

## **Nokia BDA Campus (LEED Gold)**

### **Introduction**

#### **Nokia**

Nokia is a Finnish multinational communications corporation, headquartered in Keilaniemi, Espoo, a city neighboring Finland's capital Helsinki. Nokia is focused on wireless and wired telecommunications, with 112,262 employees in 120 countries, sales in more than 150 countries and global annual revenue of 51.1 billion euros and operating profit of 8.0 billion as of 2007. Nokia is a world leader in mobile communications, driving the growth and sustainability of the broader mobility industry. Nokia's first project built in the spirit of LEED New Construction was in White Plains, New York, in the United States. In 2006, Nokia announced its selection of the Beijing Economic-Technological Development Area (BDA) as the location for its Nokia China Campus. The campus will consist of their China headquarters, R&D centers, and mobile phone manufacturing base. The Nokia China Campus will be the new headquarters for Nokia's activities in the Greater China Area. It will create a world class campus that, at its opening in the later part of 2007, will host over 1500 of Nokia's staff from R&D, sales and marketing operations, pre-production, logistics, sourcing and manufacturing operations. Eventually, more than 2000 Nokia employees will be based in this new hub.

#### **Beijing Economic-Technological Development Area (BDA)**

The BDA lies with its back on the city proper of Beijing, faces the Bohai Sea and neighbors the Beijing-Tianjin-Tanggu Expressway, 90-minute drive to Xingang Port, Tianjin, Nanyuan Domestic Airport is 8 Km away to the west. It is 30-minute drive to the Capital International Airport, 15-minute drive to Beijing Freight Railroad Station to the north, and 20-minute drive along the Third Ring Road westward to the Beijing Western Passenger Railroad Station, the largest in the country, 10 minute drive to the city proper and the light rail public transit system linking BDA and downtown Beijing has been listed in the Capital Development Program Year 2000. BDA first phase development is 15 sq. km Expressway on its east side, River Liangshui on its west; golf courses are situated on both sides of east and north. The whole area is surrounded by greenbelt. The industrial area with advanced facilities, on the east part adjacent to the expressway, intakes projects of technology-intensive with high added value, less energy consumption and environmental friendly. West part is our quality residential area. On both sides of the axis road are multi-functional public buildings which consist of Financial Center, WTC, Science & Technology Research

Center, Administration Center, Shopping Mall, and hotels, office buildings and Sports & Culture Center, etc. BDA is equipped with advanced facilities for international telecom, water, electricity, natural gas, steam, heat, and separate drainage systems for sewage and rainfall. The industrial area is generally divided by street blocks of 400m x 400m, BDA investors can obtain the supply of what they need from each by only connecting their own installments to the underground mains nearby. You can put it into production immediately after your plant constructions is completed.

### **LEED Gold Building**

The building reaches six stories high and covers 70,000 square meters (753,410 square feet). It houses office space for 2000 employees and a research and development center. Nokia China's new headquarters feature a breathable glass curtain wall, 10 years of fast-growing forest floor, elevating desks, and environmental dust control. The new construction received "Green Building" (LEED) Gold Award, given by the United States Green Building Association (USGBC). The Nokia China headquarters is the first newly built LEED Gold Certified commercial building in China. Prior to this, China has never won such an award for new commercial buildings.

A major feature of this building is that 77% of its lighting uses natural light. Walking into an office in the building, a "green" philosophy is demonstrated everywhere in decor and furniture. Smoking is prohibited in the entire building to ensure that all office environments do not contain air pollution. Even indoor plants are carefully selected for their water-saving features, and their ability to survive on little water. Compared with ordinary commercial buildings, this building will achieve 20% energy-savings and 37% water-savings.

### **Sustainable Sites**

Usually points in this section will be given automatically if the building is built in a city. For BDA, the industrial area with advanced facilities, on the east part adjacent to the expressway, intakes projects of technology-intensive with high added value, less energy consumption and environmental friendly. West part is the quality residential area. On both sides of the axis road are multi-functional public buildings which consist of Financial Center, WTC, Science & Technology Research Center, Administration Center, Shopping Mall, and hotels, office buildings and Sports & Culture Center, etc. It is proved by prospecting that the rise and fall of the bedrock ground is smooth and steady, there exists no fault, and suitable for industrial purposes, civil high-rises and public facilities. BDA is the hub of communications linking Beijing,

Tianjin, and Tanggu in terms of transportation network leading to all directions by means of air, land, and sea. On the east side of BDA is the International Container Transit Station and with the Beijing International Goods Circulation Center, Customs House, Commodity Inspection Bureau on the north side. BDA will be more functionable with its bounded warehouses and other facilities to be built. The light rail system that links BDA and Downtown Beijing is also being planned.

### **Water Efficiency**

Many water-saving facilities and ideas are incorporated when building this new construction. Nokia BDA Campus uses reclaimed water to flush toilets and all the faucets are sensor activated which help to reduce water waste. The plants in the building are all local plants and require minimum watering. The campus also has a central water treatment plant in place that facilitates water recycling, and the system reduces the use of water for 37%.

### **Energy and Indoor Environmental Quality**

There are many energy-saving plans that got implemented on this campus. The exterior of the building is a doubled glass curtain wall with a temperature-controlled cavity in between its glass panes. This works with the building's air conditioning system to prevent the impact of outdoor temperatures being felt. This innovation reduces the energy use of the entire building by 14%. A large communal atrium connects the office and research and development wings providing natural light and ventilation along with skylights throughout the building. All the offices and meeting rooms are around the central atrium area and 77.4% of the office space can use daylight as daily lighting source. All the air conditioning, lighting and projector systems are controlled by central computers and will be shut down if no one uses them for 15 minutes. The use of all-in-one printers and encouragement of duplex printing in the office promotes another way to conserve energy.

The entire building is smoke-free, and a lot of local plants are planted inside the building to increase air quality. 97.7% of the area inside the building has access to outside views, which is truly amazing.

### **Material and Resources**

When Nokia decided to build the new campus, they intended to incorporate LEED standards in every aspect of the construction. The value of local materials (within 800 km radius) used to build the campus is 27.2% of the total. And 12.1% of the materials used are recycled materials. 78% of the construction

waste can be recycled and is diverted from landfill. Furniture and carpet are made from rapidly renewable materials. Recycling facilities in the building takes care of all the waste recycling on site.

### **Innovation and Design Process**

This is the most exciting and attractive part of the project. Nokia BDA Campus takes into consideration the surrounding environment and incorporates a lot of environmental friendly ideas.

#### 1. Parking and Transportation

More than half of the parking spots are built underground. Green space is built above the underground parking garage to absorb heat. Half of the parking spots are reserved for hybrid cars or people who carpool to work. Nokia also encourages employees to take advantage of its transit buses which have 49 lines going to different directions of Beijing. Designated bicycle parking lot is build and riding bicycles is encouraged.

#### 2. Dining and Recycling

The dining hall only provides fresh food and no plastic utensils are used. Mugs are provided at the water fountain to reduce the use of plastic cups. As a cell phone manufacturer, Nokia also places so-called "Green Box" at the entrance for employees to recycle their old cell phones and accessories.

#### 3. Synergy

The Nokia headquarters building is part of a project called "Xingwang (Star-Net) Industrial Park". Nokia has invited many of its partners, including accessories providers, logistic providers and other partners on the vertical product chain to move to this industrial park. So far, cell phone OEM manufacturer Foxconn, battery manufacturer Sanyo and logistic firm DHL have all moved in to work with Nokia. In 2007, this region (1 km radius) has produced 70.7 million handsets, which takes up 25% of Nokia's global sales. This synergy saves a lot of costs in terms of business travel, transportation of products and other unnecessary expenses.

#### 4. Office Mobility

For employees who don't have to come to work every day, there is a mobile working space designated for these employees and employees from other countries who are visiting the BDA campus. This saves unnecessary energy use of having empty office spaces.

### **Problem**

Overall, I am very satisfied with the project. It is a pioneer project in China and many of its innovations could be used elsewhere for future green building projects. Unfortunately, one of the most important components of green building – clean energy is not represented in this project. This is mainly due to the still ongoing development of clean energy in China and the high cost of solar panels/thermal devices. Other than that, green roof is also not found in the project. I really hope this could be integrated in the very near future. In addition, compared to other LEED Gold buildings, Nokia BDA Campus hasn't saved as much energy and water as others. For instance, the Boulder Associates, Inc. Office in Colorado saves as much as 43% water, while Nokia uses 37% less. This is also partly due to the fact that this is a commercial building with thousands of employees.

### **Conclusion**

Nokia BDA Campus is the first newly-built LEED Gold certified commercial building in China. It has many innovative features built in. The cost of the entire building is only 2% more than if it had been built as a regular building. It uses 20% less energy and 37% less water. Although some ideas that have been popular elsewhere in the world are not included in this project, e.g. clean energy and green roof, this is still a milestone for the green building development in China. So far, there have been 101 LEED certified projects in China and because of the existence of Nokia BDA Campus, BDA has officially announced that all the factories and buildings in the region have to meet certain environmental standards.

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