What’s next for Green Offices in Romania?
Why - World Green Building Week?
Cundall events around the world
Cundall has completed a research project which draws on the testing of others as well as in-house testing to quantify the benefits of plants. These results will be presented, and the benefits quantified in terms of energy and CO₂ reduction.

Plants in Buildings
- Better air quality
- Less ventilation
- Removes PM2.5 / PM10

Plants on Buildings
- SUDS
- Better air quality
- Lower temperature
- Less energy
Madrid – LEED version 4. A big step forward for Spain

LEED V4

- Most dramatic change in the way buildings are designed in the last 15 year.
- The tool is adapted to new markets such as data centres, warehouses, distribution centres, mid-rise residential, etc. with dedicated compliance paths
- LEED V4 is available already and it will coexist with LEED 2009 until June 2015.

KEY CHANGES

- New weightings and categories
- Increased emphasis in energy - 20%
- Different compliance options for international projects
- ASHRAE 2010 (25% energy reduction in some cases, even more in others)
- More rigorous commissioning process including envelope commissioning
- Whole building life cycle assessment
Impact Investing

**What?**

Impact Investments aim to solve social or environmental challenges while generating financial returns.

**Why does it matter?**

In both emerging and developed markets, we face challenges in health, education, climate, renewable energy, and more. Impact investing serves as a new investment model that tackles these issues alongside a financial return.
Shanghai – Rejuvenating communities through sustainable developments

- Defining the principals early 早期定义的校长
- Future proofing 适应未来发展
- Rating tools 评级工具
- Quantifying / verifying 量化/验证
- Social impact 社会影响
- Impact development 影响发展
Newcastle – The evolution of sustainable buildings

- Behaviour
- Operation
- Unregulated
- Regulated

- Energy
- Material Use & Waste
- Healthy Environment
- Biodiversity
- Wellbeing
- Flexibility & Adaptability
- Water
The performance of office and school work is affected by indoor environmental conditions and by the features of buildings that influence indoor environmental conditions. Work performance may be improved from a few percent to possibly as much as 10% by providing superior indoor environmental quality (IEQ).

Berkley

Operational efficiency - through standard routes and with innovation

Healthy environments - by looking at the bigger picture

Ecological footprint - remembering that our influence continues beyond the building entrance.
Warsaw - CFD Simulations

- Thermal Bridges and condensation risk
- Thermal Comfort
- Risk of Draft
- Natural Ventilation
- External Wind Studies
- Data Centres
- Smoke ventilation & dispersion of contaminants
- Thermal Bridges and condensation risk
- Bespoke analysis
Bucharest - What’s next for green offices in Romania?
Green Buildings in Romania – Drivers back in 2007

- Legislation – CO$_2$ reduction
- Increasing fuel costs
- International Benchmarking for International Investment
- Asset value
- Climate change – risk mitigation
- Technological development
Green Buildings in Romania - Legislation

- Order 2055/2005 concerning the revision of the thermal regulations for buildings (C107) – approved on the 13th of December 2005 and amended in October 2010 by improving the thermal resistance values.
- Order 157/2007 which brought into force the “Methodology of calculation of the energy performance of buildings – Mc 001/1,2,3-2006” – 1st of February 2007
- Following the publication of the above Methodology, the EPC is mandatory since 2007 for all buildings when constructed, sold or rented, except for residential buildings.
- The EPC is mandatory for all residential buildings when sold or rented – 1st January 2011
- Order 63/2012 which supplements and amends O.G. 18/2009 regarding the thermal rehabilitation of blocks of flats and single-family buildings built between 1950 and 1990 – 8th November 2012
- Law 159/2013 regarding the transposition of the EPBD recast into national law – 20th May 2013
- Order 3152/2013 on the approval of the State’s control procedure on the uniform implementation of the legal provisions on building’s energy performance and on the inspection of HVAC systems – 16th October 2013
- Order 3466/2013 on the inventory of buildings heated and / or cooled, owned and occupied by the central government, and making the inventory available to the public and setting up data banks on energy efficiency. – 12th December 2013
Green Buildings in Romania – Fuel Costs

Global Oil Production, Consumption and Price 2001 - 2012
http://www.eia.gov/ers
Advocates of Green Buildings in Romania
Romania’s First Internationally Recognised Breeam Office

Lakeview

- Accredited in 2009
- AIG Lincoln
- BREEAM International
- Very Good (Design and Procurement)
45 Projects accredited in Romania, office examples include:

- Bucharest One
- Ethos House
- Victoria Centre
- Hermes Business Campus
- Euro Tower
Romania’s First Internationally Recognised LEED Buildings

City Gate Tower North

- Certified 19th July 2013
- GTC & Bluehouse (Developer)
- Europa Group (Owner)
- LEED – Gold (Existing Building)
LEED Certified Office Accommodation - Bucharest

35 Projects registered although only nine certified, examples include:

Iulius Malls

City Gate North & South Towers

DB Global Technology

AFI Park

PMV Business centre
Bucharest - What’s next for green offices in Romania?

BREEAM and LEED accredited projects

- **Bulgaria**: BREEAM projects
- **Romania**: BREEAM projects
- **Hungary**: BREEAM and LEED projects
- **Austria**: BREEAM projects
- **Spain**: BREEAM and LEED projects
- **Czech Republic**: BREEAM projects
- **Poland**: BREEAM and LEED projects
- **Germany**: BREEAM and LEED projects
- **Netherlands**: BREEAM projects

**Legend:**

- **BREEAM**
- **LEED**

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Green Buildings in Romania – Drivers in 2014

- Legislation – CO2 reduction
- Reduction in oil and gas reserves and Increasing fuel costs
- International Benchmarking for International Investment
- Asset value
- Climate change – risk mitigation
- Workplace productivity, health & well-being
- Holistic approach - Reducing Design and Construction Costs
Typical Office - Business Operating Costs

- 1% Energy Costs
- 9% Rent and consumables
- 90% Labour Costs
Workplace productivity, health & well-being

Indoor air quality

- Higher Ventilation and fresh air rates
- Improved air quality
- Reduced CO$_2$
- Lower Pollutants

Increased productivity 8-11%
Thermal Comfort vs Personal Comfort

- Greater ‘personal’ environmental control
- Reduced energy consumption
- Local control of temperature

Task Air – Integrated Personal comfort stations can lead to an increase in productivity of 5-8%
82% of workers think there is a connection between office morale and the amount of daylight in a building.
Workplace productivity, health & well-being

Light Shelves

Reduced Energy Demands
Electric Lighting

Task based lighting levels – new guidance

500 Lux (0.6 Uo)
300 Lux (0.4 Uo)
100 Lux (0.1 Uo)
Workplace productivity, health & well-being

Office Lighting Design – Electric Light
Workplace productivity, health & well-being

Office Lighting Design – Electric Light
Workplace productivity, health & well-being

Biophilia
Workplace productivity, health & well-being

Biophilia
Holistic Approach
Holistic Approach
Holistic Approach
Holistic Approach

Natural ventilation with exposed thermal mass

Night cooling of exposed soffit

Automatic top window for night cooling and background ventilation

Manual middle window for purge ventilation
Conclusions

The Present

• Legislation will deliver Green Buildings, although that is no longer enough.
• Enforcement must improve.
• Accreditation is trailing behind neighbours.

The Future

• Building design has changed, holistic approach is essential
• Building, not systems, led
• Challenge the norms (Cat A culture is no longer appropriate)
• Dare to be different!