



Hotels4Climate

Fostering GHG reduction in the Cypriot
and Greek hotel industry

Hotels' best practices in Cyprus

Panayiotis Kastanias

Cyprus Employers & Industrialists Federation (OEB)

Study visits in Cyprus, 02-03 November 2020

On behalf of:

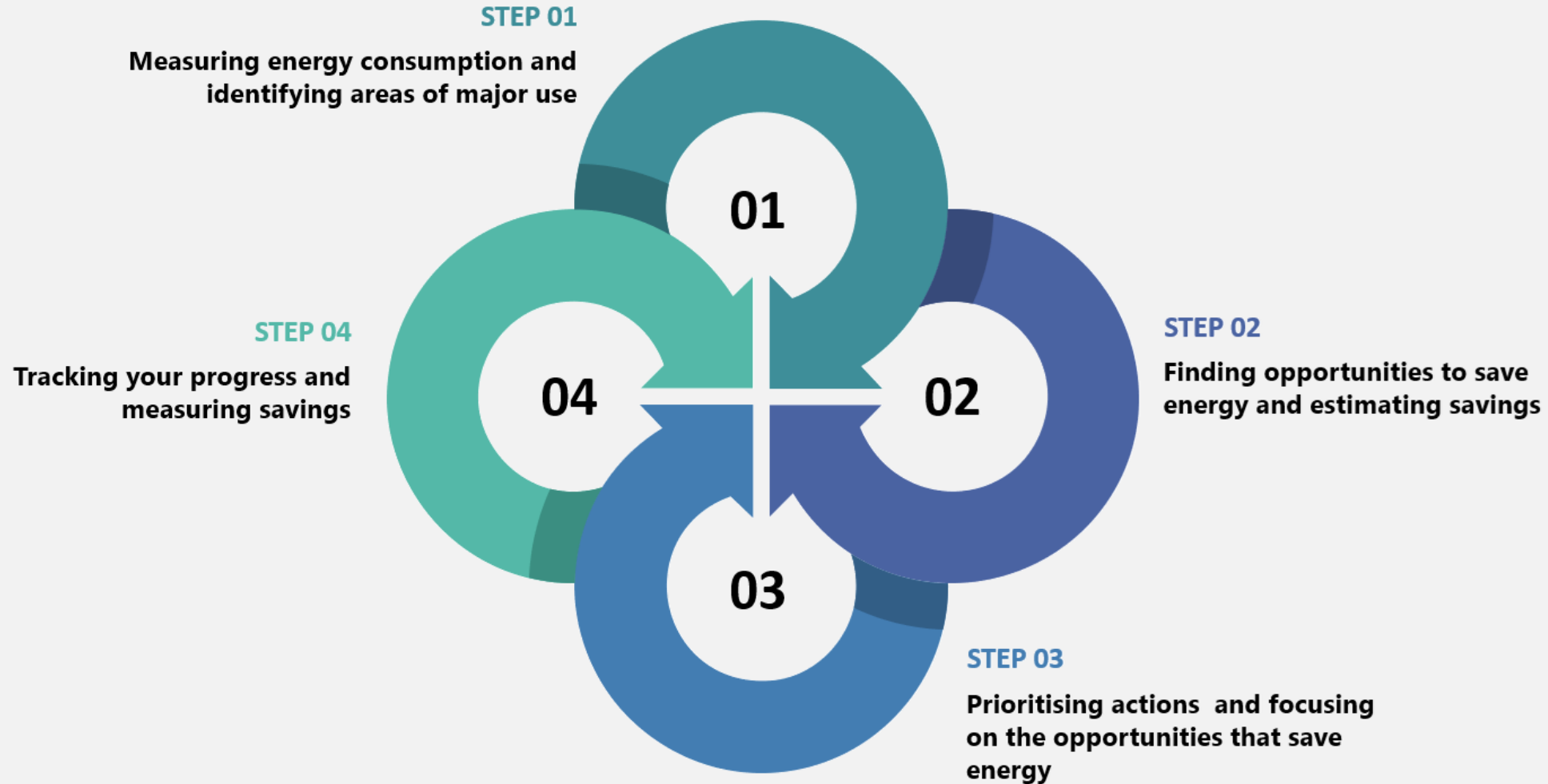


Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety



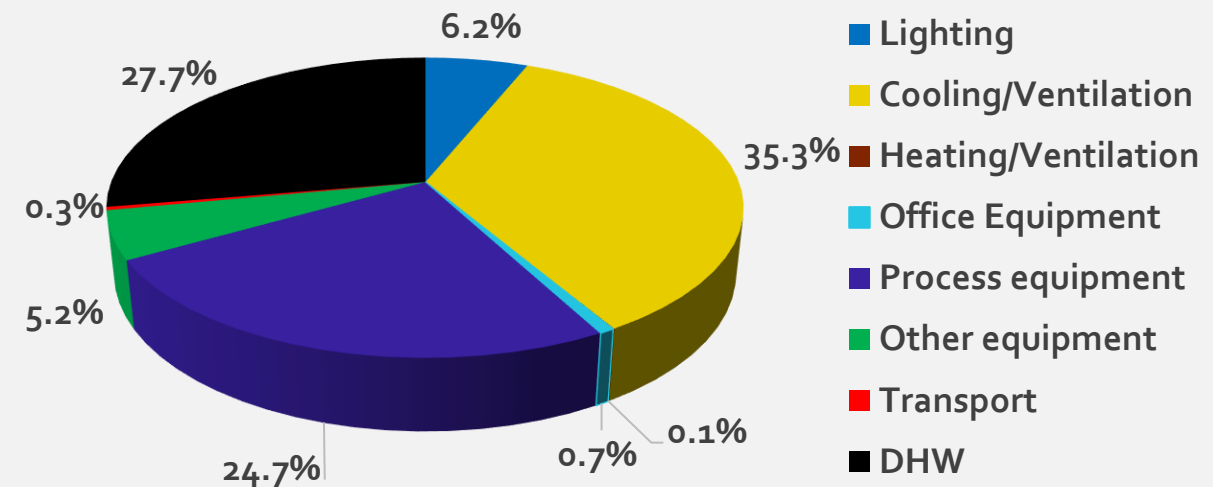
European
Climate Initiative
EUKI

Four steps of the Energy Management Process



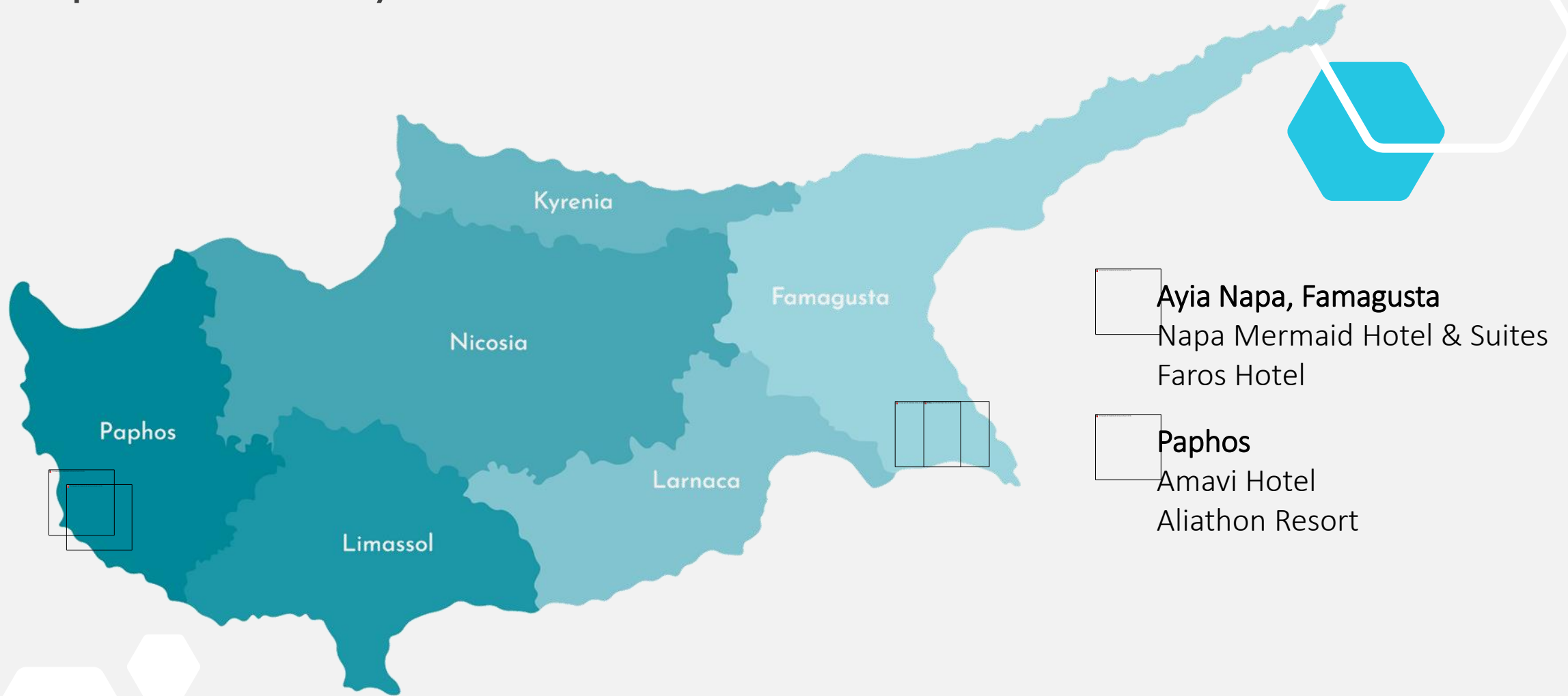
Main energy users in hotels' facilities

- HVAC systems are considered the largest consumers of energy in hotels, accounting for approximately 40% of the total energy consumption. Energy efficiency (SCOP, SEER), indoor temperature set-point, thermal insulation of the building envelope, floor area and weather conditions are among the main factors affecting energy consumption of the HVAC systems.
- DHW is usually the second largest consumer, accounting for up to 25-30% of the total energy consumption.
- Process equipment have also a large percentage of the total energy consumption. The process equipment includes kitchen (Meals' preparation, refrigeration), room, laundry, gym, saloon, spa and pool (sauna, steam bath, pumps) equipment. The process equipment share in the total energy consumption is related to the hotels facilities (hotels star-rating)
- Lighting can vary between 5-15% of the total energy consumption, depending on the lighting technology.



Distribution of energy consumption in a typical hotel (seasonal) in Cyprus

Map of the study visits



Ayia Napa, Famagusta

Napa Mermaid Hotel & Suites
Faros Hotel

Paphos

Amavi Hotel
Aliathon Resort

Napa Mermaid Hotel & Suites

4-star hotel

Located in Ayia Napa, Famagusta District

- Replacement of approximately 90% of the hotel's conventional bulbs & spotlights with LED.
- Installation of autonomous PV system in 2012 with a capacity of 14kW. It is intended for the operation of 3 swimming pool pumps.
- In 2018, 80 solar thermal panels on the hotel roof were replaced by new ones. The hot water produced from these panels covers a significant proportion of the hotel needs.
- Replacement of the diesel fired boiler with a wood pellet boiler of 90% energy efficiency and 180 kW heating capacity.
- Hotel staff and clients participate in Recycling campaigns/ programs every year.
- Thermal insulation was installed in 20% of the hotel rooms.
- Food and garden waste composting.

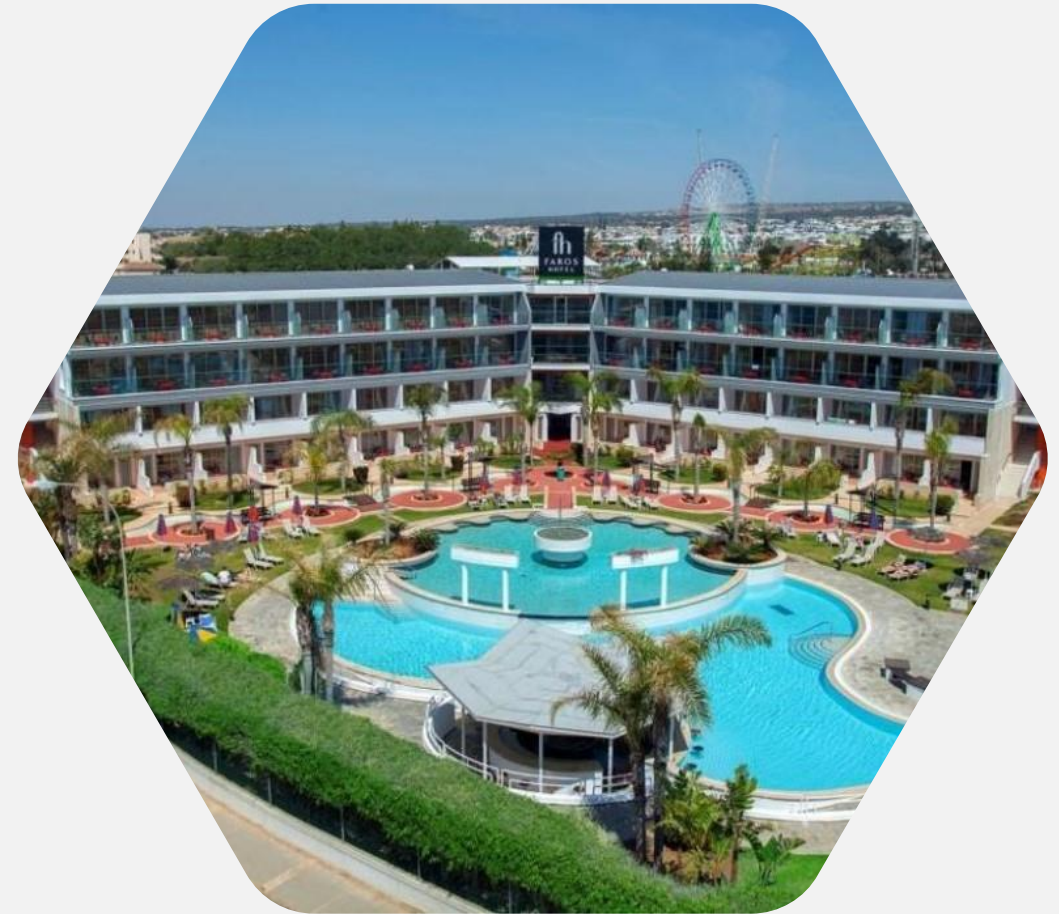


Faros Hotel

4-star hotel

Located in Ayia Napa, Famagusta District

- Replacement of approximately 98% of the hotel's conventional bulbs & spotlights with LED.
- In 2018, 60 solar thermal panels were installed on the hotel roof, covering a significant proportion of the hotel needs for hot water.
- Along with the installation of these panels, the chiller was replaced by a VRF system, which was combined with a hydrofree system. HydroFree, combined with a 3-pipe Set Free Sigma VRF system, offers the possibility to have free hot water production by recovering energy produced by the air conditioning system. The entire hotel needs for hot water are covered by the solar panels and the hydrofree system. The oil-fired boiler is no longer in use.
- During the period 2014-2019 all single glazed thermopanes were replaced with double glazed thermopanes.
- Building Management System (BMS) and KNX system were installed to automatically control the electromechanical equipment and the lighting, respectively.

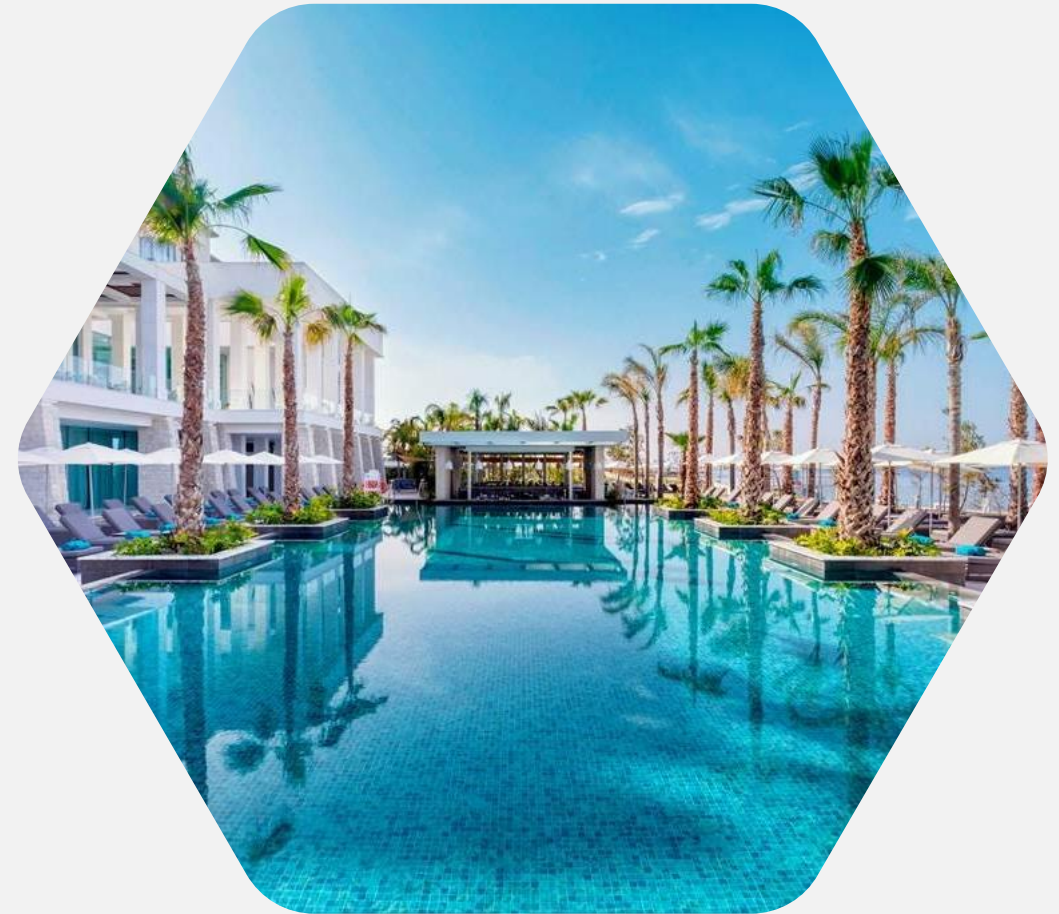


Amavi Hotel

5-star hotel

Located in Yeroskipou, Paphos District

- Amavi hotel is classified as high energy efficiency building with a class A Energy Performance Certificate (EPC).
- Installation of indoor shading that opens and closes automatically to control the room temperature.
- All rooms were equipped with occupancy sensors determining human presence in a room in order to control the room electrical equipment.
- BMS and KNX system were installed to automatically control the electromechanical equipment and the lighting, respectively.
- Installation of a six-pipe simultaneous chiller that covers the hotels needs for space cooling and heating, producing at the same time domestic hot water with no additional energy consumption.



Aliathon Resort

4-star hotel

Located in Yeroskipou, Paphos District

- 361 solar panels were installed on the roof of the hotel, satisfying a significant proportion of the hotel needs (domestic hot water and laundry).
- All rooms were equipped with occupancy sensors determining human presence in a room in order to control the room electrical equipment.
- Thermal insulation was installed in 60% of the hotel envelope.
- Installation of voltage optimization system, which optimises the incoming voltage by a set amount in order to match electrical equipment requirements on-site providing energy consumption savings.
- Replacement of approximately 95% of the hotel's conventional bulbs & spotlights with LED
- 17 kW autonomous PV system was installed in 2011 to cover the consumption of 11 swimming pool pumps.
- 20 kW of PV system was installed in 2016 under the net-metering scheme.
- 100 kW of PV system was installed in 2015 under the self-consumption/net-billing scheme.
- Use of water-saving devices that reduce daily water consumption through flow-restrictors and infrared detectors.
- E-cube in large walk-in refrigerators





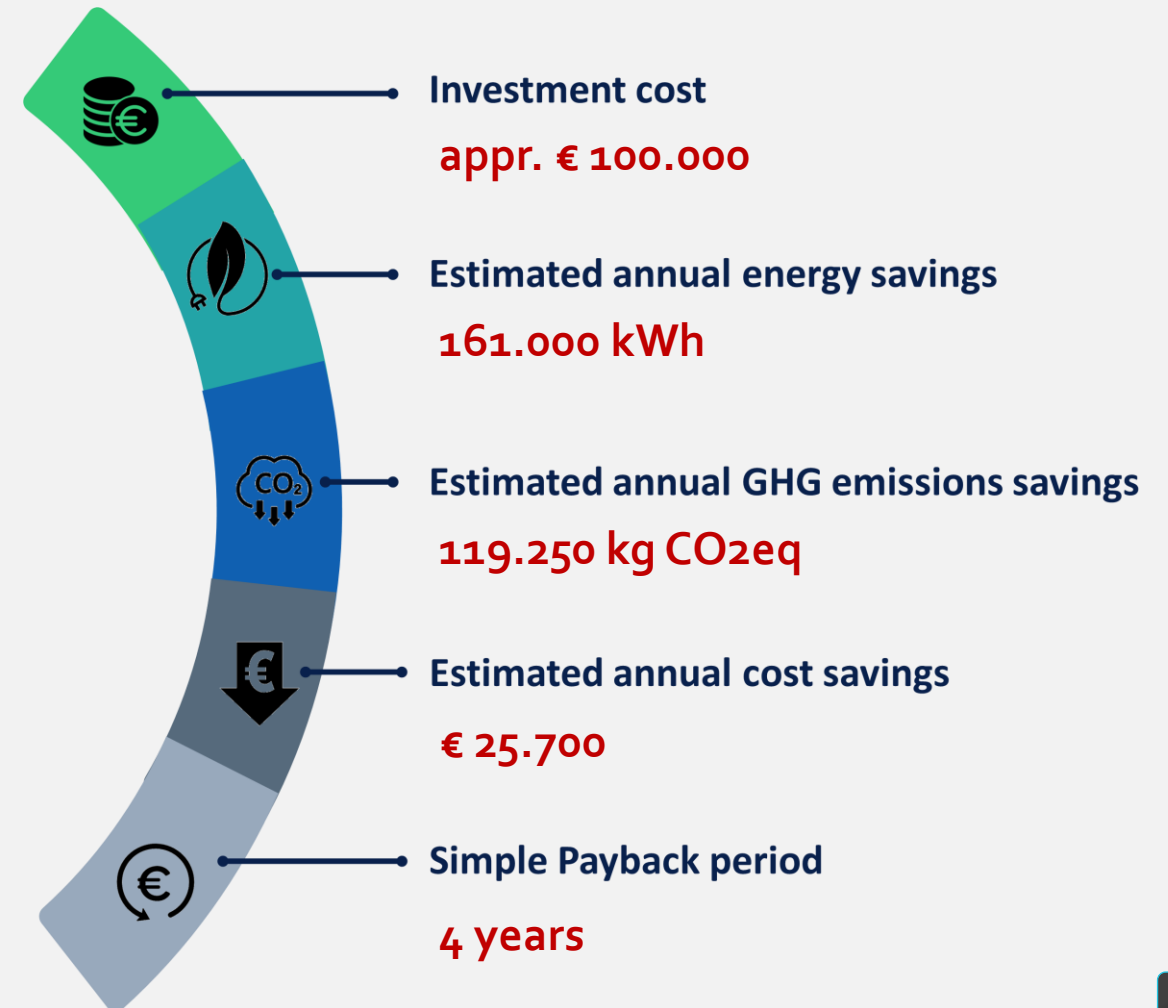
- 1) Solar panels
- 2) PV systems
- 3) E-cube in large walk-in refrigerators
- 4) Chiller 6-pipe
- 5) voltage optimization system
- 6) wood pellet boiler



100 kW Net-Billing PV system

Aliathon Resort

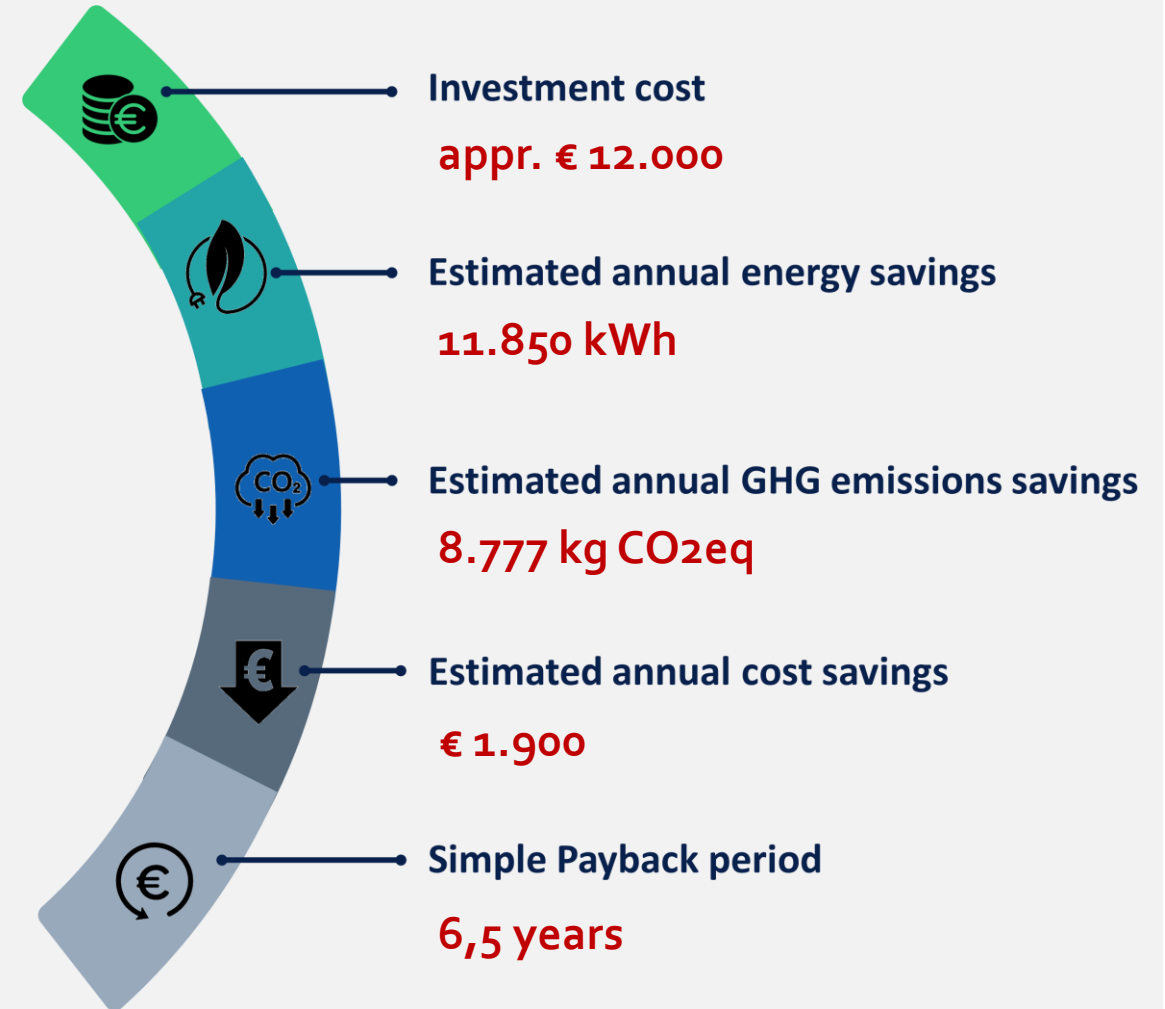
- The net-billing PV system was installed in 2015.
- Net-billing is a scheme related to the installation of PV systems or Biomass Electricity Systems (BES) which are implemented only in the premises of SMEs for the purpose of generating electricity for their own use.
- If the cost of exported electricity (from PV) does not exceed the cost of imported electricity (from the grid), then the consumer will pay the difference for each billing period. Respectively, in the case where the cost of the exported electricity exceeds the cost of imported electricity, the surplus amount will be credited to the next billing period.



7,35 kW Autonomous PV system

Cavo Maris

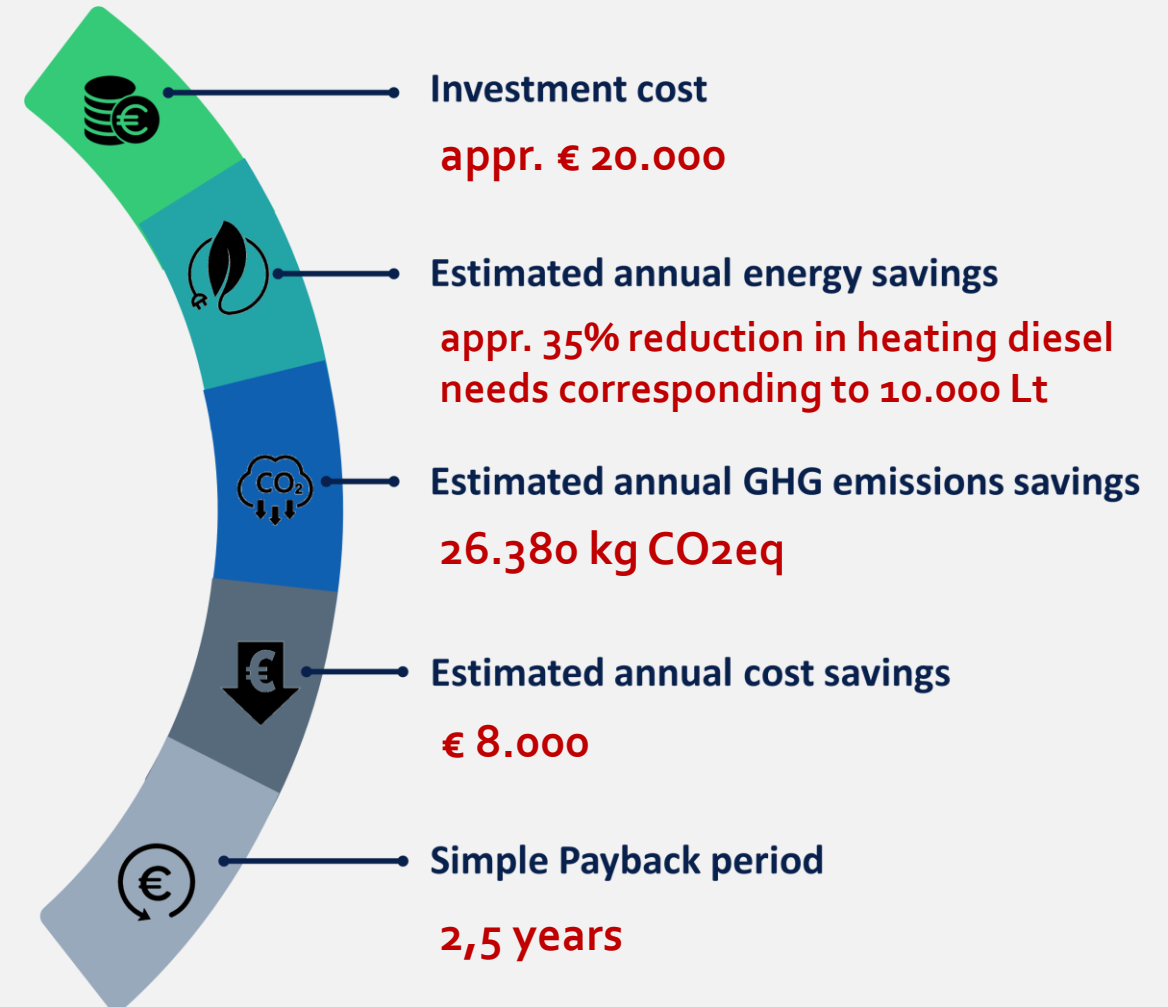
- The autonomous PV system was installed in 2012
- Capacity of 7,35kW
- Covers the consumption of 4 pool pumps.



80 Solar thermal panels for hot water

Napa Mermaid

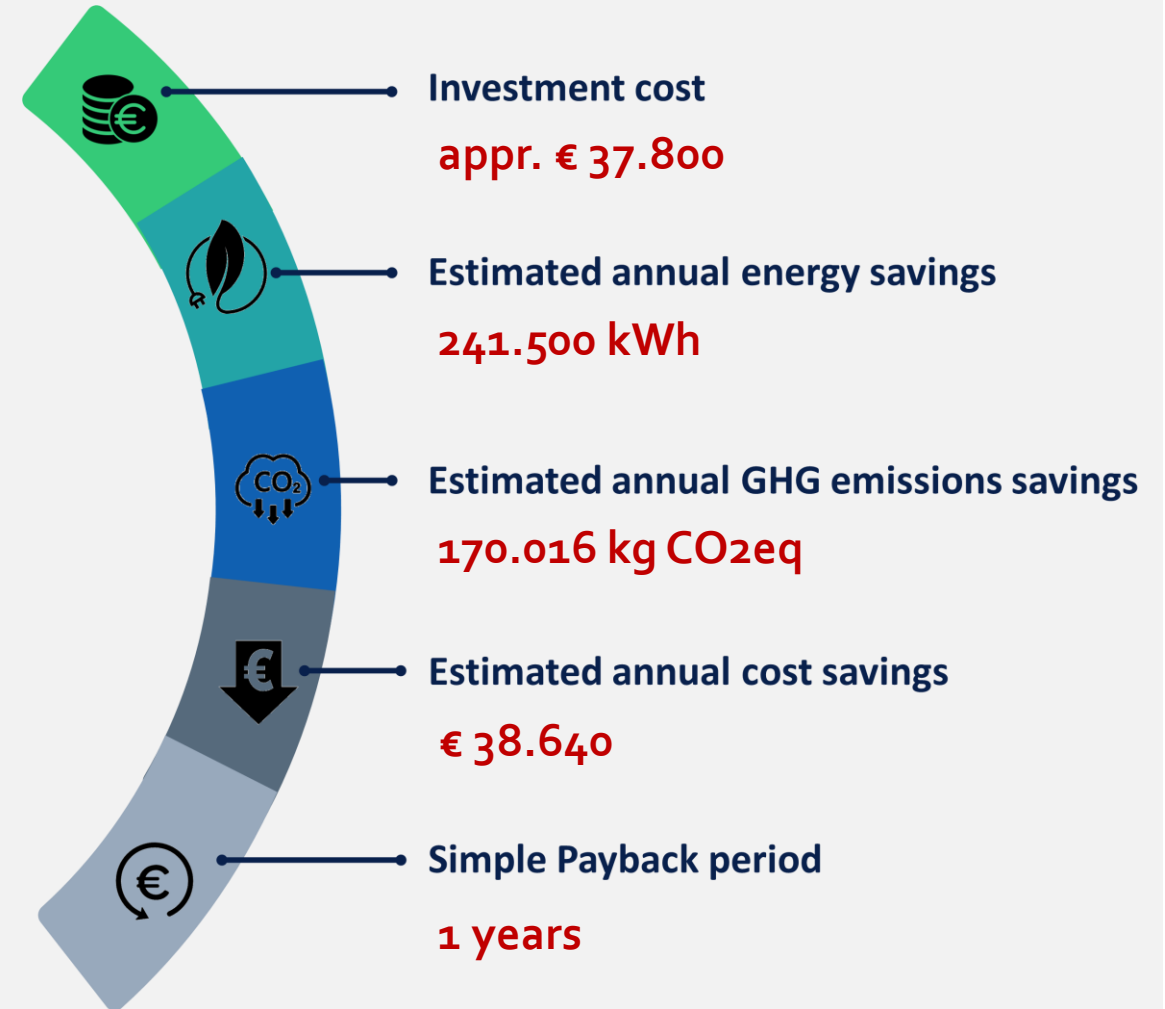
- In 2018, 80 solar thermal panels were installed on the hotel roof.
- The hot water produced from these panels covers a significant proportion of the hotel needs.



Energy Efficient lighting

Rodon Mount Hotel Resort

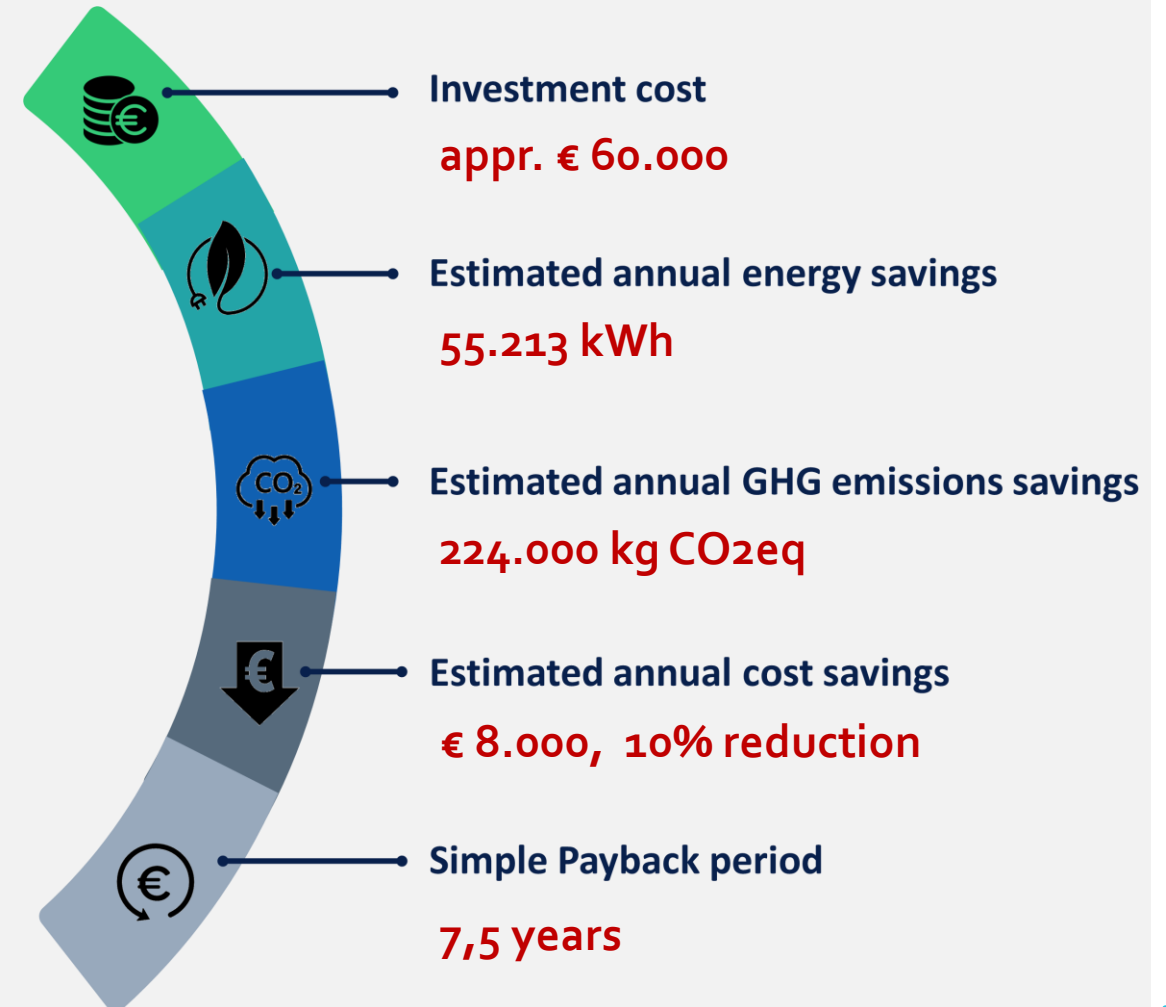
- Replacement of approximately 3.150 conventional bulbs (incandescent, halogen) & spotlights (halogen) with LED, corresponding to 75% of the hotel's total lighting.
- Gradually from 2016 until 2019



Wood pellet boiler

Rodon Mount Hotel Resort

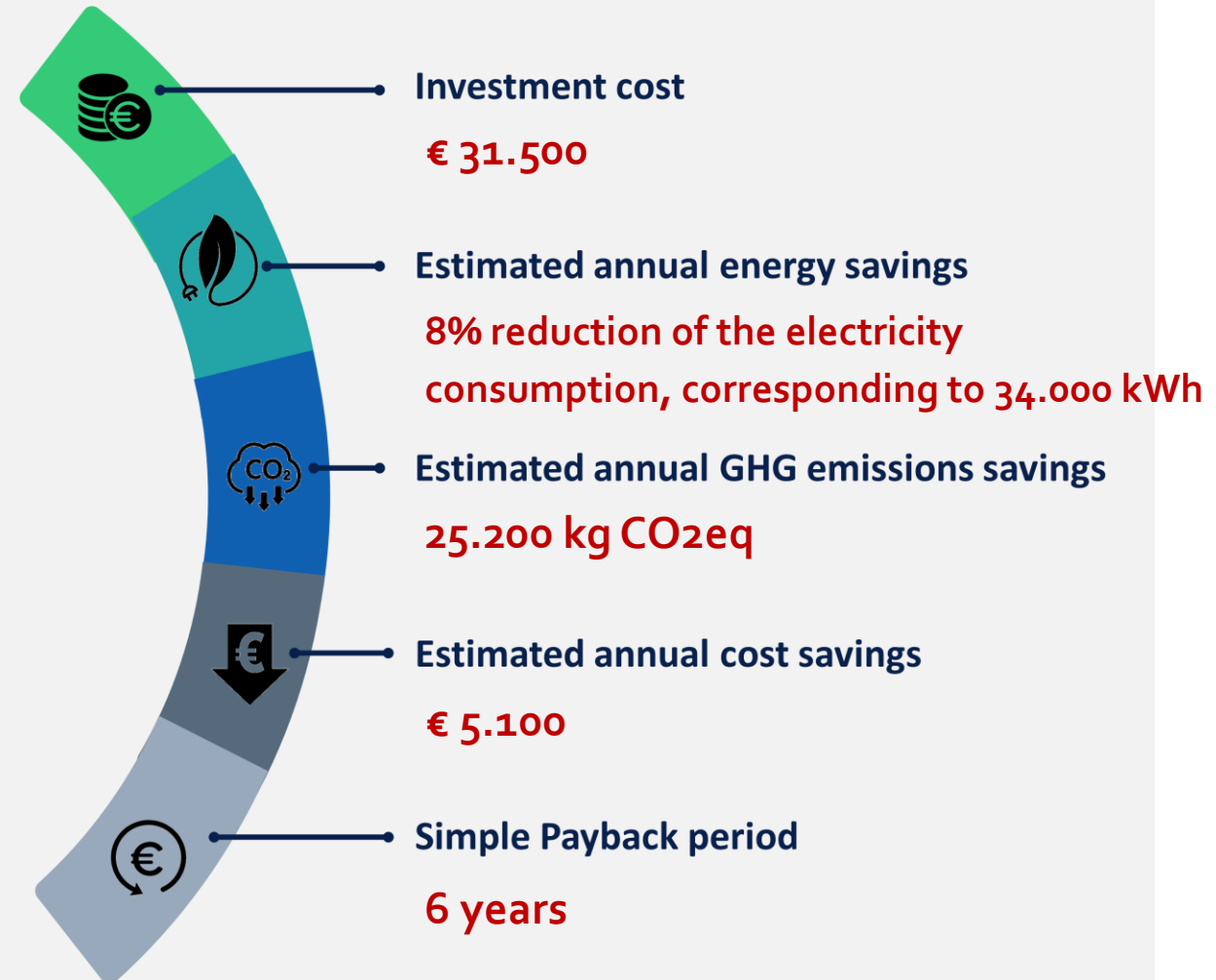
- Replacement of the two gas boilers with a wood pellet boiler of 90% energy efficiency and 1MW total heating capacity.
- Around 237 tonnes of pellets are used annually to cover the needs for hot water and space heating of the hotel.



Voltage optimization system

Aliathon Resort

- This system cleans and conditions the incoming power supply.
- It optimises the incoming voltage by a set amount in order to match electrical equipment requirements on-site providing energy consumption savings.
- There are two voltage optimizers installed at Aliathon Resort. Their nominal capacities are 170kVA and 100 kVA.



Environmental Measures (I)

Aphrodite Hills Resort by Atlantica

- **Recycling:** The hotel collects and recycles paper, PMD, glass, batteries, cooking oil, lamps, toners, electrical and electronic equipment.
- **Replacement of single-use plastic cups, plastic cocktail stirrers and plastic straws with paper and biodegradable ones.**
- **Bus card is provided to all personnel:** The hotel covers the expenses for the bus card of the personnel in an attempt to encourage them to use public transport to get to the hotel.
- **Replacement of guest guidance catalogue with Mobile application:** In 2019, the guidance catalogue that was provided to the hotel guests, has been replaced by a mobile application. That led to hundreds of paper savings.
- **Plastic caps campaign:** The resort collects hundreds of bottle caps on a daily basis, with the aim of giving them to a local charity and turning them into wheelchairs for people with disabilities. Guests, visitors and personnel are encouraged to place the plastic caps in special baskets.
- **Beach and local area cleaning.**



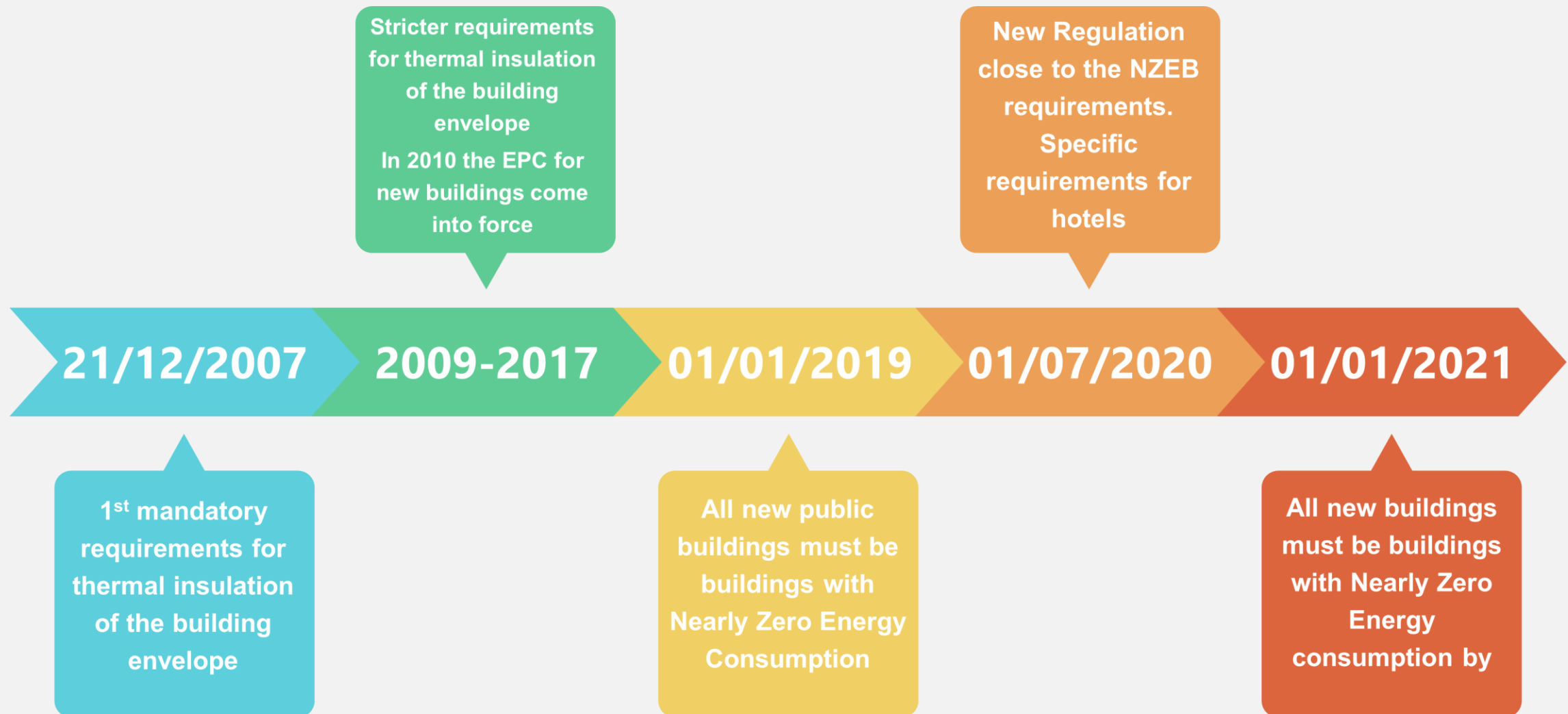
Environmental Measures (II)

Aphrodite Hills Resort by Atlantica

- **Olive tree planting:** A favourite wedding tradition at Aphrodite Hills Hotel is to provide wedding couples an olive tree planting opportunity. The actual planting takes place on the hotel grounds nearby the signature hole of the National Golf Course.
- **Christmas tree decorated with recycled and sustainable materials:** The 2019-2020 Christmas tree was decorated with handmade star ornaments made from recycled paper embedded with wildflower seeds. After Christmas, all the tree ornaments were used to grow a special wildflower garden that will be dedicated to “One Dream, One Wish” foundation for children battling cancer.
- **Participate in World Environment Day:** In 2019, Aphrodite Hills Hotel participated towards this global movement by GoingDark for 1 hour, engaging their guests into various activities to make their stay at the hotel special and memorable, contributing at the same time towards energy saving. The total estimated energy savings by this action account for 1000kWh.



Development of buildings energy performance



Minimum energy performance requirements for hotels

Into force: 01/07/2020

New buildings	
Energy efficiency rating in EPC	A
Maximum primary energy consumption for hotel buildings	220 kWh/m ² /yr
Mean heat transfer coefficient for walls (U- Value)	0,40 W/m ² K
Mean heat transfer coefficient for horizontal structural elements (U- Value)	0,40 W/m ² K
Mean heat transfer coefficient for thermopanes (U- Value)	2,25 W/m ² K
The above U-Values may be exceeded in case the maximum mean U-Value of the total elements of the building envelope is not greater than:	0,65 W/m ² K
Maximum mean shading factor of thermopanes	0,63
Minimum RES share of the total primary energy consumption	9%

Thank you!

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