Our Journey to Net Zero

VeneziaAirport

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Foreword

Aware of its central role in the economic and social development of the area where it is located, Venice Marco Polo Airport has developed its ESG (Environmental, Social and Corporate Governance) strategy aiming for the highest levels of sustainability and innovation, integrating environmental aspects and reduction of carbon dioxide emissions, social aspects and people's experience, and economic aspects and operational efficiency.

We have developed our "Roadmap to Net Zero Carbon Emissions" underlining our commitment and as a further step in our journey which began years ago and which is constantly seeking best environmental performance. It is based on identifying a path to change current processes that will be integrated with an ESG perspective, also in order to obtain third-party certification. The Roadmap will also be an integral part of the Airport Master Plan, and includes the implementation of processes for collecting data on emissions from the various sources so as to constantly measure the reaching of the set objectives by means of specific KPIs (Key Performance Indicators).

The commitments in the Roadmap across the different scopes are specific and strong, and are based on the following fundamental principles:

- *reduction of CO_2 emissions generated by the Airport's activities by using low-consumption energy systems, low-environmental-impact technologies, and by eliminating the use of fossil fuels and non-renewable resources. We are committed to achieving Net Zero Emissions by 2030;*
- *constant and continuous monitoring of all key environmental factors;*
- *minimisation of land occupancy and consumption of resources;*
- *protection of the environment through landscape protection, rehabilitation and enhancement of green areas;*
- *efficient energy management;*
- *collaboration and sharing with the local areas and communities, to implement works of mitigation and compensation.*

A sustainable procurement management process is also being promoted whereby suppliers are selected based on specific requirements for the environmental compatibility of their products and services, their environmental certifications and, above all, their commitment and strategy to reduce CO_2 emissions.
We have therefore defined a carbon management strategy to reduce climate-changing emissions and limit the increase in global warming to 1.5°C by 2050, in line with the Paris Agreement on the reduction of climate-changing gas emissions and adopted by 196 Parties at COP 21 on 12 December 2015.

The ESG acronym has two other dimensions that we certainly do not intend to overlook. These relate to the full accessibility of the Airport and the development of an integrated "zero emissions" intermodal system within the local area, and to transparency and integrity in relations with workers who are an integral part of our strategy.

Monica Scarpa
CEO of SAVE Group

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Introduction

The latest report of the **Intergovernmental Panel on Climate Change (IPCC)** states that climate change is affecting weather and climate extremes as frequent heat waves and heavy rainfalls are set against long periods of drought in all regions. Global warming of 1.5°C and 2°C will be exceeded in the 21st century unless **considerable reductions in greenhouse gas emissions are achieved in the coming decades**.

The effects of climate change have already been felt in many parts of the world. Regarding Italy, recent studies of the **Regional Environmental Protection Agency** show data for the **Veneto Region** are in line with the current phase of the planet's global warming. The Region belongs to the Mediterranean macro-region, considered one of the planet's "hot-spots", as temperatures are increasing at faster rates than the global average. **Flooding, super-high tides/sea levels, coastal erosion, and rapidly-diminishing glaciers in the Dolomites mountains** all indicate that north-eastern Italy is already on a path that is almost irreversible.

Climate change requires urgent action and in a global response, governments, companies and civil society have declared a **climate emergency**.

The aviation sector is currently responsible for about 2-3% of the world's CO_2 emissions, and 4% in Europe, a percentage that could increase significantly as the number of flights increased by 8% between 2014 and 2017, and a growth of 42% from 2017 to 2040 is the most-likely scenario. To address the huge impact of such projected growth, **"Destination 2050 - A Route to Net-Zero European Aviation"** was unveiled in 2021 as a plan aiming to fully decarbonise the European civil aviation sector by 2050.

Not only: already in 2009, **ACI EUROPE launched Airport Carbon Accreditation (ACA)**, allowing the assessment and recognition of participating airports' efforts **to manage and reduce their CO_2 emissions**.

In 2019, the European Commission announced the **'European Green Deal'** to make Europe a climate-neutral continent by 2050. In the same year, the **Airports Council International (ACI) committed to reaching Net Zero Carbon Emissions by 2050**.

In June 2021, the **EU Climate Law** was passed by the European Council and Parliament, and in July the **'FIT FOR 55'** legislative package was issued, setting the **binding target of a 55% reduction of GHG emissions by 2030**.

Climate action is our priority too. We have committed to Net Zero and this has led us to develop this **roadmap**.
The roadmap follows the guidance by the IPCC on limiting global warming to 1.5°C to pre-industrial levels and, through its commitments, contributes to the ACI pledge of Net Zero and the European Green deal. The maximum warming the environment can sustain without undergoing changes perceived to be unsafe is deemed to be 1.5°C.

Our Carbon Footprint and achievements to date

Reducing our impact on the environment is certainly not an easy, obstacle-free path. It is first essential to know what one's own **starting point** is, in order **to correctly identify a plan of action for reaching the set objective/s**.

Defining our carbon footprint follows the principles of the GHG Protocol, **by identifying the different sources of emissions**, which are conventionally grouped into **3 categories**:

SCOPE 1 direct GHG emissions from sources that are owned or controlled by us;

SCOPE 2 indirect GHG emissions from the off-site generation of electricity (and heating or cooling) purchased by us;

SCOPE 3 all other indirect GHG emissions from airport-related activities from sources not owned or controlled by us, but for which the airport can influence and/or guide.

SCOPE 1

1. Vehicles/Ground support equipment belonging to the Airport
2. On–site power generation
3. Boilers, furnaces
4. De-icing substances

SCOPE 2

5. Off-site electricity generation

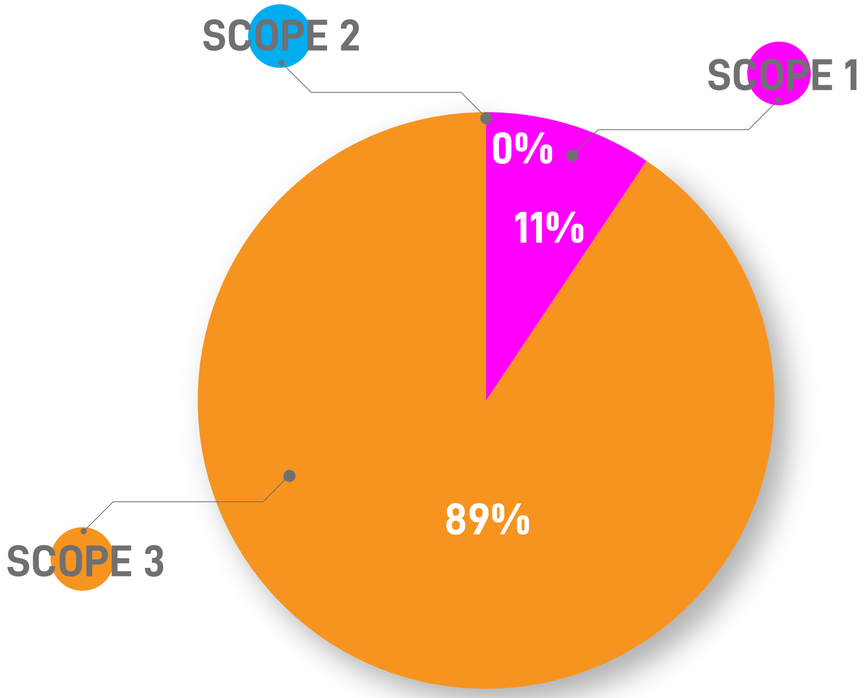
SCOPE 3

6. LTO cycle (landing and take-off)
7. Auxiliary Power Unit
8. 3rd party vehicles/Ground support
9. Passenger travel to the airport
10. Staff commute
11. Staff business travel

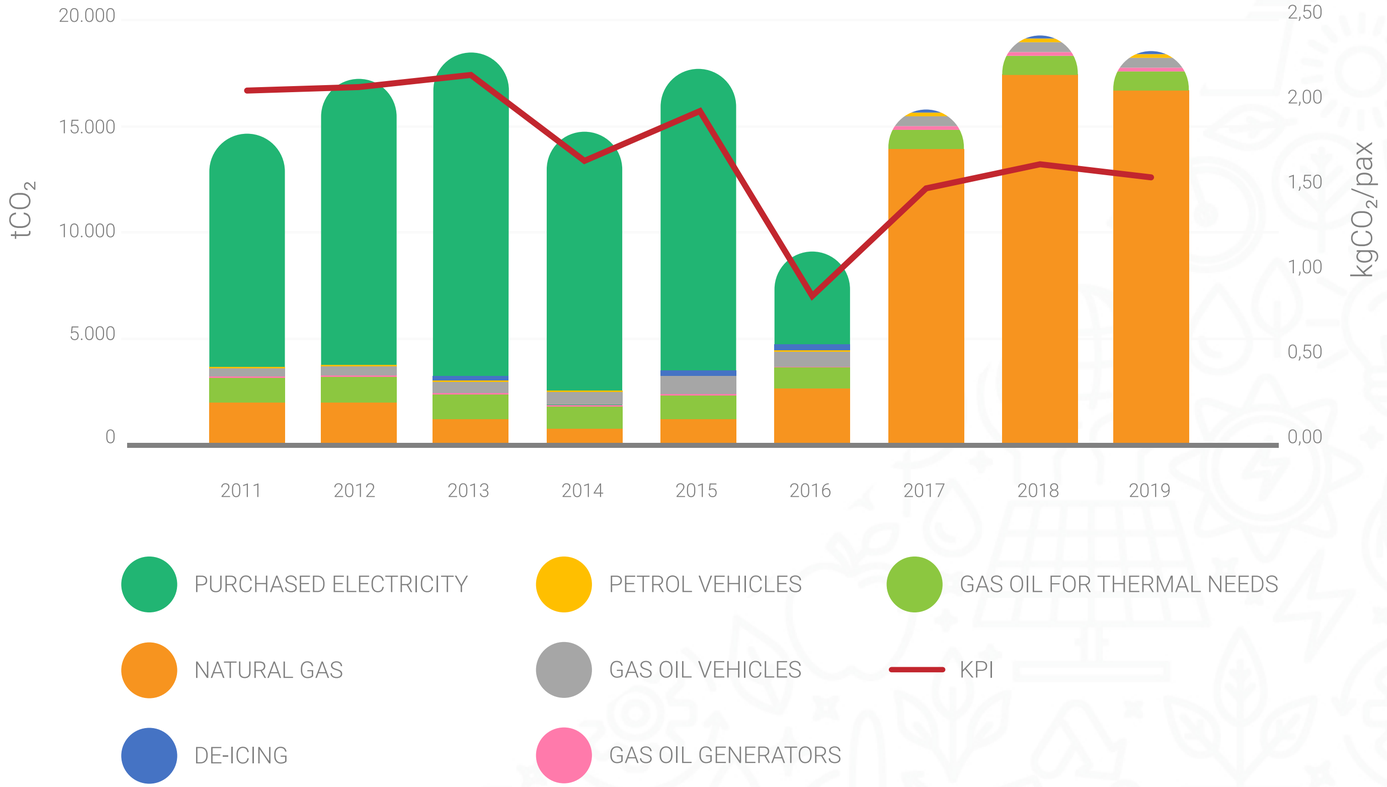
In 2019, our emissions from our **direct control (Scopes 1 and 2)** accounted for about 10% of the total amount.

Our journey to reduce carbon emissions started 10 years ago. In the last decade, while our airport has grown both in terms of infrastructure and traffic, our reference KPI (kg CO_2/passenger) has actually decreased.

EMISSIONS BY SCOPE



EMISSIONS TREND



Our Path to Net Zero

Our Net Zero Roadmap gives a view of our journey to Net Zero by 2030.

2014

ACA LEVEL 2

2015

ACA LEVEL 3+

2016

"LEED GOLD CERTIFICATION" OF AIRPORT FIRE FIGHTERS BUILDING

PURCHASE OF ELECTRICITY FROM RENEWABLE SOURCES

2017

JOURNEY STARTED TO REPLACE SERVICE VEHICLES WITH ELECTRIC-POWERED ONES

"LEED GOLD CERTIFICATION" OF MOVING WALKWAY AND DOCK ZONE

COMMISSIONING OF TRIGENERATION PLANT

2019

COMMITMENT TO NET ZERO

2022

ACA LEVEL 4+

2026

INSTALLATION OF AGRIVOLTAIC SYSTEM (26 MWp INSTALLED)

2028

UPSCALING OF THE AGRIVOLTAIC SYSTEM WITH THE ADDITION OF ANOTHER 24 MWp

DECOMMISSIONING OF THE CURRENT TRIGENERATION OPERATING SYSTEM

COMMISSIONING OF THE NEW "GREEN" PLANT/SYSTEM LAYOUT

2030

NET ZERO

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THE THREE MAIN FOCUS AREAS OF OUR ROADMAP

01

Managing **decarbonisation** due to our increasing **energy demand**

02

Energy demands of our **buildings**

03

Collaborations with **stakeholders**

01

Managing **decarbonisation** due to our increasing **energy demand**

The **airport development plan** provides for the construction of new facilities and the expansion of a series of services that are already in operation, such as Pre Conditioned Air (PCA) systems for aircrafts and recharging stations for electric vehicles which, by their very nature, are energy-intensive. It is important to implement efficient energy management.

To achieve our goal, we have therefore explored the **technologies of the future** and enhanced and **optimised those already established**, identifying the implications, possible action plans, decarbonisation potential, and implementation costs.

The goal is to develop an energy system that replaces the previous one (including trigeneration plant) by 2028 that will be based on 100% renewable energy.

While maintaining the goal of decarbonisation, the **two alternative energy systems have been evaluated**:

- grow in a manner consistent with airport growth and progressive **technological development**;
- meet **energy requirements up to 2037**, the horizon year of the future Masterplan;
- bring forward **the goal of achieving Net Zero Carbon Emissions** (for those sources under Scopes 1 and 2) **to 2030**.

The two systems are:

- A **mixed system** that maintains the current cogeneration logic (simultaneous production of electricity and thermal cooling energy) by converting the incoming energy vector from natural gas to hydrogen. The hydrogen will be partly self-produced through electrolysis from photovoltaic systems, and the remainder from the national grid. The mixed system also includes thermal production (using high-enthalpy geothermal energy) and heating and cooling through heat pumps.

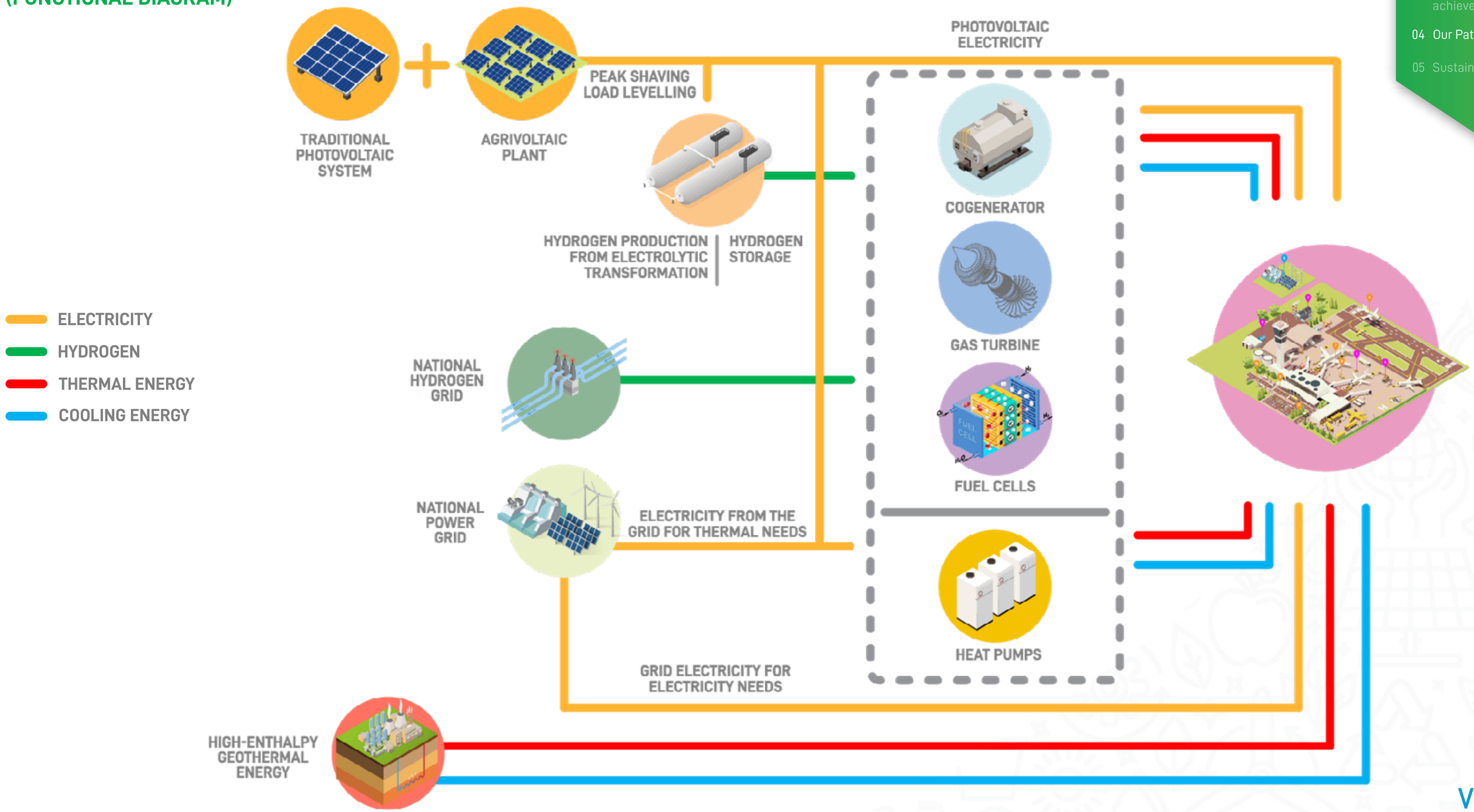
- A **full-electric system** that relies primarily on electricity supply from the external grid and partly on on-site energy production from the various photovoltaic systems. The supply of electricity from the external grid will be covered by "Guarantees of Origin" certifying that the electricity comes from a renewable source. In addition to the electricity requirements, the electricity supply will meet the needs for heating and cooling needs by using heat pumps.

A **hydronic loop is planned in both systems**. This loop is a balancing circuit for simultaneous thermal and cooling loads, with the aim of efficiency and rational energy use.

The **technologies involved in the first scenario are highly innovative** and still at the research stage.

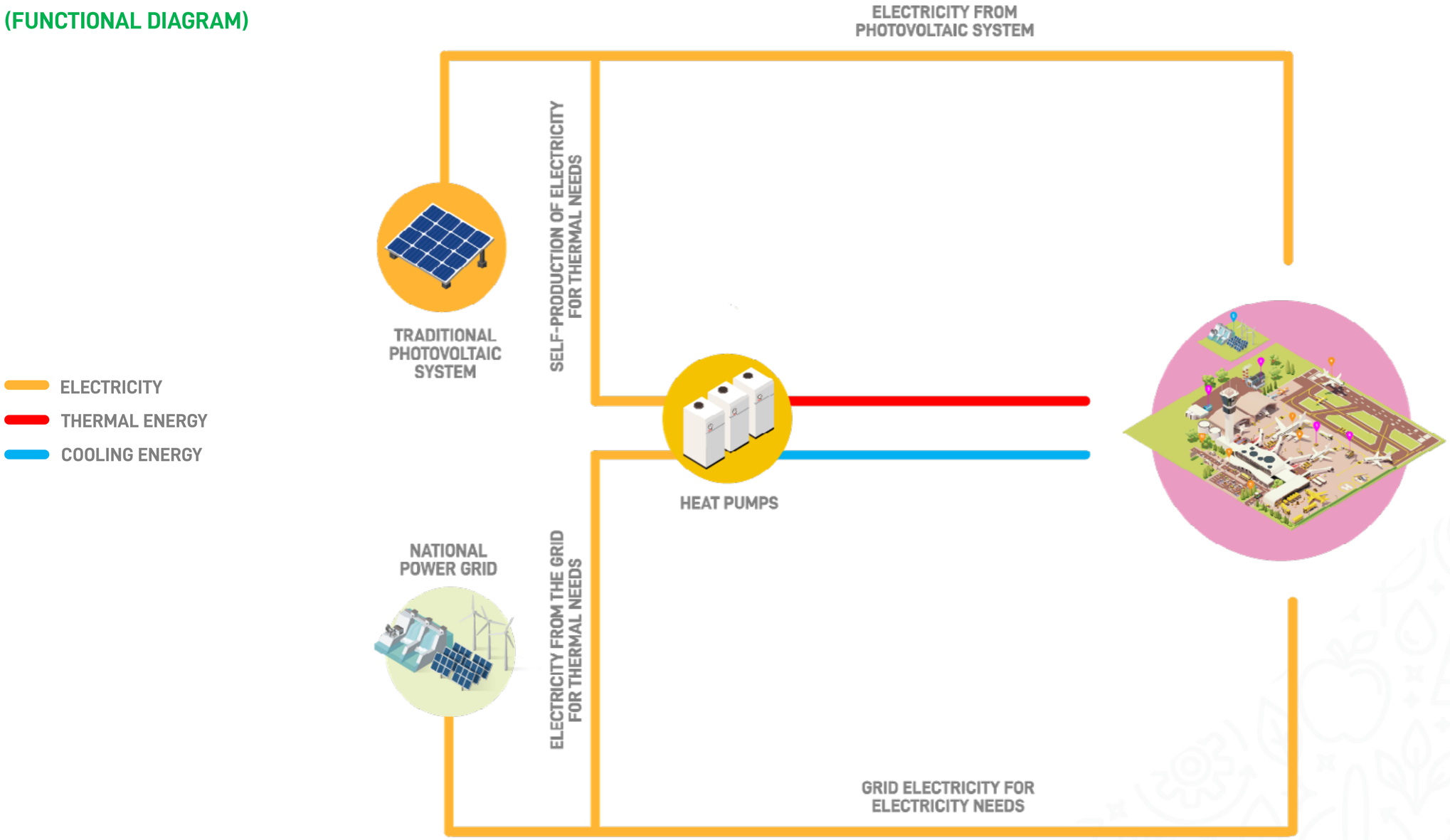
1ST SCENARIO: MIXED SYSTEM

(FUNCTIONAL DIAGRAM)



2ND SCENARIO: FULL-ELECTRIC SYSTEM

(FUNCTIONAL DIAGRAM)



AGRIVOLTAIC ENERGY

The **spatial pattern of modules used in agrivoltaic systems makes it possible to optimise the land on which the photovoltaic system stands**, whether for agricultural or energy purposes. The design is such that the distances between the system's infrastructures, from the ground, and their density make it suitable to cultivate and maintain the land.

This brings a number of **benefits**:

- **reduction** in land-use requirements;
- increase in crop yield, as the shade brought by the panels **reduces** soil **temperatures** and water requirements;
- enhanced **protection** from **increases** in daytime **temperatures** and sudden drops in night-time ones;
- **increase** in relative humidity which, in addition to **plant growth**, affects the reduction of module temperature thus benefiting their efficiency.

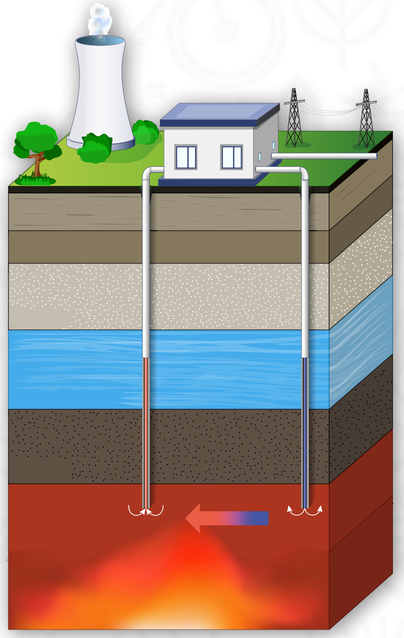
HIGH ENTHALPY GEOTHERMAL ENERGY

Geothermal energy is **energy in the earth's crust in the form of heat that manifests itself as a progressive increase in temperature as depth increases**.

Thermal energy accumulated underground is then made available through water or steam, whether natural or injected, which flows from the geothermal reservoir to the surface spontaneously (geysers, blow-holes, hot springs) or is delivered artificially through mechanical drilling (geothermal well).

The **benefits** include:

- high **resilience** to climate change;
- operation **365 days** a year regardless of outside temperatures;
- **reduced** landscape and noise **impact**.



HYDROGEN

There are several techniques for producing hydrogen but only **“green hydrogen”** is the one that really allows us to fight global warming. This is achieved by using ‘electrolysers’, machines that take **electricity produced from renewable sources and extract hydrogen from water through electrolysis**.

Benefits:

- **100% sustainable** as there is no emission of polluting gases either during combustion or production;

- being easy to store, it allows **flexibility** of use over time;

- **versatility**, as it can be transformed into electricity or synthetic gas and used in various fields ranging from industry to transport.

However, at the moment there are some **negative aspects** that require responsible management:

- **high costs**;

- higher **energy consumption** as producing hydrogen requires more energy than other fuels;

- **safety issues**: hydrogen is a highly volatile and flammable substance so extensive safety measures are required to prevent leakage and explosions. This issue is therefore very sensitive, especially in the airport sector.

02

Energy demands of our **buildings**

In addition to the **design and implementation of environment-friendly plant and systems**, existing buildings must also **adopt solutions that require low energy consumption**, thereby reducing waste and exploiting local resources.

To address the energy demands of our buildings, we have set these **key actions**:

- installation of a **photovoltaic system** above the terminal areas and, in general, on new buildings, while avoiding glare effects towards the landing and take-off routes;

- **resilient design** of the energy systems and spaces provided for their installation that allows the effects of climate change to be taken into account as well as possible future development scenarios of the airport and the surrounding area;

- new buildings designed to meet **LEED** (Leadership in Energy and Environmental Design) Gold standards, a voluntary rating system that defines buildings' sustainability.

03

Collaboration with **stakeholders**

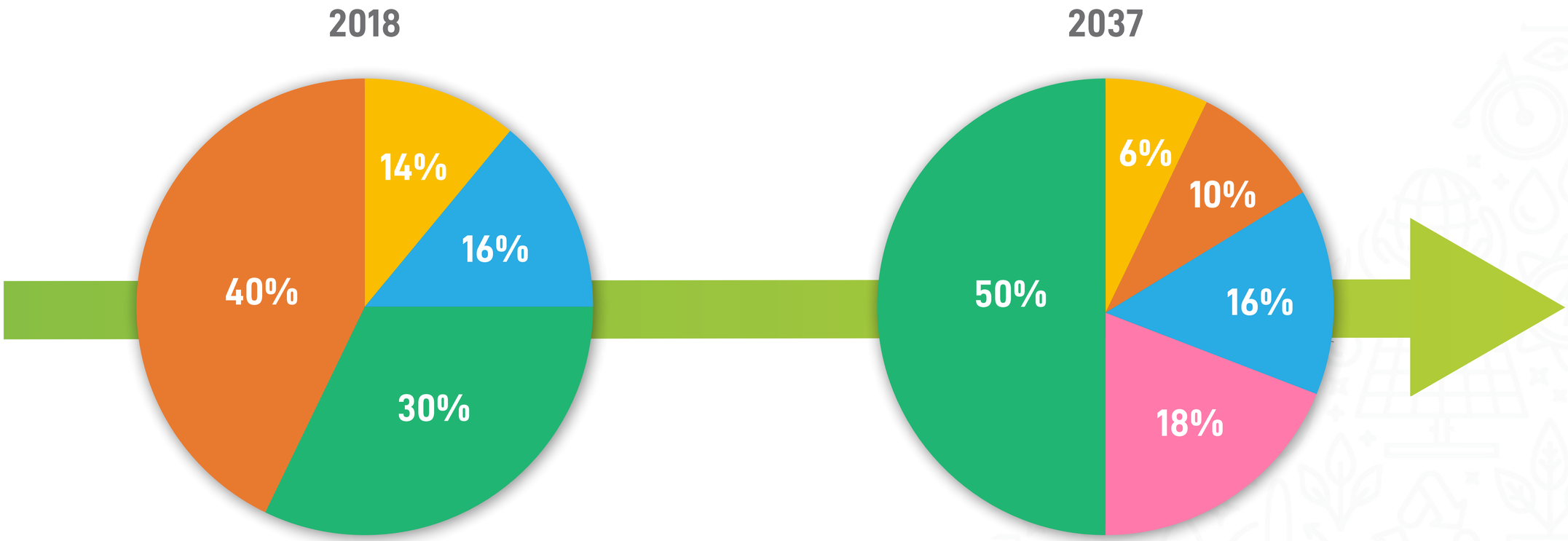
Although the goal of Venice Airport is to reach Net Zero Carbon Emissions for the activities we manage directly, it is also important to **create synergies with our stakeholders that will help counter the effects of climate change**.
Climate-changing emissions caused by transport are a major issue, so we have produced a **'low-carbon mobility plan'** that advocates improvements to the public transport network, and provides for the decarbonisation of vehicles and public transport.

Key actions:

- incentives to use **electric vehicles** by creating a suitable charging infrastructure;
- greater development of **car sharing**;
- opening of the **new Airport railway station in 2025**: a project that will be delivered in time for the '2026 Olympic Winter Games Milano-Cortina' and will enhance and enrich the intermodal and sustainable transport network of Venice and Veneto;
- close **collaboration with the local public transport** management companies to enhance all transport modes (road and water);
- implementation of a **vertiport** to develop mobility by using drones;
- **deployment of self-driving cars** by 2035.

All of the above will bring **reductions in emissions** while encouraging users to change their habits.

- PUBLIC TRANSPORT
- PRIVATE CAR
- PRIVATE TRANSPORT (TAXI, SHUTTLES, ETC.)
- WATER TRANSPORT
- NEW FORMS OF TRANSPORT



To support sustainable aviation's decarbonisation roadmap to reduce emissions during ground operations, several solutions will be adopted:

- extension of the installation of **Pre-Conditioned Air (PCA)** to all aircraft stands (not only in the finger stands). PCA units supply aircraft with pre-conditioned air and electricity on their parking positions so they can avoid having to run their auxiliary power units (APUs);

- **e-taxiing**: Implementing **electric-taxiing concepts** based on an electric motor installed in the landing gear, to avoid using jet engines for taxiing;

- **taxibots**: implementing **semi-robotic tow vehicles** fully controlled by the aircraft pilots to tow the aircraft from the terminal to the runway and back without using jet engines.

Sustainable Development Goals

The 2030 Agenda for **Sustainable Development** adopted by all **United Nations Member States** in 2015 represents an urgent call to action for all developing and developed countries, by adopting an **action plan focused on 17 Sustainable Development Goals (SDGs).**

At SAVE, for years we have been disclosing our sustainability performance and our future performance targets, which comply with the **Global Reporting Initiative** standards. Our Net Zero Emissions roadmap, focused on carbon management and related emission reduction, contributes to achieving the following Sustainable Development Goals regarding the fight against climate change:

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