



SRI LANKA ENERGY MANAGERS ASSOCIATION - ANNUAL SESSIONS 2010

BUILD GREEN TO ENSURE SUSTAINABILITY

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Presentation Layout

- Impact of buildings on resources
- Green objectives
- Benefits from developing green buildings
- Green certification and its benefits
- Green requirements and levels of certification
- Barriers, failures of green concepts and responsible stakeholders
- Certification procedure





Building Impact on Resources

- 40-50% primary energy use
- 70% electricity consumption
- 40% CO₂ emissions
- 15% potable water use



- Build Green to Reduce above IMPACTS!!

Graphics from USGBC



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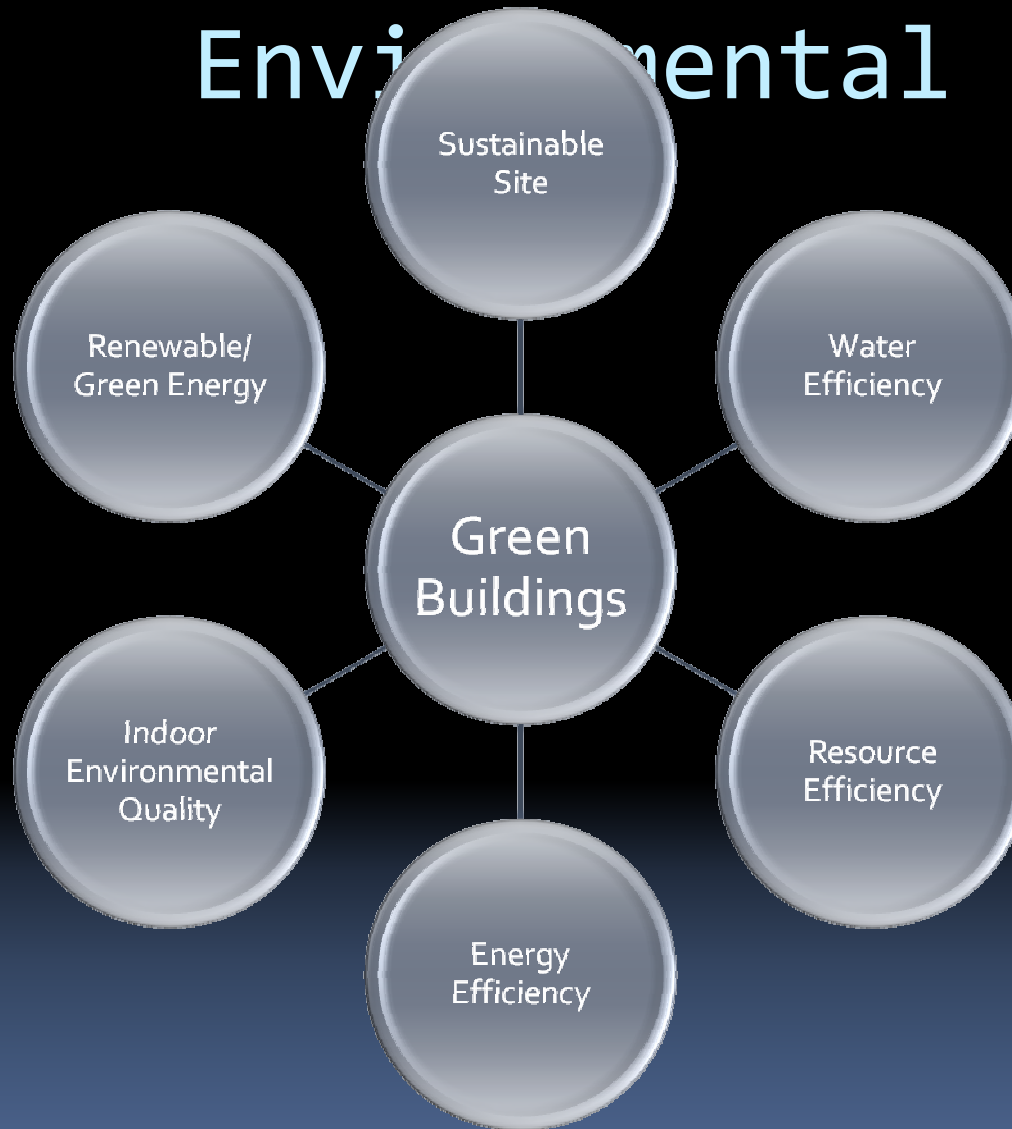
Sustainable Development - Driving Force

Sustainable design, design with nature, environmentally sensitive design, holistic resource management - regardless of what it's called, "sustainability," the capability of natural and cultural systems being continued over time, should be the key!





Environmental Issues





Green Design Objective

Adopt practices that significantly reduce or eliminate the negative impact of construction and operations of building on the environment and occupants in five broad areas:

- Sustainable site planning
- Safeguarding water and water efficiency
- Energy efficiency and renewable energy
- Conservation of materials and resources
- Indoor environmental quality

What Is Green Building?



© U.S. Green Building Council, 2008

Graphic from USGBC





Anticipated Benefits

Environmental benefits

- **Reduce the impacts of natural resource consumption**

Economic benefits

- **Improve the bottom line**

Health and safety benefits

- **Enhance occupant comfort and health**

Community benefits

- **Minimize strain on local infrastructure and improve quality of life**





Economic Benefits

Competitive first costs

- **Integrated design allows high benefit at low cost by achieving synergies between disciplines and between technologies**

Reduce operating cost

- **Lower utility costs significantly**

Optimize life-cycle economic performance





Economic Benefits

Increase building valuation and ROI

- Using the income-capitalization method: $\text{asset value} = \text{net operating income (NOI)} \div \text{the capitalization rate (return)}$.
- Quantify financial benefit in terms of Return On Investment (ROI) instead of payback time.

Decrease vacancy, improve retention

- Marketing advantages

Reduce liability

- Improve risk management





Economic Issues





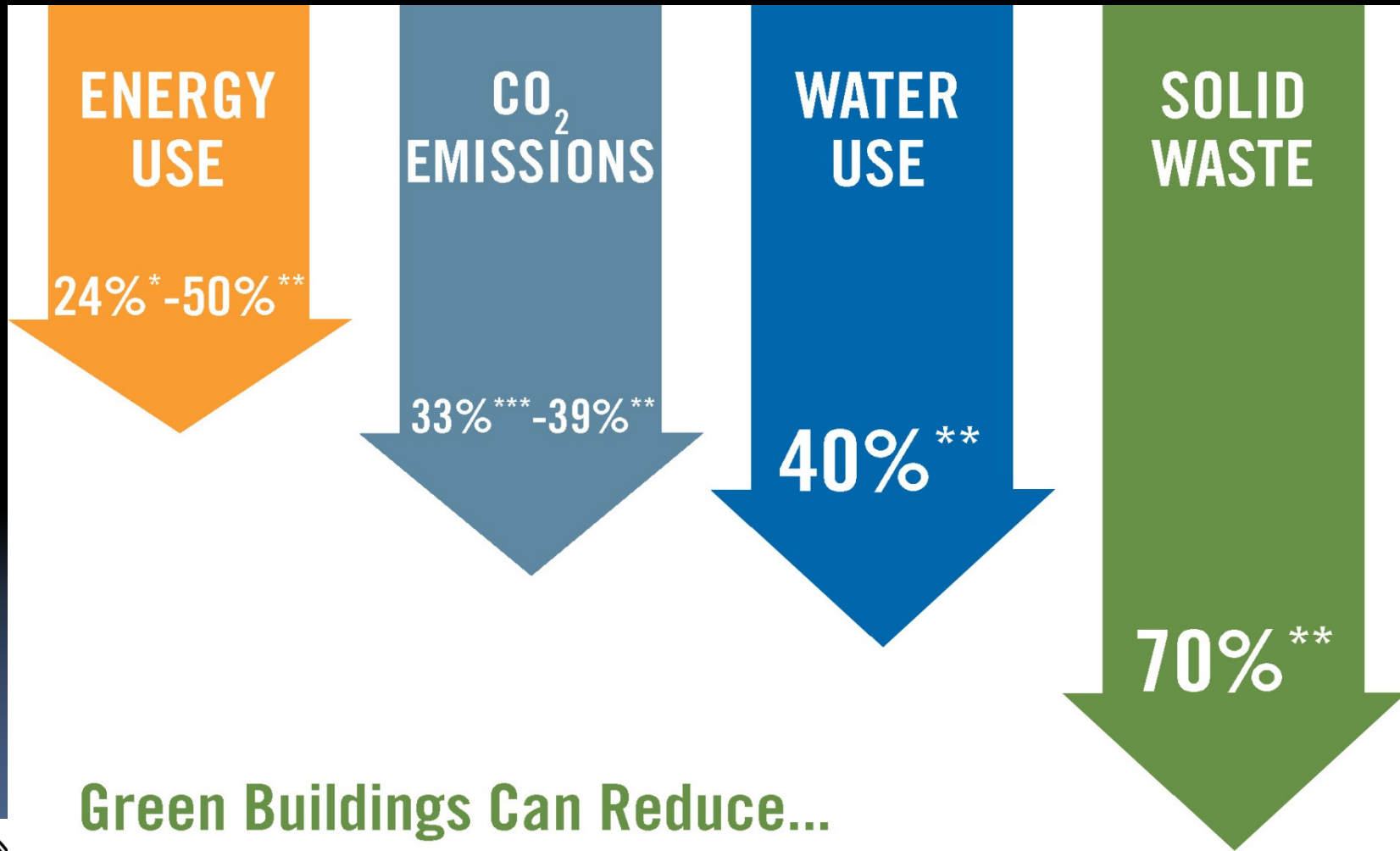
Productivity Benefits

- Improve occupant performance
 - Significant improvements in national productivity in the US
 - Student performance is better in daylit schools.
- Reduce absenteeism and turnover
 - Providing a healthy workplace improves employee satisfaction
- Increase retail sales with daylighting
 - Studies have shown ~40% improvement





Direct Incentives



Green Buildings Can Reduce...





Perceived Business Benefits

- 25-30% operating cost reductions
- 10-15% building value increase
- 20-25% return on investment
- 5-10% occupancy ratio increase
- 5-7% rent ratio increase





Leadership in Energy & Environmental Design[®]

A leading-edge system for designing, constructing, operating and certifying the world's greenest buildings.





Certification Categories





Why Was LEED Created?

- Facilitate positive results for the environment, occupant health and financial return leading to sustainability.
- Define “green” by providing a standard for measurement
- Prevent “greenwashing” (false or exaggerated claims)
- Use as a design guideline
- Recognize leaders
- Establish market value with recognizable national “brand”
- Raise consumer awareness
- Transform the marketplace!





LEED[®] Certification Benefits

Recognition of Quality Buildings & Environmental Stewardship

- Third party validation of achievement
- Contribute to growing knowledge base
- LEED certification plaque to mount on building
- Official certificate
- Receive marketing exposure through USGBC Web site, case studies, media announcements





Assessment

Tool Identified for Certification:

- Green Building Rating System used by US Green Building Council (LEED - Leadership in Energy & Environmental Design)
 - Scores
 - sustainable sites
 - water efficiency
 - energy and atmosphere
 - materials and resources
 - indoor environmental quality
 - Innovation credits





Measures Applicable to Sri Lanka: Sustainable Sites

- Reduce Impact on Land
 - Reuse Old/Contaminated/Disturbed Sites
 - Erosion and Sedimentation Control
- Reduce Impact on Infrastructure
 - Transportation
 - Storm water discharge
 - Waste water discharge





Measures Applicable to Sri Lanka: Water Efficiency

- Potable Water Use Reduction Through
 - Innovative Technology – water saving fixtures
 - Graywater Systems
 - Efficient Landscape Design
 - Rain Water Harvesting





Measures Applicable to Sri Lanka: Energy Efficiency

- Energy Performance
 - Design and Layout
 - HVAC
 - Lighting
- Building Commissioning
- Measurement and Verification
- Instrumentation & Monitoring
- Renewable Energy
 - On-site renewable energy
 - Purchase of green power





Measures Applicable to Sri Lanka: Resource Efficiency

- Recycling
- Waste Reduction
- Process Efficiency
- Appliance Standards





Measures Applicable to Sri Lanka: Indoor Environmental Quality

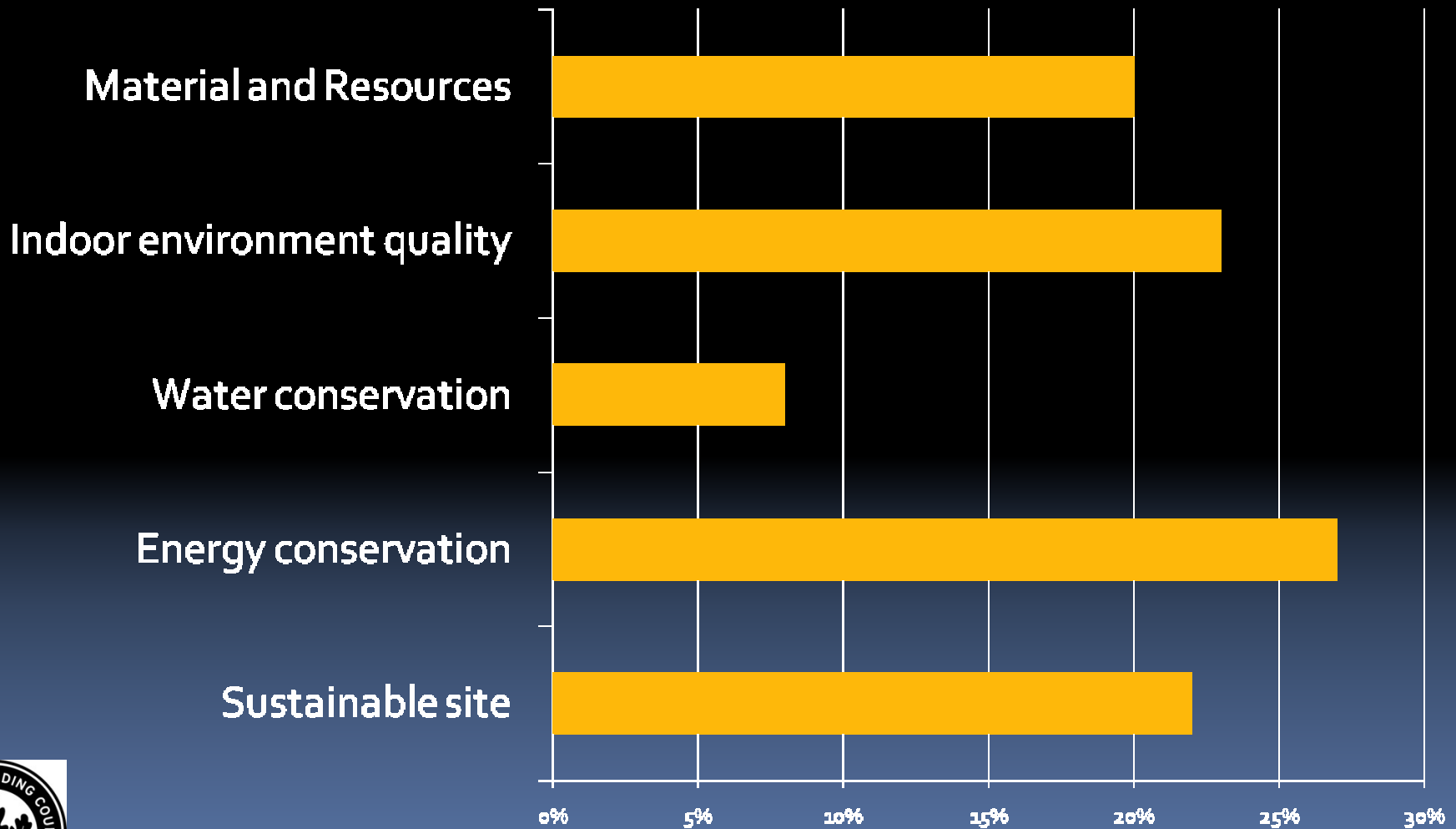
- Eliminating Indoor Pollutants and Chemicals
- Controlling Moisture to Avoid Fungal/Microbial Growth
- Control indoor CO₂ levels by providing fresh air





LEED-NC[®] Point Distribution

Five LEED credit categories





Technical Overview of LEED®

- Integrated design and construction process
- Optimizes environmental and economic factors
- Four levels of LEED-NC V3 certification:
 - Certified Level 40 - 49 points
 - Silver Level 50 - 59 points
 - Gold Level 60 - 79 points
 - Platinum Level 80+ points (106 possible)





Barriers Include

- Perceived additional initial costs;
- Lack of expertise/Knowledge;
- Circle of blame – designers and contractors say clients don't ask for it, clients say designers don't provide it;
- Perceived additional risks, both technical and market orientated;
- Communication problems between different professionals and trades;
- Conservative industry;
- Lack of Commitment and understanding;
- Lack of Incentives.





Impact on Building construction/operations

- 20- 25⁰% increase in construction costs!
- 30 – 40⁰% reduction in operational costs!





ICU Stanford Hospital

- “Artificial” windows installed at a cost of \$1,000/ft²
- Patients hospitalized for shorter periods
- Complained less
- Required less pain medication
- Considered to be well worth the cost





Brandix Casualwear, Seeduwa

- Energy cost reduction by 50%
- 60% reduction in water consumption
- 95% waste recycling
- Limited artificial light with 100% daylighting during most parts of day
- ASHRAE indoor comfort levels to increase productivity and quality by estimated 35%
- Reduced absenteeism with improvement health standards to 2%
- Reduction of fossil fuels for daily transport and other installation usages
 - Bus and Van pools
 - PLATINUM RATED – 1ST INDUSTRY IN THE WORLD!





LEED Projects in Sri Lanka

- Brandix Casualwear, Seeduwa – Platinum
- VTA, Ahangama – Silver
- VTA, Samanthurai – Silver
- Jay Jay Childrenswear, Seethawaka – Gold
- Brandix Centre for Inspiration – Gold
- MAS Thurulie, Thuhiriya - Platinum
- MAS AITC, Thuhiriya – Gold V3
- HNB, Nittabuwa – Expected Gold
- Beira Industries, Horana – Expected Silver
- Ulagalla Walawwe, Anuradhapura – Expected Silver
- Brandix Essentials, Koggala – Expected Silver





Final comments

- Green facilities are healthier for occupants, use less energy and water and have less of an impact on the environment!
- However, the challenge for experts is to building cost effective installations and not build green at ANY COST!!!





END

Thank you

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