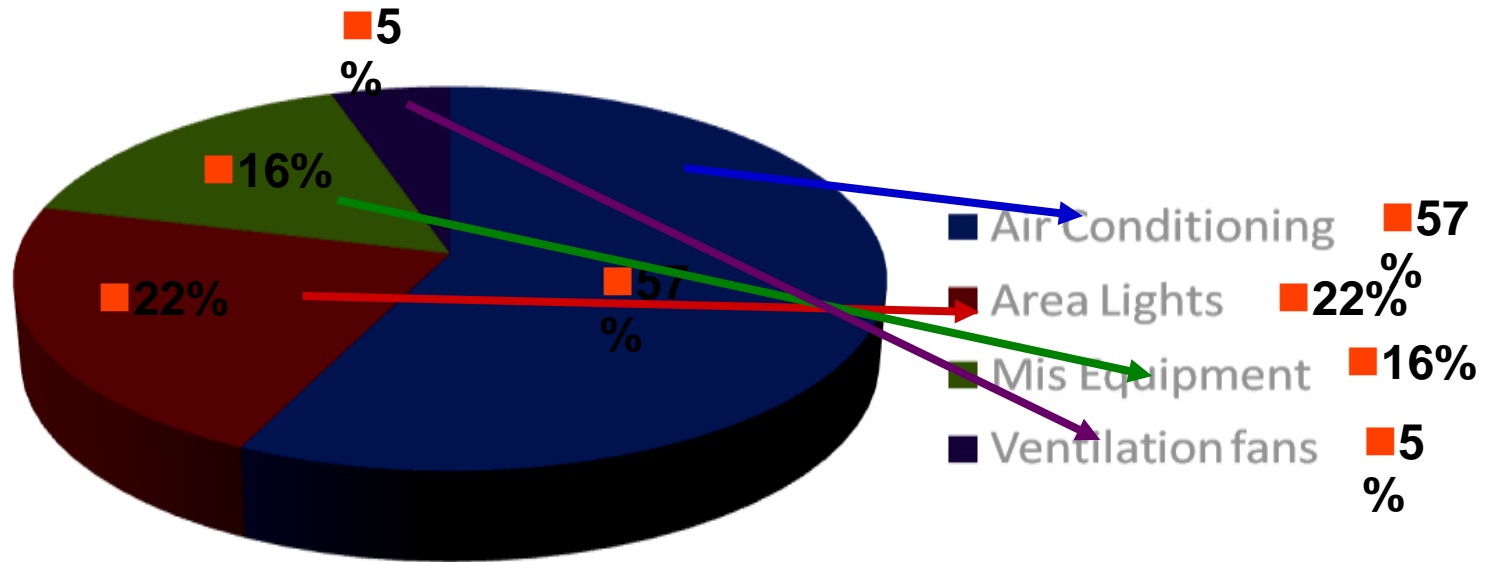
- On-site collection and reuse of Stormwater and/or steam condensate. Potential Uses:
  - Toilet/Urinal Flushing
  - Landscape irrigation – none proposed
  
- 3 R (Reduce, Recycle & Reuse)



**Section 3**

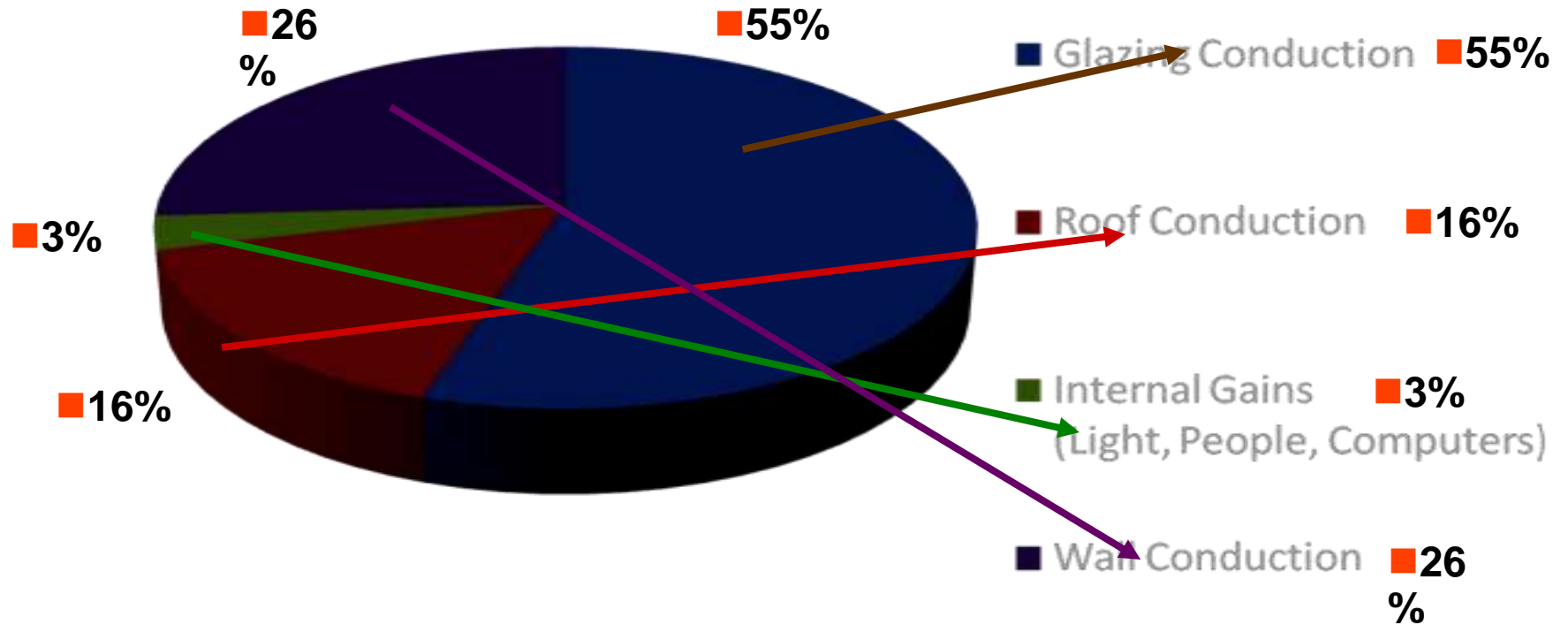
**ENERGY AND ATMOSPHERE**

## BUILDING ENERGY CONSUMPTION



■ Break-up of Energy consumption in a building

## COOLING LOAD COMPONENTS



Break-up of Heat Gain through various Building Components

# WHO IS RESPONSIBLE FOR ENERGY EFFICIENCY IN A BUILDING

- ❖ Architect?
- ❖ Owner?
- ❖ Facilities group?
- ❖ MEP consultant?
- ❖ Landscape architect?



■ All can contribute !

## ■ 1. Orientation

## ■ 2. Envelope measures

➤ Wall, Glazing, Fenestration, Shading, Sky lighting, Roof

## ■ 3. Equipment & systems

➤ Chiller, VFD, Lighting

## ■ 4. Controls

➤ BMS, Temperature, Humidity

## ■ 5. Commissioning

➤ Additional commissioning, M&V

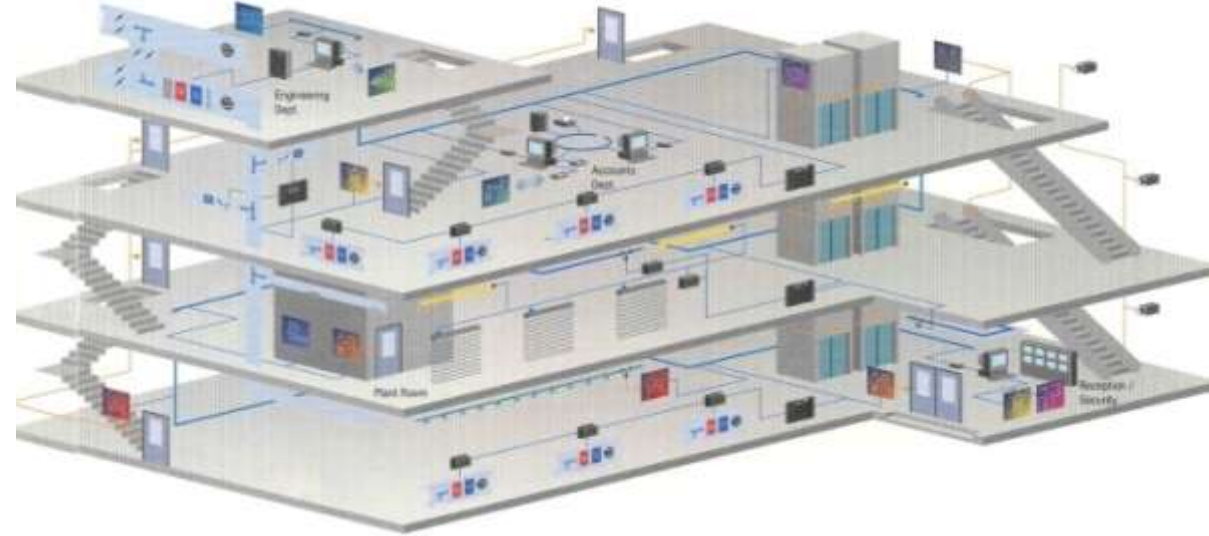


- Air-conditioning
  - Chiller COP: Higher than ASHRAE 90.1
  
- ❖ VFD for supply & return fans and pumps
  
- 
  
- ❖ Heat recovery wheels, Economizers
  
  
- ❖ Controls & Building Management Systems

- ❖ ASHRAE requirement
  - Overall lighting density  $<1.0$  w/sq.ft
  - Trade off allowed
- ❖ Maximum daylighting
- ❖ Daylight cum dimmer controls
- ❖ Occupancy sensors (toilets)
- ❖ CFL, T-5 Lamps, LED

### ❖ Why BMS?

- Variations inevitable
- ❑ Load
- ❑ Occupancy schedule
- ❑ Climatic conditions



### ❖ Human interface

minimized

- ❖ Online corrections
- Building Management System – An effective tool

- ❖ Best of equipment, systems, controls may be in place
- No savings if not commissioned
- ❖ Can result in 5-10% savings
- Especially if carried out by a III Party



Section 4:

## MATERIALS AND RESOURCES

## WASTE MANAGEMENT - RECYCLING





- ❖ Dedicated place for recycling
- ❖ Segregation
- ❖ Quantification
- ❖ Recycling program
  - Identification sources for recycling
  - Tracking
  - Awareness programs for building occupants

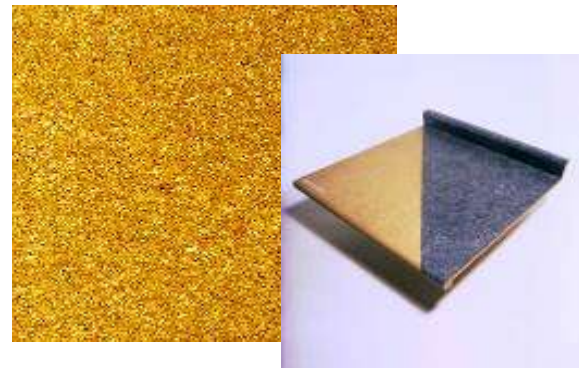


## GOOD PRACTICE

- Provide facilities for materials recycling
- Demolition/Construction Waste Recycling – target 75-95% recovery of all non-hazardous materials
- 10% Minimum Recycled Content
- 20-40% Regional Manufacture
- Locally-harvested 50% FSC-Certified hardwoods and veneers for all built-in millwork and casework



- Targeted use of rapidly-renewable, bio-based materials:
  - Strawboard substrates for built-in casework
  - Natural Linoleum flooring
  - Resilient Cork Flooring
  - Bio-composite countertop materials
  - Bamboo
- Expanded recycling efforts (organic waste, equipment, batteries, etc.)





**Section 5**

**INDOOR ENVIRONMENTAL QUALITY**

## GOOD PRACTICE

- Ventilation design per ASHRAE-62-2004
- Smoking prohibited
- Construction IAQ Management Plan
- Indoor Chemical and Pollutant Control
- Acoustic Standards for key spaces
- Duct liner issues

IAQ GUIDELINES FOR  
OCCUPIED BUILDINGS  
UNDER CONSTRUCTION

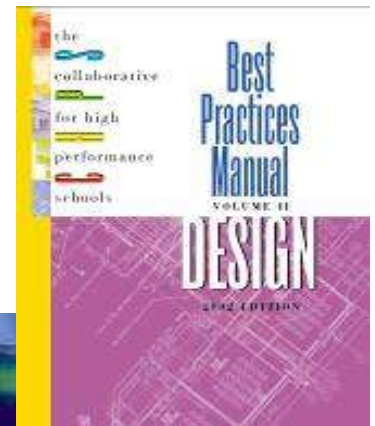


SHEET METAL AND AIR CONDITIONING CONTRACTORS'  
NATIONAL ASSOCIATION, INC.



## GOOD PRACTICE

- Green requirements (low-emissions, reduced toxicity) for:
- Adhesives and Sealants
- Paints and Architectural Coatings
- Composite wood panels
- Carpet and carpet tiles



- Daylight and Views:
- Space Planning
- Solar control/glare control strategies
- Lighting balance and luminance ratios in spaces
- Lighting fixture layouts and controls
- Colors and Materials inside spaces
- Occupant fine-tuning (shades, blinds, etc.)





- Demand control ventilation - CO2, CO and humidity monitoring
- Controllability of perimeter and non perimeter spaces



**Conference Room Lighting**

**4. Control Options**

**Pressing Concern System**

Overcoming lighting increases the availability of a space...  
 intelligently, and allows the light levels to be tailored to  
 the specific needs of the facility, increasing comfort and  
 quality of light and optimizing the energy use.

Light can be set to suit the level needed throughout a room  
 through:

Using a preset lighting system, the user can select  
 pre-determined lighting levels for multiple rooms by  
 pressing of the buttons. These levels are stored into memory  
 or memory can be used to adjust lighting at any time.

**Control Options**

1. Press which settings get used  
 2. Level how many rooms get used  
 3. Room lighting system for each room

**Remote Settings**

Room: [ ]  
 Address: [ ]  
 Name: [ ]  
 Mode: [ ]

**Scene Settings**

Scene: [ ]  
 Address: [ ]  
 Name: [ ]  
 Mode: [ ]

**Results**

Power: [ ]  
 Current: [ ]  
 Status: [ ]

First Error: [ ]  
 Storage Full: [ ]  
 Module Not Back: [ ]  
 255 with Address: [ ]  
 Storage Change: [ ]



## BENEFITS: TANGIBLE

- Reduce operating costs
- Energy savings: 30 – 50%
- Zero water discharge and 100% water recycling
- Water savings: 20-40%
  - With an incremental cost of about 5-8 % & Incremental cost gets paid back in 3-5 years time
- Working in environment with access to daylight and views provides connection to the exterior environment which results increased productivity to the extent of 12% to 15%.
- Recycling more than 95% construction waste.
- More than 75% of virgin wood used in the building is certified wood.
- Enhanced public image

## BENEFITS: INTANGIBLE

- Environmental benefits
- Reduce impact on the environment
- Health and Safety benefits
- Enhance occupant comfort
- Economic benefits
- Improve the bottom line (productivity of occupants)

World Class Standards & Procedures

## SGS ROADMAP FOR LEED PROJECTS

- Feasibility Study
- Project Registration
- LEED Facilitation
- Energy Simulation
- Lighting Simulation
- Fundamental & Additional Commissioning
- LEED Submittals to USGBC
- Response to Queries
- Award of LEED Certification.

# BENEFITS EXPERIENCED IN LEED BUILDINGS

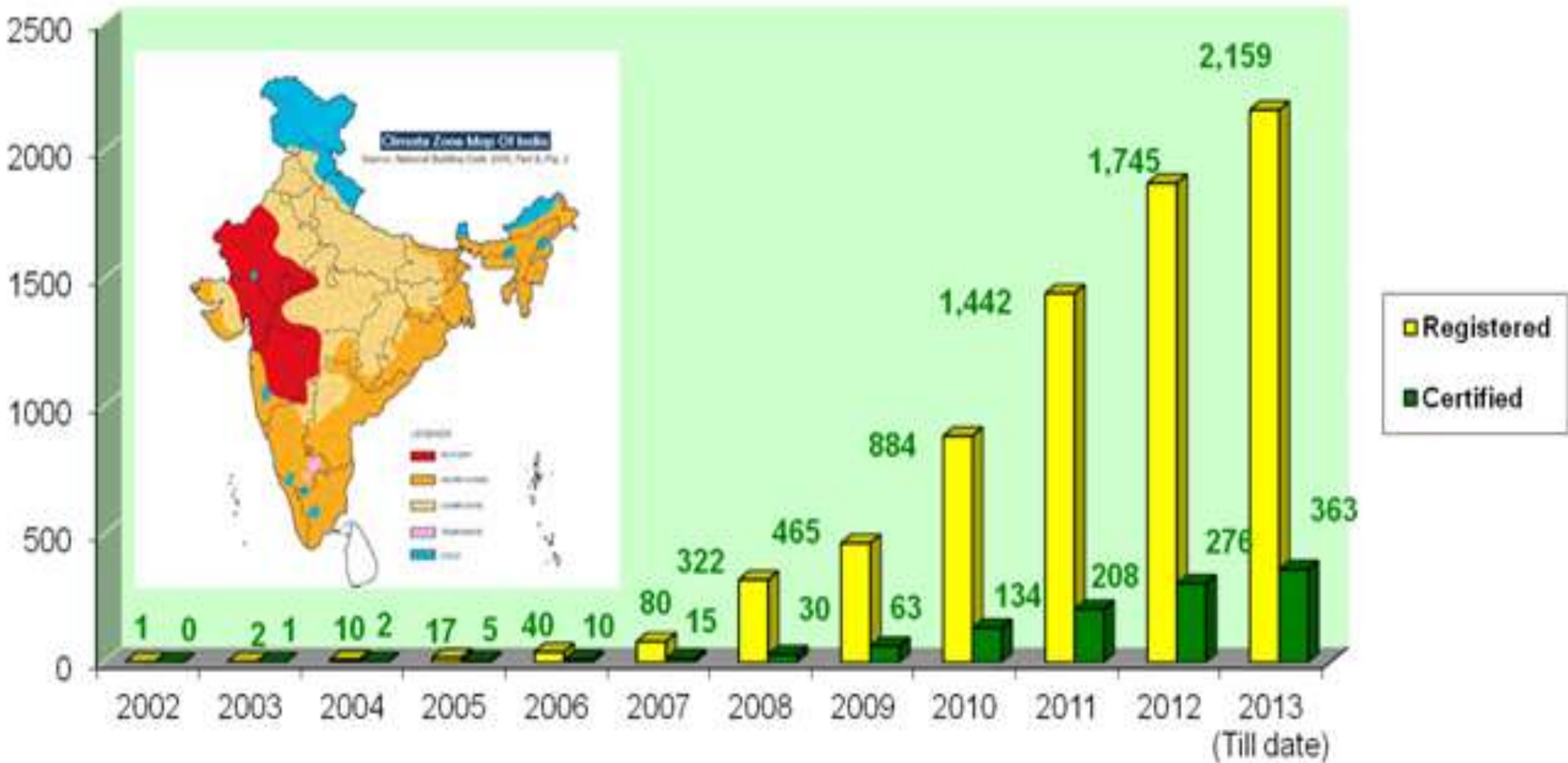
## ■ 3 LEED Platinum Buildings monitored to validate tangible benefits (SOURCE: CII, IGBC)

Building	Sq Ft	Normal Building (kWh)	Actual Building (kWh)	% reduction	Annual Energy Savings (Rs In Lakhs)
WIPRO	1,75,000	48,00,000	31,00,000	40%	102
ITC	1,70,000	35,00,000	20,00,000	45%	90
CII GODREJ	20,000	3,50,000	1,30,000	63%	9

Energy consumption depends on Local climate, Density of occupancy, occupancy schedule, Orientation of the building, Internal loads

# GREEN BUILDINGS IN INDIA

## SCENARIO: GREEN BUILDINGS



INCREMENTAL COST

■ &

■ PAY BACK PERIOD

SGS

building

**LIFE**

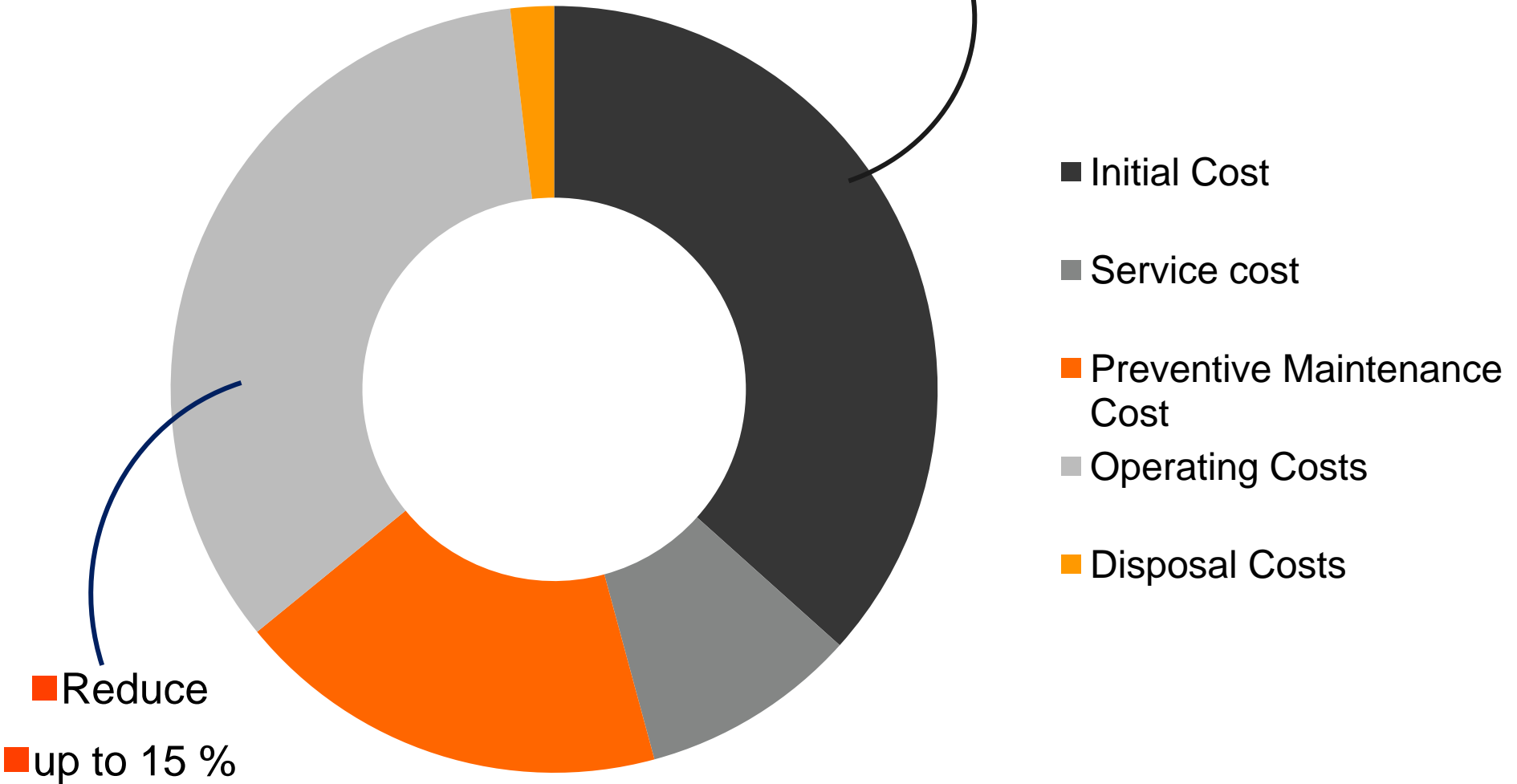
**CYCLE**

**COST**

**ANALYSIS**



Invest 1-4% for green building



### Project type

### IT Park

Project Size

14,00,000

**Building Envelope:**  
DGU,  
Insulation

**HVAC System:**  
Chilled water  
system

**Water Fixtures:**  
Low flow,  
Water Meters

**STP**

10%

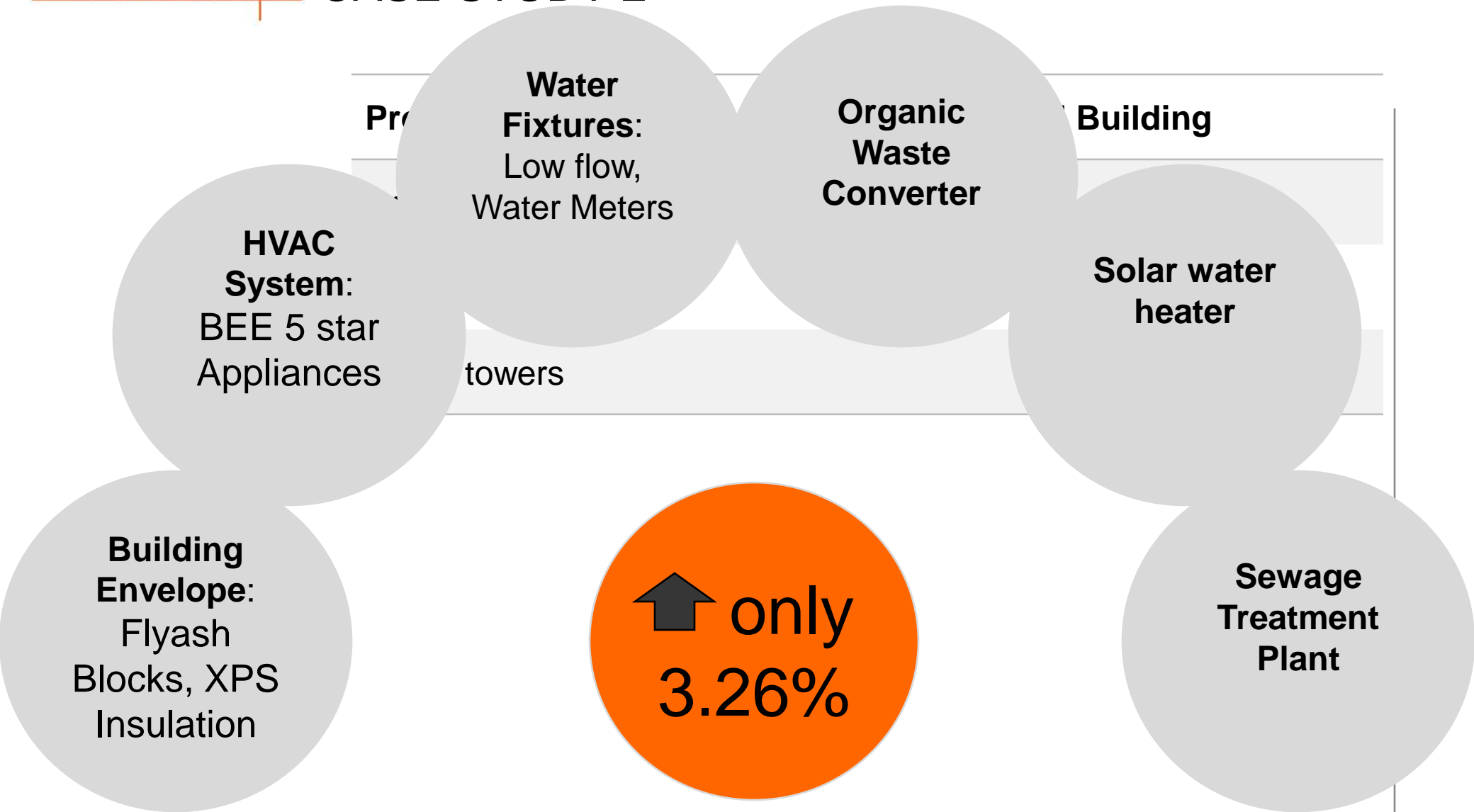
9%

2 % increase  
in cost for  
GB

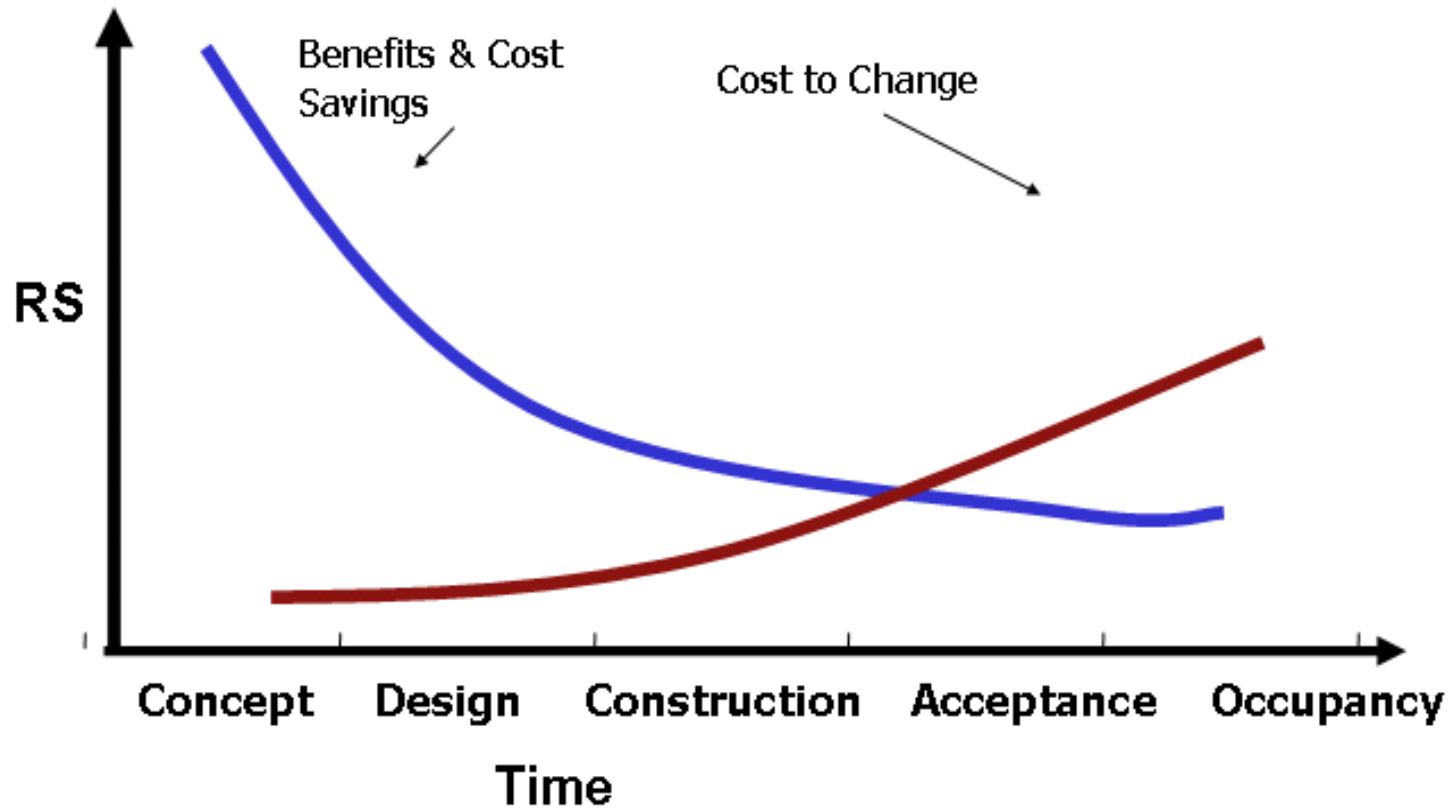
Savings  
15 % p.a.  
~ 1.4 cr

■ Payback  
Period  
■ 2.8 years

## CASE STUDY 2



## APPROPRIATE TIME TO REGISTER THE GB PROJECT



**■ EVERYTHING YOU CONSTRUCT  
■ IS BUILDING YOUR REPUTATION**

**■ BUILD GREEN.  
■ ITS AFFORDABLE.**



# **SGS** **SUSTAINABLE BUILDING SERVICES**

- **Green building consultancy**
- **Life cycle assessment**
- **Indoor Air Quality testing**
- **Electrical & energy audits**
- **Carbon Footprint consultancy & training**
- **Validation and Verification for CDM and Joint Implementation Projects**
- **Environmental Due Diligence Audit**
- **Environmental Site Assessment**
- **Soil, Water, Air, Waste sampling and testing (laboratory)**
- **Site Investigation (Hydrocarbon Forensic, PCB after remediation)**



### ■ WE BUILD

### ■ TRUST

### ■ WE DELIVER

### ■ VALUE

- SGS is the global leader in **inspection, verification, testing** and **certification** recognized as the global benchmark for quality and integrity.
- Recognized by regulators like **MOEF, CPCB, BEE, State nodal agencies**.
- Third party and independent nature of business, resulting in best value creation for clients
- Accredited to **ISO 17025** by **NABL, Dept of Science and technology**.
- **PAN India** presence
- Global expertise and knowledge base.
- **Technology partnership** for instrumentation, analysis and reporting pertaining to energy management services.
- A **complete solution** provided for all your Energy & Environmental needs .

WE NOT ONLY PREACH BUT ACT AS WELL

## SGS BUILDING POLICY

SGS is the world's leading inspection, verification, testing and certification company and is recognised as the global benchmark for quality and integrity.

We are aware of our responsibility to our stakeholders and future generations to minimize our ecological footprint and are taking active steps to reduce our energy use and resource consumption across our Businesses.

Buildings worldwide account for nearly 40% of global energy consumption. At SGS, the energy we consume in our offices and laboratories represents a significant portion of our overall environmental impact when translated into CO<sub>2</sub> emissions.

With over a thousand buildings around the world, this represents an immediate and tangible area in which SGS can make improvements.

In line with this, our company signed a pledge in November 2009 with the World Business Council for Sustainable Development (WBCSD)'s Manifesto for Energy Efficiency in Buildings, to reduce CO<sub>2</sub> emissions from our owned buildings to a level of:

- 10% below current levels by 2013, and
- 20% below current levels by 2020 (based on our 2010 baseline)

SGS aims to achieve these reductions by committing to:

Efficiency in Buildings, to reduce CO<sub>2</sub> emissions from our owned buildings to a level of:

- 10% below current levels by 2014, and
- 20% below current levels by 2020 (based on our 2010 baseline)

our environmental services, in particular our building services which aim to improve the quality of construction and conformity of buildings to national and international codes and energy standards.

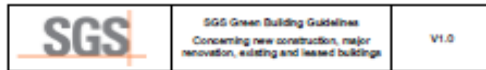
Senior Management is responsible for ensuring compliance with this policy, including but not limited to the establishment of programs and compliance with reporting requirements. Sustainability, however, is the responsibility of all of us, at every level within our organisation.

The Chief Executive Officer of SGS is ultimately responsible for the implementation of this policy, and is assisted by the Sustainability Steering Committee, which oversees the implementation of social and environmental programmes within SGS.



Chris Kirk  
Chief Executive Officer  
12<sup>th</sup> May 2010

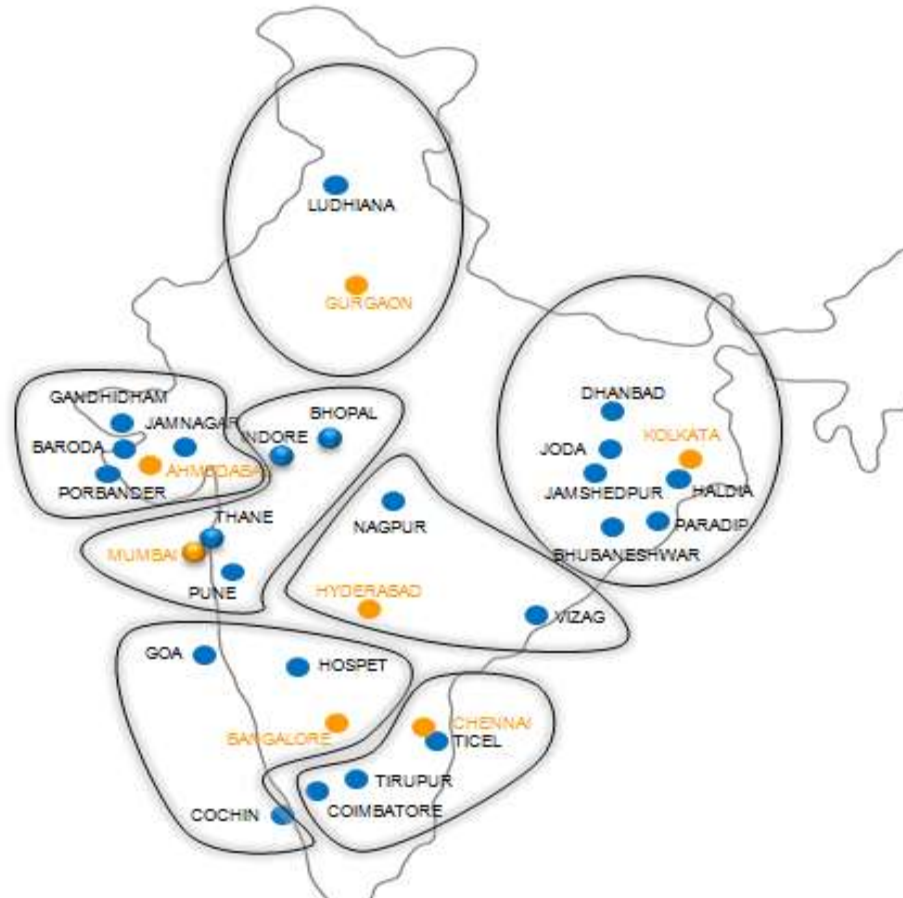
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### SGS GREEN BUILDING GUIDELINES

- Launched March 2012
- New buildings and Major Renovation
  - - 20% energy compared to building standard in force or pre-renovation
  - Apply Green Building Checklist
- Existing buildings
  - -10% by 2014, -20% by 2020
  - Apply Building Energy Rating Tool
  - Apply Green Building Checklist
  - Energy audit and implement efficiency measures
- Leased buildings
  - Incorporate green lease clauses

## SGS FOOTPRINT IN INDIA



- Approximately 4000 people
- PAN India network organized into 7 Regions
- Over 60 operating locations
- Largest Inspection, Testing, Certification company in India

- ■ 7 main regions
- ■ Sub locations under 7 main regions

## TO SUM UP

- Green Buildings
  - Excellent opportunity to reduce operating costs from day one
  - Sustainability of Business
- Tremendous benefits
  - Tangible & Intangible
- Long term benefits

**“Green makes Business Sense”**



SGS \$ 6

1500

billion

group

75,000

offices & laboratories

400+

employees

110

sustainable professionals

avinash.kumar@sgs.com

+

10 million sq.ft.+

green building footprint

BEE certified star rated buildings  
4000+

100+

green building projects

buildings assessed for IAG

2000 MW

renewable energy

WHEN YOU NEED TO BE SURE

SGS



## FOR DETAILS - CONTACT

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