



Zero PM

Zero pollution of Persistent, Mobile substances

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Dissemination and Exploitation plan

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Summary

This document is Deliverable 8.1: The Dissemination and Exploitation Plan. The primary aim of ZeroPM's dissemination and exploitation activities is to:

Spread and embed the projects results with all potential users in order that use, emissions and pollution from PM substances is reduced to protect European water resources and avoid risks to humans.

The Dissemination and Exploitation Plan answers the following questions:

- ▼ what do we want to achieve with dissemination to maximize impact?
- ▼ who are the potential users (PU) of ZeroPM results?
- ▼ what are the information needs and topics of interest to different PU?
- ▼ when and how are most opportune to disseminate?

The Dissemination and Exploitation Plan outlines ZeroPM's dissemination aim and objectives, the PU groups of ZeroPM results, ZeroPM's key results and how they are of interest to the identified PU groups, the specific dissemination activities that will be carried out, qualitative indicators to be achieved, details of how the execution of the dissemination activities will be followed and an exploitation plan. This is a living document and will be updated at the periodic reporting points to include the following (non-exhaustive) points: new potential user groups, additional dissemination activities and additional key results.



Contents

1	Introduction	8
2	Dissemination aims and objectives	9
	2.1 Communication, dissemination and exploitation	10
3	ZeroPM potential user groups	11
	3.1 Policy-makers and administrators and European authorities responsible for coordinating and enacting legislation (PU1 and PU2)	11
	3.2 Chemical producers (PU3)	12
	3.3 Chemical users (PU4)	12
	3.4 Water utilities (PU5)	13
	3.5 Businesses working with technical solutions (PU6)	14
	3.6 Scientific community, academic networks and clustering (PU7)	15
	3.7 Environmental groups and NGOs (PU8)	18
	3.8 General public (PU9)	19
	3.9 Media (PU10)	19
4	Achieving ZeroPM's impact	19
	4.1 Project results	19
5	Dissemination activities	27
	5.1 Website, social media and branding	29
	5.2 Scientific publications	29
	5.3 Policy briefs	31
	5.4 Reply to public consultations of forthcoming policy	31
	5.5 Web based tools for chemical manufacturers and chemical downstream users	32
	5.6 Data inventories in repositories	33
	5.7 Remediation fact sheets and guideline documents	34
	5.8 ZeroPM PhD student and postdoc forum	35
	5.9 PhD student and postdoc research days	35
	5.10 SIN List update launch event	36
	5.11 Technology demonstrations and training at test sites	36
	5.12 School / university visit to test sites	36
	5.13 Student summer school	37
	5.14 Final ZeroPM workshops	37
6	Evaluating execution	38
	6.1 Monitoring and evaluation of execution	39
7	Exploitation plan	40
	7.1 Key exploitable results	40
	7.2 Beneficiary roles and responsibility	41
	7.3 Reporting	43

Tables

Table 1: Communication, dissemination and exploitation principles	10
Table 2: ZeroPM's potential user (PU) groups	11
Table 3: The institutes that have joined PU5.....	13
Table 4: The businesses that have joined PU6	14
Table 5: Information about the members of the External Excellence Advisory Board.....	16
Table 6: The environmental groups and NGOs that have joined PU8	18
Table 7: ZeroPM's results for dissemination and exploitation according to whether they are related to prevention (green), prioritization (orange) or removal (red)	20
Table 8: Further details of the dissemination activities planned in ZeroPM	27
Table 9: PhD students and postdocs involved in ZeroPM.....	29
Table 10: Potential journals to publish ZeroPM work in	30
Table 11: Overview of the ZeroPM web-based tools to be produced	32
Table 12: Key performance indicators for dissemination activities	38
Table 13: Responsibilities of each beneficiary for ZeroPM exploitation.....	42

Figures

Figure 1: The six elements included in the Dissemination and Exploitation plan	8
Figure 2: The impact of ZeroPM is political, economic, scientific and societal	21
Figure 3: The written forms of dissemination and the dissemination events to be carried out in ZeroPM.....	27



Table of abbreviations

CA	Consortium agreement
CLP	Classification, labelling and packaging
ECHA	European chemicals agency
EPUG	Extended potential user group
EU	European Union
FAIR	Findability, accessibility, interoperability, and reusability
GRC	Gordon Research Conference
GWRC	Global water research coalition
IAWR	The International Association of Waterworks in the Rhine Basin
IPCHEM	Information Platform for Chemical Monitoring
IPR	Intellectual property rights
ITN	International training network
JRC	Joint Research Centre
LWSSC	Levos Water Supply and Sewage Company
NGO	Non-governmental organisation
NORMAN	Network of reference laboratories, research centres and related organisations for monitoring of emerging environmental substances
OA	Open Access
PC	Project coordinator
PM	Persistent, mobile
PU	Potential user
REACH	Registration, evaluation, authorisation and restriction of chemicals
SC	Steering committee
SETAC	Society for Environmental toxicology and chemistry
SIN List	Substitute it Now List
SSD	Sewage sludge directive
UNEP	United nations environment programme
USEPA	United states environmental protection agency
WP	Work package



1 Introduction

ZeroPM, which stands for Zero pollution of Persistent, Mobile substances, is a 5 year long European research project funded under the Horizon 2020 research and innovation program. ZeroPM will interlink and synergize three strategies to protect the environment and human health from persistent and mobile (PM) substances: **Prevent**, **Prioritize** and **Remove**. To do this, ZeroPM will develop an evidence-based multilevel framework. The framework will guide policy, technological and market incentives to minimize use, emissions and pollution of entire groups of PM substances.

This report is Deliverable 8.1 – the Dissemination and Exploitation plan. The ZeroPM Dissemination and Exploitation plan details the ZeroPM results to be disseminated to the identified potential user groups, how the results support achieving ZeroPM's impact, the way activities will be monitored and an exploitation plan. This deliverable goes hand in hand with Deliverable 8.3 – the ZeroPM Communication plan. Deliverable 8.1 has been developed at an early project stage and will be a living document that is updated during the periodic and final reporting. The deliverable will ensure that project results are widely spread and imbedded with all potential user groups.

The Dissemination and Exploitation plan includes six key elements shown in Figure 1. The interplay between these elements is important as it determined the extent to which ZeroPM results are made available and taken up by potential users. These six elements are discussed in the six subsequent chapters.



Figure 1: The six elements included in the Dissemination and Exploitation plan



2 Dissemination aims and objectives

The ZeroPM Grant Agreement, Article 29 – Dissemination of results – Open access – Visibility of EU funding states the following:

29.1 Obligation to disseminate results

Unless it goes against their legitimate interests, each beneficiary must — as soon as possible — ‘disseminate’ its results by disclosing them to the public by appropriate means (other than those resulting from protecting or exploiting the results), including in scientific publications (in any medium).

This does not change the obligation to protect results in Article 27, the confidentiality obligations in Article 36, the security obligations in Article 37 or the obligations to protect personal data in Article 39, all of which still apply.

A beneficiary that intends to disseminate its results must give advance notice to the other beneficiaries of — unless agreed otherwise — at least 45 days, together with sufficient information on the results it will disseminate.

Any other beneficiary may object within — unless agreed otherwise — 30 days of receiving notification, if it can show that its legitimate interests in relation to the results or background would be significantly harmed. In such cases, the dissemination may not take place unless appropriate steps are taken to safeguard these legitimate interests.

If a beneficiary intends not to protect its results, it may — under certain conditions (see Article 26.4.1) — need to formally notify the Agency before dissemination takes place.

With this in mind, the primary aim of ZeroPM's dissemination and exploitation activities is to:

Spread and embed the projects results with all potential users in order that use, emissions and pollution from PM substances is reduced to protect European water resources and avoid risks to humans.

To support this aim, the Dissemination and Exploitation Plan answers the following questions:

- ▼ what do we want to achieve with dissemination to maximize impact?
- ▼ who are the potential users (PU) of ZeroPM results?
- ▼ what are the information needs and topics of interest to different PU?
- ▼ when and how are most opportune to disseminate?

This document will result in the following outcomes:

- ▼ To ensure policy makers and enforcers, chemical manufacturers and downstream users, water utilities, companies working with technical solutions, academic networks, NGO's and the general public can use the tools developed, and lessons learned in ZeroPM, both during and after the project period;
- ▼ To enhance the reputation and credibility of ZeroPM at the regional, national, international, European and worldwide scale by maximising existing networks and partner expertise.

2.1 Communication, dissemination and exploitation

Communication, dissemination and exploitation are all vital components to achieve the anticipated visibility, recognition and impact of ZeroPM. It is important that these three pillars are not confused. Impact will be maximised when the work carried out is aligned with the needs of the potential users of ZeroPM knowledge. In addition, activities must be tailored in order to reach different audiences, as a one size fits all approach will not be sufficient. A clear understanding of the needs of the target audiences and the most appropriate means to reach them is required. A united approach by the whole ZeroPM consortium is needed. Table 1 shows the guiding principles for communication, dissemination and exploitation (adapted from presentation given at the H2020 Coordinators Day on the 7th of September 2021).

Table 1: Communication, dissemination and exploitation principles

	Communication	Dissemination	Exploitation
	Informing about the project	Informing about results and making them available for use	Facilitating and making use of results
What	Taking strategic and targeted measures for promoting the action itself and its results to a multitude of audiences, including the media and the public, and possibly engaging in a two-way exchange	The public disclosure of the results by any appropriate means, including by scientific publications in any medium	The utilisation of results in further research activities other than those covered by the action concerned, or in developing, creating and marketing a product or process, or in creating and providing a service, or in standardisation activities
Why	Demonstrates how EU funding contributes to tackling societal challenges	- Maximizes the impact of research, enabling the value of results to be potentially wider than the original focus - Prevents results becoming lost	- Makes use of the results; recognising exploitable results and their stakeholders - Concretises the value and impact of the R&I activity for societal challenges
Who	Multiple audiences that include target groups referred to as potential user groups beyond the project's own community. Including the media and general public.	Specialist audiences referred to as potential user groups that may use the results.	Commercial business, policy makers and general research field.
How	- Identifies and sets clear communication objectives - Strategically planned and not ad-hoc efforts - Uses pertinent messages, right medium and means	Transfer of knowledge and results to the ones that can best make use of it	Project partners can exploit results themselves, or facilitate exploitation by others (e.g. through making results available under open licenses)



3 ZeroPM potential user groups

ZeroPM has identified 10 groups of potential users (PU) of project knowledge across different geographic scales (Table 2). ZeroPM has established an extended potential user group (EPUG) of organisations who showed interest in actively following, supporting and participating in ZeroPM project activities. This group will be expanded over the coming months, benefiting from the key communication messages detailed in this document. More information about the knowledge each PU group may be interested in and benefit from, is given below.

Table 2: ZeroPM's potential user (PU) groups

PU 1	Policy-makers and administrators working with PM substances at all stages of their life cycle, at national, European and international levels
PU 2	European authorities responsible for coordinating and enacting legislation for PM substances at all stages of their life cycle
PU 3	Chemical producers working at European and international levels
PU 4	Chemical users, referring to private industries that require chemicals working at European and international levels
PU 5	Private and public-sector water utilities working at national and European levels
PU 6	Private sector businesses working with technical solutions at European and international levels
PU 7	Scientific community and academic networks, (including clustering) working with specific groups of PM substances at the national, European and worldwide level
PU 8	Environmental groups and other NGOs working at the European and international levels
PU 9	General public at the local and national levels
PU 10	Media at the local, national, European and international levels

3.1 Policy-makers and administrators and European authorities responsible for coordinating and enacting legislation (PU1 and PU2)

ZeroPM is working in a rapidly moving policy area. The Chemicals Strategy for Sustainability released by the European Commission in 2020 set bold action points for the management of chemicals (including PM substances) in Europe. Alongside this, the Zero Pollution Strategy plans to review all European Union's environmental laws and aims to reduce pollution by 2050 "to levels no longer considered harmful to health and natural ecosystems and that respect the boundaries with which our planet can cope, thereby creating a toxic-free environment".

Policy makers and administrators are currently discussing, among others points, the following forthcoming policy change: amendments to the REACH and the CLP Regulations, updates and evaluations of the Industrial Emissions Directive (Directive 2010/75/EU), the Water Framework Directive (Directive 2000/60/EC) and its daughter directives, the Food Contact Materials Regulation (Regulation (EC) No 1935/2004), and



the Sewage Sludge Directive (Directive 86/278/ EEC), as exemplary regulations that will involve persistent and mobile substances.

European authorities responsible for coordinating and enacting legislation will translate these changes into updated European regulations. ZeroPM will help support competent authorities to enforce the need for chemical regulation of some PM substances, to update EU directives and national legislations related to drinking water, wastewater and sludge management and to understand which PM substances should be prioritized for clean-up based on effects on human health and the environment.

The following policy-makers and administrators and European authorities are foreseen in the EPUG: the USEPA, Environment Canada, the Chinese Ministry of Ecology and Environment, the Chinese Ministry of Water Resources, ECHA, KEMI and the Norwegian Environment Agency.

3.2 Chemical producers (PU3)

Chemical producers working at European and international levels will need to adapt to the updated policies and regulations of PM substances. By starting early, the possibilities to greater innovation towards functional alternatives that are safe and sustainable increases. These alternatives will also provide a market advantage in the new regulatory landscape. Chemical producers will be interested in the web-based tools that will be developed in WP4 Market Transition, including the Marketplace of alternatives to PM substances, where chemical producers will also be invited to contribute. There will also be a strong interest from this group about which PM substances will be prioritised for further studies and also for additions to the SIN List. Chemical producers may also be interested in ZeroPM if they are included in ChemSec's Chemscore. The Chemscore ranks the 50 largest companies and ranks their performance in four different categories: the toxicity of their product portfolio, research and development of non-toxic chemicals, management and transparency and the number of controversies and scandals that the company has been involved in. A larger score means a better performance.

3.3 Chemical users (PU4)

Many companies are unaware of which chemicals are in their products, and therefore which contain PM substances. Thus, for chemical downstream users, significant financial and time resource investments are needed to identify, assess and implement safer and viable alternatives into production. However, barriers represented by a lack of knowledge, time and money can result in poorly informed decisions which may present themselves as regrettable substitutions.

The ChemSec business group (formed of Adidas Group, Apple, Boots UK, Coop, Dell, EurEau, H&M Group, IKEA, Kingfisher, Lego Group, Shaw Industries, Skanska, Sony Mobile and The Swedish Construction Federation) is a basis for PU4, as is the growing number of companies that have signed up to support ChemSec's "no to PFAS movement" <https://chemsec.org/pfas/>. All the deliveries in WP4 aim to support this user group in the identification and phase-out of harmful PM substances. Shaping these tools



in dialogue with the companies above will ensure that knowledge about these resources is spread to a much larger group of chemical users. This will be achieved via targeted newsletters, talks at relevant events and digital marketing.

3.4 Water utilities (PU5)

Private and public-sector water utilities working at national and European levels are tasked with keeping drinking water clean and PM substance free. The costs of treating drinking water with the advanced methods that are needed to remove PM substances presents a financial challenge for water utilities. Sustainable methods are needed where the economic, environmental and technical benefits outweigh the costs. ZeroPM has three test sites (two in Germany and one in Greece) where novel methods will be developed, pilot tested and evaluated for their sustainability. Table 3 shows the institutes that have joined PU5 in ZeroPM.

Table 3: The institutes that have joined PU5

Organisation and contact person	Associated test site	Short description
Global Water Research Coalition, Stephanie Rinck-Pfeiffer, Managing Director	N/A	Members: Canadian Water Network, KWR Water Cycle Research Institute (Netherlands), PUB (Singapore), SUEZ (France), Stowa - Foundation for Applied Water Research (Netherlands), TZW (Germany), UK Water Industry Research, VEOLIA (France), Water Research Australia, Water Research Commission (South Africa), The Water Research Foundation (US), Water Services Association of Australia. The GWRC serves as a focal point for the global collaboration for research planning and execution on water and wastewater related issues.
EurEau, Oliver Loebel, Secretary General	N/A	EurEau rings together drinking water and waste water professionals across 29 countries who supply water to over 500 million people.
The International Association of Waterworks in the Rhine Basin, Wolfgang Deinlein, Managing director	N/A	Works towards clean drinking water for 61 million inhabitants. The organisation consists of 120 water utilities in six countries along the river Rhine: Switzerland, Liechtenstein, Austria, France, Germany and the Netherlands. They focus on open and transparent public related to the precautionary protection of drinking water resources.
Vewin: Dutch association of water supply companies, Harrie Timmer, Senior Policy Advisor	N/A	Vewin are involved in international regulation, research and cooperation to improve water quality. Vewin supports regulation of PMT substances
RIWA Rijn, Gerard Stroomberg, Director	N/A	RIWA is the association of 4 drinking water companies in the Netherlands who work to improve water quality in the Rhine. Recent monitoring has shown PFAS and other emerging PM substances that are not removed during treatment.



Wasserversorgung Rheinessen-Pfalz GmbH, Ronald Roepke, CEO	Upper Rhine	WVR supply more than 229 000 people with drinking water in the Rhineland-Palatinate area in Germany, some of which comes from bank filtrate. WVR is concerned about the presence of PM substances in the water supply and will participate in the pilot water treatment demonstrations in ZeroPM and use results in decision-making.
Stadtwerke Rastatt, Olaf Kasprzyk, Managing Director	Rastatt	They supply 50000 people with drinking water in the Rastatt area in Germany. The presence of PFAS in supplies necessitates solutions and ZeroPM will exchange knowledge related to the current AC treatment used now and the novel ones to be developed in the project.
Stadtwerke Baden-Baden, Peter Riedinger	Rastatt	They supply 55000 people with drinking water in the Rastatt area in Germany. The presence of PFAS from the application of contaminated sludge necessitates solutions. ZeroPM will exchange knowledge about the novel treatment methods for the test site.
Lesvos Water Supply and Sewage Company S.A., Despina Bokou, Director	Greece	They are the largest Water Supply and Sewage Company in the North Aegean Region. The company operates the STP at Mytilene where the sludge pilot system will be installed, as well other 12 STPs in the island of Lesvos.
Hellenic Association of Municipal Water and Sewerage Companies, George Marinakis, President	Greece	They coordinate and represent activities of the 117 members in Greece. They assist members with service improvement and have identified the occurrence of PM substances in drinking water, waste waters and sewage sludge as one of the major issues of concern for members.

3.5 Businesses working with technical solutions (PU6)

In areas where PM substances are in the environment, remediation solutions are needed. Businesses offering standard and advanced technical solutions will increase their profitability and market share by further expanding their portfolio of solutions. Table 4 shows the businesses that are members of PU6. Other businesses will be contacted as ZeroPM progresses, particularly those involved in H2020 projects that were funded under the same call (see section 3.6), for example EnvyTech Solutions AB, who are involved in the PROMISCES project.

Table 4: The businesses that have joined PU6

Organisation and contact person	Associated test site	Short description
Donau Carbon, Marco Müller, Head AC Application	N/A	Donau Carbon has 100 years of experience in the production, evaluation, and implementation of activated carbon (AC) adsorption systems (full scale and mobile units) for water remediation, a possible solution for PM substance pollution.



REGENESIS, Jack Shore, District Manager	N/A	REGENESIS carry out research, development and supply of products and services for cost-effective remediation of contaminated land and groundwater. Solutions are relevant for ZeroPM.
ENBIO Ltd, George Lytras, Technical Director	Greece	ENBIO Ltd construct water and wastewater treatment systems and are a supplier of environmental technology solutions in Greece. Knowledge related to technical solutions is relevant for ZeroPM.
CONDIS, Rieke Neuber	Upper Rhine	CONDIS manufacture boron diamond doped electrodes. Knowledge from CONDIS will support the electrochemical degradation/mineralization method to be developed for the PM substances contained in treatment residues.
Lanxess, Stefan Neufeind	Upper Rhine	Lanxess's core business comprises the development, manufacture and sale of high-tech plastics, high-performance rubber, specialty chemicals and intermediates. Lanxess will support the work with ion exchange resins providing materials and technical support.

3.6 Scientific community, academic networks and clustering (PU7)

ZeroPM emphasises integrated transdisciplinary research that creates a bridge between several academic disciplines, as demonstrated by the diverse expertise of the consortium. The beneficiaries in ZeroPM will continuously collaborate to create synergies with academic networks working in these disciplines, as well as other projects and initiatives of interest that might provide significant leveraging potential to ZeroPM. Examples include:

- ▼ Green Science Policy Institute (Arlene Blum, Executive Director) works to facilitate the responsible use of chemicals to protect the ecosystem and human health. It builds partnerships between scientists, regulators, businesses, and public groups to develop innovative solutions. Two-way communication will support ZeroPM.
- ▼ The NORMAN network which is a network of reference laboratories, research centres and related organisations for monitoring of emerging environmental substances. A close link with WP5 Substance grouping is envisaged and database exchange will be carried out, also in connection with the sister project PROMISCES, of which they are a member. An initial meeting has been held with NORMAN and PROMISCES to identify potential topics for collaboration (defining harmonized use categories).

In addition, ZeroPM has established an External Excellence Advisory Board which is made up of five people who are all active within PM substance research outside Europe. These members will work with ZeroPM to highlight relevant findings and spread and embed the ZeroPM message in China, Canada and America. The members are described in Table 5.



Table 5: Information about the members of the External Excellence Advisory Board

Name	Country	Biography and ZeroPM WP link
Julie Zimmerman	Yale University, USA	Expert in green chemistry and chemical substitution. Her work focuses on sustainable technology innovation. She is Editor in Chief of Environmental Science & Technology and will be involved in WP2 Alternatives assessment and will carry out a sabbatical at beneficiary Stockholm University.
Joel Tickner	University of Massachusetts-Lowell, USA	Works with green chemistry, chemicals policy, and pollution prevention research on safer products and manufacturing processes. He is the founder of the Association for the Advancement of Alternatives Assessment and the Green Chemistry and Commerce Council (GC3). GC3 consists of 120 companies and works for an industrial shift towards green chemistry. He will be involved in WP4 Market transition, passing knowledge from the industrial shift in America
Jianguo Liu	Peking University, China	Expert in emission inventories of PFAS in China. He carries out research on emission, exposure, impact and policy of chemicals of high or emerging concern globally, including POPs, PBT, EDCs, and PPCPs in China. He was a former member of the Chinese governmental delegation for the Stockholm Convention, SAICM and the Minamata Convention and is now a member of the Steering Committee of the UNEP Global Chemicals Outlook II. He will be involved in WPs 3 Policy and 5 Substance grouping feeding his experiences of the science-policy interface.
Biao Jin	Chinese Academy of Sciences, China	Research expertise in PMT substances in China and an ongoing collaboration with the Ministry of Ecology and Environment (MEE) of China. Has will be involved in WP5 Substance grouping supplying a Chinese perspective.
Sébastien Sauvé	Université de Montréal, Canada	Expert in sustainability and environmental chemistry. He carried out research on contaminated sludge, circular economy, PFAS analysis, effects of PM substances on health and the environment. He will be involved in WPs 6 Risk Assessment and 7 Technical solutions, via state-of-the-art methods for novel PM substance monitoring and their effects on environmental and human health.

In addition to the members shown in Table 5, three additional people have been approached:

- ▼ Satoshi Endo: National Institute for Environmental Studies, Japan. Expert in environmental processes and properties of contaminants. Research on soil sorption, property prediction, and environmental process modelling of organic contaminants. Contribution to WP6.
- ▼ Roxana Suehring, Ryerson University in Toronto Canada, Expertise in the fate and transport of organic contaminants, plastic contamination in urban water,



emerging contaminants, high-resolution mass-spectrometry and long-range chemical transport. Contribution to WP5.

- ▼ Michelle Embry, Health and Environmental Sciences Institute, Washington, USA. Expertise in bioaccumulation, animal alternative methods development in ecotoxicology, PBPK modelling, exposure assessment, risk modelling. Contribution to WP6.

ZeroPM will maximise knowledge gained in ongoing H2020 projects as well as EU projects that have concluded. ZeroPM will establish strong links and collaborative efforts with projects funded under the same call and sister calls through clustering activities. ZeroPM will utilize EU Joint Research Centre (JRC) scientific tools and databases. Examples of relevant projects, clusters and JRC resources include:

- ▼ SOLUTIONS (FP7, grant agreement number 603437). ZeroPM will build on the analysis of regulatory gaps and opportunities identified for present and future emerging pollutants in land and water resources management. Several members of ZeroPM were also part of SOLUTIONS.
- ▼ PERFORCE3 (H2020 ITN project, grant agreement number 860665). ZeroPM will learn from remediation methods tested for water contaminated by PFAS and use modelled data in the multimedia fate model in WP6. Several members of ZeroPM are also part of Perforce3.
- ▼ UNEP stocktake. Methods used to assess social aspects of possible actions, barriers and policy solutions to reduce the flow of plastics to the ocean will be used in ZeroPM
- ▼ ITN LimnoPlast (H2020 ITN project, grant agreement number 860720). Tools developed to investigate risk perception related to microplastics in freshwater will be used in ZeroPM. One member of ZeroPM is also a member of ITN Limnoplant.
- ▼ EUTOXRISK (H2020 project, grant agreement number 681002). ZeroPM will build on the integrated approach for testing and assessment using in vitro and in silico models for hazard assessment.
- ▼ EURION New test methods will be developed within the EURION cluster that can be implemented in the bioassay toolbox of ZeroPM.
- ▼ HYDROUSA (H2020 project, grant agreement number 776643). ZeroPM will built on the gained experience for integrated wastewater management applying circular and nature-inspired technologies
- ▼ HBM4EU (H2020 project, grant agreement number 733032) ZeroPM will build on HBM4EUs' assessment of stakeholder needs and priorities.
- ▼ RoadToBio (H2020 project, grant agreement number 745623). ZeroPM will seek synergies with RoadToBio which will deliver a roadmap and action plan Europe's chemicals industry towards the Bioeconomy to 2030.
- ▼ Sister projects
 - SCENARIOS: Strategies for health protection, pollution Control and Elimination of Next generAtion RefractIve Organic chemicals from the Soil, vadose zone and water (TOPIC GD-8.1-2020)
 - PROMISCES: Preventing Recalcitrant Organic Mobile Industrial chemicalS for Circular Economy in the Soil-sediment-water system (TOPIC GD-8.1-2020)



- PANORAMIX: Providing risk assessments of complex real-life mixtures for the protection of Europe’s citizens and the environment (TOPIC GD-8.2-2020)
- Alternative: environmentalAL Toxicity chEmical mixtuRes through aN innovative platform based on aged cardiac tissue model (TOPIC GD-8.2-2020)
- LIFESAVER: Living Impact on Fetal Evolution: Shelter-Analyze-Validate-Empower Regulations (TOPIC GD-8.2-2020)
- ▼ Cluster: Green Deal. A cluster for all projects funded under the H2020 Green Deal call.
- ▼ JRC-ECVAM. This initiative focuses on the validation of in vitro bioassays for thyroid hormone disruption and will be linked to WP6 of ZeroPM.
- ▼ The JRC's IPCHEM database for chemical monitoring data will be used to retrieve existing data especially from the Environmental monitoring and Products and Indoor Air modules. Data produced by WP5 will be shared to this database.

3.7 Environmental groups and NGOs (PU8)

Environmental groups at the grass root level face the problem of PM substances in the environment first hand. Communities who have contaminated drinking water, or those who are unable to grow crops on contaminated land are pushing for change and requesting support. NGOs working at the European and international level can play a key role in promoting social or political change on a broad scale or very locally. Table 6 shows the environmental groups and NGOs that are members of PU8. The list will be expanded as ZeroPM continues.

Table 6: The environmental groups and NGOs that have joined PU8

Organisation and contact person	Short description
The District Office of the City of Rastatt, Reiner Sohlmann	The community at Rastatt is directly affected by the PFAS contamination in the area and will benefit from ZeroPM research at test site 1 (Rastatt)
Clean Cape Fear (Emily Donovan, Co-Founder)	Clean Cape Fear is made up of advocacy groups, community leaders, scientists, educators, and professionals working to solve the DuPont /Chemours PFAS pollution in America in local air, soil, water, and food supply. Social and behaviour aspects of the work clean cape fear will carry out can benefit ZeroPM.
PfoaProjectNY, Loreen Hackett, Founder	PfoaProjectNY is a grass roots group responding to elevated concentrations of PFOA in the blood of local residents in New York as a result of contaminated drinking water. They will look towards the results of ZeroPM for information.
CHEM Trust, Ninja Reineke	CHEM Trust has a mandate to protect humans and animals from harmful chemicals. CHEM Trust will follow ZeroPM, especially policy and market transition work, highlighting project achievements.



3.8 General public (PU9)

Communication is also essential to inform non-specialists. ZeroPM will therefore also direct its communication activities towards the general public who are PU9. It is important to reach out to the general public and show them the impacts and benefits of the problems ZeroPM is working to solve. By including them ZeroPM will be able to show how societal issues can be tackled. Activities will target inhabitants who are affected by the pollution close to the ZeroPM test sites. For example, local inhabitants living in the Rastatt area will be able to participate in demonstration days and the close link with Stadtwerke Rastatt, Stadtwerke Baden-Baden and The District Office of the City of Rastatt will also foster this. The general public will also be included in the social sciences work to be carried out where surveys in three European countries will be used to obtain data related to perceptions on essential use.

3.9 Media (PU10)

Project partners, especially WP leaders and partners carrying out the work at the ZeroPM test sites, will establish contact with journalists for local and regional news coverage in newspapers, radio and television. The ZeroPM coordinator communications officer and other partners will write regular press releases highlighting significant project developments and outcomes that will be available to all partners for translation to the local language. The media strategy will target in this way national, EU and international news outlets to reach the general public. Previously, ZeroPM consortium members have been interviewed by Chemical Watch, the BBC, Reuters, the Guardian and the Economist, and can notify their journalist contacts at these outlets about news from ZeroPM. Press releases will be launched on institute websites, national press release servers, and international press release servers like EurekAlert!.

4 Achieving ZeroPM's impact

4.1 Project results

In order to answer the question related to the information needs and specific topics of interest to the identified PU groups (section 3), it is first necessary to understand the results that will be produced by ZeroPM. Table 7 shows the key ZeroPM results according to whether they are related to the Prevention, Prioritization or Removal section of ZeroPM.



Table 7: ZeroPM's results for dissemination and exploitation according to whether they are related to prevention (green), prioritization (orange) or removal (red)

Key result	Code	WP
Guidance for alternative assessment for PM substances	PREVENT-1	2
Guidelines for identifying essential use cases of PM substances	PREVENT-2	2
Mental model to understand social perceptions to essential use of PM substances	PREVENT-3	2
Policy actions and road maps for PM substance groups	PREVENT-4	3
Feedback to public consultation of forthcoming policy	PREVENT-5	3
An analysis of actions, needs, and challenges for meeting the zero pollution ambitions	PREVENT-6	3
A list of PM substances that are a cause for concern under existing legal/policy framework	PREVENT-7	3
Identified policy opportunities and gaps for preventing selected PM substances from entering the environment	PREVENT-8	3
Updated assessment methods for PM substances	PREVENT-9	3
Web-based tools to highlight alternatives to harmful PM substances	PREVENT-10	4
Web-based tool to highlight PFAS containing products and their uses	PREVENT-11	4
Updated list of PM substances for inclusion on the SIN (Substitute It Now) List	PREVENT-12	4
Up-to-date inventory of PM substances on the global chemical market	PRIORITIZE-1	5
Harmonization and quality control of empirical data for PM substances	PRIORITIZE-2	5
Emissions, production and uses database	PRIORITIZE-3	5
Production, use, emission/exposure/circular economy indices to feed an early warning system	PRIORITIZE-4	5
A grouping approach for PFAS including precursors and transformation products	PRIORITIZE-5	5
Database coordination for PM substance monitoring data	PRIORITIZE-6	5
Novel <i>in silico</i> models for external human exposure and internal human exposure	PRIORITIZE-7	6
New risk matrix for screening of PM substances for human health risk	PRIORITIZE-8	6
Best practice <i>in silico</i> and <i>in vitro</i> risk assessment methods that can be applied to PM substances	PRIORITIZE-9	6
Passive and active sampling methods for PM substance monitoring	REMOVE-1	7
Remediation solutions for contaminated water and sludge	REMOVE-2	7
Factsheets for stakeholders about removal, management and mitigation strategies for PM substances	REMOVE-3	7
Fitness check of the parameter PFAS total in the revised EU Drinking Water Directive	REMOVE-4	7



These results will translate into the impact from ZeroPM which will be societal, political, scientific and economic. Figure 2 provides an overview of the four different impact areas as well as the PU groups (see section 3).

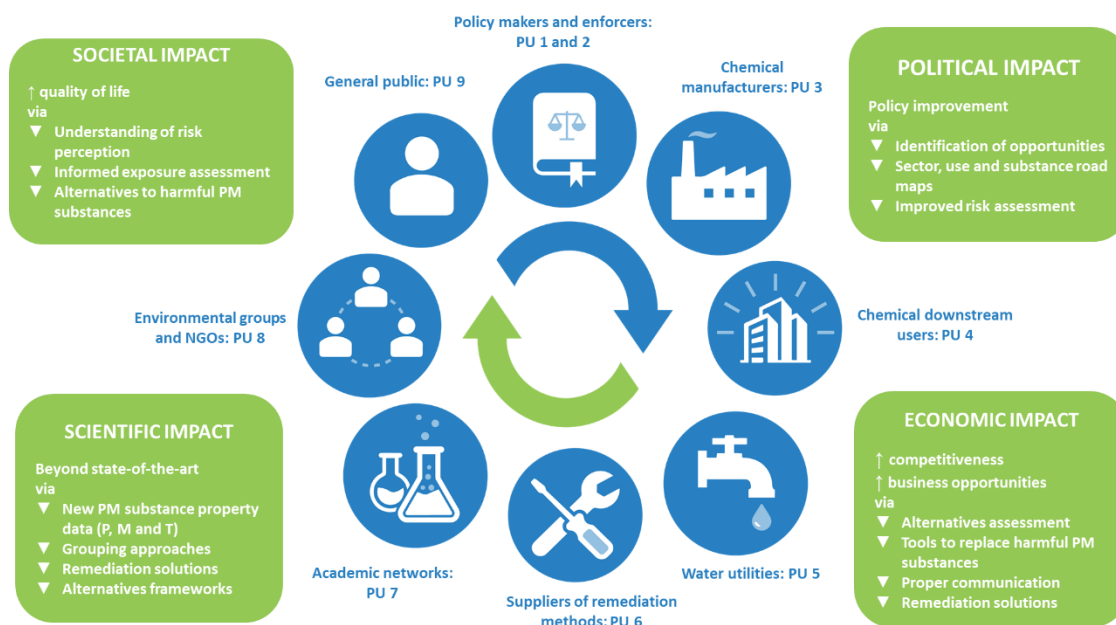


Figure 2: The impact of ZeroPM is political, economic, scientific and societal

From the outset of ZeroPM, 10 specific impacts were defined. The work to be carried out in ZeroPM and the subsequent results will support the achievement of the impacts. These results are of specific interest to different PU and it follows that the means, timing and type of dissemination needs to be tailored accordingly to reach the specific PU. The 10 impacts, the way in which ZeroPM will achieve them, the results to be disseminated and the PU that will have most interest in them, are shown below. The results to be disseminated are shown according to their codes given in Table 7.

Scientific Impact: A foundation for prevention and mitigation solutions based on:

- ▼ understanding the sources and distribution of PM substances
- ▼ improved environmental fate models
- ▼ improved understanding of relevance for human and environmental health

ZeroPM will provide solutions to the problem of PM substances on three levels: prevention, prioritization and removal. Sources and distributions of PM substances will be the central focus of the prioritization research. For the prioritized PM substance groups, ZeroPM will provide fate models that assist in an improved understanding of relevance for human and environmental health. ZeroPM's mitigation solutions are strongly focused on prevention of environmental and health problems due to harmful PM substances by supporting a phase-out and emission reduction.

Results to be disseminated and PU group expected to be interested:

- ▼ **PRIORITIZE-1** of interest to policy makers and enforcers (PU1+2), chemical manufacturers and downstream users (PU3+4), water utilities (PU5), suppliers of



remediation methods (PU6), academic networks (PU7), environmental groups and NGOs (PU8)

- ▼ **PRIORITIZE-2** of interest to policy makers and enforcers (PU1+2), chemical manufacturers and downstream users (PU3+4), water utilities (PU5), suppliers of remediation methods (PU6), academic networks (PU7), environmental groups and NGOs (PU8)
- ▼ **PRIORITIZE-7** of interest to chemical manufacturers and downstream users (PU3+4) and policy makers and enforcers (PU1+2)
- ▼ **PRIORITIZE-8** of interest to policy makers and enforcers (PU1+2)
- ▼ **REMOVE-1** of interest to water utilities (PU5) and policy makers and enforcers (PU1+2)
- ▼ **PREVENT-10** of interest to chemical manufacturers and downstream users (PU3+4)
- ▼ **PREVENT-4** of interest to policy makers and enforcers (PU1+2) and chemical manufacturers and downstream users (PU3+4)

Societal Impact: Provide solutions and support decision making for addressing the large-scale diffuse contamination of water and soil with persistent and mobile chemicals (including for combinations of pollutants) in an integrated manner

ZeroPM will collaborate with local decision makers at two different types of large-scale diffuse contamination areas in its test sites, one in Germany and one in Greece. In Germany, the drinking water that is supplied to 50,000 people has been linked to elevated PFAS concentrations in blood. Here ZeroPM will test the effectiveness of innovative drinking water treatment solutions and the treatment of residues that remain as waste by-products. Solutions to the diffuse contamination of sludge with PM substances will be investigated in Greece. ZeroPM will explore thermal technologies (dry pyrolysis, hydrothermal carbonisation) that destroy most molecular bonds in the PM substances investigated as well as leading to enhanced energy, nutrients and carbon recycling. Knowledge transfer and discussion will provide local authorities with support for their decision-making process.

Results to be disseminated and PU group expected to be interested:

- ▼ **REMOVE-2** of interest to water utilities (PU5), environment groups and NGOs (PU8)
- ▼ **REMOVE-3** of interest to policy makers and enforcers (PU1+2), water utilities (PU5), suppliers of remediation methods (PU6), environmental groups and NGOs (PU8)

Economic Impact: Contribute to achieving a toxic-free environment through solutions for better load reduction, (bio)remediation and detection technologies

ZeroPM will focus on contributing to achieving a toxic-free environment both through solutions for load reduction and via remediation and detection technologies. Solutions for load reduction will be investigated by focusing on methods related to prevention and prioritization of PM substances. Preventing PM substances from reaching the environment, thus reducing their loads can be achieved by providing alternative substances to harmful PM substances, providing policy tools and supporting industry to make the transition to these safer substitutes. Remediation and detection technologies for contaminated ground water and surface water used as drinking water sources and waste water treatment plant sludge will be investigated in ZeroPM. Both will employ novel treatment methods that consider overall system performance to most effectively achieve a toxic free environment.

Results to be disseminated and PU group expected to be interested include:



- ▼ **PRIORITIZE-8** of interest to policy makers and enforcers (PU1+2)
- ▼ **REMOVE-1** of interest to water utilities (PU5) and policy makers and enforcers (PU1+2)
- ▼ **PREVENT-4** of interest to policy makers and enforcers (PU1+2) and chemical manufacturers and downstream users (PU3+4)
- ▼ **REMOVE-3** of interest to policy makers and enforcers (PU1+2), water utilities (PU5), suppliers of remediation methods (PU6), environmental groups and NGOs (PU8)
- ▼ **PREVENT-10** of interest to chemical manufacturers and downstream users (PU3+4)
- ▼ **PREVENT-2** of interest to policy makers and enforcers (PU1+2)
- ▼ **PREVENT-11** of interest to chemical manufacturers and downstream users (PU3+4)
- ▼ **PRIORITIZE-3** of interest to policy makers and enforcers (PU1+2), chemical manufacturers and downstream users (PU3+4). Water utilities (PU5), suppliers of remediation methods (PU6), academic networks (PU7), environmental groups and NGOs (PU8)
- ▼ **REMOVE-2** of interest to water utilities (PU5), suppliers of remediation methods (PU6), environment groups and NGOs (PU8)
- ▼ **REMOVE-4** of interest to policy makers and enforcers (PU1+2), water utilities (PU5) and suppliers of remediation methods (PU6)

Societal Impact: Improve risk assessment to facilitate optimal risk management and preventive solutions

ZeroPM will provide a novel risk assessment approach that combines exposure assessment and bioassay read outs showing hazard. The risk assessment approach will take into consideration which target organs PM substances can affect, will extend the applicability domain to substances with P and M intrinsic properties, will use additional endpoints to monitor which are relevant for PM substance exposure and will use in vitro and non-mammalian in vivo methods. ZeroPM will develop innovative life cycle impact assessment tools combined with risk assessment tools, that uses results from the *in silico* methods for human external exposure and *in vitro* methods to determine PM substance hazard. The tools will consider the long-term risk of PM substances and support risk management strategies.

Results to be disseminated and PU group expected to be interested:

- ▼ **PRIORITIZE-9** of interest to policy makers and enforcers (PU1+2)
- ▼ **PREVENT-8** of interest to policy makers and enforcers (PU1+2)
- ▼ **PREVENT-12** of interest to policy makers and enforcers (PU1+2) and chemical manufacturers and downstream users (PU3+4)

Political Impact: Support policy development, regulatory action and risk communication with FAIR data of regulatory relevance

ZeroPM will start from the global inventory of chemicals and make several databases that can be used explicitly for policy development, regulatory action and risk communication, all of which will follow the FAIR Guiding Principles for scientific data management and stewardship. These databases will include PM substance evaluations of the global inventory of chemicals, use databases to find alternatives and databases that include emission/exposure/circular-economy categories to help prioritize for prevention, monitoring and removal. ZeroPM will specifically support risk communication with FAIR data of regulatory relevance by using a social and behavioural evidence base of current risk



perception in different stakeholders in three countries, which also considers the benefits provided by the PM substances in different use contexts. ZeroPM's policy analysis and development work will draw on this data in its descriptions of needs and challenges for meeting EU zero-pollution ambitions. It will also generate options for policy actions and data/analysis on their impacts, e.g., effectiveness, feasibility, costs.

Results to be disseminated and PU group expected to be interested:

- ▼ **PRIORITIZE-1** of interest to policy makers and enforcers (PU1+2), chemical manufacturers and downstream users (PU3+4), water utilities (PU5), suppliers of remediation methods
- ▼ **PRIORITIZE-4** of interest to policy makers and enforcers (PU1+2)
- ▼ **PRIORITIZE-9** of interest to policy makers and enforcers (PU1+2)
- ▼ **PRIORITIZE-3** of interest to policy makers and enforcers (PU1+2), chemical manufacturers and downstream users (PU3+4).

Political Impact: Support actions deriving from several EU documents on persistent and mobile chemicals, the upcoming Zero Pollution Action Plan and the aims of the new Circular Economy Action Plan to minimise the presence of substances that pose problems to human and environmental health

ZeroPM will closely analyse the EU policy documents as a foundational step in the development of options and roadmaps as relevant for other work packages and the overall project. The following specific policy actions have been identified as points to which ZeroPM's results will feed in to:

Chemicals Strategy

- ▼ "The Commission will: define criteria for essential uses to ensure that the most harmful chemicals are only allowed if their use is necessary for health, safety or is critical for the functioning of society and if there are no alternatives that are acceptable from the standpoint of environment and health".
- ▼ "The Commission will: introduce [...] persistent, mobile and toxic and very persistent and very mobile substances as substances of very high concern".
- ▼ "The Commission will: support research and development for decontamination solutions in terrestrial and aquatic environments".
- ▼ "The Commission will: address PFAS with a group approach, under relevant legislation on water, sustainable products, food, industrial emissions, and waste".
- ▼ "The Commission will develop an early warning action system for chemicals to ensure that EU policies address emerging chemical risks as soon as identified by monitoring and research".
- ▼ "The EU will promote the development of common standards and innovative risk assessment tools internationally, notably with the OECD, and promote their use under international frameworks, amongst others, to shift further away from animal testing".

Circular economy action plan (CEAP)

The CEAP promotes the reduction, reuse and recycling of electronics and ICT, packaging, plastics, textiles, and construction and building materials. However, within the materials themselves, or during their production, several PM substances, most notably PFAS have been utilized. Substituting these chemicals during material production provides one effective way to remove them from the cycle avoiding them being recycled into other materials which carries an additional exposure and emission risk for humans and the environment.

Sewage Sludge Directive (SSD)

The SSD is currently undergoing evaluation because " *The importance of recycling of materials, in line with circular economy principles, is highlighted as a priority area under the*



European Green Deal and CEAP. Transformation of the industry and all the value chains is required for Europe to be less dependent on the extraction of raw materials. However, it is important that what is used as a resource is not contaminated, otherwise recycling will result in increasing pollution of soil, water and/or air". This evaluation will consider pollutants that are of the most concern in sludge application/recycling, and it is highly likely that PM substances will be amongst these.

Results to be disseminated and PU group expected to be interested:

- ▼ **PRIORITIZE-8** of interest to policy makers and enforcers (PU1+2)
- ▼ **REMOVE-3** of interest to policy makers and enforcers (PU1+2), water utilities (PU5), suppliers of remediation methods (PU6), environmental groups and NGOs (PU8)
- ▼ **PREVENT-2** of interest to policy makers and enforcers (PU1+2)
- ▼ **PREVENT-9** of interest to policy makers and enforcers (PU1+2)
- ▼ **PREVENT-5** of interest to policy makers and enforcers (PU1+2)
- ▼ **PREVENT-6** of interest to policy makers and enforcers (PU1+2)
- ▼ **PREVENT-7** of interest to policy makers and enforcers (PU1+2)
- ▼ **PRIORITIZE-1** of interest to policy makers and enforcers (PU1+2), chemical manufacturers and downstream users (PU3+4), water utilities (PU5), suppliers of remediation methods (PU6), academic networks (PU7), environmental groups and NGOs (PU8)
- ▼ **REMOVE-2** of interest to suppliers of remediation methods (PU6), environment groups and NGOs (PU8)
- ▼ **PRIORITIZE-5** of interest to policy makers and enforcers (PU1+2)
- ▼ **PREVENT-10** of interest to chemical manufacturers and downstream users (PU3+4)
- ▼ **PRIORITIZE-4** of interest to policy makers and enforcers (PU1+2)
- ▼ **REMOVE-3** of interest to policy makers and enforcers (PU1+2), water utilities (PU5), suppliers of remediation methods (PU6), environmental groups and NGOs (PU8)

Economic Impact: Increase innovation through safe alternatives

ZeroPM will use methods developed in the growing field of chemicals alternatives assessment (CAA) in order to identify sustainable alternatives to harmful PM substances. Additional alternatives will be identified in ZeroPM by applying novel cheminformatics algorithms on the comprehensive use database for the global chemical inventory. In order to assure that the alternatives suggested by ZeroPM are safer, the novel risk assessment approach to be developed will be used for the alternatives in the second phase of ZeroPM (from month 30).

Results to be disseminated and PU group expected to be interested:

- ▼ **PREVENT-10** of interest to chemical manufacturers and downstream users (PU3+4)
- ▼ **PRIORITIZE-1** of interest to policy makers and enforcers (PU1+2), chemical manufacturers and downstream users (PU3+4), water utilities (PU5), suppliers of remediation methods
- ▼ **PRIORITIZE-8** of interest to policy makers and enforcers (PU1+2)

Economic Impact: Support the market for greener products

The competitiveness and growth of companies will be focused on in ZeroPM via the production of web-based tools, in collaboration with chemical manufacturers and chemical



downstream users in order that opportunities to move towards greener products are highlighted. ZeroPM will use an existing online tool, the Marketplace which gathers all green chemistry innovations in one place and makes it easier for companies to choose safer solutions, to aid this goal. In addition, the SIN List will inform companies and other stakeholders about relevant PM substances that are likely to be considered for forthcoming regulation. ZeroPM will help to identify potentially harmful PM substances that will be added to the SIN list.

Results to be disseminated and PU group expected to be interested:

- ▼ **PREVENT-12** of interest to policy makers and enforcers (PU1+2) and chemical manufacturers and downstream users (PU3+4)
- ▼ **PREVENT-11** of interest to chemical manufacturers and downstream users (PU3+4)
- ▼ **PREVENT-10** of interest to chemical manufacturers and downstream users (PU3+4)

Societal Impact: understanding of barriers for the adoption of preventative solutions

ZeroPM will identify barriers to the adoption of preventative solutions. ZeroPM will address the seeming mismatch between the way regulators use and enforce policy to meet their goals and the way others use and implement the same policy. ZeroPM will do this by bringing together the perspectives of industry, policymakers, and civil society interest groups to ensure that perceptions of risks and benefits that drive consumer consumption patterns are understood. ZeroPM will identify points of consensus and conflict to inform policy and voluntary solutions. The uptake of alternatives and the use of mitigation solutions, through technical or behavioural solutions will also be explored. This will ultimately enable the design of more robust policies and help successful implementation of preventive solutions.

Results to be disseminated and PU group expected to be interested:

- ▼ **PREVENT-10** of interest to policy makers and enforcers (PU1+2)
- ▼ **PREVENT-3** of interest to policy makers and enforcers (PU1+2) and chemical manufacturers and downstream users (PU3+4)

Societal Impact: Meet the Sustainable Development Goals (SDG) and broader sustainability principles

ZeroPM will address *SGD3 ensure healthy lives and promoting well-being for all at all ages*, target 3.9 reduce the number of deaths and illnesses from hazardous chemicals and pollution. ZeroPM will promote preventative solutions that reduce the amount of harmful PM substances in the environment, thus reducing their potential uptake to humans. ZeroPM will further address *SDG 6 Clean water and sanitation*, target 6.3 "By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally". ZeroPM's solutions are designed to reduce pollution. ZeroPM will also address *SDG 12 Responsible consumption and production*, target 12.6 "Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle". ZeroPM will work closely with chemical manufacturers and downstream users in order to highlight the sustainable alternatives to hazardous PM substances that are identified in ZeroPM. ZeroPM will ensure that one SDG is not met at the expense of another, specifically related to substitution and avoiding regrettable substitution, resource use and climatic impacts.

Results to be disseminated and PU group expected to be interested:



- ▼ **PREVENT-2** of interest to policy makers and enforcers (PU1+2)
- ▼ **PREVENT-10** of interest to chemical manufacturers and downstream users (PU3+4)
- ▼ **PREVENT-6** of interest to policy makers and enforcers (PU1+2)
- ▼ **PREVENT-7** of interest to policy makers and enforcers (PU1+2)
- ▼ **PREVENT-11** of interest to chemical manufacturers and downstream users (PU3+4)
- ▼ **PRIORITIZE-1** of interest to policy makers and enforcers (PU1+2), chemical manufacturers and downstream users (PU3+4), water utilities (PU5), suppliers of remediation methods
- ▼ **PRIORITIZE-8** of interest to policy makers and enforcers (PU1+2)
- ▼ **REMOVE-2** of interest to water utilities (PU5), suppliers of remediation methods (PU6), environment groups and NGOs (PU8)

5 Dissemination activities

ZeroPM has identified multiple dissemination activities that will be used to inform about results and make them available. These are shown in Figure 3 grouped according to whether they are written means or events. An overview is given in Table 8 and additional details are included in the subsequent chapters.

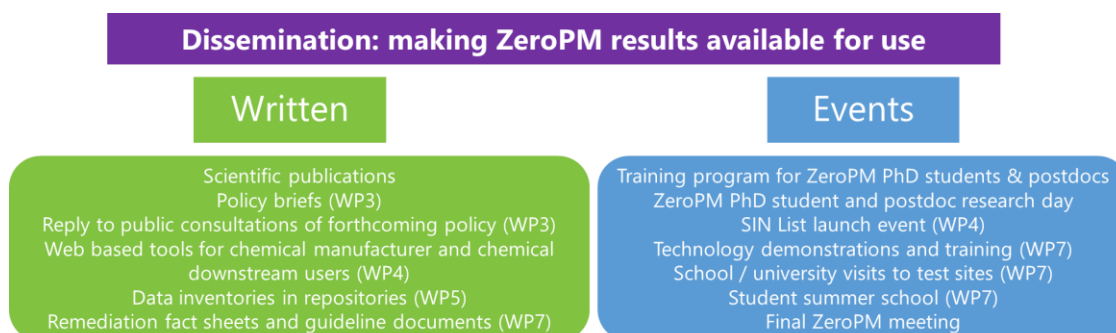


Figure 3: The written forms of dissemination and the dissemination events to be carried out in ZeroPM

Table 8: Further details of the dissemination activities planned in ZeroPM

Activity	Description	PU	Expected impact	Impact area
Scientific publications	Scientific findings reported as OA publications. Special attention will be paid to collaborative papers submitted to high impact internationally peer-reviewed journals.	PU 8	Contribute to scientific excellence and ensure ZeroPMs' legacy.	Science
Policy briefs	Expected policy briefings will describe the objectives of the options proposed (i.e. the ban of certain chemicals for non-essential uses, the promotion of sustainable alternatives), their costs and	PU 1, 2	Shape policy and result in change by influencing attitudes of policy-makers	Policy



	benefits to different actors and society in general			
Reply to public consultations of forthcoming policy	Submit collective ZeroPM input to relevant public consultations, such as Roadmaps, Inception Impact Assessments, or Open Public Consultations.	PU 1, 2	Shape policy by providing policy makers with the scientific knowledge gained in ZeroPM	Policy
Web based tools for chemical manufacturer and chemical downstream users	Guidance and information to support a market transition hosted on ZeroPM partner ChemSec's web platform. See section 3.WP4 Market transition for more details.	PU 3, 4	Support industry with tools to assist in the transition away from harmful PM substances	Industry
Data inventories in repositories	Inventories of PM substances, their properties and use deposited in open repositories.	PU 1-8	Open data and FAIR principles to support data sharing and fulfilment of ZeroPM aims	Policy, Science, Industry
Remediation fact sheets and guideline documents	Shorter factsheets and longer guideline documents to present ZeroPM's remediation solutions. Identified areas include: how to avoid large scale diffuse contaminations caused by the application of biosolids/sludge containing PM substances to agricultural areas, guidelines for the efficient and economical operation of the developed systems for water and sludge, factsheet about passive sampling tools for time-integrative sampling of selected PM substances and factsheet about nontarget analyses of a wider range of PM substances.	PU 5,6	Provide water utilities and companies working with remediation solutions with knowledge related to PM substance load reduction. Support policy development and decision-making in cases of PM substance polluted water and sludge.	Industry
Training program for ZeroPM PhD students and postdocs	PhDs and postdocs involved in ZeroPM will be invited to two seminars per WP leader to provide information about WP results, illustrate ways for cross WP collaboration at the student level	PU 8	Increase knowledge exchange and capacity building for young minds.	Science
ZeroPM PhD student and postdoc research day	All PhDs and postdocs will organize a research day supported by the communications team (see section 3.2) in order to showcase their work	PU8	Exchange of knowledge across ZeroPM. Support younger researchers	Science
SIN List update launch event	A high profile, one day event, held most likely in Brussels to launch the update of the SIN List to include prioritized PM substances. See section 3.1	PU 1-8	Provide companies, policy makers, and other SIN List users with knowledge to help transition to safer alternatives	Policy, Industry
Technology demonstrations and training	Two demonstration days where the successful technologies to treat water and sludge are showcased at ZeroPM test sites (section 3.1)	PU 5,6	Support decision making at the test sites, showcase pilot treatments and results.	Industry
School / university visits to test sites	Local school and university students will be invited to visit the test sites and involved in stimulating learning activities	PU 8, 9	Engage young minds in the possibilities within the environmental technology industry	Industry, Society
Student summer school	A 3 day summer school in Lesvos, Greece in 2025 to educate students about sludge and water management,	PU 8	Educate younger researchers who are especially interested in	Science



	PM substances and remediation solutions including a visit to the test site.		remediation of PM substance pollution.	
Final ZeroPM meeting	The final ZeroPM meeting will be proposed as a Society of Environmental Toxicology and Chemistry (SETAC) high-profile Pellston workshop or a Gordon Research Conference	PU 1-8	Contribute to scientific excellence and ensure ZeroPMs' legacy	Science, policy, industry

5.1 Website, social media and branding

The ZeroPM website (www.zeropm.eu), social media (SM) accounts (e.g. twitter and LinkedIn) and ZeroPM branding form both communication and dissemination channels. Results from activities will be profiled on the website and via the SM outlets and all dissemination material will be ZeroPM branded. For more information the reader is referred to Deliverable 8.2 ZeroPM website and Deliverable 8.3: The ZeroPM Communication plan.

5.2 Scientific publications

ZeroPM will produce scientific publications based on project results. Engagement of PhD students and postdocs is also very important in this regard as these young scientists will carry out much of the work to be done. Table 9 shows the number of PhD students and postdocs that are foreseen in each of the WPs.

Table 9: PhD students and postdocs involved in ZeroPM

Work package number	PhD students	Postdocs	Status March 2022
WP1	-	-	None foreseen
WP2	3	1	All started contracted periods
WP3	1	-	Started contracted period, no further foreseen
WP4			None foreseen
WP5	1 or 2	1 or 2	Total of 3 positions will be taken up by October 2022
WP6	2	1	One PhD student and the postdoc have started. Final PhD to start by May 2022
WP7	3	1	2 PhD students started contracted periods. One PhD student and one postdoc to take up posts by August 2022
WP8	-	-	None foreseen

Table 10 shows potential journals that ZeroPM work can be published in. The KPI used to monitor the scientific publications is the number of papers published. All KPI are provided in section 6.



Table 10: Potential journals to publish ZeroPM work in

Journal	Impact factor
Science	47.73
Nature	14.96
Scientific Reports	5.13
Environmental Science and Technology	9.03
Environmental Au	New journal for 2021
Environmental Sciences Europe	5.89
Chemosphere	7.01
Science of the Total Environment	7.96
Environmental Pollution	8.04
Water Research	11.24
Desalination	9.50
Chemical Engineering Journal	13.27
Advances in water resources	4.51
Journal of hazardous material	10.59
Environmental Science Processes and Impacts	4.24
Environmental Toxicology and Pharmacology	4.86
International Journal of Molecular Sciences	5.54
Environmental Health Perspectives	9.03
Toxicology Letters	4.37
Environment International	9.62
Journal of Environmental Psychology	5.19
Frontiers in Psychology	2.78

5.2.1 Open access to scientific publications

Publishing will be as according to the ZeroPM Grant Agreement, article 29.2: Open access to scientific publications:

Each beneficiary must ensure open access (free of charge online access for any user) to all peer-reviewed scientific publications relating to its results.

In particular, it must:

(a) as soon as possible and at the latest on publication, deposit a machine-readable electronic copy of the published version or final peer-reviewed manuscript accepted for publication in a repository for scientific publications;

Moreover, the beneficiary must aim to deposit at the same time the research data needed to validate the results presented in the deposited scientific publications.

(b) ensure open access to the deposited publication — via the repository — at the latest:

(i) on publication, if an electronic version is available for free via the publisher, or

(ii) within six months of publication (twelve months for publications in the social sciences and humanities) in any other case.

(c) ensure open access — via the repository — to the bibliographic metadata that identify the deposited publication.

The bibliographic metadata must be in a standard format and must include all of the following:

- the terms “European Union (EU)” and “Horizon 2020”;



- the name of the action, acronym and grant number;
- the publication date, and length of embargo period if applicable, and
- a persistent identifier.

5.3 Policy briefs

WP3 Policy in ZeroPM will carry out a task dedicated to the synthesis and development of policy messages. Policy messages will be iteratively developed throughout the project, aiming to feed into ongoing policy initiatives. The synthesis will summarize key findings and recommendations for each group of PM substances, uses or sector. From these findings and recommendations, policy briefs will be prepared. Each policy brief will include a description of the particular issue, policy messages and recommendations for actions. The briefs will be aimed at government policy makers and others who are interested in formulating or influencing policy. To date, there are three policy briefs that have been conceived and are detailed below:

- ▼ Brief 1: Results from task 3.1 related to the review and regulatory watch of the EU's zero-pollution policy objectives, actions, needs and challenges.
- ▼ Brief 2: Results from task 3.2 related to the analysis of opportunities and gaps in the existing policy/legal framework for preventing selected PM substances from entering the environment
- ▼ Brief 3: Results from task 3.3 related to the development and assessment of policy options for preventing and minimising emission of hazardous PM substances

Additional policy briefs may be prepared depending on findings and changes in the political climate that take place during ZeroPM. Policy briefs may also be produced in collaboration with the sister projects funded under Topic 8.1 and Topic 8.2 (detailed in Deliverable 8.3: The ZeroPM communication plan under Clustering activities). The KPI used to monitor the policy briefs is the number of policy briefs produced. All KPI are provided in section 6.

5.4 Reply to public consultations of forthcoming policy

The rapidly moving political arena that ZeroPM is working in means that there is a very high likelihood for public consultations of forthcoming policy to occur during the course of ZeroPM. ZeroPM partners will submit collective as well as individual partner responses to roadmaps, inception impact assessments and open public consultations. The European Commissions "Have your say" website will be used as the means the deliver the replies (https://ec.europa.eu/info/law/better-regulation/have-your-say_en). The website is the portal for citizens and businesses can share their views on new EU policies and existing laws. WP3 Policy will be responsible for alerting other partners to forthcoming public consultations. By providing policy makers with the scientific knowledge gained in ZeroPM, the project will have the possibility to shape policy.

The KPI used to monitor the reply to public consultation of forthcoming policy is the number of public consultations replied to, either from individual partners or collectively under ZeroPM. All KPI are provided in section 6.



5.5 Web based tools for chemical manufacturers and chemical downstream users

Within WP4 Market Transition in ZeroPM, a number of web-based tools will be developed for chemical manufacturers and chemical downstream users. Table 11 gives an overview of the tools. The tools will provide guidance and information to support a market transition and will be hosted on ZeroPM partner ChemSec's web platform. Dissemination will be strengthened by outreach and promotion of the tools through social media, digital marketing, and speaking at conferences and fairs.

Table 11: Overview of the ZeroPM web-based tools to be produced

Name of tool	Related ZeroPM task	Description of tool
PFAS guide	Task 4.2 PFAS guide for downstream chemical companies	A user friendly PFAS guide for companies to identify PFAS in their products or manufacturing processes. Will build on the PFAS movement established by ChemSec which is a group of companies who are proactive to removing PFAS. These committed companies have expressed their challenges in understanding which products that might contain PFAS and where substitution is needed. Existing and forthcoming scientific publications and databases will be translated in to a user friendly interactive online searchable database. An iterative step will be built in for members of the ChemSec business group (PU4) to provide feedback for improvement
PM substance alternatives on the Marketplace	Task 4.3 Highlighting PM substance alternatives from chemical manufacturers on the ChemSec Marketplace	The ChemSec Marketplace allows chemical producers of safer alternatives to advertise their products free of charge. Companies looking for safer alternatives can also advertise their needs. The Marketplace is used by ECHA with a posting seeking information on alternatives included in the REACH authorisation process. The Marketplace will be expanded with up to 80 alternatives to harmful substances. The platform will be programmed to include a subsection for PM substances alternatives.
SIN List update web-based tool	Task 4.4 Adding new PM substances to the SIN List, to guide substitution efforts for both chemical producers and users	The SIN List will be updated with new harmful PM substances using information from all WPs and by including second opinions from scientists and governmental representatives outside ZeroPM. A report of the findings above, with the top targeted PM substances, will be prepared. This dossier will be published on the SIN List website and the accompanying database will be updated to provide information on these substances, the concerns, where they might be found and how they can be substituted.

The KPI used to monitor the web-based tools for chemical manufacturers and downstream users is the number of hits on all tools. All KPI are provided in section 6.



5.6 Data inventories in repositories

The ZeroPM Grant Agreement Article **29.3 Open access to research data** will be followed. This article states:

Regarding the digital research data generated in the action ('data'), the beneficiaries must:

(a) deposit in a research data repository and take measures to make it possible for third parties to access, mine, exploit, reproduce and disseminate — free of charge for any user — the following:

(i) the data, including associated metadata, needed to validate the results presented in scientific publications, as soon as possible;

(ii) not applicable;

(iii) other data, including associated metadata, as specified and within the deadlines laid down in the 'data management plan' (see Annex 1);

(b) provide information — via the repository — about tools and instruments at the disposal of the beneficiaries and necessary for validating the results (and — where possible — provide the tools and instruments themselves).

This does not change the obligation to protect results in Article 27, the confidentiality obligations in Article 36, the security obligations in Article 37 or the obligations to protect personal data in Article 39, all of which still apply.

As an exception, the beneficiaries do not have to ensure open access to specific parts of their research data under Point (a)(i) and (iii), if the achievement of the action's main objective (as described in Annex 1) would be jeopardised by making those specific parts of the research data openly accessible. In this case, the data management plan must contain the reasons for not giving access.

ZeroPM will produce several data inventories and use several repositories for data storage and preservation. The central data inventory will be built at NGI using their IT infrastructure. It is a new, long-term goal, since the proposal that the complete ZeroPM database will be available to all via the ZeroPM website. For this we will make a graphical user interface (GUI), similar to that of the ECHA website, so that users can select what types of chemicals and properties they would like to extract from the ZeroPM database. The database in its entirety will be based on FAIR principles. More information can be found in Deliverable 1.1: The data management plan.

Until the complete ZeroPM database is ready for sharing, portions of that database, as well as data sets of data generated within the project, will be available on open access repositories, as well as tools developed for building and analysing the database.

These include:



- **Zenodo:** ZeroPM community – for uploading key presentations, publications, data sets, and other results.
- <https://zenodo.org/communities/zeropm-h2020/?page=1&size=20>



- **GitHub:** Repository for tools used to build and analyse the ZeroPM database
- <https://github.com/ZeroPM-H2020>

PubChem

- **Pubchem:** Data that is collected and produced by ZeroPM will be synched with PubChem, so that outputs from the project can be accessible within the PubChem data fact sheets, and to give ZeroPM members more information about each substance than what will be compiled in the ZeroPM database.
- ZeroPM entries to Pubchem will be found here: <https://pubchem.ncbi.nlm.nih.gov/source/25168>

Using these data inventories and repositories will ensure long term preservation and access to data produced by ZeroPM.

5.7 Remediation fact sheets and guideline documents

WP7 Technical solutions will work with novel remediation solutions for PM substances in water and sludge. One of the key dissemination means from the WP is fact sheets and longer guideline documents where the remediation solutions will be presented; these include:

- ▼ Factsheet about passive sampling tools for time-integrative sampling of selected PM substances and factsheet about nontarget analyses of a wider range of PM substances.
- ▼ Factsheet about how to avoid large scale diffuse PM substance contaminations caused by the application of biosolids/sludge to agricultural areas,
- ▼ Guidelines for the sustainable operation of the remediation solutions developed for water and sludge,

These factsheets and guidelines will provide water utilities and companies working with remediation solutions with knowledge related to PM substance load reduction. They will also support policy development and decision-making in cases of PM substance polluted



water and sludge. The KPI used to monitor the remediation fact sheets and guidelines is the number of downloads (section 6)

5.8 ZeroPM PhD student and postdoc forum

The opportunity that ZeroPM brings for the PhD students and postdocs is very valuable. Being involved in a large European project provides an extra dimension for the students. In order to maximise their activities, scientific output and dissemination efforts, a ZeroPM PhD student and postdoc forum has been started. The vast majority of PhD students and postdocs will be recruited by August 2022 (see Table 9). The forum will be run by the PC and one other member of the consortium who is not a WP leader or involved in the Communications team.

The aims of the forum will be to provide an arena for the PhD students and postdocs to meet and learn about what each other are doing, to establish collaborations at the student level, to learn about how to disseminate and communicate, and importantly to provide a more informal platform to support them. The forum should enhance links between researchers and WPs and facilitate research activities. Meetings will be organised that include the following topics:

- ▼ Presentations from the PhD students and postdocs about their work
- ▼ Presentations from the WP leaders about the WPs
- ▼ Presentations from the PC about proposal writing
- ▼ Presentations from consortium members who are journal editors to talk about publishing
- ▼ Presentations from external people to provide inspirational talks about their work or careers. The EPUG, EEAB and ZeroPM monitoring team will be contacted for this.
- ▼ Informal online social events with a mixture of presentations and socializing

The KPI used to monitor the training program is the number of students attending (section 6).

5.9 PhD student and postdoc research days

A further activity for PhD students and postdocs involved in ZeroPM is research days which will take place biannually, or possibly annually depending on whether the event coincides with other ZeroPM in person activities. The days will be organised by the same people as the PhD student and postdoc forum.

The first research day will be planned to take place at the same time as the Prevention workshop (described in Deliverable 8.3 – The ZeroPM Communication plan). PhD students and postdocs will be invited to make posters about their work to a wide audience. At further events they will be invited to pitch their idea, give longer presentations or contribute to ZeroPM films and podcasts. Dissemination outside of ZeroPM will also be targeted as the PhD students and postdocs will be encouraged to work together to write scientific articles. The KPI used to monitor the research days is the number of students attending. All KPI are provided in section 6.



5.10 SIN List update launch event

A key dissemination activity for ZeroPM is the SIN (Substitute It Now) List update launch event which is part of WP4 Market transition. The SIN List was launched in 2008 by ZeroPM partner ChemSec and has guided substitution efforts of companies by listing chemicals that are most likely to be targeted by regulation in the near future. The list pre-empts chemicals that will be regulated and supports innovation in the chemical industry. By using the criteria laid out in REACH, the SIN List presents hazardous chemicals that will likely be identified as Substances of Very High Concern (SVHCs) ahead of the slower regulatory process.

The list will be updated using information from all WPs and making the selection based on intrinsic properties (WP5), environmental and human exposure (WP6), emissions (WP5), a lack of alternatives (WP2), difficulty to remove them from the environment (WP7) and substances that have the highest potential to reach the environment under current policy/regulation (WP3). The final substances will be selected by WP4 and will be subject to second opinions from scientists and governmental representatives that are outside the ZeroPM project. This will ensure a credible and transparent approach.

The SIN List update will be launched at a high-level event in 2024, most likely in Brussels, as for earlier updates. An accompanying report will be prepared. The KPI used to monitor the SIN List update launch is the number of participants (section 6).

5.11 Technology demonstrations and training at test sites

Technology demonstrations and training activities will take place at the ZeroPM test sites and the invitation will be extended to those actively involved in the test activities, as well as stakeholders facing similar problems. The solutions developed will be explained and participants will be able to see the sites and learn about how PM substances resulted in contamination, as well as get more general information about ZeroPM. In total, six to eight technology demonstration and/or training days are foreseen spread across the ZeroPM test site (Rastatt, Upper Rhine and Mytilene) that will take place at opportune times. In some cases, this will be after the novel remediation solutions are put in to place and in other cases this will be earlier on to provide a more general training in drinking water treatment. The technology demonstrations and training will be held in a mixture of languages, where Greek, German and English will be used. During the demonstrations and training, extensive activities will be in place to ensure sufficient visibility of ZeroPM. The KPI used to monitor the technology demonstrations and training are the number of demonstrations and the number of attendees (section 6).

5.12 School / university visit to test sites

During different phases of the test site activities, local school and university students will be invited to visit the test sites. The partners responsible for the test site activities will be responsible for making contact with relevant schools. The visits will include an introductory talk, talks about PM substances in the environment, why they are problematic and how they can be remediated and stimulating learning activities and each



visit is foreseen to be held over half a day. The following provides a list of possible project work and experiments that could be carried out to engage them:

- ▼ Experiment related to water treatment using coloured dye (no PM substances will be used at the visits), some sorbents such as sand, soil, activated carbon and some solid phase microextraction cartridges
- ▼ Projects related to wastewater/sludge management at the relevant test site area and the role of Wastewater Treatment Plants as point sources of PM substances to the environment
- ▼ Projects related to water management at the relevant test site areas and the role of Wastewater Treatment Plants as point sources of PM substances to the environment
- ▼ Projects related to the water cycle in their home city, the possible sources of PM substances in the environment and the pathways through which they can contaminate water
- ▼ End of the day quiz

By offering such opportunities, ZeroPM will be able to profile the results of WP7 Technical solutions as well as engaging young minds in the possibilities within the environmental technology industry. The KPI used to monitor the visits to the test sites is the number of students who attend (section 6).

5.13 Student summer school

A 3-day summer school will be organised in Lesbos (Greece) in 2025 to educate students about sludge and water/wastewater management, PM substances and remediation solutions including a visit to the Sewage Treatment Plant of Mytilene and to the pilot-scale system that will have been constructed there for sewage sludge treatment.

During the summer school, the participants will be informed about the sources of PM substances, their common concentrations in water/wastewater and sludge samples, the ability of different water and wastewater treatment systems to remove PM substances and other organic micropollutants. Furthermore, they will be educated on the use of novel biological and thermal treatment processes for sludge treatment and they will be trained on issues related to the efficient monitoring of wastewater and sludge treatment systems. Discussions will also be held related to the existing European legislation for wastewater and sludge management and on the future challenges of wastewater/sludge treatment sector.

The summer school will be open to scholars, researchers and professionals working on water/wastewater technology issues. The course will be in English and the total number of participants will be around 30. The KPI used to monitor the student summer school is the number of students who attend (section 6).

5.14 Final ZeroPM workshops

The final ZeroPM project workshop will showcase ZeroPM results. Two approaches will be taken to the final ZeroPM workshops. The first will be to propose a Society of



Environmental Toxicology and Chemistry (SETAC) high-profile Pellston workshop or a Gordon Research Conference. SETAC Pellston workshops bring together environmental professionals to advance the state of knowledge and promote resolution of technical issues to identify solutions for pressing environmental challenges and are thus extremely well suited to disseminate the spectrum of ZeroPM results. Pellston workshops are typically attended by 40 to 60 people by invitation only which means WP leaders and task leaders from ZeroPM will attend in addition to well targeted other professionals who will be identified during ZeroPM. Solicitation of the workshop will be by host institute NGI during 2026. An alternative to the Pellston workshop is a Gordon Research Conference (GRC) which is a conference related to vital, emerging areas of science. Scientists are able to propose conferences at any time and the evaluation committee makes a selection on the 1st June each year. These events have no limit on numbers who can attend. A special series of scientific publications or a book chapter will also be targeted as an output of the workshop.

In addition, an in-person meeting will be held where the ZeroPM consortium, the EPUG, EEAB, ZeroPM monitoring team and other key stakeholders identified during ZeroPM will be invited. This workshop will be developed as the project progresses, hand in hand with the plans for the Pellston or GRC. The KPI used to monitor the final ZeroPM meeting is the number of attendees (section 6).

6 Evaluating execution

In order to monitor the impact of the dissemination activities, a timeline and criteria for evaluation must be set. To address this, ZeroPM has set measurable key performance indicators (KPI) to achieve (Table 12). Since the dissemination activities rely on the results that will be generated they will take place later on in the project than the communication activities. ZeroPM has been divided in to three phases running from month one to month nine, from month 10 to month 36 and from month 37 to month 60. The initial phase will create an initial awareness of ZeroPM and will lean heavily on communication activities. The strategic and targeted phase will direct communication in order to reach specific groups with deeper messages. The final exploitation stage will maximise impact and legacy of ZeroPM and intensify interest. Whilst the activities and the corresponding KPI have been spread out, sufficient flexibility is required to allow activities to adapt to project developments.

Table 12: Key performance indicators for dissemination activities

Project phase and corresponding key performance indicator			
	Initial awareness (M1-M9)	Strategic and targeted (M10-M36)	Exploitation (M37-M60)
Scientific publications	Number of publications over project: 35		
Policy briefs (WP3)	Number of policy briefs over project: 5		
Reply to public consultations of forthcoming policy (WP3)	Number of public consultations replied to over project: 5		



Web-based tools for chemical manufacturers and downstream users (WP4)		Number of hits (including views, downloads, unique users or unique user downloads) to all tools designed in ZeroPM: 1000	Number of hits (including views, downloads, unique users or unique user downloads) to all tools designed in ZeroPM: 3000
Data inventories (WP5)		Number of downloads / uses: 150	Number of downloads / uses: 400
Remediation factsheets and guideline documents (WP7)		Number of downloads of the factsheets and guideline documents: 150	Number of downloads of the factsheets and guideline documents: 500
Training program for PhD students and postdocs	Number of PhD students and postdocs attending events: 10		
PhD student and postdoc research day	Number of PhD students and postdocs attending events: 10		
SIN List update event (WP4)			Number of participants: >100
Technology demonstrations (WP7)		Total number of attendees: 70	Total number of attendees: 100
School / university visits to test sites (WP7)		Total number of school and university student visits to test site: 100	Total number of school and university student visits to test site: 150
Student summer school (WP7)			Number of students participating per school: 30
Final ZeroPM workshops			Number of attendees at SETAC Pellston workshop/GRC: 60/>100 Number of attended at in-person workshop: >200

Based on the evaluation of performance, the dissemination and exploitation plan will be updated and further developed. Potential weak points will be identified and mitigation measures will be put in to place.

6.1 Monitoring and evaluation of execution

In addition to qualitative targets, the execution of dissemination activities and the impact will be monitored internally by the Steering Committee and monitored externally by the ZeroPM monitoring team. Both groups will use the KPI to track activities as well as providing feedback concerning the effectiveness and impact of the dissemination activities.

The SC is the main decision-making body in ZeroPM, which is chaired by the PC and includes one representative from each partner. SC meetings will take place every six months throughout the duration of ZeroPM and will be held, as far as possible, in conjunction with other project meetings. The mandate of the SC is dictated in the CA, and decisions will be taken by consensus.



The ZeroPM monitoring team will be responsible for monitoring the overall progress made and decisions taken in order to achieve the deliverables, milestones and impact expected of ZeroPM. They will have a deep understanding of the project components, the dissemination and exploitation plan as well as the communication strategy so that they are capable of monitoring the project. The monitoring team will ensure decisions are relevant for societal, industrial and political uptake and will provide their expertise to guide this.

7 Exploitation plan

Exploitation is defined by the EU as:

"Means to make use of the results produced in an EU project in further activities (other than those covered by the project, e.g. in other research activities; in developing, creating and marketing a product, process or service; in standardisation activities)."

According to the ZeroPM Grant Agreement Article 28.1 Obligation to exploit the results:

Each beneficiary must — up to four years after the period set out in Article 3 — take measures aiming to ensure ‘exploitation’ of its results (either directly or indirectly, in particular through transfer or licensing; see Article 30) by:

- (a) using them in further research activities (outside the action);*
- (b) developing, creating or marketing a product or process;*
- (c) creating and providing a service, or*
- (d) using them in standardisation activities.*

This does not change the security obligations in Article 37, which still apply

The exploitation plan will ensure that these principles are followed.

7.1 Key exploitable results

All of ZeroPMs' market outputs will be open access and free for public use. Table 7 shows the results from ZeroPM that are suitable for dissemination. The following results are considered as those that are key exploitable results

- ▼ The web-based tools for companies will include a PFAS guide as well as the addition of 80 alternatives to PM substances on the Marketplace tool
- ▼ The remediation methods and accompanying factsheets and guideline documents
- ▼ An analysis of actions, needs, and challenges for meeting the zero pollution ambitions and identified policy opportunities and gaps for preventing selected PM substances from entering the environment

The web-based tools are strongly aimed at chemical manufacturers and downstream users (PU3+4). The information highlighted will be a catalyst for increasing the market for safer alternatives. In many cases the same companies producing the PM substances are interested in developing safer alternatives and the Marketplace tool will serve to



reduce time to market for innovative solutions. These tools will be promoted at relevant fairs and will support chemical manufacturers and chemical downstream users towards innovative products.

The remediation methods, factsheets and guideline documents are strongly aimed at water utilities (PU5) and businesses working with technical solutions (PU6). They will provide new processes and techniques, optimizing the services of those working to ensure clean water supply. Potential competitors for the implementation of technical solutions for water treatment in waterworks are private companies. These companies often have a limited product portfolio and operate under economic pressure meaning that the solutions used in waterworks are often not adapted to site specific problems. ZeroPM will be able to identify optimal solutions for the test sites as well as providing optimization potential from a neutral point of view. technology demonstrations and training events, environmental technology exhibitions and remediation

The policy analysis considering actions, needs, challenges, opportunities and gaps will be strongly aimed at policy makers and enforcers (PU1+2). The goal is that results are taken up in public policy making by transferring them to appropriate decision-makers at local, national and European levels. Policy messages will be formulated via policy briefs that will be iteratively developed throughout the project and will feed into ongoing policy initiatives.

Exploitation of the ZeroPM results will also be heightened via select dissemination measures that will extend beyond the lifetime of the project. All web-based tools will be published by ZeroPM partner ChemSec and they will remain after ZeroPM has finished. Additional funding will be sought to keep these resources up to date. WP substance grouping will produce databases and lists that will remain in the public domain and be a key dissemination tool for years to come. The pilot scale remediation solutions established during ZeroPM will also remain after project completion. These will be used by the local suppliers where they are installed.

ZeroPM will establish the Global PM substance Science Panel which will focus on the science surrounding PM substances in the environment, picking up on key actions, new regulation that has been adopted and advances made by the chemical industry and the water sector, that arise after ZeroPM has finished. Funding will be sought from bodies such as the Nordic Council of Ministries.

7.2 Beneficiary roles and responsibility

Each beneficiary will ensure exploitation of their results. Table 13 provides details about how this will be ensured.



Table 13: Responsibilities of each beneficiary for ZeroPM exploitation

Beneficiary	Exploitable results	Exploitation strategy
NGI	Databases produced in WP5 constitute a service	using them in further research activities (outside the action); creating and providing a service,
SU	Database of alternatives produced in WP2 constitute a service	using them in further research activities (outside the action); creating and providing a service,
VUA	Risk matrix and associated output in WP6 transferred to standard practice internally as well as constituting an external lab-based service. Lab methods will become standardized internal practice.	using them in further research activities (outside the action); creating and providing a service, using them in standardisation activities.
DVGW	Remediation solutions in WP7 are new processes which are a service. Lab methods will become standardized internal practice.	using them in further research activities (outside the action); developing, creating or marketing a product or process; creating and providing a service, using them in standardisation activities.
Milieu	Policy analysis in WP3 constitutes a service	using them in further research activities (outside the action); creating and providing a service,
ChemSec	Web-based tools in WP4 are openly available and constitute a service	using them in further research activities (outside the action); creating and providing a service
UBA	Policy analysis in WP3 constitutes a service	using them in further research activities (outside the action); creating and providing a service
UniLux	Databases produced in WP5 constitute a service	using them in further research activities (outside the action); creating and providing a service
UniAeg	Remediation solutions in WP7 are new processes which are a service. Lab methods will become standardized internal practice.	using them in further research activities (outside the action); developing, creating or marketing a product or process; creating and providing a service, using them in standardisation activities.
TGER	External exposure models in WP6 constitute a service	using them in further research activities (outside the action); creating and providing a service
Chalmers	Chemical and technological alternatives assessment methods in WP2 constitute a service	using them in further research activities (outside the action); creating and providing a service
NIVA	Remediation solutions in WP7 are new processes which are a service. Lab methods will become standardized internal practice.	using them in further research activities (outside the action); developing, creating or marketing a product or process;



		creating and providing a service, using them in standardisation activities.
UniVie	Social sciences method used to refine the definition of essential use in WP2 is a process	using them in further research activities (outside the action); developing, creating or marketing a product or process;
Fraunhofer ITEM	Internal exposure models in WP6 constitutes a service	using them in further research activities (outside the action); creating and providing a service,
EMPA	Databases produced in WP5 constitute a service	using them in further research activities (outside the action); creating and providing a service, or

7.3 Reporting

Reporting dissemination and exploitation activities is crucial to monitor, iterate and improve impact. Reporting will be performed by all ZeroPM beneficiaries both via internal reporting which will take place every 12 months and at the end of reporting periods. The periodic reports will be used in order to document and demonstrate communication activities and outcomes. An excel template has been made which will be used for the internal reporting. The template contains a list of the types of dissemination activities defined in the EC reporting module as well as how they are defined in ZeroPM, a list of the target audiences to be reached (both as they are listed in the EC reporting module and in relation to ZeroPM) and a more detailed tab to collect the following information about communication and dissemination activities:

- ▼ Partner name
- ▼ Dissemination activity in the reporting module
- ▼ ZeroPM dissemination activity
- ▼ Title
- ▼ Authors / presenters
- ▼ Name of event
- ▼ Target group in the reporting module
- ▼ Target group in ZeroPM
- ▼ Estimated number of persons reached (best guess)
- ▼ Number of countries reached (best guess)
- ▼ Date/period
- ▼ Location
- ▼ Web link / location in sharepoint
- ▼ Pictures taken (if needed for audit)
- ▼ IPR management activities in the form of a list of applications for patents, trademarks, registered designs, licenses, copyright/copylefted material etc





H2020 project Zero pollution of Persistent, Mobile substances
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