



**Decentralized innovative treatment of ammonium-rich urban wastewater**

## **Economic assessment**



**POLITECNICO**  
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**LIFE DeNTreat FINAL EVENT – web meeting**

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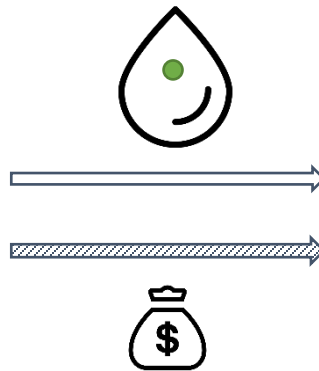
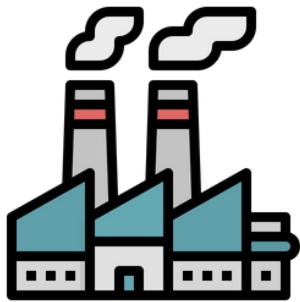
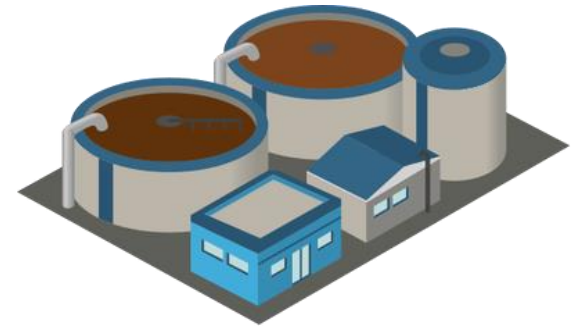
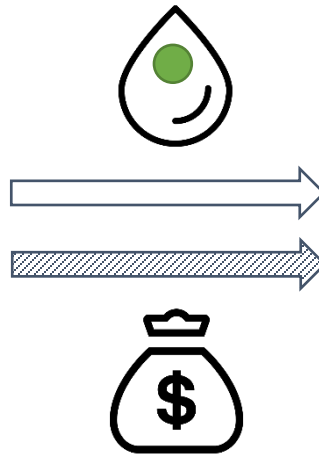
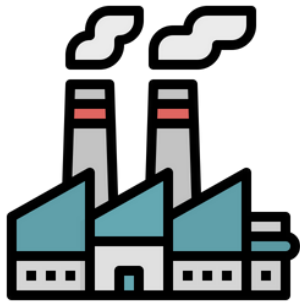


The project has received funding from European Union 's LIFE Programme under Grant Agreement LIFE16 ENV/IT/000345

# BACKGROUND

- DTP is a game-changing technology (high quality, flexible, eco-friendly)
- Drawbacks for wastewater quality, issues with regulatory compliance
- Need for enabling solutions (how long will the derogation period last?)
- What is the cost of such enabling solutions?
- How does this cost meet existing economic constraints?

# DETAILS ABOUT ECONOMIC ASSESSMENT



# ECONOMIC ASPECTS - the case of the Como textile district

## THE PREVIOUS TARIFF

SEWAGE SYSTEM

$$T_2 = F_2 + \left\{ f_2 + dv + K_2 \left[ \frac{O_i}{O_f} \left( db + Mdb + df + \frac{1}{3} df + Mdf \right) \right] + da + daN \right\} V$$

FIXED TERM

WASTEWATER TREATMENT

COST COEFFICIENT OF CHARGES FOR THE  
NITROGEN TREATMENT - 0,03369 €/m<sup>3</sup>

+

FEE FOR LIMIT DEROGATION (> 100 mg/L)  
0.75 €/kgN

# ECONOMIC ASPECTS - the case of the Como textile district

## THE PREVIOUS TARIFF

### TARIFF CALCULATION EXAMPLE

for wastewater with 200 mgN/L, 1000 mgCOD/L, 350 mgBOD/L, 100 mgTSS/L

**TOTAL TARIFF FOR WW TREATMENT = 1.5809 + 0.075 = 1.6559 €/m<sup>3</sup>**

FEE FOR NITROGEN REMOVAL = 0.03369 + 0.075 = 0.10869 €/m<sup>3</sup>  
= 0.5435 €/kgN

# ECONOMIC ASPECTS - the case of the Como textile district

## THE NEW TARIFF

$$T_p^{ATO} = QF_p^{ATO} + QC_p^{ATO} + QV_p^{ATO} \cdot V_p$$

**TREATMENT CAPACITY TERM**
**VOLUME**

**FIXED TERM**
**VARIABLE TERM**

$$\begin{aligned}
 & QV_p^{ATO} \quad \text{SEWAGE SYSTEM} \\
 & = T_{f_{ind}}^{ATO} \\
 & + \max \left\{ 1; \left[ \%_{COD} \cdot \frac{COD_p}{COD_{rif}} + \%_{TSS} \cdot \frac{TSS_p}{TSS_{rif}} + \%_N \right. \right. \\
 & \left. \left. \cdot \frac{N_p}{N_{rif}} + \%_P \cdot \frac{P_p}{P_{rif}} + \sum_j \%_{X,j} \cdot \frac{X_{j,p}}{X_{j,rif}} \right] \right\} \cdot Td_{ind}^{ATO} \quad \text{WASTEWATER TREATMENT}
 \end{aligned}$$

$N_{rif} = 10 \text{ mg/L}$   
 $\%N = 15$

# ECONOMIC ASPECTS - the case of the Como textile district

## THE NEW TARIFF

### TARIFF CALCULATION EXAMPLE

for wastewater with 200 mgN/L, 1000 mgCOD/L, BOD 350 mg/L, 100 mgTSS/L

**TOTAL TARIFF FOR WW TREATMENT = 1.5809 + 0.075 = 2.1166 €/m<sup>3</sup> (+28%)**

FEE FOR NITROGEN REMOVAL = 0.9270 €/m<sup>3</sup> (8.5 times higher)  
= 4.635 €/kgN

# **ECONOMIC ASPECTS - the case of the Como textile district**

## **Consequences of the Life DeNTreat on the tariff: an example**

DTP wastewater

200 mgN/L, 1000 mgCOD/L, 350 mgBOD/L, 100 mgSST/L

**TOTAL TARIFF FOR WW TREATMENT = 2.1166 €/m<sup>3</sup>**

DTP wastewater after treatment by LIFE DeNTreat solution

50 mgN/L, 700 mg COD/L, 50 mgBOD/L, 100 mgSST/L

**TOTAL TARIFF FOR WW TREATMENT = 1.2731 €/m<sup>3</sup>**

**TARIFF DIFFERENCE FOR WW TREATMENT = 0.8435 €/m<sup>3</sup>**



# KEY FINDINGS

- Tariff on wastewater involves a penalty for regulation exceedance
- Current tariff on wastewater is creating a relevant cost for companies
- The LIFE DeNTreat solution provides a significant economic benefit
- Tariff costs need to be considered in the solution economic assessment
- Case-by-case assessment based on national/regional/local situation

# Thank you

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