D1.2 PRACTICAL GUIDE ON BEST SCP PRACTICES IMPLEMENTATION TO FOSTER THE SUSTAINABILITY AND COMPETITIVENESS OF THE TOURIST ACOMMODATION SECTOR IN UGANDA

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1 GREENTU PROJECT

The GREENTU Project (Greening the Tourism Sector in Uganda), funded by the European Commission under the Switch Africa Green Programme, is being implemented by Fundación GAIKER (GAIKER, Spain, Project Coordinator), Uganda Tourism Association (UTA, Uganda, Partner) and Uganda Community Tourism Association (UCOTA, Uganda, Partner).

The action has an overall duration of 36 months and aims at boosting the transformation of Uganda towards an inclusive green economy by enhancing the sustainability and competitiveness of a key sector for the country, as it is the Tourism Sector. To attain this, the action aims at equipping MSMES of the Tourist Accommodation Sector in Uganda to implement Best SCP practices and Environmental Management Systems (ISO 14001). At the same time, the action will foster sustainable consumption by consumer awareness raising campaigns and supporting MSMEs of the Tourism Sector on eco-labelling scheme implementation.

This deliverable "D 1.2 Practical guide for the sustainable development of the Tourist Accommodation Sector in Uganda is a public document developed in the context of "Output 1 – Improved sustainability and resource efficiency of the Tourist Accommodation Sector in Uganda and compliance with internationally recognized EMS ISO14001".

1.1 PRACTICAL GUIDE

This guide aims to foster sustainability of the Tourist Accommodation sector in Uganda, gathering a set of actuations and best practices to solve those activities and practices that are critical because of their negative environmental, economic or social impacts (hotspots). The guide is aimed at the Tourist Accommodation Sector in Uganda and its MSMEs in particular, and it pursues to be an useful tool to foster the sustainability of the sector.

A deep analysis to explore techniques, technologies, practices, etc. has been carried out. In addition, the participation and contribution of the main stakeholders representing the whole Tourism value chain has been taken into account for the elaboration of this guide.

The guide includes the environmental hotspots and constraints of the sector and the best sustainable practices to address those negative activities. Those practices have been classified according to their nature: cross-cutting issues, minimisng energy consumption, minimising water consumption, waste water management, waste management, hotel and kitchens restaurants and emissions.

Finally, best sustainable consumption and production practices are briefly summarized in description sheets.

2 SUSTAINABLE CONSUMTPION AND PRODUCTION PRACTICES

Definition of sustainable consumption and production (SCP) given by the Norwegian Ministry of Environment, Oslo Symposium 1994: "The use of services and products, which respond to basic needs and bring a better quality of life while minimising the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardise the needs of future generations".

SPC Practices are an approach to minimise the negative environmental impacts from consumption and production systems while promoting quality of life for all.

SCP requires "lifecycle thinking" to increase the sustainable management of resources and achieve resource efficiency along both production and consumption phases. SCP encourages the development of processes that use less material and less hazardous substances and generate less waste. In addition, SCP aims at "doing more and better with less".

Key principles of SCP are:

1. Improve the quality of life without increasing environmental degradation and without compromising the resource of need of future generation.

2. Decouple economic growth from environmental degradation by:
   a. reducing material/energy intensity of current economic activities and reducing waste and emissions from consumption and disposal.
   b. promoting a shift of consumption patterns towards groups of goods and services with lower energy and material intensity without compromising quality of life.

3. Apply lifecycle thinking which considers the impacts from all life-cycle stages of the production and consumption process.

3 WHAT BENFITS WILL BEST SCP PRACTICES BRING TO MY ORGANIZATION?

Since the effects of global warming and other environmental impacts are becoming more severe, governments and entities all over the world are carrying out different activities and practices to reduce the impact of its activities.

The implementation of best sustainable consumption and production practices is a tool to reduce the environmental negative impacts.

This tool allows hotels to implement the most suitable practice to reduce the negative impact of its activities. Due to the variety and nature of the sustainable consumption and production practices a hotel can choose between different practices taking into account different issues such as the cost of the practice, human resources needed for the implementation, etc.

Among the benefits of the implementation of SCP Practices it is worth to highlight the following ones:

- Rationalization of the purchase of raw materials from the environmental point of view

- Reduction of the consumption of energy and water

- Reduction of the cost of waste management, by reducing its generation and promoting its reuse and recycling

- Minimisation of environmental impacts derived from atmospheric emissions and noise generated by the company

- Contribution to a model of sustainable development, achieving the business objectives of continuous improvement and prevention of pollution, while protecting the environment and society

- Strengthen economic competitiveness

- Offers the creation of new markets, green and decent jobs

- Is an opportunity to leapfrog to more resource-efficient, environmentally-sound and competitive technologies

- Respects the socio-cultural authenticity of host communities, conserves their built and living cultural heritage and traditional values

- Public image enhancement because of the environmental behaviour

3.1 IMPLEMENTATION REQUIREMENTS AND PROCEDURE

To achieve the benefits mentioned above the accommodation has to comply with the following steps:

3.1.1 COMMITMENT

It is important the engagement of the top management and staff for the implementation of a sustainable consumption and production practice. Besides, it will be helpful setting up an environmental committee or 'green team'. It will share out the workload and spread the message throughout the accommodation. Positive engagement, motivation and enthusiasm go a long way to getting results. If possible, team members should be selected from all levels in the hotel e.g. reception, maintenance, kitchen, cleaning and dining/restaurant/bar staff. In addition, it is important to provide staff training on the implementation of SCP Practices.

3.1.2 INITIAL ASSESSMENT

It is important to carry out an initial and global assessment in order to identify the weaknesses and improvement opportunities of the accommodation.

This preliminary study will include the assessment of different environmental issues, such as:
- general management
- energy sources and energy consumption
- water consumption and management
- waste and waste water management and treatment, etc.

3.1.3 SCP PRACTICE SELECTION

According to the results of the initial assessment, the most suitable SCP practice will be selected. During the selection procedure different issues will be taken into account: expected environmental benefits, expected economic savings, investment required, maintenance costs, etc.

3.1.4 BASELINE DEFINITION OR MEASUREMENT

In order to quantify the improvement achieved once the SCP practice is implemented it is very important to precisely defined (calculation, estimation or measurement) the previous situation. Therefore, the reference values of the environmental, economic and social parameters expected to be improved must be determined.

The template of the "report of improvements", provided in Annex I can be used to collect and compare the information before and after the implementation of the SCP practice.

3.1.5 IMPLEMENTATION OF THE SCP PRACTICE

The implementation of the SCP practice is related not only to the implementation itself, but also to the training and awareness raising activities required in order the SCP practice to be successfully implemented.

Depending on the SCP practice implemented training and awareness activities will be aimed at different people (staff, guests, etc.) and different communication channels will be used: training session, posters, leaflets, incentives, notice boards, etc.

3.1.6 EFFICIENCY MONITORING

In order to check the proper implementation and performance of the SCP practice a monitoring programme must be implemented.

4 ENVIRONMENTAL HOTSPOTS AND CONSTRAINTS OF THE SECTOR

At the beginning of the GreenTU project, a diagnosis study of the Tourist Accommodation Sector in Uganda was carried out. In this task, a Life Cycle approach was used in order to define a baseline of sector's performance and identify those activities and practices that are critical because of their negative environmental, economic or social impact (hotspots).

5 CROSS-CUTTING ISSUES

5.1 ENVIRONMENTAL MANAGEMENT SYSTEM IMPLEMENTATION

An Environmental Management System (EMS) is a set of processes and practices that enable an organization to reduce its environmental impacts and increase its operating efficiency. The EMS provides a framework that helps a company achieve its environmental goals through consistent control of its operations. The EMS itself does not dictate a level of environmental performance that must be achieved; each company's EMS is tailored to the company's business and goals.

Although there are different alternatives when implementing an environmental management system, the most widely used standard on which an EMS is based is International Organisation for Standardisation (ISO) 2015. ISO 14001 is the international Environmental Management Standard. It specifies the requirements to identify and control any aspects of your Organization which have an effect on the environment. These activities can include, but are not limited to, the use of natural resources, energy consumption and the management of waste. If you require more information about ISO 14001, you can find it on the *"Practical guide for the implementation of EMS ISO 14001 in the MSMEs of the Ugandan Tourist Accommodation Sector"*.

Briefly, an EMS contains:

- Commitment of top management and engagement of staff

- Definition of an environmental policy which is the commitment of the organization to the laws, regulation and other policy mechanism concerning environmental issues

- Identification of risk and opportunities and aspects and impacts of the activity

- Definition of environmental objectives and plans and procedures to achieve them

- Trainings of competence and awareness of environmental issues

- Implementation and operation procedures

- Checking and monitoring performance and taking corrective actions

5.2 SUPPLY CHAIN MANAGEMENT

A supply chain is a group of independent organisations connected together through the products and services that they separately and/or jointly add value on in order to deliver them to the end customers.

In the case of the Tourist Accommodation Sector, the supply chain is composed by different organisations which provide accommodations with products and services. For example: transport, food, etc.

The aim of this practice is to screen supply chains for products and services used by the organisation in order to identify supply chain environmental hotspots, considering the entire value chain, and to identify relevant control points (e.g. product selection, avoidance, green procurement, supplier criteria) that can be used to minimise the environmental impact over the whole value chain.

For example, when buying furniture, fittings and equipment, a hotel should prioritise the use of furnishing and finishes that use materials from sustainable forests, have low toxic material levels, are locally manufactured and are durable enough to least-ease of repair, disassembly and recycling.

5.3 GOOD HOUSEKEEPING

Housekeeping is one of the most important activities in the accommodation sector. By implementing good housekeeping initiatives operational cost and environmental negative impacts can be reduced.

Good housekeeping practices are often simple common sense that focuses more on the human side of business operations rather than the technological site. Exercising good housekeeping practices can require no capital cost and usually entails implementing simple changes that results in reduced emissions, wastes, operational costs and increased productivity as well as increased workplace safety.

Housekeeping practices can be implemented through:

- Careful handling and storage of raw materials and finished products in order to reduce spills, accidents and water wastage.

- Waste segregation: This is done by preventing mixing of hazardous waste with non-hazardous waste (to reduce disposal costs), storing materials in compatible groups and isolating liquid waste from solid waste.

- Preventive maintenance programmes: This involves maintaining a complete preventative maintenance schedule to ensure that maintenance problems do not go unchecked.

- Training and awareness. By providing training to employees. Awareness raising should highlight the economic and environmental impact of waste generations and disposal.

- Effective Supervision. Top Management need to show their commitment and support to pollution prevention programs by committing to closer supervision, which may improve productivity and reduce waste generation.

- Employee participation. Employees and management have to discuss potential waste reductions areas and possible ideas for implementation. Employees should also feel that they are playing a role in the cleaner production programme. There should be an open dialogue of ideas

- Inventory control. A record of purchasing of raw materials needs to be kept up to date in order to avoid unnecessary purchases. There also need to be clear guidelines on how to dispose the raw material in the correct manner.

- Monitoring. Monitor if the housekeeping is being done in a properly way.

- Workplace tidiness/safety. The workplace should be kept clean and safe by keeping tools, floors and equipment clean, making employees aware of the risk of their jobs and having the emergency safety measures in place, etc.

5.4 NOISE AND VIBRATION CONTROL

Although an accommodation does not have machinery that can generate a lot of noise and vibrations, it is an environmental vector to consider. Practices to control the emission of noise and vibration:

- The prevention of noise generation at source. Preventative maintenance and replacement of old equipment can considerably reduce the noise level generated.

- Placing as much as distance as possible between the noise source and those likely to be affected by it.

- For new building, one of the simplest construction methods is to utilize lightweight metal studs instead of wood studs. Metal studs provide isolation by minimising the vibration path between the two sides of the wall assembly.

- The more mass that is between adjacent rooms, the better the isolation. Some ways to add mass are additional layers of gypsum wall board, additional layers of acoustical gypsum board, or installing acoustical vinyl sheets. Combining different types of materials is typically most effective.

5.5 MONITORING

It is essential to monitor the environmental outputs and emissions to assess the environmental performance. For an effective monitoring, it is necessary to record the consumption of water, energy, waste generation, etc. In addition, key performance indicators should be monitored.

6   MINIMISING ENERGY CONSUMPTION

Energy consumption in the accommodation sector is influenced by various technical, architectural, local and management factors. All of these factors can induce significant fluctuations in energy consumption and makes it difficult to define and estimate energy targets. However, improving energy efficiency saves money, enhances the business reputation and helps in the fight against climate change.

There is an Energy Management Hierarchy which is a framework for prioritising the most preferable options for energy management and efficiency. Levels of the hierarchy from the highest to the lowest in terms of the priority include:

-   Elimination or reduction of energy use
-   Energy efficacy
-   Use of energy efficiently
-   Low carbon energy and renewable energy technologies

6.1   LOW COST PRACTICES 💰

6.1.1   NATURAL VENTILATION

According to several studies, 20 – 50 % of energy costs in hotels are attributable to heating, ventilation and air conditioning (HVAC) systems.

Although there are practices to reduce the use of the air conditioning and the energy consumption that is associated (explained in the section 6.2.2), the best practice that can be used is the natural ventilation. Natural ventilation reduces dependency on air conditioning. So, the hotel has to take into account designs that provide greater natural ventilation

Key measures to reduce the energy consumption:

-   Ventilation: Ventilation is responsible for 35% of heat loss from buildings, so it is necessary at least control ventilation rates according to occupancy profiles across different zones.

-   Use of free and evaporative cooling: Installation of openable windows so that natural ventilation with outdoor air may be used at appropriate times.

6.1.2 INVOLVE YOUR GUESTS

It is important to provide guests with information to reduce energy consumption, so tips to reduce energy consumption should be displayed in different formats throughout relevant areas of the accommodation. The accommodation shall offer communication materials through signs or stickers for accommodation's guests, providing tips on:

- unplugging unused devices
- turning off unnecessary lighting
- adjusting thermostats correctly
- opening windows appropriately (i.e. turn off the air conditioning when a window is open)

Figure 1: Sign for energy conservation in Hotel Paradise on the Nile

In addition, guests should be aware of the possibility of reusing towels (section 6.1.4.). The hotel could provide them with information about the environmental benefits related to not changing towels every day. With this practice, guests will be contributing to the improvement of the environmental performance through the reduction of the energy consumption.

6.1.3 TRAIN YOUR STAFF

Housekeeping staff is responsible for room condition on a day-to-day basis and constitute a key control point for energy management and maintenance. Continuous staff training and clear reporting procedures are essential in every area: housekeeping, maintenance, kitchen, etc. The following key check points are relevant:

- turn off unnecessary equipment in guest rooms
- shut down computers when they are not in use
- if heaters or air-conditioners are going to leave on for guest arrival, housekeeping staff should adjust to have an appropriate temperature
- ensure good control of the heating system and air conditioner
- avoid operating the heating and cooling system simultaneously

- check for doors, windows... and report to maintenance
- use of washing machine for full loads only
- closing fridge and freezer doors correctly

6.1.4 HOUSEKEEPING

6.1.5 The implementation of a towel and reuse programme is a simple and effective sustainable practice in order to reduce not only the energy consumption, but also the water consumed.

The hotel should consider not changing the towels and sheets every day. Environmental information can be provided to guests in order they to decide when they want to reuse their towels and linen, and when they want them to be replaced...

6.2 MODERATE COST PRACTICES 💰 💰

6.2.1 ENERGY MONITORING AND MANAGEMENT SYSTEMS

In order to identify efficiency improvements and cost savings it is essential to know how much energy the accommodation is consuming. This information can be accessed through the energy bills. Moreover, there are some tools and practices that can be implemented to reduce the consumption of energy. Some of those actions have no financial cost; they only need human investment and care.

One action is to implement an energy management programme. That programme should include:

- Identification and monitoring of energy consumption across major energy consuming processes and areas. This information has to be recorded and reported every month.

- Definition of energy targets to reduce energy consumption. Regular comparison and monitoring of energy flows with performance targets to identify where action should be taken to reduce energy use

- Regular review of targets, which may include comparison with benchmark data, to confirm that targets are set at appropriate levels.

- If possible, audit of major energy consuming equipment and processes. An energy audit involves the compilation of an inventory of energy-using equipment, combined with estimated usage patterns, to estimate the main sources of energy demand.

On the other hand, it is important to identify efficiency improvement options and to ensure that all equipment is maintained through appropriate periodic inspections in order to prevent energy loss. Furthermore, regular maintenance and cleaning should be carried out in order equipments to run efficiently.

6.2.2 HVAC SYSTEMS

This practice aims at minimising energy consumption from HVAC systems by installing products with the top energy label classes (when applicable), zoned temperature control and controlled ventilation with heat recovery (ideally controlled by CO_2 sensors) and energy efficient components (e.g. variable-speed fans), and to optimise HVAC in relation to building-envelope and energy source characteristics.

Key measures to reduce the energy consumption of HVAC systems are:

- Integrated and optimised HVAC system design: HVAC optimisation requires integration with features of the building envelope and heating and cooling systems. The design and control of HVAC systems should aim to achieve comfortable and hygienic indoor conditions with minimal energy input.

- Zoned HAV control: Individual rooms and various areas within accommodation buildings have different heating and cooling requirements at different times.

- Use of free and evaporative cooling: Installation of openable windows so that natural ventilation with outdoor air may be used at appropriate times.

- Efficient components: Selection of the most efficient HVAC systems.

Finally, it is important the age and the condition of HVAC system. It has to be cleaned monthly and it requires periodical inspection.

6.2.3 EFFICIENT LIGHTING

The correct use and the installation of lighting is another way to reduce energy consumption. The choice of lighting must be carefully considered.

Installation of low-energy lighting (i.e LED) and efficient and intelligent control systems can lead to considerable reductions in electricity consumption and will reduce impacts associated with electricity generation (i.e. air pollution, climate change and resource depletion).

Design and implementation of an optimised lighting system should include the following elements:

- Identification of the specific lighting requirements according to the type use for the particular space

- Selection of the most efficient lamps to deliver the lighting requirements for each zone

Moreover, to ensure optimum performance it is important to keep light fixtures and fittings clean. A regular cleaning routine for external lighting is important because moss, lichen and environmental pollutants can all rapidly build up on lights and reduce their effectiveness by as much as 50%.

SCP practice is also to optimise building design and interior layout in order to minimise the need for artificial lighting during the daytime in rooms and many public areas, as well as the use of heating and cooling.

6.2.4   KEY CARDS

Key cards are another sustainable practice that the hotels can implement. By means of using key cards hotels can reduce the amount of electricity consumed. As soon as the guest takes out the key card when leaving the room, all the lights and electronic devices are switched off.

Furthermore, key cards can be connected to a window sensor, in order to automatically switch off air conditioning when the window is open.

6.3   HIGH COST PRACTICES 💰 💰 💰

6.3.1   BUILDING ENVELOPE

Depending on many aspects of the building architectural form, the building envelope plays an essential role to reduce energy consumption. Installation of proper insulation is an important part of maintaining an energy efficient building envelope.

- For new buildings, the best practice is to ensure that these are compliant with the highest achievable energy ratings.

- For existing buildings, the best practice is retrofitting to minimise heating and cooling energy requirements.

Likewise, to reduce energy consumption it is important to select glazing materials based on their light transmittance, heat transfer characteristics and durability that meet or exceed the performance of materials. If the installation of new window is not realistic because of the investment, it is possible to improve the energy efficiency of the building and tighten the envelope by installing a window film on the glass.

Older doors in accommodation buildings can leak air during the heating and cooling season, which can significantly increase energy consumption, so regular inspection is required.

6.3.2   HEAT PUMPS AND GEOTHERMAL HEATING/COOLING

The installation of efficient heat pumps for heating and cooling, or, where possible, groundwater cooling, will contribute to minimise the energy consumption.

A heat pump is a device that transfers heat energy from a source of heat to what is called a heat sink. When a heat pump is used for heating, it employs the same basic refrigeration-type cycle used by an air conditioner or a refrigerator, but in the opposite direction - realising heat into the conditioned space rather than the surrounding environment. In this use, heat pumps generally draw heat from the cooler external air or from the ground.

A geothermal heat pump or ground source heat pump (GSHP) is a central heating and/or cooling system that transfers heat to or from the ground. It uses the earth all the time, without any intermittency, as heat source (in the winter) or a heat sink (in the summer). This design takes advantage of the moderate temperatures in the ground to boost efficiency and reduce the operational costs of heating and cooling systems and may be combined with solar heating to form geosolar system with even greater efficiency.

6.3.3   RENEWABLE ENERGY SOURCES

Using renewable energy sources is another way to reduce energy consumption in an accommodation and there are many renewable energy options available such as: wind, solar, biomass, etc.

Regarding solar energy, it is important to point out that there are two different technologies: solar thermal systems and solar photovoltaics (also known as solar PV).

The core difference between solar PV and solar thermal can be found in their working principles.

Solar thermal, on the other hand, uses sunlight to heat a fluid (depending the particular application, it can be water or other fluid). The most common technology consists on the direct heating of water by sunlight.

Solar PV is based on photovoltaic effect, by which a photon (the basic unit of light) impacting a surface made of a special material generates the release of an electron. This technology is used for lighting.

Use of renewable energy sources will help secure the future energy supply and lower the human impact on the environment.

Figure 2: Hotel Top Five's solar thermal panels

6.3.4   ELECTRIC EQUIPMENT

One of the most important practices is to consider the most modern and efficient alternatives, when replacing any equipment. The hotel should prioritise the most environmentally friendly equipments.

In this sense, product with ecolabel or top energy label classes should be chosen whenever possible.

On the other hand, the installation of technology such as motion sensor and/or timer in guest rooms, central areas and outdoors is another sustainable practice.

7   MINIMISING WATER CONSUMPTION

Water use in the accommodation sector is essential for a number of activities such as: irrigation, daily laundry, daily cleaning... The major areas of water consumption are guest bathrooms, kitchen and laundry facilities and communal toilet facilities. Swimming pool and the irrigation can contribute an additional consumption of water. However, there is great potential for water reductions across accommodation enterprises by implementing some practices.

In order to identify efficiency improvements and cost savings it is essential to know how much water the accommodation is consuming and how much is being sent to sewer. This information can be easily accessed through the water bills.

There is a water management hierarchy which is a framework for prioritising the most preferable options for water management. Levels and items to consider in the water management hierarchy are:

- Eliminate: educate staff and guests to avoid using water if it is not necessary. Consider if the water using activity is actually required.

- Alternative water use: eliminate the inappropriate use of water. Can you hygienically use an alternative water source in the activity?

- Reduce: consider options to improve water efficiency. Can existing fittings be upgraded to improve water efficiency?

- Reuse: Can water efficiency be increased through its reuse? Consider if the reused water needs to be treated prior to reuse

- Recycle: Can water be recycled for use in another water using activity?

7.1   LOW COST PRACTICES 💰

7.1.1   WATER SYSTEM MONITORING, MAINTENANCE AND OPTIMISATION

The aim is to undertake a water consumption audit and monitor water consumption across key water consuming processes and areas (i.e. sub-metering) in order to identify efficiency improvement options, and to ensure that all equipment is maintained through appropriate periodic inspection, including during housekeeping.

Leaking water pipes and appliances can increase water consumption considerably, and in the process incur significant costs. Monitoring water consumption is a first step to

improving water use efficiency. Leaking can be detected by an effective monitoring and maintenance programme with the following actions:

- Daily checks and reporting procedure by housekeeping staff to detect obvious leaks
- Detailed periodic inspections to detect hidden leaks

A number of small leaks throughout accommodation can contribute substantially to total water consumption, and easily result in cumulative wastage of thousands of m3 per year. Consequently, the avoidance of leaks through monitoring, inspection and maintenance can reduce water consumption dramatically. Moreover, monthly water consumption should be recorded and analysed to identify irregular patterns.

7.1.2 EFFICIENT WATER FITTINGS IN GUEST AREAS

The installation of efficient water fittings, including low-flow spray taps and low-flow thermostatic showers, low- and dual-flush WCs, and waterless urinals is envisaged.

- Low flow shower heads: A use of a low flow shower head can decrease water consumption. Air is bubbled in with the water, reducing the amount of water used but allowing a soft bubbly flow without any loss of water pressure. Moreover, shower take energy to heat the water, thus cutting down on water usage also cuts down on energy usage. Since the demand for hot water is lessened, the amount of energy used is lower and result in lower CO_2 dispersed into the air.

Figure 3: Low flow shower heads

- Faucet aerators: A faucet aerator or tap aerator is often found at the tip of a water faucet. Aerators can be simply screwed onto the faucet head, creating a non-splashing stream and often delivering a mixture of water and air. Because the aerator limits the water flow through the faucet, water is reduced as compared to the same time of flow without and aerator. In the case of hot water, because less water is used, less energy is needed to heat water, reducing the CO_2 dispersed into the air.

Figure 4: Faucet aerator

- Flow restrictor: A flow restrictor is used to restrict the flow of water of a tap or a shower. It is ideal for situations where a tap aerator is not suitable (e.g. hose). It reduces the water consumption. In addition, due to the reduced flow rate less energy is required to pump and heat water thus giving the additional benefit of reducing energy and avoiding CO_2 emissions.

Figure 5: Flow restrictor

- Low flow toilets: A low flow toilet is a flush toilet that uses significantly less water than a full-flush toilet. Low-flush toilets use a special design of the cistern and the siphon in order to allow the removal of faeces and excreta with less water. Besides, they also include a dual flush system, with one flush being designed for urine only, using even less water than the other designed for faeces. A low flush toilet uses 20 to 60 percent less water than average toilets.

Figure 6: Low flow toilets

- Pressure reducing valves: Pressure reducing valves control pressure and manage loss of water at outlets

Figure 7: Pressure reducing valves

- Recirculation pumps: Hot water recirculation pumps are a convenient way to ensure that you have immediate hot water from the tap thus ensuring reduced time and loss of cold water in the shower

7.1.3   INVOLVE YOUR GUESTS

As it has been explained in the section 6.1.2, it is important to provide guests with information to reduce water consumption, so communications in guests room reminding them how to save water should be displayed. Information about:

- The value of water and the need to conserve it
- The reduction in water use achievable through reuse

Once again, the hotel should involve guests by requesting or encouraging guests to reuse bedclothes and towels (section 7.1.5).
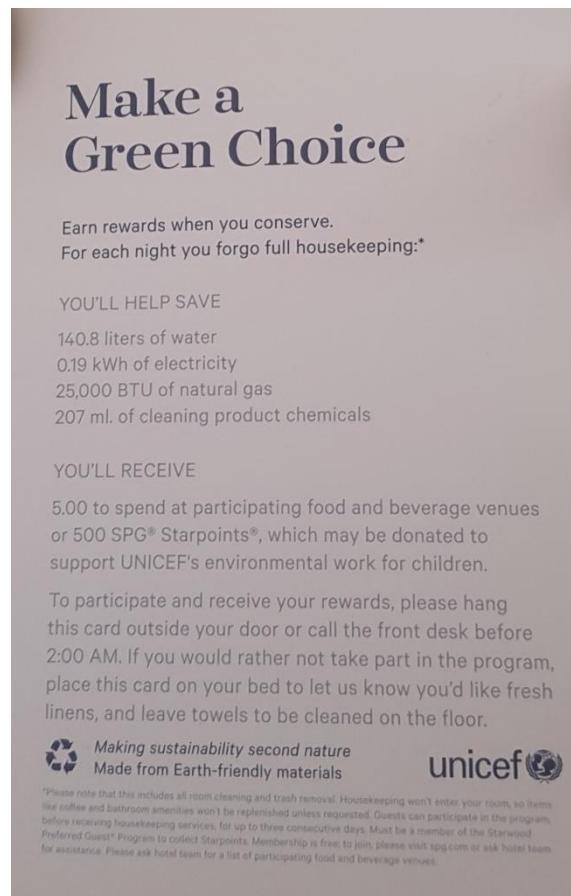
Figure 8: Green card with information for guests in Sheraton Hotel.

7.1.4 TRAIN YOUR STAFF

A very important sustainable practice is to train staff on the implementation of water- and chemical-efficient cleaning methods, and to procure environmentally certified consumables for bedrooms and bathrooms. Furthermore, the hotel should train the staff to use equipment in the most efficient way possible.

Signs and stickers in kitchens and staff bathrooms reminding employees to save water should be put. The hotel should ask them to report any leaks they find.

7.1.5 HOUSEKEEPING

As explained in section 6.1.4, the hotel should implement a towel and reuse programme in order to reduce both, the water and the energy consumption.

On the other hand, laundry requirements and water consumption can be minimized through green procurement of towels and bedclothes, in terms of size, density, colour and material.

7.1.6 IRRIGATION

It is highly recommended to turn off irrigation when it rains and turn it back on when the plants need water again.

Besides, the hoses and irrigation pipes should be regularly checked in order to avoid leaks.

This practice is related to the one explained in the section 8.1.1. The hotel should collect and use rainwater for the irrigating.

7.2 MODERATE COST PRACTICES 💰 💰

7.2.1 SANITARY WARE

The design and installation of sanitary ware to make the building greener:

- Low fill volume bathtubs

- Dual flush system toilets

- Dry urinals (they use purely plant-based sealant. This biodegradable sealing liquid effectively prevents unpleasant odours)

- Sensor urinals

- Sensor taps

7.2.2 OPTIMISED SMALL-SCALE LAUNDRY OPERATIONS

The procurement of the most water- (and thus energy-) efficient washing extractors and the most energy-efficient driers (e.g. heat-pump driers) and ironers will be pursued.

SCP practice is also to recover heat from wastewater and exhaust ventilation air.

7.2.3 OPTIMISED LARGE-SCALE OR OUTSOURCED LAUNDRY OPERATIONS

When selecting an efficient laundry service provider environmental criterion should be taken into account: certified by an ecolabel or that complies with criteria in such labels, or to ensure that on-site large-scale laundry operations comply with such criteria.

7.2.4 OPTIMISED POOL MANAGEMENT

Swimming pools give rise to a number of environmental impacts, especially where poorly managed, through demand for water, energy and disinfectant chemicals. The management of the pool can be improved, from an environmental perspective, through different actions:

- Optimisation of the frequency and timing of backwashing based on the pressure drop rather than fixed schedules

- Use of ozonation or UV treatment and careful dosing control

- Minimisation of chlorination, and to recover heat from exhaust ventilation air.

Therefore, an implementation of an efficiency plan for swimming pool and spa areas includes:

- Benchmarking specific water, energy and chemical consumption in swimming pool and spa areas, expressed per m2 pool surface area and per guest-night

- Minimisation of chlorine consumption through optimised dosing and use of supplementary disinfection methods such as ozonation and UV treatment.

7.3 HIGH COST PRACTICE 💧 💧 💧

Replace older equipment with the latest most water efficient technology.

Finally, it requires higher investment, but the hotel should consider the installation of sensors and/or timers in guest rooms, central areas and outdoors, to ensure that water-consuming equipment is only used when needed.

8 WASTEWATER MANAGEMENT

8.1 MODERATE COST PRACTICES 💧 💧

8.1.1 RAINWATER AND GREY WATER RECYLCLING

Some water applications in accommodation do not require the use of potable water. Thus, the use of water recycled from on-site rainwater or grey water collection systems can considerably reduce demand for potable water from the supply network.

Grey water is the term used to describe wastewater from activities such as bathing, showering, laundry, dishwashers, etc. Grey water recovery system that recovers grey water for use in indoor processes (e.g. toilet flushing) following treatment, or for exterior processes (e.g. irrigation) can be installed.

On the other hand, installation of harvesting and use of rainwater reduces reliance on municipality water and associated costs and inconveniences. Furthermore, it can be used for indoor and outdoor activities reducing the water consumption.

Figure 9: Nob View Hotel's rainwater tank

8.1.2 PROCESS WATER MANAGEMENT

Water management addresses the problem of optimal allocation of reusable water among different water-using operations. Wastewater management deals with optimal design of effluent treatment units to respect environmental norms. However, optimal

design of effluent treatment units should be solved in conjunction with the problem of optimal allocation of water among different processes that use water.

The first step for an efficient process water management involves optimisation of water consumption, determining the optimum quantity required for each processes and introducing the correct quantity of water. Secondly, installation of equipment and the necessary access are also a key issue to consider for the delivery of water.

Another practice is the floating macrophyte system. This is an eco-friendly water purification system using floating plants to purify and recycle wastewater that can be used for landscape irrigation.

9   WASTE MANAGEMENT

9.1   WASTE MANAGEMENT PLANNING

Material use and waste generation in the tourism sector are directly linked, so hotels should aim to prevent or eliminate waste by using materials efficiently from the outset, wherever possible, as this will almost always save money as well as environmental impacts. There is a waste hierarchy which identifies waste management options and ranks them in terms of sustainability:

- Prevention: The most effective means of waste minimisation with the lowest environmental impact and this focuses on the measures to be taken so as not to create any type of wastes in the first place.

- Reduce: Minimise the amount of waste. Implement green procurement, select products with little packaging or returnable packaging, products that use the least hazardous materials, etc.

- Reuse: Consider if certain items can be reused, sold or donated to others that can use them. Products or components of products that have become waste that can be use without any other processing.

- Recycle/Compost: When materials can be recycled, major resources are saved. Recycling is usually when the material returns to its pure state to use for something else. This includes composting.

- Recovery: recover materials or energy from waste which cannot be reduces, reused or recycled.

- Disposal: should be considered as a last resort once you have exhausted the other stages. This has to be carefully managed because it takes a lot of time before a full remediation of the land is reached.
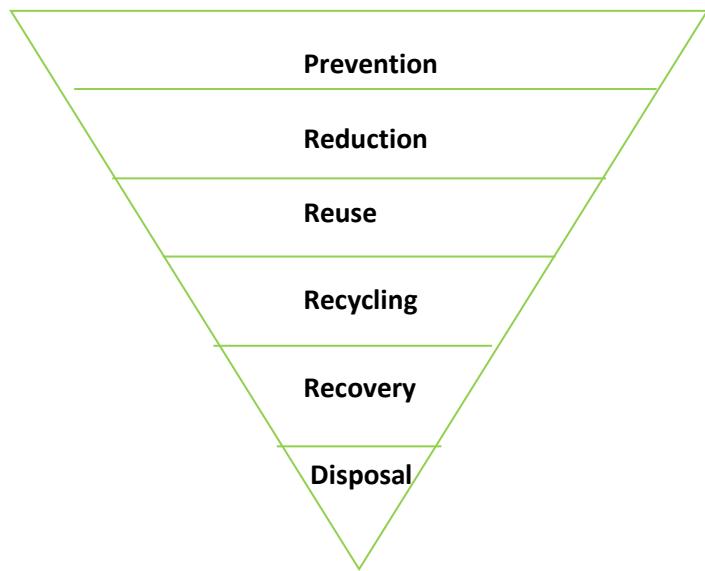
Figure 10: Waste Management Hierarchy

Waste should be characterised according to composition, source, types of waste produced, generation rates or according to local regulatory requirements. For an effective characterisation, a waste management plan should be carried out. In addition, generated waste quantities should de recorded as well as the type of the waste.

Waste management plans have a key role in achieving sustainable waste management. Their main purpose is to give an overview of all waste generated and treatment options for this waste. The plans will provide a framework for the following:

- Compliance with waste policy and target achievement are important instruments contributing to implementation and achievement of policies and targets set out in the field of waste management at regional, national, etc. level.

- Inventory of waste and capacity for managing it: Waste management plans give an outline of waste streams from different sources and quantities to be managed.

- Outline of needs and future developments: Waste management plans must contain forecasts of future waste streams and the import and export of waste as well as the associated needs for new collection schemes and disposal installations.

- Outline for management of packaging waste: Discuss requirements for the prevention and re-use of packaging.

- Outline for management of biodegradable waste: Discuss strategies and measures taken to achieve reduction of biodegradable waste going to landfills. A sustainable practice will be composting.

- Information on general waste management policies and technological measures: Plans must describe waste management policies that aim to comply with the waste hierarchy and to achieve continuous improvement in waste management.

Waste management plans need to be evaluated at least once a year and revised as appropriate. It is important the engagement of top management and staff to participate in the elaboration of the plans and have access to them once elaborated. These plans should be public.

9.2 WASTE PREVENTION

As it has been mentioned in the section 9.1, an accommodation has to follow the Waste Management Hierarchy (Fig. X). The first step is waste prevention. Reducing the amount of waste generated at source and reducing the hazardous content of that waste is regarded as the highest priority. Waste prevention is closely linked with improving manufacturing methods and influencing consumers to demand greener products and less packaging.

Prevention of waste generation will be promoted through:

- Green procurement of products, considering product life cycle impacts:
  - Avoid single-use items: food, soaps, shampoos… Ex: replace individually wrapped soaps and shampoos with soap and shampoo dispensers
  - Buy cleaning agents in concentrated and bulk form
  - Select products with less packaging and/or and packaging made from recycled and recyclable material

- Careful management of resources:
  - Paper: print documents only when absolutely necessary (double-sided), use if it is possible electronic billing, etc.

Table 1 : Items to avoid, items to select and actions to prevent waste in acommodation

Avoid	Select	Do
-Single-use hygiene products	-Refillable amenity dispensers in guest bathrooms	-Provide guests with reusable glasses and cups in rooms
-Single-portion food products	-Food sold in bulk packaging where appropriate	-Put condiments and food serving in refillable containers
-Disposable plates, cups and cutlery	-Cloths instead of disposable paper towels	-Give preference to vendors that supply their products in returnable and reusable containers
-Excessive use of paper napkins	-Durable coasters instead of paper ones	
-Items with unnecessary or excessive packaging	-Cloth bags or baskets instead of plastic bags to collect and return towels, linens and guest laundry	-Minimise the use of hazardous chemicals
-Offering newspapers and magazines	-Refillable printer and copier cartridges	-Provide electronic information and newspapers
	-Rechargeable batteries	-Print double sided
		-Identify reuse possibilities

9.3 WASTE SORTING AND RECYCLING

Apart from the implementation of waste prevention strategies, it is important to have in place recycling plans to reduce significantly the amount of waste.

The first sustainable practice consists of providing separated waste collection facilities throughout the establishment, to ensure that there is a clear procedure for waste separation, and to contract relevant recycling services at least for glass, paper and cardboard, plastics, metals and organic waste.

Secondly, recycling plans consider the following elements:

- From the waste inventory defined in the waste management plan, it is needed to identify potentially recyclable materials.

- Identify waste recycling and packaging return options available locally.

- Establish recycling objectives. These objectives should be assessed every six months to evaluate the environmental performance. To achieve these

objectives and targets, employees have to be aware of recycling plans. Trainings should be provided.

9.3.1 Figure 11: Collection and storage of segregated waste in Hotel Paradise on the Nile
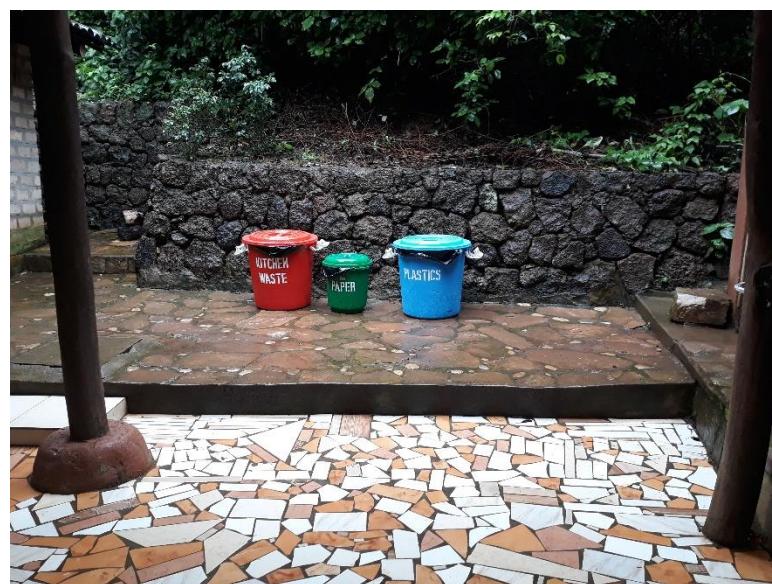
Figure 12 : Serenada Eco Resort's waste sorting

9.4 TREATMENT AND DISPOSAL

After following the waste management hierarchy, the last step is disposal. Waste materials should be treated and disposed of and all measures should be taken to avoid impacts to human health and the environment.

Waste treatment and disposal methods are selected and used on the form, composition and quantity of waste materials:

- The accommodation has to assess different on-site or off-site biological, chemical or physical treatment of the waste material to render it non-hazardous prior to final disposal.

- The final disposal of the waste must be done in specific facilities conditioned for that and has to fulfil all the regulations and laws.

Examples of treatment and disposal include composting operations for organic and non-hazardous waste, properly designed permitted and operated landfills or incinerator designed for the respective type of waste, or other methods known to be effective in the safe, final disposal of waste materials such as bioremediation.

9.5 HAZARDOUS WASTE MANAGEMENT

If the generation of hazardous waste cannot be prevented, its management should focus on the prevention of harm to health, safety and the environment. It is important to separate hazardous waste from non-hazardous waste.

In a hotel environmental, common potentially hazardous waste includes:

- Polishes (used on the floor, metal, shoes and furniture)

- Cleaning and disinfecting products (carpet and oven cleaners, detergent, bleach, spot removers and pool chemicals)

- Office products (white-out fluids, permanent ink markers, photocopying and printing fluids)

- Pesticides, fungicides, and herbicides used around the hotel

- Solvents and aerosols, including air fresheners

- Oil based paints and varnishes

- Flammables (lubricating oil)

- Motor oil

Other hazardous waste can come in the form of solid items, such as batteries, fluorescent lamps, light bulbs, computers and monitors and asbestos.

These principles should be followed for the hazardous waste management:

- The accommodation has to assess the product before buying it. Ask if it is really needed and evaluate if there are more alternatives.

- Understanding potential impacts and risks associated with the management of any hazardous waste during its complete life cycle

- Ensuring compliance with applicable local and international regulations.

- Hazardous waste must be store in a safe. Storing hazardous waste safely requires careful forethought and planning.

- Make sure that product labels are attached and readable, and containers are in good condition, away from direct sunlight, wind and rain.

- Provide adequate ventilation where volatile waste is stored.

- Provide specific training in handling and storage of hazardous waste.

10 HOTEL KITCHENS & RESTAURANTS

Kitchen and restaurant in the accommodation sector are one of the most important activities, so it is important to implement sustainable consumption and production practices in order to reduce the environmental impacts.

10.1 LOW COST PRACTICES 💰

10.1.1 MONITORING

The hotel should monitor food that comes back untouched from guest plates and asses if the majority of the guests are not eating it, in order to modify the menu and to avoid that food waste.

In addition, the hotel should review the portion sizes on plated dishes and volumes on buffets in order to asses if the hotel is regularly throwing away uneaten food.

The hotel has to check and monitor the plastic and packaging that is used in the kitchen:

- In order to reduce the packaging, ordering foods in bulk should be considered.
- Before eliminating the plastic, the hotel should assess the benefits they have on food. Maybe a food wrapped with a plastic last longer than an unwrapped one.

10.1.2 GREEN SOURCING OF FOOD AND DRINK PRODUCTS

Food and drink supply chains should be assessed in order to:

- Identify environmental hotspots and key control points

- Select environmentally certified products

- Edit menus to avoid particularly damaging ingredients (e.g. endangered fish species and some out-of-season fruit)

- Ensure judicious portioning of meat and dairy products and availability of vegetarian options.

10.1.3 ORGANIC WASTE MANAGEMENT

All organic waste should be separated and sent for anaerobic digestion where available, or alternatively incineration with energy recovery or local/on-site composting. Moreover, this organic food can be used as feed for animals in nearby farms.

10.2 MODERATE COST PRACTICES 💰 💰

10.2.1 OPTIMISED DISHWASHING, CLEANING AND FOOD PREPARATION

Efficient washing equipment, efficient dishwashers and connectionless steamers should be selected whenever possible. This section is related to the section 6.3.4 mentioned before.

10.2.2 OPTIMISED COOKING, VENTILATION AND REFRIGERATION

Efficient cooking equipment, including induction-hob or pot-sensor-controlled gas hobs, efficient refrigeration equipment that uses natural refrigerants such as ammonia or carbon dioxide should be selected.

11 AIR EMISSIONS

Although accommodation sector is not a sector that has much air emissions, pollution prevention can reduce the impact of air pollution by using materials, processes or practices that reduce or eliminate air pollution at the source.

The most common air pollutants that come from accommodation sector are:

- Toxic air pollutants and ozone-depleting substances

- Cleaning supplies, synthetic materials, paints, and pesticides can release toxic air pollutants and volatile organic compounds (VOC). Although emitted indoors, these air pollutants will also eventually leak into the outdoor air through doors, ventilation systems, and other openings. Once outside, the chemicals in these substances can react in the air to form ground-level ozone (smog), which has been linked to a number of respiratory effects

- Ozone-depleting substances such as chlorofluorocarbons may be released by improperly maintained heating, ventilation, and air conditioning (HVAC) units

Firstly, the accommodation has to comply with laws related to air emissions to prevent impacts on human health and the environment.

Making changes in how accommodation properties maintain their facilities can stop pollutants at the source and improve indoor air quality. Improving work practices emissions can decrease. Examples of sustainable practices are:

11.1 LOW COST PRACTICES 💰

- Try to avoid when possible toxic products.

- Purchase cleaners and chemicals with low toxic air pollutants and VOC content. Here is included for example the use of paints that are free of Volatile Organic Compounds (VOCs).

- For maintenance of buildings, use water-based or other less toxic paints and coating.

- Regularly inspect floors to determine where the most wear occurs. Refinish only those portions.

11.2 MODERATE COST PRACTICES 💰 💰

- If available, use indoor furniture made of wood instead of pressed wood products, which can emit toxic air pollutants.

- Check for leaks in HVAC units and refrigeration systems, during equipment maintenance and operation.

- Recover and reuse ozone-depleting substances.

- At the end of equipment service life, replace with new and more efficient equipment that does not use ozone-depleting substances.

12 OTHER SUSTAINABLE PRACTICES

The hotel will also consider the environmental and tourism impacts on local communities, as well as the activities that clients will be involved in while visiting a destination:

- Offer destinations that support local communities by providing jobs to residents and developing projects that improve the quality of life for locals.

- Ensuring procedures receive a fair share of revenue. Local communities should benefit from tourism activities with fair wages and other-long term benefits.

- If a popular destination is struggling with a sensitive or damaged environment, try to find an alternative to offer clients.

- Support and share scientific research related to habitat protection and conservation.

- Tread as carefully as possible while transporting clients, using existing roads or trails.

- Showcase specific conservation programs for species or habitats in your area. Look into partnership with local parks, conservation zones and wildlife reserves that may provide knowledgeable experts tan can enhance your clients' experience with presentations of natural heritage of the region.

- Take time to learn about diseases that may affect the animals your clients are visiting.

- Maintain open lines of communication with local officials in small, remote communities. Community support can raise the company's profile, which in turn brings more people to the community and helps to sustain the local economy.

- Look to the local community for employees. Locals typically have the best knowledge of the area.

- Be familiar with all applicable laws and guidelines in the region. Inform clients/customers about all applicable laws.

![GreenTU logo]

13 GREENTU PROJECT CASE STUDIES

The table below shows the 30 accommodations that have been trained and technically supported during the implementation of sustainable consumption and production practices.

All these accommodations will implement at least one sustainable consumption and production practice with the technical support of GreenTU Project:

ACCOMMODATION NAME	LOCATION	LOGO
Eureka Place Hotel	Kampala	
Arch Apartments LTD	Kampala	
Makerere University Guest House	Kampala	
Nob View Hotel	Kampala	
Bannana Village	Entebbe	
Nile Hotel Jinja LTD	Jinja	
Protea Hotel by Marriott Entebbe	Entebbe	
Central Inn LTD	Entebbe	

ACCOMMODATION NAME	LOCATION	LOGO	46
Fairway Hotel LTD	Kampala		
Forest Cotttages	Kampala		
Tourist Bay Hotel	Jinja		
Pavillion Hotel	Kampala		
Arcadia Suites Kampala	Kampala		
Hotel Top Five	Kampala		
Jevine Hotel	Kampala		
Jobiah Hotel	Mukono		
Makutano Hotel	Kampala		
Serenada Eco Resort	Mukono		
Sheraton Hotel	Kampala		

ACCOMMODATION NAME	LOCATION	LOGO	47
Namirembe guest house	Kampala		
Crystal Suites	Kampala		
Serena Hotel	Kampala		
Garuga Resort Beach Hotel	Entebbe		
Uganda Wildlife Conservation Education Center	Entebbe		
Makerere Serene Hotel	Kampala		
Hotel Paradise on the Nile	Jinja		
Namugongo hotel	Kampala		
Ngamba executive cottages	Entebbe		
Mestil Hotel	Kampala		

ACCOMMODATION NAME	LOCATION	LOGO	
Skyz Hotel	Kampala	SKYZ HOTEL	

14 ANNEX I: REPORT OF IMPROVEMENTS

All the information required in this template should be collected in order to define the baseline or current situation of the accommodation and to compare it with the situation at the end of the project. A good definition of the starting point (baseline) as well as the final situation will enable the identification and quantification of the main improvements achieved

Name of the accommodation:	Name of the technician:

INVOLVEMENT IN GREENTU PROJECT

☐ **Implementation of Best SCP practice(s)**
   Short description of the Best SCP practice(s) implemented:

☐ **Implementation of Environmental Management Systems according to ISO14001**
☐ **Implementation of ecolabelling scheme**

SERVICES AND OCCUPANCY

	2019 SEMESTER 1	**2019** SEMESTER 2	**2020** SEMESTER 1	**2020** SEMESTER 2
Number of rooms				
Overnight stays				

ENERGY CONSUMPTION

	2019 SEMESTER 1	**2019** SEMESTER 2	**2020** SEMESTER 1	**2020** SEMESTER 2
Electricity (kWh)				
Natural gas (m3)				
Fuel (l)				
Solar panels (kWh installed)				
Fire wood (tons)				
Charcoal (kg)				

WATER CONSUMPTION

	2019 SEMESTER 1	**2019** SEMESTER 2	**2020** SEMESTER 1	**2020** SEMESTER 2
Water supply network (m3)				
Groundwater and nearby sources of water (m3)				
Rainwater (m3)				

OTHER PRODUCTS CONSUMED

	2019 SEMESTER 1	**2019** SEMESTER 2	**2020** SEMESTER 1	**2020** SEMESTER 2
Cleaning products (l)				
Paper (reams)				

WASTEWATER

	2019 SEMESTER 1	**2019** SEMESTER 2	**2020** SEMESTER 1	**2020** SEMESTER 2
To treatment plant (m3)				
To septic tank (m3)				

WASTE

	2019 SEMESTER 1	**2019** SEMESTER 2	**2020** SEMESTER 1	**2020** SEMESTER 2
Waste to landfill (kg)				
Waste burned (kg)				
Composting organic waste (kg)				
Recycling plastics (units)				
Recycling glass (l)				
Recycling metal (kg)				

PICTURES

Please include some pictures that show the difference between the situation before GREENTU (2019) and after GREENTU (2020).

Pictures can be related to:
- Energy sources
- Water sources
- Waste storage
- Etc.

➤ **Pictures before GREENTU implementation**

➤ **Pictures after GREENTU implementation**