European Commission

European Committee of the Regions

Stakeholder Workshop

“Towards a Zero Pollution Monitoring and Outlook”

Day 1, 24 May 2022

Agenda

10:00	**Welcome and opening – purpose of the meeting**
10:15	**Session 1: Policy context and link between monitoring frameworks**
11:00	Break
11:15	**Session 2: Zero Pollution Monitoring**
13:00	Lunch break
14:00	**Session 3: Zero Pollution Outlook**
15:45	Break
16:00	**Session 4: Discussion and conclusions**
17:00	End of meeting

Welcome and opening

Purpose of the meeting

Session 1: Policy context and link between monitoring frameworks

Presentations from DG ENV

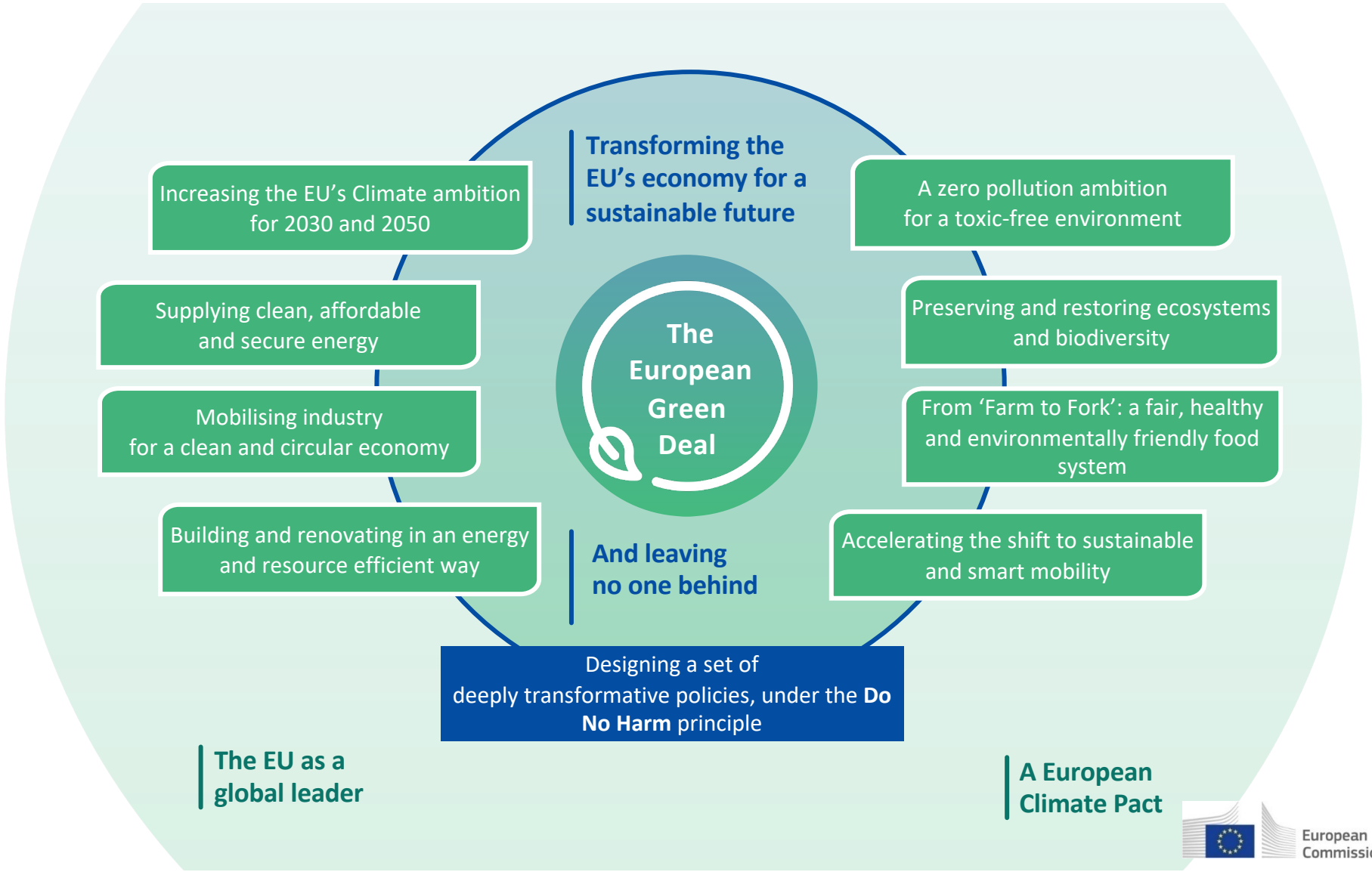
Monitoring framework for the 8th Environment Action Programme

Workshop
Zero pollution Monitoring and Outlook
24 May 2022

Barbara Bacigalupi
European Commission, DG Environment

European Union

The European Green Deal



Governance - The 8th Environment Action Programme

A “deal” between all institutions making the EGD’s objectives legally binding

- 2021 – 2030 timeframe: a stable political framework to 2030
- A 2050 long-term vision: “wellbeing for all, within the planetary boundaries”, in line with the EGD’s climate neutrality objective
- 6 thematic priority objectives in line with the EGD
- Enablers to support implementation
- An overarching coherent environmental monitoring framework to assess and communicate progress towards the 2030 and 2050 objectives

- Decision on the 8th EAP to 2030 published in the Official Journal on 12 April : EUR-Lex - 32022D0591 - EN - EUR-Lex (europa.eu). Entry into force on 2 May

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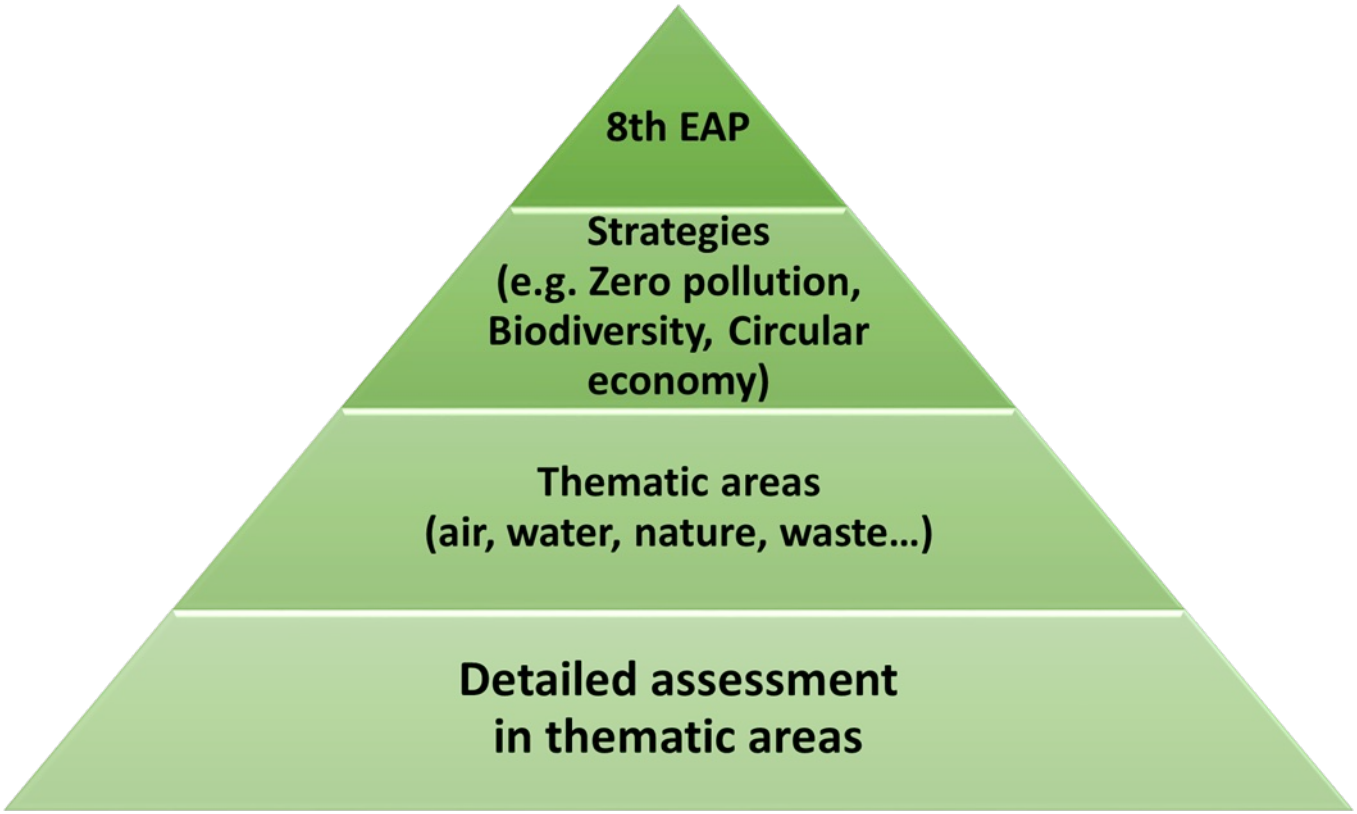
Monitoring the 8EAP and the environmental policies



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Monitoring the 8th Environment Action Programme – principles

Purpose:	Impact/Outcome and link to 2030
target	
Focus:	Environment and Climate policy,
including	pressures
Narrative/key question:	*In light of the 2050 vision and 2030*
targets,	
	what is the progress towards the 6
priority	*objectives of the programme*
Target audience:	ENVI ministers & general public
Granularity:	EU, MS, Regional, Local (where
possible)	
Reporting:	Annual stocktake and more in-depth assessments mid-programme (2024)
and	end-programme (2029)

Monitoring the 8th EAP – Timeline

Adoption of the proposal for the 8th EAP announcing the monitoring framework	**Commission adoption of 8th EAP (October 2020)**
Principles "Towards an 8th EAP monitoring framework"	**Publication of the Principles and consultation (February 2021)**
Draft list of Indicators - Discussion in the Commission	**EKC, Commission services (Spring 2021)**
	Publication of the draft MF and launch of consultation
Consultation of Member States and stakeholders	**Member States workshop (September 2021)**
	Stakeholders workshop (October 2021)
Trialogue and adoption of the 8th EAP	**Political agreement Dec. 2021** **Enter into force on 2 May 2022**
Revised version and adoption of the MF	**Fine-tuning of the 8EAP MF after negotiations on the legal text are concluded**
	Commission adoption in 2022

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The Environmental key policy priorities

1. **Circular economy action plan** (March 2020)
   For a cleaner and more competitive Europe
   - **Focus on production, key value chains and waste prevention**
   - **35 actions, including the revision of the monitoring framework**
2. **EU Biodiversity Strategy 2030** (May 2020)
   Bringing nature back into our lives
   - **Ambitious EU targets and commitments for 2030 to achieve healthy and resilient ecosystems**
   - **More than 100 actions, including a monitoring framework and a knowledge centre (link to global Biodiversity monitoring)**
3. **Zero-pollution action plan** (May 2021)
   Towards zero pollution for air, water and soil

- **Ambition: Air, water and soil pollution is reduced to levels not harmful to health and natural ecosystems and within planetary boundaries**
- **33 actions, including Zero Pollution Monitoring and Outlook Reports**

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A new Circular economy action plan

Make sustainable products the norm in the EU
Empower consumers and public buyers
Sustainable production processes

Electronics and ICT
Batteries and vehicles
Packaging
Plastics
Textiles
Construction and buildings
Food, water and nutrients

Reduce Waste
Reduce Waste Exports
Boost market for high quality and safe secondary raw materials

Making circular economy work for people, regions and cities

Circular economy as a requisite for climate neutrality

Getting the Economics Right

Financial Markets

Investments and R&I

Global Level Playing Field

Monitoring

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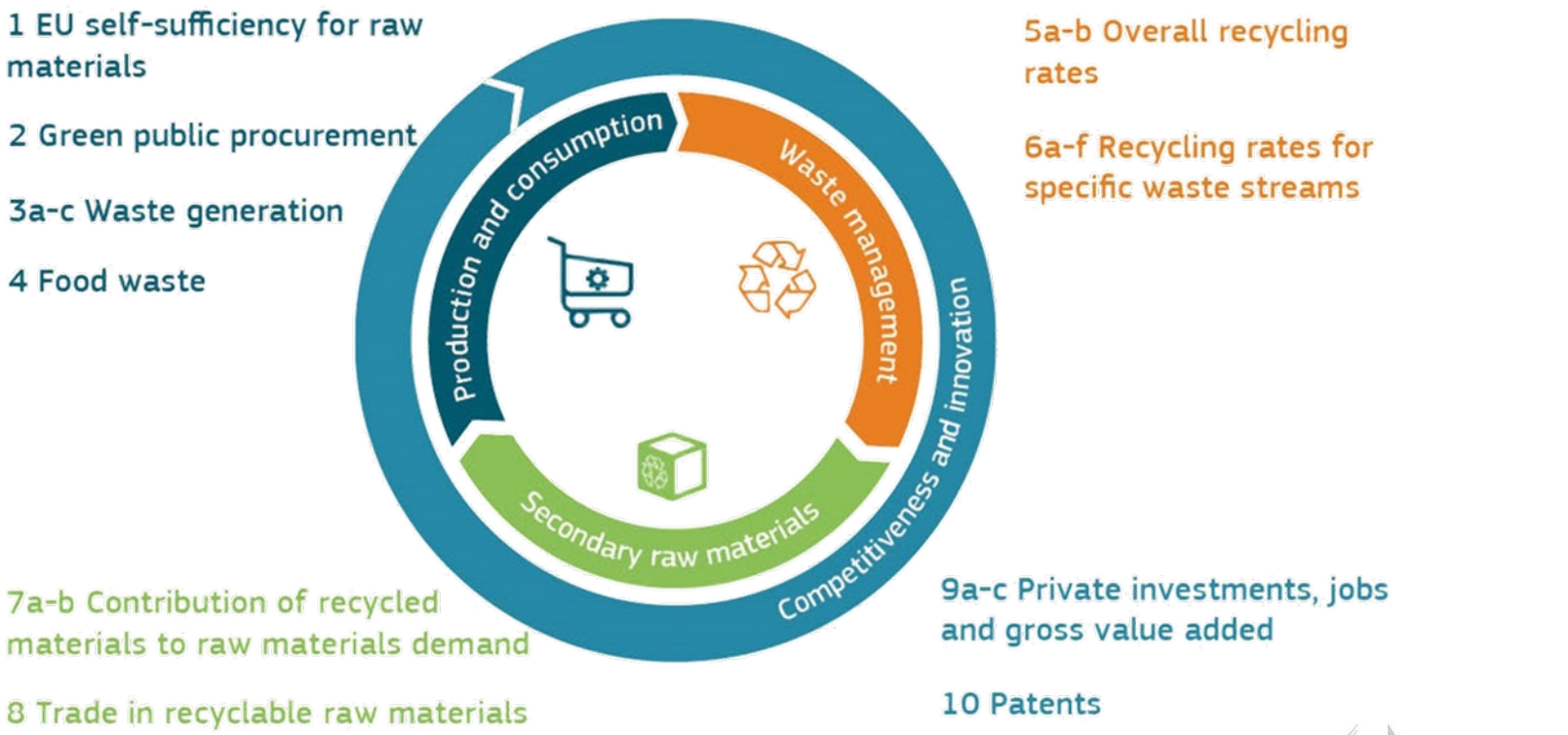
Monitoring progress towards Circular economy

EU Monitoring framework for the Circular economy



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A new Monitoring tool for Circular economy

Current approach

- **10** individual indicators
- In **4** main groups
  - production/consumption;
  - waste management;
  - secondary raw materials,
  - competitiveness/innovation
- Covering the **entire loop**
- Capturing **main** CE elements
- Also presented on a **website**, continuously updated

New approach

- **12** individual indicators
- In **5** main groups
  - production/consumption;
  - waste management;
  - secondary raw materials;
  - competitiveness and innovation;
  - global sustainability and resilience
- Covering the **entire loop,** more balance
- **Holistic view**
- **Website**

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The EU Biodiversity Strategy 2030

Ensure that by 2030, Europe's biodiversity will be on a path to recovery for the benefit of people, the planet, the climate and our economy

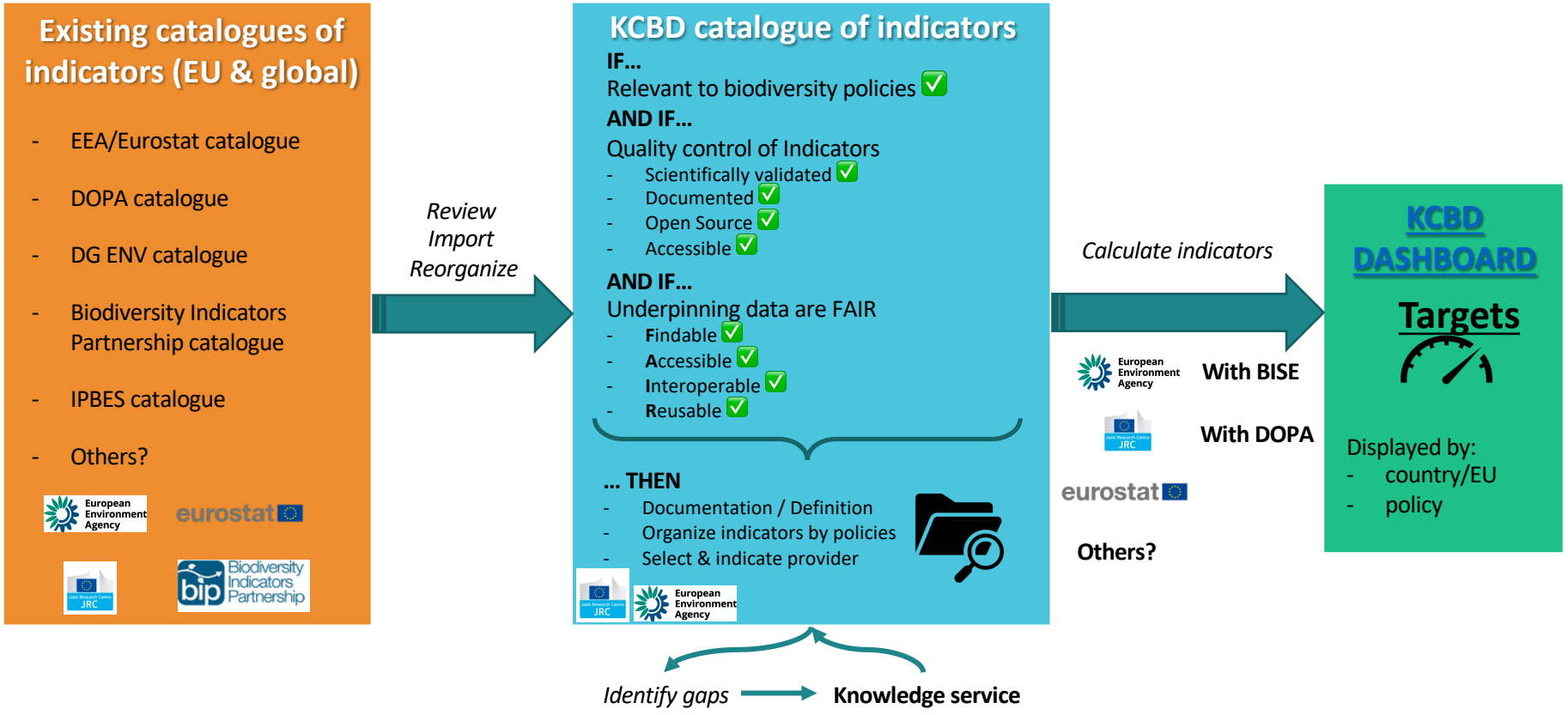
Protect Nature

Enable Transformative Change

Restore Nature

EU For An Ambitious Global Agenda

Monitoring progress towards Biodiversity targets



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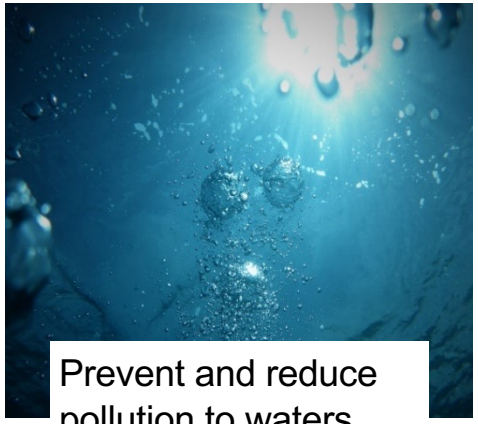
A Zero Pollution ambition for a toxic-free environment

The response

The Zero Pollution Action Plan

The zero pollution vision for 2050: Air, water and soil pollution is reduced to levels no longer harmful to health and natural ecosystems thus creating a toxic free environment.



Prevent and reduce pollution to waters and oceans and facilitate remediation

Prevent and reduce air and noise pollution

Prevent and reduce soil pollution and facilitate remediation

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Zero pollution – Monitoring and Outlook

- **Integrated Monitoring and Outlook framework to be developed as much as possible on the basis of existing indicators, see details in SWD(2021) 141** (including proposed indicators in the Annexes)
- **First report prepared for end 2022 – second report in 2024**
- **Shortcomings in terms of thematic** (e.g. soil and chemicals) **and time coverage** (e.g. frequency of data)
- **Closely coordinated and integral part of 8th EAP, SDGs and other frameworks including pollution-relevant indicators**
- **Proposed indicators mainly linked to zero pollution targets** (not all are under 'zero pollution' heading and some are under development)

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Thank you for your attention!

Barbara.Bacigalupi@ec.europa.eu

8th Environment Action Programme to 2030

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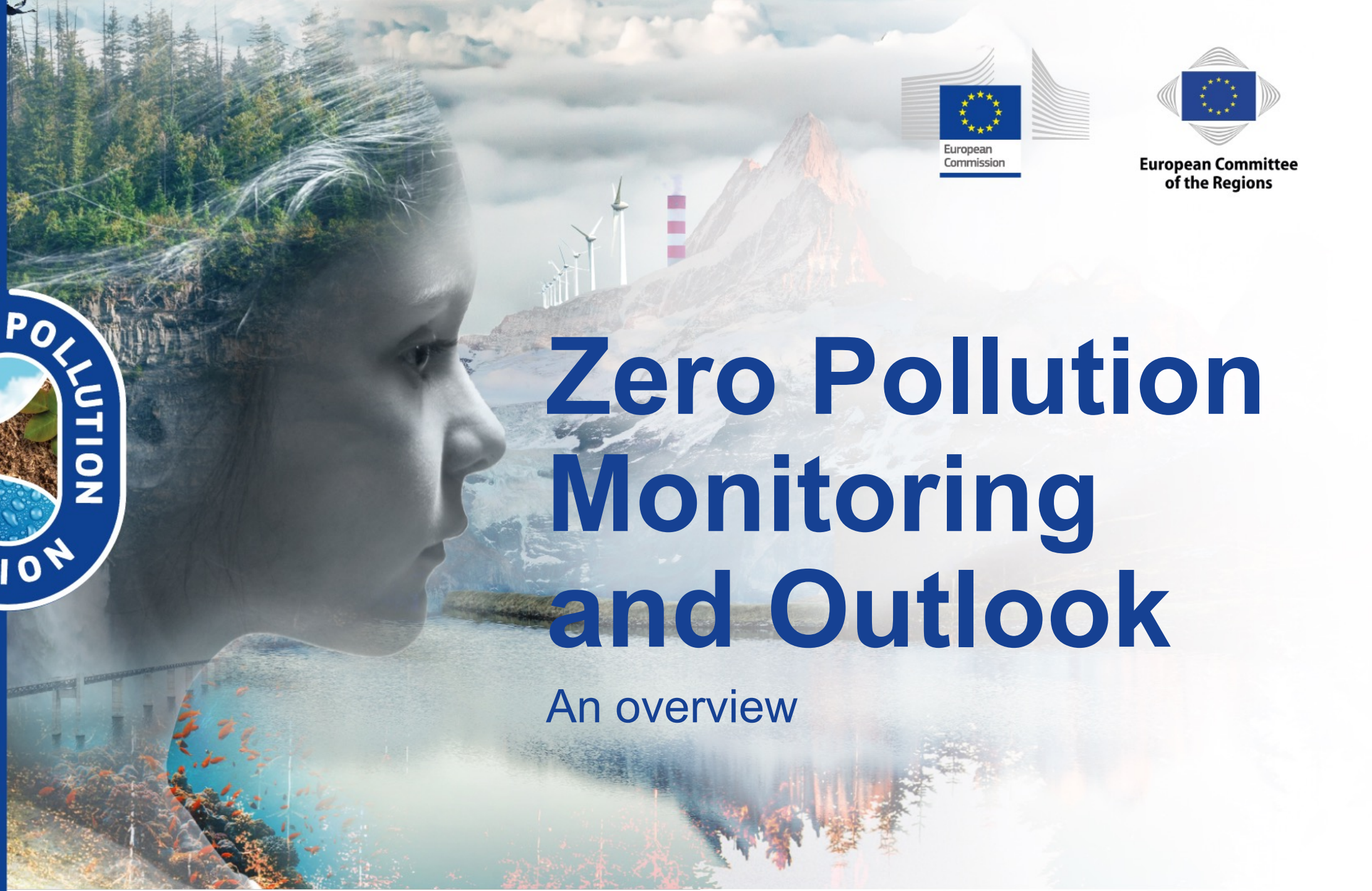

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Zero Pollution Monitoring and Outlook

An overview

The **zero pollution vision** for 2050

"Air, water and soil pollution is reduced to **levels no longer considered harmful**

to health and natural ecosystems and that **respect the boundaries our planet can cope with**,

thus creating a toxic-free environment."

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2030 targets complementing SDGs

by **55% the health impacts** of **air pollution**

by **30% the share of people** disturbed by **transport noise**

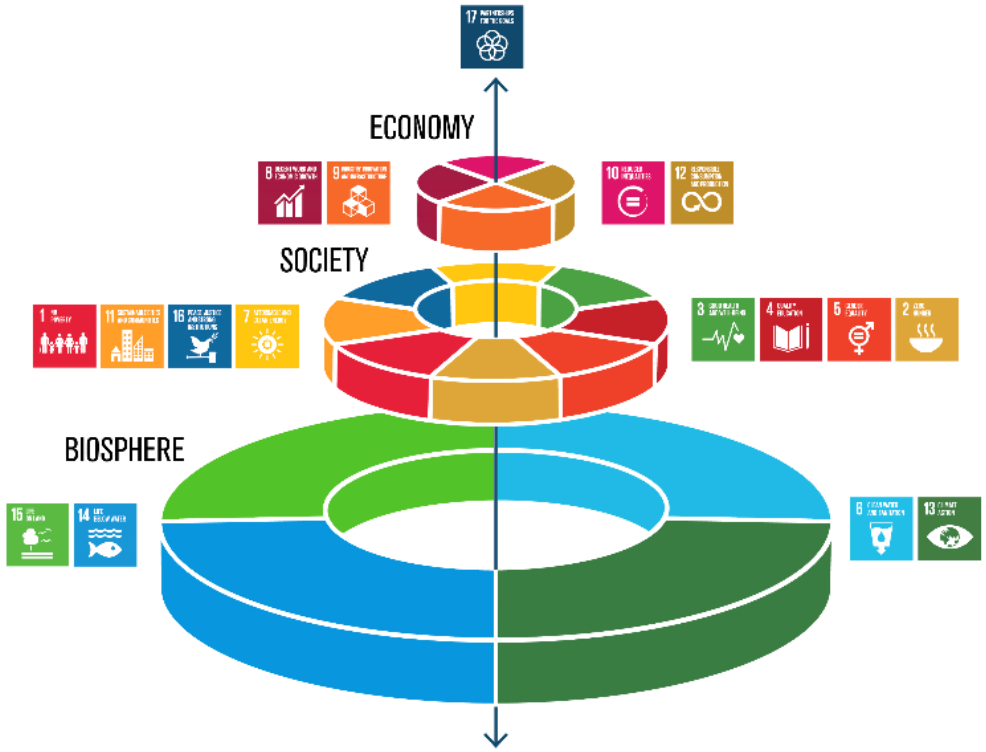
by **25% the EU ecosystems** threatened by **air pollution**

Achieve objectives in EU laws
(air, water, marine and other)
+ reduce

by **50% plastic litter at sea** and by **30% microplastics**

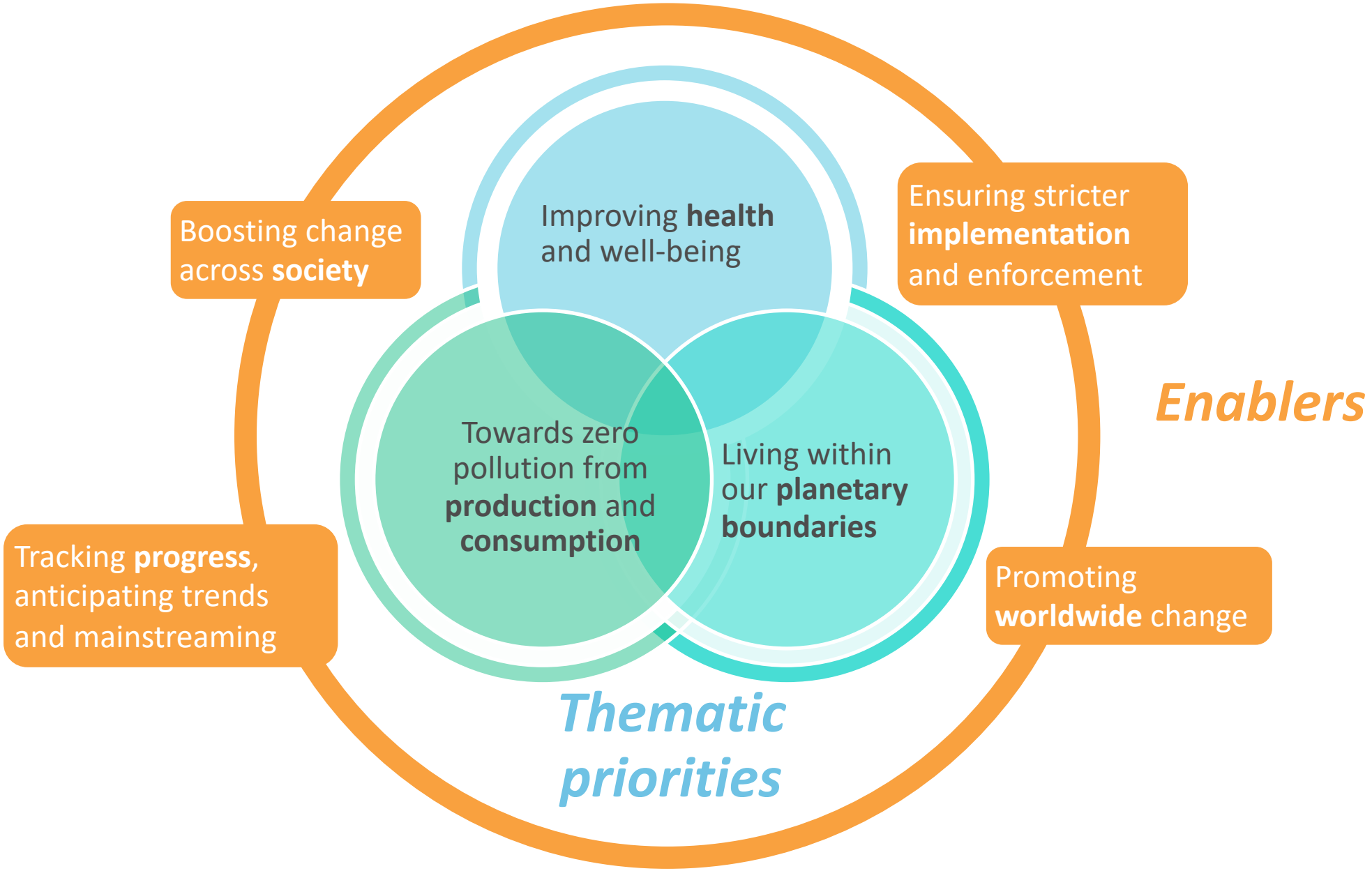
by **50% nutrient losses, pesticides use & antimicrobials sales**

waste generation and by **50% residual municipal waste**

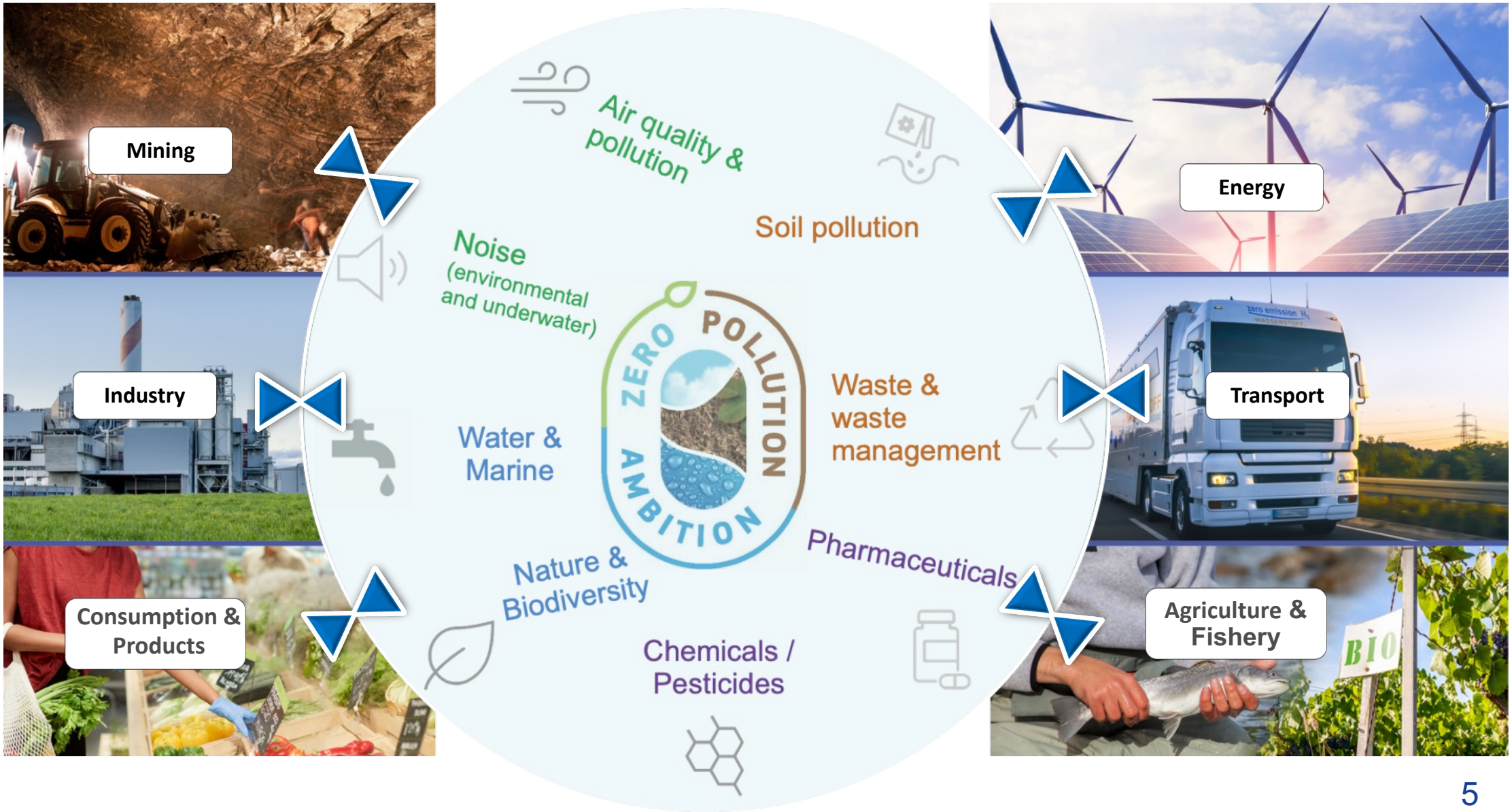


Graphics by Jerker Lokrantz/Azote

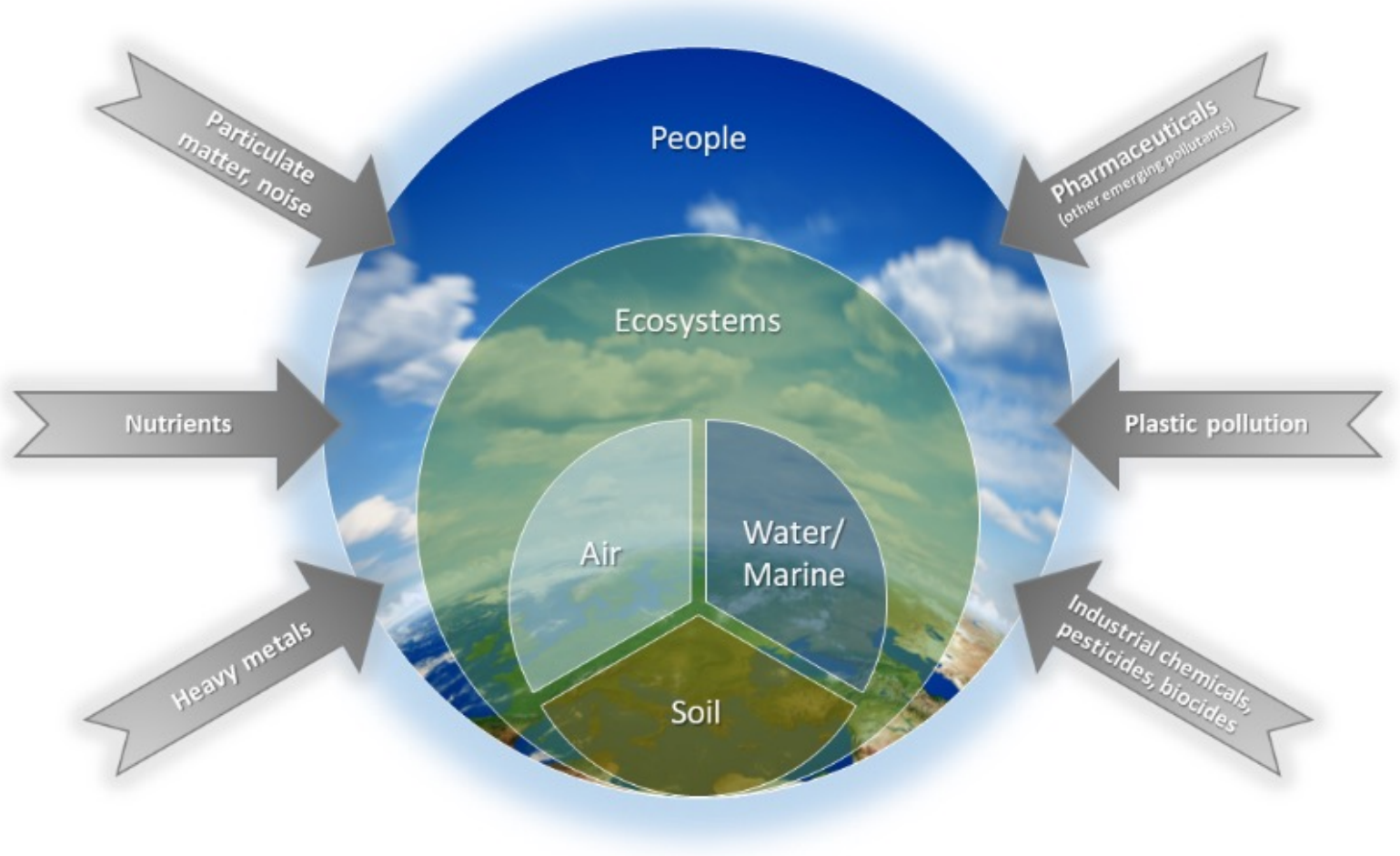
Action Areas



Towards an integrated approach



A simplified conceptual model for the report



SWD(2021) 141: Table of contents

Annex 1: Existing targets and objectives

Annex 2: Indicator lists

Selection criteria

Part A: Regular Dashboard indicators (every 1-2 years)

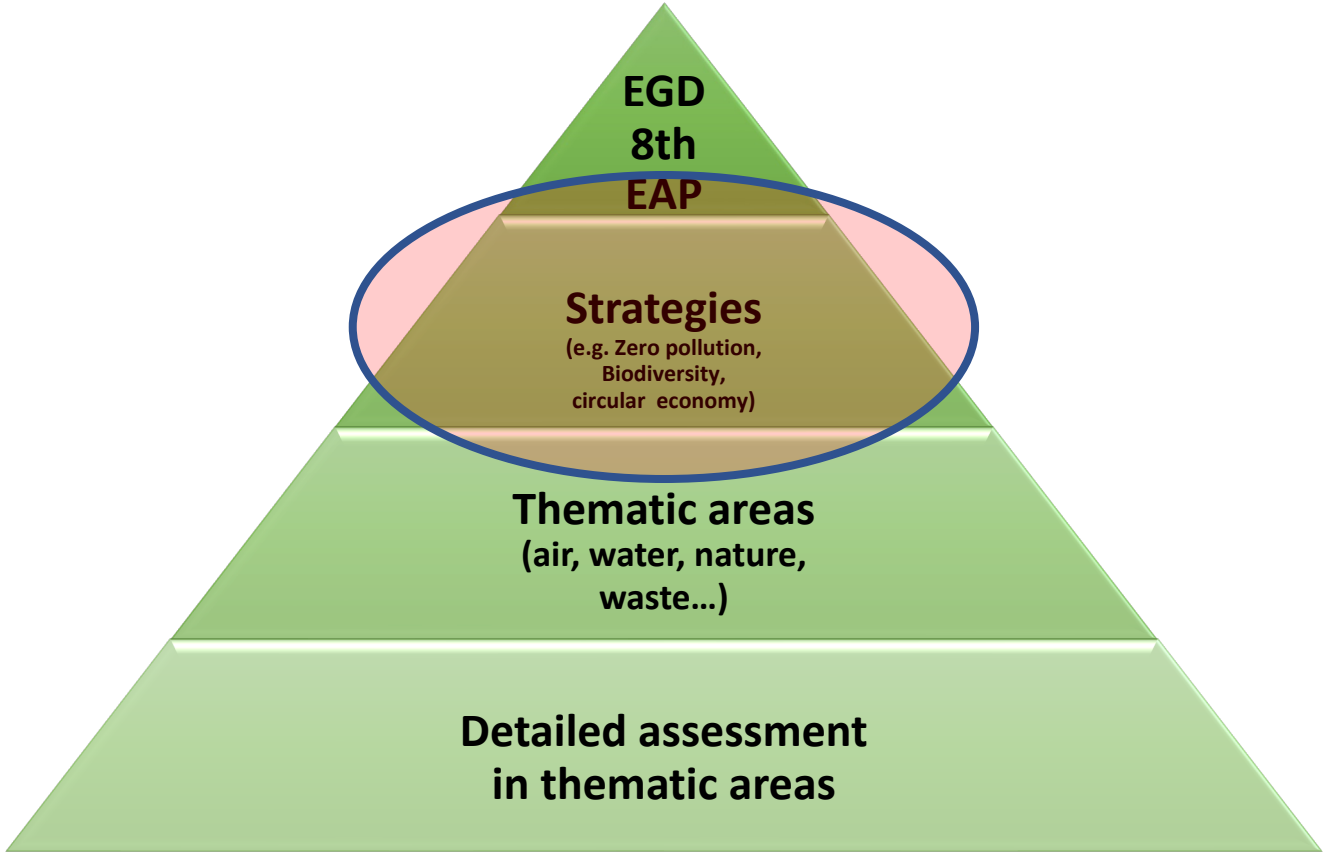
Part B: Indicators for assessments (every 4-6 years)

Part C: Indicators to be developed

Part C: Outlook / Foresight

-> Link to SWD (2021) 141

Defining purpose and level of detail



Tiered/layered approach building on one another. Stories across the levels are coherent.

Simplified structure for 2022 report

COM Report "Policy Summary" (ENV)

ZP monitoring (EEA)

- Input from air, noise, water, marine, industrial emissions, waste and other legislation (EEA)
- Other available indicators (e.g. soil) (JRC, ESTAT)
- Consumption footprint (JRC)

ZP outlook (JRC)

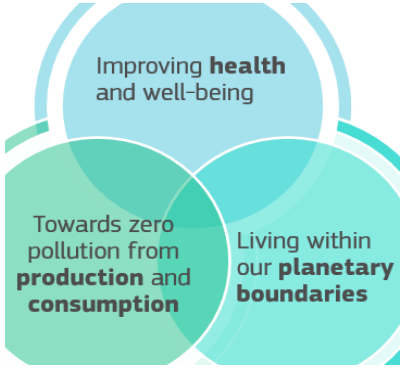
- Clean Air Outlook (ENV)
- Water/Marine (JRC)
- Soil Outlook (JRC)
- Consumption Footprint (JRC)

FORENV report 2021 (consultant)

Key questions

Monitoring:

- What is the progress regards the ZP targets?
- What is the progress on key indicators which cover the most important pollution dimension?
- What else do we know about pollution, e.g. emerging issues or evidence not based on indicators?
- What is the combined impact on health and biodiversity or the combined pollution from all pollution sources? (link to action areas)

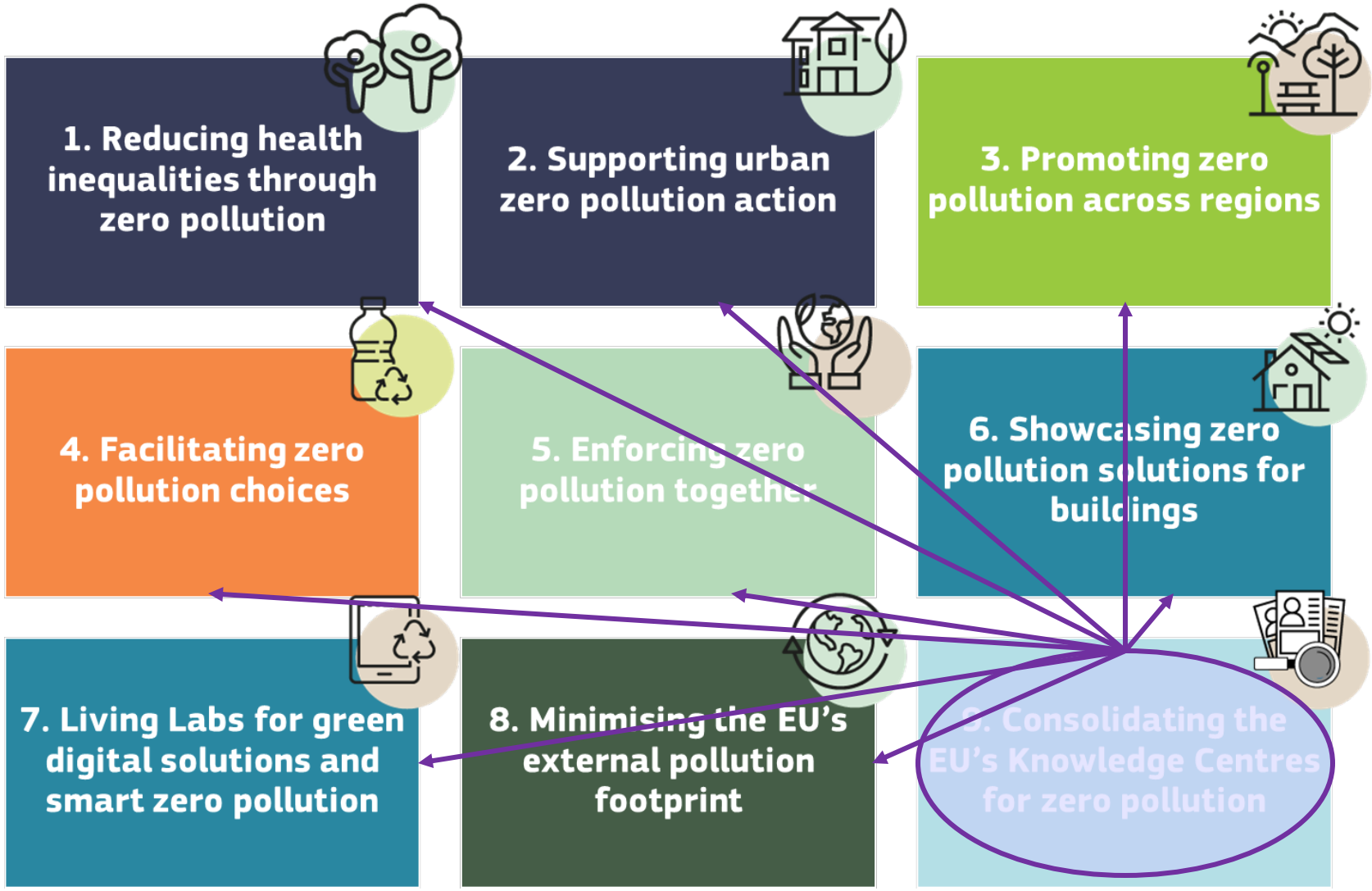


Outlook:

- Will we achieve the ZP targets in 2030 based on the agreed and planned measures?
- What is the wider perspective for 2030 / 2050 for achieving the zero pollution ambition?

What can we improve in order to strengthen the evidence base?

Integral part of ZP flagships



Next steps

May/June2022: Stakeholder Consultation

July-Oct 2022: Preparation of the ‘Report’

Nov/Dec 2022: 1st Zero Pollution Monitoring and Outlook Report

14 December 2022 (tbc): Zero Pollution Stakeholder Conference

During 2023: discussion and further development of Report

1st Semester 2024: 2nd Zero Pollution Monitoring and Outlook Report

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https://ec.europa.eu/environment/zero-pollution-stakeholder-platform_en


EU Chemicals Strategy
for Sustainability
Indicator
Framework
Bernhard Berger
Zero Pollution Stakeholder Workshop
24 May 2022
#ChemicalsStrategy
#EUGreenDeal
European
Commission

The Chemicals Strategy for Sustainability

Develop a framework of indicators to monitor:

- The **drivers** of chemicals pollution
- The **impacts** of chemicals pollution
- And measure the **effectiveness** of chemicals legislation

by 2024

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The goals of the Chemicals Strategy in a nutshell

	CSS objective
Prevention	Promote **safe-and-sustainable-by-design chemicals**, materials and products and clean production processes
Prevention	**Substitute** substances of concern as much as possible
Prevention	**Avoid most harmful substances** in consumer products and professional uses unless they are essential for society (c.f. the ongoing development of criteria for essentiality)
Prevention	**Reduce consumption of resources**
Prevention	Promote **innovative tools for testing** (e.g. non-animal test) and risk assessment
Control/minimise	Develop **modern business models** and smart solutions for safe and sustainable use of chemicals
Control/minimise	Ensure the development of **digital solutions** for tracking of chemicals and to ensure full information to users of chemicals
Control/minimise	**Step up risk management measures** for hazardous chemicals on the EU market (incl. from imports)
Remediate/eliminate	**Eliminate** as far as possible **substances of concern from waste** and secondary raw materials
Remediate/eliminate	**Restore health and environment** to a good quality status
Remediate/eliminate	Promote **safe and clean recycling** and waste management solutions
Remediate/eliminate	Step up **decontamination techniques**

Version 1 of the framework: candidate indicators

Areas of candidate indicators

1: Production and Consumption of chemicals
2: Safe and Sustainable by Design
3: Consumption footprint, chemicals in products and in the Circular Economy
4: Pesticides, biocides, antimicrobial resistance and pharmaceuticals
5: Environmental and human (bio)monitoring
6: Additional ad-hoc indicator candidates: this includes indicators on enforcement activities, animal testing and research

During 2022, validation of candidate indicators is taking place. At the moment areas 2 and 3 are the least developed.

List of candidate indicators (32 - with sub-indicators)

Target availability by 2024

TS		Indicator name	Data provider	2022	2024
TS1	Chemicals production and consumption	Number of substances identified as Substances of Concern	ECHA	x	
		Volume of SOC produced in and imported into the EU	ECHA		x
		Production and consumption of chemicals	ESTAT	x	
		Share of substances in need for regulatory action (assessed or initiated)	ECHA	x	
		Substances of concern with declared uses in REACH dossiers	ECHA		x
		Share of carcinogens registered for product categories	ECHA		x
		Substances of concern in down-the-drain consumer products	ECHA		x
TS4	Pesticides, Biocides, Pharma, AMR	Pesticides/Chemical plant protection products	ESTAT	x	
		Antimicrobials, resistance (human/vet) and biocides	EMA	x	
		Anthropogenic chemicals in food and feed	(EFSA)		x
		Chemical pollutants in drinking water and ground water	(EEA)		x
		Pharmaceutials sales (still to be discussed)	EMA	x	

TS		Indicator name	Data provider	2022	2024
TS5	Environmental and human (bio)monitoring	Industrial Pollution Intensity	EEA	x	
		Emissions to Water from Urban Waste Water Treatment	EEA	x	
		Surface water chemical pollutants and risk	EEA	x	
		Contaminated sites	EEA	x	
		LUCAS Soil indicators of metals, antibiotics and pesticides	JRC		x
		Hazardous substances in the marine environment	EEA	x	
		Chemicals effect on climate change and the ozone layer	(EEA/TBD)	x	
		Chemicals in humans and their risk	EEA/OSHA	x	
TSx	Other (ad-hoc)	Enforcement indicators for REACH and CLP	DG GROW	x	
		Safety Gate – RAPEX notifications and reactions	DG JUST	x	
		Animal use in science	JRC	x	

Later availability, 2024+

TS		Indicator name	Data provider
TS1	Chemicals production and consumption	Substances of concern assessed for developmental immuno-, endocrine- and neuro-toxicity in regulations	ECHA
TS2	Safe and sustainable by design chemicals (SSBD)	Placeholder for a set of Safe and Sustainable by Design indicators	DG RTD
TS3	Product, footprint and circular economy	Substances of Very High Concern in articles	ECHA
TS3		Consumption footprint	JRC
TS3		Domestic footprint	JRC
TS4	Pesticides, Biocides, Pharma, AMR	POPs and heavy metals air pollution (to be discussed)	(EEA)
TS5	Environmental and human (bio)monitoring	Monitoring and assessing Indoor Pollution in the EU Building Stock	JRC
TS5		Impacts of chemicals on Human Health	EEA
TSx	Other (ad-hoc)	Research and Innovation on chemicals	DG RTD/ENV

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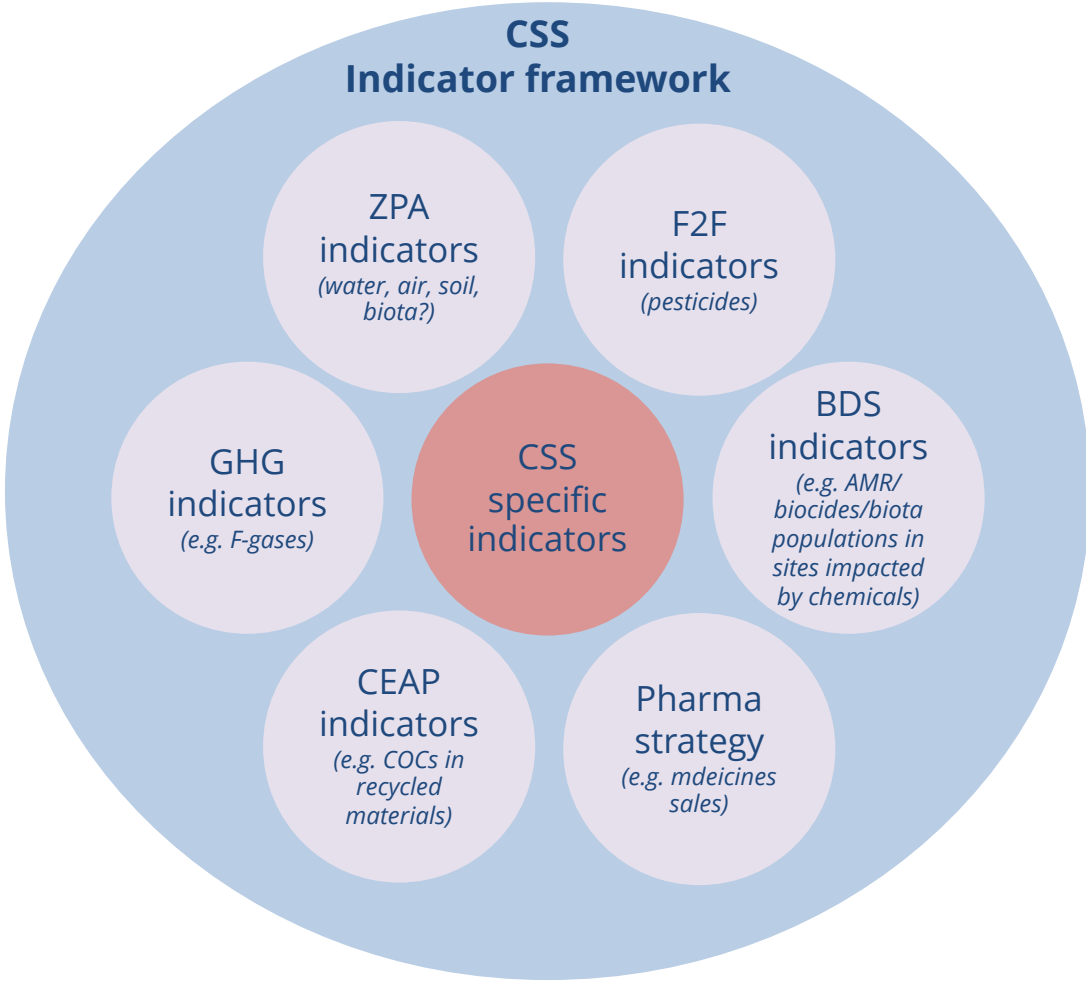
Interface with indicators from other strategies

Harvesting of indicators from other domains

Alignment with messaging/reporting from other policies



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Expectation from Zero Pollution towards CSS indicators

code	Indicator name	single ir	TS	Year of first availabil	Included in ZP Indicator Set?
TS4-1	**Chemical pesticides sales and risks**	**2**	**TS4**	2022	Yes
	A. Use and risk of chemical plant protection products	-	TS4	2022	
	B. Use of the more hazardous plant protection products	-	TS4	2022	
TS4-2	**Antimicrobials, resistance (human/vet) and biocides**	**>3**	**TS4**	2022	Uncertain
	A. Consumption of antimicrobials in food producing animals	-	TS4	2022	
	B. Antibiotic consumption in humans	-	TS4	2022	
	C. AM resistance- vet (EFSA) and human (ECDC)	-	TS4	tbc	
	D. Biocides	-	TS4	tbc	
TS4-3	**Placeholder (draft) for anthropogenic chemicals in food and feed**	**2**	**TS4**	tbc	Yes
	A. Food contaminants (to be discussed)	-	TS4	tbc	
	B. Pesticide and Veterinary drug residues (to be discussed)	-	TS4	tbc	
TS4-4	**Chemical pollutants in drinking water and ground water**	**2**	**TS4**	2024	Yes
	A. Chemical pollutants in drinking water	-	TS4	2024	
	B. Chemical pollutants in ground water	-	TS4	2024	
TS4-10	**Pharmaceutials sales (still to be discussed)**	**2**	**TS4**	2024	No
	A. Sales of veterinary pharmaceuticals in the EU	-	TS4	2024	
	B. Sales of human pharmaceuticals in the EU (to be discussed)	-	TS4	tbc	
TS5-1	**Industrial Pollution Intensity**	**2**	**TS5**	2022	Yes
	A. Industrial emissions	-	TS5	2022	
	B. Industrial production	-	TS5	2024	
TS5-2	**Emissions to Water from Urban Waste Water Treatment**	**2**	**TS5**	2022	Yes
	A. Treatment level of waste water	-	TS5	2022	
	B. Wastewater pollutants	-	TS5	2024+	

- Chemicals is a key element of ZP monitoring and outlook assessments
- A number of candidate CSS indicators also included within ZP Monitoring indicator set.
- Mainly Environmental and human biomonitoring indicators
- CSS will provide greater depth of information/assessment

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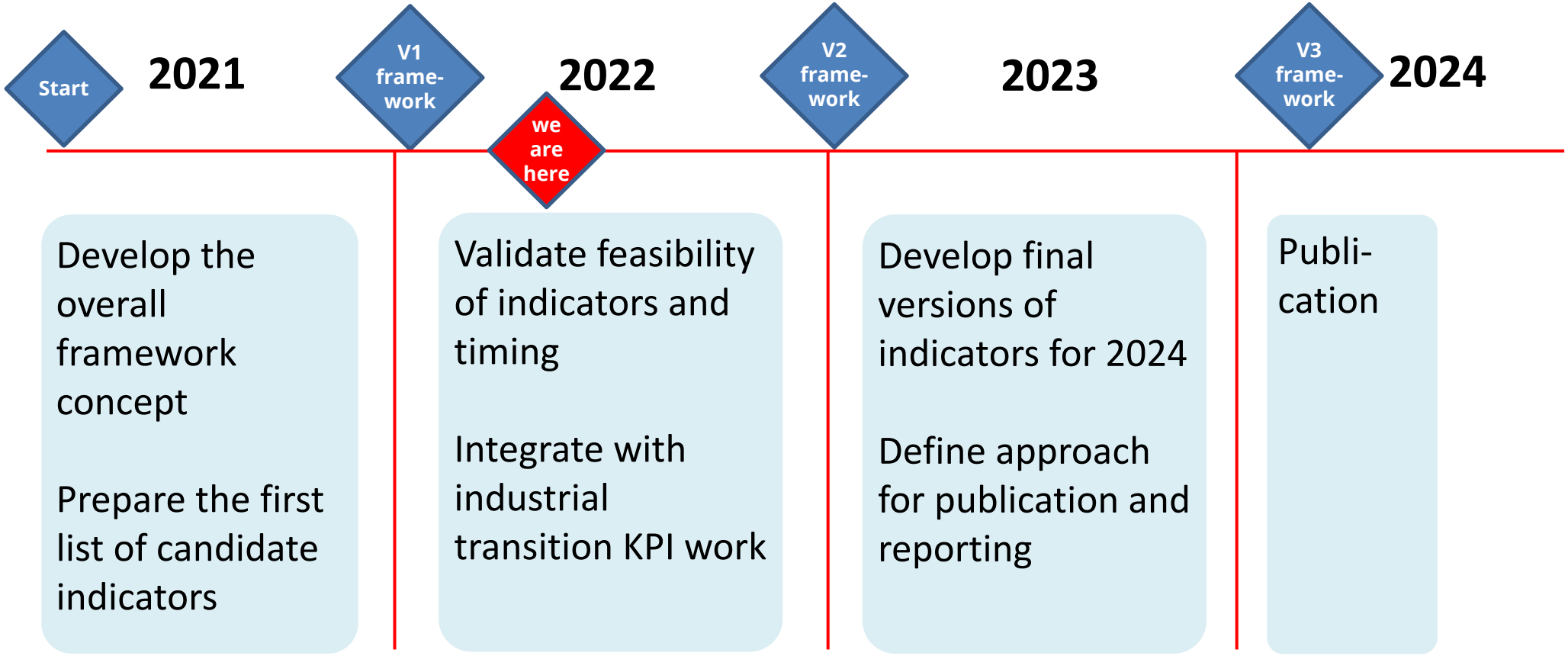
Current status and next steps



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Thank you

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Session 2:
Zero Pollution Monitoring

Presentations from EEA, JRC, UNEP and GAHP

EEA - Zero Pollution Action Plan

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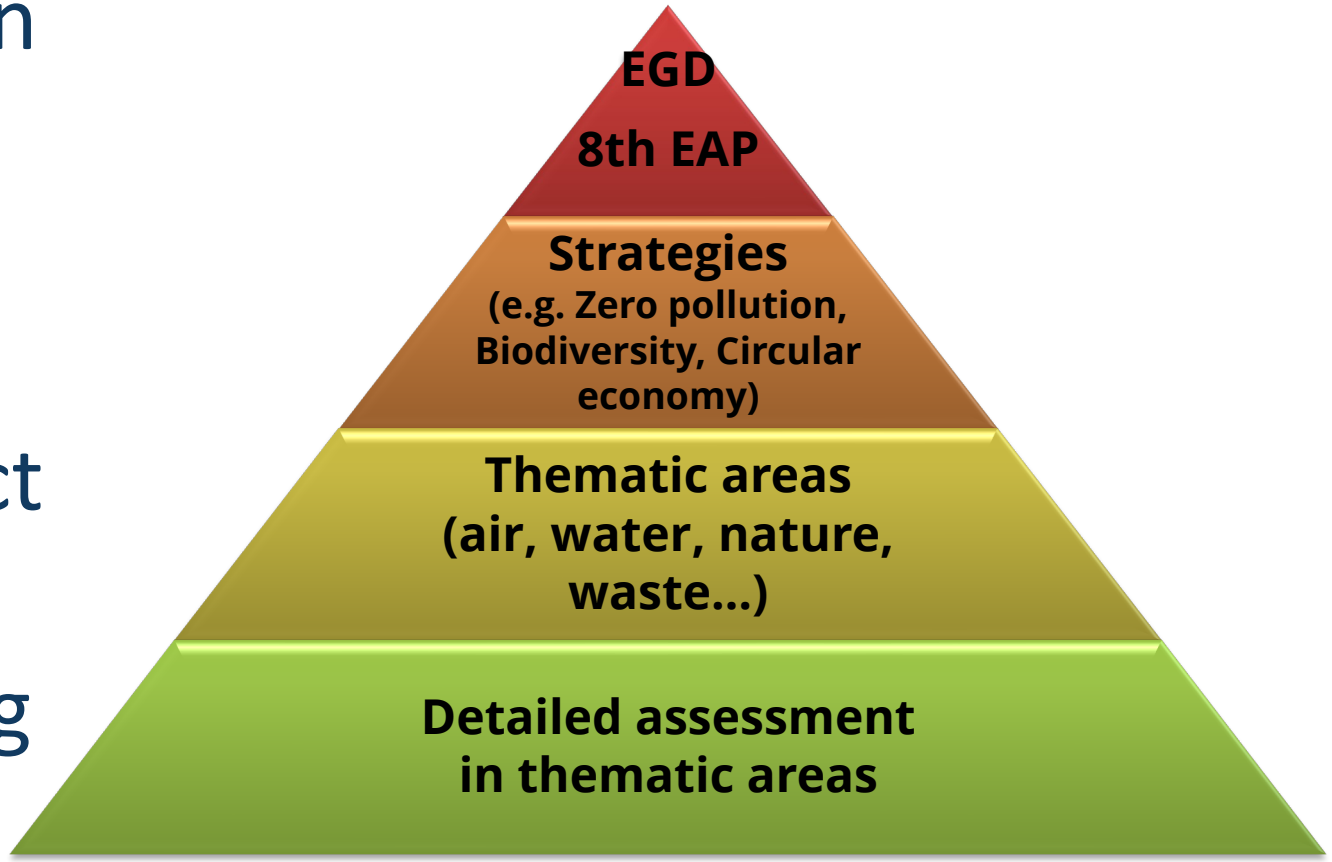
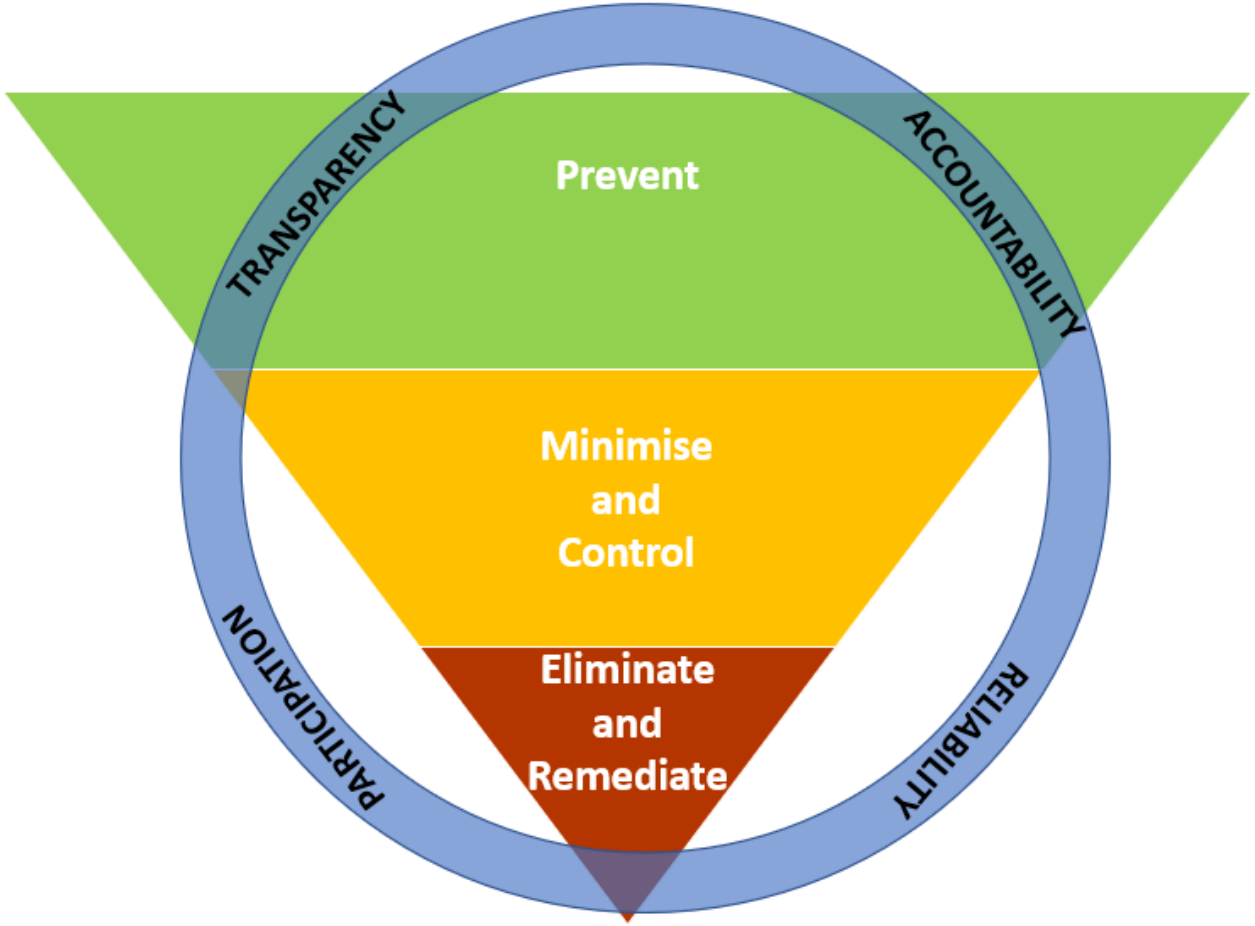
Objectives of the Zero Pollution Action Plan?

"Air, water and soil pollution is reduced to levels no longer considered harmful to health and natural ecosystems and that respect the boundaries our planet can cope with, thus creating a toxic-free environment."

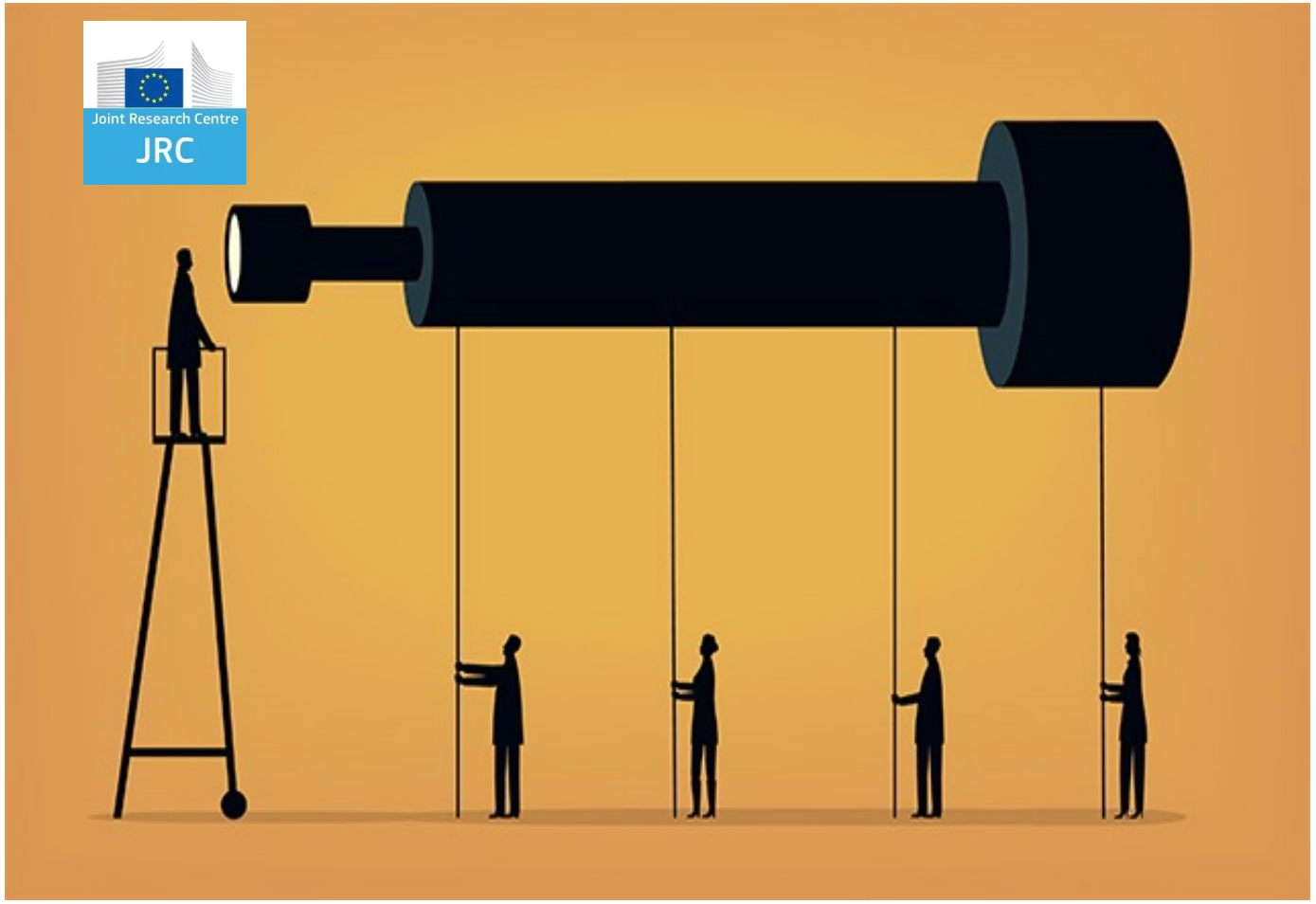


Zero Pollution Hierarchy & Key Elements

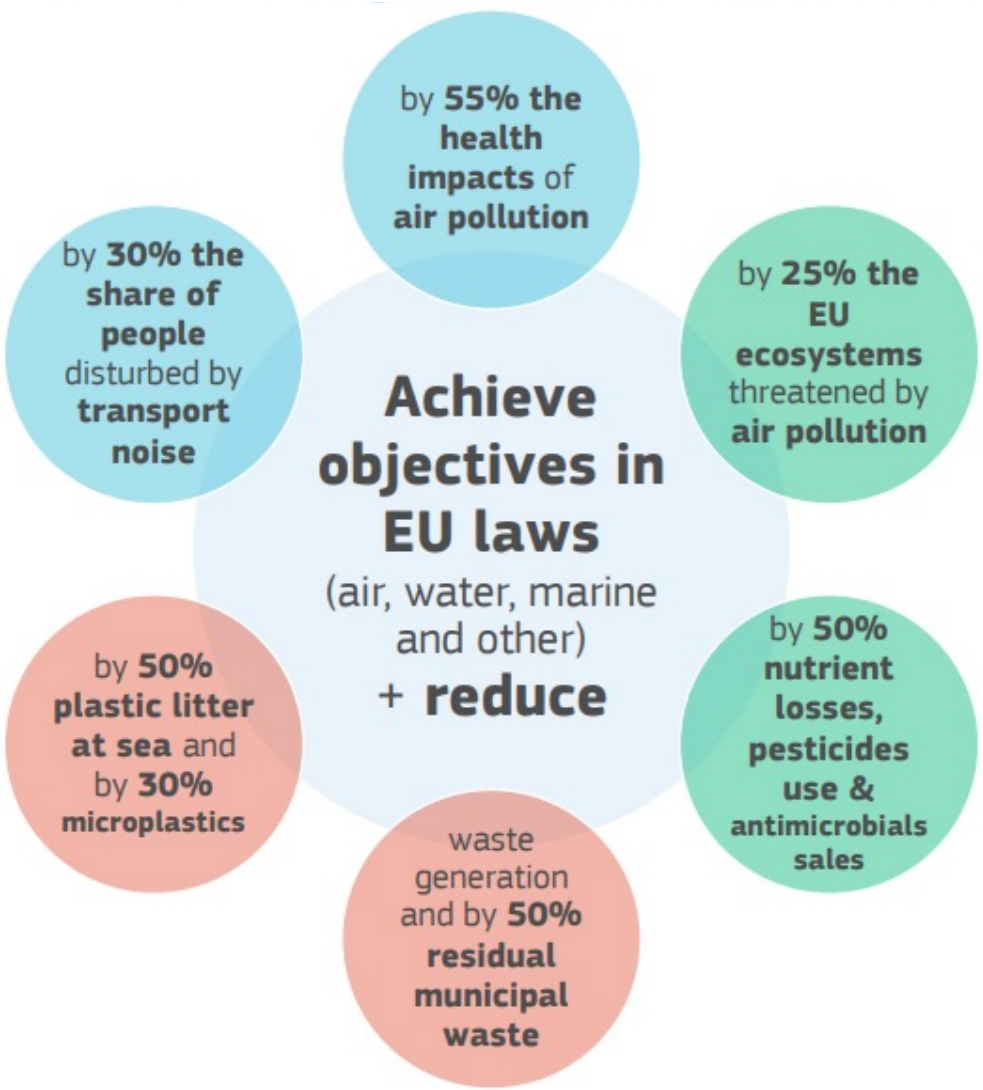
- Integrated approach to addressing environmental issues
- Knowledge based actions and policies
- Addressing inequalities
- Use of digitalisation



EEA Role: Assessing Progress - Monitoring & Outlook



2030 ZP Interim Targets



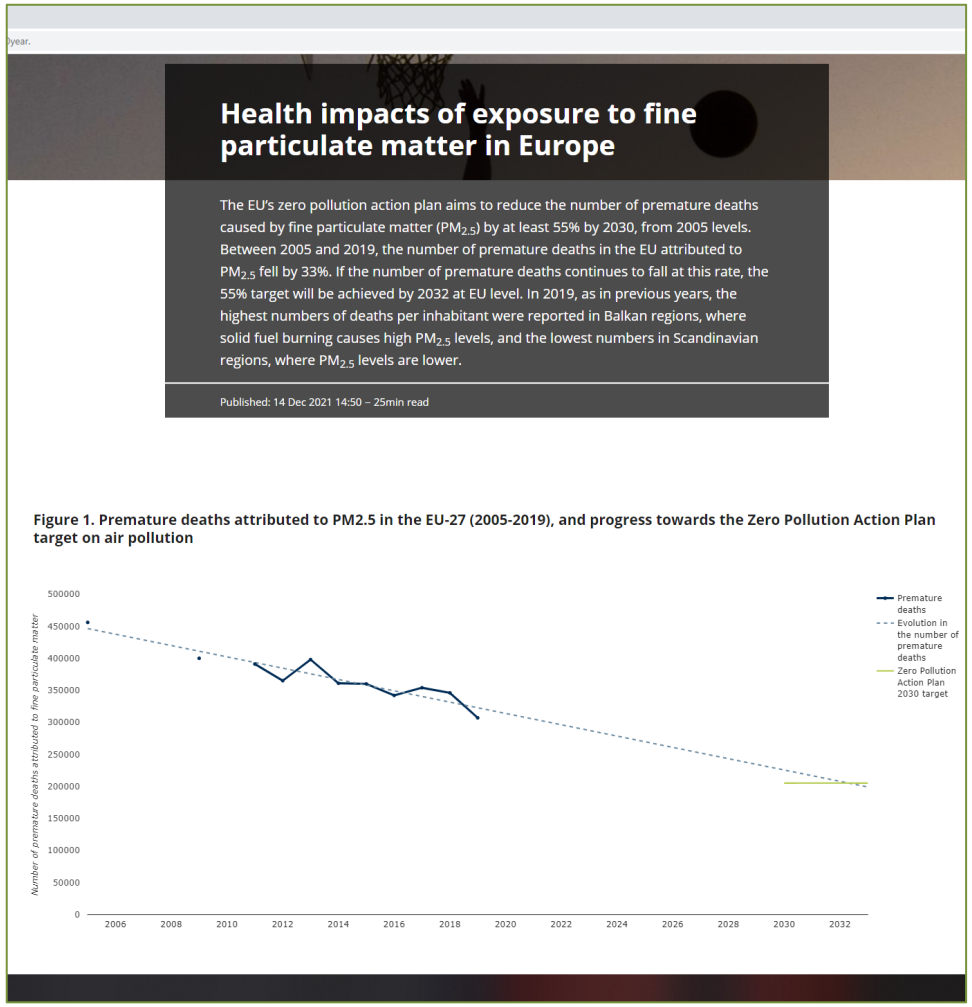
Achieve ZP Ambition by 2050

ZP Monitoring Assessment (ZPMA) Objectives

- A knowledge system driving ZP ambition
- A tool to measure progress of the ZPA
- A driver for change towards better monitoring
- What are trends, state & distance to target (policy target or ZP target)?
- What are the challenges?
- What are the knowledge gaps?

How will we assess progress?

Indicators



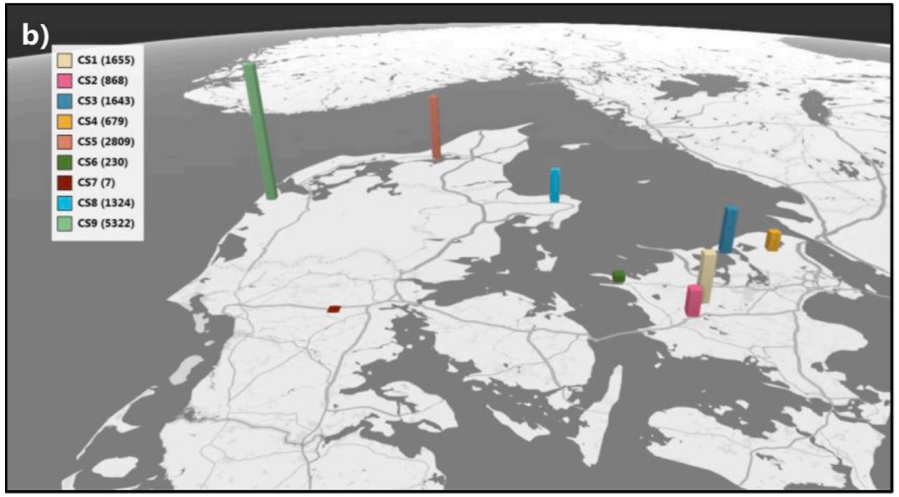
Health impacts of exposure to fine particulate matter in Europe

The EU's zero pollution action plan aims to reduce the number of premature deaths caused by fine particulate matter ($PM_{2.5}$) by at least 55% by 2030, from 2005 levels. Between 2005 and 2019, the number of premature deaths in the EU attributed to $PM_{2.5}$ fell by 33%. If the number of premature deaths continues to fall at this rate, the 55% target will be achieved by 2032 at EU level. In 2019, as in previous years, the highest numbers of deaths per inhabitant were reported in Balkan regions, where solid fuel burning causes high $PM_{2.5}$ levels, and the lowest numbers in Scandinavian regions, where $PM_{2.5}$ levels are lower.

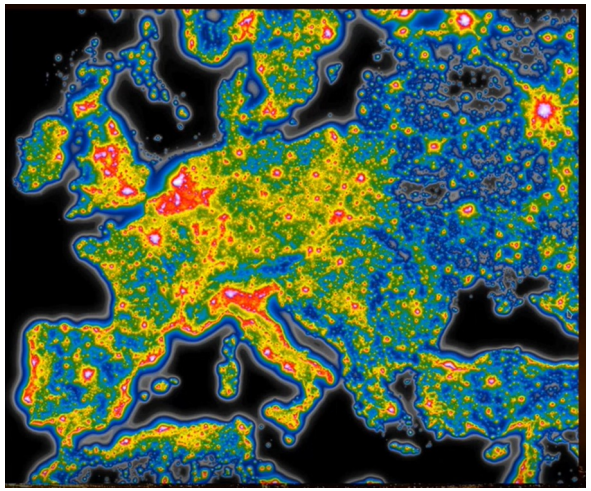
Published: 14 Dec 2021 14:50 – 25min read

Figure 1. Premature deaths attributed to PM2.5 in the EU-27 (2005-2019), and progress towards the Zero Pollution Action Plan target on air pollution

Signals



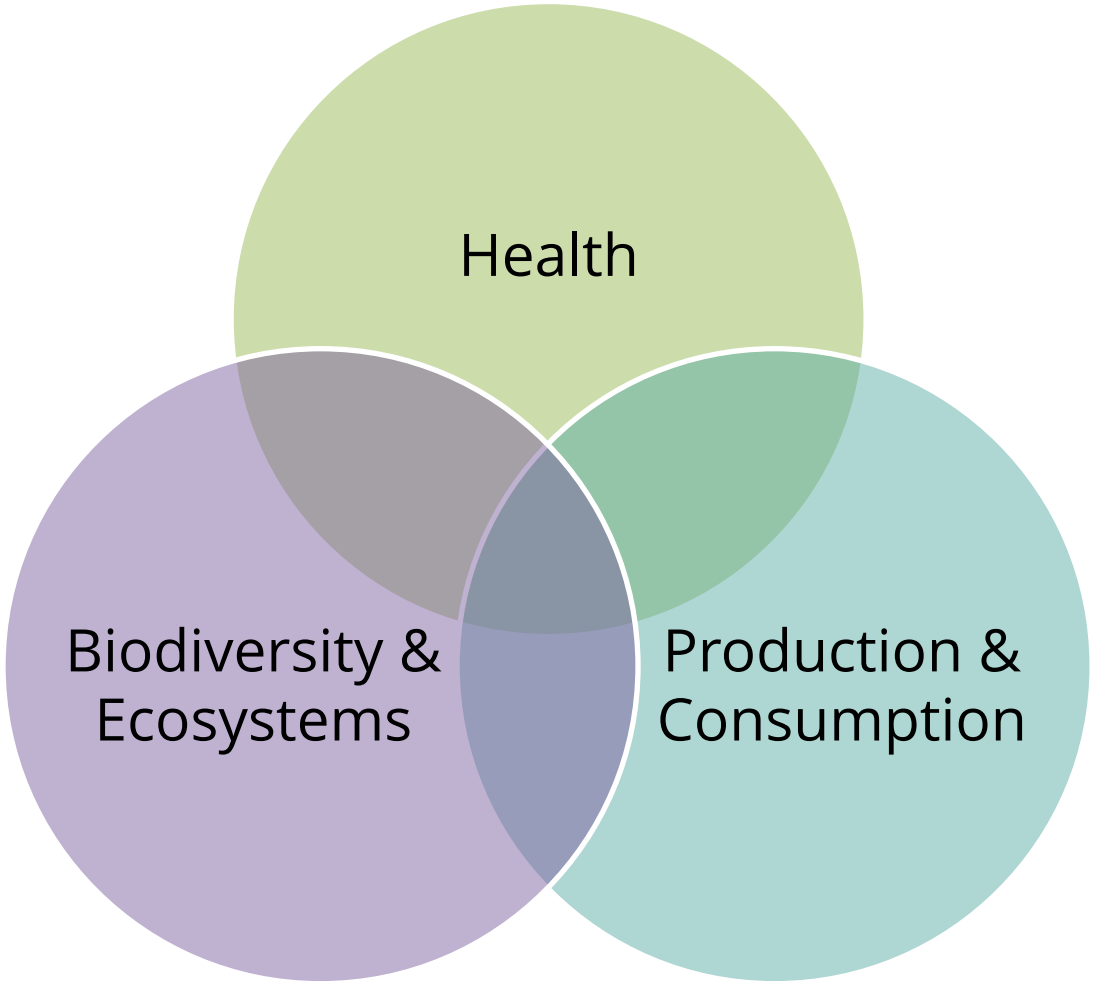
Impacts of pesticides on pollinators



Light pollution

European Environment Agency

Monitoring Assessment Components



Structure of Web Product

ZP Main Landing Page, analysis of 6 targets, key messages, infographic

ZP & Health	ZP & Ecosystems	ZP & Production/Consumption
Subtopics – air; water; noise; soil; chemicals.	Subtopics – air; marine; soil; Freshwater.	Subtopics – resource extraction; production; use; waste.

Cross-cutting Case Studies

ZP & Health

Subtopics – air; water; noise; soil; chemicals.

Zero Pollution and Health - Components

European Environment Agency

Indicators: Air Pollution and Health

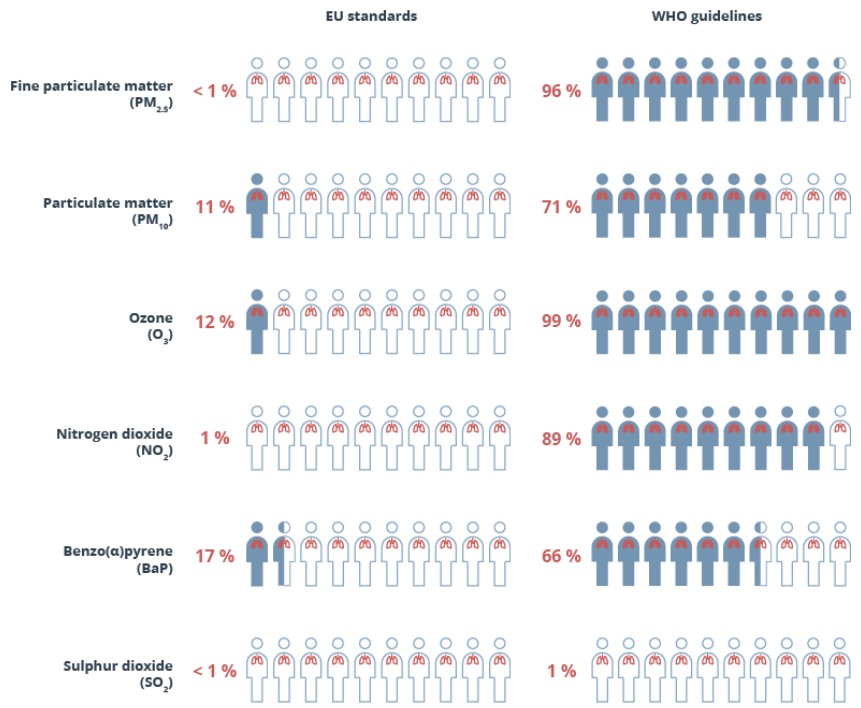
ZP & Health

Subtopics – air; water; noise; soil; chemicals.

Air Pollution

Health impacts of exposure to fine particulate matter in Europe

Exceedance of air quality standards in Europe



European Environment Agency

Signals: Air Pollution and Health

ZP & Health

Subtopics – air; water; noise; soil; chemicals.

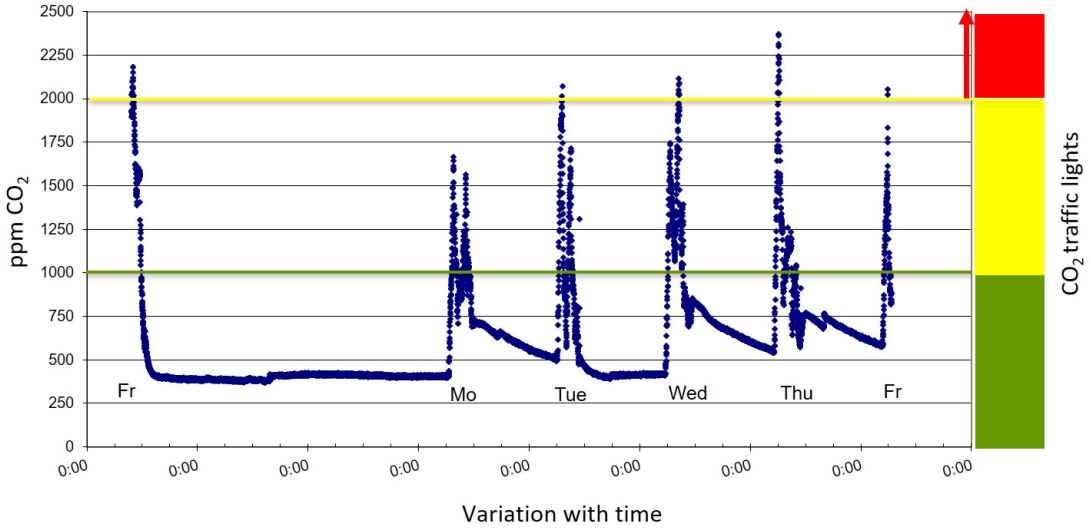
Air Pollution and Health Signals

Emerging pollutants - Black carbon & UFP

Indoor air quality - SINPHONIE Project

New approaches to monitoring - low-cost sensors, citizen science, etc..

Asbestos exposure and health risks in Europe.



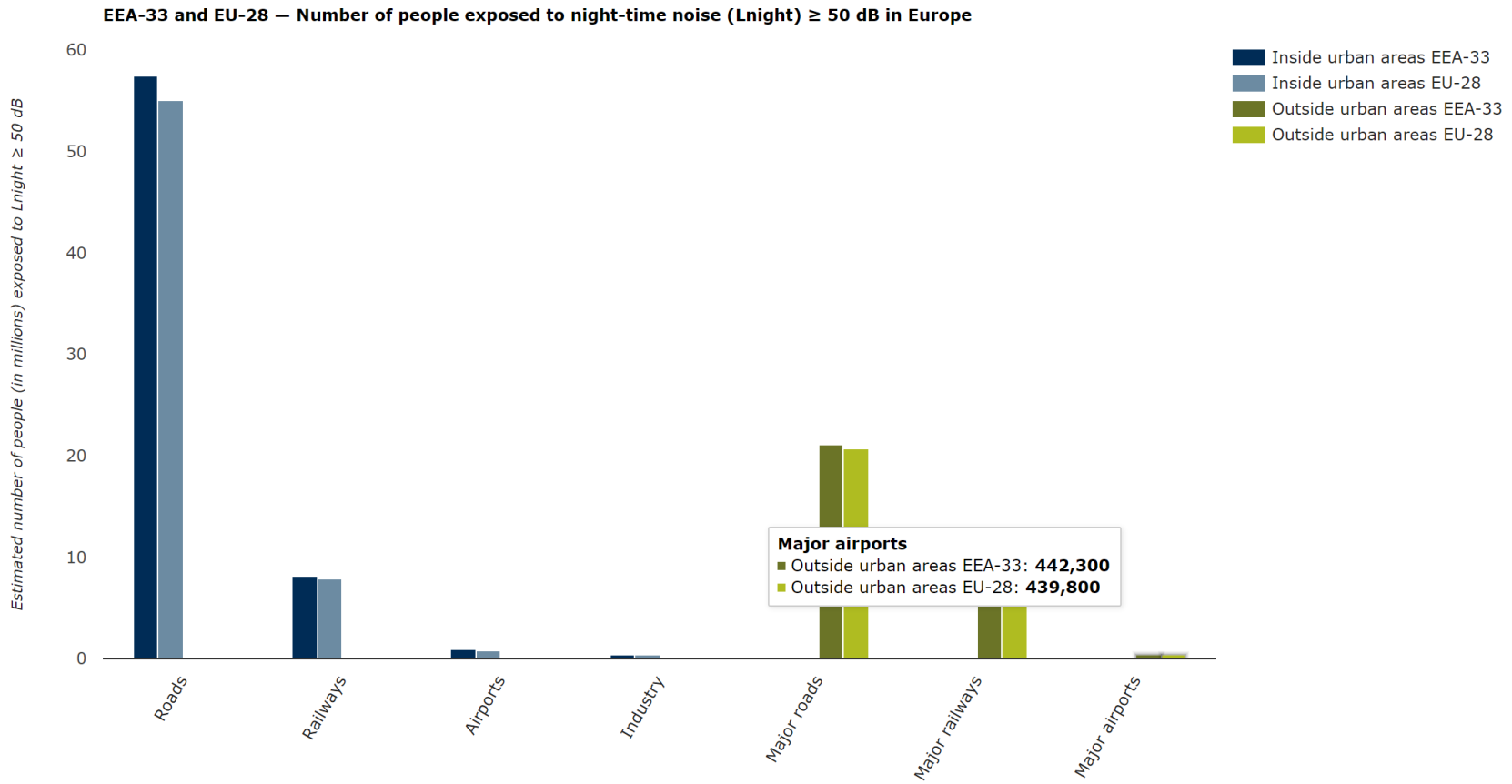
Indicators: Noise Pollution and Health

ZP & Health

Subtopics – air; water; noise; soil; chemicals.

Noise Pollution

Exposure of Europe's Population to Environmental Noise



European Environment Agency

Signals: Noise Pollution and Health

ZP & Health

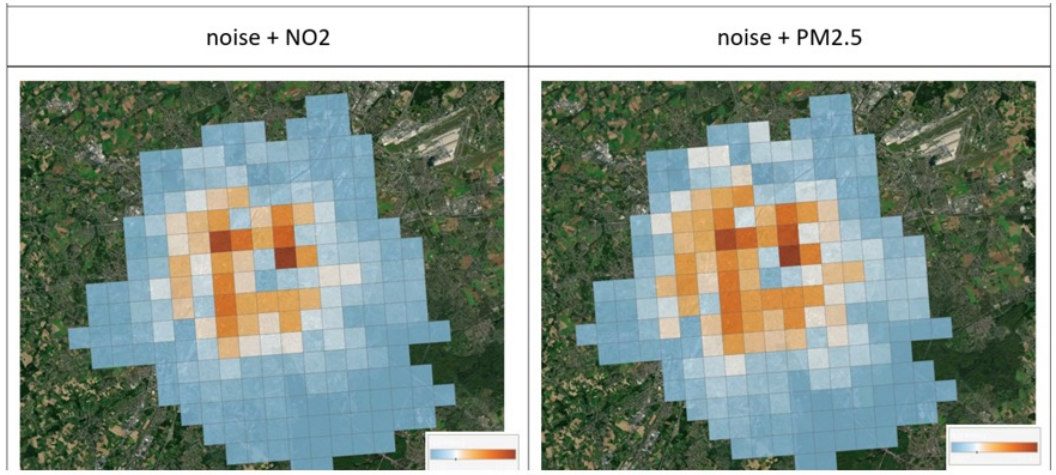
Subtopics – air; water; noise; soil; chemicals.

Noise Pollution and Health Signals

Combined impacts of air pollution and noise

Emerging health risks associated with noise exposure

Figure 1b Total health burden of combined road and air pollution (Example Brussels)

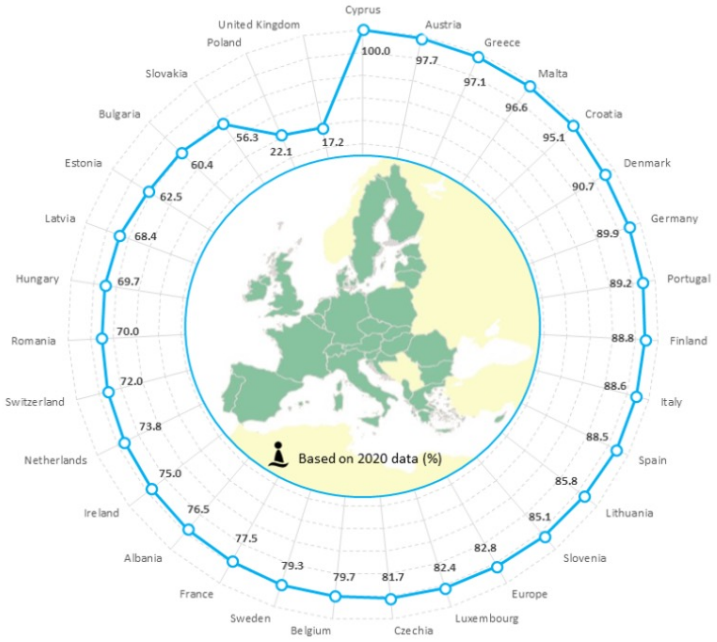


Indicators: Water Pollution and Health

ZP & Health

Subtopics – air; water; noise; soil; chemicals.

Water Pollution
Bathing water quality in Europe
Nutrients in freshwater and groundwater
Urban waste water treatment in Europe



European Environment Agency

Signals: Water Pollution and Health

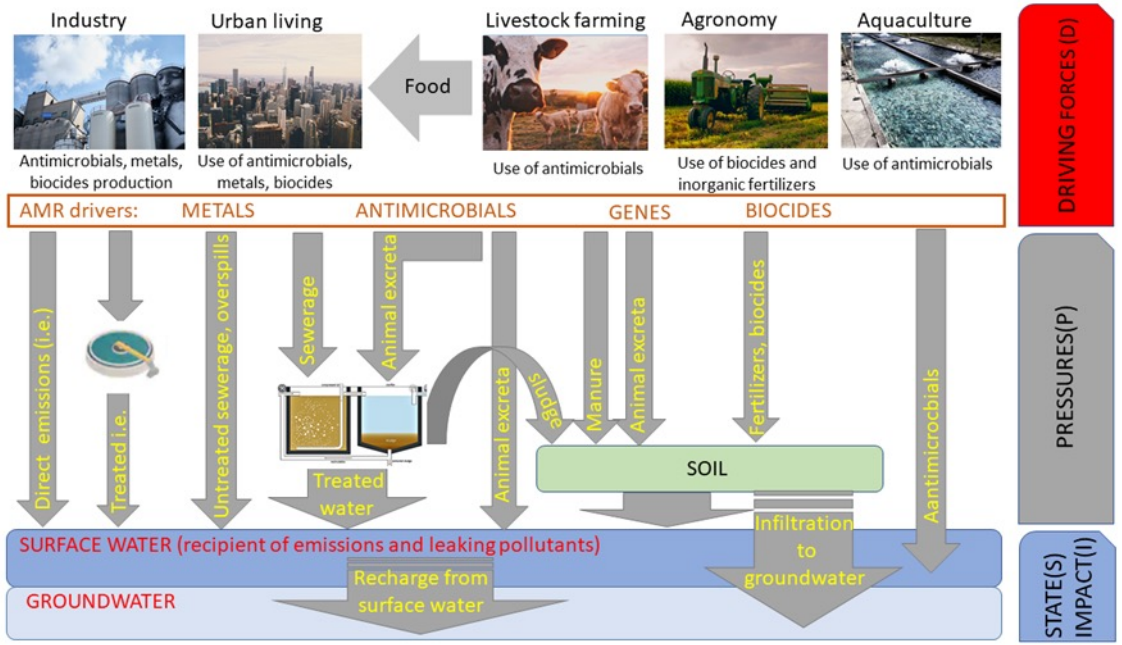
ZP & Health

Subtopics – air; water; noise; soil; chemicals.

Water Pollution and Health Signals

Impacts of cyanobacteria on health and wellbeing

Antimicrobial resistance



European Environment Agency

Indicators: Chemical Pollution and Health

ZP & Health

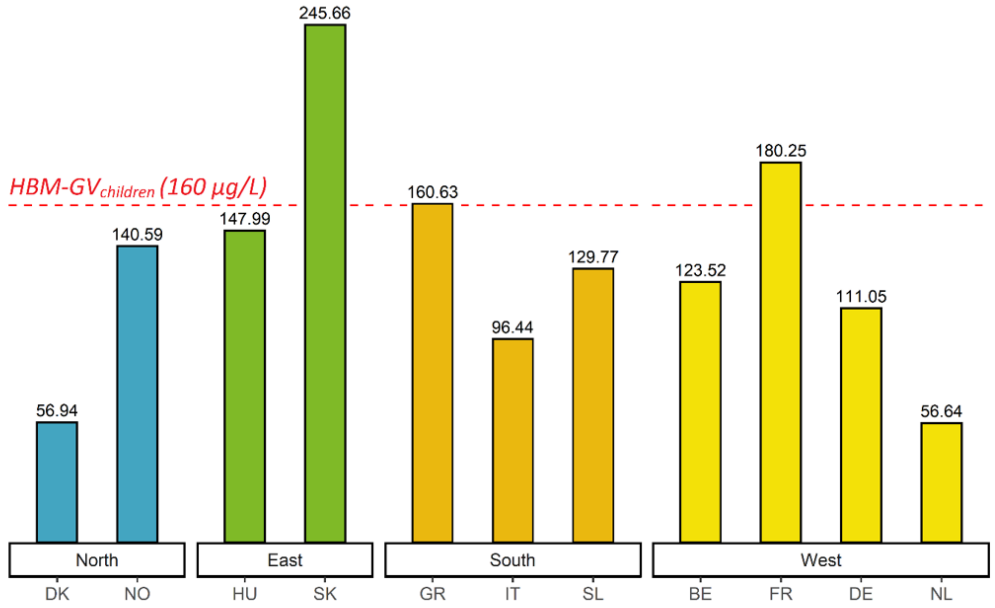
Subtopics – air; water; noise; soil; chemicals.

Chemical Pollution

Environmental burden of cancers (EEA indicator not yet published)

Bisphenol levels in EU citizens (HBM4EU indicator – not yet published)

Phthalate levels in EU citizens (HBM4EU indicator – not yet published)



Note: The graphs present the 95th percentile value of DiBP; the value below which 95% of the DiBP levels were reported.

European Environment Agency

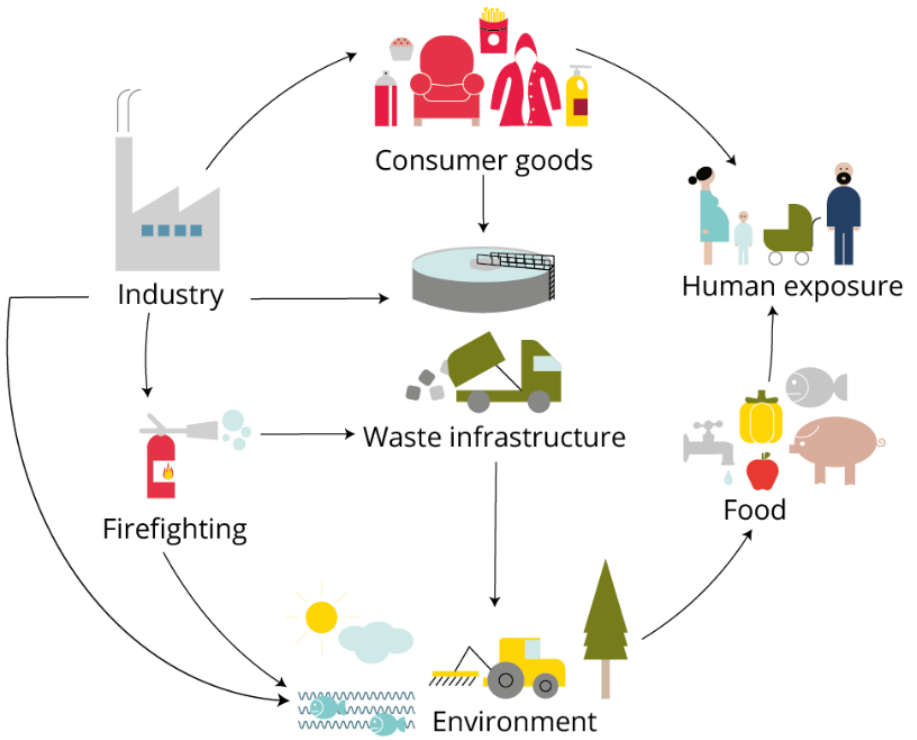
Signals: Chemical Pollution and Health

ZP & Health

Subtopics – air; water; noise; soil; chemicals.

Chemical Pollution and Health Signals
Regrettable substitution (DEHP example)
Effects of chemical mixtures
Human exposome
PFAS

Figure 2: Typical PFAS exposure pathways



European Environment Agency

Indicators: Soil Pollution and Health

ZP & Health

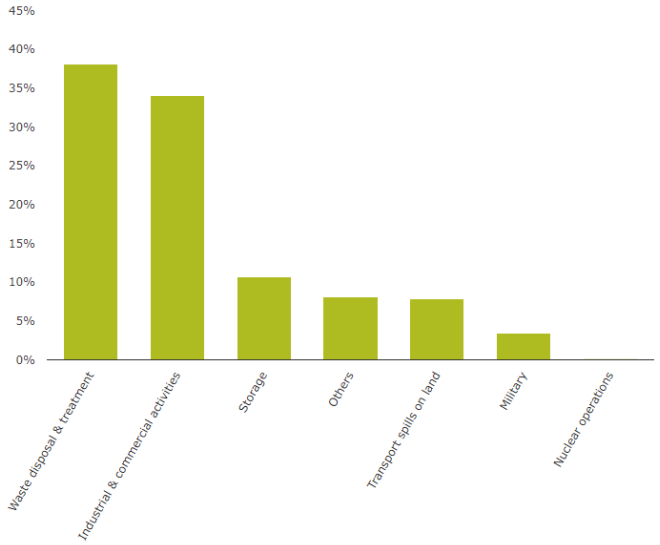
Subtopics – air; water; noise; soil; chemicals.

Chemical Pollution

Progress in the management of contaminated sites

Cadmium levels in EU citizens (HBM4EU indicator – not yet published)

Figure 1: Key sources of soil contamination



Signals: Soil Pollution and Health

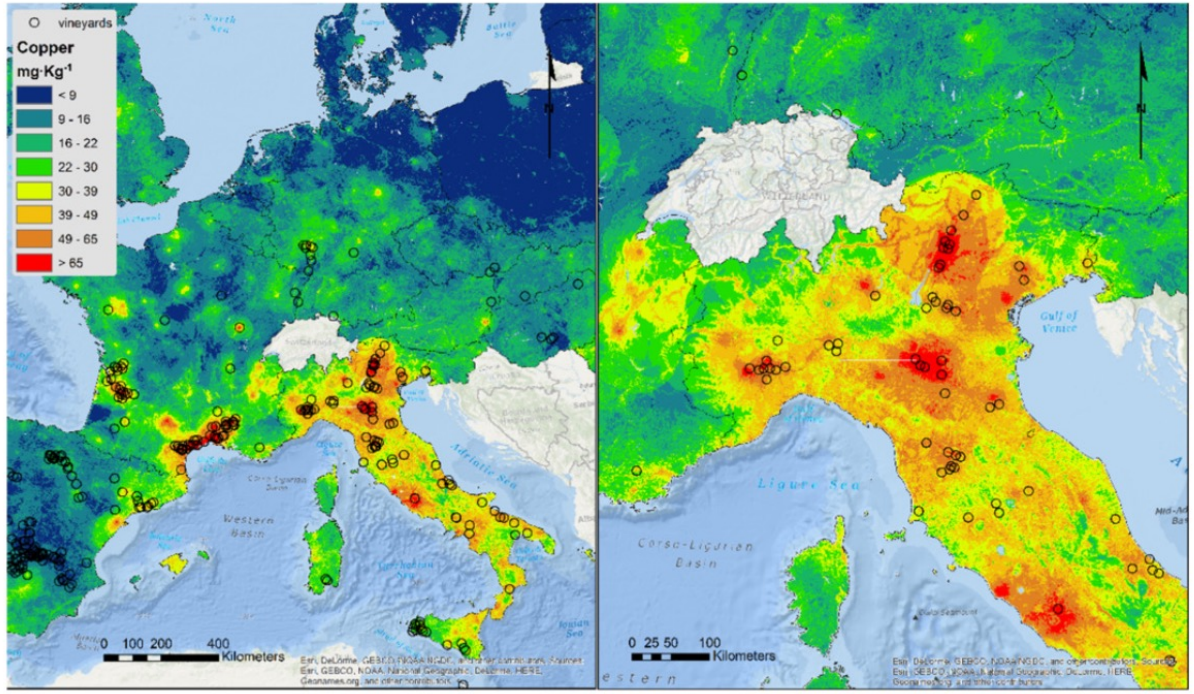
ZP & Health

Chemical Pollution and Health Signals

Pesticide residues in food/feed

Copper and/or cadmium in soil

Subtopics – air; water; noise; soil; chemicals.



ZP & Ecosystems

Subtopics – air; marine; soil; Freshwater.

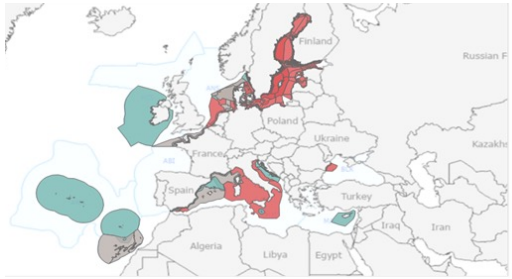
Zero Pollution and Ecosystems – Components

Indicators: Marine pollution and ecosystems

ZP & Ecosystems

Subtopics – air; marine; soil; Freshwater.

Marine Pollution
Hazardous Substances in Marine Organisms (EEA, published June)
Nutrients in transitional, coastal and marine waters (EEA, published in July)
Cl-a in transitional, coastal and marine waters in Europe (EEA, published July)
Beach litter (JRC assessment – available in June)
Micro Litter (Literature and EU projects- will be replaced by MS data in 2024)
D5, D8, D10 and D11 MSFD GES Dashboards – EEA WISE Marine (will be refined in June) + EEA composite indicators on contaminants, eutrophication, ML)
Number of significant oil spills (EMSA indicator)
Underwater Noise (EMSA indicator)
Emissions from shipping (EMSA indicator)



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Signals: Marine Pollution and Ecosystems

ZP & Ecosystems

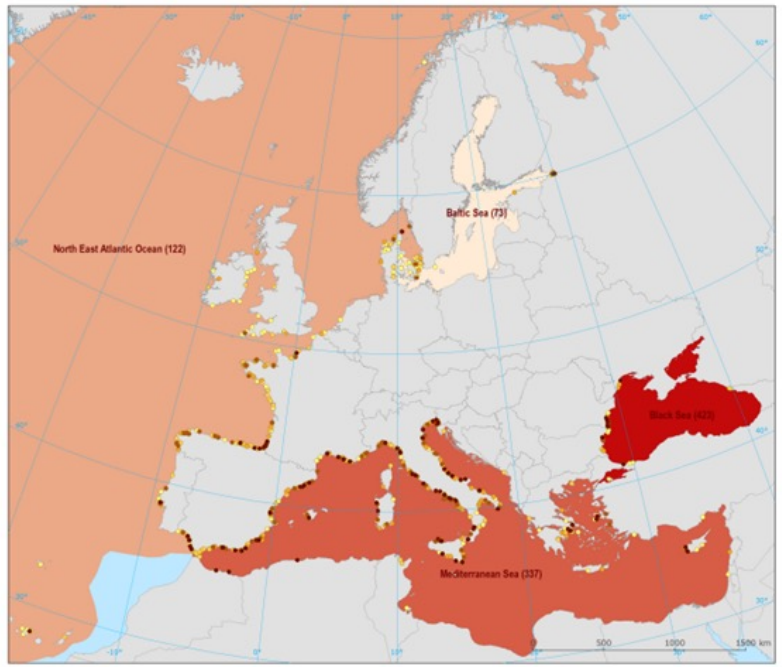
Subtopics – air; marine; soil; Freshwater.

Marine Pollution and Ecosystems Signals

EEA Marine Litter Watch – beach litter

EMSA Underwater noise pollution

Map 1: Median number of beach litter per 100 m by marine sub-region/region and median number in each beach site (as circles)

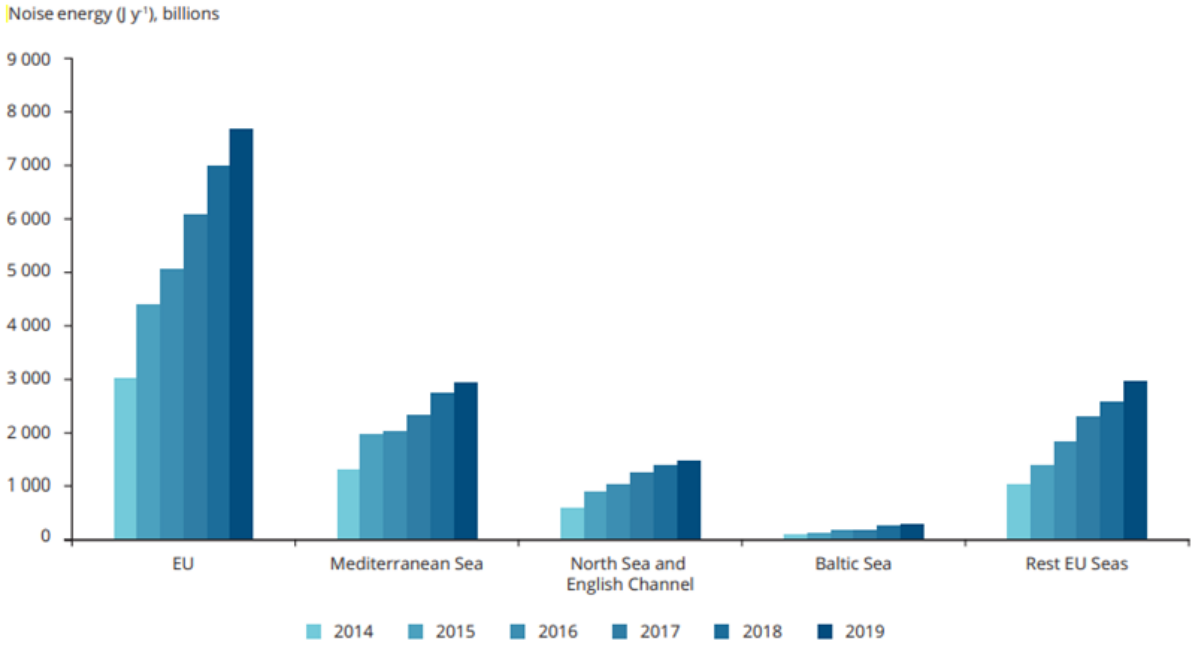


Beach site - Items per 100 m

- >1000
- >500 - 1000
- >250 - 500
- >100 - 250
- ≤100

Note: The median number of items per 100 m of beach, averaged by regional sea and illustrated with graduated colouring for each sea, is given in parentheses.

Figure 4.29 **Overall EU underwater noise energy (J) at 125 Hz one-third octave band centre frequency by sea, 2014-2019**



Source: STEAM (2021).

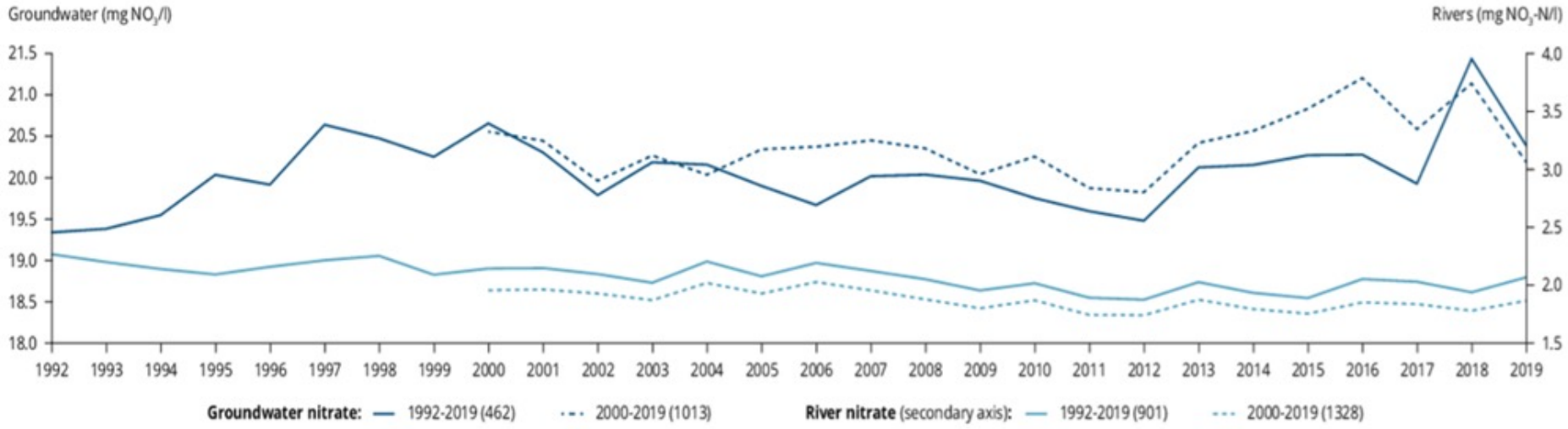
Indicators: Fresh Water pollution and ecosystems

Fresh Water Pollution
Nutrients in freshwater and groundwater (EEA indicator)
Oxygen consuming substances in European rivers (EEA indicator)
Pesticides in rivers, lakes and groundwater in Europe (EEA indicator)
WFD Good ecological status (EEA WISE Fresh water indicator)
WFD Good chemical status (EEA WISE Fresh water indicator)
Nitrates Directive reporting (4-yearly)

ZP & Ecosystems

Subtopics – air; marine; soil; Freshwater.

Figure 1. Nutrients in European water bodies



European Environment Agency

Signals: Fresh Water Pollution and Ecosystems

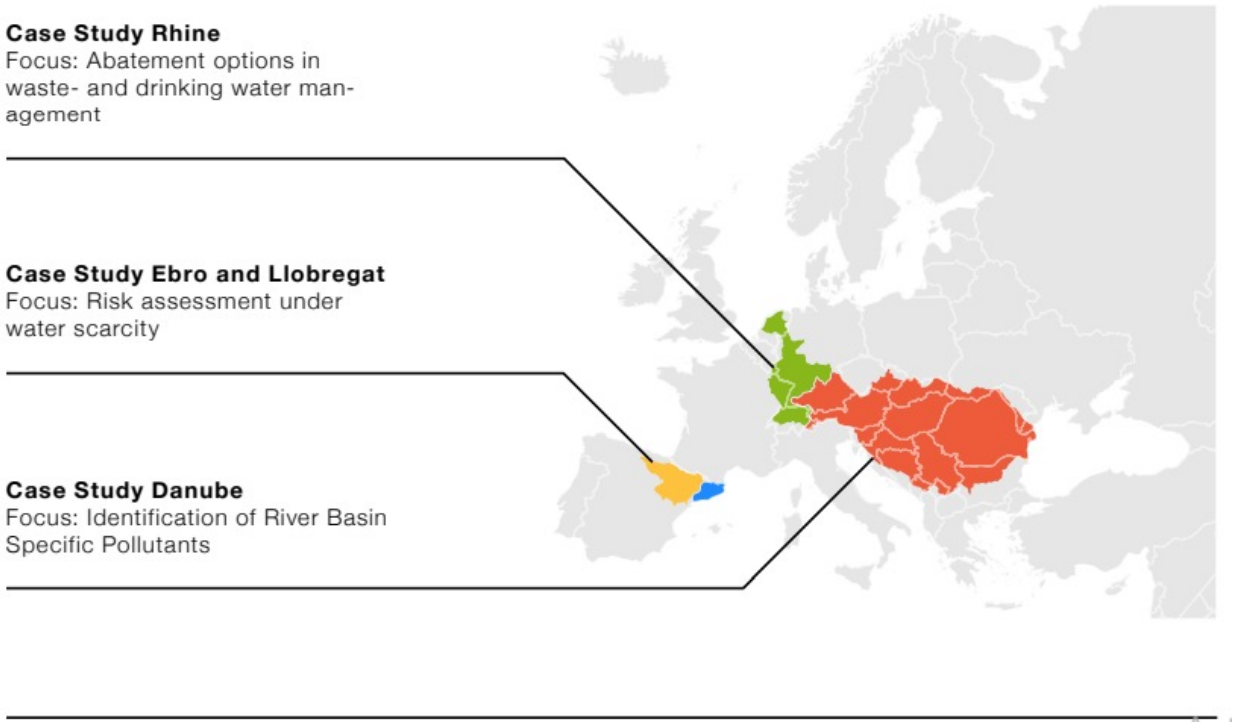
Fresh Water Pollution and Ecosystems Signals

Emerging substances (EU SOLUTIONS Project)

EEA Chemicals in European Waters Report

ZP & Ecosystems

Subtopics – air; marine; soil; Freshwater.



European Environment Agency

Indicators: Air pollution and ecosystems

ZP & Ecosystems

Subtopics – air; marine; soil; Freshwater.

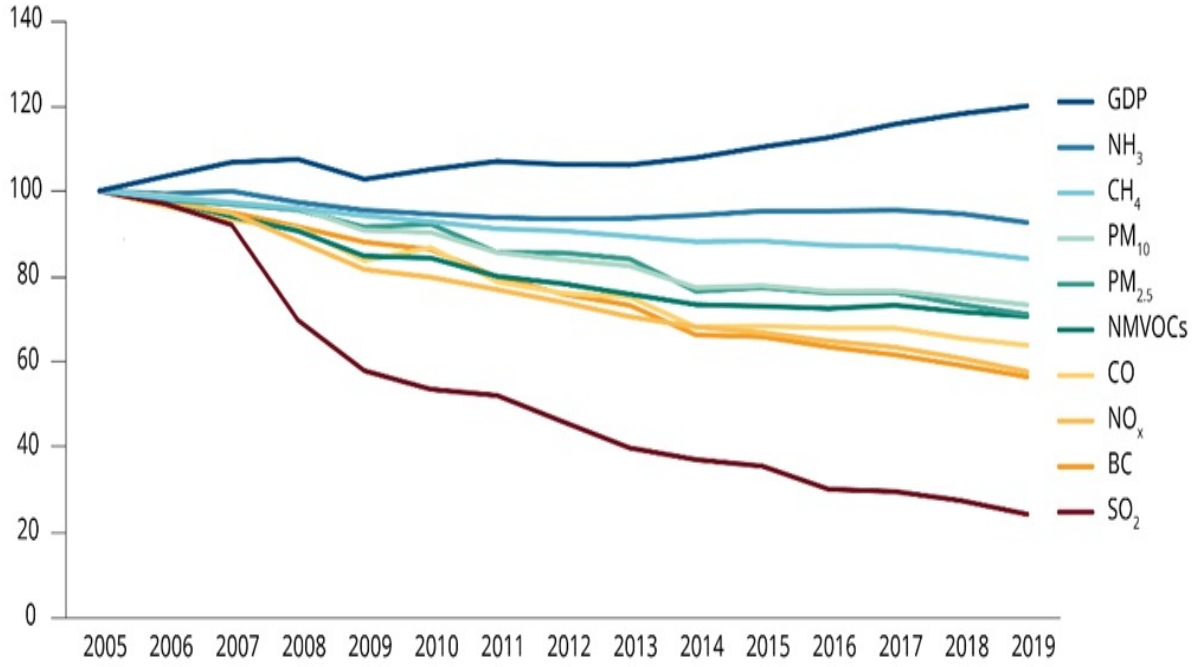
Air Pollution

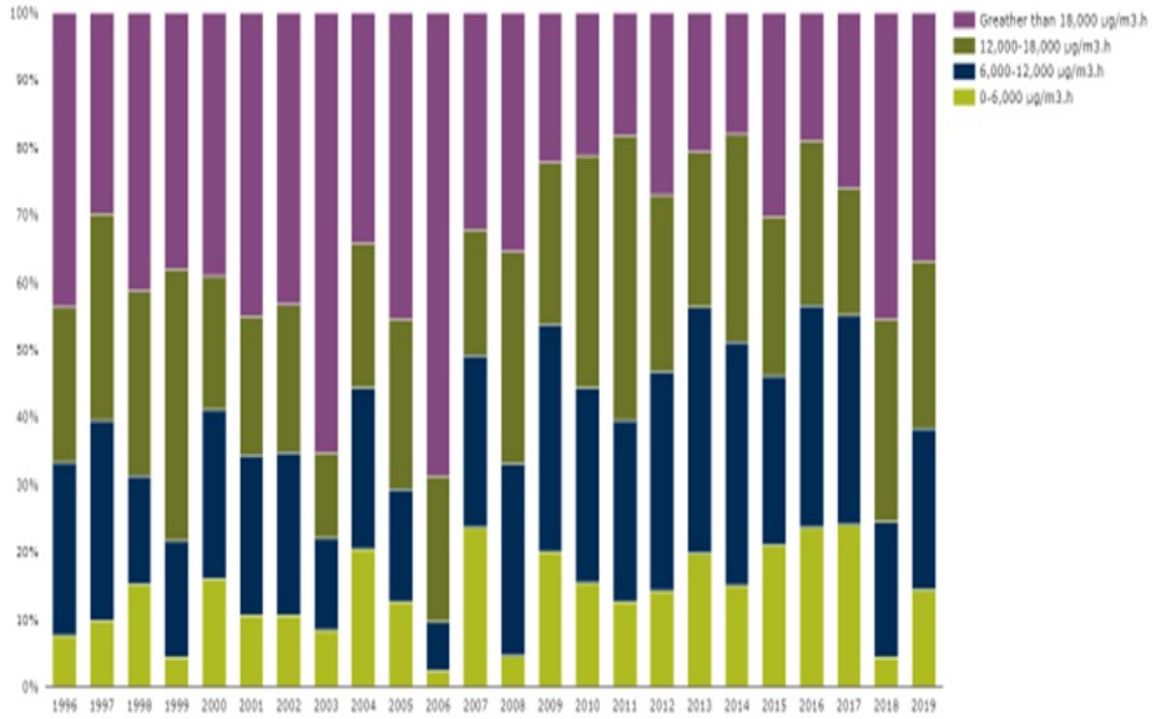
Exceedance of critical loads for eutrophication (to be published Q3)

Heavy metal emissions in Europe (EEA indicator)

Emissions of the main air pollutants in Europe (EEA indicator)

Exposure of Europe's ecosystems to ozone (EEA indicator)





Signals: Air Pollution and Ecosystems

ZP & Ecosystems

Subtopics – air; marine; soil; Freshwater.

Air Pollution and Ecosystems Signals

Eutrophying Emissions from Shipping in the Baltic

Ozone damage to crops/vegetation

Ecosystem impacts in Switzerland (Research Project)

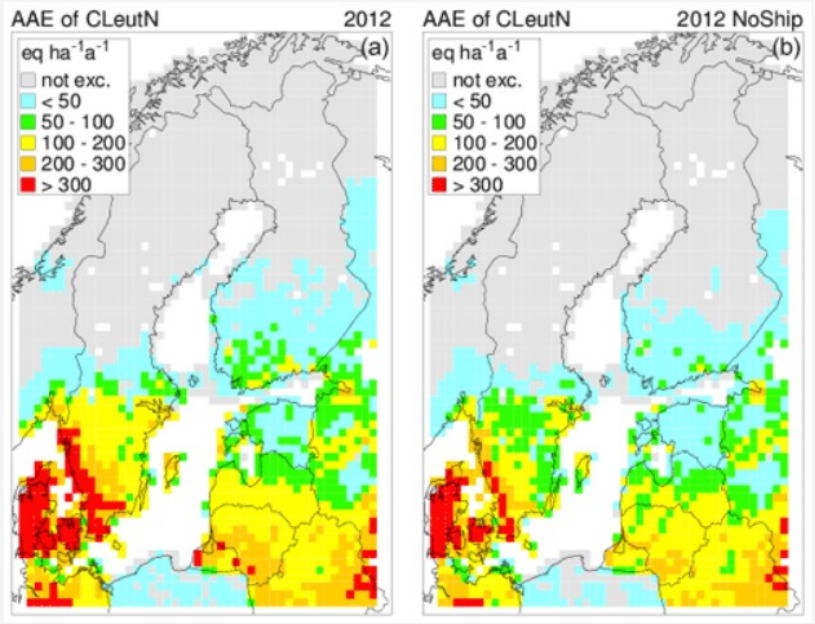


Figure 6 The average accumulated exceedance (AAE) of CLeutN in 2012. Panel **(a)** shows the exceedances for the total deposition. Panel **(b)** shows the exceedances for the scenario without shipping deposition.

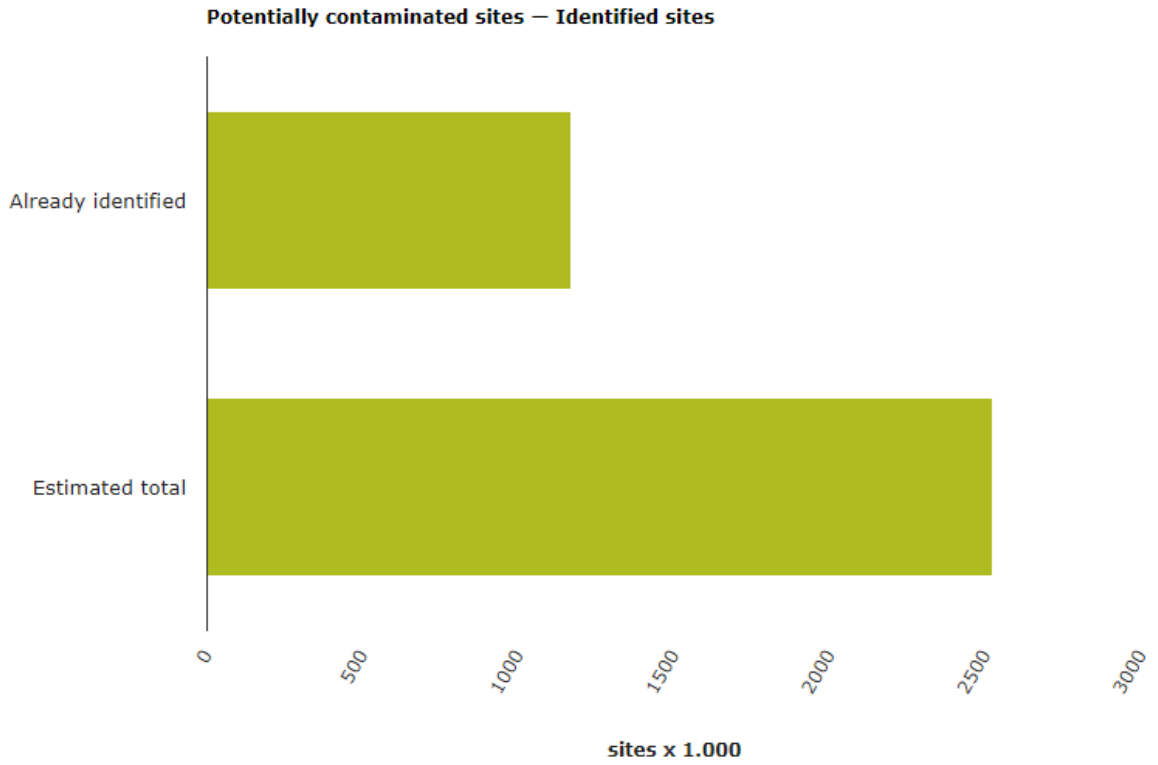
Indicators: Soil pollution and ecosystems

ZP & Ecosystems

Soil Pollution

Progress in the management of contaminated sites

Subtopics – air; marine; soil; Freshwater.



Signals: Soil Pollution and Ecosystems

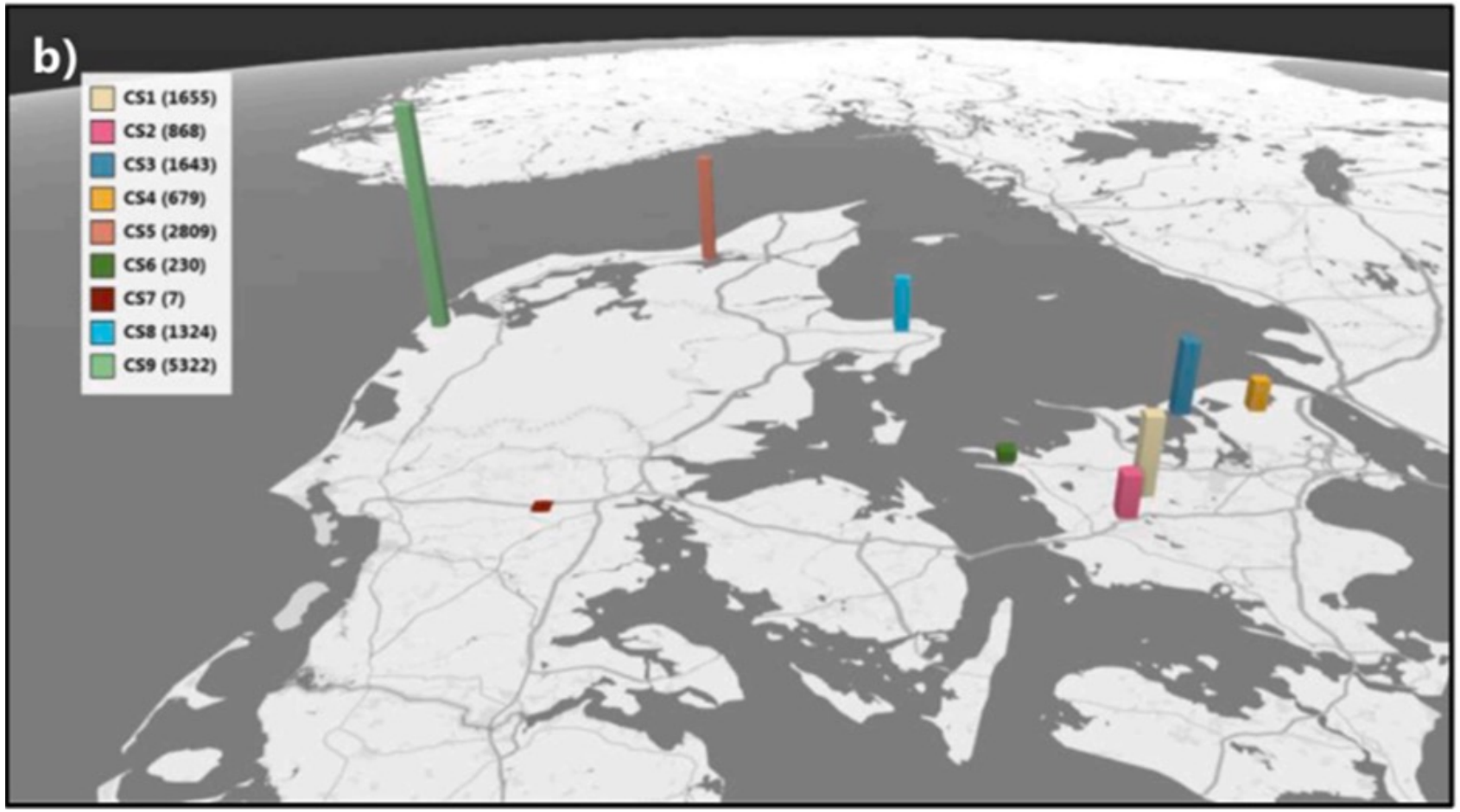
ZP & Ecosystems

Subtopics – air; marine; soil; Freshwater.

Soil Pollution and Ecosystems Signals

Understanding our Impacts on Pollinators (INSIGNIA)

Light Pollution impacts on ecosystems



Zero Pollution and Production/Consumption – Components

Indicators: Resource Extraction

ZP & Production/Consumption

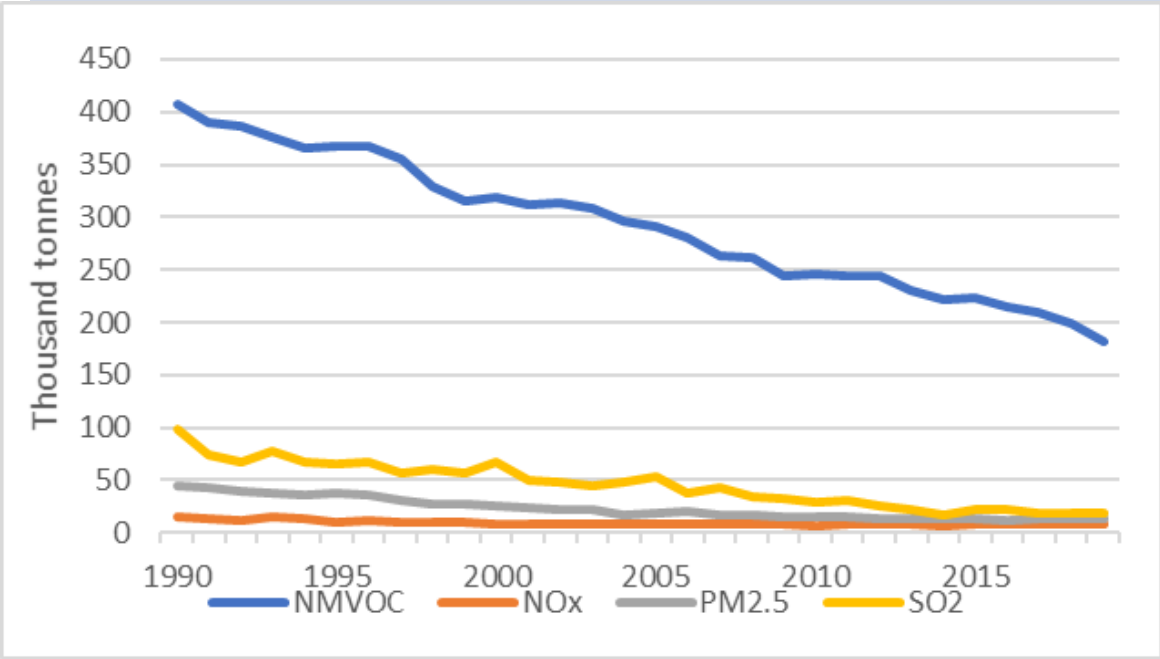
Subtopics – resource extraction; production; use; waste.

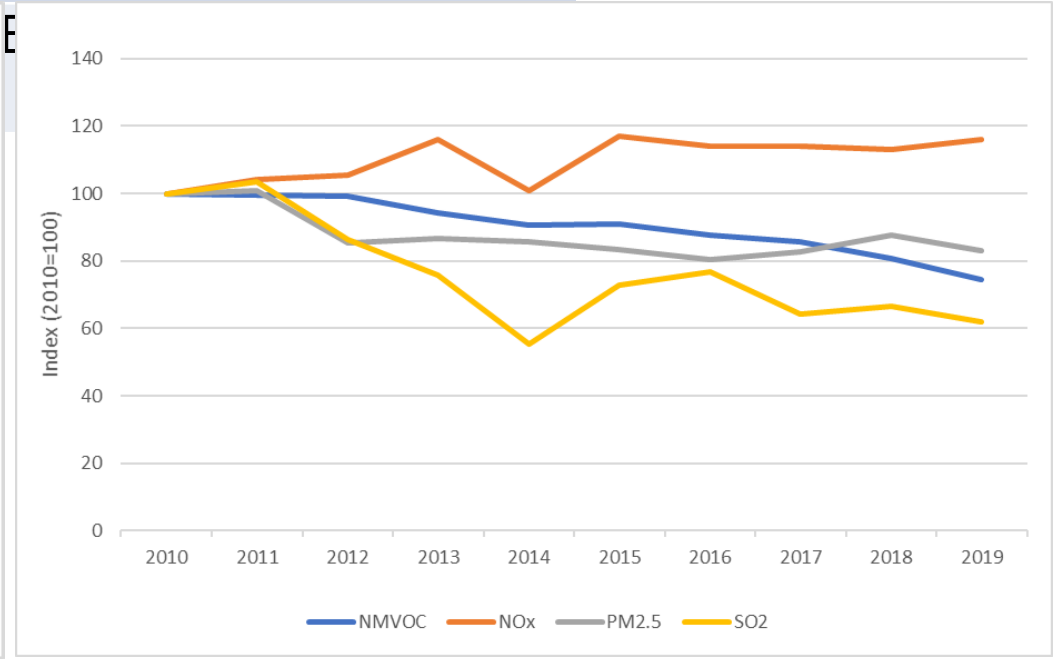
Pollution from resource extraction

Emissions of major pollutants to air by extractive industries (EEA data viewer)

EU Reliance on imported raw materials (JRC Raw materials scoreboard)

Emission of heavy metals to air by extractive activities (EEA data viewer)





Source: National air pollutant emissions data viewer 1990 – 2019

Signals: Resource Extraction

ZP & Production/Consumption

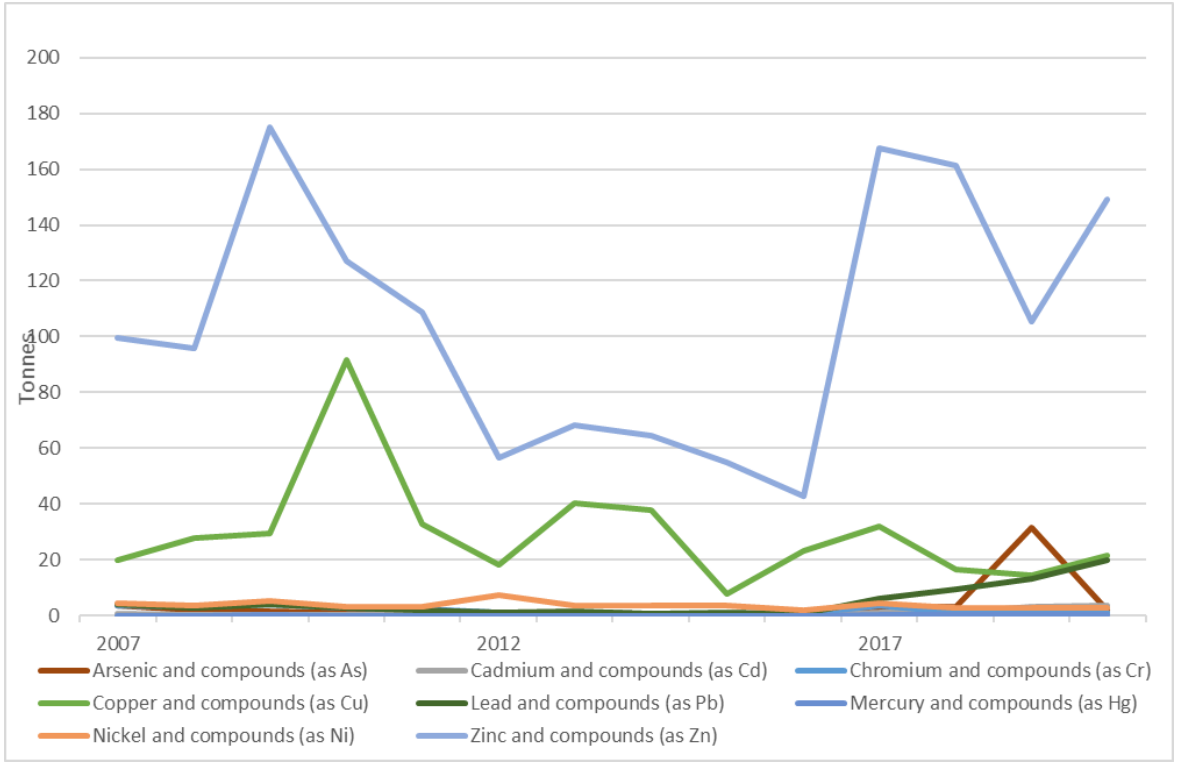
Subtopics – resource extraction; production; use; waste.

Extraction Signals

Emissions of heavy metals to water in the extractive industry

Global materials flows database of the International Resource Panel

Hotspots Analysis tool for Sustainable Consumption and Production



Indicators: Production

ZP & Production/Consumption

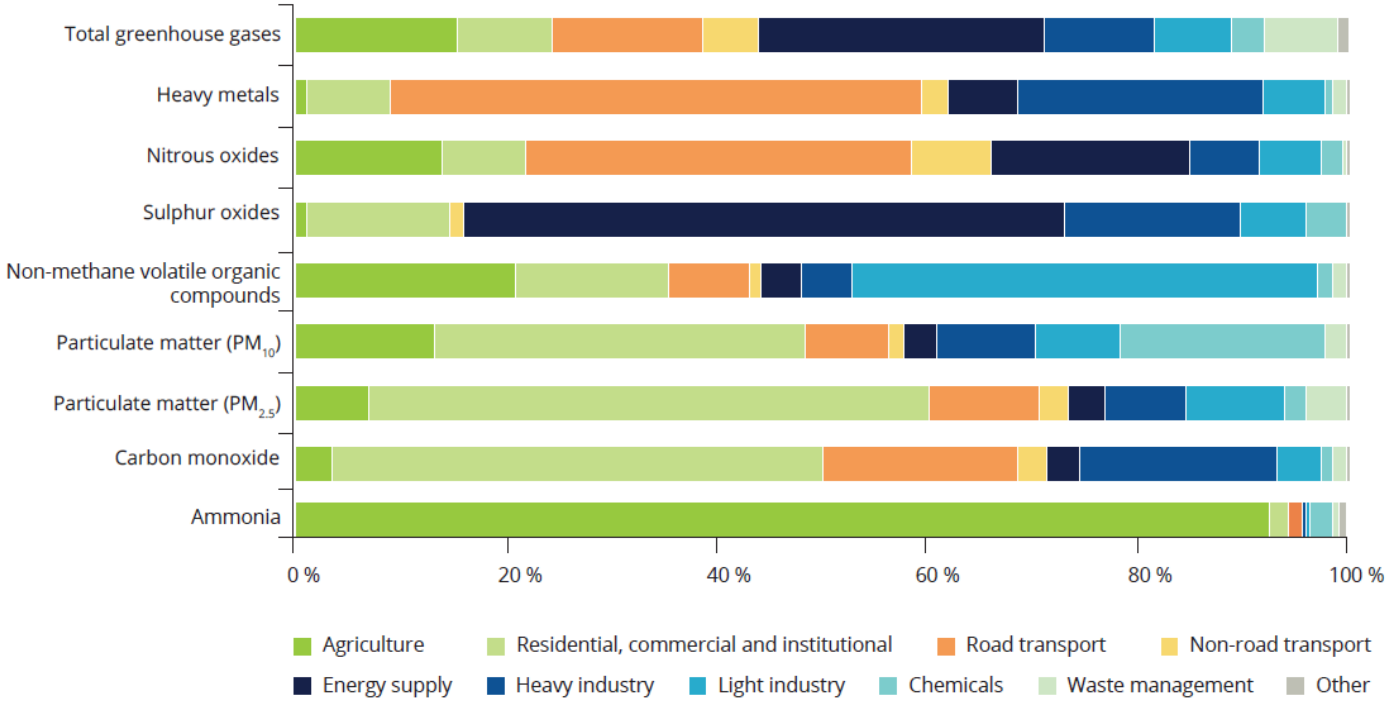
Subtopics – resource extraction; production; use; waste.

Pollution from industrial production

Industrial releases of pollutants to air in the EU-27 (EEA Indicator).

Industrial releases of pollutants to water in the EU-27 (EEA Indicator).

Industrial emissions of air pollution by sector (in development)



Notes: Heavy metals include arsenic, cadmium, chromium, copper, lead, mercury and zinc and are aggregated by mass. Only those air pollutants covered by the CLRTAP are included.

Sources: EEA (2019g) for total GHGs and EEA (2019f) for air pollutants.

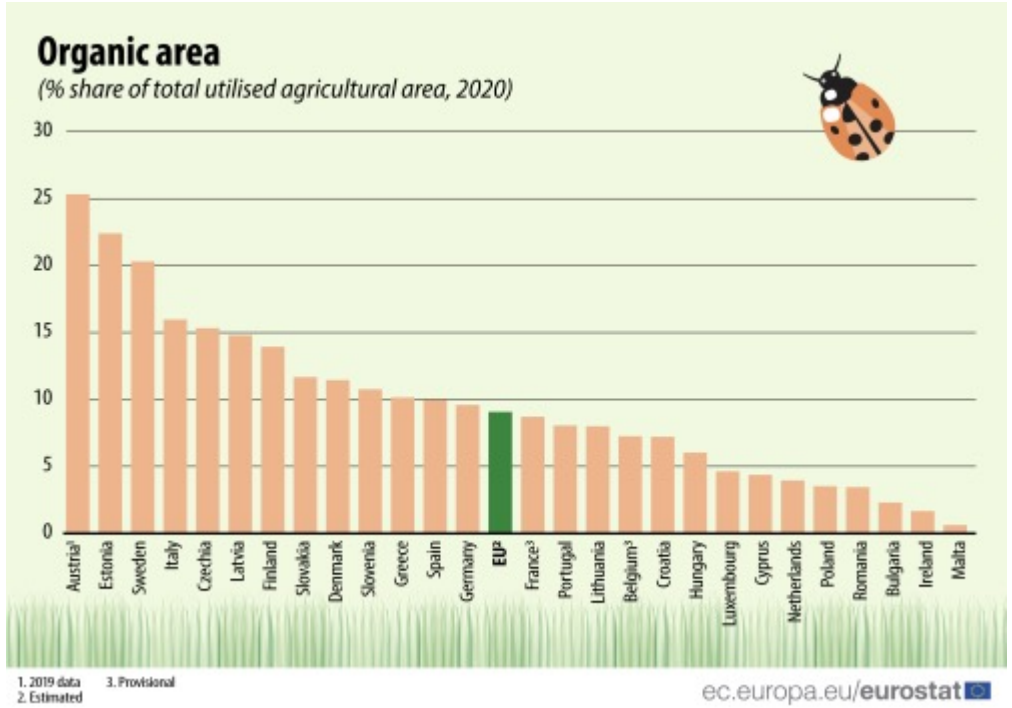
European Environment Agency

Indicators: Consumption

ZP & Production/Consumption

Subtopics – resource extraction; production; use; waste.

Pollution from agricultural production
Mineral Fertiliser Consumption (Eurostat)
Air pollution from agriculture (EEA air pollutant emissions data viewer)
Trends in risk from pesticide use (HRI1 & HRI2 indicator)
Land area under organic farming in the EU (Eurostat)



European Environment Agency

Signals: Production

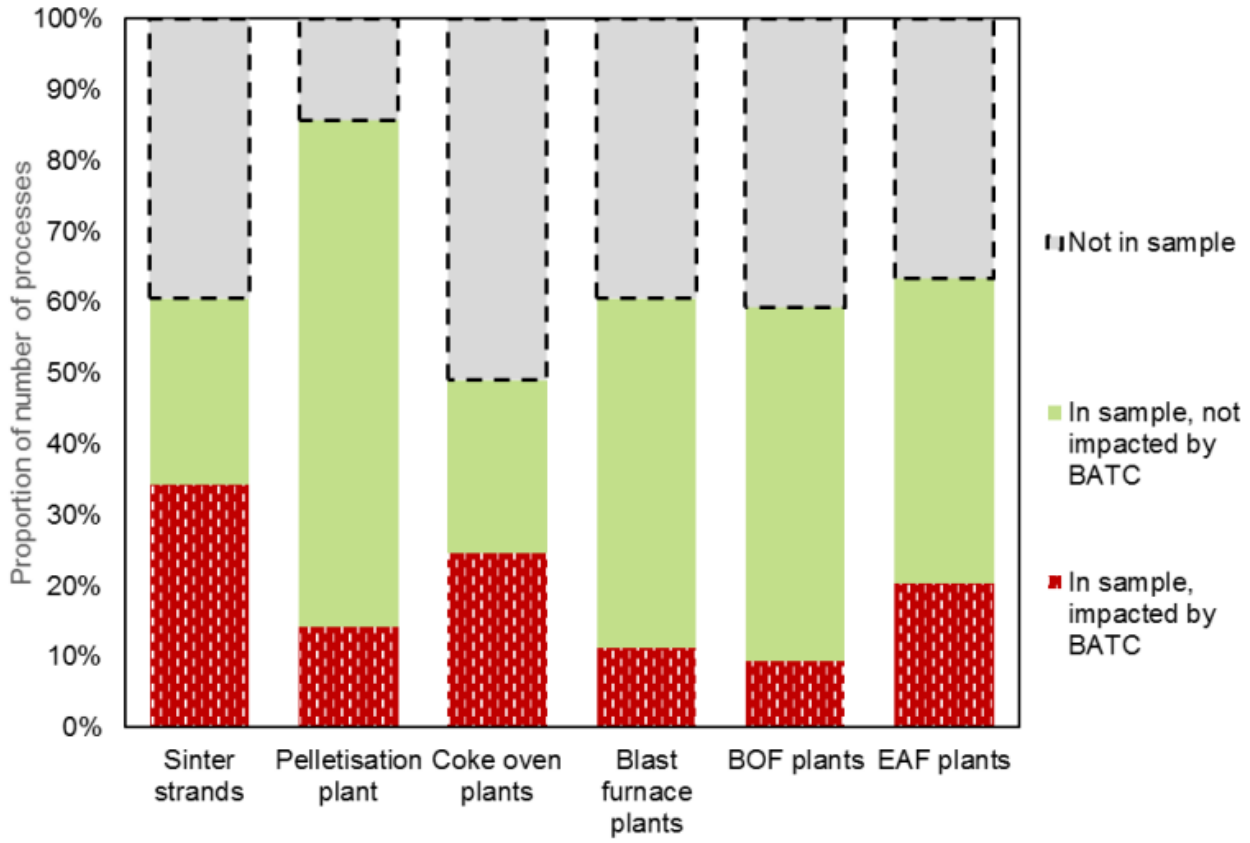
ZP & Production/Consumption

Production Signals

Production Signal 1: Information on LCP reported under the Energy Community

Production Signal 2: Analysis of the costs and benefits of BAT implementation

Subtopics – resource extraction; production; use; waste.



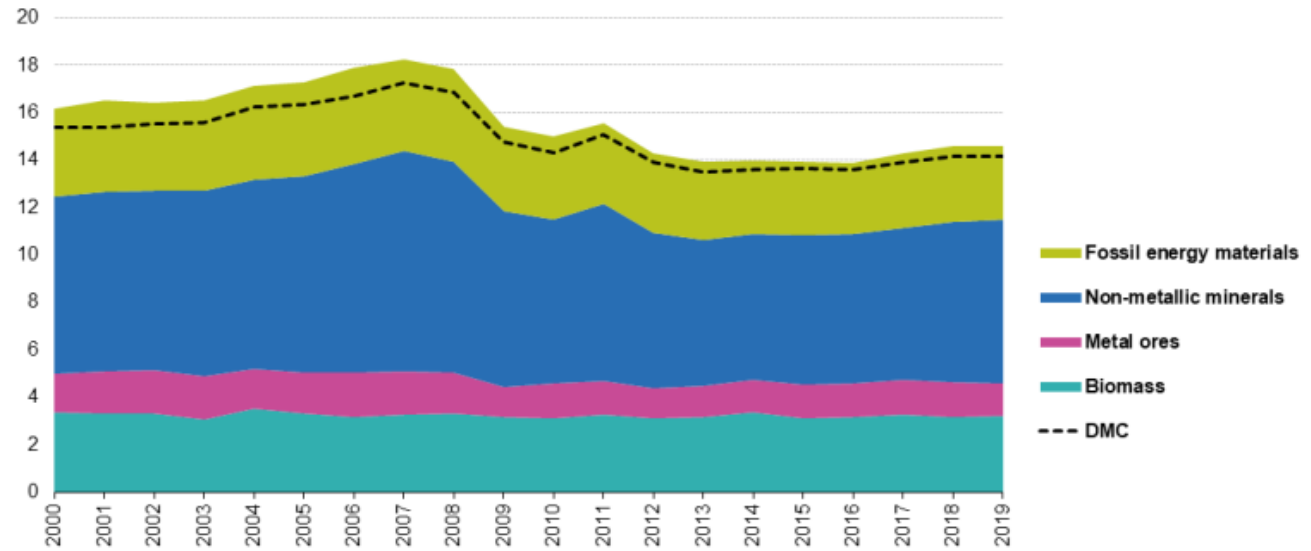
Indicators: Consumption

Consumption
Consumption footprint (JRC/EEA)
Consumption of chemicals hazardous to health (Eurostat)
Material footprint (Eurostat)

ZP & Production/Consumption

Subtopics – resource extraction; production; use; waste.

Raw material consumption (RMC) by main material categories, EU, 2000-2019
(tonnes per capita)



Source: Eurostat (online data codes: env_ac_mfa, env_ac_rme)

eurostat

European Environment Agency

Signals: Consumption

ZP & Production/Consumption

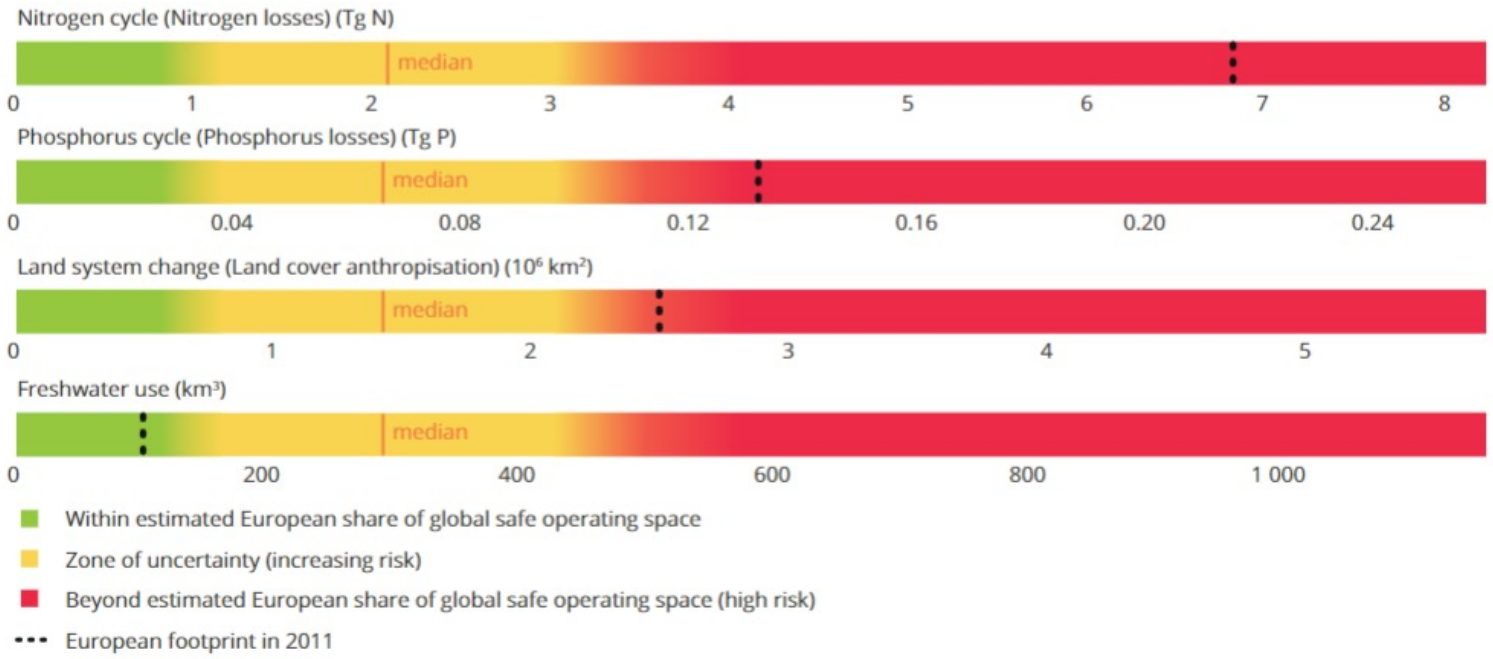
Consumption Signals

Consumption Signal 1: Impacts of EU consumption – safe operating space

Consumption Signal 2: Novel entities and planetary boundaries

Subtopics – resource extraction; production; use; waste.

Figure ES.1 Overview of European performance for three planetary boundaries



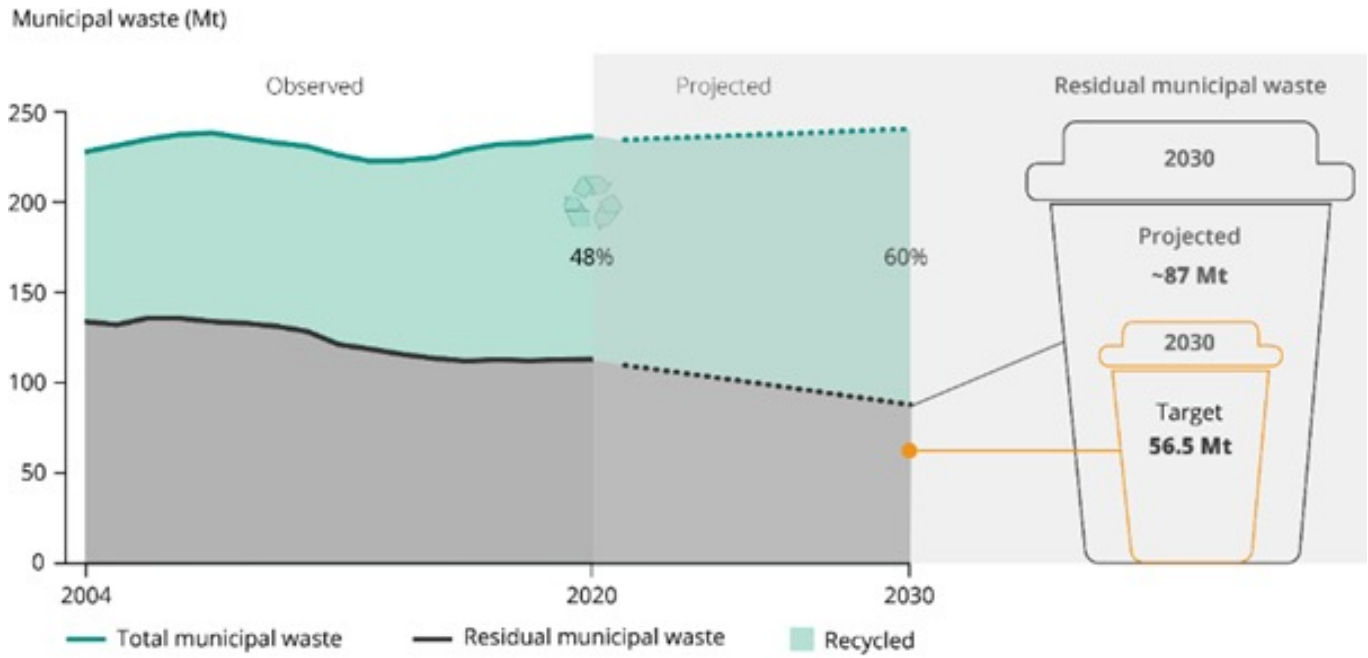
European Environment Agency

Indicators: Waste

Waste
Waste generation and decoupling (EEA Indicator)
Quantity of residual municipal waste generated (EEA Briefing)
Diversion of waste from landfill (EEA Indicator)
Landfills – indexed air emissions for selected pollutants
Incineration – indexed air emissions for selected pollutants

ZP & Production/Consumption

Subtopics – resource extraction; production; use; waste.



European Environment Agency

Signals: Waste

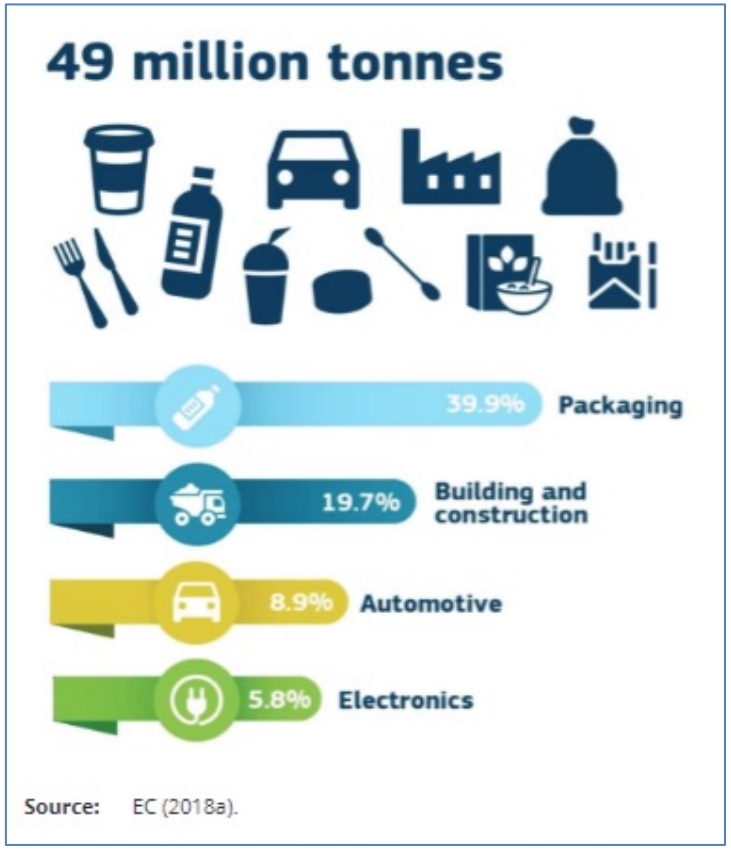
ZP & Production/Consumption

Waste Signals

Waste Signal 1: Prevention of plastic waste in Europe

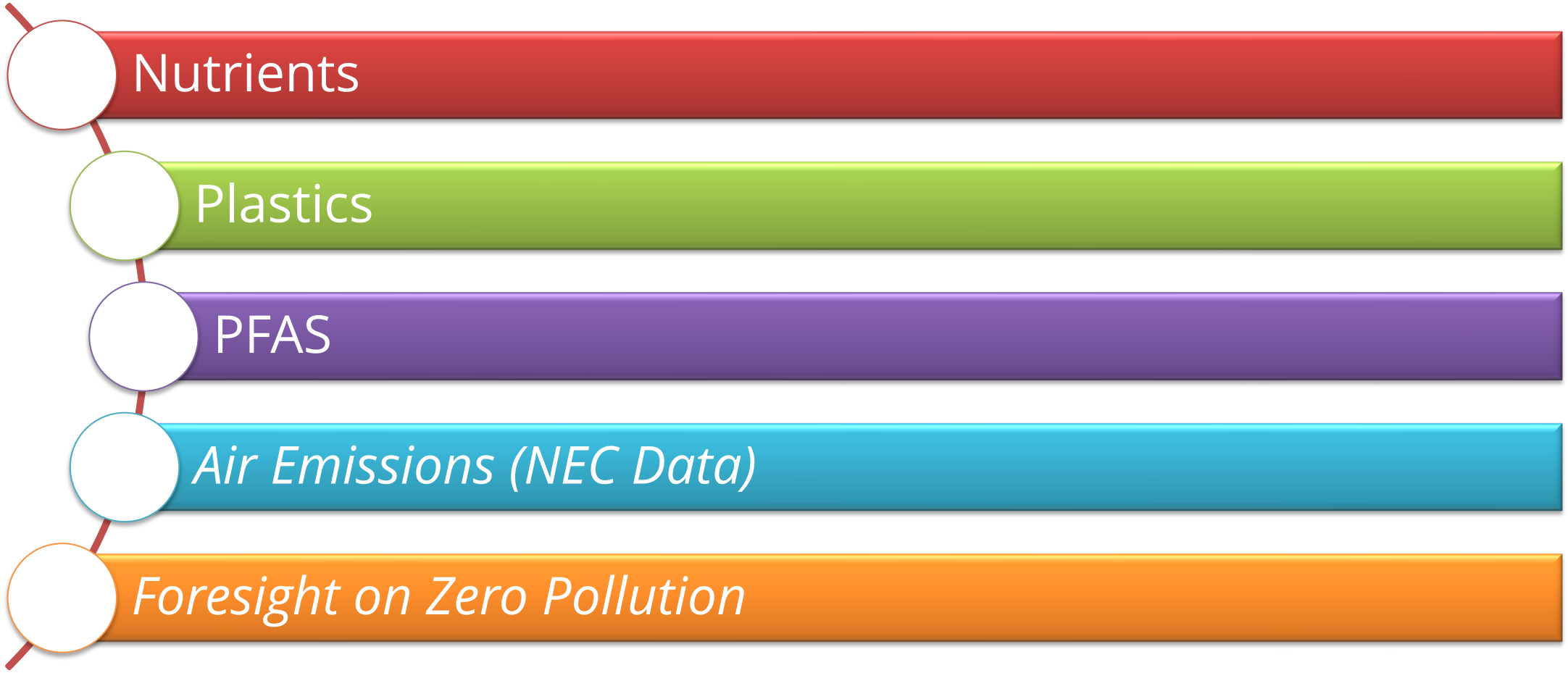
Waste Signal 2: Industrial symbiosis as a way to reduce waste generation

Subtopics – resource extraction; production; use; waste.

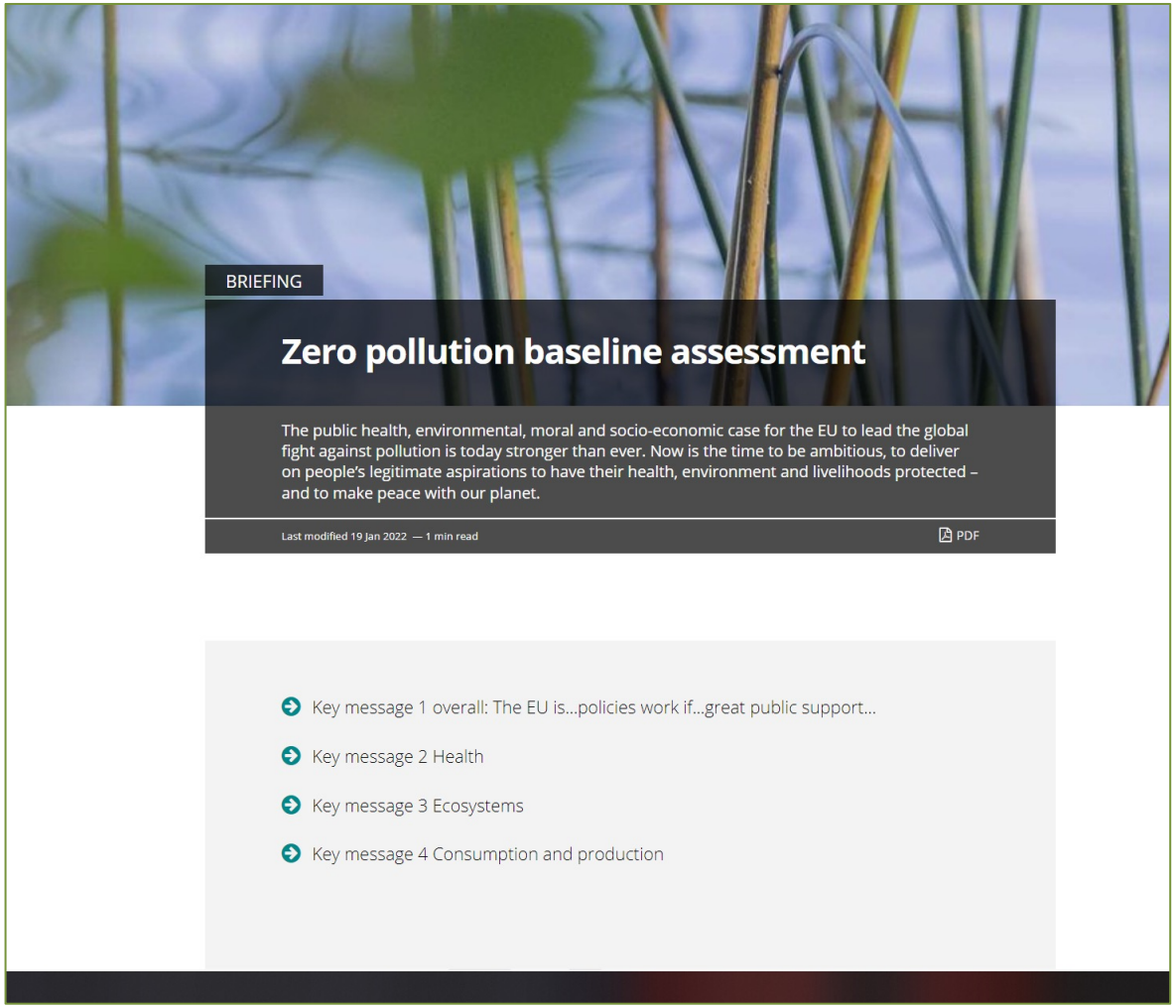


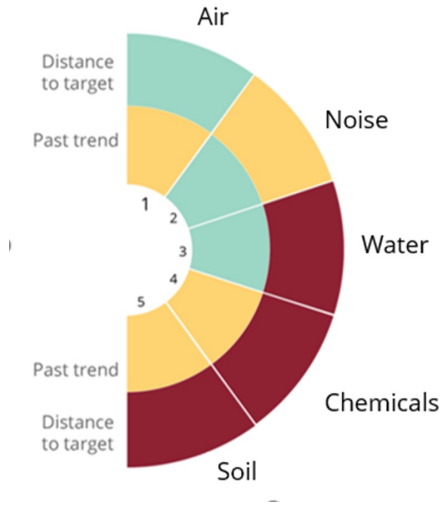
European Environment Agency

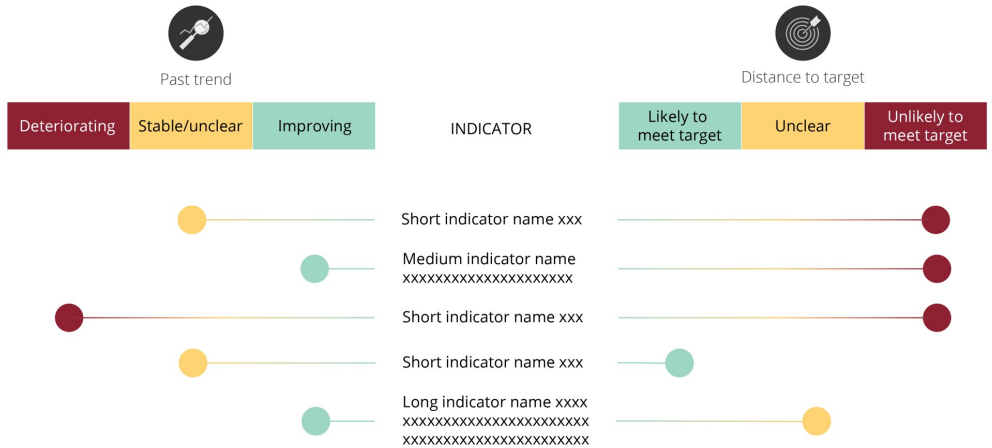
ZP Cross-Cutting Stories



What will we deliver?







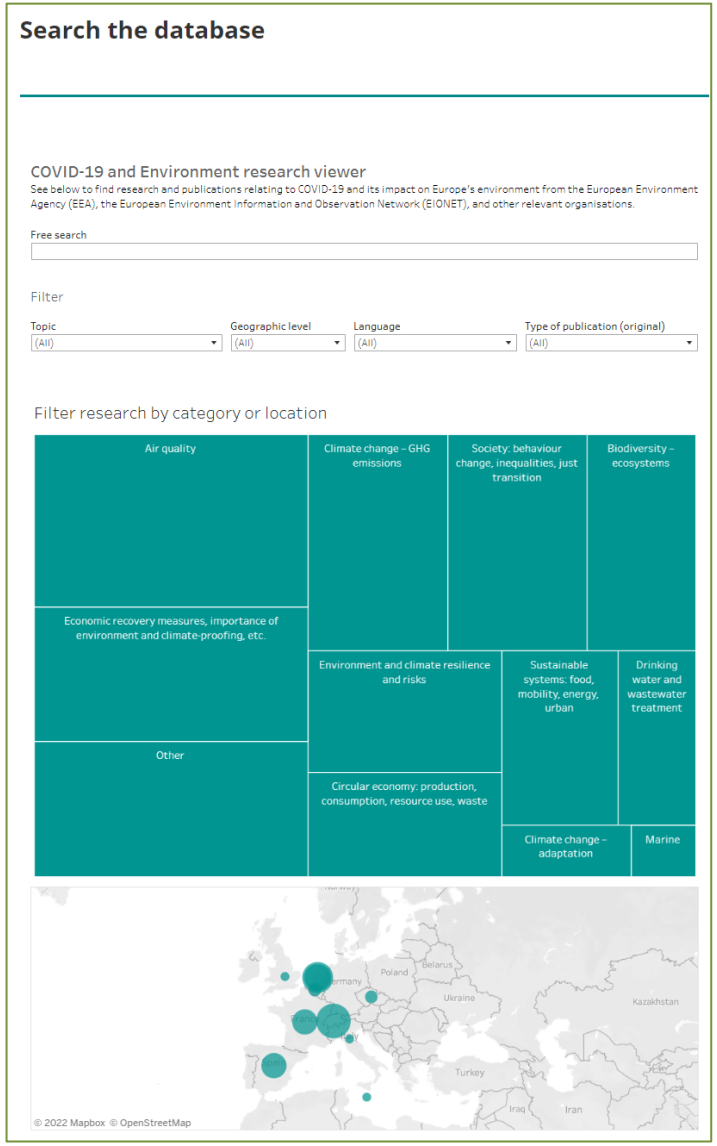
European Environment Agency

Alignment with other reporting…

- SOER 2025
- Chemicals Strategy indicator framework
- 8th EAP indicator reporting
- Biodiversity dashboard
- Circular economy action plan
- Farm to fork
- Etc…

Engagement with countries

- Request to countries to provide national examples relevant to ZP
- ~ 20 country responses received to date



European Environment Agency

Overview of Timeline

June/July 2022	• Draft ZP monitoring assessment ready for consultation
Summer 2022	• Update to any indicators finalised since July 2022 and inclusion in updated draft
Autumn 2022	• Finalise and publish EEA Zero Pollution Monitoring Assessment
~ June 2024	• Second EEA Zero Pollution Monitoring Assessment

Questions?

| 24 May 2022 | www.eea.europa.eu

Zero Pollution Monitoring and Outloo

Soil Monitoring

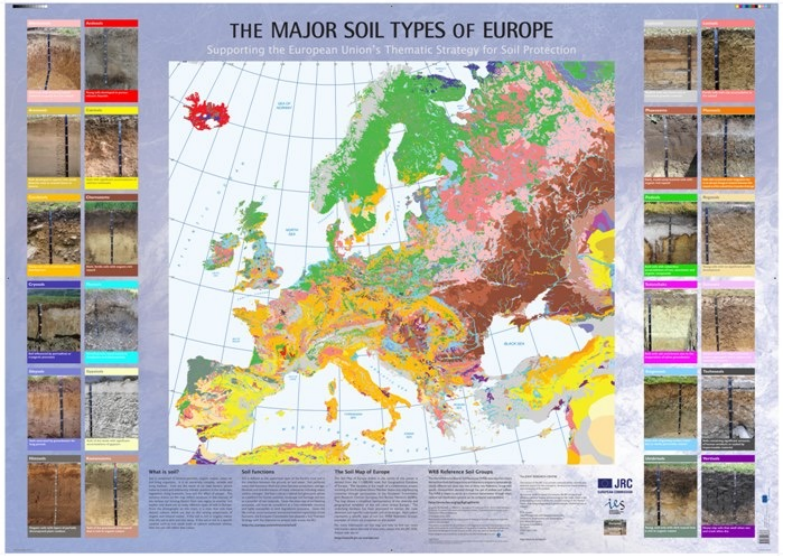
EC JRC Soil Team
EEA + TC Land

ZP Workshop, 24-25 May 2022

Soil and pollution

- Complex biological-geological media
- Constant exchanges between Liquid-Gasous-Soild phases within and from soil = water/air pollution!
- Underpins a broad range of ecosystem services
  - Food & feed production
  - Water regulation
  - Buffers and transforms pollutants
- Highly variable geographically
- Generally not on people's radar!

John A. Kelley, USDA Natural Resources Conservation Service

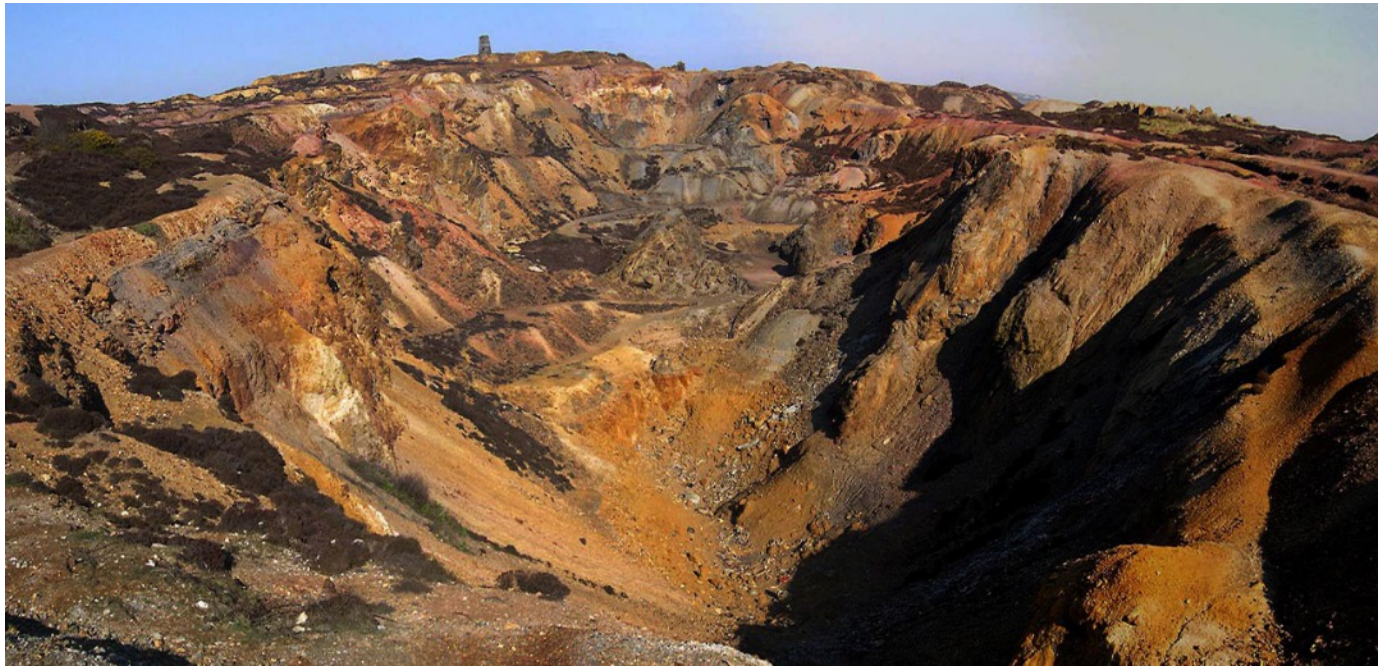


European Commission

Soil Pollution

Diffuse

Local / Point



European Commission

Consequences of soil pollution

Ingestion, dermal contact, inhalation, ecosystem services

European Commission

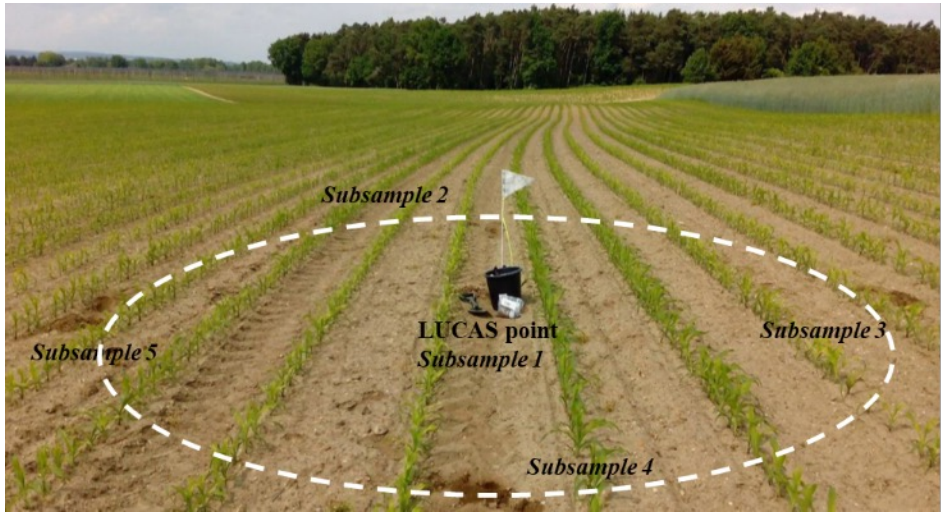
Assessing and monitoring soil pollution

Soils difficult to assess (compared to air and water)

Laboratory analysis based on a physical sample collected from the field.

Modelling

- Atmospheric deposition
- Exceedance of critical loads



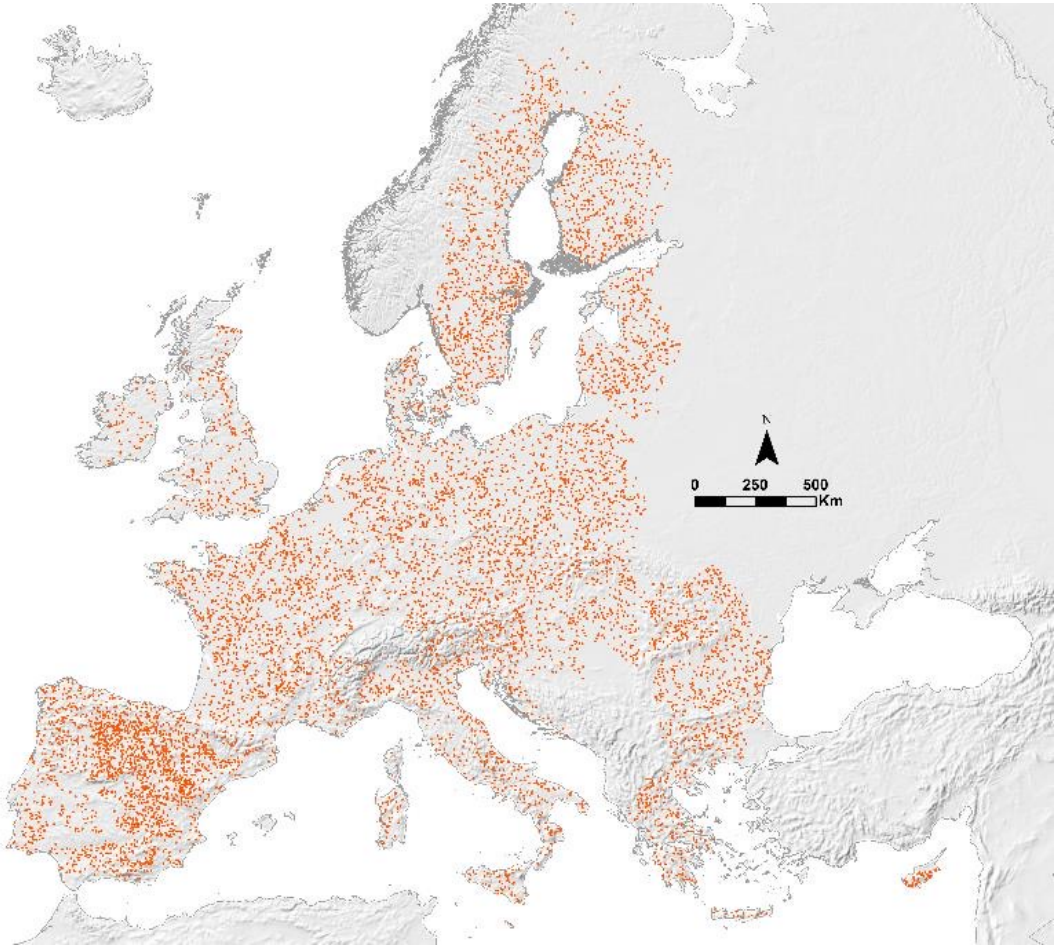
Some pollutants naturally found in soils (e.g. metals linked to geology)

Soil characterisctics can affect the presence of pollutants (e.g. pH, texture)

Lack of investment in soil monitoring – lacking policy need

LUCAS Soil Module

- Subset of EUROSTAT LUCAS Land Use/Cover Survey
- Carried out 2009/2012, 2015, 2018 & 2022
  - In single growing season
  - All MS
- 22,000 locations across EU – 41,000 locations
- Only harmonized soil data collection programme for EU
- Extending in scope – ZPAP calls for pollution module



- Basis of an integrated soil monitoring system (+MS)
- Methodology extended to Africa (Soils4Africa Project)

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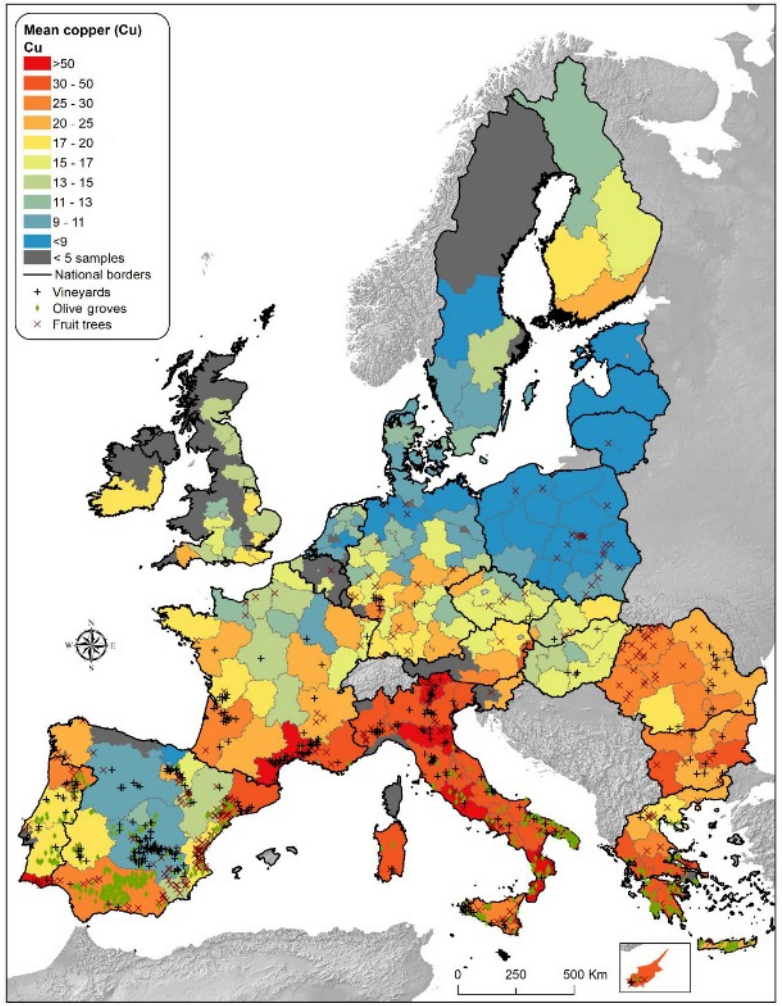
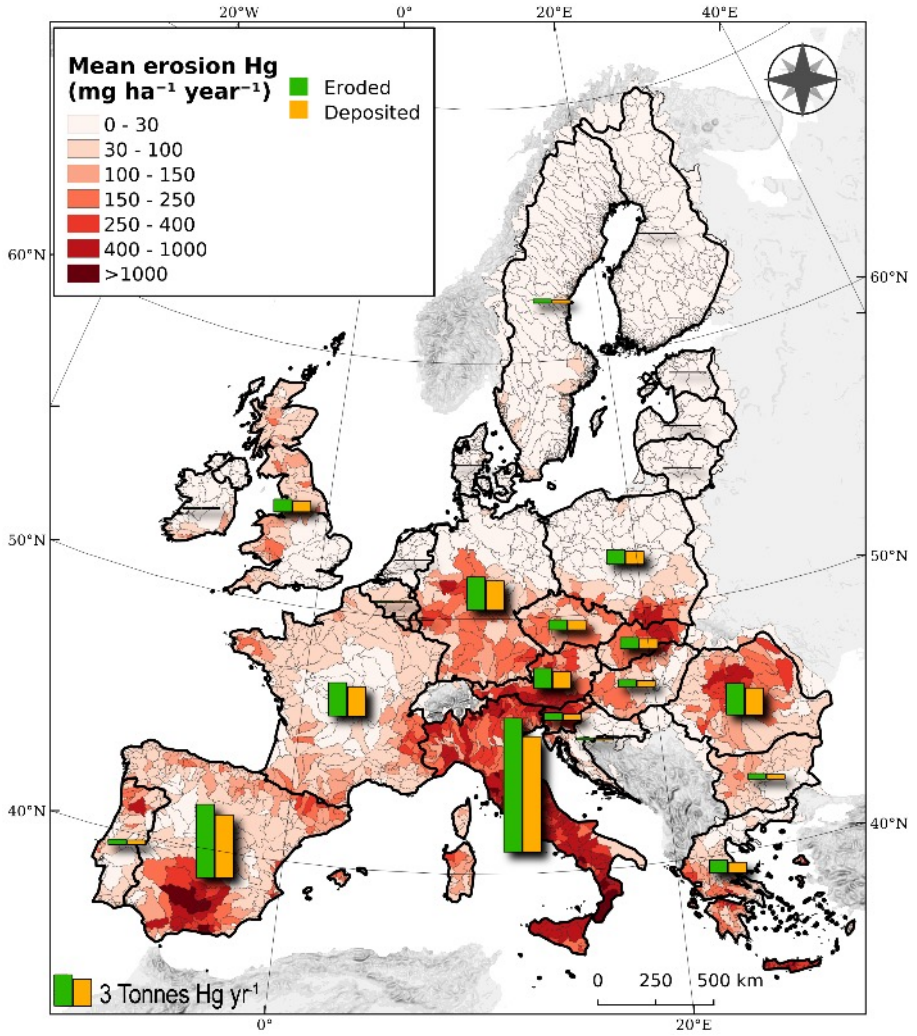
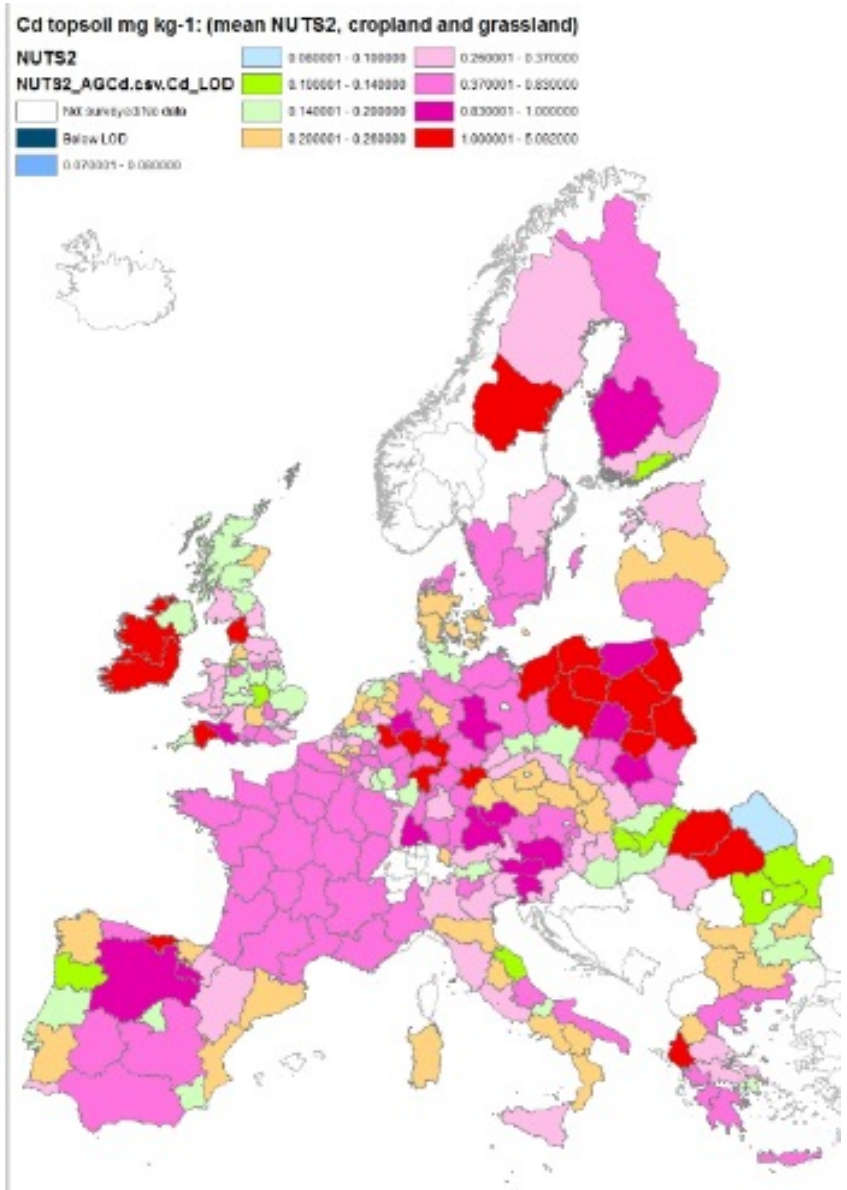
LUCAS = Concentrations of metals in topsoils

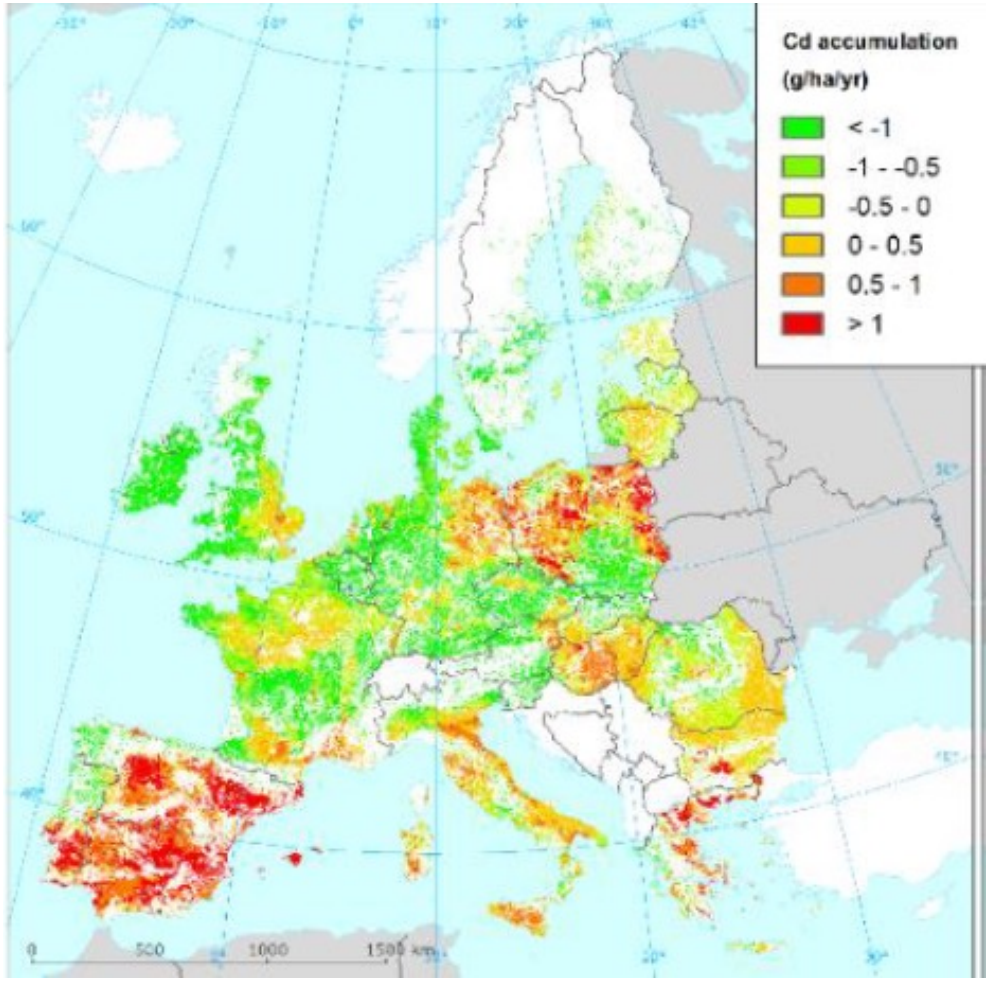




European Commission

Concentrations of metals in topsoils

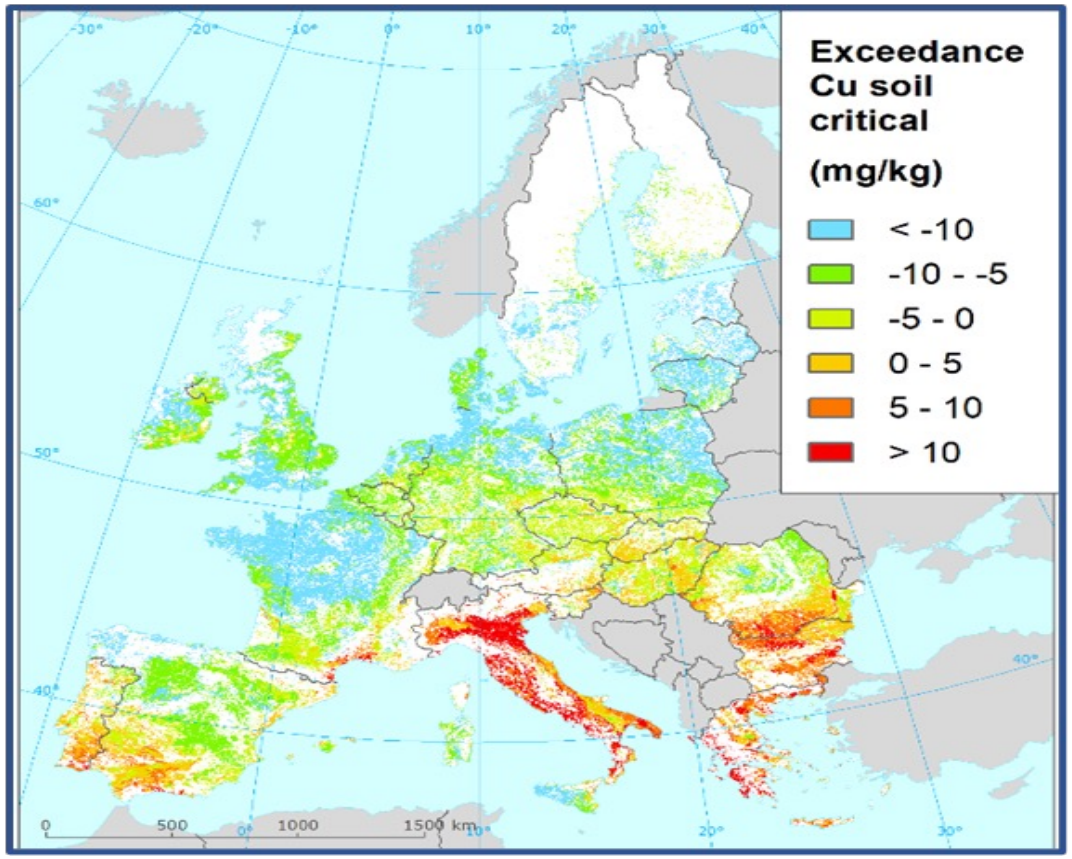


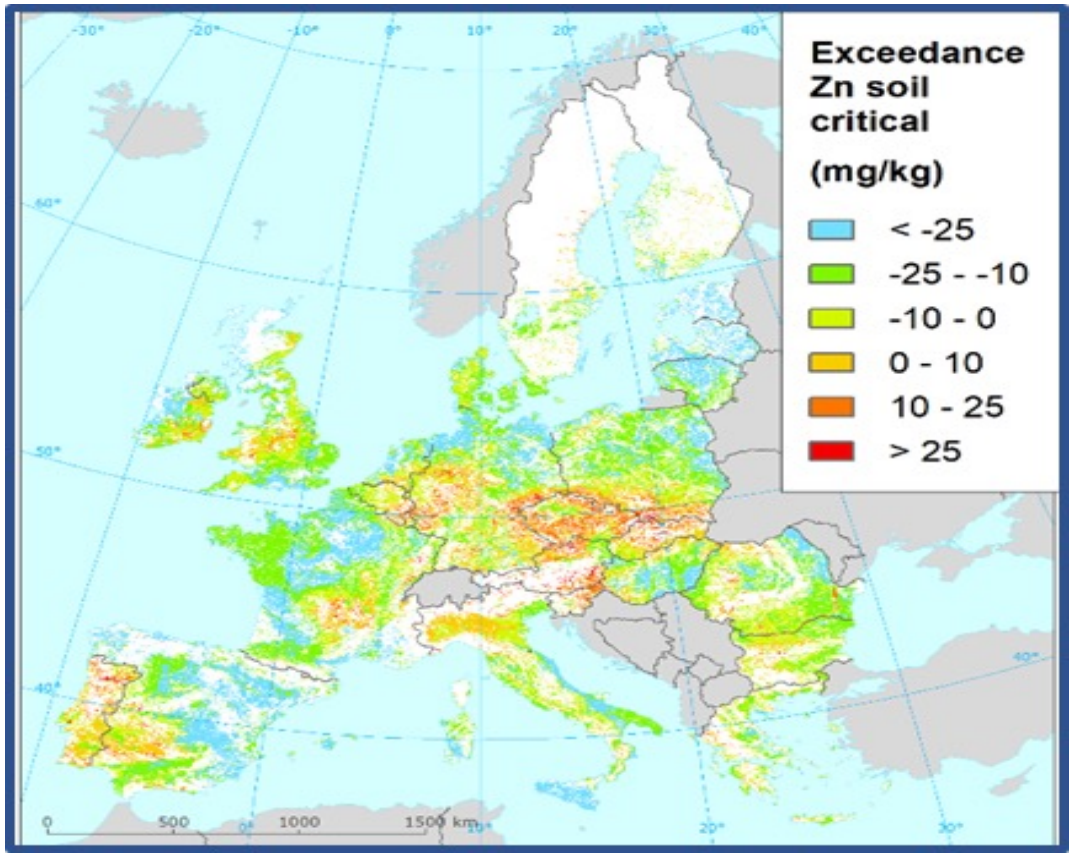


currently not exceeding critical limits but levels are increasing in places

EUSO / EEA / De Vries et al. 2022

European Commission



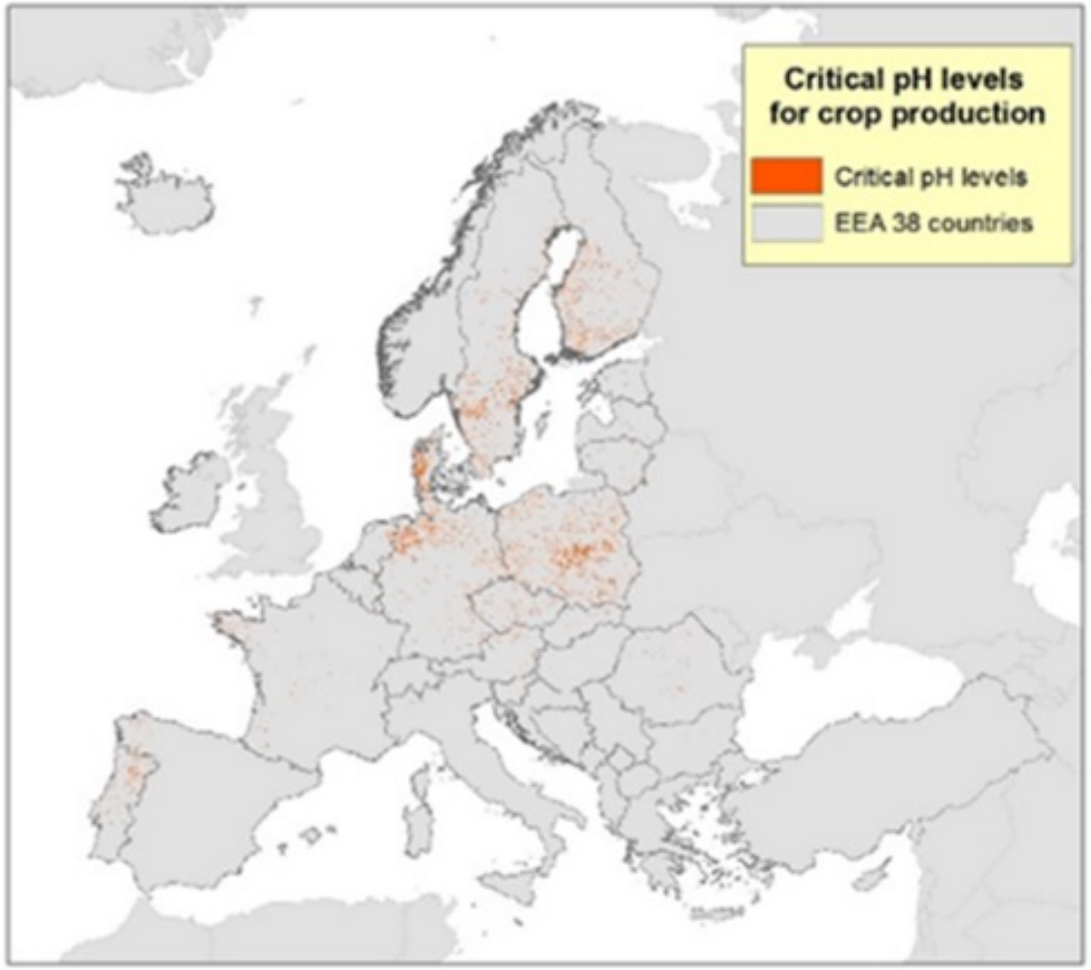


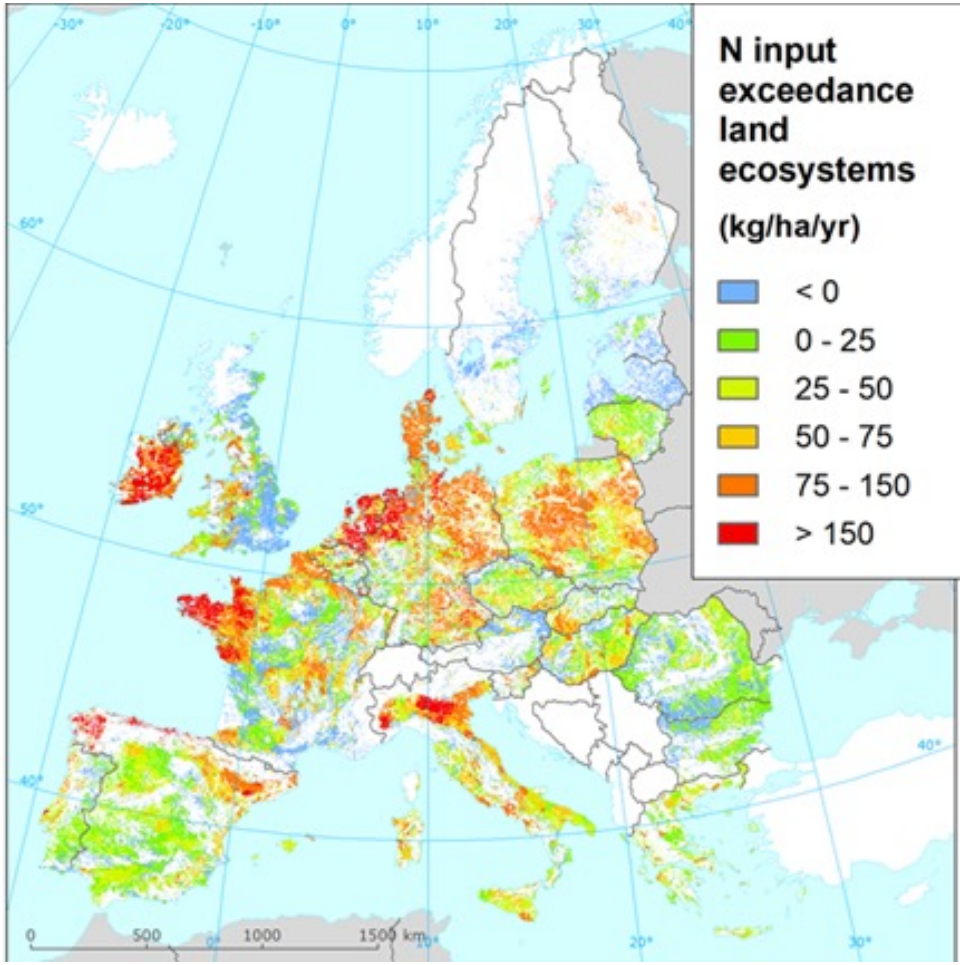
	Metal threshold exceedance	
	Cu	Zn
Arable land (including pasture)	23%	18%

EEA / De Vries et al. 2022

European Commission

Nutrients

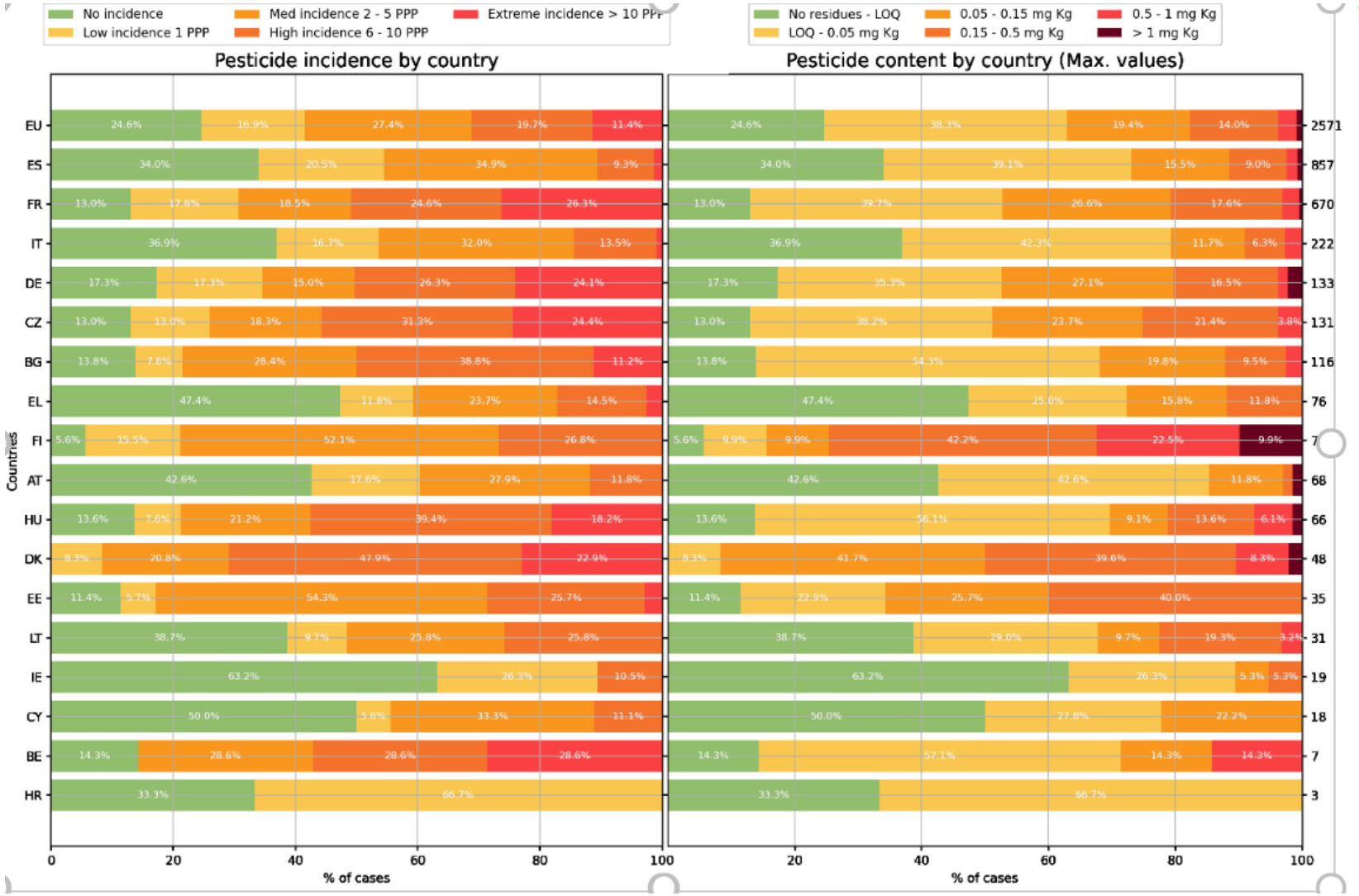




Currently, 6.9 % of the arable land shows signs of acidification

European Commission

Pesticides



More than 80% of the tested soils contained pesticide residues

25% of samples had 1 residue

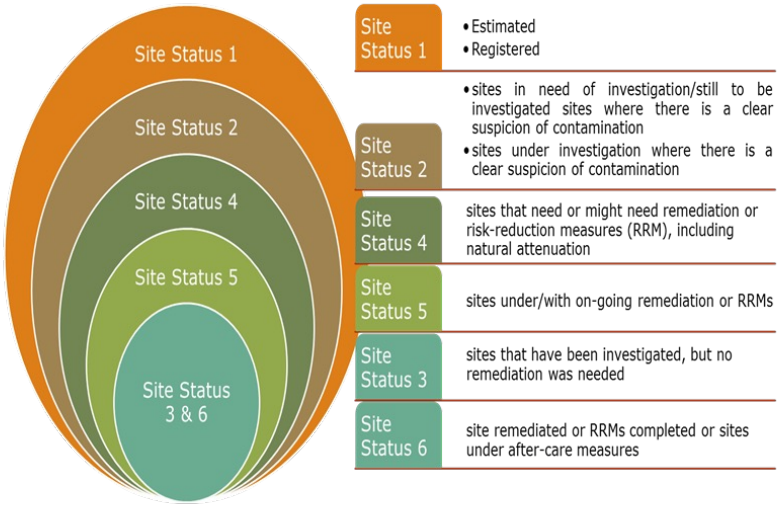
58% of samples had mixtures of two or more residues

Silva et al. 2018

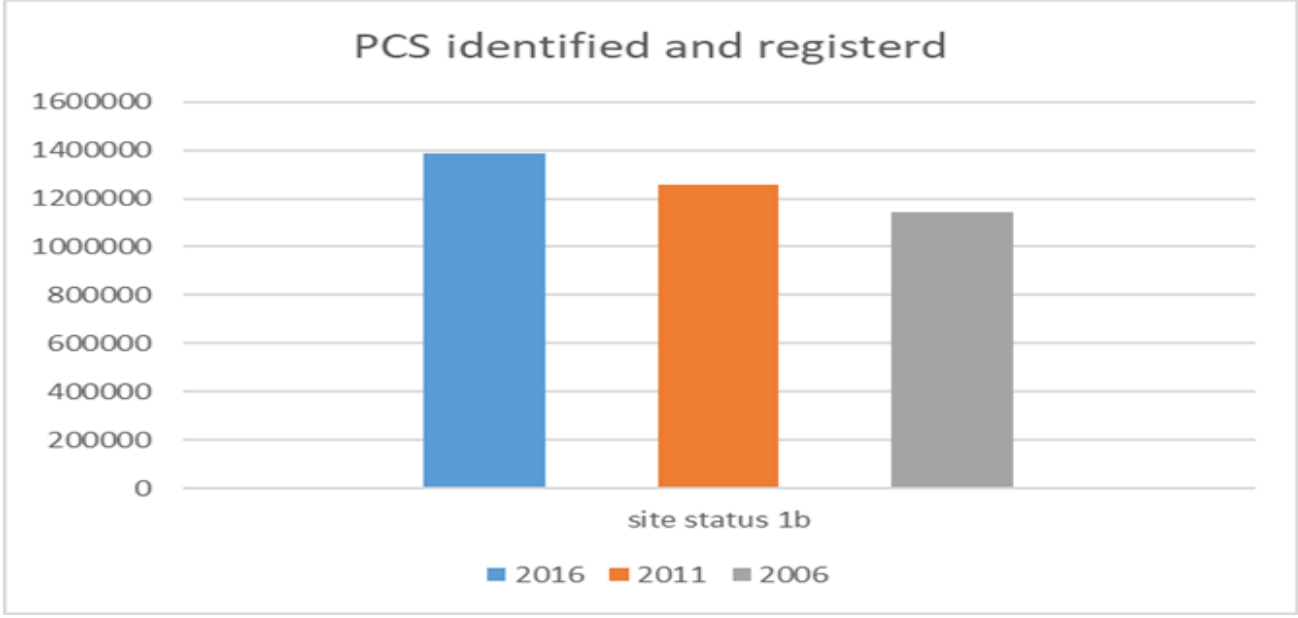
Preliminary analysis based on LUCAS 2018

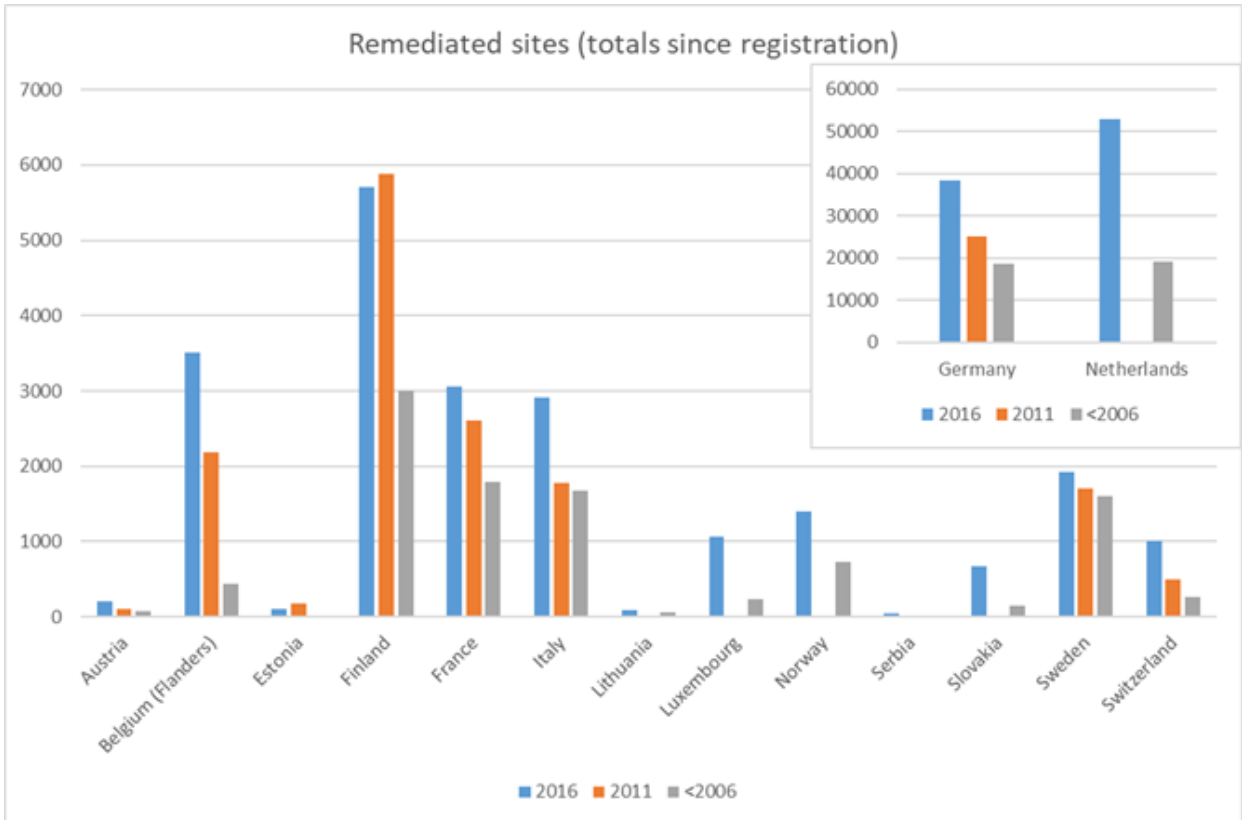
European Commission

Contaminated sites



- 2,8 million sites have been estimated where polluting activities have taken place considering the artificial surface.
- 694 000 registered sites where polluting activities took/are taking place in national and regional inventories of replying countries;
- more than 235 000 sites have been remediated.
- Efforts focused on investigation and remediation of sites where polluting activities took/are taking place due to many countries already have an accurate inventory.





JRC/EIONET:2018; EIONET WG Soil Pollution

Challenges

Microplastics?

Work in progress/needed: PFAS, PAHC, pharmaceuticals, trends….
Specific case studies (Regions, MS) but no consolidated EU perspective

Key messages from soil pollution

Chemical contamination of soils is widespread

- Almost 3 million contaminated and potentially contaminated sites
  - Increase in remediation but more identified - definitions
- Some agricultural soils show exceedance of critical levels of metals and agrochemicals (nutrients, plant protection products)
- Much unquantified in terms of spatial extent, concentration, risk, trends
- Outlook

Thanks for your attention

Any questions?

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European Commission

Pollution Summary Report:
where is the world in taking action to address pollution ?
an SDG lens

Stakeholder Workshop “Towards a Zero Pollution Monitoring and Outlook” – 24-25 May 2022

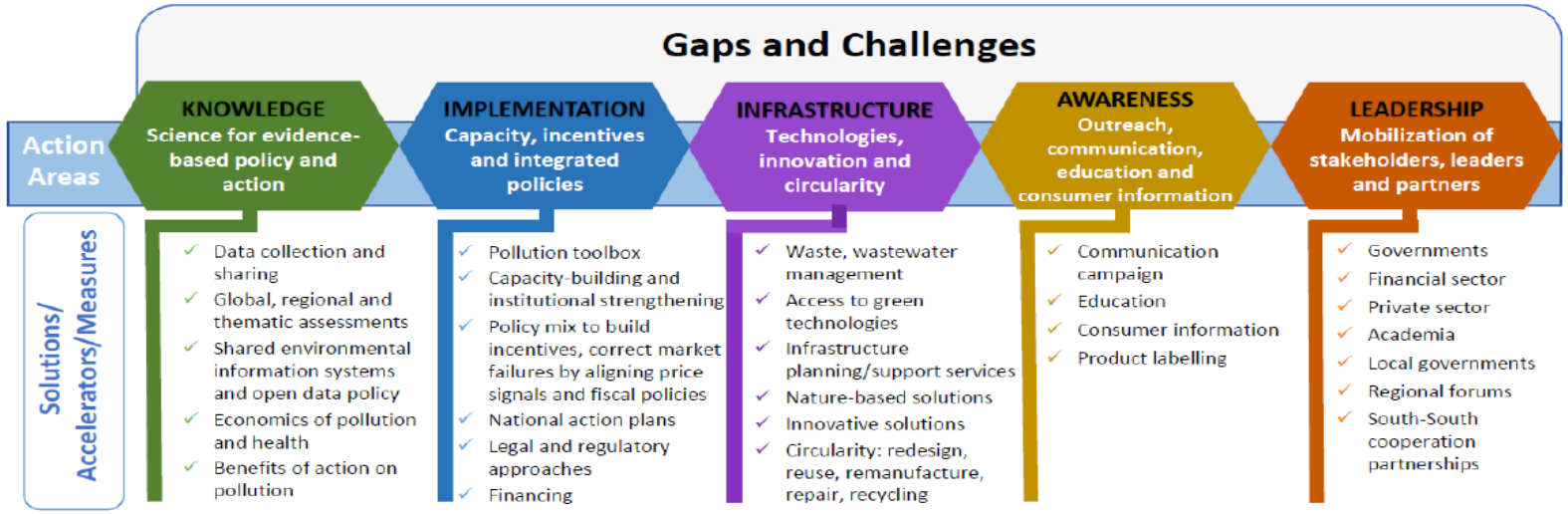
Maria Cristina Zucca, Pollution and Health Unit, Chemicals and Health Branch, Economy Division

Background - Why this report?

- UNEA by Ministerial Declaration at its 3rd session highlighted the need for rapid, large--scale and coordinated action against pollution.

- Implementation Plan "Towards a Pollution-Free Planet" was developed and welcomed by UNEA Resolution 4/21

- The Implementation Plan
  - Aims to accelerate action and strengthen capacities to address pollution, across all environmental media
  - Focuses on five key action areas: knowledge, implementation, infrastructure, awareness, leadership
  - Calls for tracking progress towar
    accelerating action to reduce pc



Scope and aim

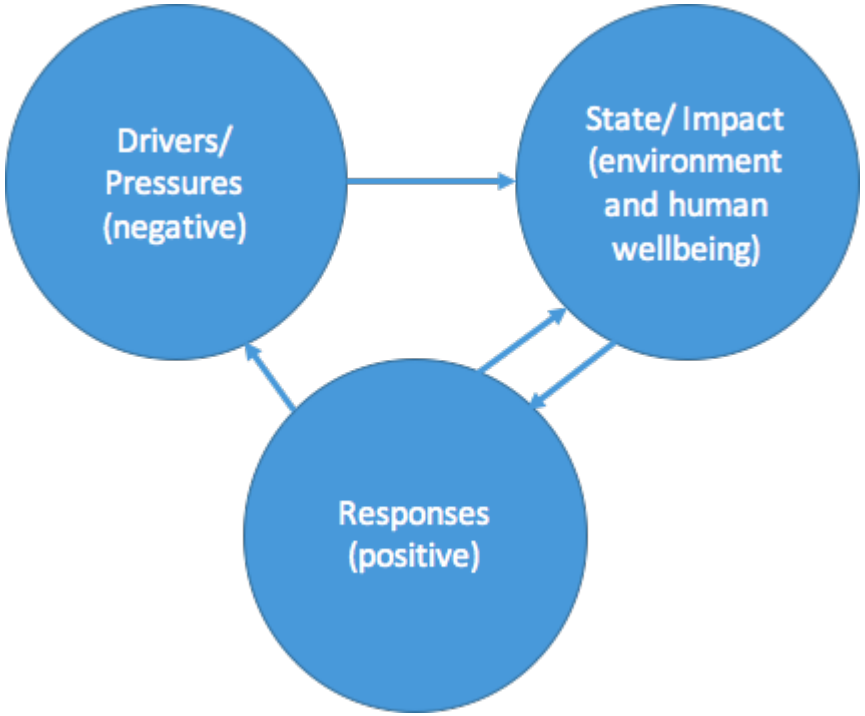
- Holistic approach
- Overview of the status of global pollution, using an SDG lens
- Focuses on the following themes, in line with the Implementation Plan "Towards a Pollution-Free Planet":
    1- Air Pollution
    2- Freshwater Pollution
    3- Land & Soil Pollution
    4- Marine & Coastal Pollution
    5- Chemicals & Waste Pollution
- Focuses on global and regional levels action
- Aims to identify gaps and actions to close the gaps
- Takes stock/builds on thematic reports

Overview of the Report

- Chapter 1- Background information, pollution and sustainable development, links with health, One Health, social dimensions
- Chapter 2- The situation of pollution based on relevant SDG indicators data, by theme
- Chapter 3- Actions to address pollution: overview of global / regional frameworks (e.g. MEAs, global guidelines etc.)
- Chapter 4- Gaps and ways to close them

Approach

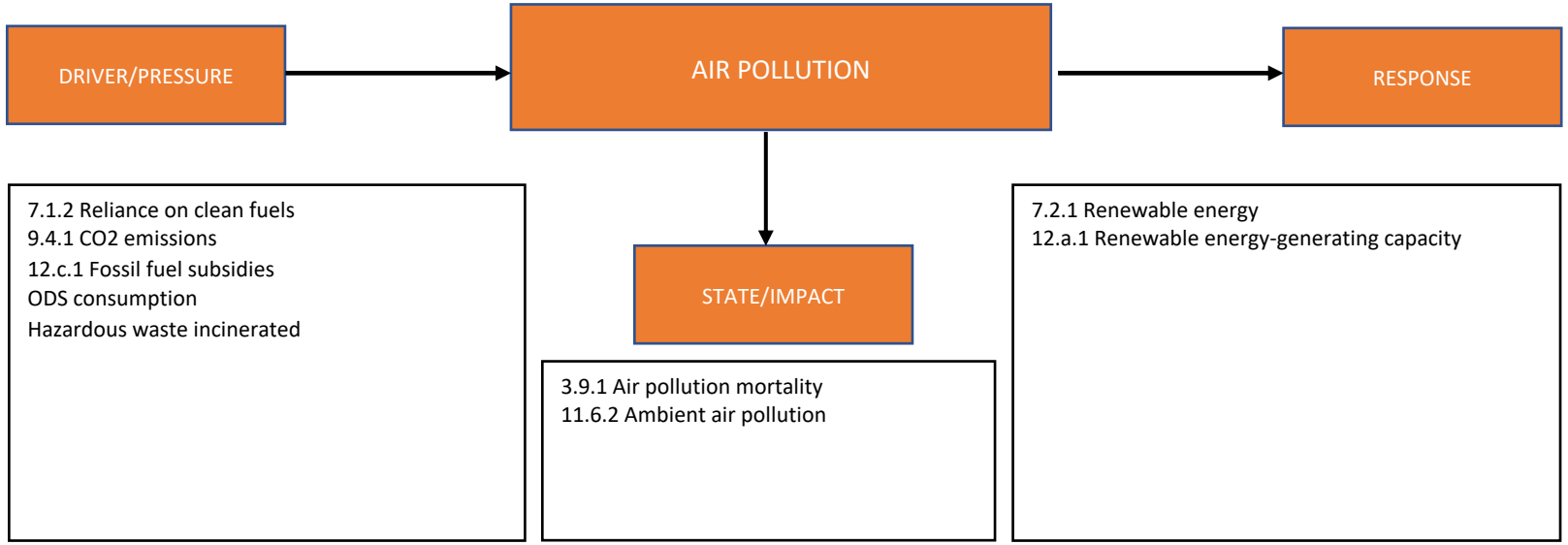
- The DPSIR framework is used to identify and categorize pollution-related indicators into drivers, pressures, state, impact and responses.
- SDG indicator framework - SDG indicators that are directly/indirectly related to pollution
- Criteria for selecting indicators: relevant, sound methodology, data availability



Indicators framework - Air Pollution

SDGs with indicators that are directly relevant to Air Pollution include:

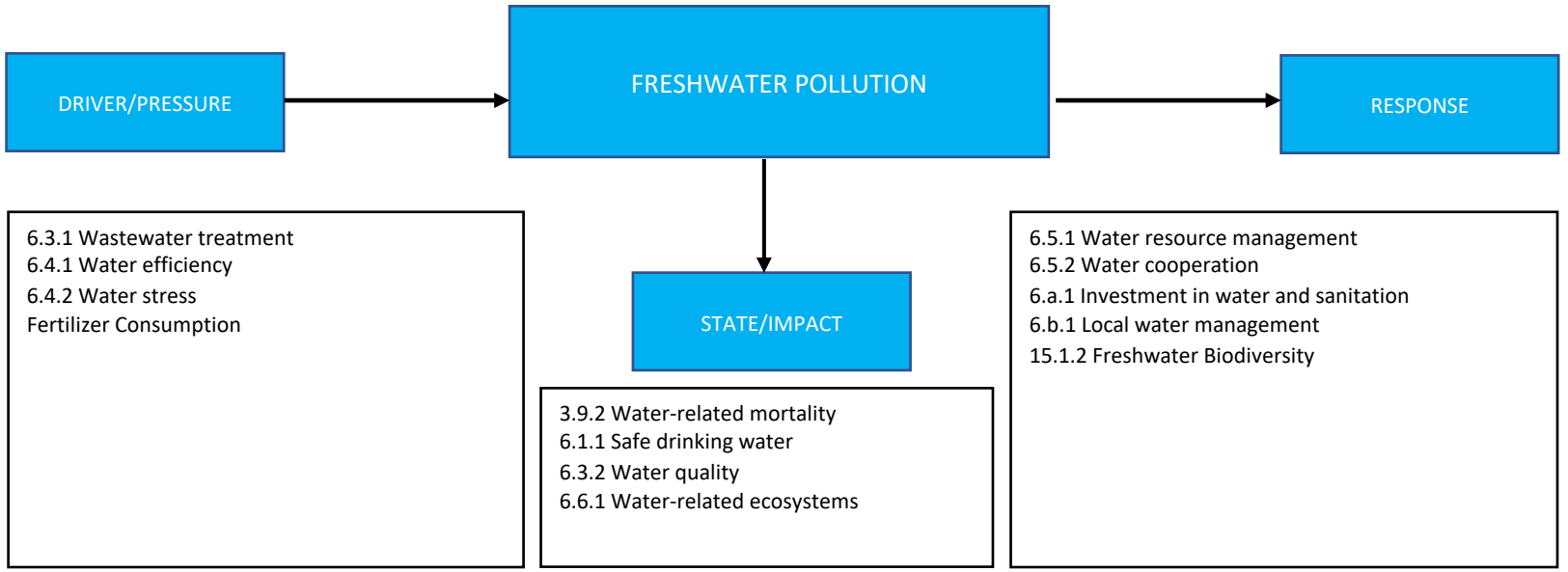
- SDG 3 Good Health & Well Being
- SDG 7 Affordable & Clean Energy
- SDG 9 Industry, Innovation and Infrastructure
- SDG 11 Sustainable Cities & Communities
- SDG 12 Responsible Consumption & Production



Indicators framework - Freshwater Pollution

SDGs with indicators that are directly relevant to Freshwater Pollution include:

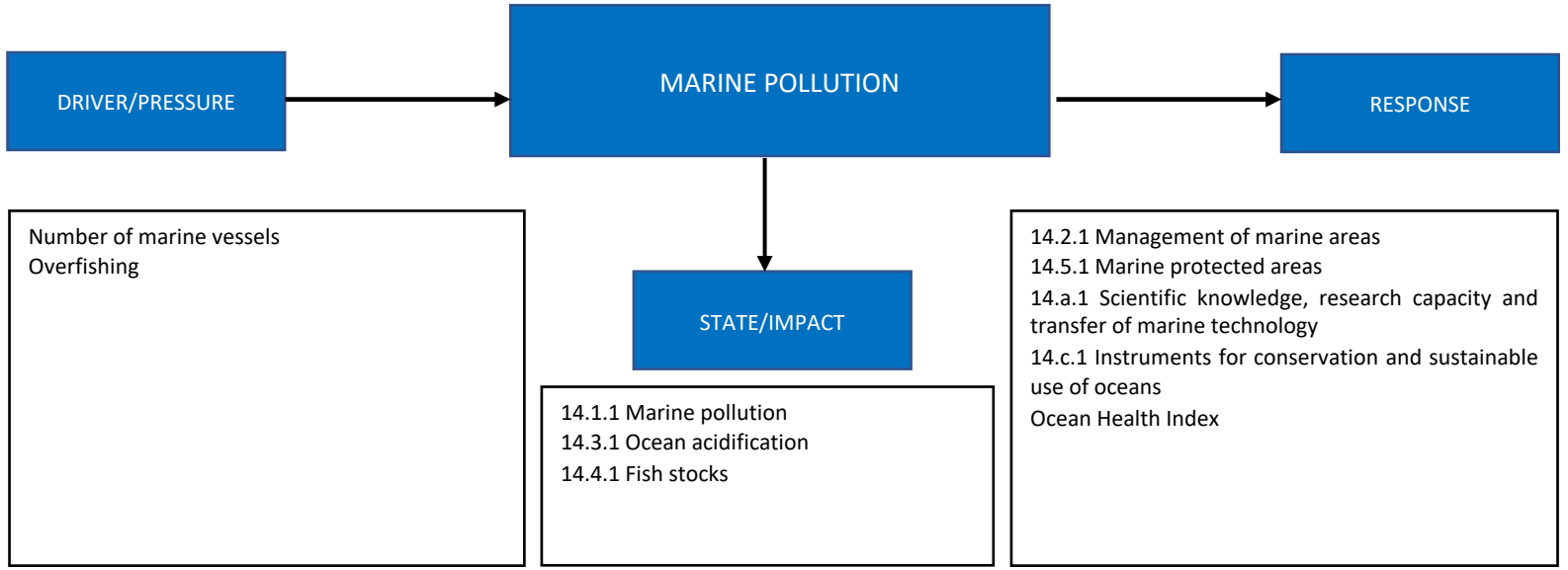
- SDG 3 Good Health & Well Being
- SDG 6 Clean Water & Sanitation
- SDG 15 Life on Land



Indicators framework - Marine & Coastal Pollution

SDGs with indicators that are directly relevant to Marine & Coastal Pollution include:

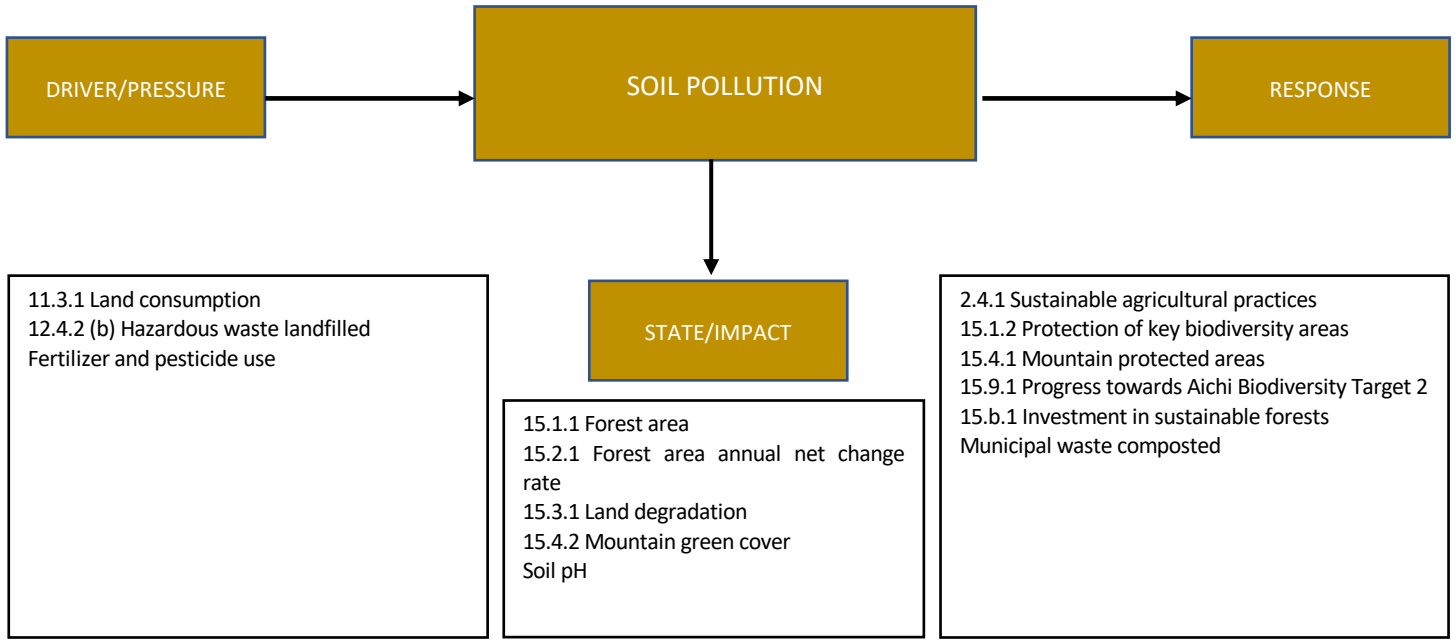
- SDG 14 Life Below Water



Indicators framework - Land & Soil Pollution

SDGs with indicators that are relevant to Land & Soil Pollution include:

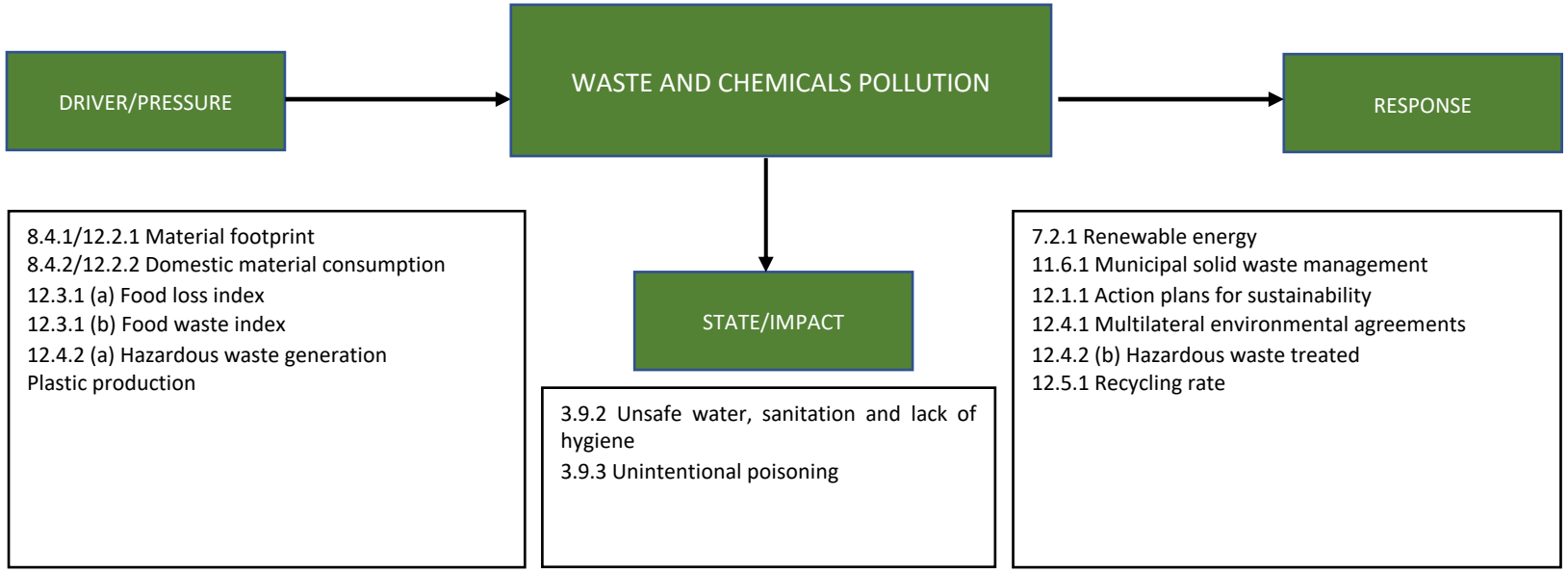
- SDG 2 Zero Hunger
- SDG 11 Sustainable Cities & Communities
- SDG 12 Responsible Consumption & Production
- SDG 15 Life on Land



Indicators framework - Chemicals & Waste

SDGs with indicators that are directly relevant to Chemicals & Waste include:

- SDG 3 Good Health & Well Being
- SDG 7 Affordable & Clean Energy
- SDG 8 Decent Work and Economic Growth
- SDG 11 Sustainable Cities & Communities
- SDG 12 Responsible Consumption & Production



Progress

- Expert workshop organized to receive inputs on gaps (Q3 2021)
- Zero draft report completed (Q1 2022)
- Peer review process (Q1 and Q2 2022) (over 1000 comments)
- Internal review/ editing / summary / layout / visuals (Q 2 and Q3 2022)
- Launch and dissemination (Q3-Q4 2022)
- Embedding in SDG page for live updates (Q3-Q4 2022)

Challenges /major conclusions and opportunities

- No comprehensive global framework to measure progress on pollution
- Pollution is a key barrier to achieving the SDGs, but SDGs framework only partially useful for progress monitoring
- Major gaps in indicators, knowledge, methods and data confirmed
- Major differences in data availability and progress across regions and themes
- A diverse, complex agenda – various possible ways to look at pollution

- Evolving and growing body of knowledge
- Stronger (yet insufficient) global attention to pollution
- Evolving global agendas, mandates and frameworks
- A dedicated science-policy interface in the making

Resolutions from UNEA 5.2 – Invigorating the sustainable management of chemicals and waste and combatting pollution

5/Resolution 2: Sustainable nitrogen management	5/Resolution 6: Biodiversity and Health	5/Resolution 7: Sound management of chemicals and waste (Omnibus resolution)	5/Resolution 8: Science-Policy Panel to contribute further to the sound management of chemicals and waste and to prevent pollution	5/Resolution 12: Environmental aspects of minerals and metals management and	5/Resolution 14: End plastic pollution: Towards an international legally binding instrument
• Nitrogen waste • Air pollution • Waste • Waste water	• Antimicrobial resistance (AMR)	• SAICM • Special Programme • Green and Sustainable Chemistry • Pesticides and Fertilizers • Endocrine Disrupting Chemicals • Asbestos • IOMC and MEA cooperation	• Science-Policy Interface, concerning chemicals, waste, and pollution	• Global Mercury Partnership • Artisanal Small-scale Gold Mining (ASGM)	• Chemicals in plastics

Thank you

Maria Cristina Zucca
On behalf of the Pollution Summary Report Team

Beat Pollution https:www.unep.org/beatpollution
UNEP SDGs https:www.unep.org/explore-topics/sustainable-development-goals

United Nations Avenue, Gigiri
PO Box 30552 – 00100 GPO Nairobi, Kenya

www.unep.org

GAHP
GLOBAL ALLIANCE ON HEALTH AND POLLUTION

Lancet Commission on Pollution and Health - an Update

Rich Fuller richfuller@gahp.net

May 2022

Many thanks to our *Lancet* Update donors:

Government Offices of Sweden
Ministry of the Environment

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development and Cooperation SDC

Lancet Commission on pollution and health - Update

- Update publication 18 May 2022 - *Lancet Planetary Health*
- Original Commission published in 2017 used 2015 data. This update uses 2019 data.

- **Pollution is still killing 9 million people a year**
  - Low and middle income countries (LMICs) suffer the worst of it
  - Wealthy countries show improvement, especially in air pollution
  - Traditional pollution (sanitation, household air pollution) improvement offset by modern pollution (air pollution, chemicals, lead).
  - Modern pollution is getting *much* worse

Other Key Findings

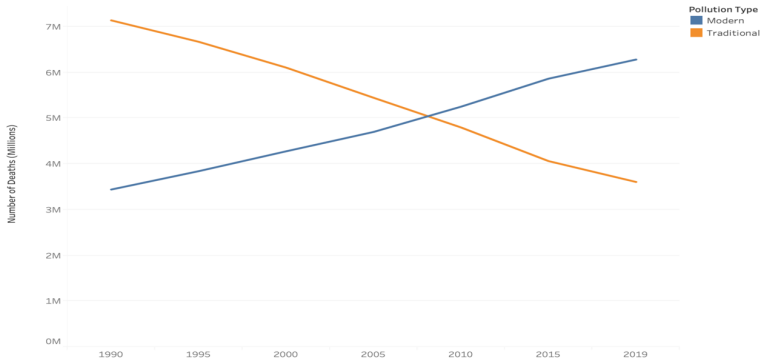
9 MILLION premature deaths = **16%** of all deaths worldwide

- **Policy response has been poor in LMICs, as has donor response**
  - Only a few countries have targeted pollution in their development agendas. Very little development assistance allocated
- **Transboundary pollution a growing concern – affects all**
  - Focus is needed on chemicals, (especially lead) and air pollution.
- **This huge public health problem has been largely ignored**
- **We've dropped the ball**

Modern vs Traditional Pollution over time

Modern Pollution – globally - getting worse

- Traditional pollution falling – household and sanitation
- Modern pollution death is growing
  - Industrialization and Urbanization
    - Includes **Ambient air**
    - and **lead and occupational chemicals**
- 92 percent in low and middle-income countries

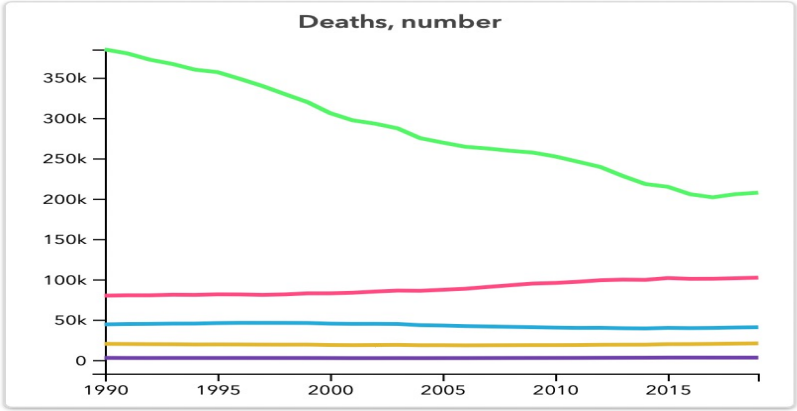


Modern Pollution deaths have increased 66 % in the last 20 years

Europe – 1990 to 2019 trends

Air pollution decreasing. Chemicals risks increasing. Lead increasing.

Chemicals – lead and occupational risks – combined AS LARGE as air pollution and GROWING

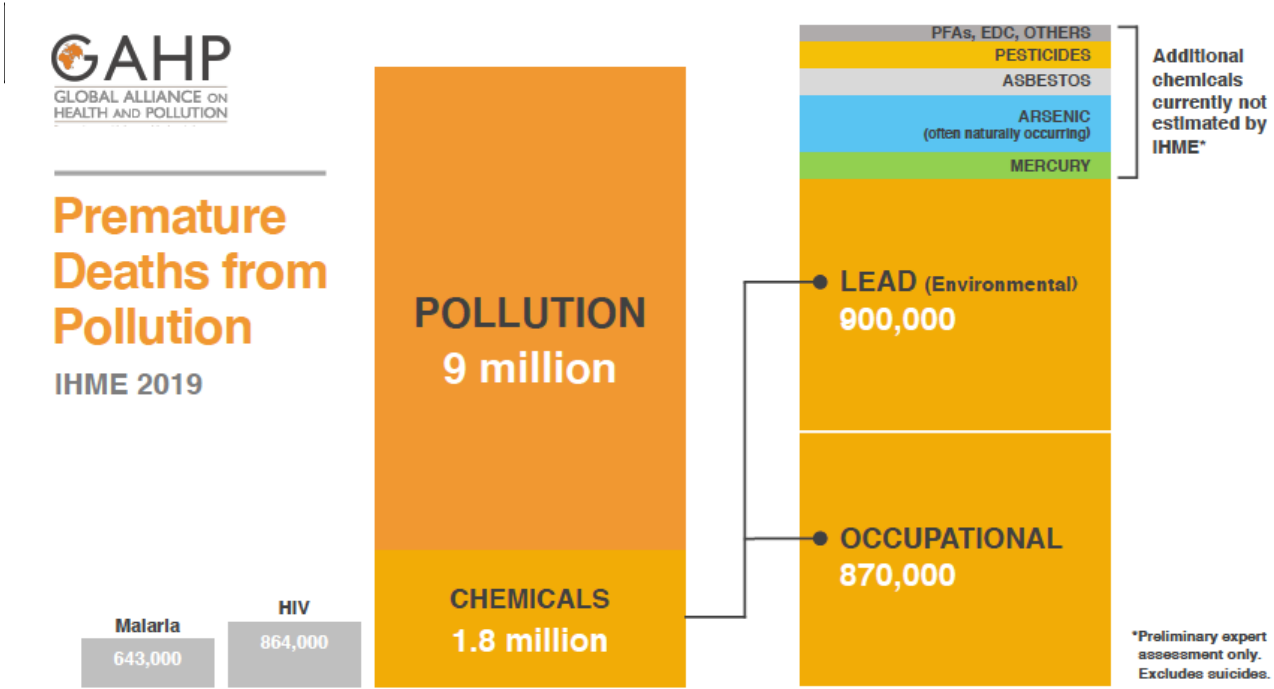


Ambient Air Pollution

Ambient and Climate Action

- **Climate driver** remains key
- Action on climate may be better for health than action on ambient alone

Lead and Chemicals – Trending up globally



Chemical Pollution
- Undercounted
- Not adequately measured

Note: Current SDG 3.9.3 metric - Deaths from pesticides (unintentional poisonings)
- just 11,000 pa
(Pesticide suicides – 138,000)

Lead Poisoning Ubiquitous

Lead (Pb) – no longer from gasoline

- Easily the **MOST PROBLEMATIC** chemical (but ignored in SDG 3.9.3)
- **800 million children** are currently lead poisoned – One in three children globally
  - **Blood Lead Levels exceeding 5 µg/dl**, (US CDC recommends intervention at 3.5 ug/dl)
- **Sources of exposure** include **unsound recycling of car batteries, adulterated spices, contaminated cookware, paint**

The Toxic Truth
Report – UNICEF and Pure Earth

Lead Pollution Impacts Us All

Lead (Pb)

Lead is becoming a major transboundary risk

- NYC Department of Health considers imports to be the next largest US source of lead exposure, after leaded paint and lead in pipes.

Lead is found in imported:

- Spices (sometimes added for color)
- Baby food (sweet potatoes, others)
- Leafy greens, some grains
- Toys, medicines, cosmetics

Chemical Pollution – Not Just Premature Mortality

Chemical Pollution

- **Neurotoxicity impacts IQ (lead especially)**
  - Lower productivity – loss of GDP
  - Higher rates of societal violence
  - Lower educational attainment
- **Reproductive toxicity and immunotoxicity**
  - COVID 19 outcomes
  - Endocrine disruptors

- **Science Policy Platform** (UNEA5 resolution) - a great step forward
- Assess **priority chemicals** based on health and environmental impact
- Fix the SDG 3.9.3 indicator

Recommendations – for governments and development agencies

LMICs needs action, and benefits are global.

Prevention is Key

- **All Sectors – make Modern Pollution a PRIORITY**
- **Integrate pollution** within **development strategies**
- Undertake **Health and Pollution Action Planning**

  Involving all critical agencies (health, environment, finance, industry, transportation, etc.) GAHP is assisting countries to do these

Recommendations

Measuring is the first step

- **Monitor pollution**
  - Ambient air monitors – relatively inexpensive, and empowers local action
  - Lead (Pb) monitoring – newborns, pregnant mothers, children
  - Develop bio-monitoring systems for other chemicals
    - Biomonitoring per Stockholm (POPS) and Minamata (mercury), and SDG 12.4

Recommendations

Modern Pollution lacks attention

- Consider **transboundary exposures** in chemicals
  - Border controls will never be adequate.
  - Reduce problems at source (international support)

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GLOBAL ALLIANCE ON HEALTH AND POLLUTION

Thank you

- Learn more at www.gahp.net
- Contact Rachael Kupka, Executive Director at Rachael@gahp.net
- Rich Fuller – richfuller@gahp.net

Session 3:
Zero Pollution Outlook

Presentations from JRC and DG ENV

Towards a Monitoring and Outlook Framework for the Zero Pollution Ambition (SWD(2021) 141)

Preparation of the first Zero Pollution Outlook High-Level Synthesis

Stakeholder Workshop "Towards a Zero Pollution Monitoring and Outlook"

24 & 25 May 2022

The Zero Pollution Outlook

- The Zero Pollution Outlook will
  - analyse synergies and trade-offs between different EU policies,
  - help translate ‘early warnings’ into recommendations on pollutants of increasing concern based on the latest research findings.
- The first Zero Pollution Monitoring and Outlook Report is planned for 2022.

Brussels, 12.5.2021
COM(2021) 400 final

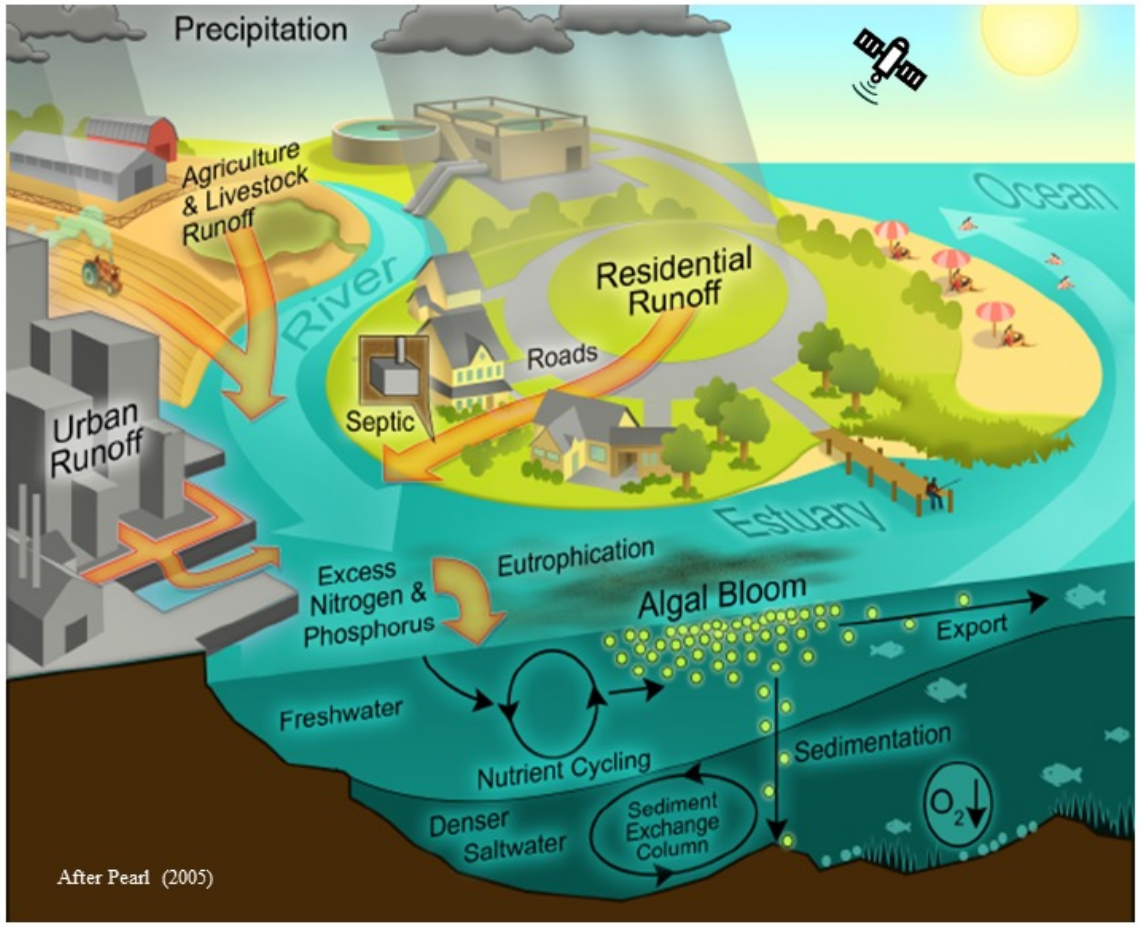
COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

Pathway to a Healthy Planet for All
EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil'

{SWD(2021) 140 final} - {SWD(2021) 141 final}

European Commission

The Zero Pollution Outlook

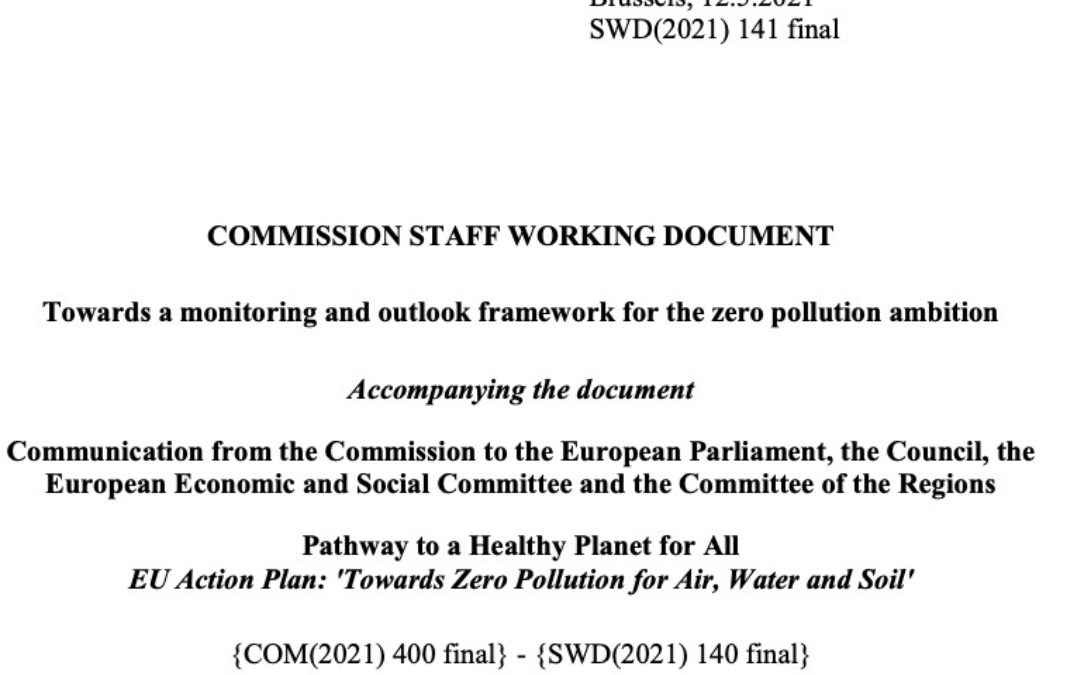


European Commission

State-of-Play

EUROPEAN COMMISSION

- Details set out in SWD document adopted on
  12 May 2021
- Document a starting point, not a rigid framework
- Strong link to existing legislation
- Implementation needs to address open issues and ‘fix’ elements for first report



Brussels, 12.5.2021
SWD(2021) 141 final

COMMISSION STAFF WORKING DOCUMENT

Towards a monitoring and outlook framework for the zero pollution ambition

Accompanying the document

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions

Pathway to a Healthy Planet for All
EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil'

{COM(2021) 400 final} - {SWD(2021) 140 final}

European Commission

Structure of Zero Pollution Monitoring and Outlook 2022

COM Report
"Policy Summary"
(ENV)

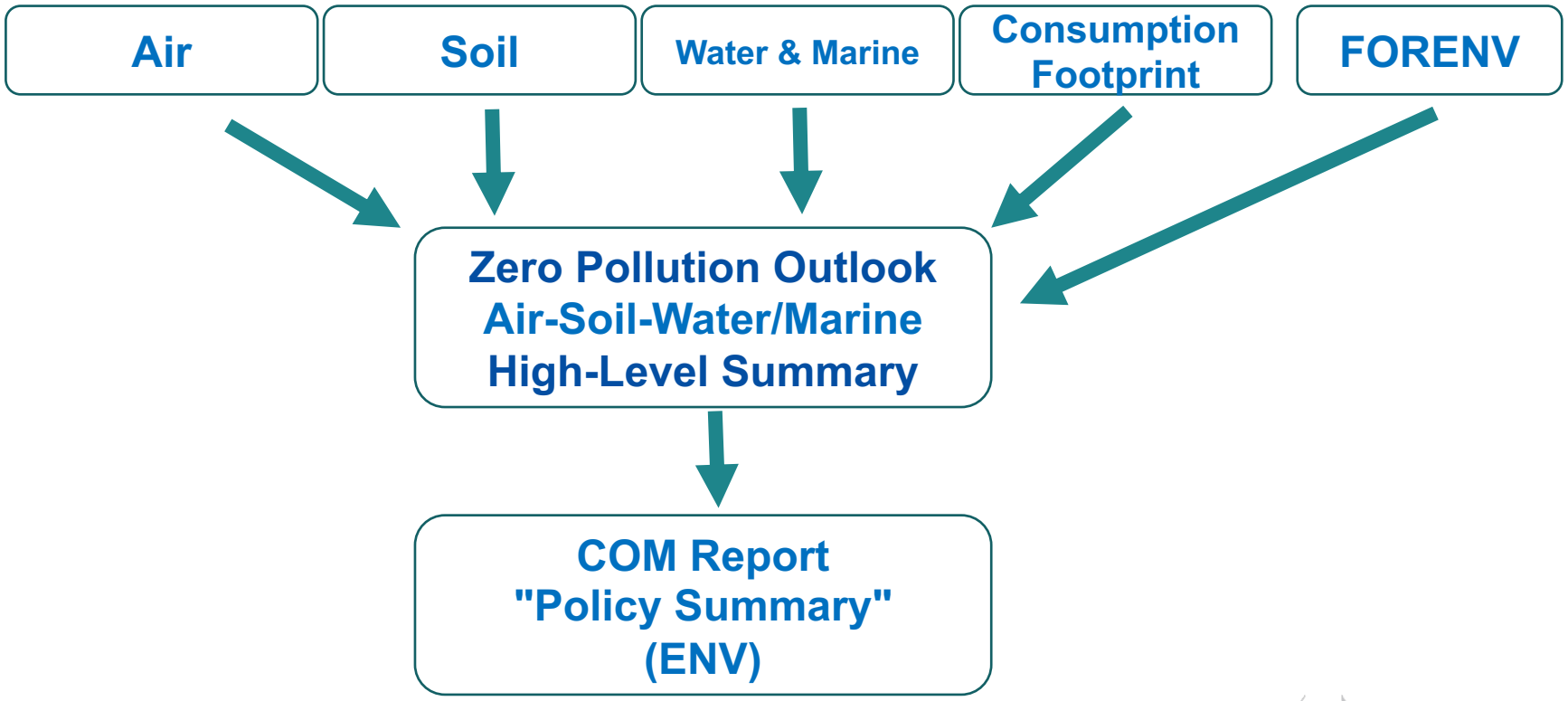
ZP monitoring
(EEA)

ZP outlook
(JRC)

European Commission

Zero Pollution Outlook Air-Soil-Water/Marine

Format	Delivery 2022
JRC Science for Policy	June
JRC Science for Policy	June (Draft)
Communication	December



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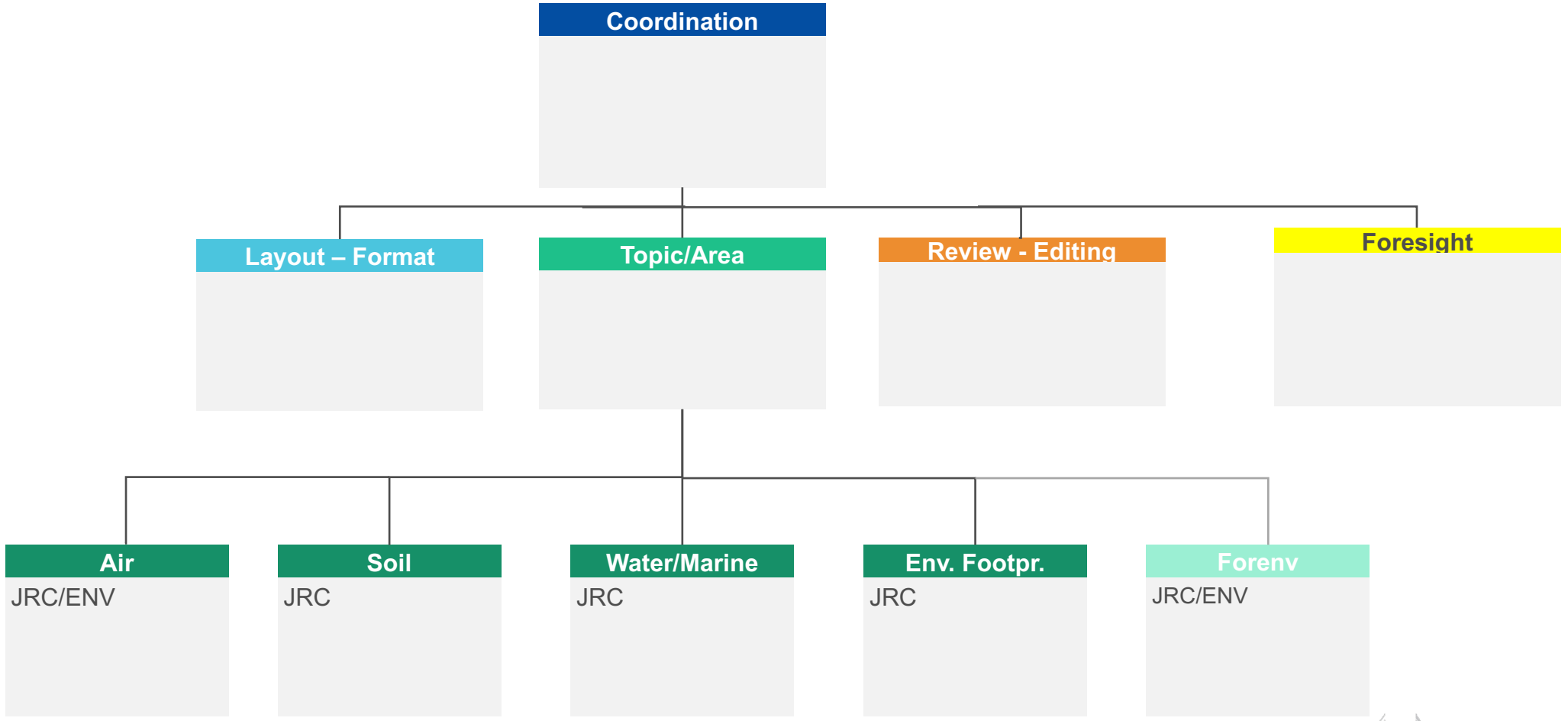
Zero Pollution Outlook: Editorial Board



European Commission

Clean

Air
Water/Marine
Soil
Environmental Footprint
FORENV

Outlook

European Commission

Keep in touch

EU Science Hub: ec.europa.eu/jrc

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EU Science Hub – Joint Research Centre

EU Science, Research and Innovation

Eu Science Hub

European Commission

Thank you

Slide 2: © Jukan Tateisi − unsplash.com

European Commission

Clean Air Outlook

“Towards a Zero Pollution Monitoring and Outlook” Stakeholder Workshop - 24 May 2022

Viviane André

European Commission, DG ENV,
Clean air and urban policy

What are the Clean Air Outlook reports ?

Regular modeling exercise (based on GAINS model) **to assess the progress towards compliance with National Emission reduction Commitments** for 2020-29 and 2030 onwards set in the NEC Directive (EU) 2016/2284

- Progress towards reducing air pollutants emissions and background concentration and related
  - **health impacts**
  - **ecosystem impacts**
- Monetisation of these impacts, to assess the costs of air pollution and the benefits of its reduction
- Wider economic impacts (on GDP and productivity)
- Transboundary impacts of air pollution and of its reduction

Analysis conducted for various scenarios:
- Baseline, updated each time to include latest EU policies
- Policy scenarios, in particular in terms of more ambitious energy and climate objectives

Commission reports, supported by IIASA reports (2018 and 2021)

Tool to support discussion with Member States and all stakeholders

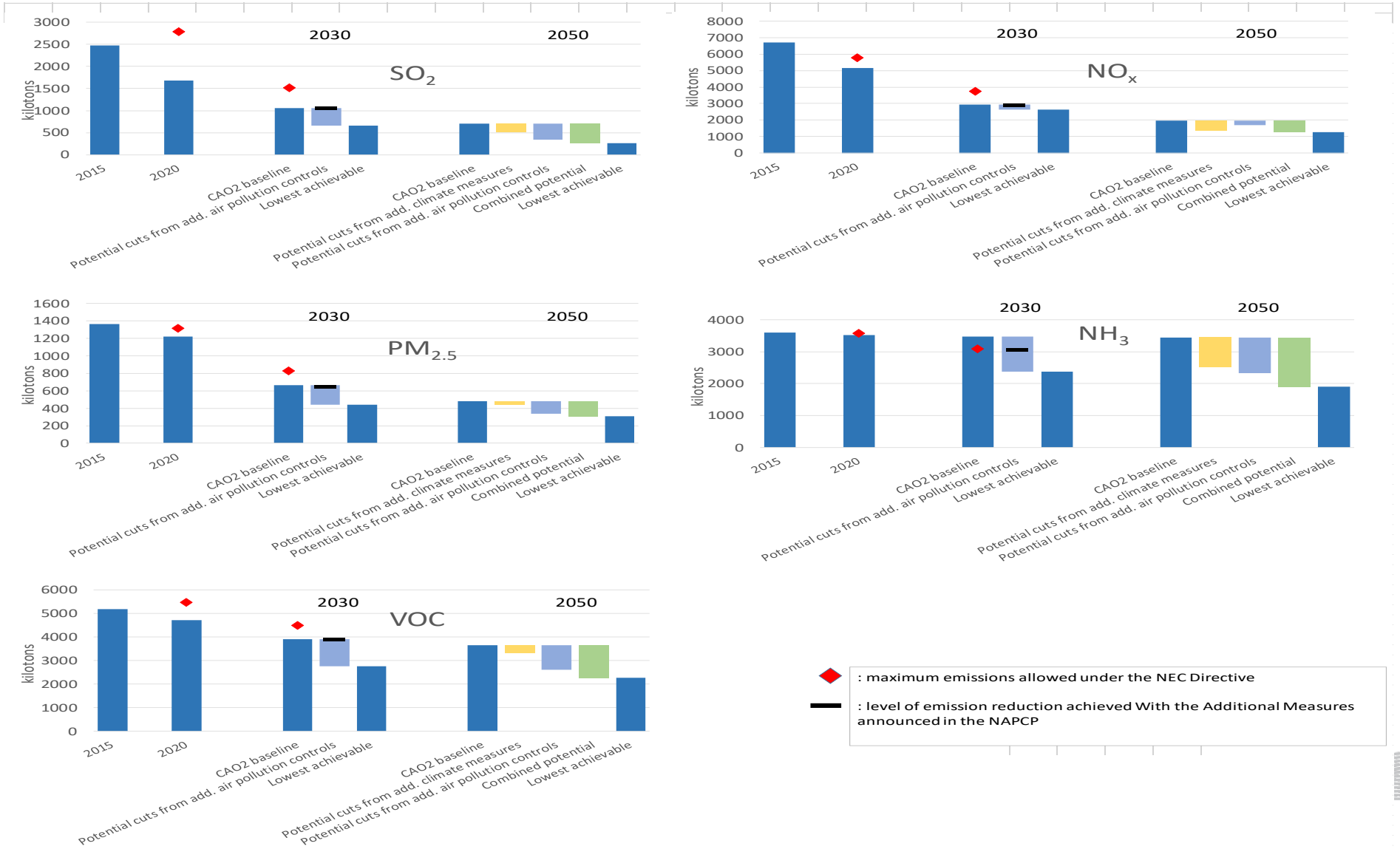
European Commission

Second Clean Air Outlook: Structure

1. Introduction
2. **State of air pollutant emissions and air quality, and progress towards compliance**
   - 2.1. Current air pollutant emissions and air quality situation
   - 2.2. Progress towards compliance
   - 2.3. Follow-up to the fitness check of the AAQD
3. **Implementation of the NEC Directive and supportive EU legislation**
   - 3.1. Changes in legislation contributing to clean air
   - 3.2. Prospects for achieving the ERC in the NEC Directive for 2030 and beyond
4. **Prospects for attaining long-term objectives**
   - 4.1. Pollutant background concentration
   - 4.2. Health impacts
   - 4.3. Ecosystem impacts
   - 4.4. Economic impacts
5. **Interactions with climate change and climate policy**
   - 5.1. Prospects for emissions of short-lived climate forcers (methane and black carbon)
   - 5.2. Co-benefits and trade-offs between policies
6. **Transboundary and international dimension**
7. Conclusion

European Commission

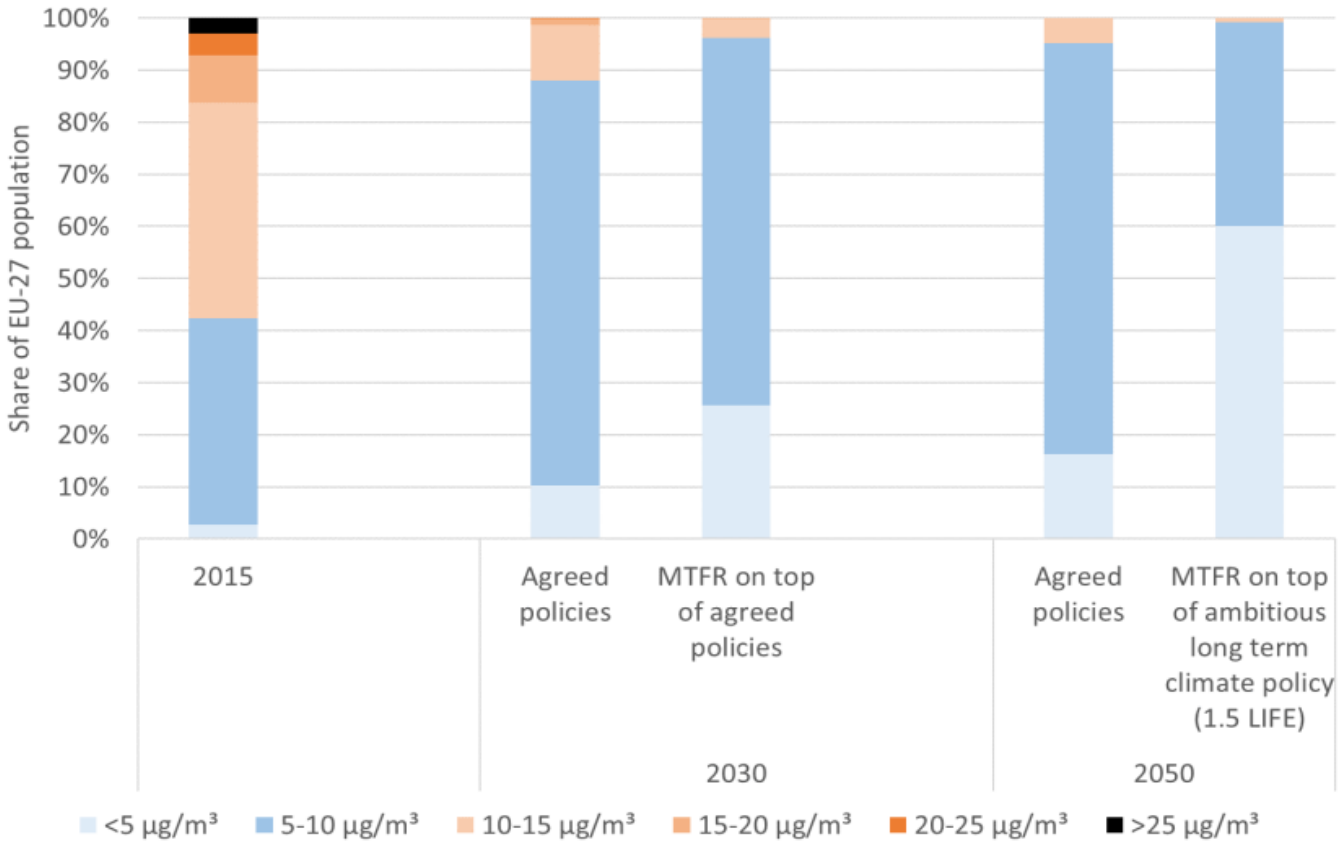
Examples of findings from 2nd Clean Air Outlook: Projected emissions of main air pollutants in EU-27 under various scenarios



European Commission

Examples of findings from 2nd Clean Air Outlook: Achievement of long term objective of halving health impacts of air pollution

Figure 2: Distribution of population exposure to $PM_{2.5}$ for key scenarios, EU-27 (Source: IIASA)

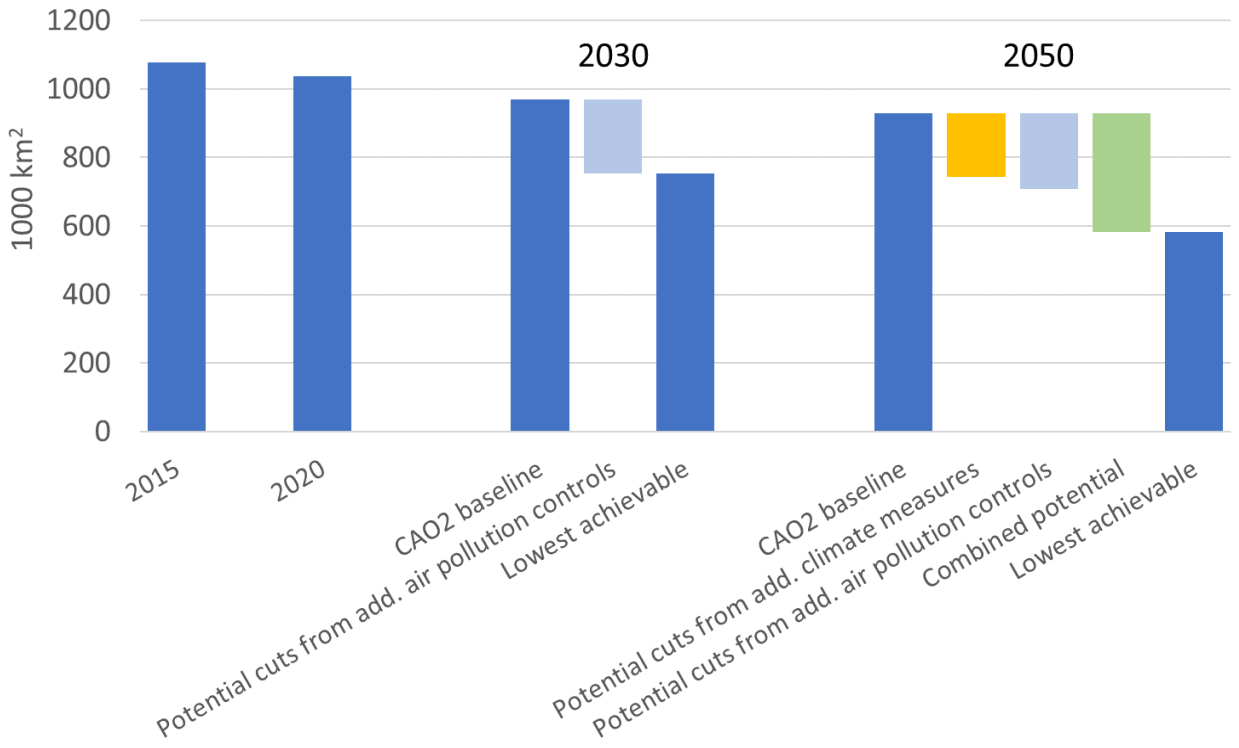


Note: MTFR stands for 'Maximum Technically Feasible air pollution Reduction measures'.

European Commission

Examples of findings from 2nd Clean Air Outlook: Ecosystem impacts

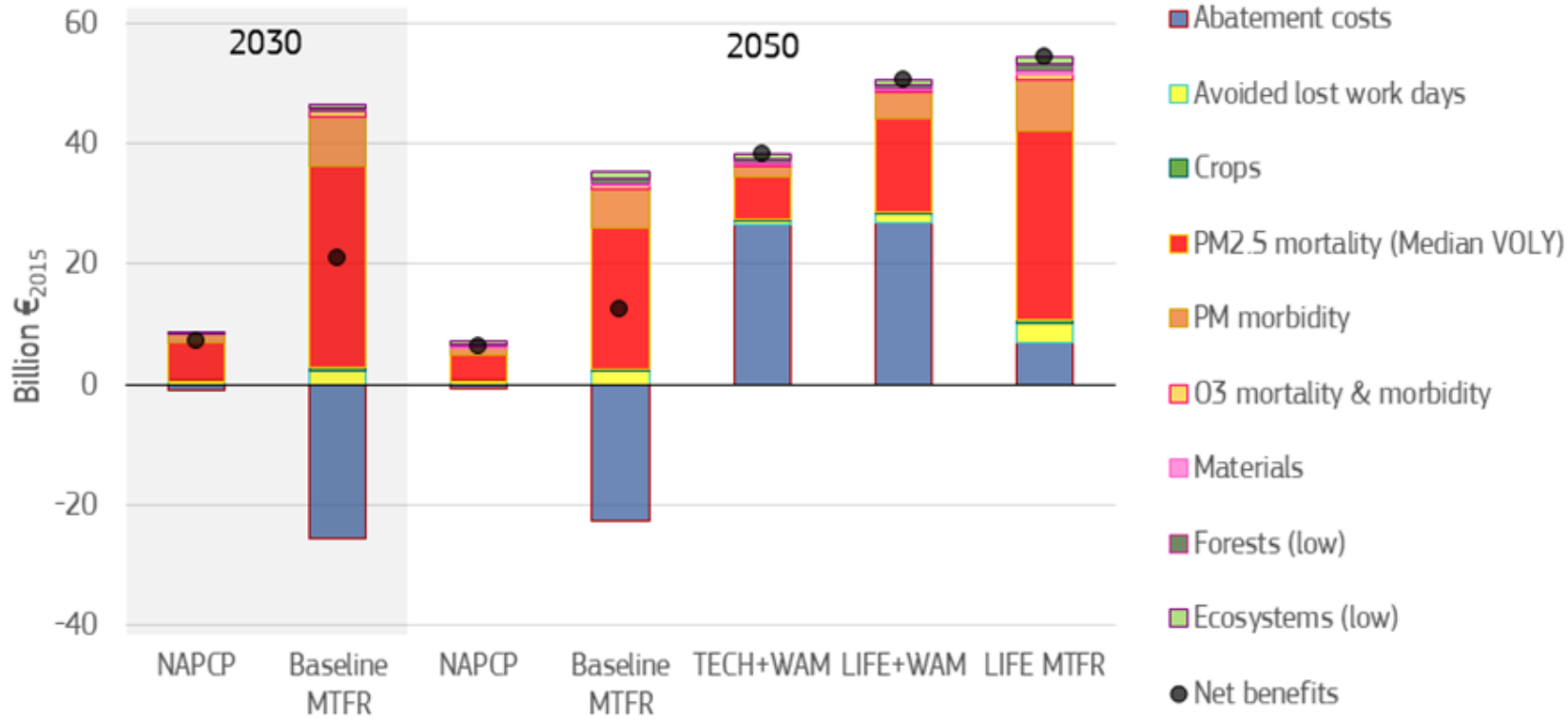
Figure 4: Area of terrestrial ecosystems (1 000 km²) where nitrogen deposits exceed the critical loads for eutrophication, EU-27



European Commission

Examples of findings from 2nd Clean Air Outlook: Economic impacts

Figure 5: Change in net benefits of clean air measures under various air and climate policy scenarios compared to baseline, in EUR billion per year (EU-27), based on a conservative valuation of all impacts (Source: JRC, in IIASA report)



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2nd Clean Air Outlook is the basis for the Zero Pollution target 1

- **By 2030 the EU should reduce by more than 55% the health impacts (premature deaths) of air pollution**

- Basis: National Emission reduction Commitments Directive (EU) 2016/2284
- Description: **The reduction is projected to be achieved** through fine particulate matter ($PM_{2.5}$) emissions reduction, **if all Member States implement all measures announced in their first National Air Pollution Control Programmes** (Article 6 of Directive (EU) 2016/2284) **to reach the objectives of the Directive, and based on the full implementation of other relevant legislation** (including, in particular, energy and climate policies). Reduction of emissions of air pollutants other than $PM_{2.5}$ (which are also covered by the NEC Directive) will deliver additional positive health effects.
- Reference year: 2005
- Evidence base: **Second Clean Air Outlook and underpinning study**
- **Monitoring: Update of the Clean Air Outlook** through the Zero Pollution Monitoring and Outlook Framework

2nd Clean Air Outlook is the basis for the Zero Pollution target 3

- **By 2030 the EU should reduce by 25% the EU ecosystems where air pollution threatens biodiversity**

- Basis: National Emission reduction Commitments Directive (EU) 2016/2284
- Description: **The Second Clean Air Outlook and its underpinning study calculated that, based on the full implementation of all measures announced by Member States in their first National Air Pollution Control Programmes** (Article 6 of Directive (EU) 2016/2284), **a reduction of 20% of the ecosystem areas measured as areas above 'critical loads' of nitrogen deposition can be achieved by 2030 compared to 2005**.
- These estimates do not take into account the additional measures needed to achieve the 50% reduction of nutrient losses as set out in both the Farm to Fork and the Biodiversity Strategies and the nature restoration targets set out in the 2030 Biodiversity Strategy. Thus, **a reduction of 25% compared to 2005 is proposed as a realistic ambition, achievable through the implementation of the measures already announced by the Member States in their first National Air Pollution Control Programmes in combination with the implementation of the additional measures needed to achieve the targets set in the Farm to Fork and Biodiversity Strategies**.
- Reference year: 2005
- Evidence base: Second Clean Air Outlook and underpinning study (in particular Table 3.12)
- **Monitoring: Update of the Clean Air Outlook** through the Zero Pollution Monitoring and Outlook Framework

The third Clean Air Outlook

Will follow same approach as the 2 previous Clean Air Outlook reports

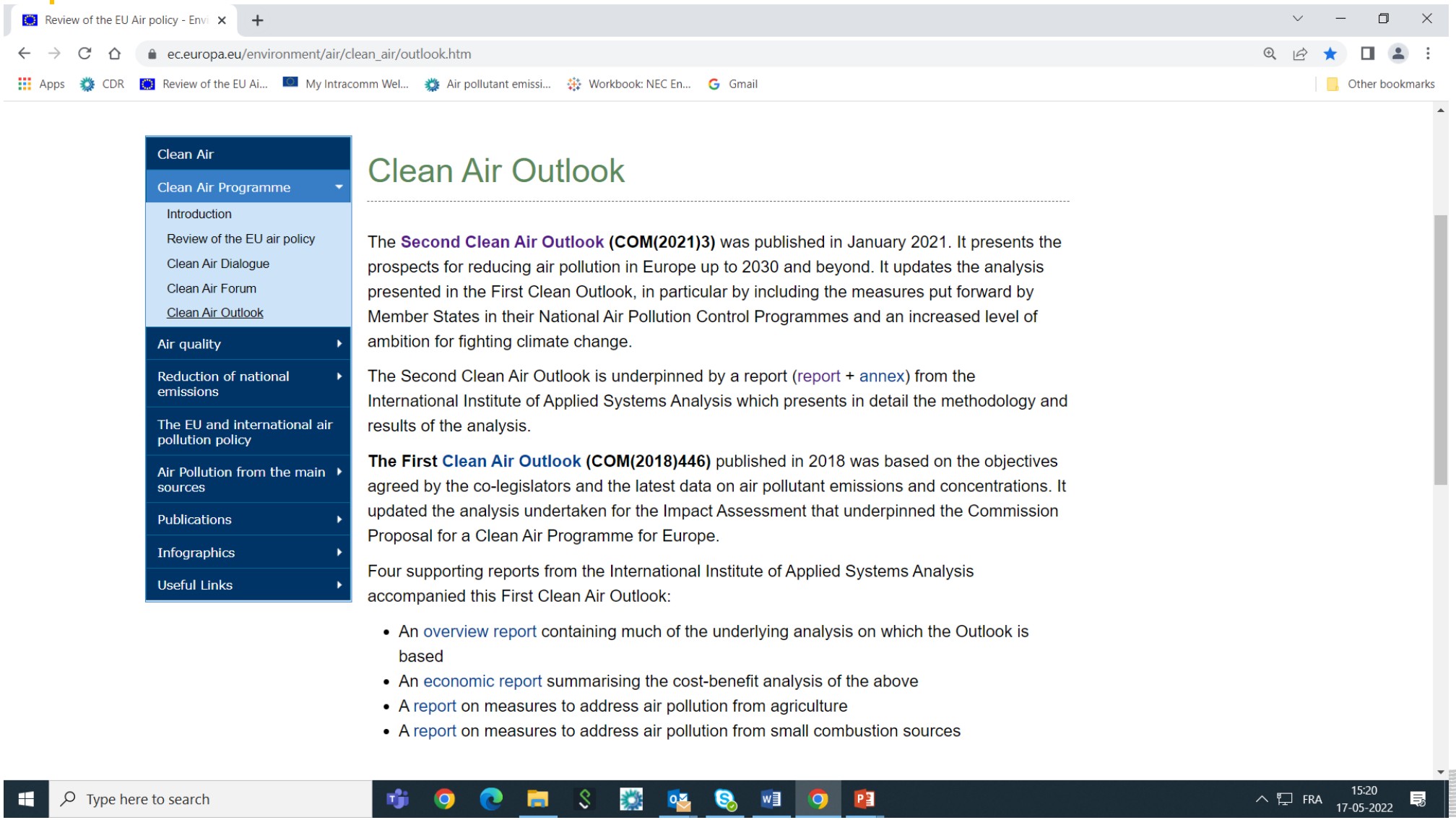
In addition: (non-exhaustive)

- Member States consulted on their respective national baseline
- Assessment of the prospect of achieving the 2 clean air targets from the ZPAP (per MS)
- Most efficient additional measures (if needed) to reach these targets
- Levels of pollutant emissions, concentration and cost-benefit analysis of reaching these targets, compared with other scenarios (baseline, MTFR, AAQD)

Interplay between 3rd Clean Air Outlook and ZP Monitoring for air

- ZP Monitoring: state of play – **current** distance to ZP targets
- Clean Air Outlook: prospects of reaching the ZP targets under different scenarios **for the future**
- End of year: Adoption of COM 3rd Clean Air Outlook report and publication of supporting study and adoption of the Zero Pollution Monitoring and Outlook

More information: https://ec.europa.eu/environment/air/clean_air/outlook.htm



European Commission

Thank you

European Commission

European Commission

European Committee of the Regions

Water/Marine Zero Pollution Outlook

Stakeholder Workshop

"Towards a Zero Pollution Monitoring and Outlook"

24 May 2022

The Zero Pollution ambition (water/marine)

ZP targets for 2030:

- improving air quality to reduce the number of premature deaths caused by air pollution by 55%;
- improving water quality by reducing waste, plastic litter at sea (by 50%) and micro-plastics released into the environment (by 30%);
- improving soil quality by reducing nutrient losses and chemical pesticides' use by 50%;
- reducing by 25% the EU ecosystems where air pollution threatens biodiversity;
- reducing the share of people chronically disturbed by transport noise by 30%, and
- significantly reducing waste generation and by 50% residual municipal waste.

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Water/marine Zero Pollution outlook

Three pressures:

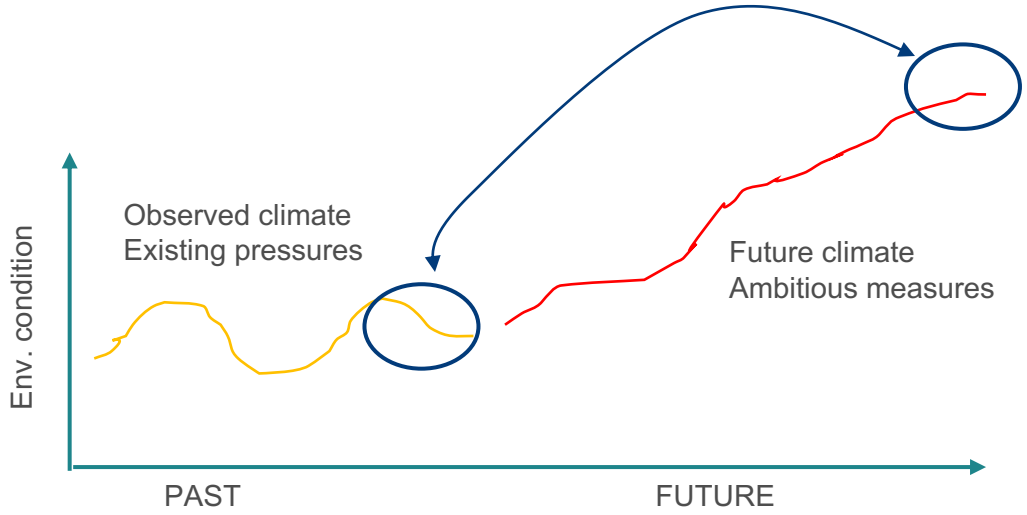
- Inorganic nutrient pollution (nitrogen & phosphate) → ZP target: -50% @ 2030
- Chemical pollution (pesticides) → ZP target: -50% @ 2030
- Macroplastic pollution → ZP target: -50% @ 2030

How close to the ZP targets can we get?

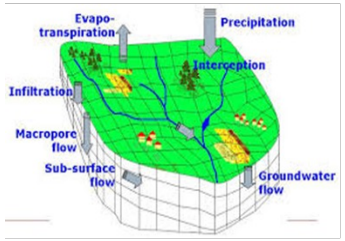
European Commission

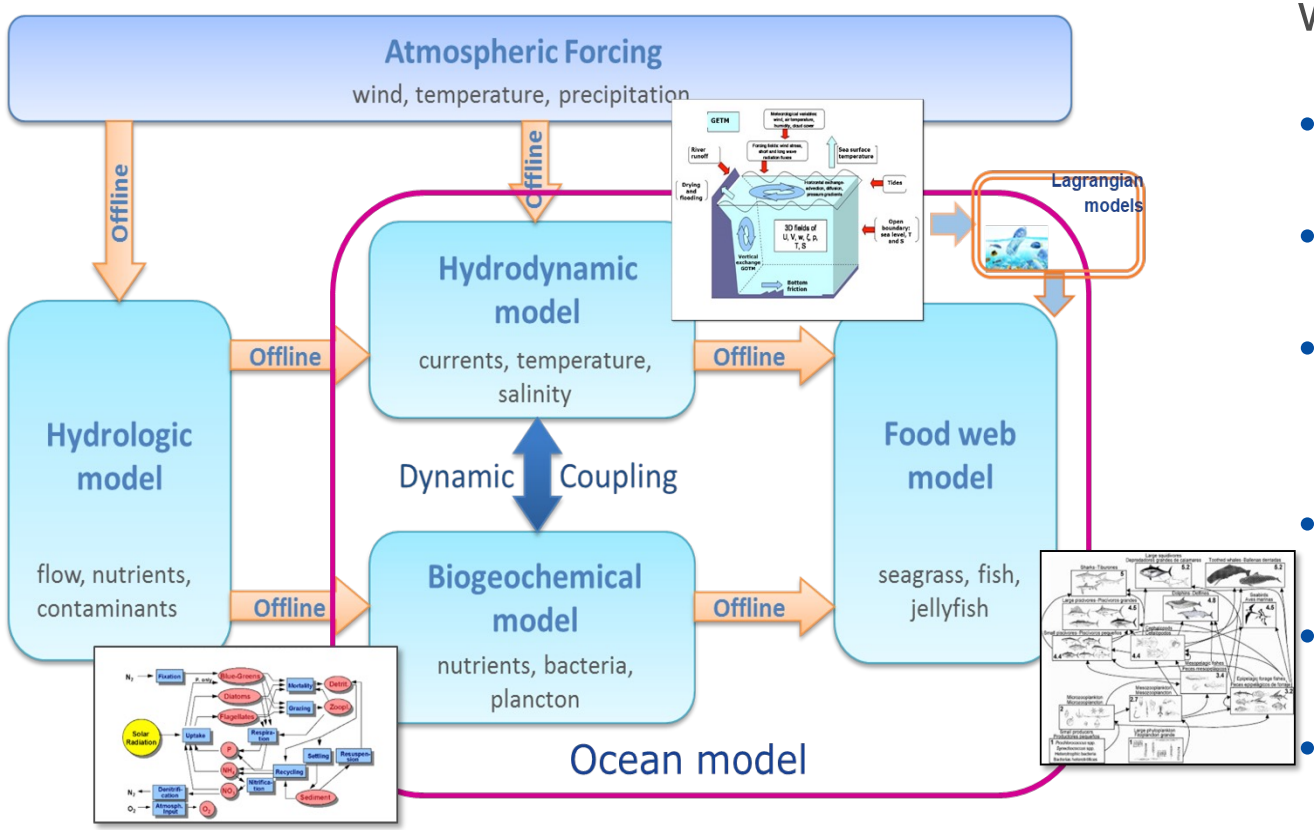
Water/marine Zero Pollution outlook

- Two scenarios:
  - A reference scenario: situation 2000 – 2018 (pollution and climatic conditions)
  - A future scenario (HAS): situation 2018 – 2030 (set of measures to fight pollution + climate change).



A digital twin of the hydrosphere to evaluate policy options





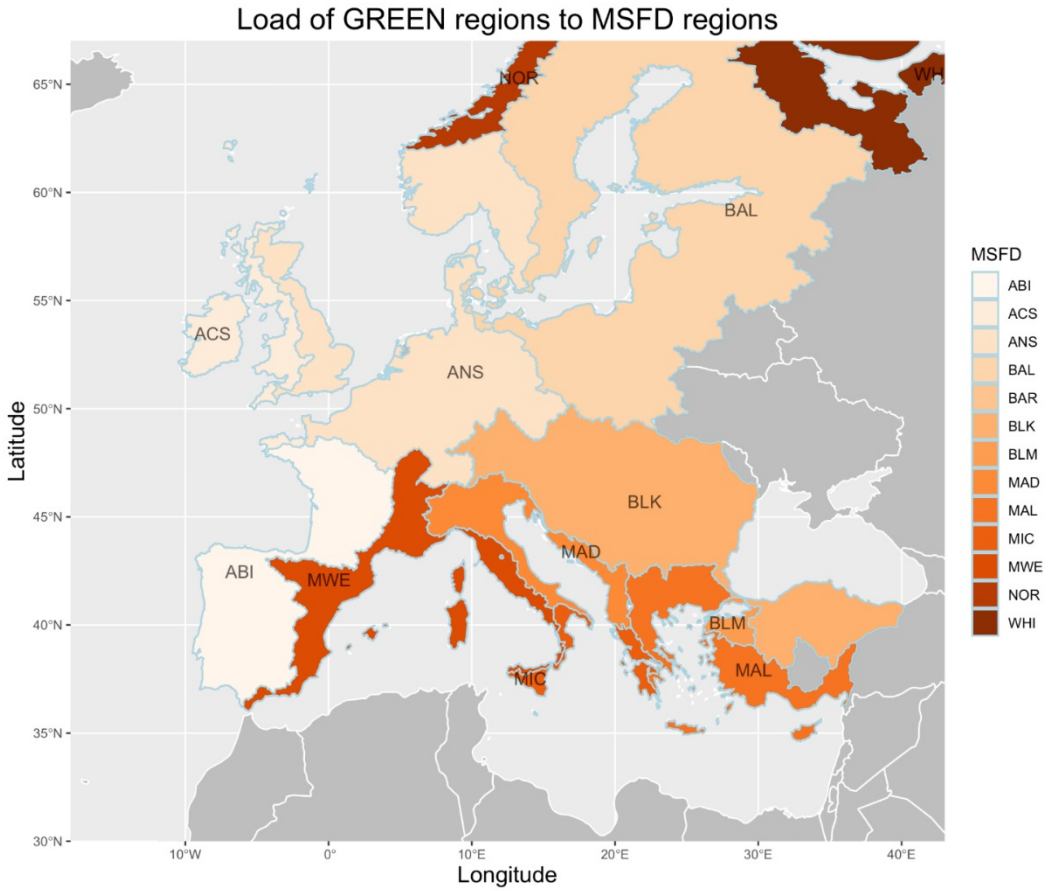
Integrated modelling tool to simulate the impact of management options on the environmental status of EU water/marine ecosystems:

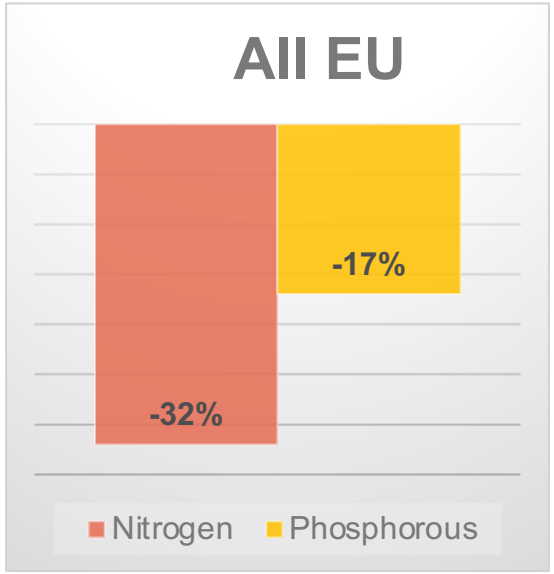
- land use,
- water use,
- diffusive and point source pollution of freshwater,
- hydrologic models,
- atmospheric depositions
- marine hydrodynamic-biogeochemical and food-web models

European Commission

Water/marine Zero Pollution outlook

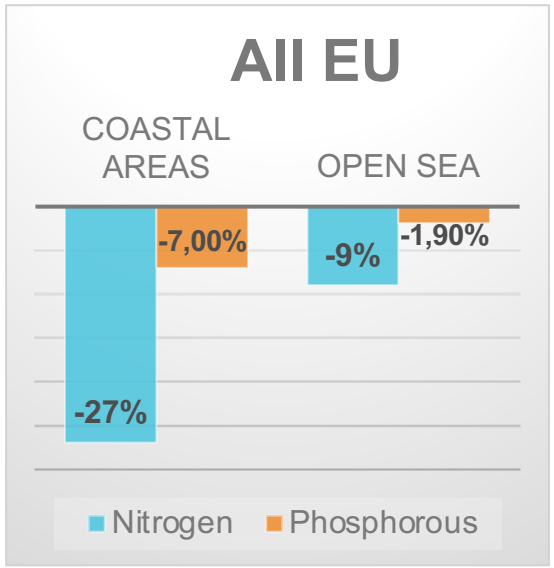
Reducing nutrient losses by 50%





N is reduced more strongly than P

Dedicated presentation tomorrow morning!



Impact of measures much higher in coastal regions

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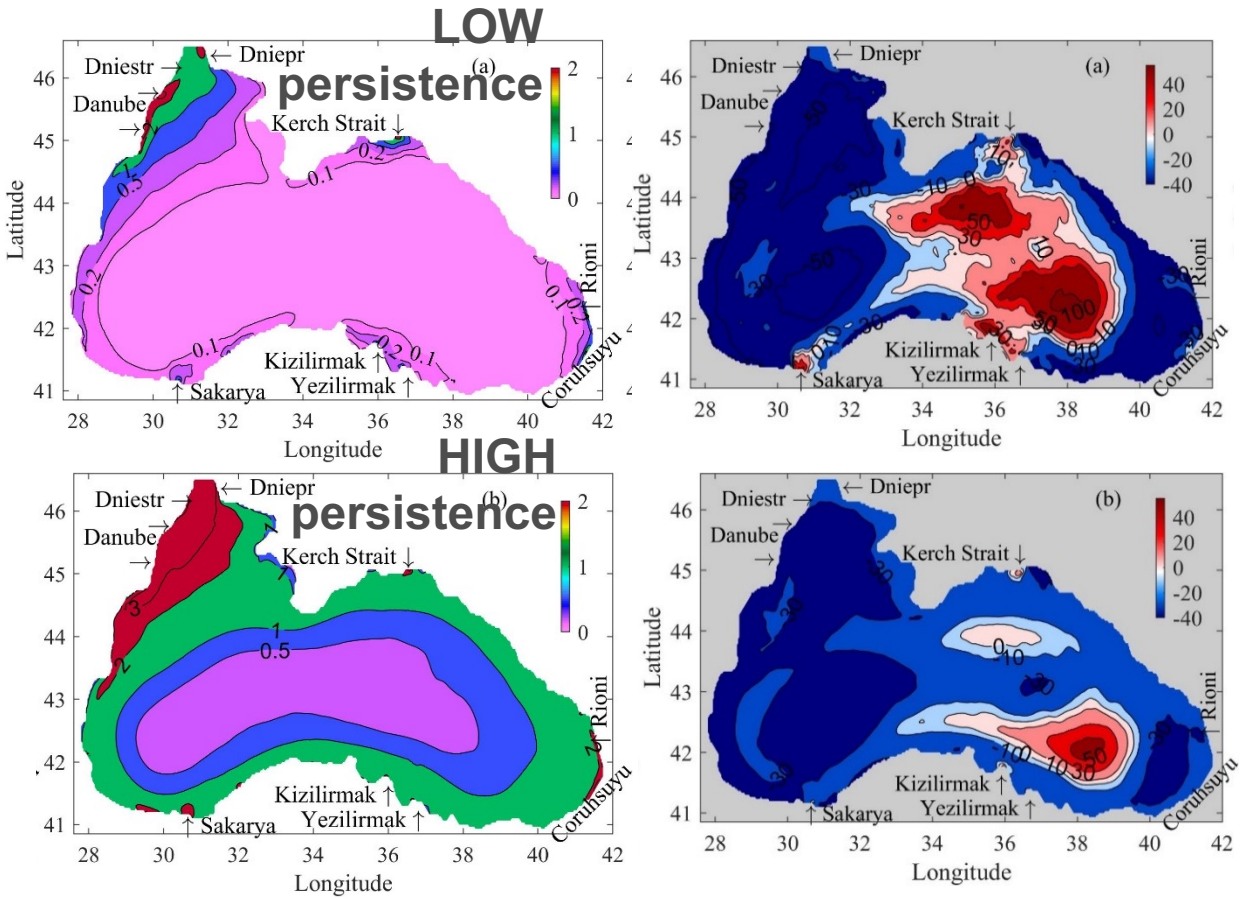
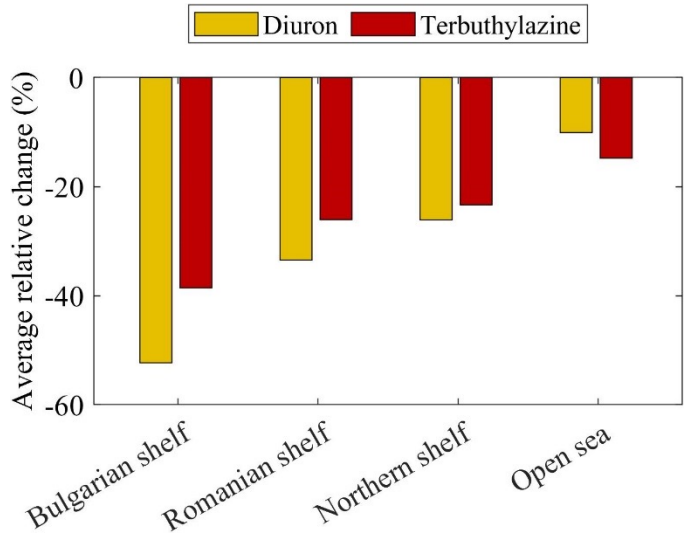
Water/marine Zero Pollution outlook

Substance	Type	Persistency DT50 (day)	Relevance to EU policies
Terbuthylazine	Pesticide	HIGH	Emerging (Tornero and Hanke, 2018)
Diuron	Pesticide	LOW	Priority list

Reducing pesticides use by 50%



General absolute reduction (larger for low persistence in shelf, opposite for high persistence)



Potential accumulation in certain regions because of hydrodynamic changes (climate)

Reference (2016 – 2018) HAS rcp4.5 (2027 – 2030)

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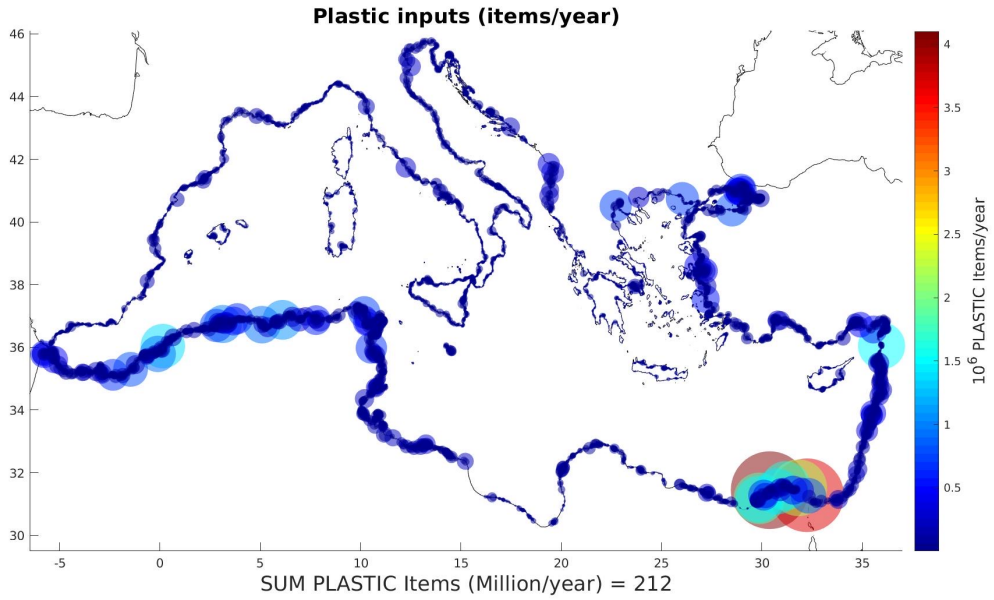
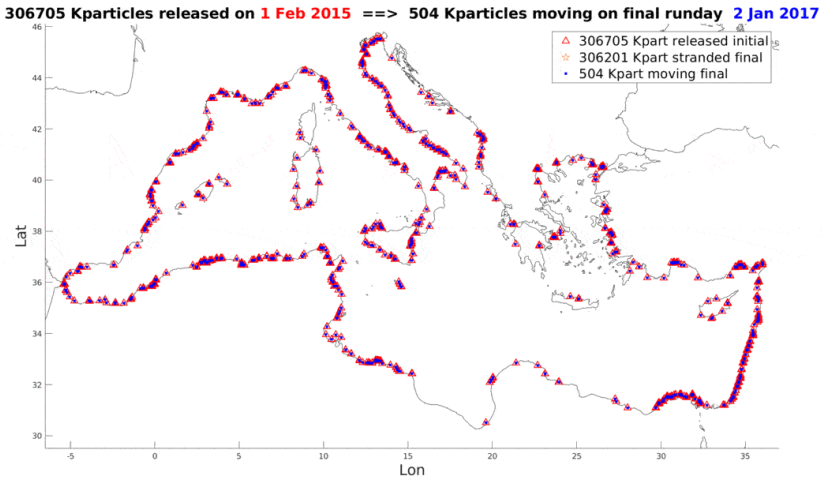
Water/marine Zero Pollution outlook

Reduce macroplastic at a sea by 50%



Macro-plastic inputs are largely unknown (but we can estimate them)

(Gonzalez et al., 2021 Nature Communications + EEA-EMODnet datasets)



A Lagrangian model moves particles around

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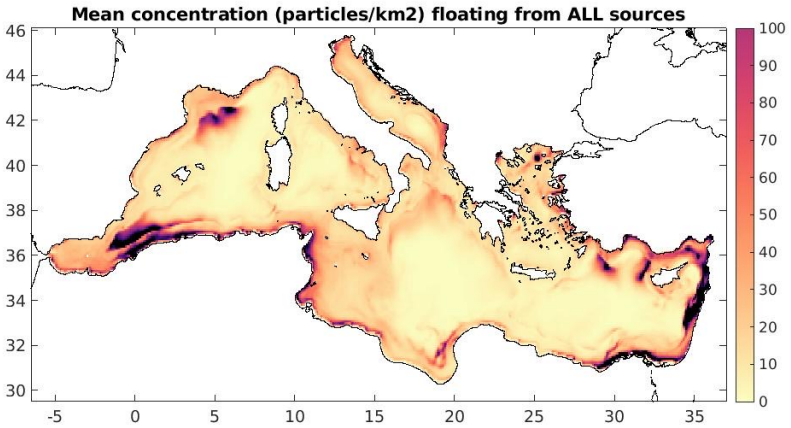
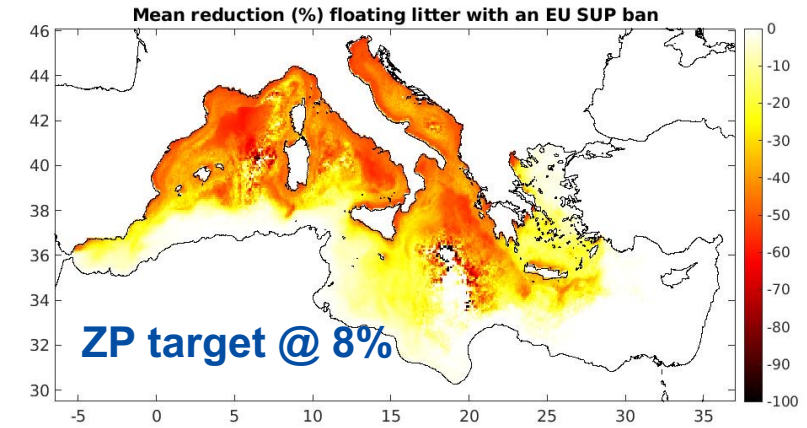
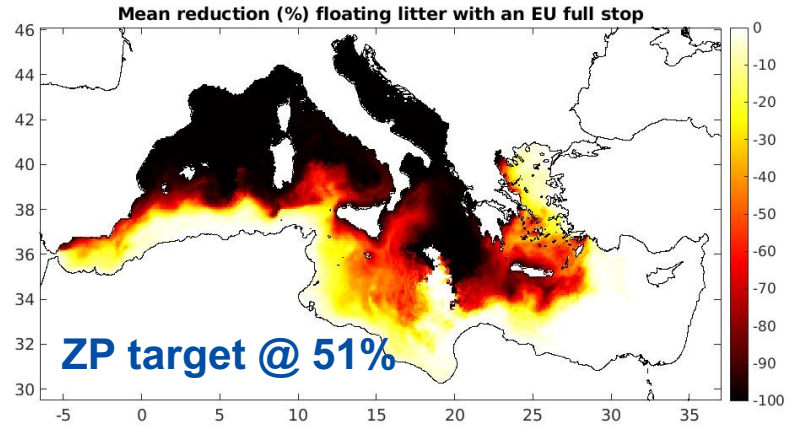
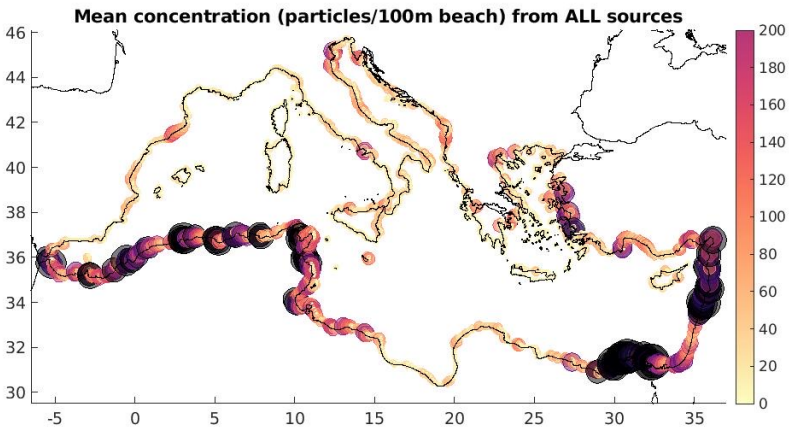
Water/marine Zero Pollution outlook

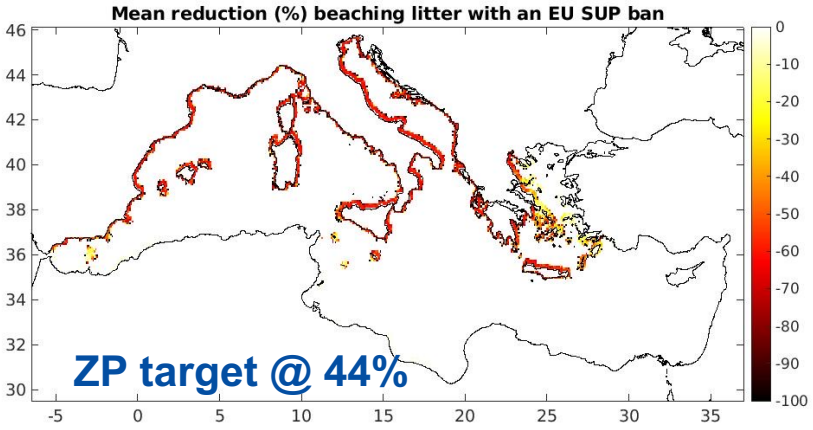
Reduce macroplastic at a sea by 50%

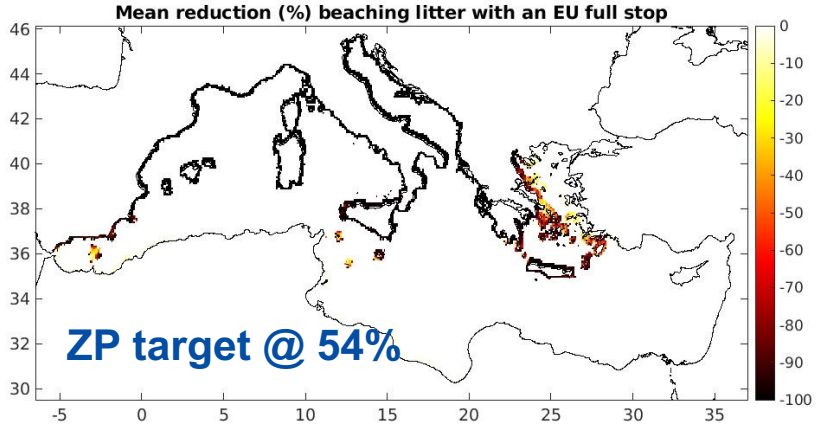












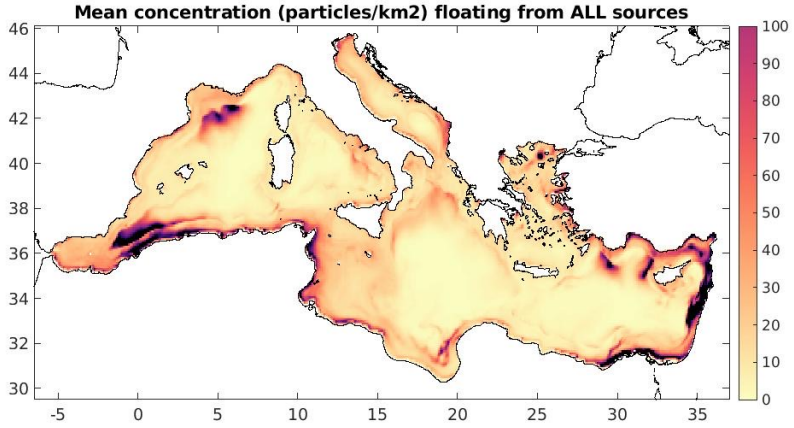
Reference (2016 – 2018)

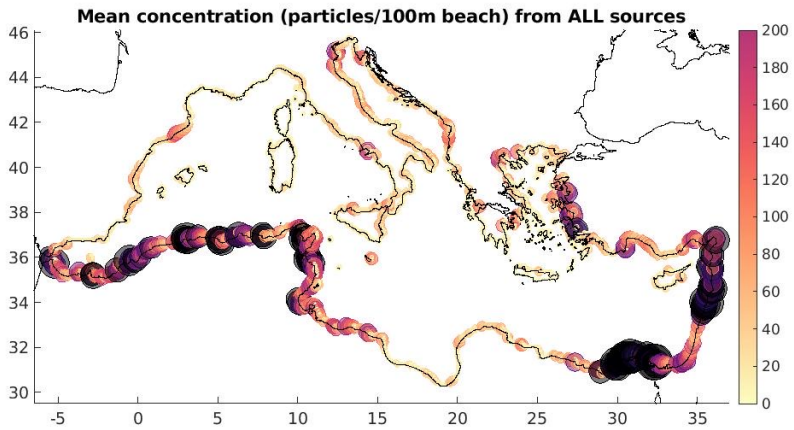
SUP ban in EU (2016 – 2018)

Plastics ban in EU (2016 – 2018)

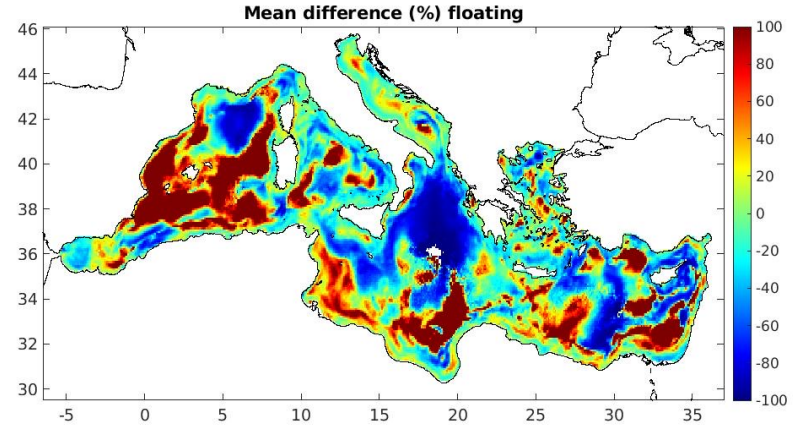
Water/marine Zero Pollution outlook

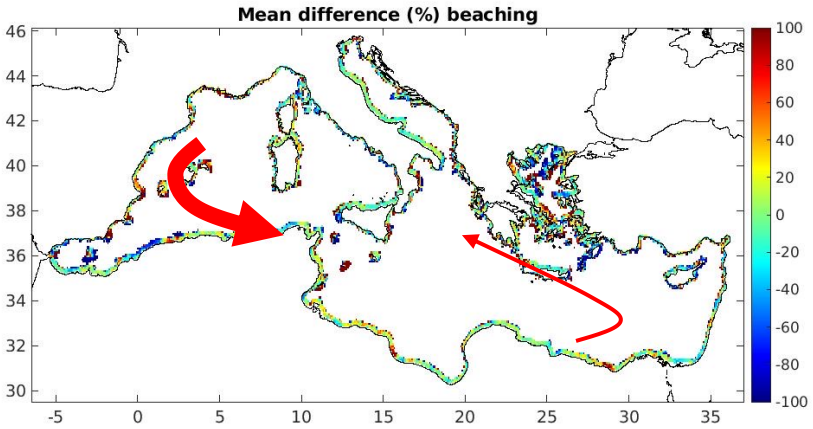
Impacts of climate change on macroplastics distribution





Reference (2016 – 2018)





HAS rcp4.5 (2027 – 2030)

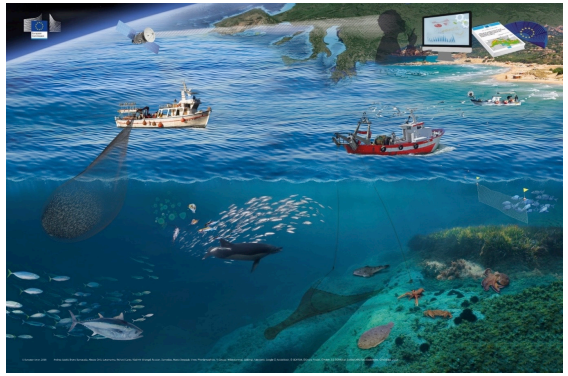
Total plastic is not affected (by definition)

Cross-boundary pollution is altered:

- **EU pollutes more non-EU coasts**
- **Non-EU pollutes less EU coasts**

European Commission

Water/marine Zero Pollution outlook



Conclusions

→ **Planned actions/measures are driving pollution levels in the right direction but they might not be enough to achieve the ZP targets by 2030**

→ **International dimension/cooperation might be important for achieving targets**

→ **Climate change impacts can be relevant for understanding the importance of measures (synergic/antagonistic impacts)**

ZERO POLLUTION AMBITION

European Commission

Clean Soil Outlook

EUSO Technical Working Group on soil pollution

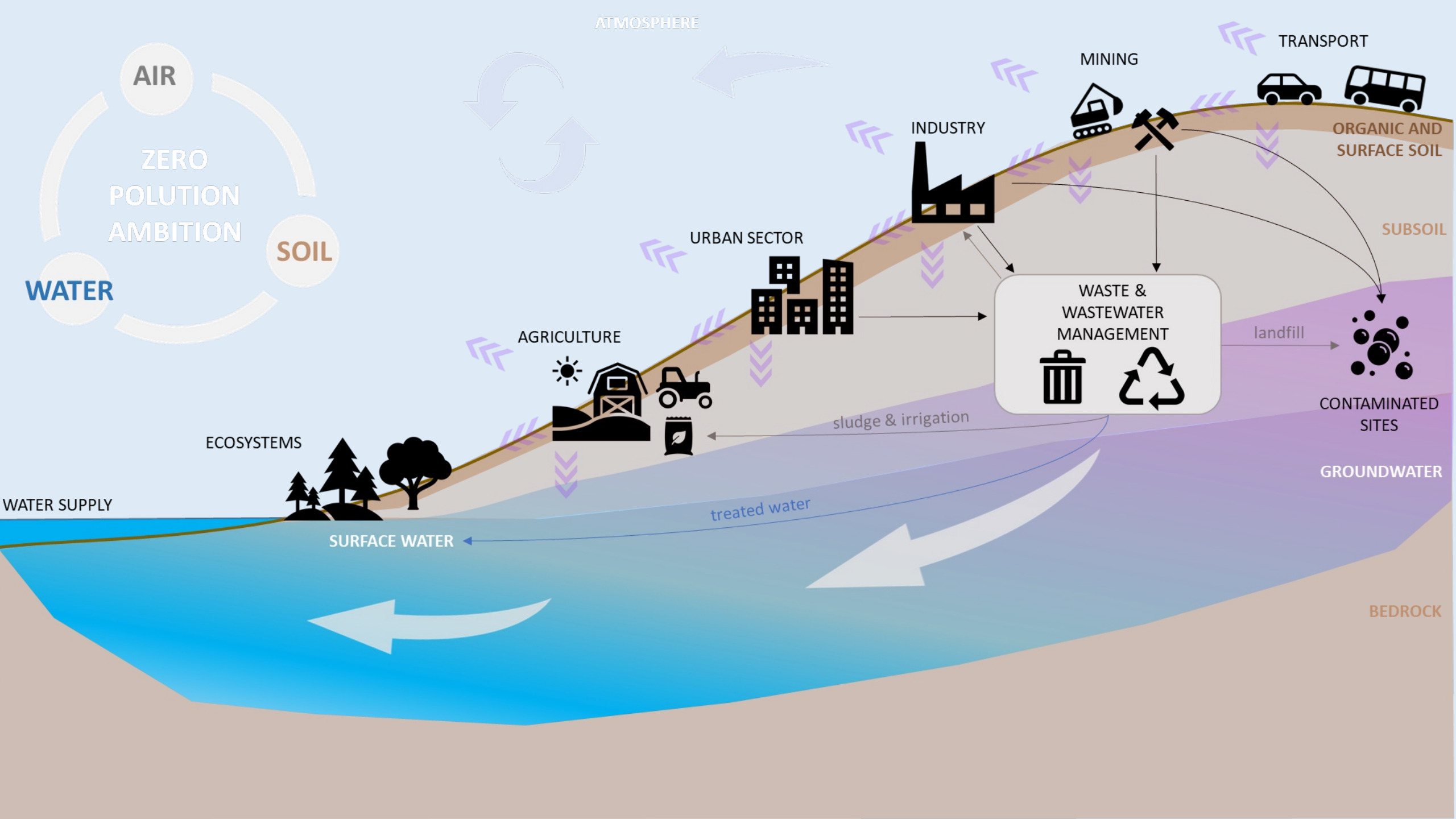
JRC D3 Team

Zero Pollution Monitoring and Outlook Workshop, 24-25 May 2022

Table of contents

Objectives of the Clean Soil Outlook report

- analyse **synergies and trade-offs** between EU policies having impact on soil,
- Help to translate **‘early warnings’** into recommendations on pollutants of increasi ng concern based on the latest research: **watchlist**, (e.g. ultrafine particles, emer ging contaminants, pesticides, metals, ...),
- analyse data and environmental landscape following the ***R*-DPSIR approach**,
- provide **projections**, **foresights** considerations,
- identify the monitoring and policy **gaps**, proposing how to **close them**.


ATMOSPHERE
AIR
ZERO
POLUTION
AMBITION
SOIL
WATER
TRANSPORT
MINING
INDUSTRY
ORGANIC AND
SURFACE SOIL
SUBSOIL
URBAN SECTOR
WASTE &
WASTEWATER
MANAGEMENT
landfill
CONTAMINATED
SITES
AGRICULTURE
sludge & irrigation
ECOSYSTEMS
GROUNDWATER
WATER SUPPLY
treated water
SURFACE WATER
BEDROCK

R-DPSIR

- R: do some Member States have better policy frameworks?
- D: are we able to identify/influence changes in Drivers?
- P: can we alleviate Pressures?
- S: State data gathered through monitoring
- I: Impacts on ecosystems and human health to be assessed
- R: novel range of responses? Because: it improves, it does not work, not enough time to notice, no knowledge, … ?

Critical statements on soil pollution

- The risks from soil pollution to human health and environmental well-being are well understood.
- Serious knowledge gaps exist regarding
  - inventory of point-type sources of pollution,
  - the extent of diffuse pollution,
  - the scale and impacts individual pollutants might have, are poorly quantified due to a lack of investment in monitoring and research, and reporting obligations.

Critical statements on soil pollution

- The soil compartment is insufficiently addressed in risk assessment procedures for market authorisation.
- a holistic approach to the European legislation on “healthy soils”, addressing their sustainable management and protection, is missing.
- While several policy targets under the European Green Deal are expected to have a positive impact on soil pollution, there is a strong possibility that diffuse pollution from copper and the number of contaminated sites is expected to rise within the coming decade.

Highlights

Outlook statements

European Commission

Challenges for point-type sources

- Will the EU be able to meet on the targets of the EU Soil Strategy for 2030
  - significant progress should be made in the remediation of contaminated sites by 2030, and
  - the inclusion of legally binding provisions on contaminated sites identification, inventorization and remediation.
- Waste managements and landfills
- Digital technologies

Trends

- The number of identified potentially contaminated sites is expected to increase due to greater assessments and monitoring, coupled with ongoing activities with potential for soil pollution.
- Although some progress has been made, at current rate, we would need several generations to achieve a total remediation without taking into account the newly appeared (accidents) or registered (better inventorisation) contaminated sites.

Challenges for diffuse pollution

- Is the EU able to create a toxic-free environment?
- A perceived obstacle is the lack of knowledge on the extent and impacts of diffuse pollution due to insufficient monitoring and research.
- Digital technologies

Trends

- Pollution from the residues of plant protection products is expected to decline if the Farm2Fork Strategy's objectives to reduce the use of pesticides is fully implemented. This should not be compensated by the increased use of low-risk plant protection products.
- The target to increase EU organic farming by 25% of the agricultural areas, might lead to an increase of the use of coper-based plant protection products. Copper tends to accumulate in most soils and alters the uptake of the nutrient balance of soils (Biodiversity strategy).
- The adoption of the Integrated Nutrients action plan should lead to a reduction on the application of mineral nutrients, and their transport in water, air, and soil (Farm2Fork, Circular economy action plan).

Trends

- Airborne pollution should also be reduced considering the on-going revision and the impact assessment of the Industrial Emissions Directive ((EU)2010/75/EU) under the European Green Deal and a possible evolution of the National Emissions Ceiling ((EU) 2016/2284), covering several pollutants and introducing ambitious reduction commitments to be achieved by 2030.
- A revised Sewage Sludge Directive could inadvertently lead to an increase microplastics present in sludge and being incorporated to soil. Legally binding thresholds of plastic in sludge should be defined. This could be complemented with actions addressing pharmaceuticals also in manure applied to soil.

Responses

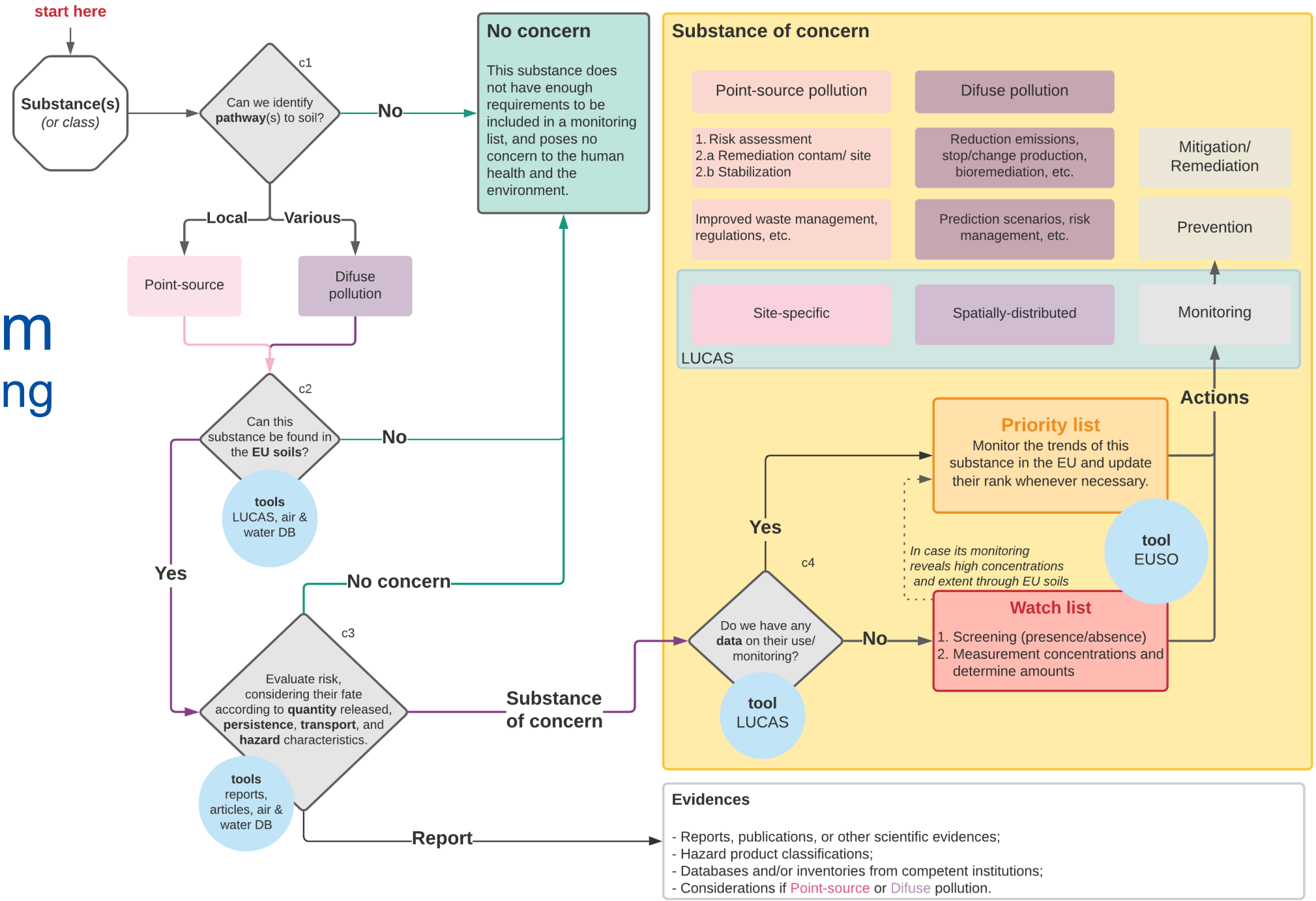
Novel outlook responses

Novel outlook responses

- **Integrated Monitoring system** including a **watchlist mechanism** for early warnings on emerging contaminants: better inventory of contaminated sites and improved understanding of diffuse pollution through LUCAS soil pollution module and monitoring by MS to be in place.
- **Remediation** - Significant progress in the remediation of contaminated soils should be ensured through legal framework and adequate investment. Low-cost, bioremediation techniques and natural attenuation might be effective for organic compounds and heavy metals. In some cases appropriate measures of confinement or risk management are needed.
- **Knowledge** - Soil Pollution is transboundary and affects low- and middle-income countries.
- An **integrated modelling framework** will improve the traceability of emission sources and quantify the share of pollution contribution on soil per given media (water and air) and their interaction.
- **Legal obligations** - Need for legally binding instruments integrating monitoring and reporting tools such as the NEC Directive.

Flux-diagram

Better monitoring

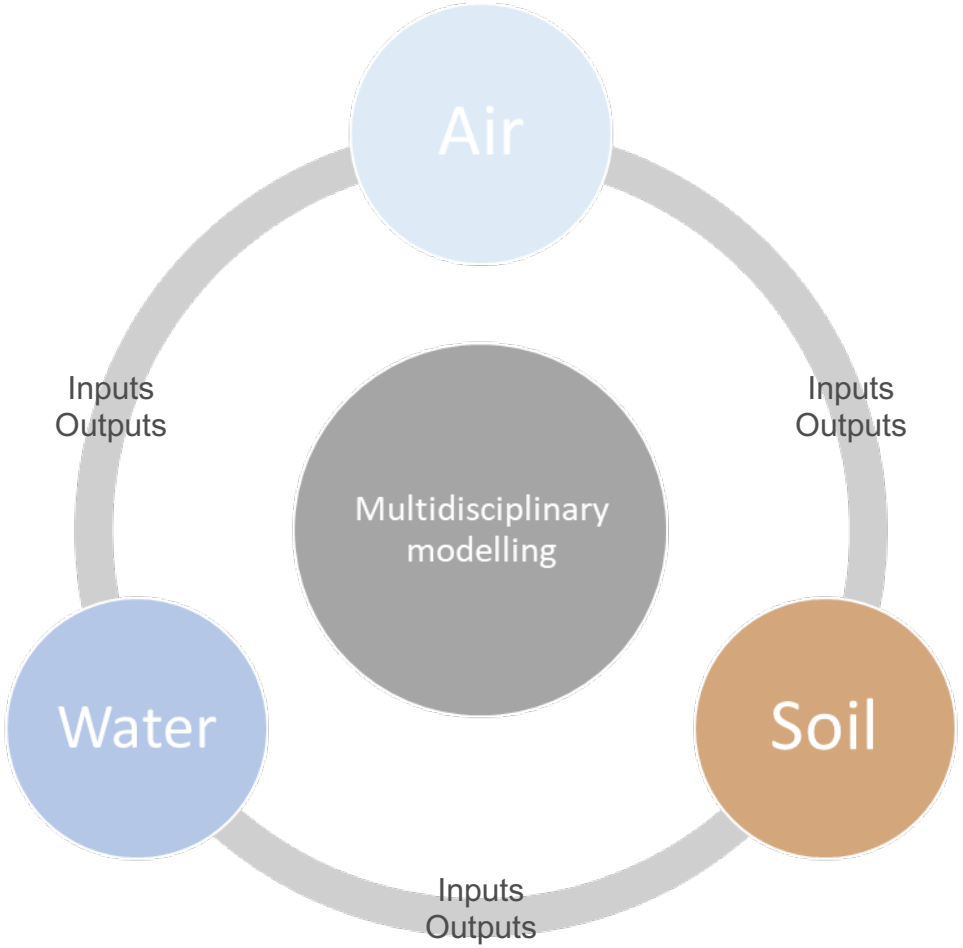


Examples for different substances

- Flux-diagram was already tested for some substances:

  - Iron ➢ **No Concern**
  - Cadmium ➢ **Priority List**
  - Asbestos ➢ **Watch List**
  - Cesium ➢ **Priority List**

Multidisciplinary modelling

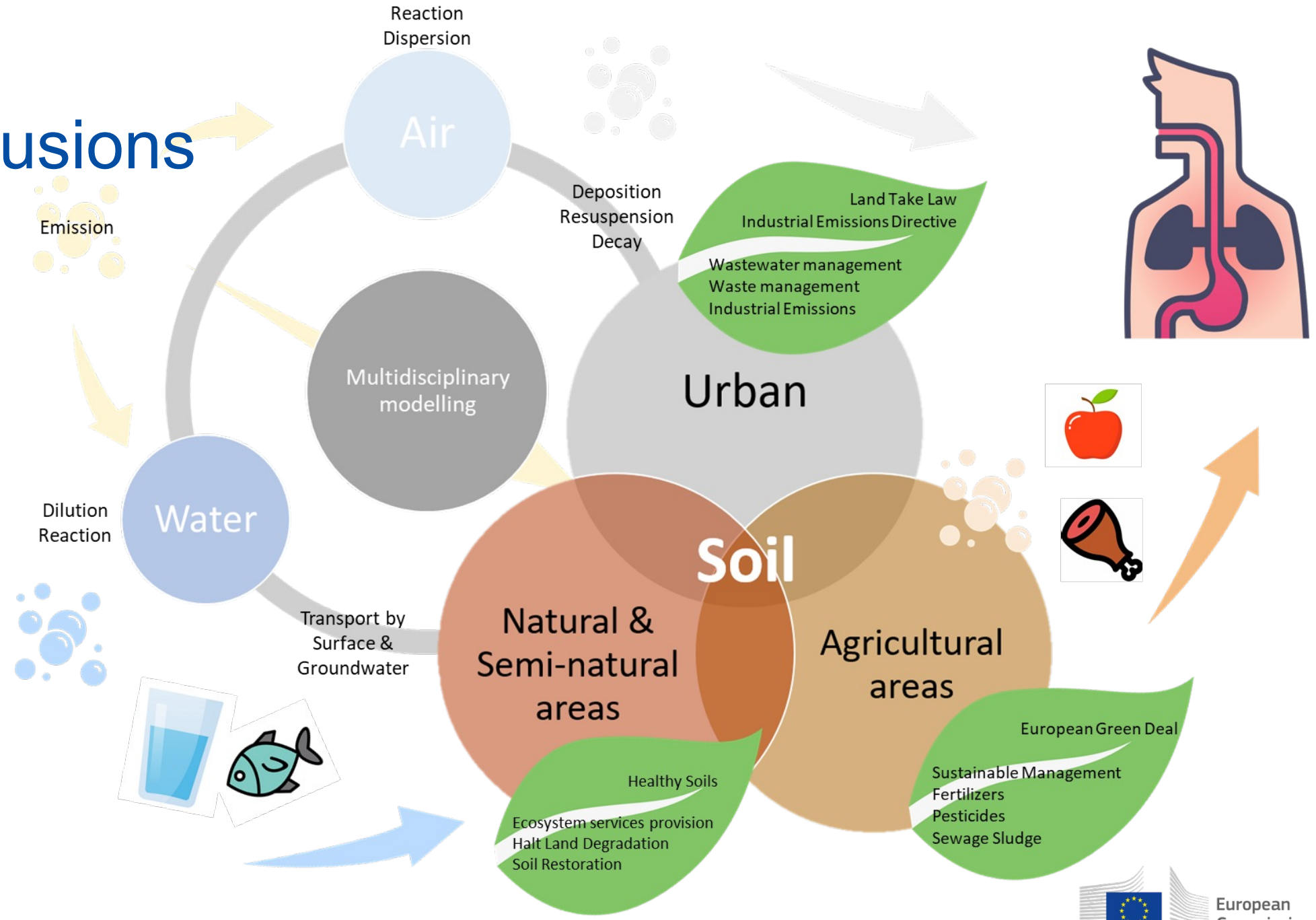


Complement to monitoring:

- Identify contribution of various sources of pollution;
- Take into consideration interactions between air, water and soil;
- Identify mixtures of pollutants;

Conclusions

Conclusions



Keep in touch

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Thank you

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Consumption footprint

Serenella Sala, Jacopo Foschi, Esther Sanye Mengual

24/05/2022

European Commission

Joint Research Centre

Consumption Footprint

Environmental emissions to air, water and soil

Potential Impact indicators

Assessment

Representative products → **Assessment of intensity of consumption** for each representative product

FOOD

MOBILITY

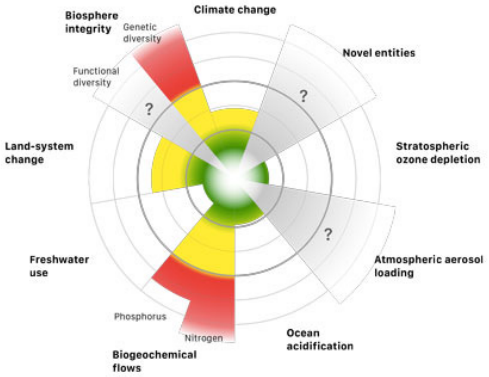
HOUSING

HOUSEHOLD GOODS

APPLIANCES

Consumption =
Domestic production
+ Imports
- Exports

Planetary boundaries



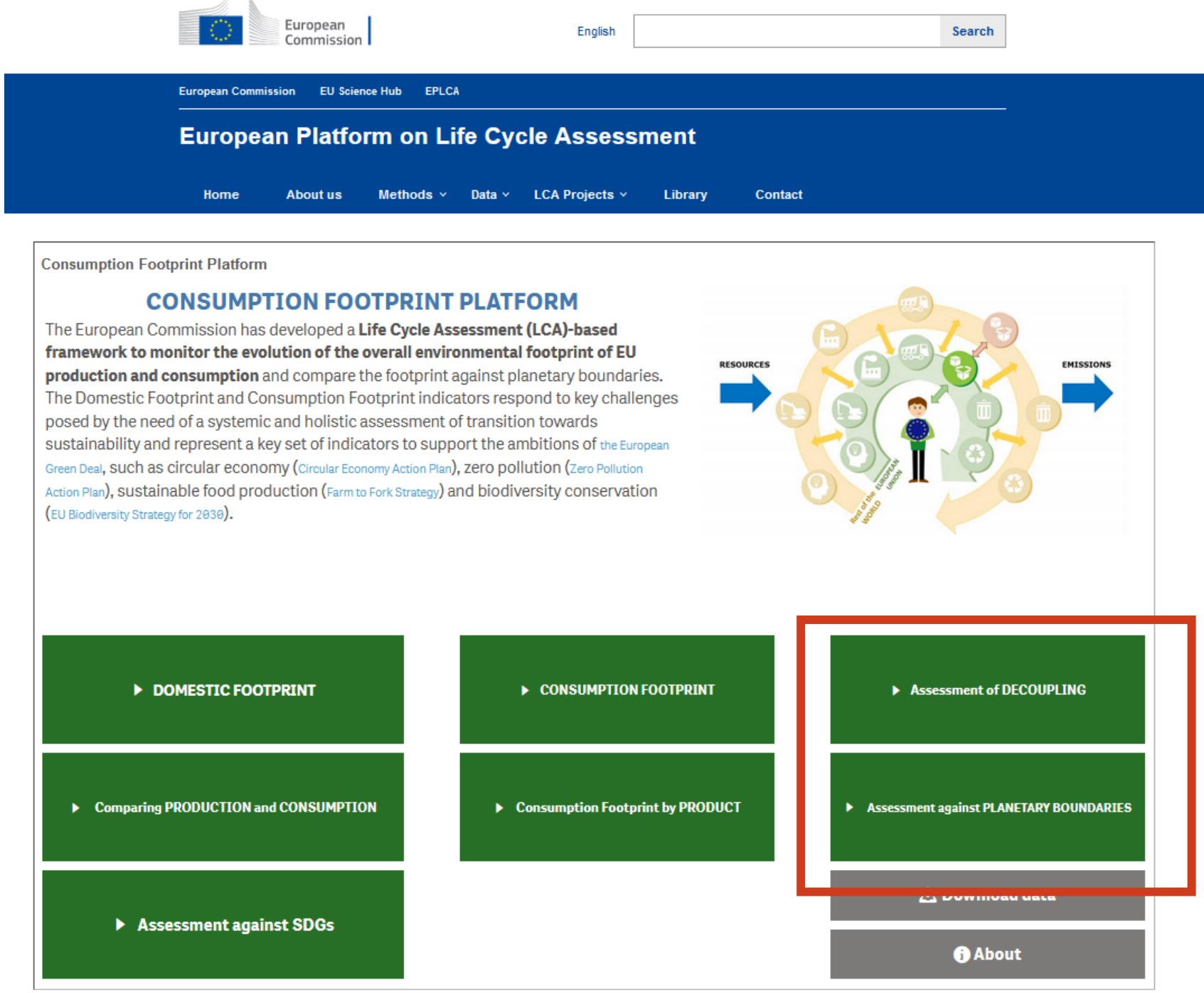
SDGs

***Mainly* modelled emissions**
along the entire life cycle of products

European Commission

Consumption footprint platform

- Data per MS and per EU
- From 2010 to 2020
- Numerous features for exploring results
  - Decoupling
  - Planetary boundaries
  - SDGs



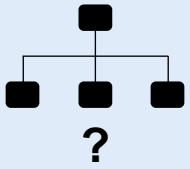
https://eplca.jrc.ec.europa.eu/ConsumptionFootprintPlatform.html

Assumptions for the outlook scenario

Identification of drivers of the consumption footprint

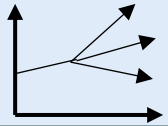
- Macroeconomic indicators:
  - GDP
  - Household consumption expenditure
- Consumer profile (e.g. dietary habits)
- Transport fleet size and composition
- Households number and types

Definition of scenarios



- Business-as-usual scenario (only policies in place before 2018)
- «EU ambitions» scenarios:
  - Farm to fork
  - Clean Vehicles Directive
  - Renovation Wave

Evaluation and comparison with targets and boundaries



- Evaluation of scenarios projections until 2030
- Comparison of resulting environmental impact with:
  - ZPAP ambitions
  - Climate change ambition
  - Planetary boundaries

Assumptions for the outlook scenario

Business-as-usual

Based on projections of:

- GDP
- household consumption expenditure
- size and composition of transport fleet
- number of households

Farm to fork

Action on drivers:

- Reduction of food waste
- Reduction of nutrient an pesticides use
- Plant-based diet

Clean Vehicles Directive

Action on drivers:

change on the transport fleet composition

increase of hybrid and electric vehicles (target: 35% of transport fleet in 2030)

Renovation Wave

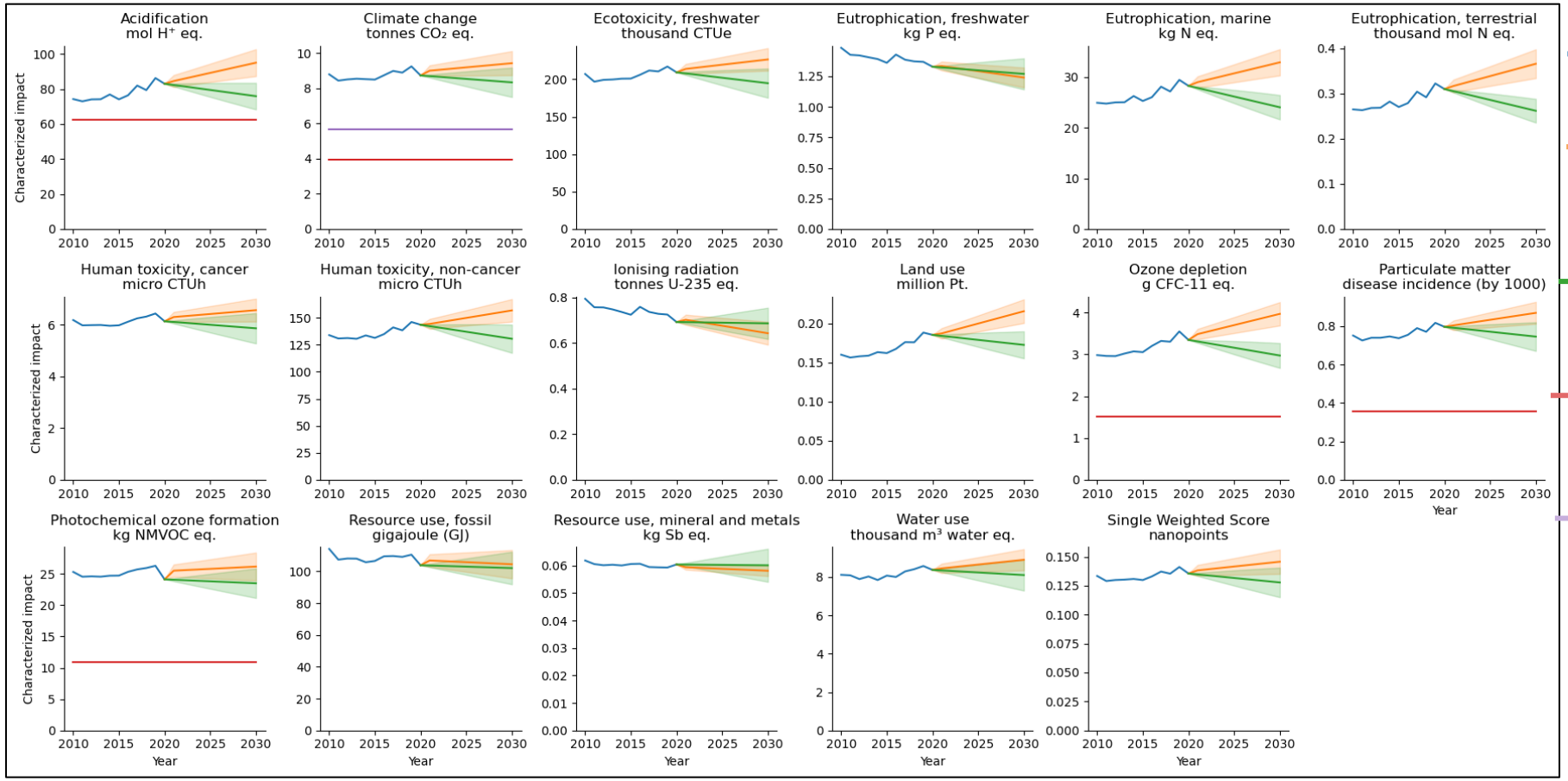
Action on drivers:

change in shares of type of households (age of construction)

renovation of old buildings (target: renovation of 35 millions building by 2030)

Preliminary results of the outlook

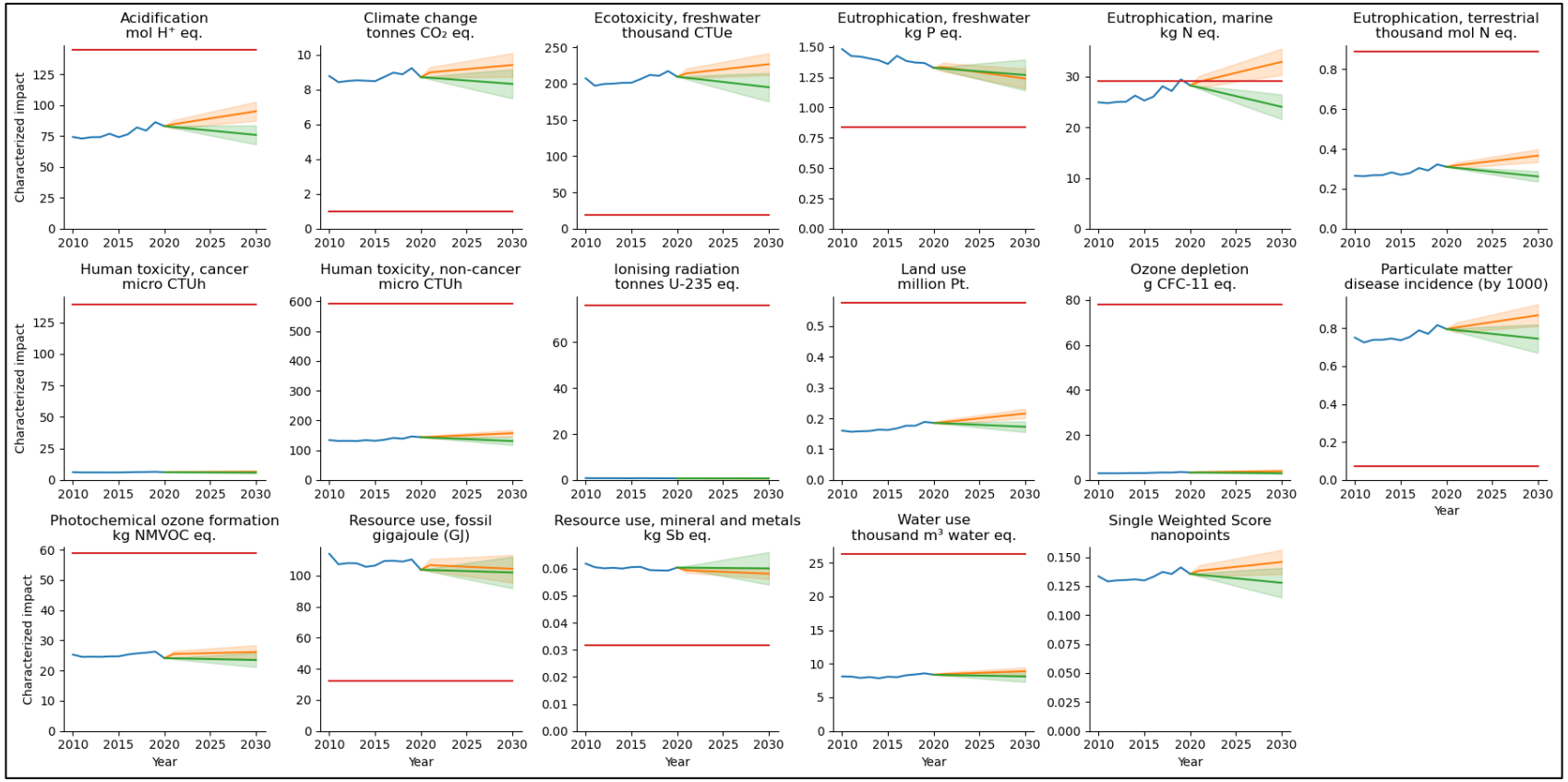
Business-as-usual and Farm to fork scenarios - comparison with ZPAP and climate change ambitions



European Commission

Preliminary results of the outlook

Business-as-usual and Farm to fork scenarios - comparison with planetary boundaries



- Historical footprint
- Business-as-usual scenario
- «Farm to fork» scenario
- Planetary boundary

European Commission

Session 4: Discussion and conclusions

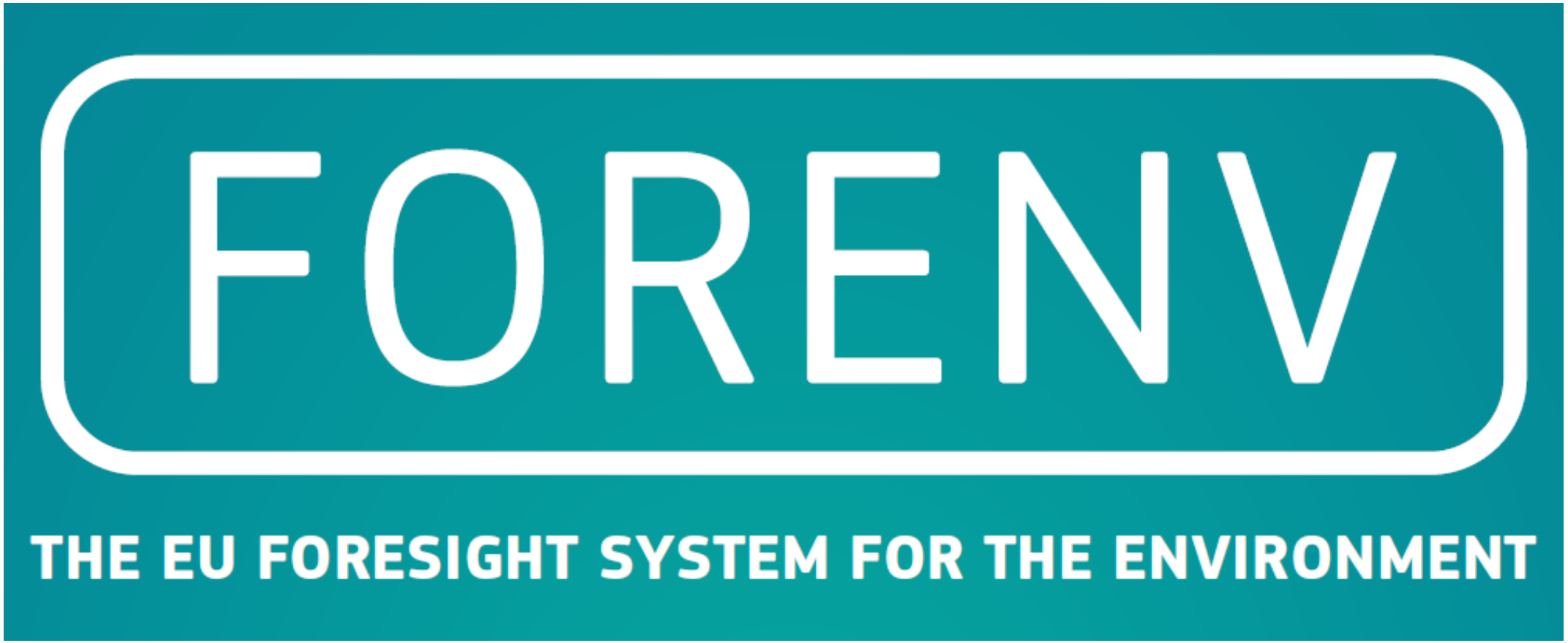
Presentations of the Zero Pollution Foresight Report

European Commission

European Committee of the Regions

Emerging issues impacting the delivery of a zero-pollution ambition by 2050

Summary of the outputs of the EU Environmental Foresight System (FORENV) 2020-21 annual cycle

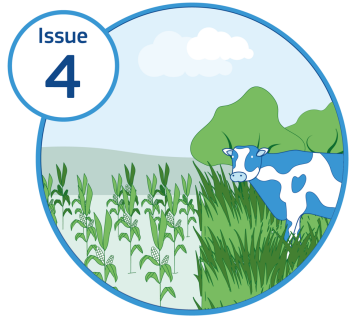

FORENV
THE EU FORESIGHT SYSTEM FOR THE ENVIRONMENT

Video link: https://audiovisual.ec.europa.eu/en/video/I-223939?&lg=EN

Urban settlement patterns and demographic change: implications for pollution

Will regenerative buildings and living materials in Europe help deliver the zero pollution ambition?

Purpose driven business: will the emergence of initiatives such as certified 'B' corporations play a major role in realising zero pollution?



Will regenerative agriculture emerge as a key trend in Europe that helps deliver the zero-pollution agenda?

Will new ways of pollution information provision influence behaviours towards low pollution lifestyles that go beyond current trends to low/zero waste?

Low pollution food: will new, less polluting, methods of producing protein, fats and tissues emerge to replace traditional agriculture?

An accelerating race to space: what will be the direct and indirect pollution impacts?

The COVID-19 pandemic has led to increased interest in resilience. Will a resilient Europe also be a zero pollution one?

Will new innovations in synthetic biology emerge that accelerate pollution reduction and mitigation?

Our growing digital consumption could challenge the 'zero pollution' ambition


5 key clusters
CLUSTER 1
Pervasive digital tools and lifestyles
CLUSTER 2
Transformations in where and how we live and work
CLUSTER 3
New pollution monitoring and data methods
CLUSTER 4
Living buildings and new materials
CLUSTER 5
Multi-faceted food system revolutions

Key questions for zero pollution policy

Pollution risks from territorial shifts

- Will ‘urbanised’ hubs emerge in areas outside cities, and how can the pollution risks from these be managed?
- How can the EU support non-urban areas to become more resilient in the face of possible future demographic developments and pollution trends?

Data informs or misinforms behaviour

- How can policy and stakeholder actions promote digital developments that increase public awareness of pollution, address the misrepresentation of information online (e.g. social media) and encourage people towards lower-pollution lifestyles?

Scaling up new technologies

- How can the EU stimulate innovation with new technologies while identifying and managing possible pollution risks as these are scaled up?

International cooperation for zero pollution

- How can the EU, including public bodies and stakeholders, strengthen interregional and international cooperation on emerging risks and opportunities that will affect the achievement of our zero pollution ambition?

All final reports and videos are accessible via the FORENV website: https://ec.europa.eu/environment/integration/research/forenv_en.htm

Thank you for joining us!

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https://ec.europa.eu/environment/zero-pollution-stakeholder-platform_en