

Net zero Strategies and roadmap for achieving CO2 emissions at water / waste companies

A Greek case study that could serve as Generic example



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In relation to the European and local goals, WATER / WASTE WATER COMPANY OF ATHENS has adopted a zero carbon footprint strategy

EU - Green Deal

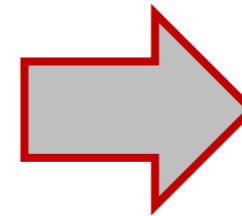
EU has set targets on clean energy, minimizing energy consumption and reducing carbon dioxide (CO2) emissions.

- > **Energy target for 2030:** 27%-30% improvement in energy efficiency, reduction of greenhouse gas emissions by 40% compared to those of the reference year 1990, at least 27% contribution to energy used from renewable energy sources, 15% interconnection target electric power
- > **Energy target for 2050: Reduction of greenhouse gas emissions by 80%-95% compared to the reference year 1990**

NECP

The NECP National Plan for Energy and Climate Change

- > The reduction of emissions to over 56% compared to 2005 emissions managing to even exceed the central European targets
- > The greenhouse gas emission reduction targets are also necessary to enable the transition to a climate-neutral economy by 2050
- > The adoption of commitments that Greece has as an EU Member State.



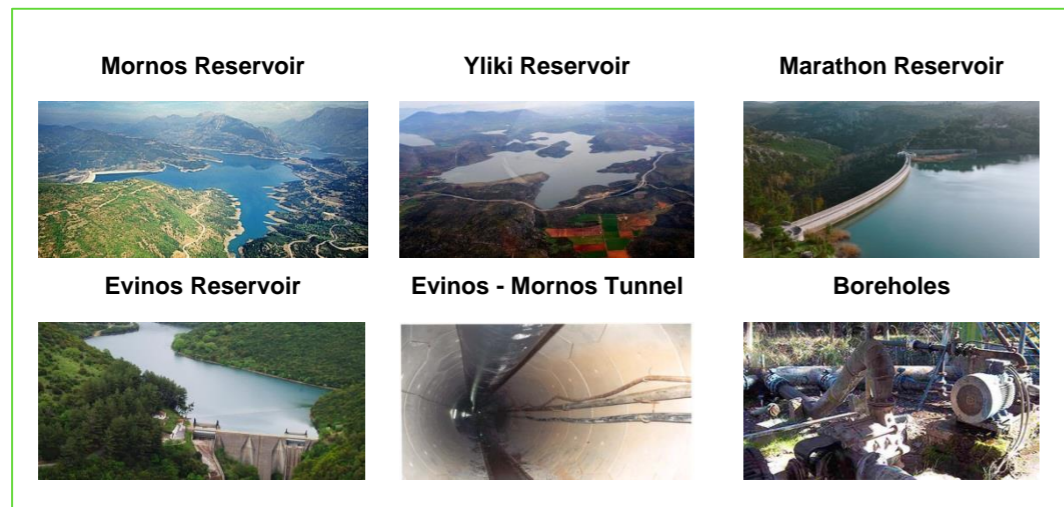
“Green” Strategy OF ATHENS WATER COMPANY

EYDAP's "Green" Strategy is based on the achievement of balanced and Sustainable Development guided by the sustainability of the environment and nature by achieving:

- > Continuous reduction of emissions through appropriate interventions (environmental benefits from the implementation of projects, reduction of the energy footprint, sanitation of the underground aquifer, upgrading of the water system)
- > Draw up a plan of actions aligned to NECP concerning investments with energy-saving objectives, rational use of energy, electrification, self-production, change of energy-consuming equipment.

E.Y.D.A.P. S.A. water cycle management depends on large greenhouse gas emissions (GHG) facilities

SIX WATER SUPPLY RESOURCES - AQUEDUCTS



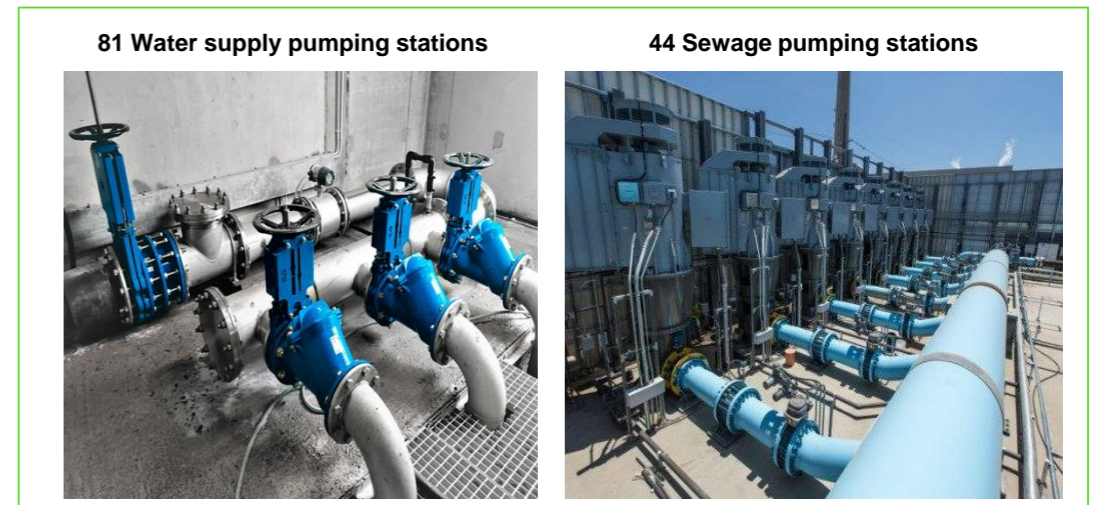
FOUR WATER TREATMENT PLANTS



FOUR WASTEWATER TREATMENT PLANTS



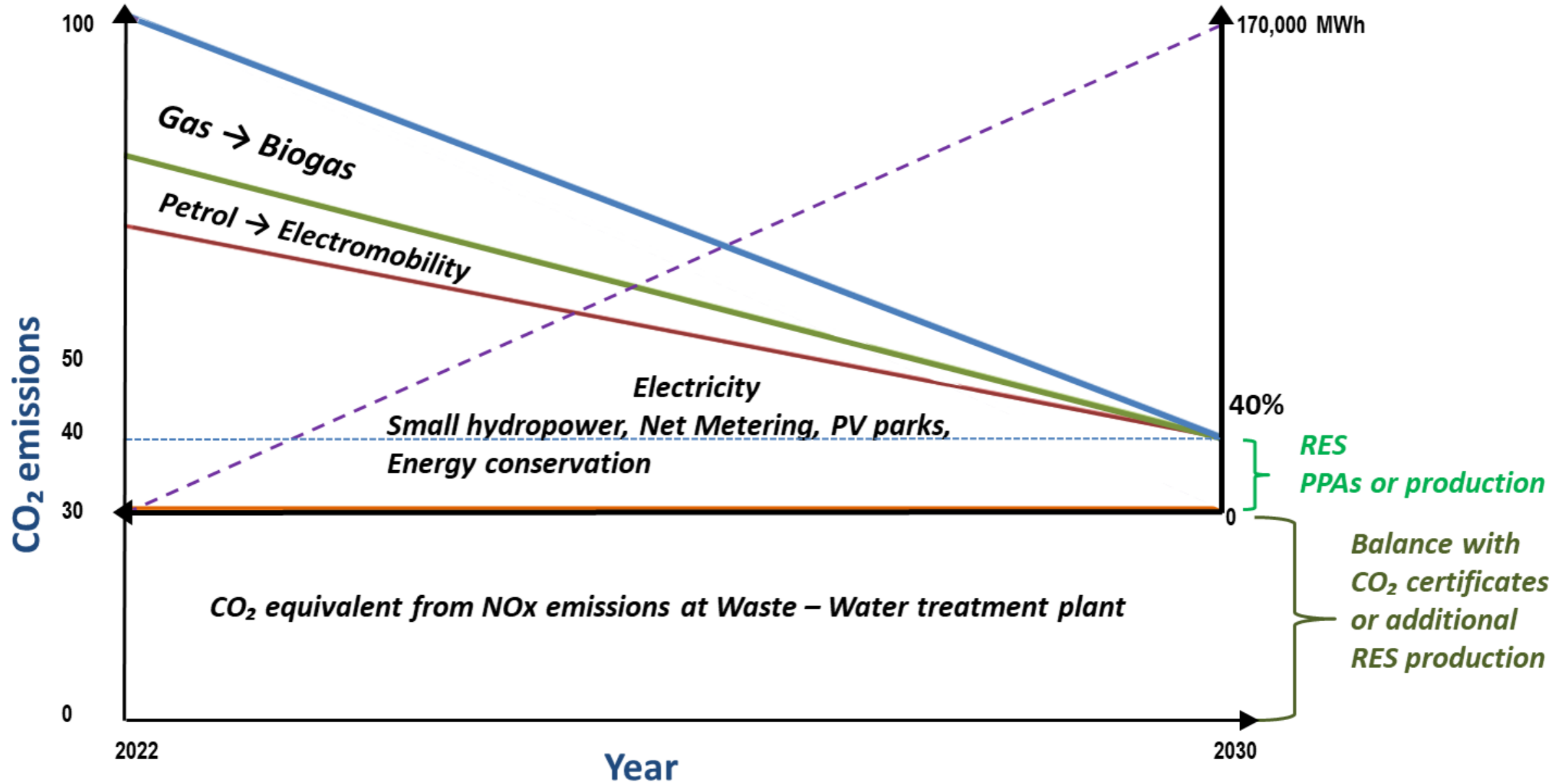
WATER SUPPLY & SEWAGE NETWORK



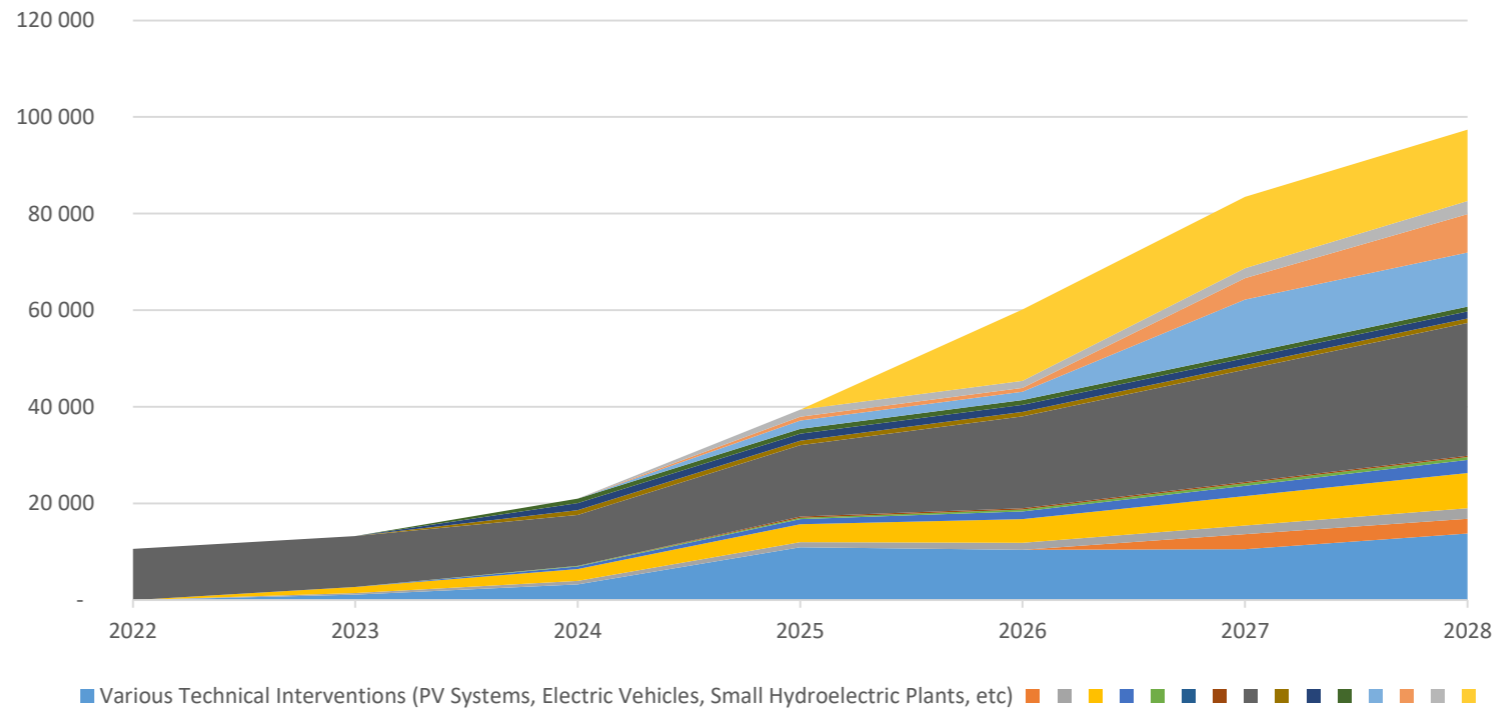
The largest company that manages the water cycle in Greece is at the forefront of efforts for the environment

- ▶ **Water supply network:** The distribution network is approximately **12,700 km** long and consists of the secondary and tertiary networks, which have a total length of approximately **9,000 km** and **3,700 km** respectively, and serves approximately **4,300,000** consumers. EYDAP, in addition to the areas it irrigates with retail sale, also irrigates areas by granting water to Municipalities with wholesale sale. **81** pumping stations work for the supply of sites, while **55** city tanks are in scattered high elevation places of the city and have total capacity **885,000 m³**.
- ▶ **Sewage network:** All of the sewage pumping stations (**44 in number**) have a power of **11 MW**. Their operation is controlled automatically through a modern Remote Control System that monitors all the main functions of the network on a 24-hour basis.
- ▶ **Psytalia Wastewater Treatment Plant:** Is the main wastewater treatment plant in the greater Athens area, with an incoming wastewater supply of approximately **720,000 m³/d**. The equivalent planning population amounts to **3,800,000** equivalent inhabitants (average) and **5,600,000** equivalent inhabitants (peak).
- ▶ **Source streams of greenhouse gas emissions (GHG):** GHG emission source streams from its facilities and operations are oil, natural gas, wastewater, electricity market, polyelectrolyte and organic material and wastewater nitrogen.
- ▶ **Large GHG contribution:** The activities with the largest contribution to GHG are the biological processes that take place in the Wastewater Treatment Plants and the electricity consumption of the facilities. Less important sources of emission are the disposal of wastewater treatment effluents in the aquatic ecosystem, the use of chemical substances, the diesel vehicles and the burning of natural gas.
- ▶ **Significant reduction in CO₂:** In 2020, EYDAP achieved a reduction in CO₂ emissions from the Psytaleia Wastewater Treatment Plant of **8.86%** compared to the corresponding value of 2019, while the corresponding reduction percentage of CO₂ emissions from the 2018 value amounts to **29.05%**.

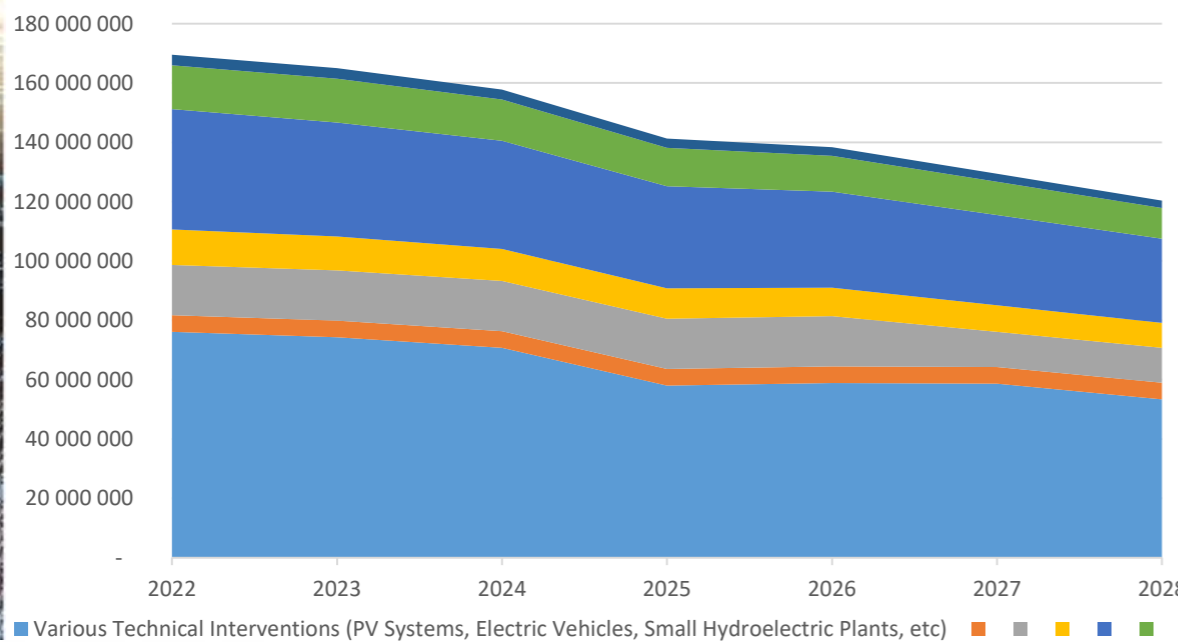
A generic CO₂ footprint reduction plan for a water – waste water company



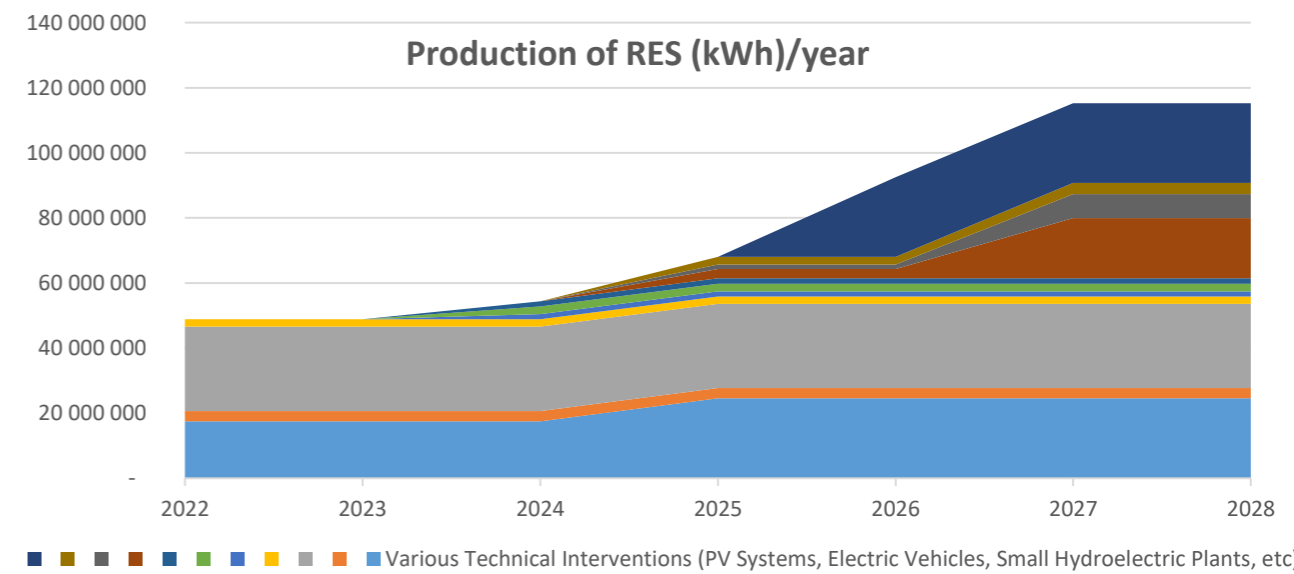
Reduction of CO₂ Emissions (tn/year)



Energy Conservation (kWh/year)



Production of RES (kWh)/year



PMO adopted a series of Carbon Footprint Reduction Program (CFP) project prioritization processes

Initial Process	ACTION A	ACTION B	ACTION C
In the direction of reducing energy consumption, production and management, there was a recording, finalization of proposed interventions for the production units program based on previous projects and energy studies, and categorization into three categories	<p>Maturity justification of short-term targeting projects based on:</p> <ul style="list-style-type: none"> > The administrative and technical maturity > the possibility of financing from available sources within the 1st semester 	<p>Maturity justification of medium-term targeting projects based on:</p> <ul style="list-style-type: none"> > the readiness of technical maturation within the first quarter of 2022 > the availability of funding sources within 2022 	<p>Justification and preparation of a maturation program for long-term interventions:</p> <ul style="list-style-type: none"> > Identification of critical path and maturation actions > Preparation for funding sources beyond 2022 > Costing of all the interventions and planning the preparation of funding files - connection with funding sources



For all energy projects there was a thorough investigation for possible financing from multiple sources of EU and Public finance i.e. European Recovery Fund, NSRF (National Strategic Reference Framework) 2021-2017, European Investment Bank etc.

For Reducing the CO₂ footprint a series of optimization strategic and Financial decisions have to be made

Priority:

▶ Energy Consumption and costs

VS

▶ ESG targets on CO₂

Implementing Interventions:

▶ Conserve and produce energy by RES on its own

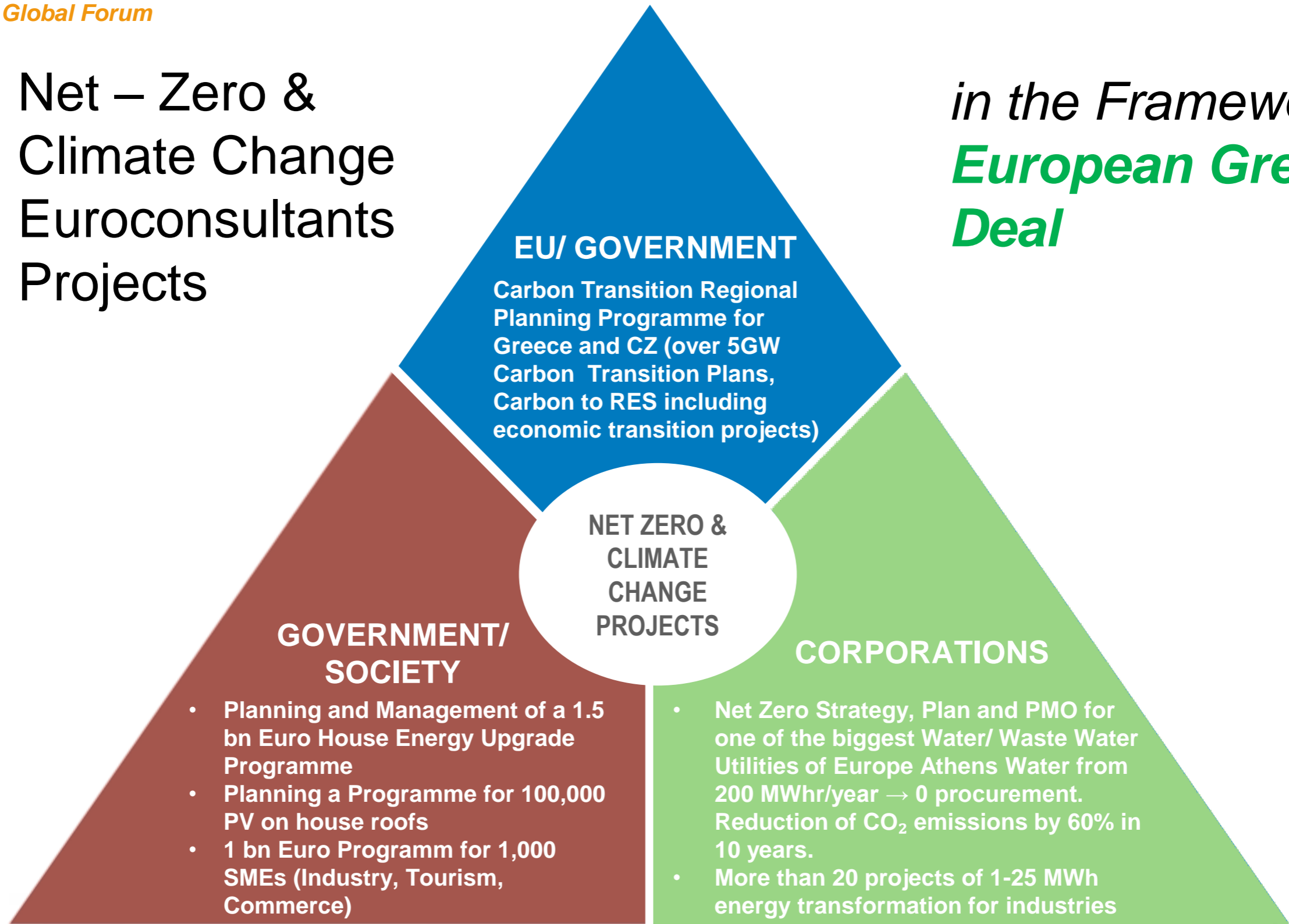
▶ Or assign to third parties like ESCO/ TPF / laas

Selecting Optimum Technical / Financial:

▶ Replacement of equipment, installing PV, electro mobility, Biogas production, small downstream Hydropower / **Monitoring mechanism is part of the digitization process**

Net – Zero & Climate Change Euroconsultants Projects

*in the Framework of
European Green Deal*



Thank you