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## Corso Court, Czech Republic

### Case Study 143

Corso Court is a commercial development in Prague that uses 36 percent less energy than the Czech building code and 30 percent less water than a typical Czech office building. The property is designed to achieve LEED (Leadership in Energy and Environmental Design) Platinum.

### 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



“We opted for Corso Court because we feel that the building matches our corporate spirit, with the values of being open and very green. It is also important for us that our young people have access to a garden, open spaces and harmony. They want to have a feeling that the building is more than just an office.”

- Olga Quiros, Director, Expedia - EMEA-Global Supply Operations



### Project Sustainability Highlights

#### Economic

- Regional construction workforce
- Operational financial savings of around a third compared with a typical Czech office building

#### Green

- 36% less **energy** than Czech standards
- 97.5% of construction **waste** diverted from landfill
- 30% less **water** than typical Czech building

#### Social

- Healthy working environments
- Large urban garden with free Wi-Fi for tenant and public use
- Activity-Based Workplace (ABW) environment

### Project Introduction

Corso Court is a modern commercial development situated in Prague 8 – Karlín. The neighborhood is a former industrial district, which has been redeveloped into a vibrant business quarter in central Prague, whilst retaining its industrial character. Corso Court is situated adjacent to a new pedestrian street in Karlín and helps to meet the demand for green office space in the neighborhood. Spanish architect Ricardo Bofill designed the architecturally striking building, which combines glass, steel and arches.

Skanska Property Czech Republic developed the US\$ 33 million project, which was constructed by Skanska Czech Republic. Corso Court is Skanska Property’s sixth commercial development in Prague. The 7-story office building offers 17,202 m<sup>2</sup> of rentable space in total, with each floor providing around 2,400 m<sup>2</sup> of floor space.

#### Energy



#### Carbon



#### Materials



#### Water



The ground floor also accommodates a 346 m<sup>2</sup> restaurant and a 570 m<sup>2</sup> retail space that is occupied by a healthy food shop, which promotes locally produced foods. The building includes a three-level underground parking garage for 302 vehicles. Corso Court has an impressive atrium with cantilevered meeting rooms projecting from the walls and a large public urban garden, which can be used for relaxation and work and offers free Wi-Fi connectivity. Skanska, including the national headquarters of several company divisions, occupies approximately half the building. Online travel company Expedia occupies the rest of the building. Tenants moved into Corso Court in November 2015.

Corso Court is designed to achieve LEED Platinum Core and Shell certification. LEED is a voluntary U.S. Green Building Council (USGBC) certification process intended to encourage and guide the construction of green buildings.

## Contributing Toward Sustainable Development

Corso Court is designed to use 36 percent less energy than Czech standards and 30 percent less water than a typical newly constructed office building in the Czech Republic. The development provides healthy working environments, promotes a long useful lifespan through flexible design, and has contributed toward sustainable urban development by redeveloping a former-industrial brownfield site and providing a large public urban garden space. Corso Court also promotes urban biodiversity, reduces the heat island effect in Prague and encourages the use of more sustainable modes of transport. During construction, the team worked toward a good health and safety performance, diverted 97.5 percent of construction waste from landfill and benefitted the regional economy by hiring workers and contractors from the Prague area.



## Green Aspects

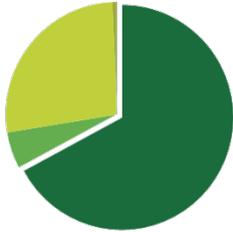
### Energy

#### Energy efficiency

Corso Court is designed to use approximately 124 kWh/m<sup>2</sup>, which is 36 percent less energy than Czech standards. The building envelope is well insulated to promote energy efficiency, with an average façade U-value of 0.79 W/(m<sup>2</sup>K), including high-performance triple glazing. The building is equipped with energy efficient HVAC (Heating, Ventilation and Air Conditioning) systems and other solutions to optimize energy use and realize financial savings. Chilled beams effectively distribute cool fresh air to realize energy savings of almost 50 percent compared with conventional fan coils. The low-speed air-handling units provide efficient ventilation at 1.6 m/s compared with the Czech standard of approximately 2.5 m/s. Corso Court has an advanced lighting system with daylight control, motion sensors and efficient LED lighting to promote energy efficiency. The elevators are equipped with regenerative drives that convert the energy from downward movements back into electricity, which use around 30 percent less energy in total than conventional elevator models.



Corso Court Embodied Carbon Footprint (tCO<sub>2</sub>e)



- Construction materials - 3,782
- Material transport - 297
- Site emissions - 1,514
- Worker transport - 38

## Intelligent energy management

The Building Management System (BMS) comprehensively monitors the building's energy use and can sub-meter individual tenants to allow them to optimize their energy consumption. The BMS is connected to an innovative mobile app, which allows tenants to monitor their energy use. The mobile app can also be used to request building services and maintenance. The BMS also uses a daylight control system and automatic light sensors, which are innovative solutions in the Czech market.

## Investing in renewable energy generation

As the developer of Corso Court, Skanska purchases electricity (through 'Guarantees of Origin') certified according to the voluntary EKOenergy ecolabel. EKOenergy ensures that the electricity sold is not only from renewable sources, but that additional sustainability criteria, concerning location, size, type and environmental impact, are also met. In addition, for each MWh of EKOenergy sold, 10 eurocents go to EKOenergy's Climate Fund. Corso Court was one of the first projects in the Czech Republic to purchase EKOenergy labeled electricity.

## Carbon

### Carbon footprinting

Skanska calculated the project's carbon footprint to be 5,631 tCO<sub>2</sub>e in total including construction materials, material transport, site emissions and worker transport. Construction materials were responsible for 67 percent of the carbon footprint.

## Materials

### Environmentally responsible materials

The vast majority of materials and substances used on the project were low-VOC (Volatile Organic Compound), including screed, wall paints, floor primers and sealants. The few exceptions were substances that could not be substituted, such as an airtight barrier glue.

Forest Stewardship Council (FSC) timber is used throughout the building. Materials with recycled content include the structural steel, gypsum boards and concrete containing fly ash, which is a byproduct from coal-fired power stations. Regional materials included over 50 tons of natural marble stone that was sourced 250 km east of Prague.

## Waste management during construction

97.5 percent of construction waste was diverted from landfill. Skanska worked directly with a manufacturer to recycle gypsum board, which has been a major waste issue on other Czech projects and is not a standard service currently offered in the market.

## Waste management during operation

The building has comprehensive waste sorting facilities throughout the office spaces to separate paper, plastics, metals, glass and corrugated cardboard. A professional waste management company serves the building's central sorting station.

## Life Cycle Assessment (LCA) & Environmental Product Declaration (EPD)

LCA and EPD were used to verify the environmental impact of Corso Court's glass and aluminum façades. This use of LCA and EPD was unique in the Czech Republic, and Skanska hopes to build on the experience to raise awareness within Skanska and its value chain.

## Water

### Water efficiency

Corso Court is designed to use approximately 30 percent less water than a typical newly constructed office building in the Czech Republic. Low-flow fixtures with automatic sensors, such as taps and urinals, have been installed along with dual flush toilets. Bathroom taps are fitted with aerators, which save water by limiting water flow.



The building has a rainwater harvesting system, which collects water from the roof and stores it in a rainwater tank in the basement. The harvested rainwater is used for the manual garden irrigation system when necessary to ensure that no potable water is required. Drought resistant and native plants have been planted on the roof and in the garden to also reduce the need for irrigation.

## Other Green Aspects

Raising awareness of more sustainable buildings

Skanska has developed a Green Education Program for tenants to encourage them to adopt more environmentally responsible behavior. The program raises awareness of the building's green features through tenant brochures and signage, which also include tips for building occupants to recycle, save energy and reduce their water use.

The building has been the central topic of multiple presentations, including the Czech Green Building Council, Royal Institute of Chartered Surveyors (RICS) and the Nordic Chamber of Commerce. These have been used to share best practice by showcasing the project's sustainability credentials.

Green roofing

Corso Court has a 614 m<sup>2</sup> green roof, which provides additional thermal insulation and extends the roof's lifespan by protecting it from weathering and UV light. In addition, roof vegetation can filter airborne pollution and reduce stormwater runoff. The building also has 129 m<sup>2</sup> of climbing vegetation on the roof and a green wall adjacent to the ground floor entrance.

Promoting urban biodiversity

In addition to the building's green roof and landscaped gardens, which can provide habitats for birds and insects in central Prague, beehives have been positioned on the roof. Skanska will use the beehives to raise awareness among employees and visitors of the importance of bees in local pollination and global food production.

Reducing heat island effect in Prague

The site is designed to contribute toward a reduced urban heat island effect in central Prague by minimizing the extent of heat absorbing surfaces. Vegetation on the site, including the green roofing and landscaped gardens, has been maximized.

The building's façade is also light in color to reduce heat absorption and the car parking was incorporated under the building, which avoids large areas of dark asphalt surfaces.

## Social Aspects

Community investment

Corso Court is closely linked to the community, through its garden and employee volunteering activities in the local community. Skanska Czech Republic provides all their employees with two volunteer days each year where they are able to volunteer for a local charity. Skanska will promote this further by working in partnership with its Corso Court employees and local charities to encourage greater action in the local community.

Occupational health and safety

One accident occurred on site and the Lost Time Accident Rate was 0.09 per million hours worked. Following the incident, all work on site was immediately stopped, safety procedures were reassessed and the site team was retrained in specific areas.

Innovative safety measures included a new ladder permit system that was implemented on the project, which helped Skanska to control ladders on site in order to promote their safe use. A face recognition site entry/exit system was installed to carefully control site teams, which also provided an accurate list of personnel on site in the event of an emergency. Safety was discussed at all meetings and feedback was requested from all visitors to promote learning. 'Voice' meetings, involving both the site management team and the site labor team, were also conducted to give the entire team the opportunity to raise any health, safety or environmental concerns.



## Healthy working environments

Corso Court is designed to promote healthy working environments for building occupants. The fresh air ventilation system supplies 45 percent more ventilation than standard systems in the Czech republic, and low-emitting substances were used to promote healthy indoor air quality. Carbon dioxide sensors have been installed in all densely occupied spaces, including meeting rooms and the restaurant area, to ensure they are adequately ventilated. The ventilation system uses chilled beams that distribute air evenly and are hygienic, as they do not allow moisture, dust and dirt to collect on the ventilation coil.

The interior has a light and spacious feel with glazed façades that optimize indoor natural daylighting and external views, and the glazed atrium allows natural light to penetrate the building. The outdoor garden is designed to accommodate both outdoor working and relaxing, with outdoor power sockets, free Wi-Fi connectivity, and various types of seating and chess tables. The two ground floor terraces, large balconies and atrium also provide pleasant working environments for tenants.

## Functional and flexible office design

The building promotes a long useful lifespan through flexible design by being able to accommodate the needs of current and future tenants. The office floors can be easily modified to accommodate single or up to four tenants, each with their own entrance. Corso Court is designed to minimize structural columns to allow more open space and greater flexibility in space usage. In addition, the garden is designed to accommodate various uses and events.

## Activity-based workplace (ABW) environment

Corso Court has adopted an ABW environment, which offers a wide range of workspaces, from quiet concentration rooms to stimulating social spaces, and allows employees to choose the workspace that best supports their immediate needs and personal preferences. Corso Court was influenced by Skanska's headquarters, Entré Lindhagen in Stockholm, which has been an ABW model for other Skanska offices.

## Contributing toward sustainable urban development

Prior to the project, the site had been a disused former-industrial brownfield site for many years. The project therefore reused a previously developed and underused site in central Prague.

During construction, the team removed petrochemical contamination and carried out archaeological surveys on buried brick foundries. Corso Court is situated in the heart of the Karlín business district, with good access to services and amenities. There is a restaurant and retail space on the ground floor, and the public garden provides a valuable park space for the local community in a neighborhood with few urban green spaces.

## Promoting more sustainable modes of transport

Corso Court has 40 bike racks, and changing and showering facilities to encourage tenants to cycle to work. A bicycle sharing scheme and an electric car sharing rental service are available to tenants, both of which are located on the premises. Corso Court is a 2-minute walk from a Prague metro station and a 5-minute walk from two tram stops. The parking garage has 16 spaces for low-emitting and fuel-efficient vehicles.

## Economic Impacts

### Regional construction workforce

Around 1,800 workers were involved in the construction. Most of the workers were from the Prague area and many local contractors were also used.

### Efficiency financial savings

Corso Court uses 36 percent less energy and 30 percent less water than a typical Czech office building, which directly equates to financial savings for tenants.

## Learning From Good Practice

Corso Court has learnt from previous Skanska developments in order to develop one of the greenest buildings in the Czech Republic to date. Skanska's relocation to Corso Court demonstrates the company's commitment to greening its own business.

