



**Blue  
Lakes**

**LIFE BLUE LAKES**

**LAYMAN'S REPORT**

**NO MICROPLASTICS JUST WAVES.**



Microplastics can originate from the disintegration of larger plastic materials

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#### LIFE BLUE LAKES

To reduce and prevent microplastic contamination of lakes, and to foster participation, governance, training and information concerning the LIFE Blue Lakes Project.

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#### PROJECT DETAILS:

LIFE18 GIE/IT/000813

Duration: 01/10/2019 – 30/09/2023

Total project budget: € 2,530,927

Project area: Italy, the lakes of Garda (Trentino Alto Adige, Veneto and Lombardia regions), Bracciano (Lazio region), Trasimeno, Piediluco (Umbria) and Castreccioni (Marche region).  
Germany: the lakes of Costance and Chiemsee.

Sector: information, communication and awareness-raising

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## THE OBJECTIVES

The European **LIFE Blue Lakes Project** tackles the **microplastic problem in Italian and German lakes** using an integrated approach combining actions of governance, training, technological and monitoring tools, and information and awareness-raising aimed at institutions, relevant subjects and citizens.

LIFE Blue Lakes was coordinated by Legambiente working in partnership with the District Basin Authority of the Central Apennines, the Regional Agency for the Protection of the Umbria Environment, the National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA), The Polytechnical University of the Marche Region, the Global Nature Fund and the Lake Constance Foundation.

The project was made possible thanks to the **co-funding of the European Commission through the LIFE Programme** and received contributions from PlasticsEurope and plastic material producer associations.

**The main aim of LIFE Blue Lakes was to guarantee the reduction and prevention of microplastics in the lakes** providing operative tools for the monitoring of inland waters and the treatment plants, raising the awareness of all the stakeholders.

### OTHER SPECIFIC OBJECTIVES ARE TO:

Provide support for local **administrations** located near the main Italian and German lakes and strengthen their commitment and that of the economic actors in the areas to tackling the problem of microplastics based on participation in defining good management practices and spreading circular economy models;

Collaborate with the **industries** of the main sectors involved in primary microplastic production (textiles, tyres, cosmetics) to come up with solutions that reduce and prevent further microplastic loads in the lakes;

Raise the awareness of the **Italian and German public** aiming at promoting behaviour that prevents the increase of plastic waste in lakes and, more generally, in the environment;

Improve the current **legislative framework**, influencing the policy agenda at Italian, German and European level.



NO MICROPLASTICS, JUST WAVES.

Plastic pollution is one of the main challenges of our time, but without plastic, the development of our modern society would have been impossible. It is a light, hygienic and unbreakable material that can be shaped into any form and has entered all production sectors. Because of its features, its decomposition is difficult and, therefore, it remains in the environment for extremely long periods breaking down into increasingly smaller particles. And here, another problem becomes evident under the microscope – **microplastics**.

**Particles of less than 5 millimetres, they are everywhere, but it is very difficult to quantify the presence of this growing pollutant, caused by human activities and impossible to fully remove.**

To solve a problem, you need to know what it is and, to know it, you need to have the scientific data. **For many years, most research has focused on the impact of plastics on the marine ecosystems** overshadowing the role of freshwater ecosystems, especially of lakes and reservoirs, as key components of the global plastic flows. Moreover, research on inland waters has been hindered by the lack of standardised sampling methods which has obstructed a comparison of the different studies and areas investigated.

To overcome these critical issues, the LIFE Blue Lakes project has established protocols for sampling microplastics in lakes and wastewater treatment plants. In addition, project partners have deployed training, information and awareness-raising activities on the need to prevent and reduce the presence of microplastics in lakes aimed at a wide variety of public and private stakeholders, starting from local administrators, through plastic manufacturers, local communities in the main Italian and German lakes, including tourism operators, schools and citizens.

## THE RESULTS

### MONITORING TECHNICAL PROTOCOLS FOR THE LAKES AND THE WASTEWATER AND FRESHWATER TREATMENT PLANTS.

The nucleus of these actions was the development of **standardised protocols for the designing and carrying out of seasonal microplastic monitoring programmes** in the lakes and wastewater and freshwater treatment plants.

The **protocol for the lake waters** fine-tuned by the researchers of ENEA, Arpa Umbria and Legambiente was developed over two years of work in the areas of **Bracciano and Trasimeno lakes**.

Samples were taken from 5 transects in water and 4 from beaches, studied over 4 seasonal campaigns. For each environmental matrix examined – surface water, water columns and lake beach sediment – besides the operative sampling procedure, another was carried out for laboratory analyses.

To further refine the research, in March 2022, **Lake Piediluco**, with its different geomorphological features, was added to the above research areas.

To share the protocol, 2 editions of a 3-day **training course** on monitoring lake microplastics were organised in Umbria, with the participation of **53 technicians and personnel from 15 Regional and Provincial Environmental Protection Agencies (ARPA and APPA)**. Instead, to widen the data collection, a network was strengthened through seminars and workshops to extend the research and share the methods used in another 4 bodies of water - Lake d'Orta (sub-alpine); Lake Ridracoli (artificial basin), Lake Scanno (mountain), Lake Cavazzo (karstic).

The **networking** took place in technical training seminars to exchange the knowledge acquired and reach more than 100 technicians and relevant entity referents.

Instead, the Polytechnical University of the Marche Region developed a **monitoring protocol to be applied in water service infrastructures**, which was adopted in 3 freshwater plants and 2 treatment plants situated in the lake districts of **Garda and Castreccioni**.

The plants, today, already remove using conventional procedures consistent quantities of microplastics. The researchers' work was aimed at supporting the right quantification of the microplastics to be able to better individuate the technological mitigation solutions and future assessments to be also included in the Water Safety Plan.

The protocol includes methodologies already described in the scientific literature and directly experimented with in the microplastic analyses on aqueducts, sewerage and treatment plants. However, it also identifies **the points to be sampled in the plants, the minimum number of samples to be collected, the quantity to be filtered, which type of filter to use and the best sizes of each mesh**.

Moreover, an automatic sampling prototype was specially designed to be used in water service infrastructures and was adopted during the sampling campaign. **The results obtained**

were shared with over 150 operators and technicians in the water sector, environmental professionals and experts and public and private analysis laboratories, both Italian and German. The sessions were both theoretical and practical, directly aimed at the plants and university laboratories to also transfer the methods and knowledge acquired during the project.



Maps for the sampling of microplastics in lake waters

### PARTICIPATION IN THE ITALIAN AND GERMAN PILOT AREAS TO DRAW UP THE LAKES PAPER.

The **Lakes Paper** drawn up through the participation of more than **200 stakeholders involving the areas of Garda, Bracciano, Trasimeno, Constance and Chiemsee** describes the causes of microplastic pollution, proposing measures to prevent this at local level and inform citizens about the problem, indicating virtuous behaviour to be adopted to contribute to reducing this problem.

By signing the Lakes Paper, **municipalities, regional authorities, associations and individual citizens have taken on voluntary commitments to help in reducing plastic waste**.

Each Lakes Paper is aimed at one of the five specific lakes, targets of the project and, therefore, tackles the main questions, needs and problems perceived at a local level.

To transfer this experience to other lake areas, and encourage the adoption of new participation,

the main measures in the Lakes Paper were modified and readapted into a more generic **Lakes Manifesto** that can be adopted based on the needs and problems of whatever area that is planning to tackle the problem.

Legambiente, the global network of Living Lakes and the newly set up ELLA (European Living Lakes Association) have widely promoted the Lakes Manifesto, attracting subjects from all sectors of society (government, civil society, the academic world and businesses) and fostering a debate that has led to **the adoption of the Lakes Paper by 78 stakeholders, including 13 municipalities, while the Manifesto was adopted by 27 municipalities.**



Lake Paper and Manifesto: a guideline for municipalities and stakeholders

### THE ADVOCACY CAMPAIGN FOR COSMETIC, OUTDOOR CLOTHING AND TYRE COMPANIES.

This action carried out by the German partners of Global Nature Fund and the Lake Constance Foundation, involved the 3 business sectors mainly responsible for microplastic contamination – **the cosmetic, outdoor clothing and tyre companies.**

Twenty German and international companies were involved in the roundtables specific for

each sector, with experts who encouraged them to sign a Memorandum of Understanding for a more sustainable production.

The outdoor clothing industry was the most responsive. Instead, the cosmetic industry revealed to be rather unresponsive and reluctant, preferring to wait for the drawing up of a final legislative framework by the European Chemicals Agency (ECHA).



Glitter: microplastics from cosmetics under the microscope

### THE WHITE PAPER FOR THE RELEVANT NATIONAL AUTHORITIES.

This action strengthened **the governance of the main Italian institutional actors responsible for the different water management areas.**

The District Basin Authority for the Central Apennines set up a Working Group which drew up a Lake White Paper, a shared institutional instrument regarding the knowledge and needs to deal with the problem of microplastics in inland waters at legislative level. Interviews, institutional plenary and bilateral meetings resulted in a final version of the Lakes White Paper, presented in July 2023, and which is now available to institutions and policy-makers to immediately make the solutions developed by the project and the intervention proposals in the different relevant sectors operative.

## LEGISLATIVE FRAMEWORK

The Blue Lakes Project falls within a **European and national legislative framework** which, from its drawing up to the moment of the beginning of the activities and implementation, step by step, became concrete and finalised.

- In 2008, the **EU Marine Strategy Framework Directive** (MSFD, 2008/56/EC) included microplastics as an indicator to be measured to establish the environmental status of marine waters.
- Instead, the legislation setting the indicators and limits for monitoring **inland water quality** (Water Framework Directive 2000/60) did still not consider the presence and impact of microplastics on their status.
- Over the last years, this directive has been moving towards a revision and most probably, also thanks to the contribution of the Blue Lakes Project, will include microplastics.
- The revision of the legislation on **water for human consumption** (EU Directive 2020/2184) foresees considering microplastics among the new pollutants to be monitored and controlled, with the request to harmonise the analysis methods by 12 January 2024.
- The revision of the **Urban Waste Water Treatment Directive** (Directive 91/271/EEC), still underway, will include microplastic pollution among the new pollutants to be kept under control, after having outlined a methodology for their monitoring.

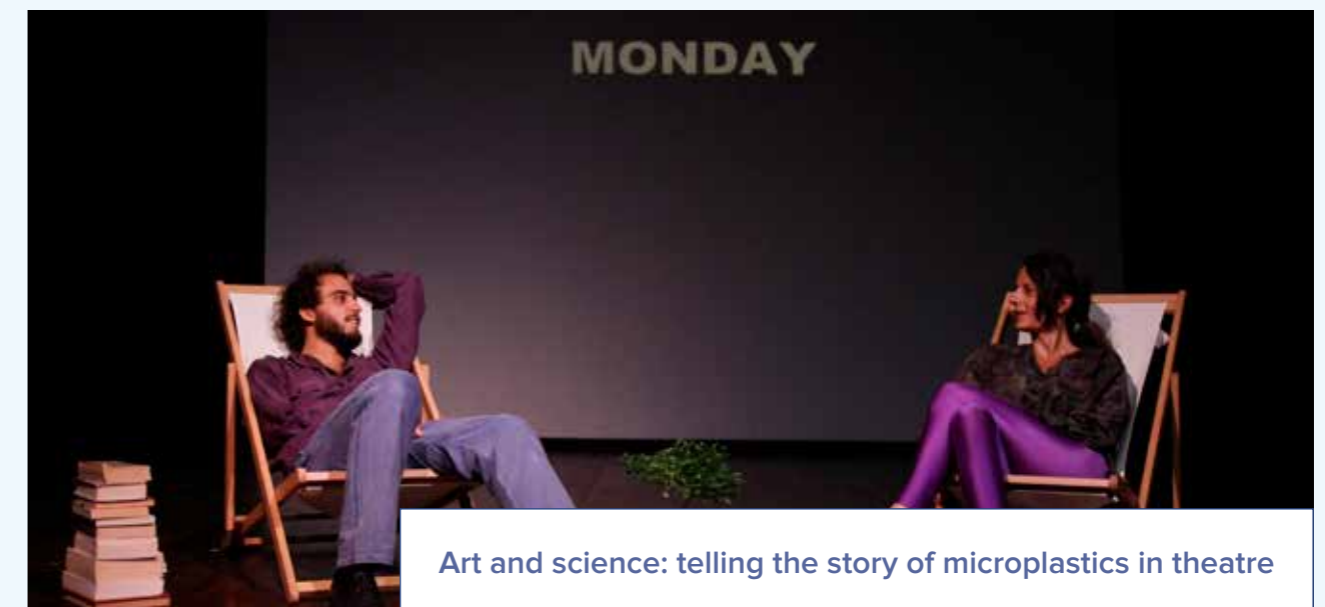
The activities carried out by the Blue Lakes Project, especially those defining the monitoring methodologies for lake waters and water treatment plants, foresaw and prepared the basis for a work forecasted by the recent new legislation that will be put into force in the next years.

and 2023, **57 classes made up of about 1,200 students and 60 teachers** were involved. Classroom lessons, meetings with project referents, workshop activities, led to the creation of audiovisual products that tell of microplastic pollution and find imaginative solutions as can only happen in classrooms.

Among the activities of citizen involvement, there were **the summer events for residents and tourists in the pilot areas called “Lakes Days” and promoted the LIFE Blue Lakes Ambassador**, young volunteers for the activities and information campaign.

And finally, the **Road Show** which in the last summer of the project promoted the **theatrical performance of “Monday”**, the workshop **“Dispersi”** (Dispersed), a **talk show** and different local activities such as “Beach Litter”, scientific aperitif events and excursions in **20 stops that involved 8 Italian regions** and lake localities, to spread messages that would otherwise not be heard, notwithstanding this worrying problem.

The theatre allowed for overcoming the barriers of emotion which do not exist in the science world and which, instead, are the drivers of all forms of art and have especially fostered people becoming more aware of the problems, to raise questions, reflect together, and spread information.



## THE AWARENESS-RAISING CAMPAIGN FOR LOCAL COMMUNITIES, SCHOOLS AND TOURISTS.

The meeting with the citizens, residents, tourists and students has allowed for starting up a collective reflection on the problem that the LIFE Blue Lakes Project wants to overcome and on the actions for which each can become an actor, to bring about change in their own area.

With the **educational programme “Blue Lakes a Scuola”**, aimed at municipalities that border on the lakes of Garda, Bracciano, Piediluco and Trasimeno, in the scholastic years of 2022



## THE FIGURES

- 5 Lake Papers** realised through as many participatory processes
- 13 Italian municipalities** have signed them
- 65 other stakeholders** who have adopted them
- 1 Lake Manifesto**
- 27 Italian municipalities** that have signed it
- 250 stakeholders** involved in the participatory process
- 50 German and international companies** reached through information and awareness-raising activities
- 20 European companies** involved in the advocacy campaign
- 4 German companies** from the textile and cosmetics industry that signed a memorandum of understanding and voluntary commitment
- 300 professionals and technicians** trained through the seminars for the application of the monitoring protocols
- 1300 teachers and pupils** involved in educational activities
- 1800 participants** at Lakes Days and conferences
- 5 international events** realised
- 5 LIFE Blue Lakes Ambassadors** appointed during project activities
- 8 Italian regions** involved in the roadshow
- 20 stages** of artistic, scientific and territorial animation events in Italy
- 13 repetitions** of the theatre show **Monday**
- 1000 spectators** attended the show
- 22 projects** involved in networking activities
- 700 articles** published in newspapers, magazines and on the web mentioning the project
- 5 million people** reached through media relations activities
- Over 62 thousand people** reached through project websites and social media

## THE PRODUCTS

- Report on good practices
- Information sheets for the 3 business sectors
- Online exhibition for the companies
- White Paper
- Lakes Manifesto
- Monitoring methodology protocol for lake waters and sediments
- Monitoring methodology protocol for treatment and drinking water plants
- Didactic kit for primary and secondary schools
- Lakes White Paper
- Transfer and replication Plan





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