

STEP Benefit Corporation

We are an **Innovation Hub** specialized in researching and selecting **top green technologies** to develop **high innovative decarbonization projects** for industries.



Our mission

5 milioni
di CO₂

We want to reduce **5 million tons of CO2 emissions** through innovation



WATER PRICE IN EUROPE

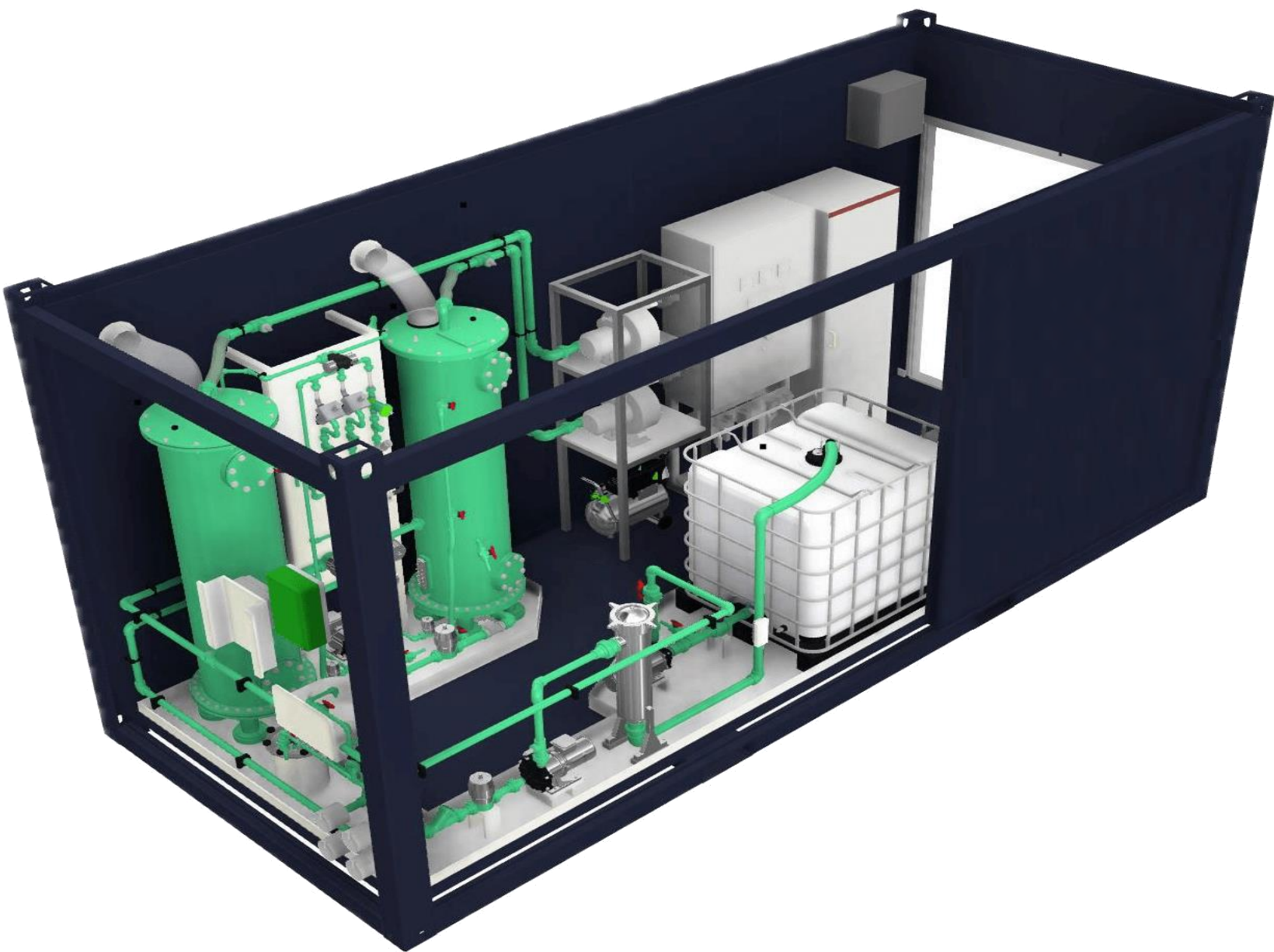
The price of drinking water for the industry in Italy is over 10 times lower than in the EU

Member State	City	PriCE (€/m3)
Norway	Oslo	5,51
Germany	Stuttgart	4,67
France	Lyon	3,57
ITALY	MILAN	0,40

FONT: The Intrnational Benchmarking Netwokr for Water and Sanitation Utilities (IBNET)



CATALYST TECHNOLOGY TO ELIMINATE > 99% PFAS



Using a process that combines **catalysts** and **electrochemical oxidation**, this solution completely destroys persistent pollutants, including (**PFAS**).

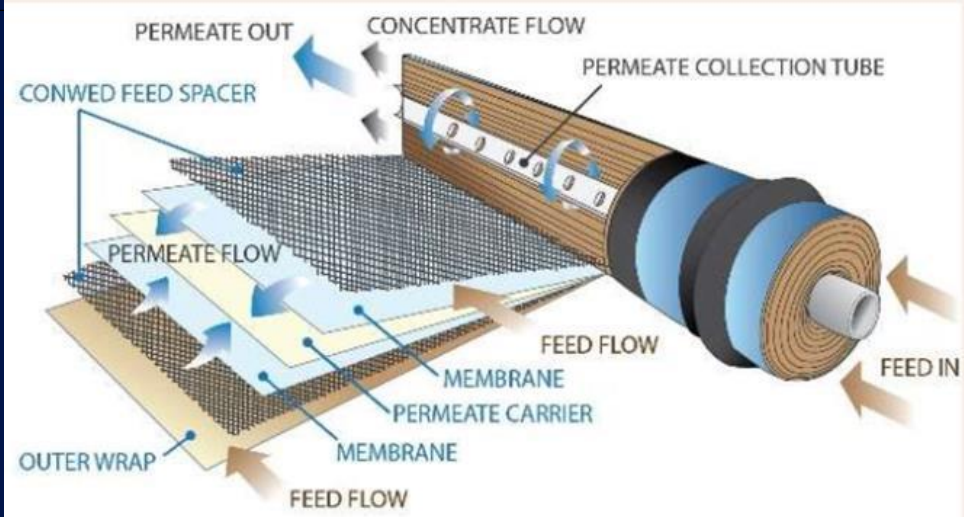
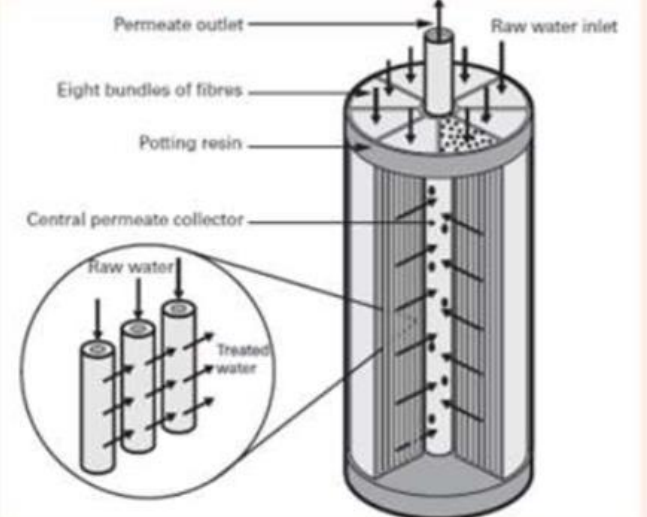
- > 99% PFAS destruction
- Zero toxic secondary waste
- Cost-effective energy sources
- Real-time monitoring and optimization

PFAS Compound	Chain	Elimination RATE(%)
PFPeA	Short Chain	>99
PFBS	Short Chain	>99
PFHxA	Medium Chain	>99
PFHpA	Medium Chain	>99
PFHxS	Medium Chain	>99
PFOA	Long Chain	>99
PFOA	Long Chain	>99

Nanofiltration MEMBRANES

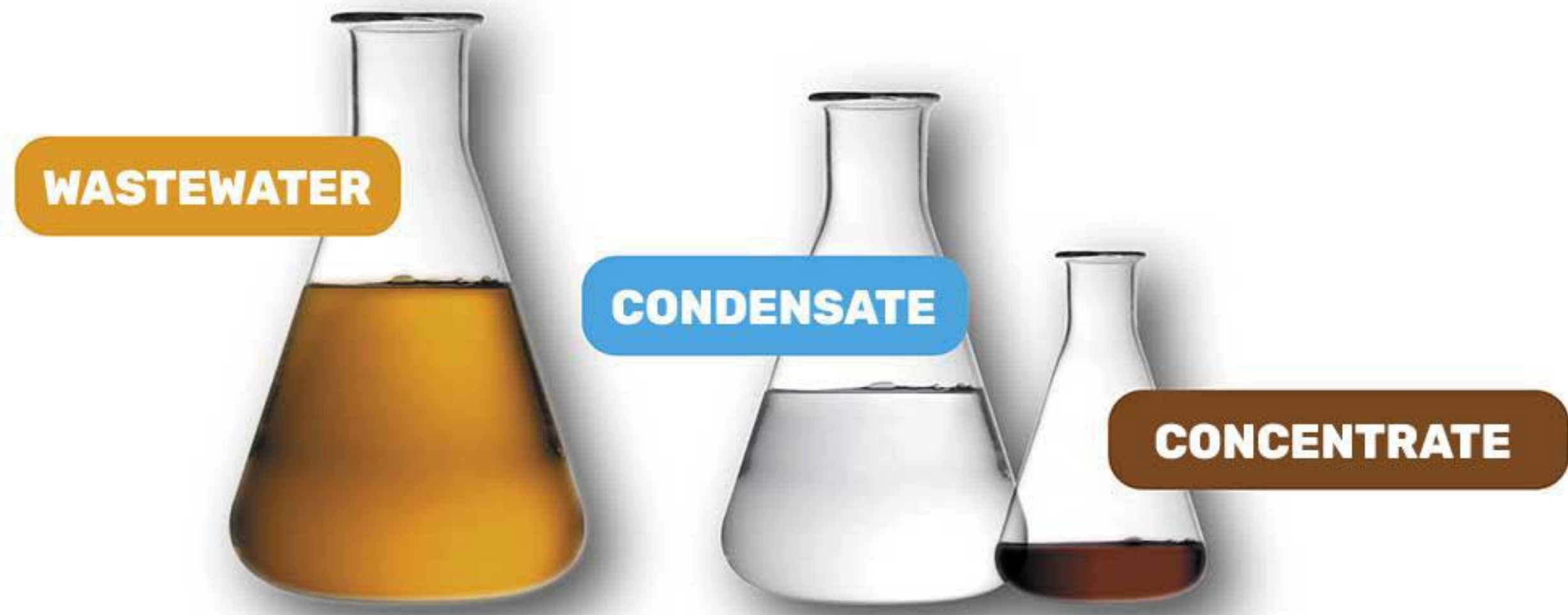
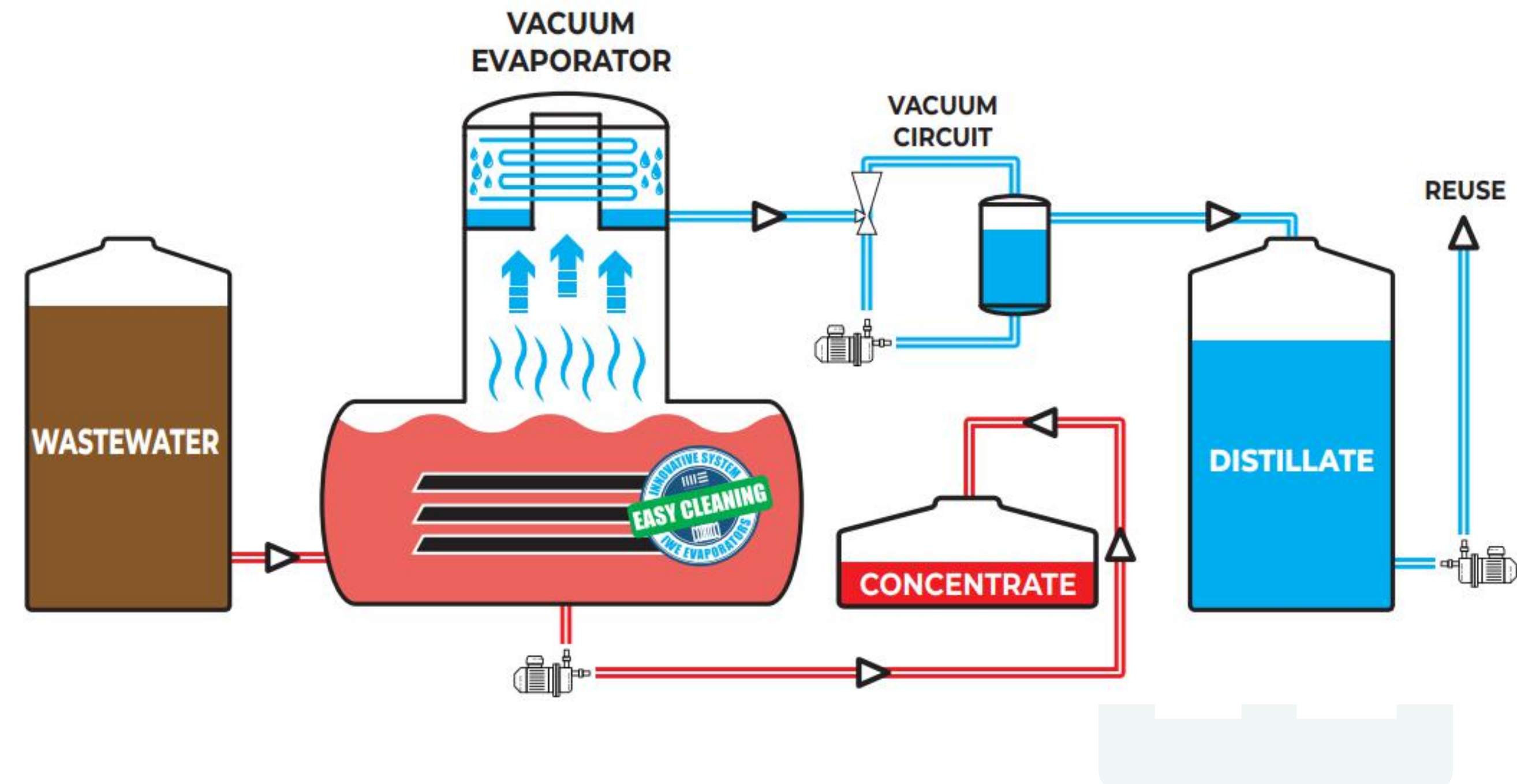
- **-70% energy** consumption (Low Pressure)
- **Elimination +90%** of micropollutants, bacteria and viruses
- **No pre-treatment**
- High levels of chlorine (dechlorination not necessary)
- High COD



MATERIAL	TRADITIONAL FILTER Polyamides	NANO FILTER
MODULE GEOMETRY		
Turbidity	< 0,5 NTU (1-2 ppm MES)	< 150 NTU (300 ppm MES)
Al, Fe, Mn	<0,05 ppm	Chemically stable
Chemical Ossigen Demand	<10 ppm	< 100 – 1000 ppm
Chlorine	< 0.1 ppm	< 500 ppm < 250.000 ppm
Operating Pressure	7-14 bar (NF) 10-20 bar (LPRO)	4-6 bar
% retention of dissolved salts	High	Low

VACUUM EVAPORATION

Through Vacuum Evaporation, it is possible to separate a non-volatile compound dissolved in a solution into demineralized water and a concentrated product with low operating costs



VACUUM EVAPORATION: PHARMA INDUSTRY CASE

CAPEX: 160.000 €

OPEX: 2.700 €/y

PBT: 6 mesi



Resource recovery and reuse of distilled water



-99% wastewater to be disposed



Energy optimization: reuse of energy for other processes



Low opex



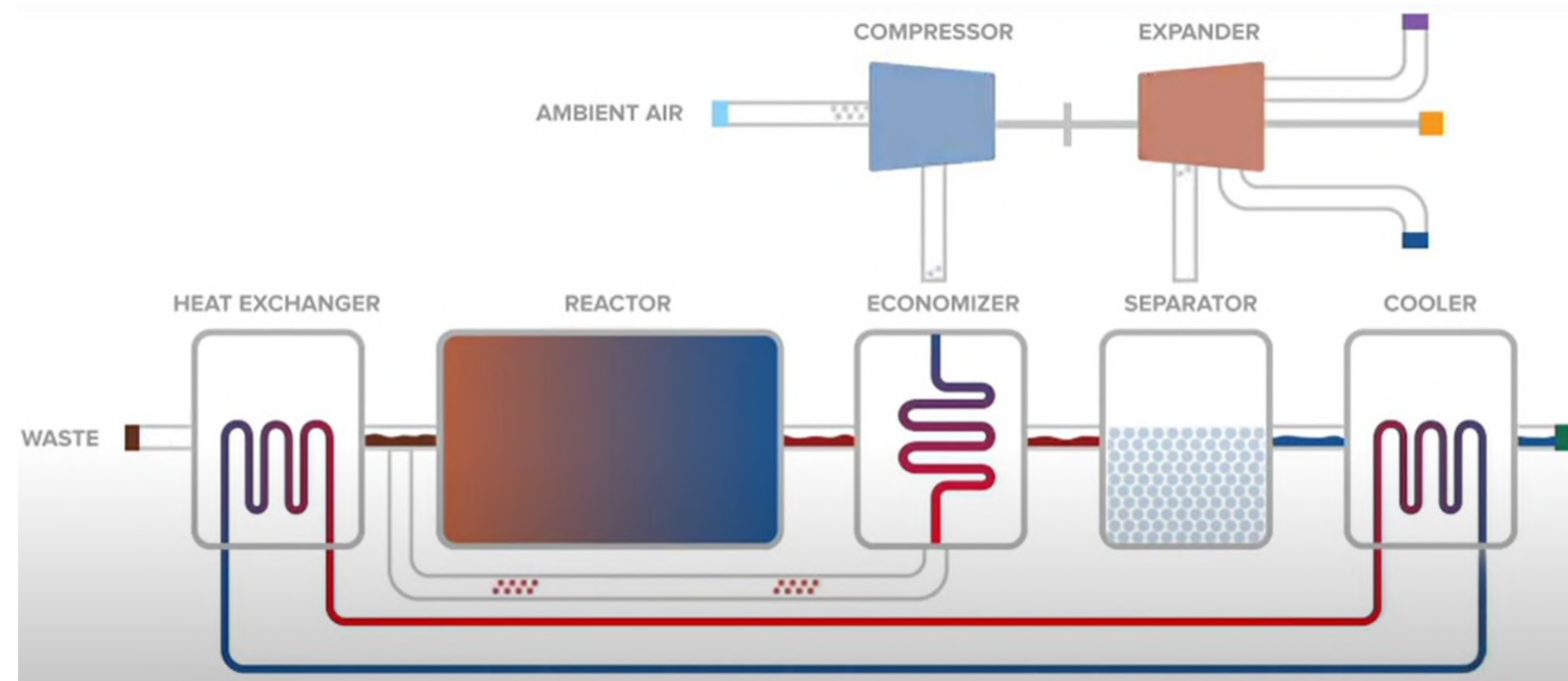
-90% costs of disposal, estimated in 300€/mq



Heat recovery

SUPERCRITICAL WATER: CHEMICAL CASE

Converting large volumes of **organic waste** from chemical industry into **clear water, heat and electricity**



Physical-thermal process that, using water and air, generates an oxidation reaction capable of completely eliminating organic compounds



SUPERCRITICAL WATER:

Chemical INDUSTRY CASE

CAPEX: 3.000.000 €

OPEX: 0 €/y

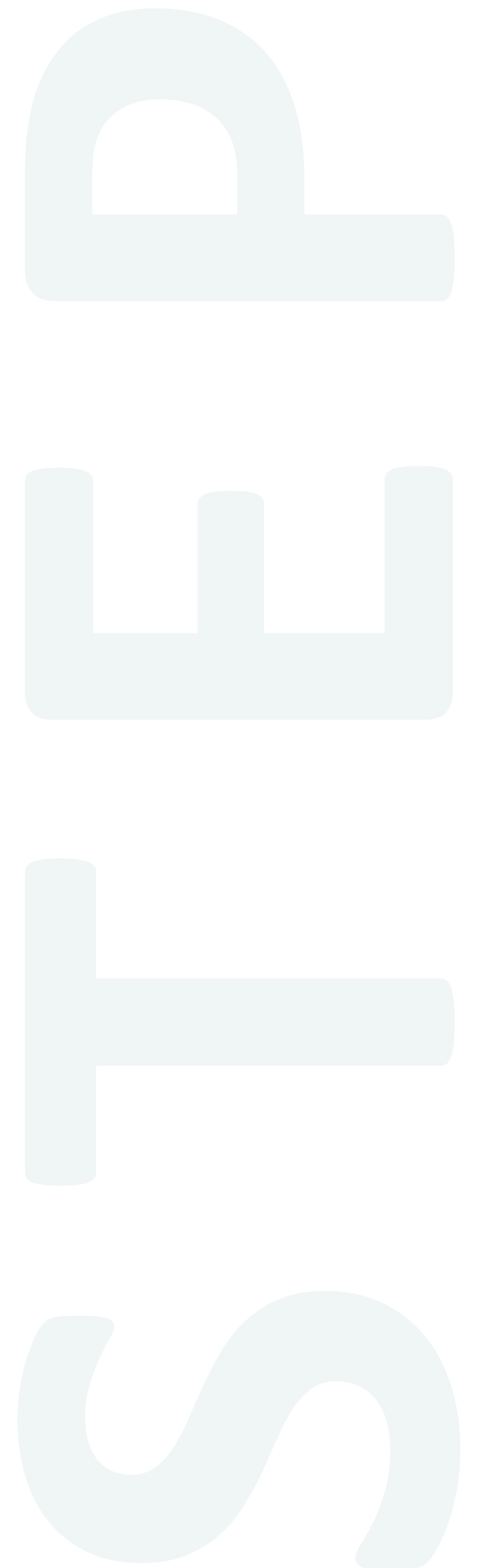
PBT: 5 years

- ✓ Waste-to-value technology
- ✓ Energy Efficiency
- ✓ Easy to integrate to actual infrastructure
- ✓ -99% Water disposal costs (400€/mq – 2.000 t/year)
- ✓ Complex contaminant elimination

By 2050:

30% of the
water
consumed
today will be
missing

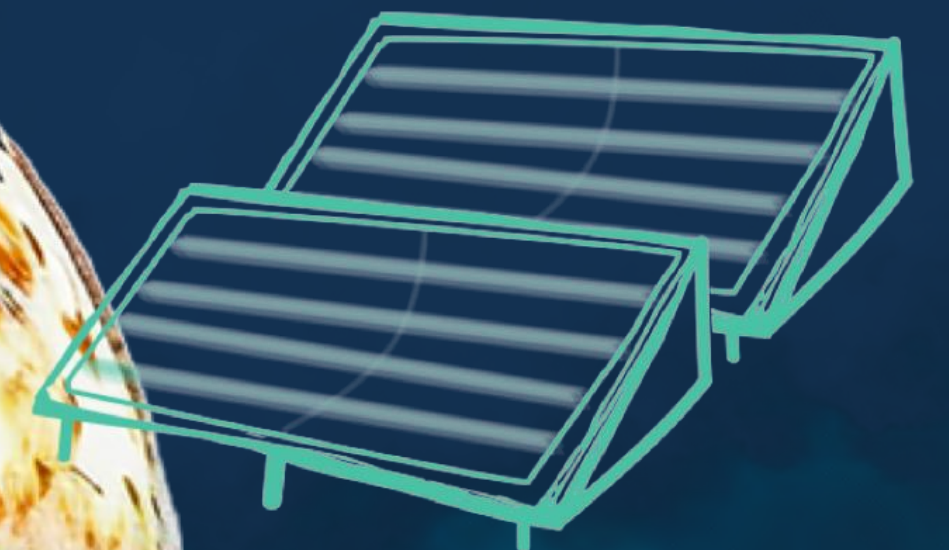
a cost of **40 billion euros** per
year due to the lack of
adequate responses



ECOMONDO 6/11/2024

STEP
green-tech, naturally

Loredana, Reniero – Business Developer



Sito: steptechpark.com

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CATALYST TECHNOLOGY: FOAM FRACTIONATION

Foam fractionation leverages the unique properties of PFAS to accumulate at the air-water interface of air bubbles. The bubbles rise forming a froth layer, enabling the removal of PFAS as a highly concentrated stream.

