



JONES LANG
LASALLE

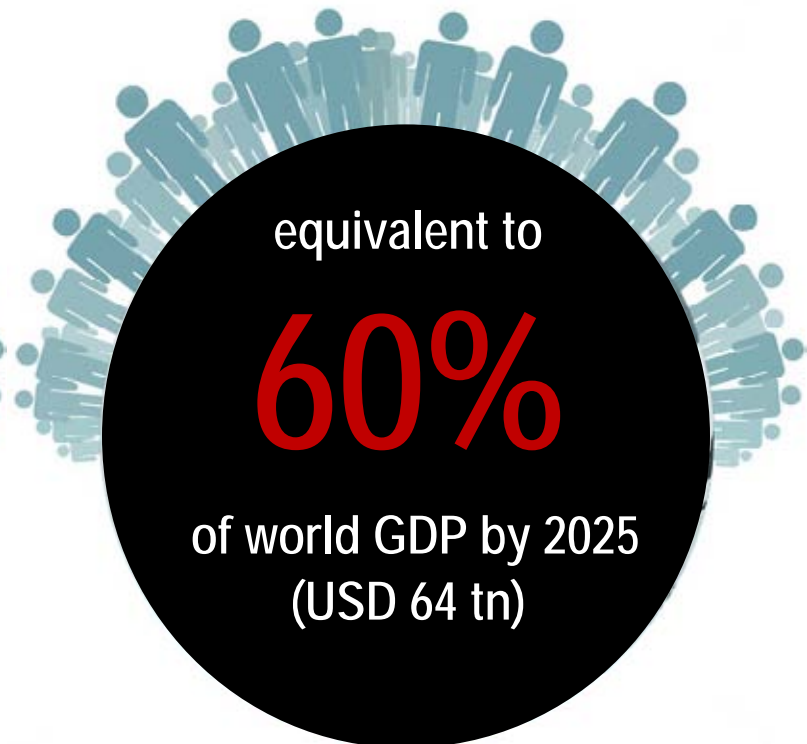
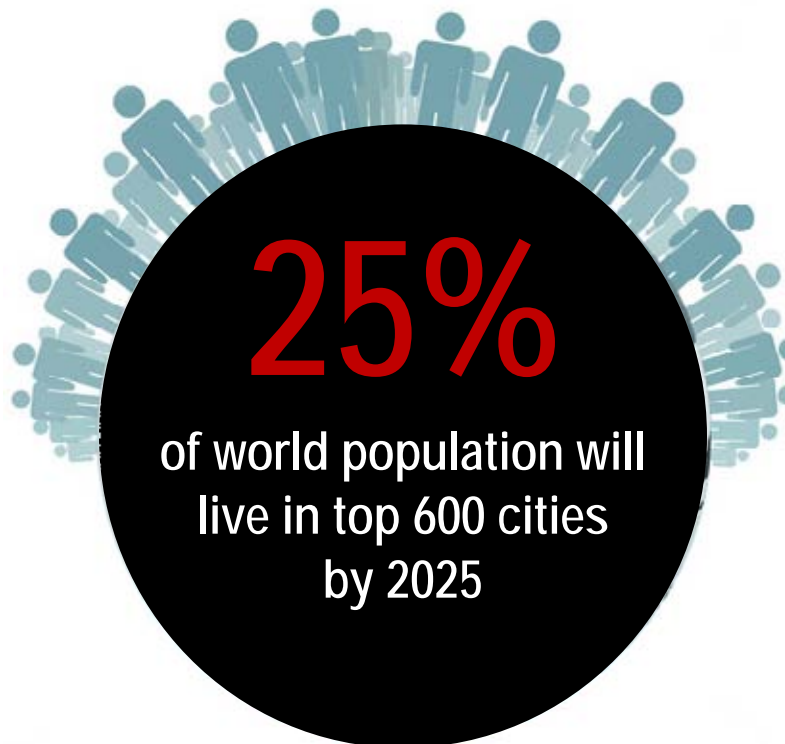
Real value in a changing world

*Why **Green Worries** for real estate*

Deepak Bhavsar
Regional Director
Strategic Consulting Group
28 June 2012

Urbanization: An unstoppable force in an uncertain world

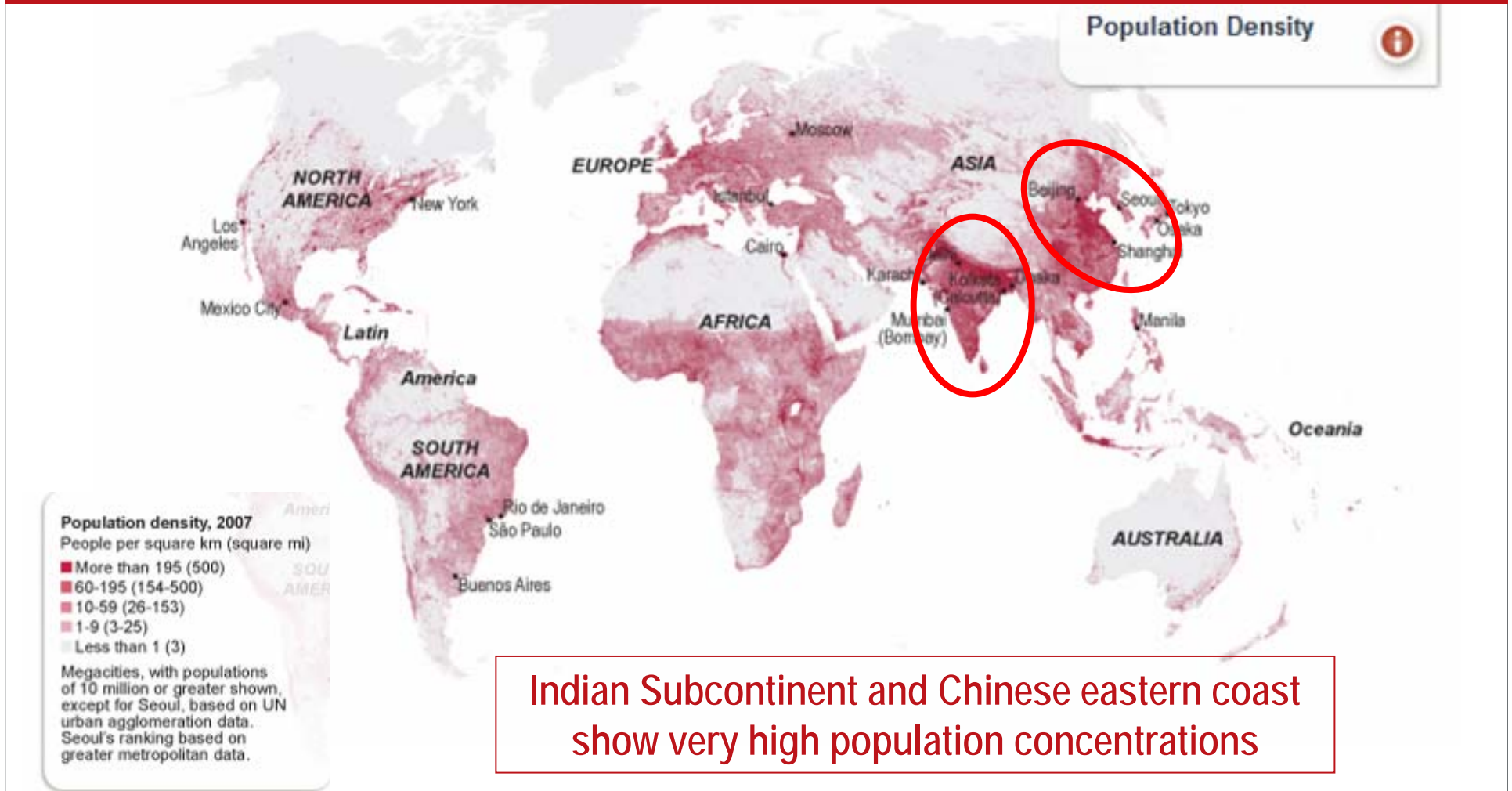
Currently 50% of world's population lives in urban areas
22% live in top 600 cities



75% of the 600 cities are in emerging economies

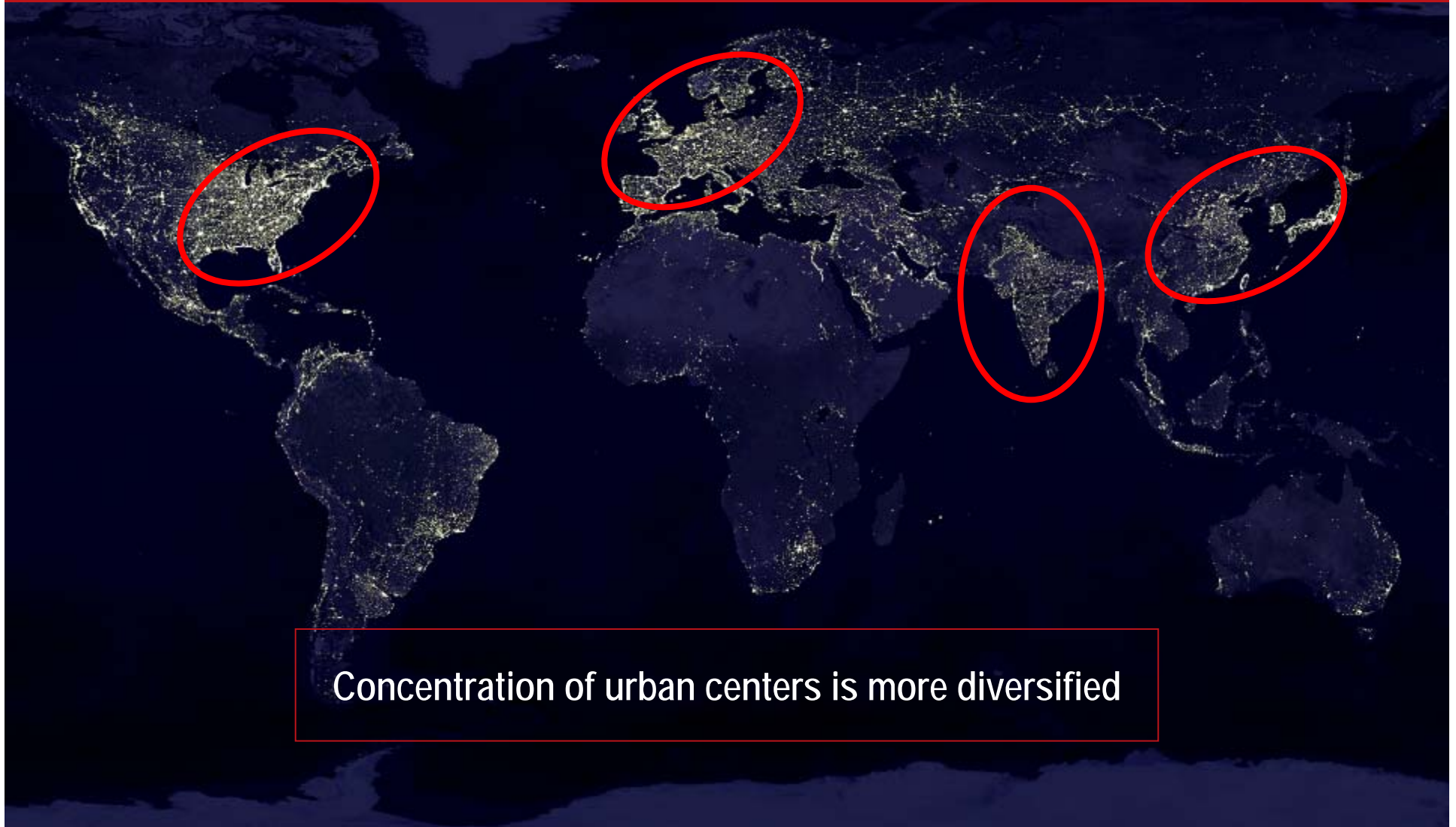
Urbanization: An unstoppable force in an uncertain world

Population Densities



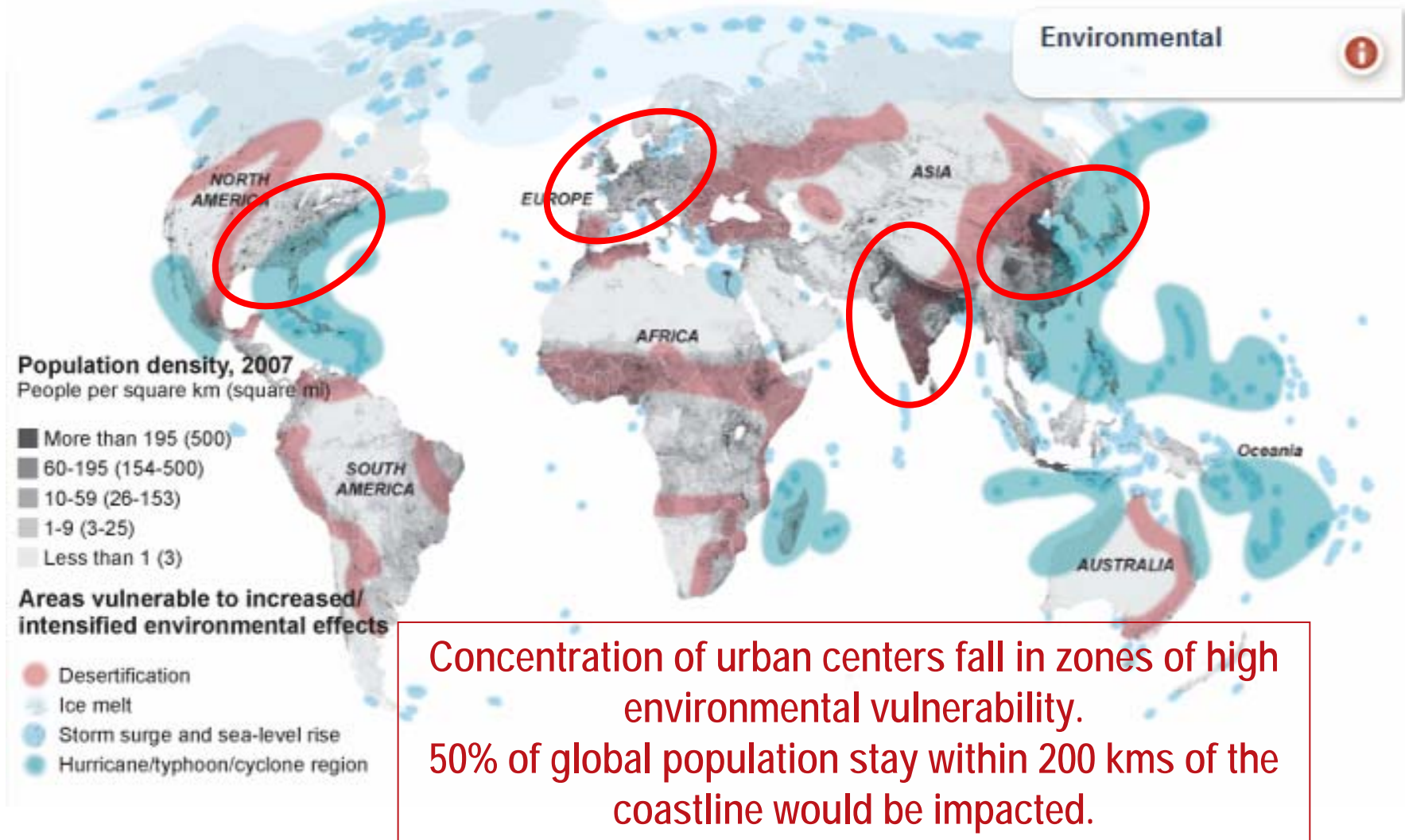
Urbanization: An unstoppable force in an uncertain world

Intensity Zones



Urbanization: An unstoppable force in an uncertain world

Environmental Vulnerability



Cities create carbon ...

Cities represent **70%** of CO₂ emissions worldwide
Consume **75%** of the world's energy



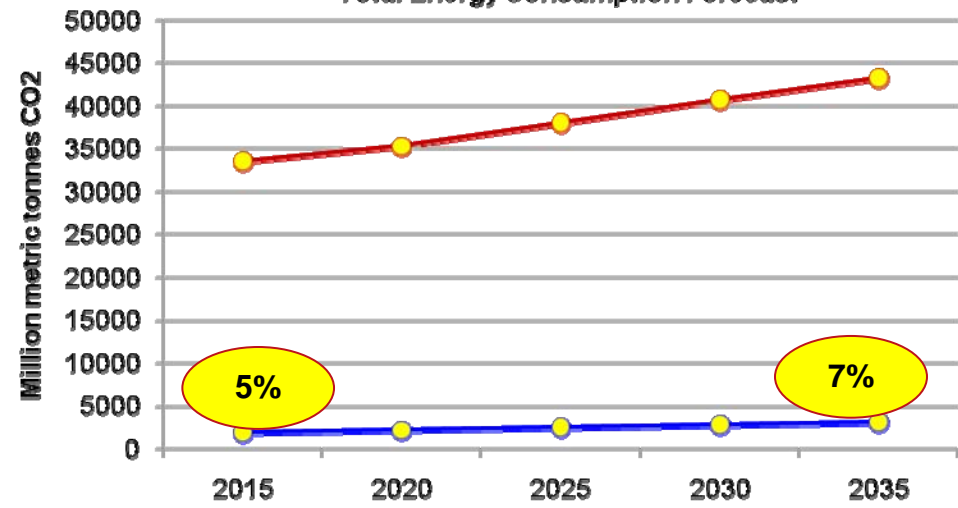
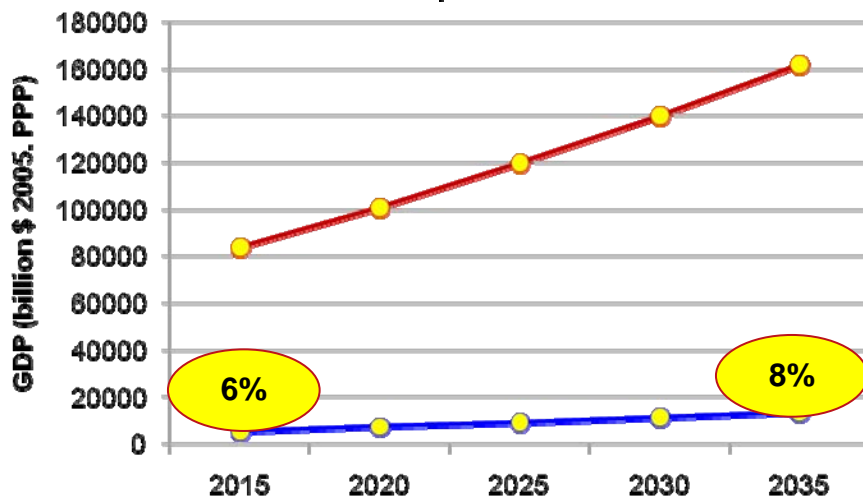
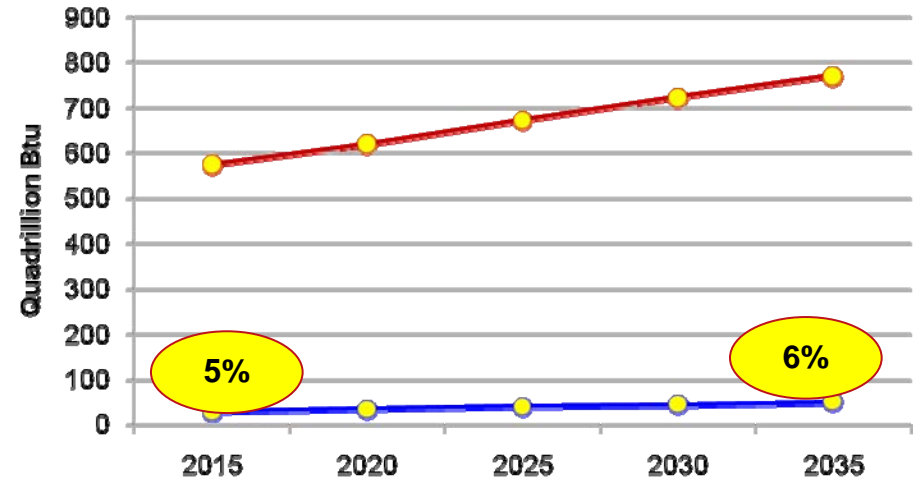
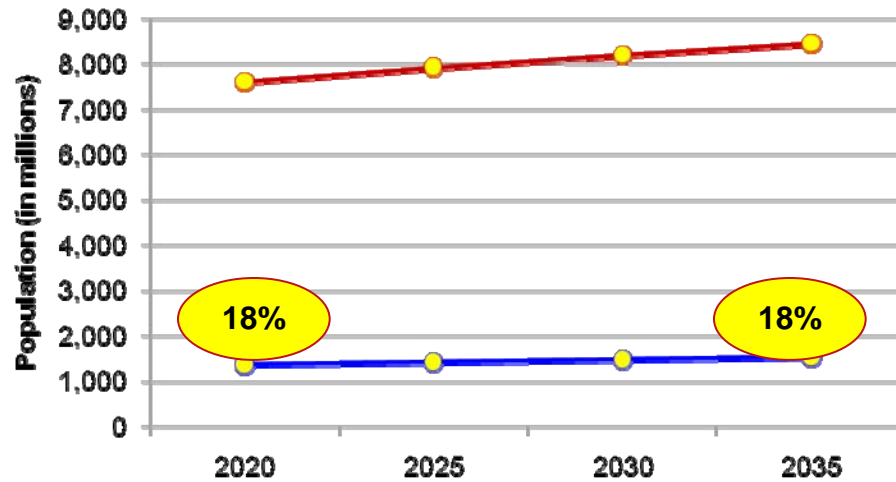
Buildings represent
65% to 70% of a
city's CO₂
emissions

Estimated costs of climate change = **Losing 5% of global GDP each year**
(Stern report)

Source: <http://www.meetingminds2011.org/files/presentations/MotM2011-S-05-Lauralee-Martin.pdf>

Image Source: buildaroo.com

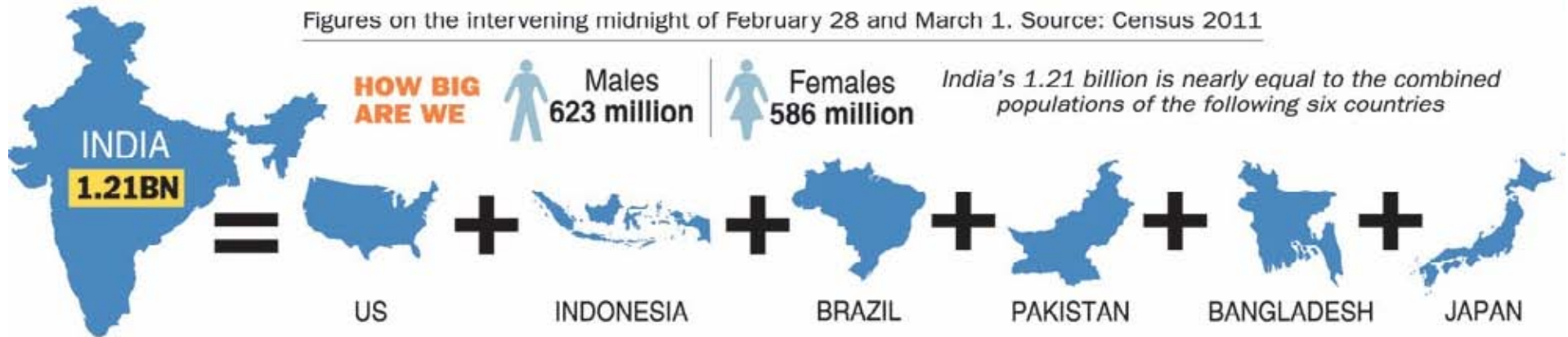
India in the World View ...



—●— WORLD —●— INDIA

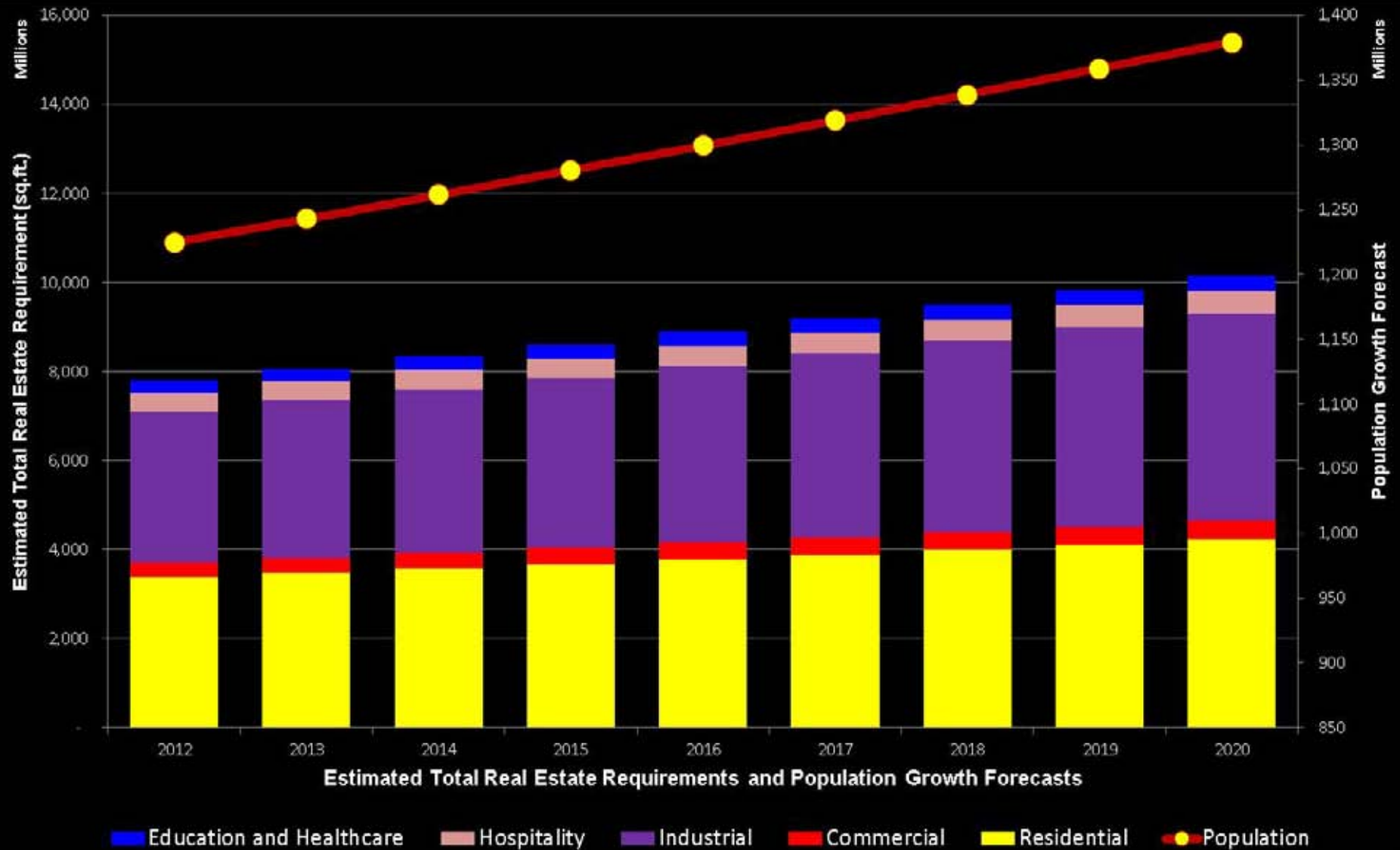
Source: International Energy Outlook 2011; [Report Number: DOE/EIA-0484\(2011\)](http://www.eia.doe.gov/forecasts/ieo/); US Energy Information Administration; <http://205.254.135.7/forecasts/ieo/>

Scale of our Future



- Total urban population in India likely to touch **496 mn** by 2020
 - By 2020, total demand for real estate is likely to be **10.145 billion sq.ft. !!**
- Electrical energy demand for 2011-12 estimated at **~ 969 Tera Watt Hours** – MoP, GoI, 2007
 - Total electrical energy demand in 2021-22 expected to be **~ 1,915 Tera Watt Hours** – MoP, GoI, 2007
 - Current electricity sector installed capacity of **199.87 GW** (+~ 31.5 GW from captive power plants) → **55%** from coal-fired plants !! – MoP, GoI, Oct 2011
- Total future drinking water requirement for urban India by 2020 estimated at approx. **74.4 BLD**
 - Total annual wastewater generation from households in urban India by 2020 estimated at approx. **59.52 BLD**

Estimated Scale of our Future



Urbanization Pressures



LAND AREA

URBAN AREA

URBAN
POPULATION

URBAN DENSITY

GDP

UNITED STATES



3 x

9,826,675 sqkm

17 x

215,697 sqkm

1.1 x

193,480,000

1 x

897

8.5 x

CHINA



3 x

9,640,821

3 x

389,116

1.7 x

311,760,000

9 x

8,012

3.5 x

INDIA



1x

3,287,263

1x

13091

1x

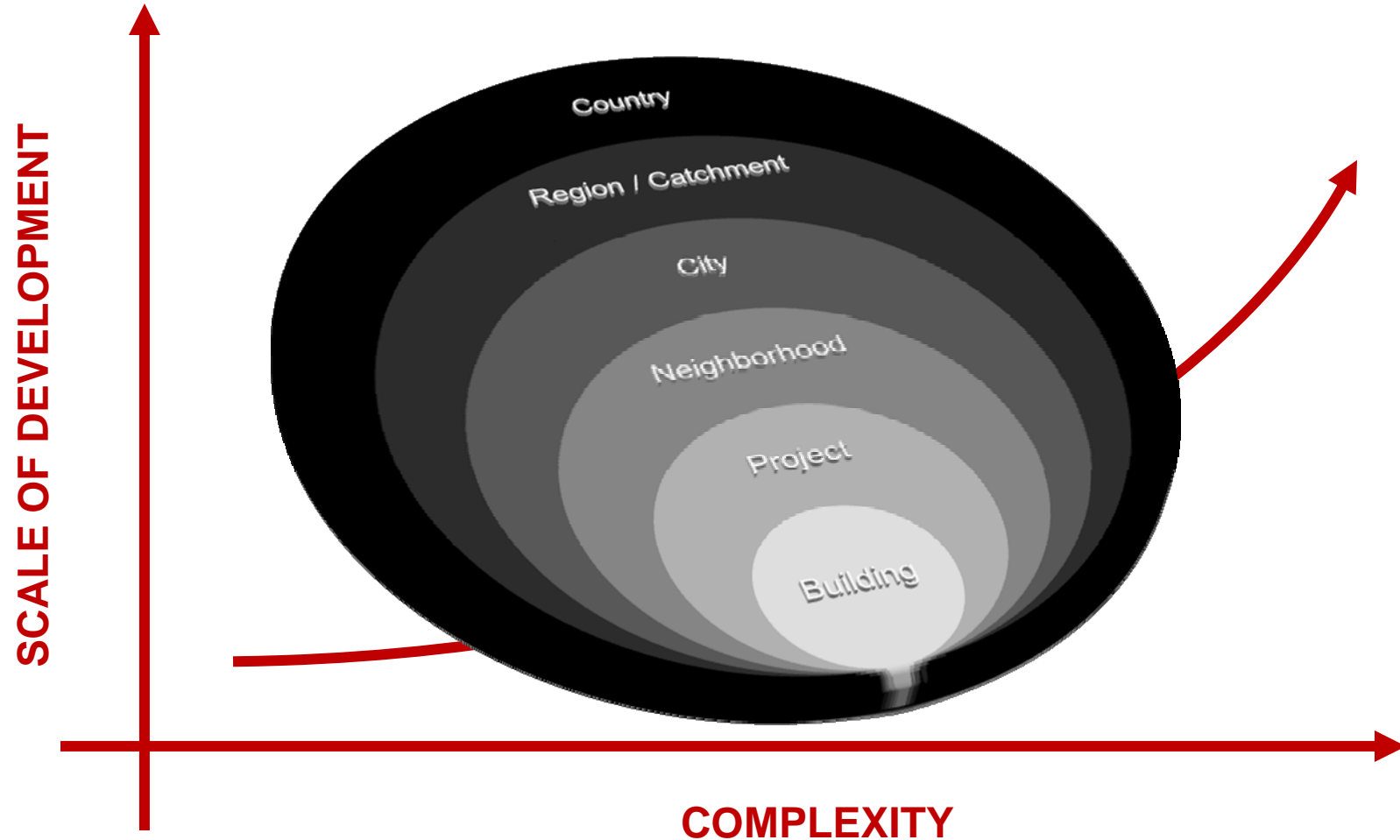
180,235,000

15 x

13,767

1x

Source: Demographia World Urban Areas 2011



How are real estate and planning coping up ?

From interventions at the building level ...

GREEN BUILDINGS (by JLL)



Bank of America Tower

New York, NY

- 2.1 million s.f 52-story, crystalline skyscraper that will be second tallest building in New York City
- Overseeing Platinum LEED® certification on core and shell



Client: Standard Chartered, new Asia Pacific Headquarters
Type: Commercial Tower and Office
Country: Singapore
City: Singapore
Size: 50,000m²
Green Rating: Green Mark Gold (target)
Completion: 2010



Client: RMZ Corporation
Type: Multi-storey Commercial Campus
Country: India
City: Chennai
Size: 270,000 m² (Greenfield)
Green Rating: LEED Gold
Completion: 2008



BioSquare

Boston, MA

- Developed and create an 6-story, 175,000 s.f. research laboratory within a state-of-the-art development complex investment
- Complete in 2005 with LEED® certification



Client: ANZ, new Global Headquarters
Type: Multi-storey Commercial Building & Fitout
Country: Australia
City: Melbourne
Size: 83,550m²
Green Rating: Green Star Office Design, As Built and Interiors (registered). Largest green building in Australia and one of the top four green large buildings in the world
Completion: 2009



Client: HSBC, new China Headquarters
Type: High Rise Commercial Tower & Office
Country: China
City: Shanghai
Size: 115,000m² Tower, 63,000m²
Green Rating: LEED Gold (target). Upon completion is expected to be the largest LEED Certified building for its category worldwide.
Completion: 2010



From interventions at the building level ...

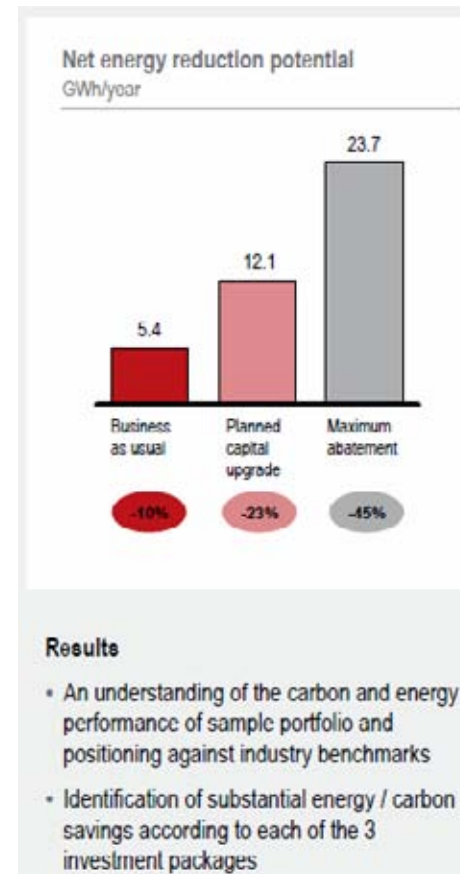
ENERGY EFFICIENCY IMPROVEMENTS – Retrofits (by JLL)

Empire State Building



- Projected up to 38% reduction in energy consumption representing an annual savings of US\$ 4.4M
- Projected reduction in carbon emissions by 105,000 metric tons over the next 15 years
- Estimated project payback time is 3.1 years

Global Insurance Group



From interventions at the building level ...

ZERO ENERGY BUILDINGS and Nearly ZERO ENERGY BUILDINGS

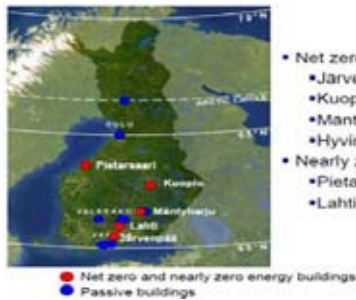
“A zero-energy building, also known as a zero net energy (ZNE) building, Net-Zero Energy Building (NZEB), or Net Zero Building, is a popular term to describe a building with zero net energy consumption and zero carbon emissions annually”

UNITED STATES OF AMERICA



Source: US Department of Energy; http://www1.eere.energy.gov/buildings/commercial_initiative/m/zero_energy_projects.html

FINLAND

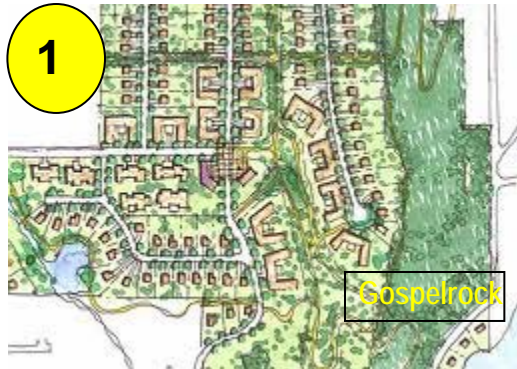


- Net zero energy buildings:
 - Jarvenpää: Apartment house 2124 m²
 - Kuopio: Apartment house 2124 m²
 - Mäntyharju: Single-family house 154 m²
 - Hyvinkää: Single family house 160 m² (2013)
- Nearly zero energy buildings:
 - Pietarsaari: Single-family house 165 m²
 - Lahti: Elderly service centre 16 500 m²



Source: Finnish Solutions for Zero Energy Building, Jyri Nieminen, VTT; http://www.vtt.fi/files/sites/eescu/seminar_16052011/9_Zero_energy_buildings_Nieminen.pdf

... to interventions at the neighborhood level ...



1

Re-engineer Portfolios

- Portfolio Rationalization
- Spatial reallocation / redistribution of assets
- Optimization of portfolio size by spread
- Manage scale to minimize costs



2

Aria, Denver, USA



3

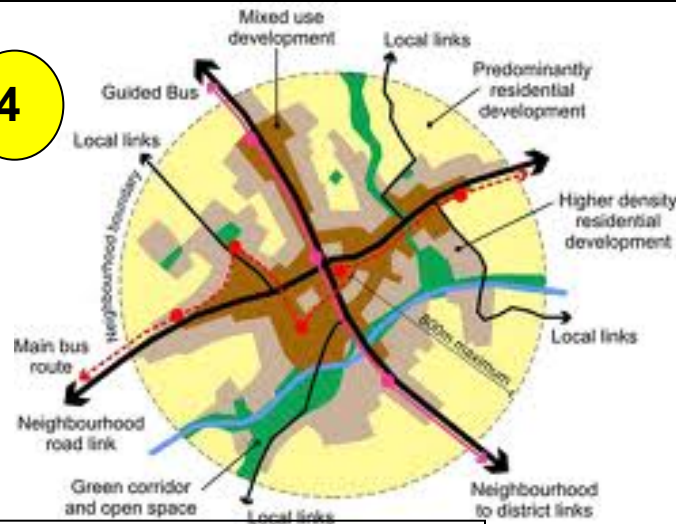
Cool City

Some sustainable development elements

Changing lifestyle habits

- Commercial Alternative Workplace Strategies
- Community water and waste-water recycling and management
- SMART neighborhoods

4



5

25 Neighborhoods



6

Rowdium, Toronto



7

Sustainable Communities



JONES LANG
LASALLE

SOURCES:

1 www.hblanarc.ca

2 www.switchboard.nrdc.org

3 www.golfnews.com

4 www.scams.jdi-consult.net

5 www.article.wn.com

6 www.sustainable.to

7 www.scotland.gov.uk

Sustainable urbanization
patterns needed

... to interventions at the city level ...

ZERO CARBON CITIES

"A zero-carbon city runs entirely on renewable energy, it has no carbon footprint and will not hurt the planet."



MASDAR CITY, Abu Dhabi, UAE



DONGTAN, China



KING ABDULLAH FINANCIAL DISTRICT, Riyadh, Saudi Arabia



CRYSTAL ISLAND, Moscow, Russia (Compact City)

Source: USC Center on Megacities; <http://megacities.usc.edu/research/solar-cities/example-cities.htm>

New Technologies



SOLAR PANELS

- Rooftops
- Solar Farms
 - Vacant land banks
 - Water bodies
 - Public spaces
 - Streetlights, etc.



VERTICAL SOLAR PANELS

- Walls
- Potential for intelligent lighting solutions
- Integration with openings – dovetailing with sustainable building design practice
- Overlay on older buildings



WIND FARMS

- Vacant land banks
- High velocity zones – deserts, sea shores
- City peripheral limits

IFEZ/Songdo – Urban Integrated Operation Center



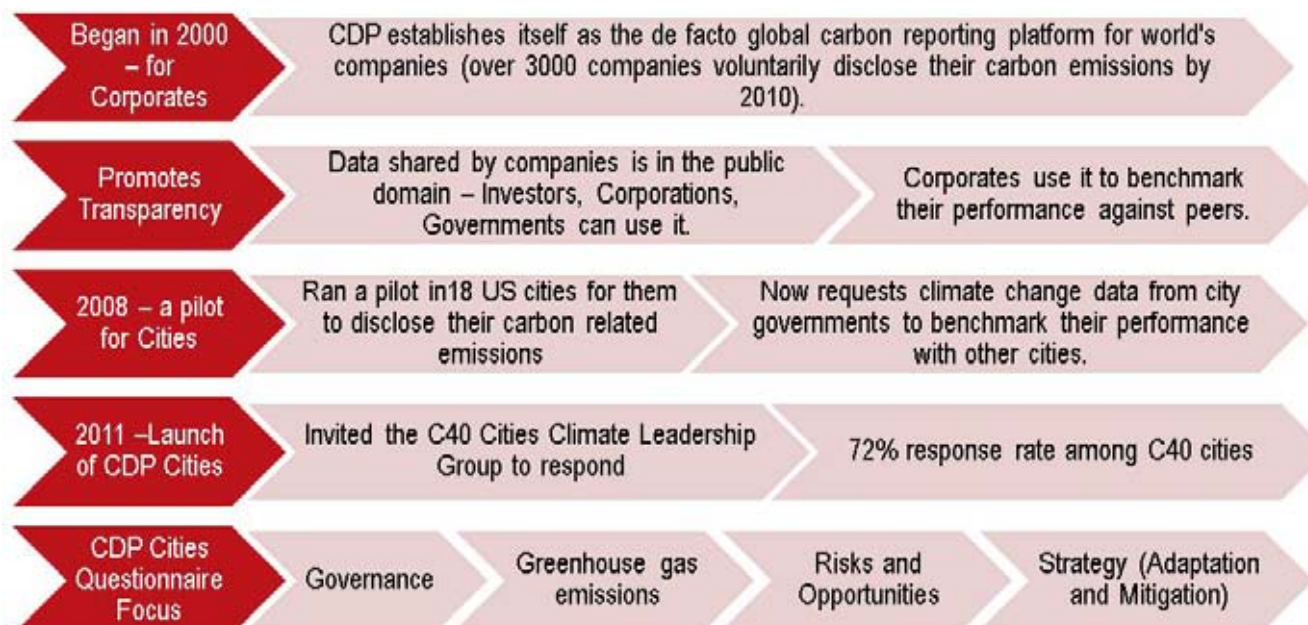
Busan Info. Highway Integrated Operation Center



Source: (1) www.australia.net.au (2) www.visualsunlimited.photoshelter.com (3) www.articlesbase.com

... to interventions at the city level under the Carbon Disclosure Project ...

CARBON DISCLOSURE PROJECT



“The work of CDP is crucial for the success of global green business in 21st century”

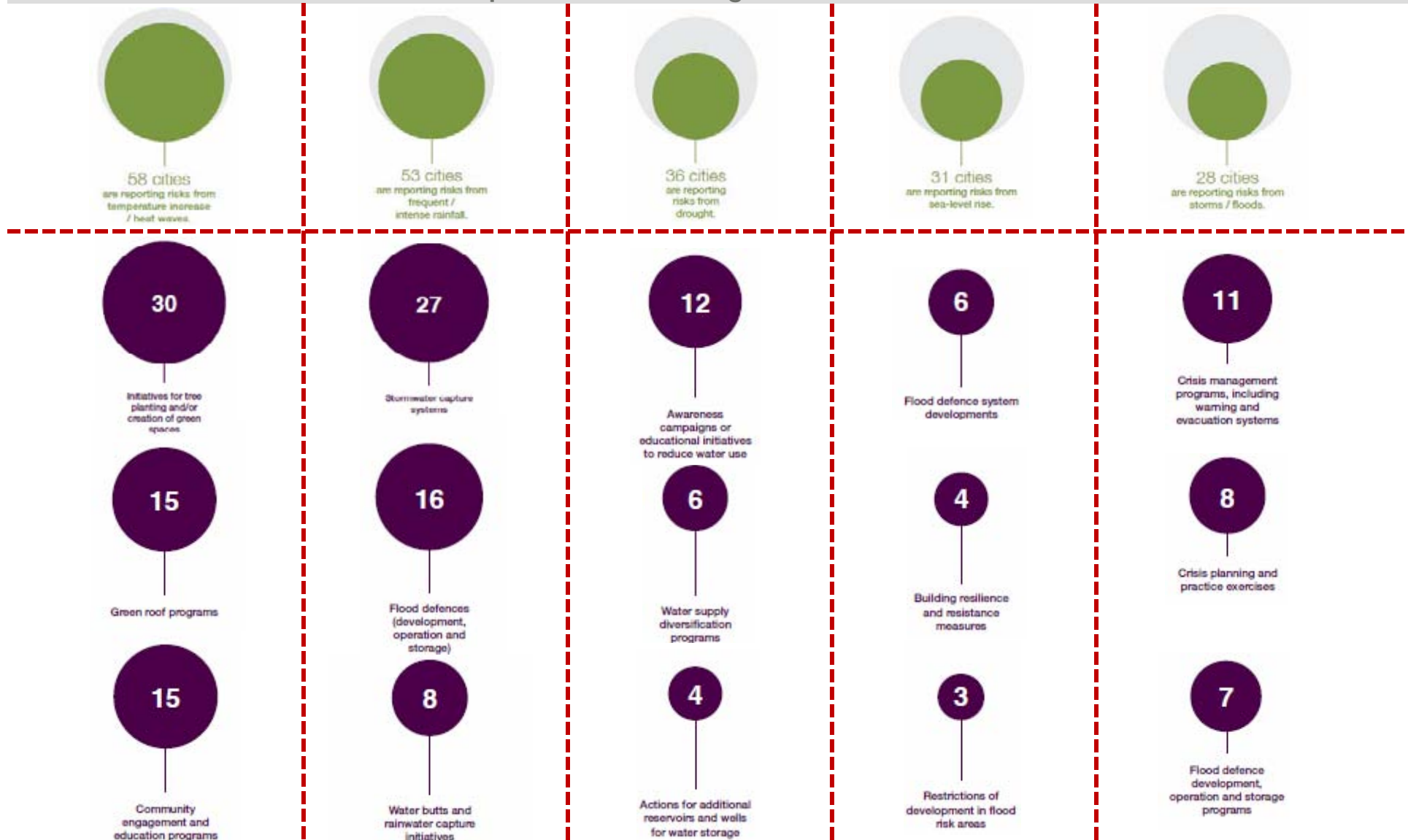
– Ban Ki-Moon, UN Secretary General Sept 2009

“The Carbon Disclosure Project is to the future of business what the X-ray was to the then future of medicine. Without it we would never see the inside of the patient’s health”

– Christiana Figueres, Executive Secretary, United Nations Framework Convention on Climate Change

... to interventions at the city level under the Carbon Disclosure Project ...

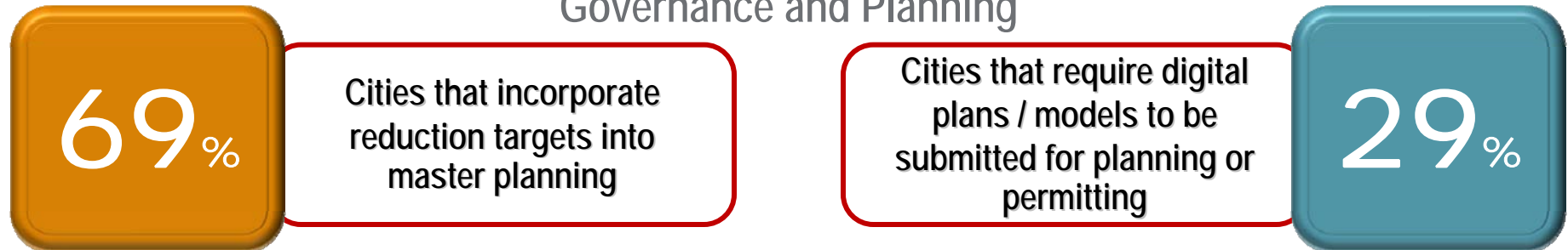
CDP Cities Report 2012 covering 73 cities all over the world



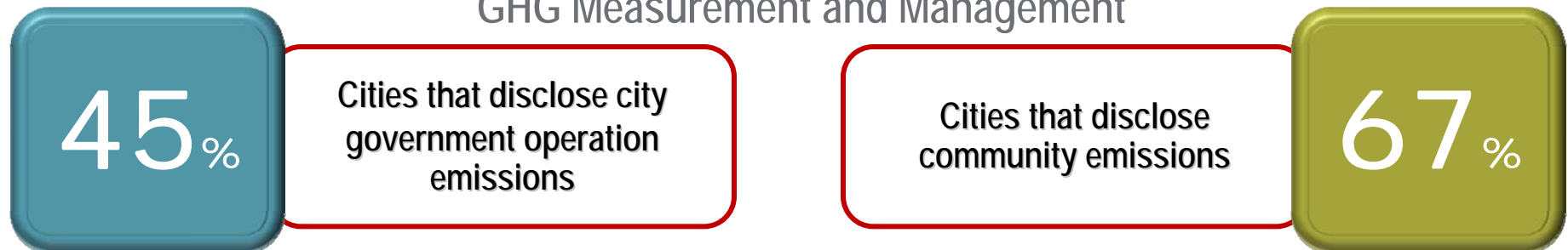
... to interventions at the city level under the Carbon Disclosure Project ...

CDP Report 2011: C40 Cities (covering 40 cities all over the world)

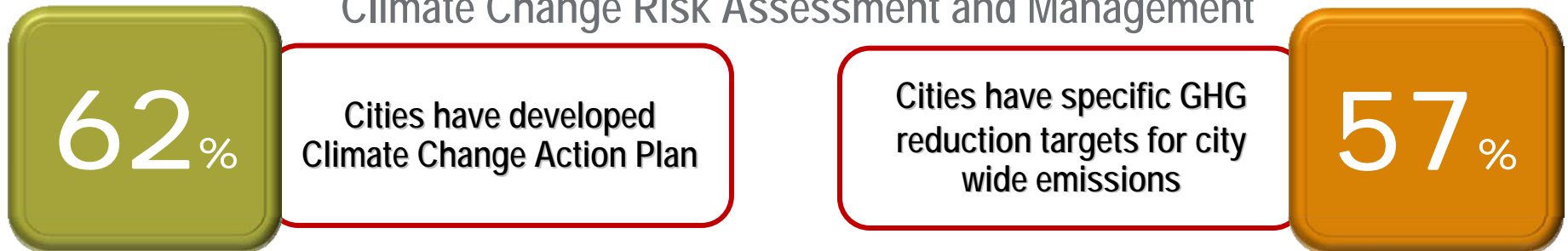
Governance and Planning



GHG Measurement and Management



Climate Change Risk Assessment and Management



... to Zero Carbon Countries !!

ZERO CARBON COUNTRY

ZERO CARBON AUSTRALIA 2020 : BEYOND ZERO EMISSIONS



Source: <http://beyondzeroemissions.org/zero-carbon-australia-2020>



"BZE developing a detailed, costed blueprint for the transition to a completely decarbonised Australian economy by 2020. The Zero Carbon Australia project will consist of 6 transition plans covering the 6 sectors of energy, buildings, transport, land use, industrial processes and coal exports.

Stationary Energy Plan

- Demonstrates that 100% renewable energy is achievable and affordable
- Designs a fully costed and detailed system of concentrated solar thermal plants and large scale wind farms
- Proves that with commercially available and proven technologies renewable energy can power Australia within 10 years
- Launched in June 2010"

Policy interventions and determination key to setting the vision and roadmap !!

Differing Priorities for Sustainable Development

Developed economies

- Green Legislation (city level, building level)
- Green Planning norms and Design guidelines
- Green Solar Densities
- Green funding
- High use of green technologies and renewables
- Improved recycling
- Reducing carbon footprint
- Zero Carbon buildings, neighborhoods, cities



REDUCING CONSUMPTION



Differing Priorities for Sustainable Development

Developing economies

- Generating jobs
- Focus on basic needs - water, food, shelter
- Scarce urban land, high cost of real estate, slums, affordable housing
- Sustainable & affordable energy needs and solutions
- Very high level of migration
- Very high population densities, more competition for scarce resources
- Crumbling urban infrastructure
- Need of capacity building at all levels of urban governance
- Funding challenges



• BASIC SUSTENANCE



Some of our key challenges ...


- Need for a holistic vision
- Need for a comprehensive policy
- Need for bridging the technology gap
- Need to revive ancient practices
- Need to generate awareness at all levels
- Need to facilitate attitudinal and lifestyle changes
- Need to consider a life sciences approach v/s a conventional engineering approach
- Need for enhancing human resource skills capacities and quantum


Some of India's critical steps towards Sustainable Development



- National Action Plan on Climate Change
 - National Solar Mission
 - National Mission for Enhanced Energy Efficiency
 - National Mission on Sustainable Habitat
 - National Water Mission
 - National Mission for Sustaining the Himalayan Eco-system
 - National Mission for a Green India
 - National Mission for Sustainable Agriculture
 - National Mission on Strategic Knowledge for Climate Change
- Bureau of Energy Efficiency

Some steps towards global collaboration

-  **Global Environment Facility:** Biodiversity Loss, Climate Change, Degradation of International Waters, and Ozone Depletion

-  **Montreal Protocol:** Ozone Layer Depletion

-  **UNFCCC:** Global Warming

-  To act jointly at the Copenhagen climate summit



Businesses will choose locations with sustainable profile

The new competitive landscape

Sustainability indices

- Siemens, IBM
- Dow Jones Sustainability Index
- Carbon Disclosure Project
- Forum for the Future

Typical measures

Currently 110 indices of city competitiveness that measure: economic, skills, culture, creativity, accessibility, brand, open space and specifically:

- **Environmental impact:** City's impact in terms of resource use and pollution;
- **Quality of life:** What the city is like to live in;
- **Future-proofing:** How well the city is preparing for a sustainable future

The clear commercial need to know

Occupier

- Occupiers location decision affected by confidence in the city to provide power, water, food, flood defense and working infrastructure and green, efficient buildings

Investors

- Investor decisions affected by occupier confidence in the long term durability of the city and by the availability of prime green stock

Developer

- Needs to differentiate and future proof the asset

These indices are helpful in context of external perceptions; but the commercial future of the city depends upon recognition of the issue and actions set to resolve it

JLL's commitment to sustainable development



Recognized leader

- ENERGY STAR Partner of the Year (2012, 2011, 2010, 2007)
- World's Most Ethical Companies, Ethisphere Institute (2010, 2009, 2008)
- U.S. Green Building Council Leadership Award (2009)
- California Sustainability Showcase Award for Commercial Buildings (2009)
- Who's Who: Leaders in Energy Management and Sustainability, Buildings Magazine (2009)
- Sustainable Cities Award, Financial Times and ULI (2008)
- 3 year partnership with Carbon Disclosure Project
- Green Globes

Making an impact

- Documented **\$128 M** in energy savings
- Conserved **587 metric tons** of green house gas emissions in 2011
- Helped save **963 GWh**
- Provided **20,000 facilities** with specialized energy services
- Managed **250+** LEED projects
- **900** accredited professionals world wide and growing



JLL's commitment to sustainable development



Environmental Management



Results

- ISO14001 certification achieved for the EMS for 100 buildings
- 8% reduction in carbon emissions from comparable buildings in FY 2009/10 compared with the previous year
- Diversion from landfill rate increased from c.50% to over 80% in two years

Carbon Footprint Mapping

Performance Measurement Management

Results

- Delivery of corporate performance and management targets
- Sustainability integrated into asset business planning
- A survey of the client's UK-based indirect investments with areas identified for further engagement on sustainability
- Sustainable Fit-Out and Refurbishment Guidance Notes drafted for tenants and for the client
- 16.5% reduction in energy usage between 2008 and 2010 (like-for-like properties)
- 91% reduction in waste sent to landfill between 2008 and 2010 (like-for-like office properties)
- 68.9% average recycling rate between 2008 and 2010 (like-for-like properties)

Building Energy Audits



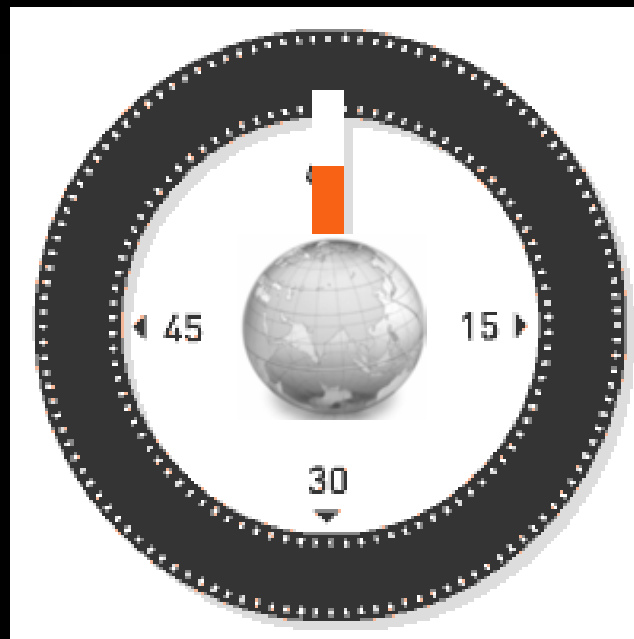
Results

Annual savings identified in documented findings:

- 4,966 MWh energy
- 903 tonnes of carbon
- €393,000 operational energy costs

Low Carbon Energy Retrofits

The clock is ticking....



Let's action this