

Further information  
**Skanska AB**  
[www.skanska.com](http://www.skanska.com)

Contact  
 Noel Morrin,  
 SVP Sustainability &  
 Green Support  
[noel.morrin@skanska.se](mailto:noel.morrin@skanska.se)

## Green Court Bucharest, Romania

### Case Study 133

Green Court Bucharest is Skanska's first commercial development in Romania. The project is pre-certified to LEED Gold (Core & Shell), and has set the standard for green building in Romania, in terms of building energy and water efficiency, and safety and waste management during construction.

### Aspects of Sustainability

This project highlights the following:

#### Green Aspects

- Energy
- Carbon
- Materials
- Water
- Local Impacts

#### Social Aspects

- Human Resources
- Corporate Community Investment
- Business Ethics
- Health and Safety



“Our employees will benefit from common meeting and social areas, open-planned offices and a lot of facilities, intended to encourage the exchange of ideas and collaboration between our teams, to highlight our friendly and open culture. All of this in a green building, in line with our CSR approach, that also offers us great working conditions and a healthy environment.”

- Jean-Francois Fallacher, CEO of Orange Romania

### Project Sustainability Highlights

#### Economic

- 33% financial savings due to energy efficiency

#### Green

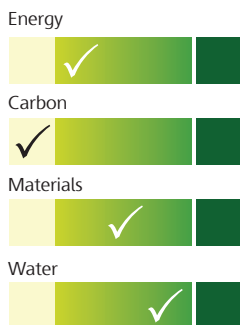
- 40% less **Energy** use than the Romanian energy code
- 95% construction waste diverted from landfill
- 50% less potable **Water** use than a conventional Romanian office building

#### Social

- Good safety practice during construction
- Healthy indoor environments

### Project Introduction

Green Court Bucharest is a commercial development situated in the Floreasca-Barbu Vacarescu area of Bucharest. The area is a new Central Business District (CBD), around 5 km north of the city center. The three-building development includes Building A, which was completed in the autumn 2014 and Building B and Building C, which are scheduled for completion in 2015 and 2016 respectively. When complete, the entire Green Court Bucharest development will offer approximately 52,000 m<sup>2</sup> of leasable space. Green Court Bucharest is Skanska's first commercial property in Romania, and is intended to meet the growing demand for high quality and green office space in Bucharest.



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Building A was developed by Skanska Romania for Skanska Commercial Development Europe (Skanska Property Romania). The 12-story building offers 18,494 m<sup>2</sup> of leasable office space and 674 m<sup>2</sup> of leasable ground floor retail units. Orange Romania, the largest telecom operator in the country, is the largest tenant of Building A, with 1,500 employees occupying 13,700 m<sup>2</sup> of the building. A restaurant and a convenience store currently occupy the ground floor retail units. The building also has 271 underground parking spaces in a three-level underground garage and 24 bicycle parking spaces. Green Court Bucharest's Building A was sold to the real estate investment company Globalworth Real Estate Investments for US\$ 52 million prior to completion.

Green Court Bucharest's Building A and Building B are pre-certified to LEED (Leadership in Energy and Environmental Design) Gold certification (Core & Shell). LEED is a voluntary U.S. Green Building Council (USGBC) certification process intended to encourage and guide the construction of green buildings.

Skanska Romania won the following in the CIJ Journal Romania Awards 2014 based on the Green Court Bucharest project: Office Development of the Year, Office Lease of the Year, ESSA Green Developer of the Year and ESSA Leading Green Building of the Year.



## Contributing Toward Sustainable Development

Building A is designed to use approximately 40 percent less energy than the Romanian code, which equates to annual financial savings of 33 percent. The building uses around 50 percent less potable water than a conventional newly built Romanian office building, and is equipped with a grey water reuse system. Green Court Bucharest is also designed to promote healthy and comfortable working environments for building occupants and a long useful building lifespan by allowing tenant flexibility. The Green Court Bucharest project has contributed toward sustainable urban development by redeveloping a previously developed site in central Bucharest and by promoting more sustainable modes of transport. During construction, Skanska ensured that 95 percent of construction waste was diverted from landfill, which far exceeded local regulations. Similarly, the project team also surpassed Romanian standard safety practice and instilled a safety culture throughout the team by implementing Skanska's safety procedures. The team worked to minimize environmental impacts during construction by exceeding local regulations. The construction project benefitted the local economy by sourcing regional workers and materials.

## Green Aspects

### Energy

#### Energy efficiency

Building A is designed to annually use approximately 168 kWh/m<sup>2</sup>, which is 40 percent less energy than the Romanian code for office buildings.

The building has a well-insulated façade with walls and windows that are 2-3 times better than conventional Romanian building practice. Exterior walls, the roof and windows have U-values of 0.24 W/m<sup>2</sup>K, 0.16 W/m<sup>2</sup>K and 1.1 W/m<sup>2</sup>K respectively. The façade shading system is also designed to avoid excessive solar heat gain and reduce the need for cooling. The energy efficient HVAC (Heating, Ventilation and Air Conditioning) system, is equipped with air handling units that recover heat from outgoing air and have Variable Frequency Drives to promote energy efficiency.

The lighting systems in the common areas and parking garage are equipped with motion sensors, and the office spaces have light intensity sensors, which optimize energy by automatically controlling lighting according to space usage and natural lighting levels.



Furthermore, over 75 percent of the floor space has access to daylight, which reduces the need for artificial lighting.

#### Renewable energy

A roof-mounted solar water heating system preheats hot water. The system will annually produce 30.9 MW of energy, which is 43 percent of the building's energy for hot water.

#### Intelligent energy management

The building's energy performance is monitored and controlled by a modern BMS (Building Management System). The system measures total building energy use and enables sub metering, which allows tenants to monitor and minimize their own energy consumption. A measurement and verification plan including corrective actions will be implemented during the building's operation.

#### Materials

##### Environmentally responsible materials

The low emitting and Volatile Organic Compound (VOC) materials used within the building included the paints, coatings and flooring systems. Materials with recycled content were prioritized, including the glazing, gypsum board, concrete components and structural steel. The raised floorboard was certified according to the Forest Stewardship Council (FSC).

##### Waste management during construction

The team set ambitious waste management targets and 95 percent of construction waste was diverted from landfill. This is an exceptional performance in a country where almost all waste is sent directly to landfill. Skanska drew on its international expertise to educate the local contractors and implement a comprehensive waste management strategy.

Significant demolition waste was also diverted from landfill by crushing the existing concrete platform on site and reusing it as subbase.

#### Water

##### Water efficiency

Building A is designed to use approximately 50 percent less potable water than a conventional newly built Romanian office building. Water efficient fixtures have been fitted throughout the building, including low-flow taps and showers, and low-flush toilets. The building also has a grey water system, which reuses all wastewater from sinks and showers for toilet and urinal flushing. The system collects, chlorinates and stores the grey water prior to reuse. Drought-resistant native species have been used in the landscaping to reduce the need to use potable water for irrigation.

#### Other Green Aspects

##### Minimizing environmental impacts during construction

During construction, the team worked to minimize environmental impacts during construction by meeting and even exceeding local regulations. A Construction Activity Pollution Reduction Plan was implemented during construction. Any potentially hazardous waste was carefully monitored, existing trees were protected, and stormwater runoff and dust generation were minimized.

##### Raising awareness of green buildings

Tenant design and construction guidelines have been compiled, which includes detailed descriptions of the building's green features and practical guidance on how the tenants can further enhance the green performance of the building.

## Reducing heat island effect in Bucharest

The site's landscaping, green roof and underground garage contribute to a reduced urban heat island effect by diminishing the extent of dark and paved surfaces on the site.

## Social Aspects

### Occupational health and safety

There were two lost time accidents during 1.1 million hours worked during construction, and the Lost Time Accident Rate for the project was 1.8 per million hours. The project exceeded Romanian standard safety practice by implementing Skanska's safety procedures. The team worked to instill a safety culture throughout the team by discussing safety and incidents with transparency, and working to continually improve and communicate safety work. Project partners were encouraged to report unsafe behavior, near misses or safety issues they witnessed in order to discuss and learn from the observations. Various types of safety training were held for all workers according to their needs, including a mandatory safety induction for every worker, safety toolbox talks, supervisor orientation training, competency training for working at height, safety leadership training for managers.

Safety technical measures also ensured that the necessary fences, platforms, scaffolds and equipment were always used properly and according to the user manual instructions. Feedback from site workers highlighted the fact that they were very appreciative of Skanska's safety efforts in order to create and maintain an injury free environment.

### Adhering to Skanska's ethical culture in a new market

Skanska strived to adhere to the company's ethical culture and Code of Conduct as it developed its first commercial development in Romania. Unlike most Skanska development units, Skanska Romania could not rely on extensive in-country experience and the services of Skanska construction units during the development phase.

Skanska's Commercial Development unit in Romania therefore employed around 60 new construction staff to supervise the construction process. The construction staff received extensive training on Skanska's ethical culture, the company's Code of Conduct and specific issues such as safety to ensure that the project would maintain Skanska's ethical standards.

### Healthy working environments

Green Court Bucharest has been designed to promote healthy and comfortable working environments for occupants. The building has a fresh air ventilation system, and low-emitting and low-VOC materials have been used. 75 percent of the indoor floor area has access to natural lighting, and daylight sensors control artificial lighting to provide a relatively uniform level of lighting throughout the day. Control displays allow occupants to directly adjust the temperature and ventilation of their room or space.

### Flexible office design

Green Court Bucharest is designed to allow occupant flexibility in order to promote a long useful building lifespan. The open planned nature of the office space and the raised flooring allows various office layouts and interior design. Each floor can also be occupied by a single large tenant or easily divided and shared by up to four smaller tenants. There is also potential to equip the server room with a separate cooling system if tenants require such a system in the future.

### Contributing toward sustainable urban development

Rundown single story industrial buildings occupied the site prior to the project. The Green Court Bucharest development has consequently made use of a brownfield site in central Bucharest. Green Court Bucharest is situated in a dense urban neighborhood, with good access to all necessary urban services and amenities.

### Promoting more sustainable modes of transport

Green Court Bucharest's Building A has indoor bicycle storage racks and dedicated changing rooms with showers and lockers to encourage tenants to cycle to work. The parking garage has reserved parking spaces for fuel efficient and low-emitting vehicles, and nine charging stations for electric vehicles. Green Court Bucharest has good access to public transport, including a tramline station 20 m from the entrance and a metro station 300 m from the development. There are also regular bus services nearby.



## Economic Impacts

### Regional construction workforce and materials

An average of 400 people worked on site throughout the construction period of Building A. Around half of the workers were from Bucharest, with the rest from the surrounding region, and many subcontractors were also from the surrounding Bucharest region. Over 20 percent of construction materials were harvested and manufactured regionally (according to LEED criteria), including the reinforcement steel.

### Efficiency financial savings

Green Court Bucharest's Building A is expected to make annual financial savings of around 33 percent throughout its lifespan through the efficient use of energy and water.



## Learning From Good Practice

The team has developed one of Romania's greenest building's to date by surpassing national regulations and standard practice in terms of building energy and water efficiency. In addition, the project set the standard for green construction in Romania by exceeding standard practice concerning waste management and environmental impacts during construction. The Green Court Bucharest project also surpassed national safety legislations and standard practice.