Green is not just a colour – it is a way of thinking

The Green Manual prepared by Colliers International contains key information and guidelines regarding sustainable development practices. Additionally, it aims to develop ecologically friendly habits among Tenants and other building occupants. Naturally, the information presented by us does not fully exhaust the subject of ecologically friendly practices or the issues relating to sustainable development. Continuous advancement of knowledge and the implementation of new technological and organizational solutions open up access to formerly unapproachable areas where ecologically friendly practices can be applied. We encourage Tenants and other building occupants to employ the solutions presented by us and to take their own ecologically friendly measures that exceed the scope of this manual.
Table of contents

CHAPTER 1 4
Sustainable development policy – why is it worth adopting? 4
1.1 Improved productivity and employee wellbeing 5
1.2 Reduced CO₂ emissions and lower office running costs 6
1.3 Increased company attractiveness to future employees 6
1.4 Enhanced company reputation 6

CHAPTER 2 7
Building manager’s ecologically friendly commitments 7
2.1 Comfortable, productive and healthy indoor environment 7
2.2 Low energy consumption, reduced greenhouse gas emissions 8
2.3 Water management 8
2.4 Ecologically friendly transport 9
2.5 Segregated office waste collection 9
2.6 Cleaning 9

CHAPTER 3 10
Office management 10
3.1 Purchasing smart office equipment 10
3.2 Managing office equipment 13
3.3 Purchasing stationery and consumables 14
3.5 HVAC (ventilation and air conditioning) system management and energy-efficient heating 16
3.6 Waste management 16
3.7 Cleaning and maintenance contracts 17
3.8 Fit-out guidelines 17

CHAPTER 4 22
Multi-criteria building performance assessment methods 22
4.1 BREEAM 22
4.2 LEED 23
CHAPTER 1

Sustainable development policy – why is it worth adopting?

A sustainable development policy in respect of buildings may be defined as: maintaining the best possible state of repair of the property and the leasable area whilst creating optimum occupancy conditions by utilising environmentally protective resources and materials (including human input), whilst preserving a balance between costs and achievable results.

DID YOU KNOW THAT:
The commercial real estate sector is responsible for*

- 40% of energy consumption,
- 30% of raw materials use,
- 25% of waste produced,
- 25% of water consumption

The effects of an ecologically friendly approach and implementation of the principles included in the sustainable development policy will only be fully noticeable after a certain time. They will take shape provided that ecologically friendly solutions are applied consistently.

Long term benefits arising from such measures include:

- improved productivity and employee wellbeing;
- lower office running costs;
- increased company attractiveness to future employees;
- positive impact on employee health;
- enhanced company reputation;
- reduced CO₂ emissions.

The concept of a “green building” is closely related to the sustainable development policy. It is a building where the principles of respect for the natural environment and the sustainable development policy are applied both at the construction stage and day-to-day operation. On the one hand, these rules are environmentally friendly, while on the other hand they work in favour of the building throughout the “life cycle” of the property and the leasable area. The cycle incorporates all the processes relating to the property and the leasable area – from selecting the building’s location, through its technical design and construction, space fit-out and operational maintenance, to renovations, modernisations and modifications.

To certify that a building has been designed and constructed and is managed in compliance with the principles of sustainable development, multi-criteria building performance assessment methods were designed by international institutions and organizations. Within such a system, a building must meet a number of requirements depending on its function, purpose and manner of use. The requirements are grouped into categories within which points are awarded for applying specific ecologically friendly solutions. When
the required number of points is reached, a certificate is issued providing an independent confirmation and verification of the fact that the building has been constructed and is managed and maintained in keeping with the international green construction standards.

The British BREEAM® (Building Research Establishment Environmental Assessment Method) and American LEED® (Leadership in Energy and Environmental Design) are the most widely respected among the many systems in place on the market.

When examining the changes that have been taking place on the property market in the recent years, it can be seen that many leading organizations initiated the transformation process of their offices into spaces more friendly for both employees and the environment. In doing so, they are moreover guided by the prospect of lowering the office running costs and increasing their attractiveness as an employer.

Implementing ecologically friendly solutions in the office may lead to improved performance of the organization in various areas.

1.1 Improved productivity and employee wellbeing

Demonstrating concern for employee health translates directly into their improved productivity. Research has found that there exists a close relationship between the conditions prevailing in the office and employee efficiency, dexterity and wellbeing.

DID YOU KNOW THAT:
On average, green building occupants spend 2% more time in the office per year as a result of reduced absenteeism due to sickness, which translates into 38 additional work hours.*

The cost of employee pay constitutes a significant portion of an organization’s fixed costs. Therefore, even a slight increase in employee attendance at work results in achieving measurable financial profits for the organization.

1.2 Reduced CO₂ emissions and lower office running costs

Any ecologically friendly initiatives applied by tenants lead to a reduced volume of waste and lower utility consumption. Any such measures, in conjunction with the owner’s activities in respect of the entire property, may have a significant impact on the protection of the environment and reduction of CO₂ emissions. The global consumption of natural resources is reduced as a result of both the owner and tenants taking the above approach. An additional benefit for tenants is the direct reduction of maintenance costs in respect of the leased premises.

1.3. Increased company attractiveness to future employees

To earn the reputation of an attractive employer is becoming an increasingly clear goal for many businesses, particularly in the context of winning and retaining talented employees. Social research shows that younger generations in particular have an increased awareness of the necessity to protect the natural environment and are likely to choose employers whose values align with theirs. This will, consequently, lead to reduced employee turnover within the organizational structure, therefore ensuring business continuity and avoid unnecessary staff replacement costs.

1.4. Enhanced company reputation

Social awareness is undergoing a transformation and organizations are faced with increasingly higher demands in respect of environmental protection and energy savings. Ever more businesses, their shareholders and employees adopt measures aimed at protecting the natural environment, which in turn positively affects the organization’s reputation and has an indirect financial benefit.

In addition to the replacement of furniture, old IT and other office equipment, we have implemented procedures and Green Policies for efficient energy and water usage. We control document circulation and paper consumption, air conditioning usage and waste management. We anticipate these changes will result in a 20% decrease in operating costs.

COLLIERS CASE STUDY
CHAPTER 2

Building manager’s ecologically friendly commitments

The first chapter of this manual clarified the issue of importance of adopting a sustainable development policy. It has been noticed that an ever increasing number of organizations realize the benefits of implementing ecologically friendly measures. Improving the work conditions, enhancing the corporate image and achieving financial savings can be the means to securing a competitive advantage.

It is a common misconception that to be ‘green’, a building has to demonstrate the latest architectural trends and be constructed using expensive materials.

It is due to the efforts and commitment of the owner, manager and tenants that all existing buildings, despite the absence of typically ecological solutions, can be operated as ‘green’ buildings.

Good building management is critical to achieving positive environmental outcomes.

This chapter will look at different solutions to be implemented by the property manager in respect of both new and older buildings in order to reduce the negative impact on the environment and generate potential savings.

These include:

- energy consumption management;
- water resources management;
- waste management;
- cleaning aligned with the sustainable development policy.

2.1 Comfortable, productive and healthy indoor environment

Common areas of buildings and actual leased premises are areas in which you, as the property manager, can provide greater comfort to tenants and other building occupants. Comfortable, productive and healthy work environment is achieved through air quality monitoring, lighting quality and comfortable indoor temperatures. Consequently, optimization of the abovementioned parameters improves employee wellbeing while reducing employee absenteeism and turnover.

We recommend that the following actions be taken as part of your ongoing property operations:

- regular air filter replacement;
- permanent, continuous ventilation system performance monitoring and ongoing maintenance;
- permanent, continuous heating, humidification and cooling installations and systems performance monitoring and ongoing maintenance;
- entering into maintenance contracts that specify use of chemicals and cleaning products with a low Volatile Organic Compounds (VOCs) content*;
- smoking restrictions in the building and its direct vicinity – designated smoking areas should be away from the building, its windows and entryways, as well as external air intakes.

*Volatile Organic Compounds (VOCs) are the by-product of a number of industrial processes and constitute a source of environmental pollution. Therefore, in many countries across the globe, there are certain norms that restrict their emission to the environment by specifying the permissible value of maximum VOC content in products.
2.2 Low energy consumption, reduced greenhouse gas emissions

The tenant’s choice of a ‘green’ building that demonstrates consumption of optimum volumes of energy results in:
- lower office running costs;
- enhanced company reputation;
- a sense of contribution towards impeding climate change.

Developing and implementing a plan containing a list of energy-saving measures will lead to reducing energy consumption and thus reduced greenhouse gas emissions. Moreover, it will allow for a detailed analysis and monitoring of utility consumption, i.e. water, heat, and energy consumption. A building operating plan should include:
- description of correct operation of all building, mechanical and electrical systems;
- detailed guidelines regarding equipment run-times (daily, weekend and depending on the season of the year);
- lighting installation run-times analysis and optimization.

Efficient energy and greenhouse gas emission management requires the following conditions to be met:
- implementation of a building operating plan as referenced above;
- installation and skillful use of a building management system (BMS) to control and monitor the building’s electrical equipment including those affecting ventilation, lighting, power systems, fire systems and security systems;
- monitoring and analysis of tenant and common area energy consumption;
- regular maintenance of building equipment;
- entering into contracts with providers of energy generated from renewable sources.

2.3 Water management

Choosing a building where sustainable water management is implemented will contribute to:
- saving money on water bills;
- developing environmental awareness.

For water management to be efficient, the following conditions must be met:
- installation of meters for major building systems using water, such as: cooling towers, humidifiers, washrooms, toilets, etc.;
- regular monitoring and analysis of water consumption levels;
- prompt action in response to any leaks and other system performance issues;
- careful water management in washrooms and toilets through installing washbasins with hand sensors, faucet aerators (also known as water aerators), dual flush toilets, waterless urinals;
- rainwater and/or greywater harvesting and use/reuse;
- planting of vegetation that does not require frequent irrigation.

**DID YOU KNOW THAT:**

Application of suitable water saving solutions in office buildings can allow you to reduce water consumption by as much as 30%.
2.4 Ecologically friendly transport

Transport significantly contributes to air pollution.

We encourage you to promote among your employees solutions that replace or minimize car travel frequency. The following can be helpful in achieving this:

- information on the availability of public transport in the vicinity of the property;
- arrange for secure bike storage;
- provide showers, changing room facilities and lockers for cyclists;
- designated parking spaces for mopeds and motorbikes;
- introduce a ‘car-pooling’ program aimed at utilizing every seat in the car.

2.5 Segregated office waste collection

What we commonly call ‘waste’ can prove to be another cost-saving opportunity. Landfill costs and the costs of municipal waste collection are significantly higher than the costs of segregated waste recycling.

Your property manager should ensure efficient waste management through:

- provision of containers for segregated waste storage;
- entering into a contract with a subcontractor that regularly monitors and reports the volume of waste collected stating the type of waste collected.

2.6 Cleaning

It is worth mentioning that certain solvent-based chemical and cleaning products can compromise indoor air quality. Therefore, it is important that cleaning services for the building align with the building’s sustainable development policy objectives and that they are provided in line with the environmental protection practices. To this end, we recommend the following solutions:

- cleaning contracts should specify the terms for use of natural, solvent-free, herbicide-free, fungicide-free, insecticide-free, pesticide-free and hydrocarbon-free products holding the required environmental certification;
- cleaning contracts should ensure that the cleaning subcontractor complies with the energy saving policy for the building and manages waste in line with the rules in effect.
CHAPTER 3

Office management

This chapter will provide you with guidelines in respect of operating your office in compliance with the sustainable development policy.

3.1 Purchasing smart office equipment

Office equipment energy consumption accounts on average for approximately 31% of total energy consumption at a conventionally equipped office. This means that significant energy savings can be achieved in this area. Energy-efficient office equipment can use as much as 50% less energy than standard equipment. Therefore, an informed decision to choose energy-efficient white goods, such as fridges, dishwashers, cookers and kettles, as well as their proper use can result in tangible financial benefits. Selecting environmentally friendly equipment does not have to entail higher upfront costs.

It has to be pointed out that choosing the right equipment does not only ensure that energy savings are made, but it also reduces the costs relating to its use, e.g. reduction in paper use and volume of office waste is made possible by printers with a double-sided printing and print reduction capacity. Thus, when purchasing energy-efficient equipment you should not be influenced by its price only, but also the costs resulting from its subsequent use.

Energy-efficient equipment also generates less heat, which can reduce air conditioning costs by as much as 30%, while keeping your office more comfortable for your employees to work in. The recommended solutions in respect of purchasing and operating your office equipment are presented below:

EQUIPMENT LEASING

Make sure that office equipment leasing companies commit to recycling or reuse of the equipment at the end of its lease period.

ENERGY EFFICIENCY LABELS

We encourage you to check the equipment parameters prior to its purchase. The energy efficiency label provides information as to whether or not the equipment is energy-efficient.

COLLIERS CASE STUDY

All our new office equipment is energy class A++ or A+, and/or is Energy Star rated. Old desktop PCs have been exchanged for laptops, tablets and All-In-One systems which has resulted in a 50% decrease of energy consumed by office equipment.
Energy efficiency labels are compulsory for the following equipment:

- fridges, fridge-freezers and freezers;
- washing machines, dryers, washer-dryers;
- dishwashers;
- electric ovens
- air conditioners.

We present above a template of an energy efficiency label used in the European Union. Its main element is the information as to the energy efficiency class displayed in the form of a colour scale starting with dark green (high energy efficiency) to red (low energy efficiency). It is worth knowing that an A++ class appliance marked with the colour green can use even 40% less energy than an A class appliance marked with the colour yellow.

Additionally, the Energy Star energy efficiency label is used in the European Union countries. It is not, however, a compulsory label. It can be used by manufacturers and sellers of equipment that meet the technical requirements for low energy consumption.

Before making a decision as to the specific model, it is additionally worth comparing the energy consumption levels in all power modes (e.g. active, standby, sleep, etc.).

When it is necessary to purchase several appliances, e.g. fax machine, printer and scanner, find out whether a multi-function appliance (fax machine that incorporates a printer and a scanner) would be a better choice and save more energy than three separate appliances.

**SELECTING COMPUTERS AND MONITORS**

The costs of energy consumption by computers and monitors account for one of the highest office operating expenses.

**SELECTING A PHOTOCOPIER**

The price of an energy-efficient photocopier is comparable to that of a standard model. Additional notice should be taken of the use of materials needed for the printing process itself. This is a key aspect, as the annual cost of paper and toner is almost 25 times higher than the cost of energy required for the photocopier to work during the same period.

---

**COLLIERS CASE STUDY**

In our Romanian office, the replacement of 60 desktop PCs with new-generation laptops, tablet PCs and All-In-One systems has produced a monthly reduction of €200 in electricity cost, with an additional saving of up to 144kg of CO₂.
DID YOU KNOW THAT:
The annual cost of paper and toner used is almost 25 times higher than the cost of energy required for the photocopier to work during the same period.

A photocopier that meets the criteria below will enable an 80% saving of energy needed for the photocopier to work, as well as reduce toner and paper expenses by half:

- low energy use compared to other models in the same price range, Energy Star certified;
- ‘energy save’ button (users can select low power mode as soon as they finish copying);
- programmable power management features;
- rapid ‘wake-up’ from standby mode;
- automatic double-sided printing;
- print reduction capability;
- uses remanufactured or refillable consumables (e.g. cartridges);
- option to use 100% recycled paper;
- ‘pull print’ capability, i.e. additional print authorization.

SELECTING A PRINTER
The criteria to use when selecting a printer are presented below. They will enable energy savings while at the same time reduce the cost of paper and toner, and office waste removal:

- low energy use compared to other models in the same price range, Energy Star certified;
- automatic double-sided printing;
- print reduction capability;
- toner/ink saving mode available;
- trays for both double-sided and reused paper (single-sided) printing;
- the use of long-life consumables available on the local market;
- option to use recycled consumables;
- option to return or recycle the printer at the end of its life;
- ‘pull print’ capability, i.e. additional print authorization.

SELECTING A FAX MACHINE
The actual working time of a fax machine is on average less than one hour a day. For this reason, it is important to ensure the model you select has low energy use in all working modes, particularly in standby and sleep modes.

Make sure that the fax machine has the capability to send documents electronically (paperless fax), so your staff are able to send and receive faxes by computer to save time, paper and toner.

Before purchasing a fax machine, look for the following:

- low energy use compared to other models in the same price range, Energy Star certified;
3.2 Managing office equipment

It is not only the parameters of office equipment that determine the volume of energy used by it. In order for an appliance to be truly energy-efficient and not generate high operating expenses, it has to be used correctly and in an informed manner.

**COMPUTERS**

- Check their settings. Modern computers have energy efficiency settings through which up to 50% of energy can be saved.
- Do not leave laptop chargers plugged in to the mains socket when they are not actually charging the appliance. A charger left plugged in to the mains socket also consumes energy.

**PHOTOCOPIERS**

- Collect a larger number of materials to be photocopied before switching on the photocopier.
- Switch off the photocopier immediately after finishing working with it.
- Avoid unnecessary copying of documents. Implement efficient internal procedures for their circulation.

**PRINTERS**

- Use an inkjet printer for printing drafts, working versions and internal documents. Laser printers require a warm-up period, which results in high energy consumption.
- Remember to enable the energy-saving setting in your laser printer – this means a saving of approximately 55 kWh per year.
- Avoid printing e-mail messages and unnecessary documents. On top of reduced toner and paper use resulting from this, you

---

**COLLIERS CASE STUDY**

In one year after installing a printing management system we saved over 35,000 pages of prints which were sent to printers and not collected. As a result 2.1 trees and 358m3 of water was saved, along with a reduction in CO2 by almost 1000kg.

- option to scan double-sided pages;
- option to reuse paper;
- toner/ink saving mode available;
- the use of long-life consumables available on the local market;
- option to use recycled consumables;
- option to return the product at the end of its life.

- Change your desktop background colour to a light one, as it is more energy-efficient than a dark coloured one.
- Always switch off your computer when not in use.
- Do not leave electronic equipment in standby mode.
- Replace desktop computers with laptops, as they are more energy-efficient.
- Replace the older type CRT monitors with a LED/LCD flat-screen monitor; replacing them can result in significant savings.

**DID YOU KNOW THAT:**

A photocopier that is switched on permanently can use 1000 kWh more energy per year.
can expect an average decrease in energy consumption by 30 kWh for one printer per year.

• Use your paper economically. Use the other side of a sheet of paper printed on before, or enable the default double-sided printing option.
• Make sure that you switch off the power on printers before leaving the office.

DID YOU KNOW THAT:
Energy wasted by printers left in standby mode overnight would in one year be sufficient to print approximately 700 A4 pages.

FAX MACHINES
• When purchasing a fax machine, check the energy consumption level in standby mode, as this is the mode that the fax machine will be working in the most.
• Select a fax machine with an inkjet printer as opposed to a laser printer.
• If a computer is used in the office in place of a fax machine, use a modem that stores messages.

DID YOU KNOW THAT:
Each unused glass of water boiled by one person per day means consumption of an additional 2KWh of energy per month.

COFFEE MACHINES AND ELECTRIC KETTLES
• Select a coffee machine model equipped with auto-switch off.
• Choose a coffee machine and kettle equipped with a thermostat to maintain adequate coffee temperature without using energy at the same time.
• Select a kettle with a flat heating element as opposed to a heating coil. This allows you to boil even the minimum amount of water.
• Pour into the kettle only as much water as you require at the particular time.
• Regularly remove limescale from the heating element of your kettle.

FRIDGES
• Do not purchase an oversized fridge. In an office a fridge is used to store a small amount of food.
• Choose an appliance with an automatic ‘no frost’ defrosting capability that eliminates frost and ice that forms on the fridge walls.

DISHWASHER
• Only turn on your dishwasher when it is fully loaded.
• Do not rinse off the dishes before loading them into the dishwasher.
• Choose the most energy-efficient setting.

3.3 Purchasing stationery and consumables
A well-informed purchasing policy that focuses on choosing products with low environmental impact is one of the elements that contribute to the image of your organization and demonstrate commitment to corporate responsibility and sustainable development.
Some of the general rules for a purchasing policy aligned with the sustainable development policy are presented below:

• minimize packaging (particularly non-recyclable packaging);
• purchase locally to save on transportation and support local industries;
• choose durable, long-life products;
• choose products with recycled content and a demonstrated low environmental impact;
• choose paper manufactured locally using environmentally friendly technologies;
• for internal correspondence use reusable envelopes manufactured from recycled paper;
• whenever possible use remanufactured/refilled toner cartridges;
• support manufacturers that produce their goods using ecologically friendly processes.

DID YOU KNOW THAT:
Disposable products, e.g. plastic cutlery, cups and plates, constitute up to 25% of all plastic waste in municipal landfills.

3.4 Lighting management and energy consumption savings
Implementing new lighting technologies (energy-efficient light bulbs, LED lighting, motion detectors, etc.) can, depending on the condition of the installation and solutions chosen, help you achieve savings of between 30% and 80%.

DID YOU KNOW THAT:
The amount of energy used for lighting accounts for 19% of total energy used in an office.

ENERGY-EFFICIENT LIGHTING
Energy performance optimization depends on the following:

• durability of light sources;
• technical condition of light fittings and sources;
• correct use along with regular cleaning (removal of gathered dust);
• replacing traditional lighting with energy-efficient solutions – in place of ordinary bulbs, use new-generation halogen bulbs, integrated compact fluorescent lights and lighting systems using electroluminescent diodes (LED);
• observing the rule that light is only switched on in areas that are being used at the given moment;
• optimum use of daylight.
3.5 HVAC (ventilation and air conditioning) system management and energy-efficient heating

Choosing optimum performance settings for HVAC equipment and programming of system settings by tenants has a significant impact on the total energy consumption in a building, and consequently the costs incurred. Therefore, we recommend following the directions below:

- when air conditioning is switched on, windows should be completely closed;
- air conditioning cooling units must not be covered;
- all appliances should be regularly cleaned and serviced – dirty filters reduce the system’s efficiency;
- avoid heating and cooling of rooms at the same time – both systems will be working at full capacity and use unnecessary energy;
- lower the temperature in the office when there are no occupants there, e.g. at night to 18°C;
- remember that facilities such as storage rooms, corridors and areas characterized by high physical activity require less heating;
- try and maintain sensible temperature: 20°C for offices, 14°C for storage rooms and utility facilities;
- keep the doors between heated and unheated rooms closed;
- remember not to cover or block heaters, as this reduces the heating efficiency.

DID YOU KNOW THAT:
Lowering the temperature in a room by 1°C allows you to lower your heating costs by 8%.

3.6 Waste management

The costs of waste storage are significantly higher than the costs of segregated waste collection. Reduction in paper use and segregated waste collection can greatly lower the office running costs and lessen the adverse environmental impact. Therefore:

- develop a strategy for reducing the volume of waste in your organization (e.g. product purchasing criteria – paper selection, paper reuse, double-sided printing);
- enter into a contract for secure document destruction instead of taking it to landfill;
- segregate your waste, e.g. obtain separate containers for storing plastic, glass, paper and organic waste and make sure they are easily accessible to all employees;
- monitor the volume of waste generated per year;
- utilize electrical and electronic waste, such as: light sources, batteries, computers, printers, chargers and mobile phones.

DID YOU KNOW THAT:
In a typical office paper accounts for more than half of the waste generated.
3.7 Cleaning and maintenance contracts

An environmentally responsible cleaning service doesn’t have to cost you more. When selecting a cleaning contractor make sure that the cleaning products used by them do not adversely affect your employees’ health. An ecologically friendly approach to cleaning can help your organization to:

- achieve environmental benefits without extra costs;
- contribute to creating a high quality work environment.

If you are arranging your own cleaning contracts for your tenancy directly, we recommend that you make sure whether:

- cleaning contracts specify compliance with the building’s energy saving and waste management policies;
- cleaning contracts specify relevant procedures for use of detergents and environmentally friendly products.

3.8 Fit-out guidelines

An appropriately arranged and fitted out office will certainly contribute to ongoing cost savings over the term of the lease. At this stage of planning your office, you have the opportunity to make decisions that can, at little or no additional upfront cost:

- improve employee satisfaction and productivity
- enhance your corporate image and provide competitive advantage;
- enhance your organization’s culture;
- reduce your energy and water bills and other expenses.

When you move out of your existing tenancy to new premises, reuse the same finishing materials and fit-out elements. Ask your existing building owner whether it is possible to leave materials that you do not need, e.g. to be used by future tenants. Also, contact and check with your new building manager whether materials in the new tenancy left over from the old fit-out can be reused by you. This approach can result in significant cost savings for you.

At the planning stage it would be worth considering whether to apply for a LEED for Commercial Interiors certificate which constitutes an independent confirmation that the guidelines referred to in this manual have been implemented and the international standards in respect of green construction have been adhered to.

LIGHTING

If you have chosen a tenancy space that makes good use of natural light, you are already ahead. Efficient lighting design can:

- reduce your costs;
- create a more comfortable and healthy work environment for your employees;
- indirectly reduce global gas emissions to the atmosphere.
DID YOU KNOW THAT:
Lighting designed during the fit-out stage can in the future reduce your energy costs by 60%.

Research has found that use of natural light in office premises improves employee productivity and reduces energy costs.

DID YOU KNOW THAT:
A well-designed building where stress is put on using daylight is estimated to reduce energy use by 50% to 80%.

Efficiency depends on a range of variables including the lamp, the fitting, the lighting controls and the lighting design (appropriate layout and power density).

The key principles of efficient lighting are to:
- ensure the appropriate number of fittings are installed (many premises are vastly overlit);
- install “intelligent lighting” systems with motion detectors and natural light-level sensors;
- use compact fluorescent or LED lights (LED lighting uses about a tenth the energy of an ordinary bulb with the same light output. It also generates negligible heat, reducing the load on air conditioning);
- paint your office walls and ceilings a light colour to minimize lighting demand.

FLOOR FINISHES
Over the “life cycle” of a building, floor finishes (carpets and linoleum) have the greatest adverse environmental impact of any items used. This is because they tend to be replaced at the end of every lease cycle.

If retaining the existing floor finishes is not possible or practical, many environmentally friendly options are available at a similar, and sometimes lower, cost than standard alternatives.

COLLIERS CASE STUDY

In our office in Romania we installed a “Green Button”, a main switch which turns off all the lighting inside the office. With an investment of less than €500, we achieved a 20% reduction of the monthly electricity consumption for the office in Bucharest.
Select floor finishes that:
- are modular (e.g. ceramic tiles) – these are easier to repair and replace and result in less waste;
- are manufactured from recycled materials;
- are low in Volatile Organic Compounds (VOCs) – both carpet/linoleum and adhesives;
- have the polyvinyl chloride (PVC) content minimized;
- are low in fire retardants as fire regulations allow.

Select a provider that:
- has a manufacturer take-back program;
- has measures in place to reduce negative environmental impact of the manufacturing process.

WORKSTATIONS
A few recommendations as to how to save money and protect the environment when considering workstations are presented below:
- minimize the use of products containing VOCs;
- where possible, reuse existing workstations;
- use products manufactured from recycled materials;
- choose designs for easy disassembly, recycling and/or reuse;
- do not use virgin PVC (you can use alternatives, such as linoleum, high density polyethylene);
- select a manufacturer that has a manufacturer take-back program;
- select a provider that has measures in place to reduce negative environmental impact of the manufacturing process.

WALLS AND CEILINGS
When considering materials for walls and ceilings:
- reduce wall material required through open plan design;
- use materials that do not require a finish or are pre-finished;
- use modular systems that can be easily disassembled and reused;
- use mechanical fixings in preference to adhesives (easier disassembly, adhesives contain VOCs);
- select wall panels and sheet linings with recycled content;
- select ceiling tiles with recycled content (if available).

OFFICE FURNITURE
A significant percentage of the waste going to landfill is made up from bulky waste, which includes office furniture. Therefore, it is important to reuse as much of your office furniture as you can. Should this not be possible, it is worth considering environmentally friendly and healthy furniture, i.e. furniture with no or low VOC content. Remember that some manufacturers also take back furniture at the end of their life.

COLLIERS CASE STUDY

Effective use of natural light can replace 70 to 80% of artificial light during daylight hours. In many of our offices we have repainted walls and ceilings in light colours, which not only gives the impression of a larger space, but also increases the reflection of natural light and minimizes the artificial lighting demand.
When selecting office furniture, look for the following:

- modular design;
- manufacturing process that minimizes materials use and waste;
- natural materials;
- high durability;
- designs for easy disassembly and repair, reuse of modules, recycling of components;
- furniture made by a manufacturer that has a manufacturer take-back program for used items and has measures in place to reduce negative environmental impact of the manufacturing process;
- designs with mechanical fixings in preference to adhesives;
- no or low VOC content.

CARPENTRY

When considering carpentry (doors, built-in furniture, floors, etc.), try and minimize adverse environmental impact by:

- avoiding timber from endangered species and rainforest timber;
- eliminate formaldehyde and other VOCs (commonly used in composite timbers, such as fibreboard and plywood);
- looking for FSC (Forest Stewardship Council) certification.

For flooring materials:

- use materials that are recycled, FSC certified or from sustainably managed plantations;
- use products manufactured from recycled materials;
- use mechanical fixings in preference to adhesives;
- where possible, use natural finishes (e.g. plant-based oils and waxes); otherwise, use materials with low VOC content;
- avoid the use of PVC (for edge strips, etc.).

PAINTS, SEALANTS AND ADHESIVES

Paints with low VOC content are currently readily available and cost around the same as standard paints. Natural paints tend to cost a little more than standard paints but contain no volatile compounds or toxic additives.

By selecting environmentally friendly paints, sealants and adhesives you have the opportunity to create a healthy environment for your employees and contribute to their wellbeing.

When intending to purchase interior wall and ceiling paints, we recommend you:

- use light colours (and therefore save energy by reducing artificial lighting needs);
- select paints with low VOC content.

COLLIERS CASE STUDY

We choose furniture providers who produce their goods using ecologically friendly processes, use wood-based materials from sustainably managed forests and develop production processes to be CO2 neutral.
VARNISHES, STAINS AND ENAMELS
For varnishes, stains and enamels (carpentry, wooden floors, etc.) use, where possible, natural plant-based oils, resins and waxes. Otherwise, use water-based finishes with as low VOC content as possible.

ADHESIVES
In terms of adhesives, use water-based adhesives with as low VOC content as possible.

WASHROOMS AND TOILETS
When washrooms are new or you are refurbishing existing ones, we recommend that you apply the following solutions that reduce your water use, and consequently costs:
• install faucet aerators (also known as water aerators);
• install dual flush toilets;
• purchase fittings that reduce water use (e.g. fittings with motion sensors).

SUPPLEMENTARY AIR CONDITIONING
If you need supplementary air conditioning for server rooms or other special purposes, it is important to choose the most energy-efficient appliance possible. Since air conditioning is a major contributor to peak demand for energy it can contribute significantly to higher energy bills. Therefore, it would be prudent to choose an Energy Star certified appliance.

By choosing efficient air conditioning, you can:
• improve working comfort levels, provided that the system is working efficiently and is properly sized, i.e. the air conditioner’s capacity is suitable for the size of the room and its purpose;
• indirectly contribute to lowering greenhouse gas emissions.

In regard to supplementary air conditioning, consider the following:
• before you install the system, optimize your lighting system (e.g. install blinds, replace ordinary light bulbs with LED lighting, etc.) to enable the reduction of any unnecessary heat load;
• choose an Energy Star certified appliance.

ENERGY/WATER SUB-METERS
Installing sub-meters to measure energy and water consumption enables you to:
• better monitor utility consumption in specific areas;
• monitor your systems’ performance (through having the opportunity to compare consumption in similar areas and recommend changes necessary to achieve savings);
• raise awareness in respect of energy and water consumption.

OFFICE PLANTS
Research shows that natural plants in the office can:
• positively influence the wellbeing and productivity of building occupants;
• lower stress;
• decrease respiratory disorders;
• absorb heat and noise;
• improve the look of your office.

Avoid the use of toxic herbicides, pesticides and fertilizers when caring for and cleaning your indoor plants.
CHAPTER 4

Multi-criteria building performance assessment methods

Multi-criteria building performance assessment methods constitute an objective and independent confirmation that a building has been designed, constructed and is managed in keeping with the standards referred to in this manual.

The British BREEAM® (Building Research Establishment Environmental Assessment Method) and American LEED® (Leadership in Energy and Environmental Design) are the most widely respected among the many systems currently in place.

4.1 BREEAM

BREEAM® is currently the oldest certification system in place on the market. It was developed and implemented by the Building Research Institute in the United Kingdom in 1990. A BREEAM certificate can be applied for in respect of different types of existing and newly designed buildings with varied purposes. The version currently in use was developed in 2008.

In 2009, a version of the BREEAM certificate was developed for projects outside of the United Kingdom. The types of the BREEAM certification system that can be applied in CEE/EE are presented below:

<table>
<thead>
<tr>
<th>SYSTEM NAME</th>
<th>BUILDING TYPE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>BREEAM International Commercial</td>
<td>Commercial and public use</td>
<td>Developed for buildings outside of Great Britain</td>
</tr>
<tr>
<td>BREEAM International Bespoke</td>
<td>Not subject to assessment within the BREEAM Europe Commercial</td>
<td>Assessment criteria adjusted to the characteristics of specific buildings.</td>
</tr>
<tr>
<td>BREEAM In-Use</td>
<td>Existing</td>
<td>Assessment system used for improving the performance of existing diverse purpose buildings.</td>
</tr>
</tbody>
</table>
4.2 LEED

LEED® is a building rating system that assesses a building’s impact on the environment and performance, and the name is an abbreviation of the words Leadership in Energy and Environmental Design. LEED was developed by USGBC (U.S. Green Building Council) in 2000. Based on the LEED structure, it is possible to identify and implement sustainable solutions relating to all stages of a building’s life cycle, starting with the design, through construction to operation.

The most popular of the LEED certification system that can be applied in CEE/EE are presented below:

<table>
<thead>
<tr>
<th>SYSTEM NAME</th>
<th>BUILDING TYPE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEED NC (New Construction)</td>
<td>New, Conversion</td>
<td>Buildings with complete existing internal fit-out, e.g. offices, multi-family buildings, hotels, student housing.</td>
</tr>
<tr>
<td>LEED EBOM (Existing Buildings Operation and Maintenance)</td>
<td>Existing</td>
<td>Existing buildings regardless of their purpose.</td>
</tr>
<tr>
<td>LEED CI (Commercial Interiors)</td>
<td>Interiors</td>
<td>Interiors in new and existing buildings, e.g. offices, bank facilities, restaurants.</td>
</tr>
<tr>
<td>LEED CS (Core &amp; Shell)</td>
<td>New – developer finish</td>
<td>Buildings in developer finish, e.g. offices to be leased, multi-family buildings.</td>
</tr>
</tbody>
</table>

ADDITIONAL INFORMATION

www.usgbc.org
U.S. Green Building Council website with additional information about the LEED system.

www.breeam.org
Building Research Institute website with additional information about the BREEAM system.

Colliers International website with information about property management.

http://www.colliers.com/en-pl/poland/services/green
Colliers International website with information about Green Building Certification.