

La revisione della direttiva europea sul trattamento delle acque reflue urbane



un'opportunità per l'adattamento e la
decarbonizzazione

GDO Analytical Report

Drought in Europe - March 2023

JRC Global Drought Observatory (GDO) of the Copernicus Emergency Management Service (CEMS) - 10/03/2023

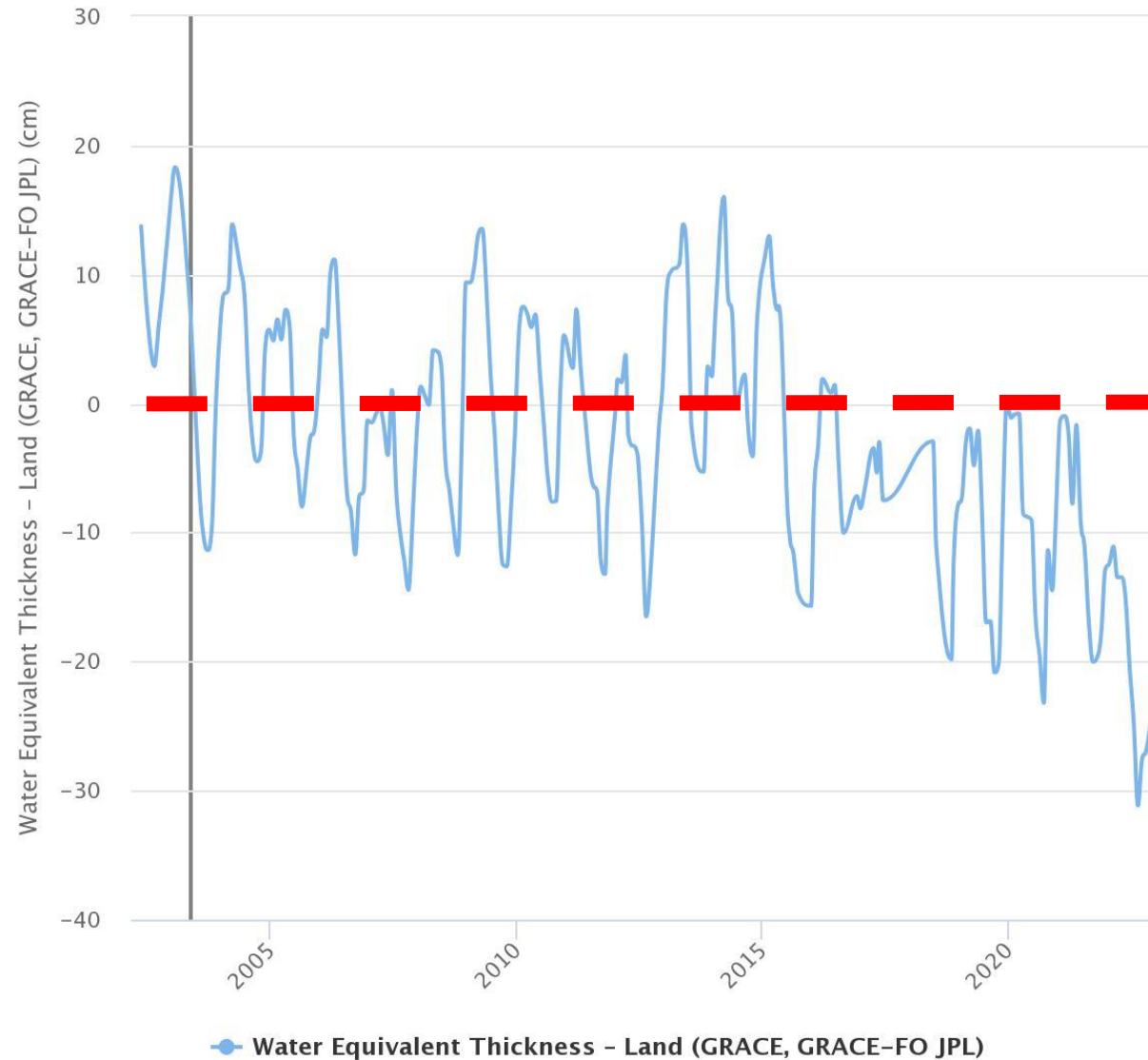


Executive summary

- Most of southern and western Europe is affected by substantial anomalies of soil moisture and river flow due to an exceptionally dry and warm winter.
- The snow water equivalent in the Alps is far below the historical average, and is even lower than that for the 2021-2022 winter. This will lead to severe reduction of snowmelt contribution to river flows in the perialpine region during spring and the early summer 2023.
- Impacts of the emerging drought are already visible in France, Spain, and northern Italy and raise concerns on water supply, agriculture and energy production.
- Seasonal forecasts show a warmer than average spring over Europe, while precipitation forecasts are characterized by higher spatial variability and uncertainty. Close monitoring and **proper water use plans** are required to deal with a season that currently has a high risk of being critical for water resources.

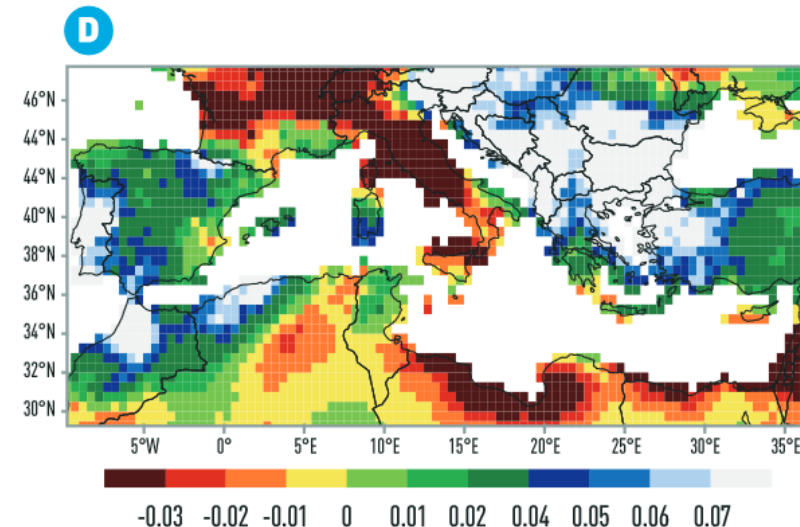
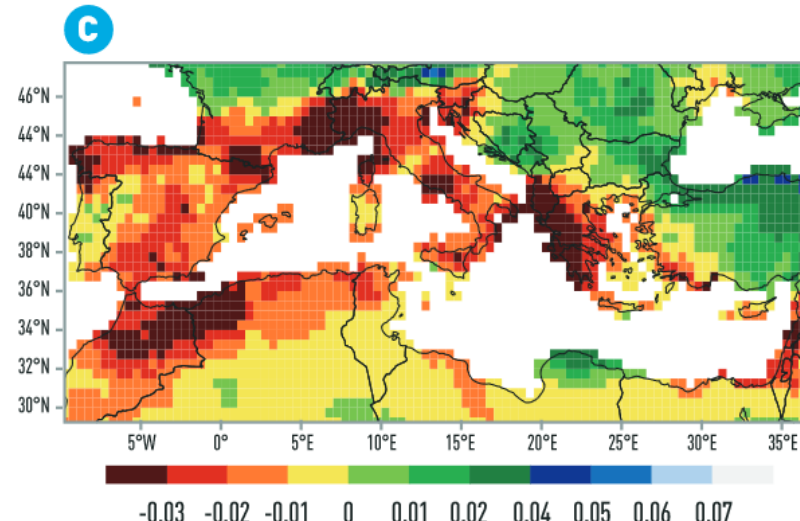
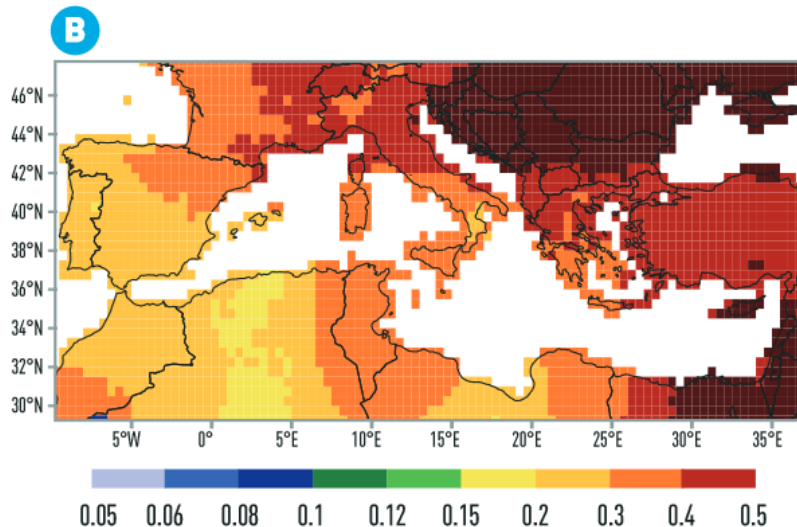
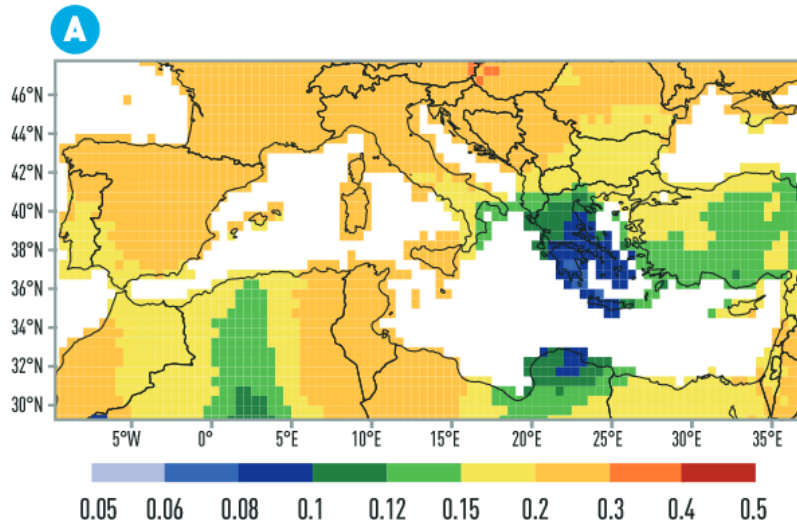
Water Equivalent Thickness - Land (GRACE, GRACE-FO JPL)

Source: GRACE, GRACE-FO
Apr 2002 - Nov 2022
Basin: Po, Subcontinent: Europe



Temperatura:

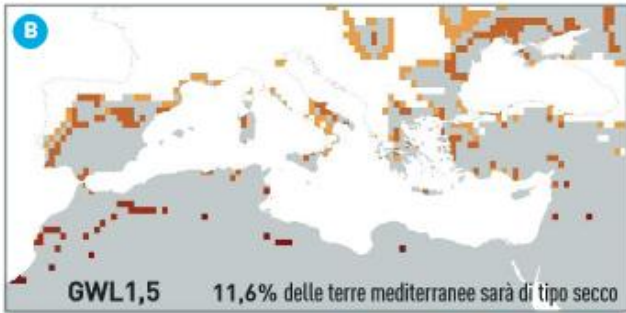
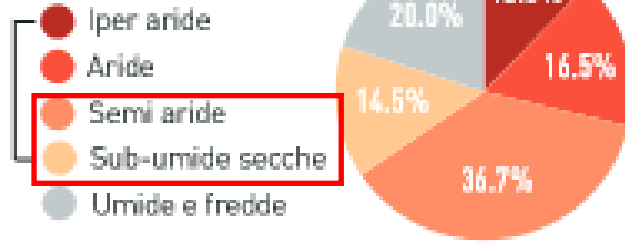
Precipitazione:



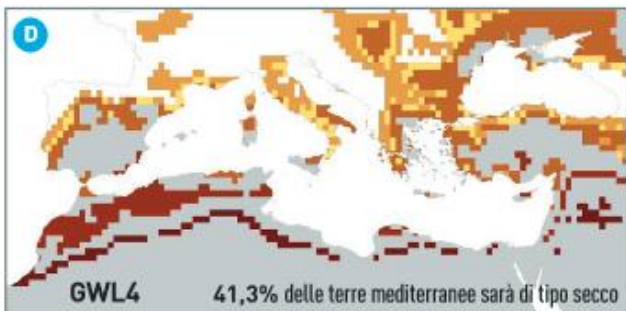
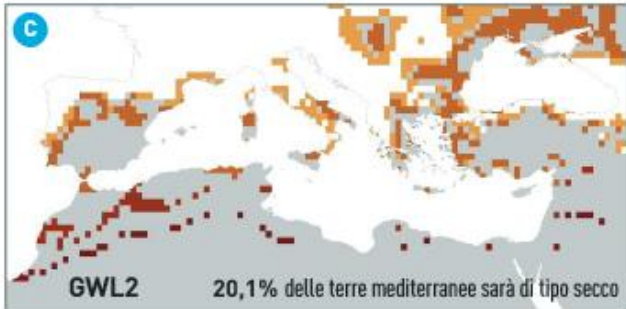
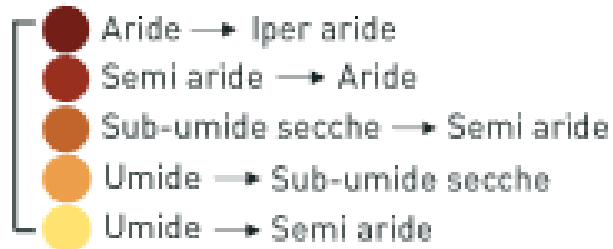
Variazioni osservate di temperatura e precipitazione. Tendenze di temperatura (tavole A e B, °C per decennio) e precipitazione (tavole C e D, mm al giorno per decennio) sui continenti attorno al bacino del Mediterraneo. Le tavole A e C mostrano i valori medi nel periodo 1950-2018, le tavole B e D nel periodo 1980-2018



Terre aride



Transizione verso tipologie più asciutte



Inaridimento:

Italia centrale → Puglia

Puglia → Sicilia

2022: proposta (COM) di Revisione della Direttiva 91/271/CEE (Acque reflue urbane)

Qualità dell'acqua

- Approccio integrato sulle acque piovane
- Ambito di applicazione da 1.000 abitanti
- Maggiore e migliore eliminazione dei nutrienti
- Nuovo trattamento dei microinquinanti
- Approccio basato sul rischio

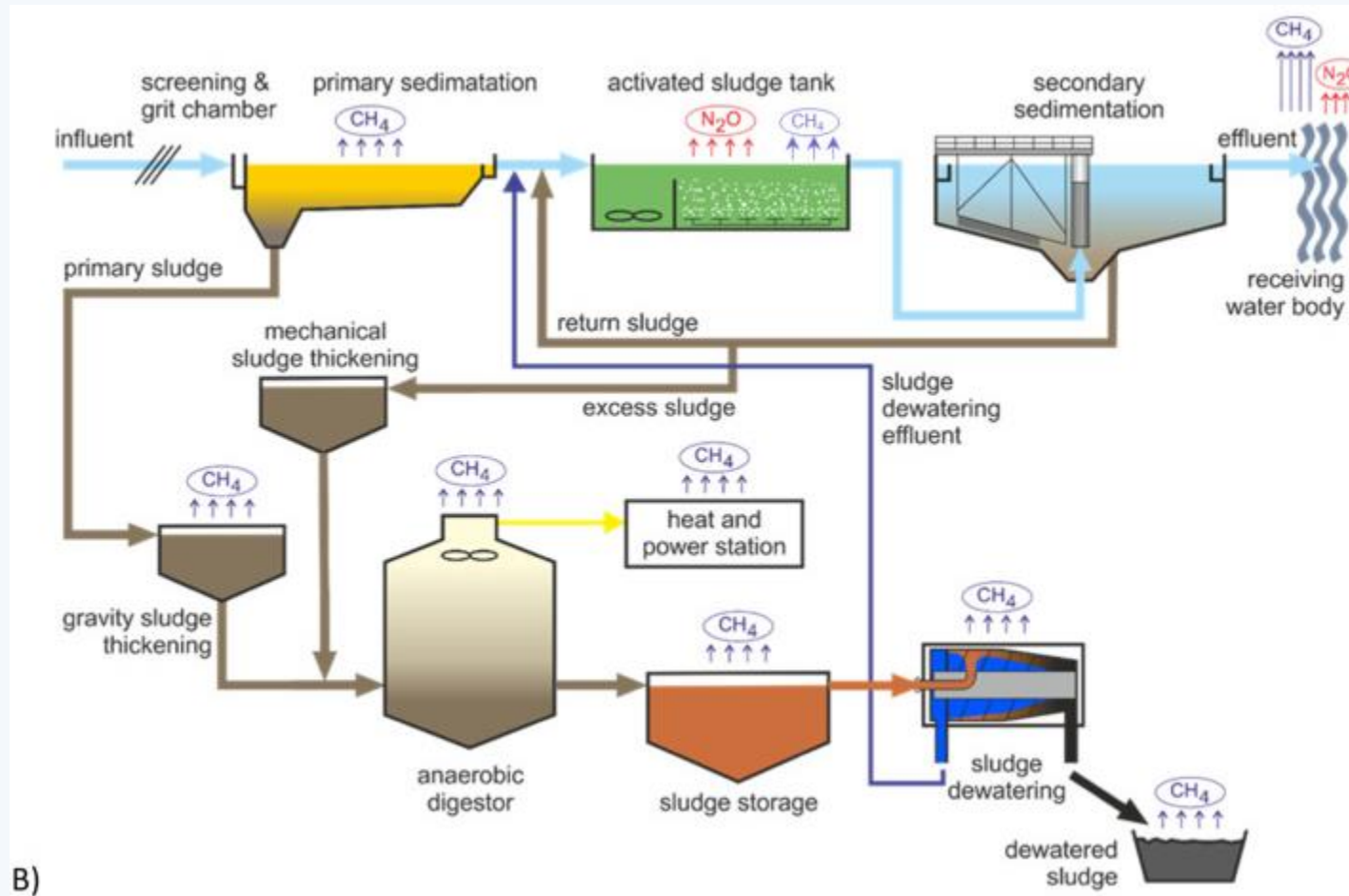
Il Green Deal

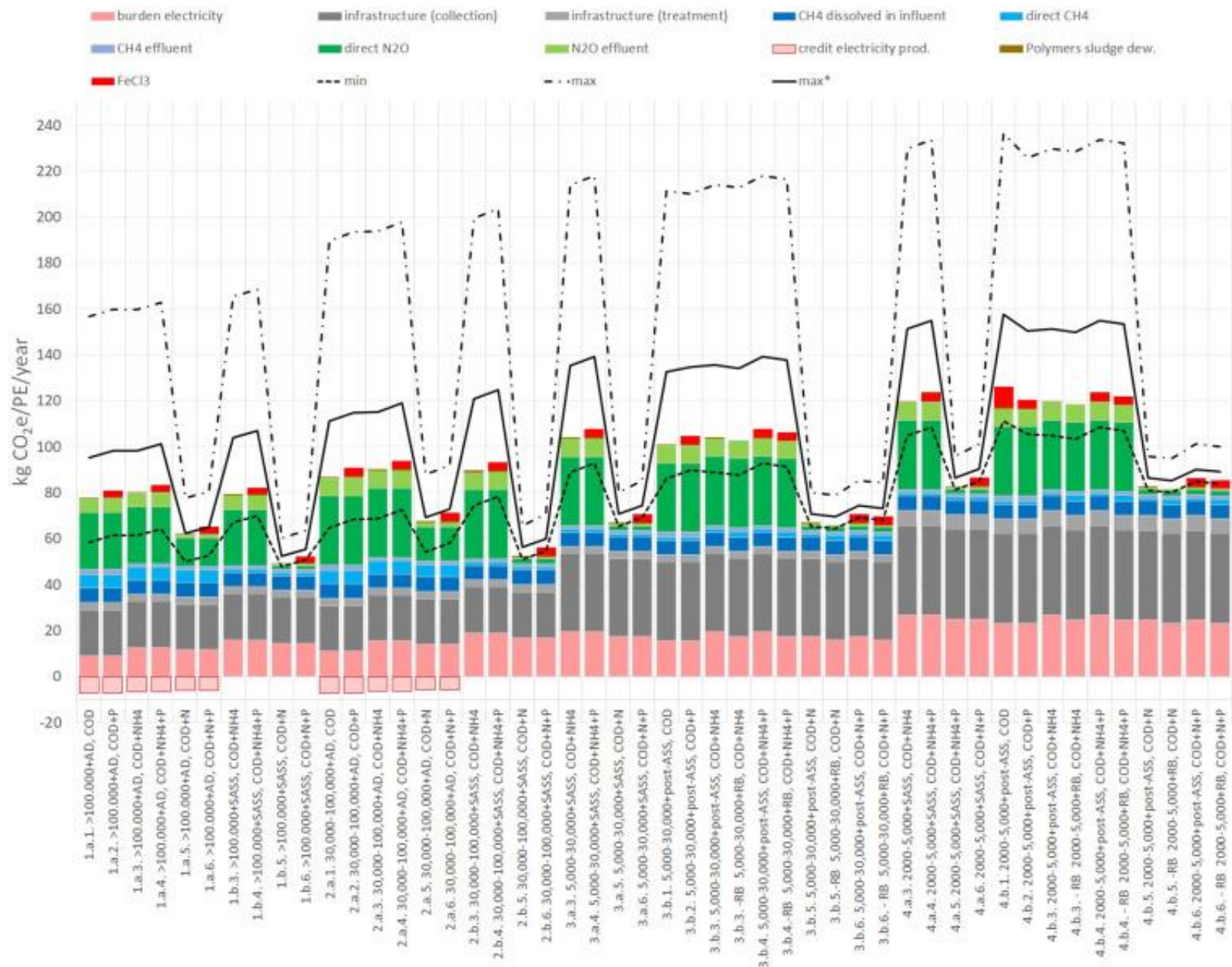
- Neutralità energetica entro il 2040
- Audit energetici sistematici e monitoraggio dei gas a effetto serra
- Inquinamento non domestico monitorato alla fonte
- Riutilizzo dell'acqua, dei fanghi e del fosforo incentivato

La gestione

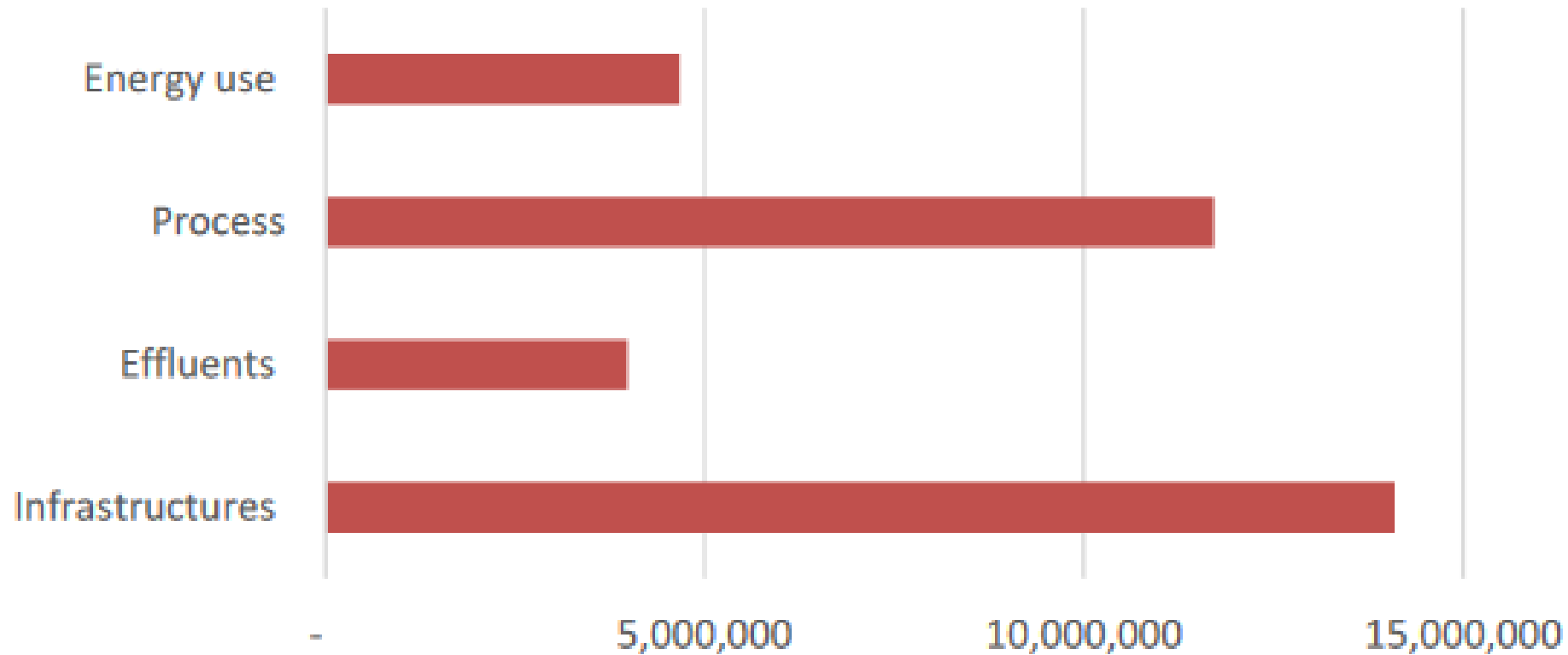
- Responsabilità estesa del produttore (cosmetici e prodotti farmaceutici)
- Monitoraggio degli indicatori chiave di prestazione e trasparenza
- Accesso ai servizi igienico-sanitari
- Monitoraggio dei parametri sanitari (compresi Covid e AMR)

Emissioni di CO₂e associate alle acque reflue





GHG emissions - Waste Water (EU 27, tons CO2e/year)



<https://environment.ec.europa.eu/system/files/2022-10/Impact%20assessment%20accompanying%20the%20proposal.pdf>

North Italy Italy

aggregated 2022

456 g

Carbon Intensity (gCO₂eq/kWh)

28%

Low-carbon

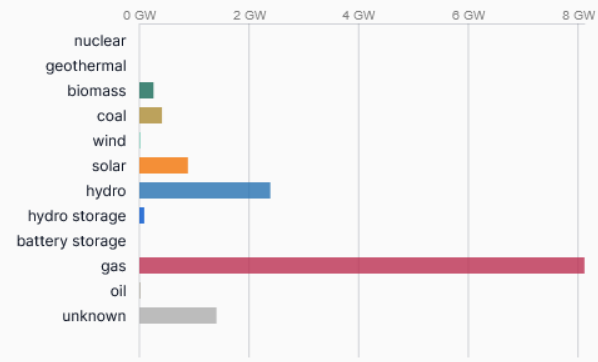
28%

Renewable

Electricity production

Carbon emissions

Electricity production average by source



Carbon intensity in the last 5 years

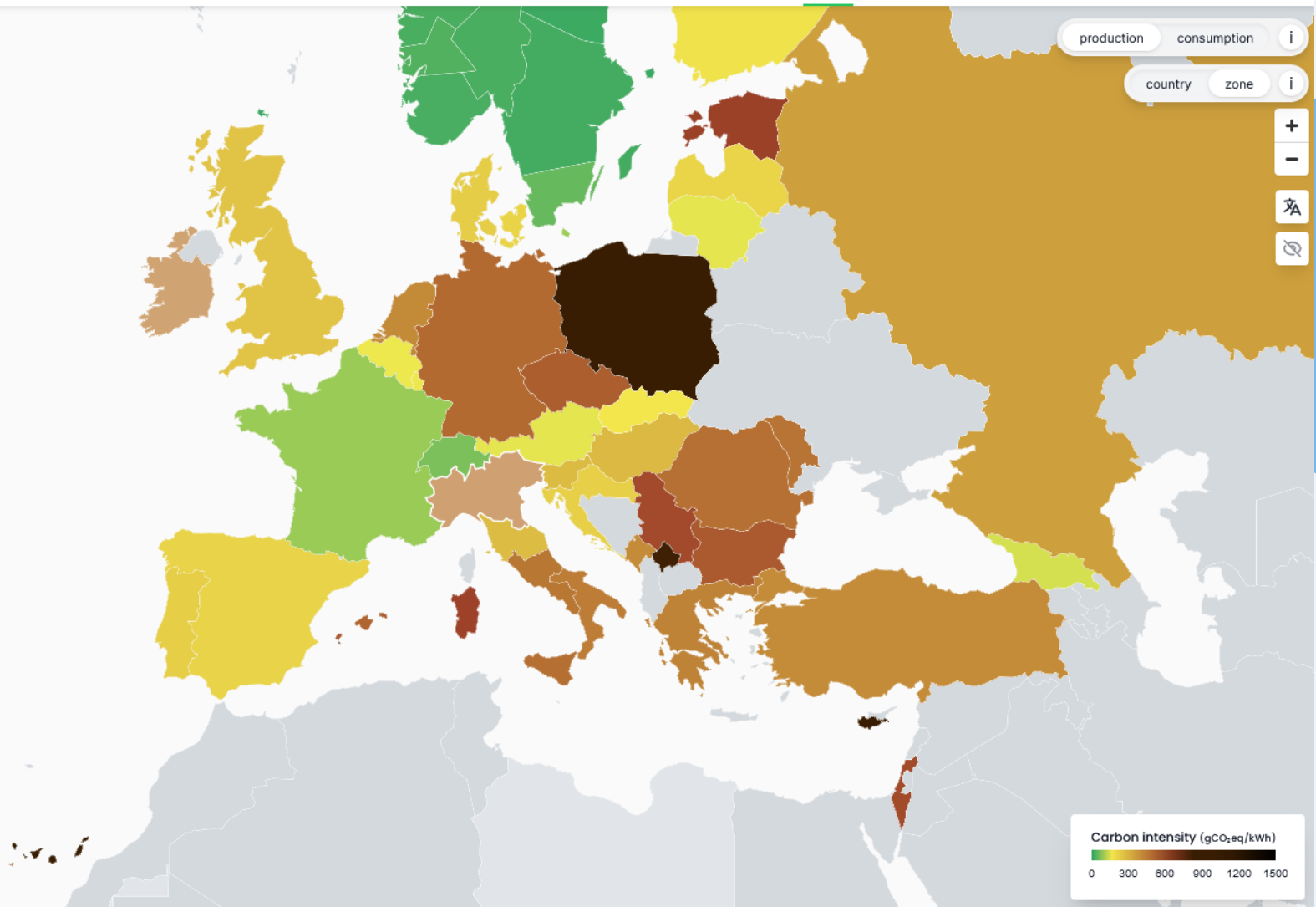
Get hourly historical, live, and forecast data with Electricity Maps API

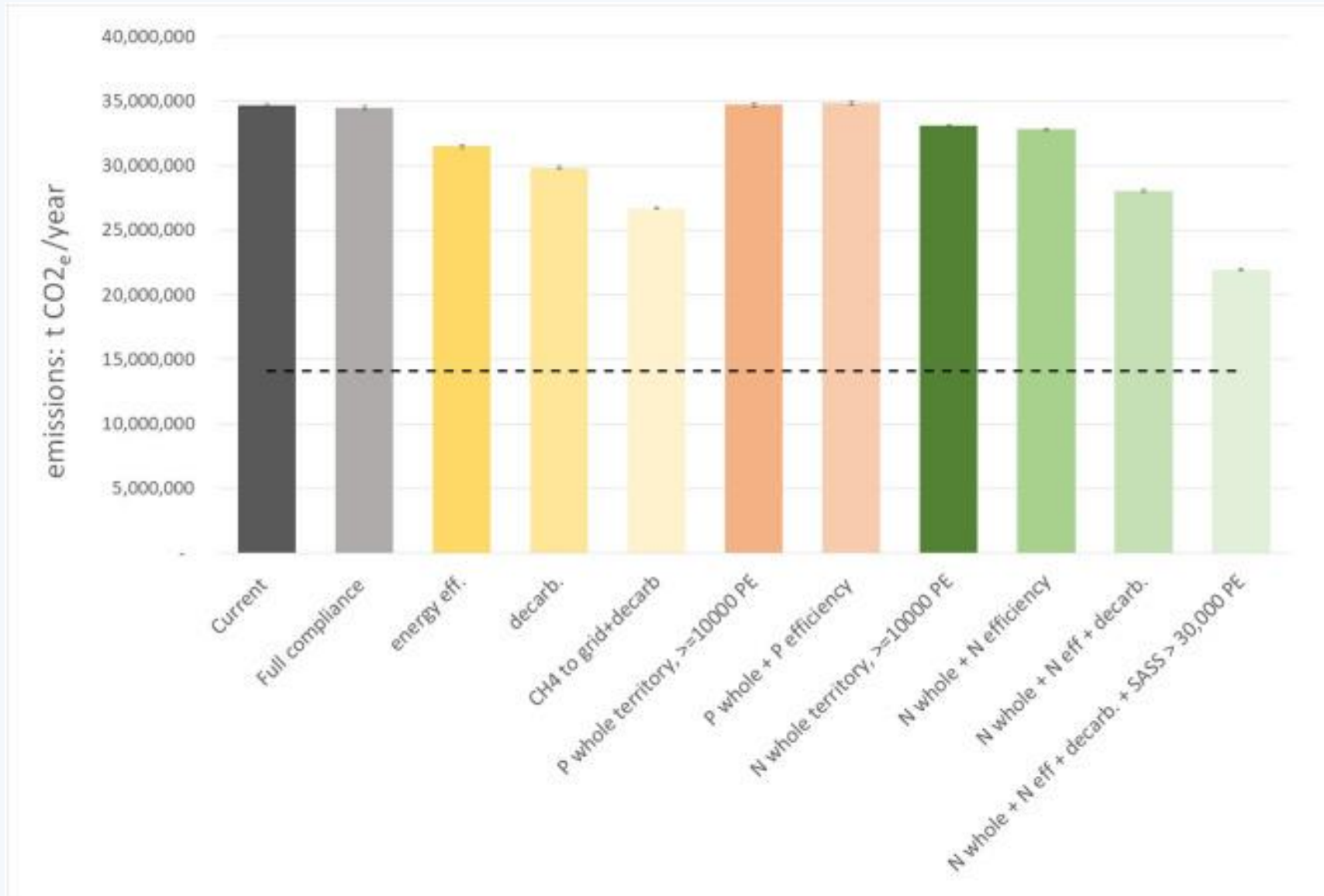


Display data from the past

2022

24 hours 30 days 12 months 5 years





<https://www.sciencedirect.com/science/article/pii/S0048969722034192>



Misure per decarbonizzare

Efficienza energetica!!!! Da ≈ 25 a ≈ 20 a ≈ 10 TWh/anno

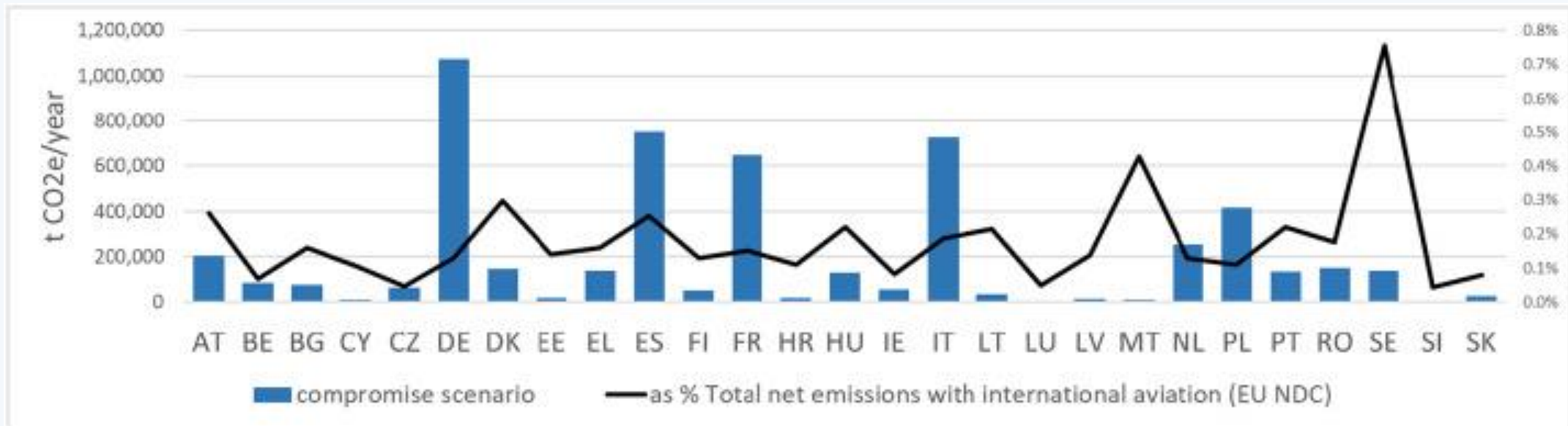
<https://iopscience.iop.org/article/10.1088/1748-9326/ab0b54/meta>

Nitro/denitro efficiente → nuovi obiettivi di rimozione di N (e P)
Recupero energetico dalla linea fanghi (biogas → biometano)
Rinnovabili sul posto (FV, idroelettrico...)

Il ruolo delle infrastrutture – vecchio dibattito decentralizzato vs centralizzato

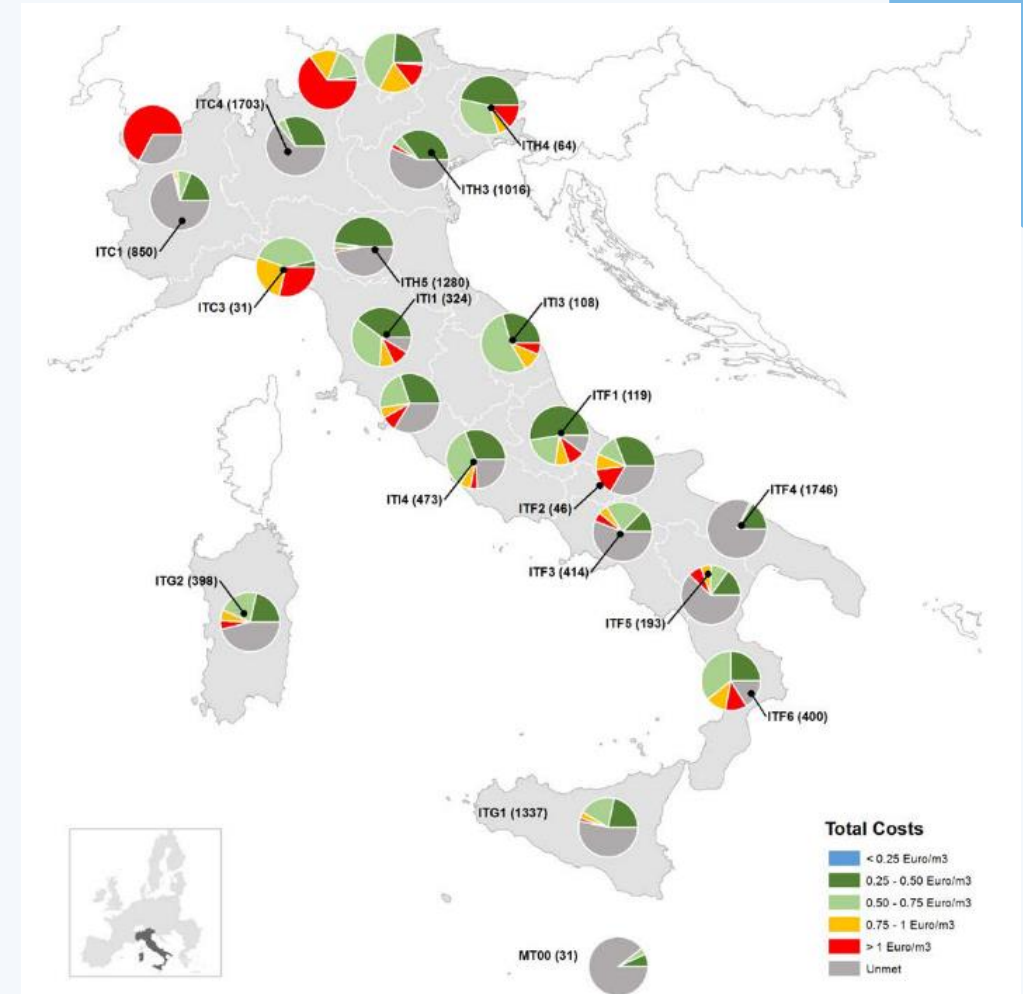
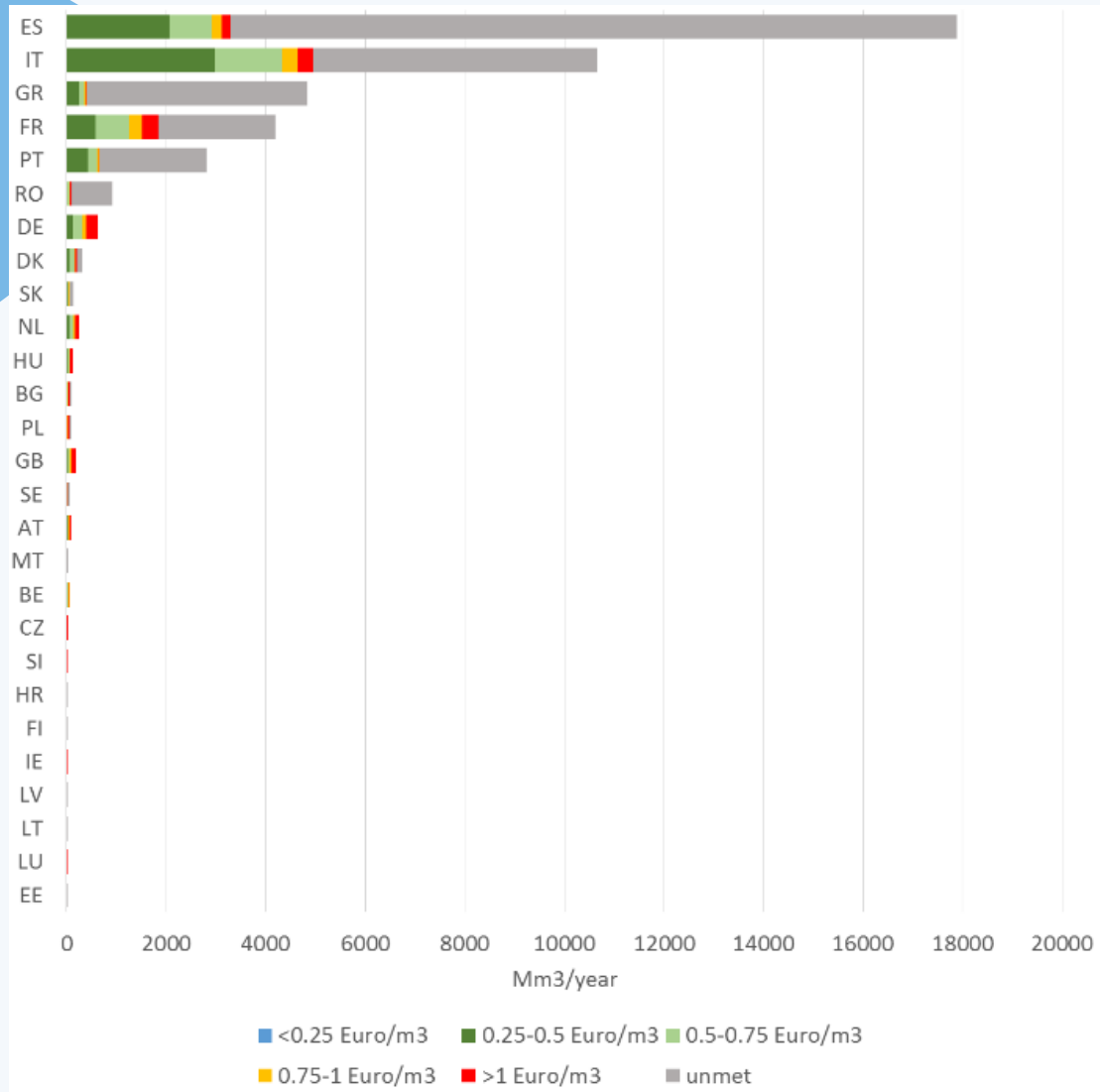
Trattamento avanzato dei microinquinanti

Rischio maggiori emissioni CO₂e (energia)



Trattamento avanzato dei microinquinanti

- Opportunità elevata qualità reflui

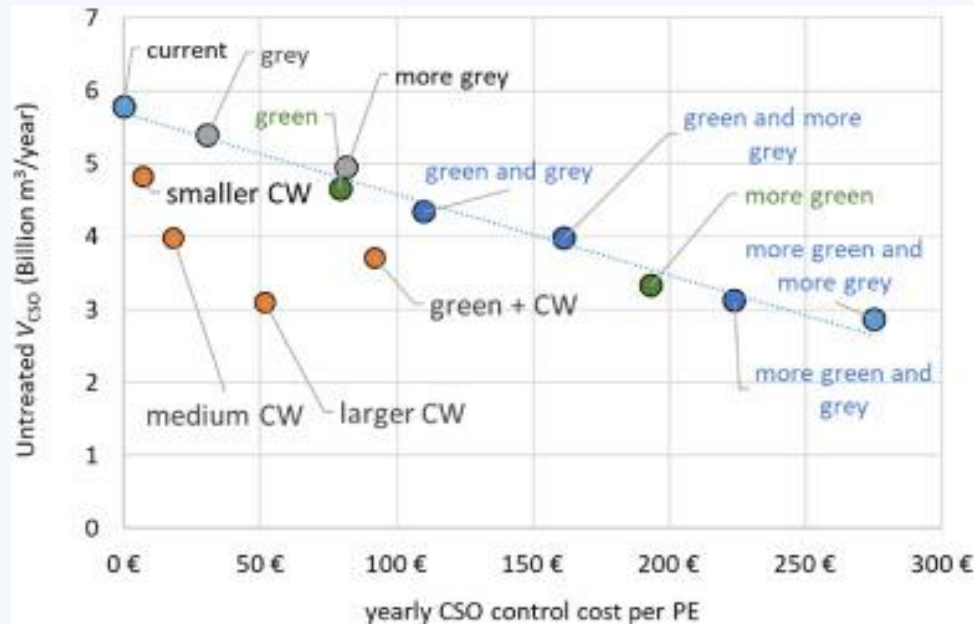


https://publications.jrc.ec.europa.eu/repository/bitstream/JRC109870/jrc109870_jrc109870_jrc_tech_report.pdf

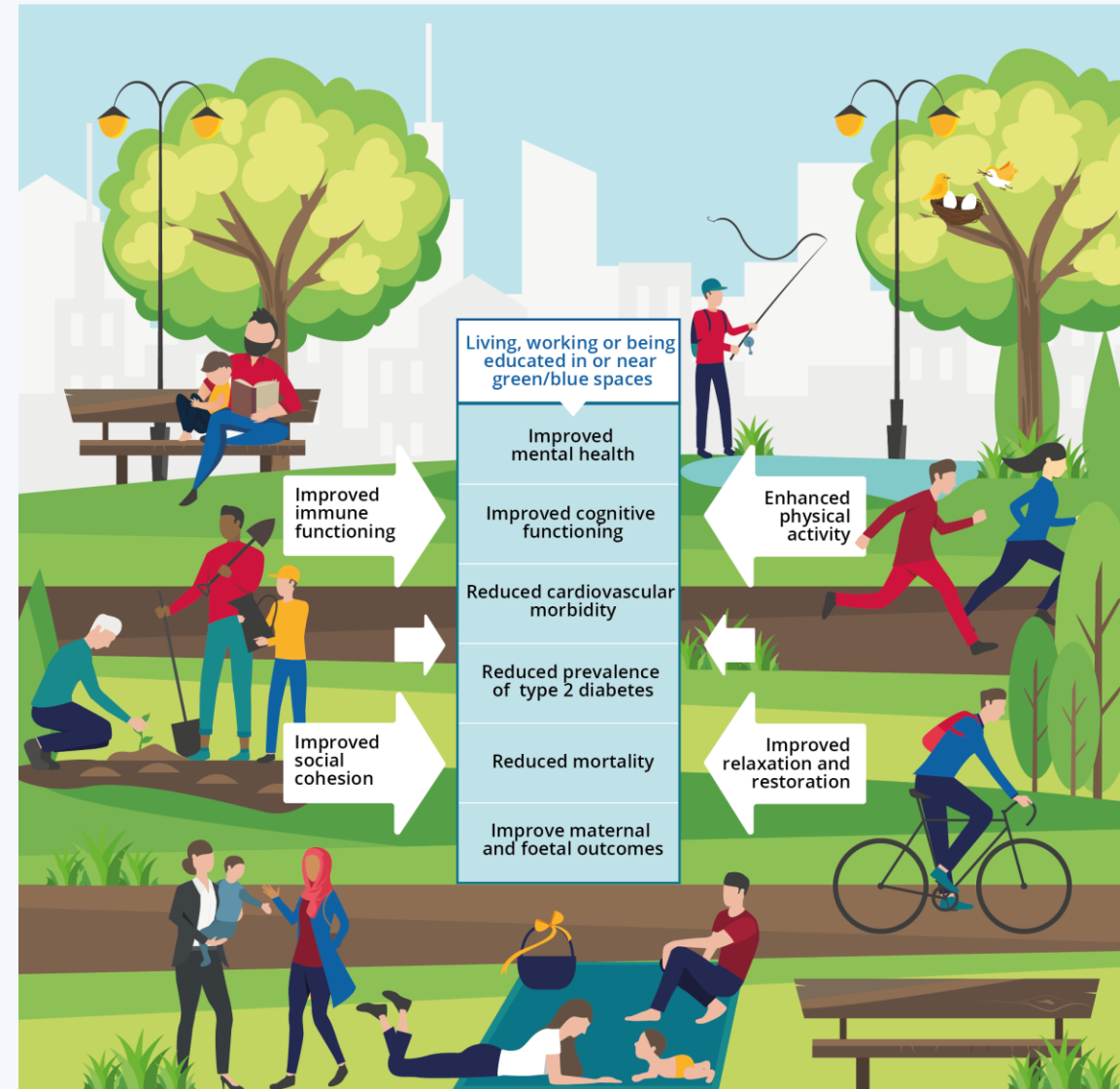
Figure 28– WMCC by NUTS2-level regions: reuse potential at various costs for IT and MT

gestione integrata delle acque urbane (compresa pioggia)

Opportunità legate al
rinverdimento delle
aree urbane



<https://doi.org/10.1016/j.jenvman.2022.115629>



<https://www.eea.europa.eu/publications/who-benefits-from-nature-in>

Osservazioni conclusive

- Gestione delle acque urbane: emissioni di CO₂e relativamente elevate, **ma**
- Opportunità di decarbonizzazione
- Opportunità di adattamento al cambiamento climatico (Riuso a scopo irriguo, Rinverdimento urbano)
- La proposta di revisione della direttiva 91/271/EEC propone una gestione integrata delle acque urbane, offrendo opportunità per soluzioni multifunzionali



Grazie dell'attenzione

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