



**Blue
Lakes**

LIFE BLUE LAKES

TRANSFER AND REPLICATION PLAN

NO MICROPLASTICS JUST WAVES.

1. INTRODUCTION

2. LIST OF REPLICABLE ACTIONS

3. CARD EXAMPLE OF A REPLICABLE ACTIVITY

4. REPLICABLE ACTIVITIES

4.1 CAMPAIGN FOR LOCAL AUTHORITIES AND STAKEHOLDERS

4.1.1 THE LAKE PAPER AND THE PARTICIPATORY PROCESS

4.1.2 THE LAKE PAPER AND THE ROUND TABLES

4.2 MONITORING ACTIVITIES: THE MONITORING PROTOCOL AND THE TRAINING COURSE

4.3 TRAINING AND DISSEMINATION OF THE TECHNICAL PROTOCOL FOR URBAN WATER SERVICE INFRASTRUCTURE

4.4 AWARENESS CAMPAIGN FOR COMPANIES

4.4.1 ROUND TABLES AND SPECIFIC FACT SHEETS FOR THE THREE SELECTED BUSINESS SECTORS

4.4.2 ELLA WORKSHOPS WITH INTERNATIONAL LAKE ORGANISATIONS

4.5 GOVERNANCE AT NATIONAL LEVEL

4.6 AWARENESS/DISSEMINATION CAMPAIGN

4.6.1 AWARENESS STRATEGY AND CAMPAIGN

4.6.2 THE LAKE THEATRE

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01. INTRODUCTION

AIMS/OBJECTIVES OF THE TRANSFER AND REPLICATION PLAN

The aim of this work is to illustrate, simply and effectively, some initiatives carried out under the Blue Lakes Project and, above all, to provide the practical tools being able to be developed in other European areas and, in particular, in those countries where there is a major need to support local initiatives concerning the governance of the decision-making processes on microplastics presence in the inner water.

PROJECT AND STUDY AREA

The LIFE Blue Lakes project contributes to reducing the contamination of lakes with microplastics. Exemplary project areas are the lakes Garda, Bracciano and Trasimeno in Italy and Lake Constance and Lake Chiemsee in Germany. Moreover, the Piediluco Lake (Umbria region) and the Castreccioni lake (Marche region) were also addressed by the project activities.

Lake Garda: 370 km², located between three regions (Trentino Alto Adige, Veneto and Lombardia). Tourism-oriented area.

Lake Trasimeno: 128 km², Umbria region. Nature conservation and tourism-oriented area.

Lake Bracciano: 56,5 km², Lazio region. Drinking water reservoir, nature conservation and tourism-oriented area.

Lake Piediluco: 1,85 km², Umbria region. Hydro-electric use and tourism-oriented area.

Lake Castreccioni: 2,4 km², Marche region. Artificial reservoir and tourism-oriented area.

Lake Constance: 536 km², international border between Germany, Switzerland, and Austria. Drinking water reservoir, high standards for water treatment. Nature conservation and tourism-oriented area.

Lake Chiemsee: 79.9 km², Bavaria. Nature conservation and tourism-oriented area.

LIST OF BENEFICIARIES

PARTNER: LEGAMBIENTE

ABBREV: LEGAMB

Legambiente is the most widespread environmental association in Italy. It conducts numerous awareness-raising and information campaigns on environmental issues. It is committed to fighting environmental crime, and promotes solidarity and peace. It works at a local, national and European level to foster sustainable development, the green economy and the adaptation to climate change.

PARTNER: AUTORITÀ DI BACINO DISTRETTUALE DELL'APPENNINO CENTRALE

ABBREV: ABDAC

The Central Apennines River basin District Authority is a non-economic public body established pursuant to art. 63 of Legislative Decree 152/2006 and subsequent amendments. The basin Authority, as part of the objectives established by law, aimed at ensuring soil protection, hydrogeological rehabilitation, quantitative and qualitative protection of the water resource.

PARTNER: AGENZIA REGIONALE PER LA PROTEZIONE AMBIENTALE - UMBRIA

ABBREV: ARPA

The Environmental Protection Agency of Umbria (ARPA UMBRIA) is a regional structure. Their main activities are:

- controls of chemical, physical and biological pollution on environmental matrices;
- monitoring air quality, water and soil;
- Waste;
- radiation and noise;
- management of the monitoring networks;
- implementation of information systems and environmental databases;
- technical and scientific support in the environmental assessment and primary prevention;
- technical and scientific support to the evaluation activities (EIA, SEA, IPPC);
- large industrial risks;
- environmental information and education.

PARTNER: ITALIAN NATIONAL AGENCY FOR NEW TECHNOLOGIES, ENERGY AND SUSTAINABLE ECONOMIC DEVELOPMENT

ABBREV: ENEA

It is the second major Italian research organisation, with around 2700 staff employees distributed in its 9 research centres all over the national territory. The Agency's activities are mainly focused on Energy Efficiency, Renewable Energy Sources, Nuclear Energy, Climate and the Environment, Safety and Health, New Technologies, Electric System Research.

PARTNER: GLOBAL NATURE FUND

ABBREV: GNF

Global Nature Fund is a non-profit, private, independent international foundation for the protection of environment and nature. The GNF has full charity status and is located in Germany with the headquarter at Lake Constance. GNF was founded in 1998 with the objective to foster the protection of nature and environment. GNF carries out nature & environment projects and model projects for the promotion of a sustainable economy. In 1998, the global Living Lakes network was initiated by GNF, an environmental partnership for the protection of lakes and wetlands worldwide. In 2022, the European Living Lakes Association (ELLA) was constituted by GNF and received full charitable status.

PARTNER: LAKE CONSTANCE FOUNDATION

ABBREV: LCF

The Bodensee-Stiftung (Lake Constance Foundation LCF) is an international charitable environmental foundation, created in 1994 by 6 environmental organisations from Switzerland, Austria and Germany. Main fields of activities are sustainable land use planning, water quality, sustainable use of water resources and lake management, environmental friendly tourism development, environmental friendly /organic agriculture, climate mitigation and adoption to climate change (energy saving, energy efficiency, renewable energy and transport / mobility) and protection of biodiversity and ecosystem services. LCF is a founding member of the international network "Living Lakes", member of the European network ECOTRANS for sustainable tourism development, ELSA (European Network for Soil Protection), Eco Camping for environmental and quality management on camping sites and others. LCF has a long term experience regarding environmental management. industry in Germany. LCF is involved in various projects and working groups on Business and Biodiversity.

PARTNER: UNIVERSITÀ POLITECNICA DELLE MARCHE

ABBREV: UNIVPM

The Università Politecnica delle Marche (UNIVPM) (www.univpm.it) has a clear scientific and technological focus. UNIVPM is very active and performant in European R&D&I. Sustainable urban water services and wastewater treatment and valorisation is a core expertise of the Lab of Chemical-Environmental and Sanitary Engineering at the Department of Material, Environmental and City Planning Science and Engineering (SIMAU). The WWEE Lab Research Group, coordinated by Prof. Fatone, manages several research projects funded by the main EU research programmes: HORIZON 2020, PRIMA Initiative, WATER JPI, LIFE, ENI CBC MED, Climate-KIC COSME. The research fields can be divided into the following 5 macro-areas: i) Resource recovery technologies in the urban water cycle; ii) Stormwater treatment and management; iii) Digital solutions for carbon footprinting and environmental/economic assessment; iv) Advanced water and wastewater treatment; v) Organic waste treatment and valorisation.

02. LIST OF REPLICABLE ACTIONS

WHICH ACTIVITY CAN BE REPLICATED

Campaign for local authorities and stakeholders - The Lake Paper and the Participatory Process

WITHIN WHICH ACTION IT WAS IMPLEMENTED

B1

WHAT MAKES THIS ACTIVITY SUITABLE TO BE REPLICATED

The Lake Paper is a tool specifically addressed to a particular geographical area and transferable to other lake areas. The Participatory Process can be replicated everywhere and in different contexts

WHICH IS THE TARGET OF THIS ACTIVITY

Local administrators, citizens and private stakeholders, associations

WHICH ACTIVITY CAN BE REPLICATED

Campaign for local authorities and stakeholders - The Lake Paper and the Round Tables

WITHIN WHICH ACTION IT WAS IMPLEMENTED

B1

WHAT MAKES THIS ACTIVITY SUITABLE TO BE REPLICATED

This activity can easily be replicated everywhere since through the open format, the participants can actively express themselves and contribute their thoughts, wishes and ideas. Moreover, different stakeholders can be brought to a table to discuss an issue

WHICH IS THE TARGET OF THIS ACTIVITY

Government, civil society, academia and private sector

WHICH ACTIVITY CAN BE REPLICATED

Monitoring activities: the Monitoring Protocol and the training course

WITHIN WHICH ACTION IT WAS IMPLEMENTED

B2

WHAT MAKES THIS ACTIVITY SUITABLE TO BE REPLICATED

The sharing and application of the protocol by the ARPAs through demonstration actions and networking activities on types of Italian lakes with different origins and geo-morphological characteristics makes this action interesting for the purposes of replicability functional to the still incomplete data collection for freshwater. Easily replicable also in other countries.

WHICH IS THE TARGET OF THIS ACTIVITY

The main target are the technical bodies in charge of inner water monitoring

WHICH ACTIVITY CAN BE REPLICATED

Training and dissemination of the technical protocol for urban water service infrastructure

WITHIN WHICH ACTION IT WAS IMPLEMENTED

B3 and B4

WHAT MAKES THIS ACTIVITY SUITABLE TO BE REPLICATED

Training courses can be organised in different locations, specific programs can be defined according to the targeted audience.

WHICH IS THE TARGET OF THIS ACTIVITY

Targets include professionals of the water sector, with a particular focus on drinking water and wastewater managers and operators, lab technicians and environmental agencies.

WHICH ACTIVITY CAN BE REPLICATED

Awareness campaign for companies (MOUs/events/capacity building workshops)

WITHIN WHICH ACTION IT WAS IMPLEMENTED

B5 and B7

WHAT MAKES THIS ACTIVITY SUITABLE TO BE REPLICATED

The Participatory Process implemented to involve the business sectors responsible for microplastic contamination, namely companies from the cosmetics, outdoor and tire industries to engage can be replicated everywhere and in different contexts

WHICH IS THE TARGET OF THIS ACTIVITY

Companies from the cosmetics, outdoor and tire industries

WHICH ACTIVITY CAN BE REPLICATED

Governance at national level (White Paper)

WITHIN WHICH ACTION IT WAS IMPLEMENTED

B6

WHAT MAKES THIS ACTIVITY SUITABLE TO BE REPLICATED

The activity provides a spectrum of solutions according to their technical-economic and social sustainability and suggests governance indications aimed at achieving an effective reduction of microplastics in lakes. Replicable in other countries at national level.

WHICH IS THE TARGET OF THIS ACTIVITY

Public and private actors (i.e National Association of Italian Municipalities - ANCI -, the Italian Federation of Companies Operating in Public Water, Electricity and Gas Services - Utilitalia)

WHICH ACTIVITY CAN BE REPLICATED

Awareness/dissemination campaign (Lake Days/activity with schools/activity with general public/Lake Theatre)

WITHIN WHICH ACTION IT WAS IMPLEMENTED

D2

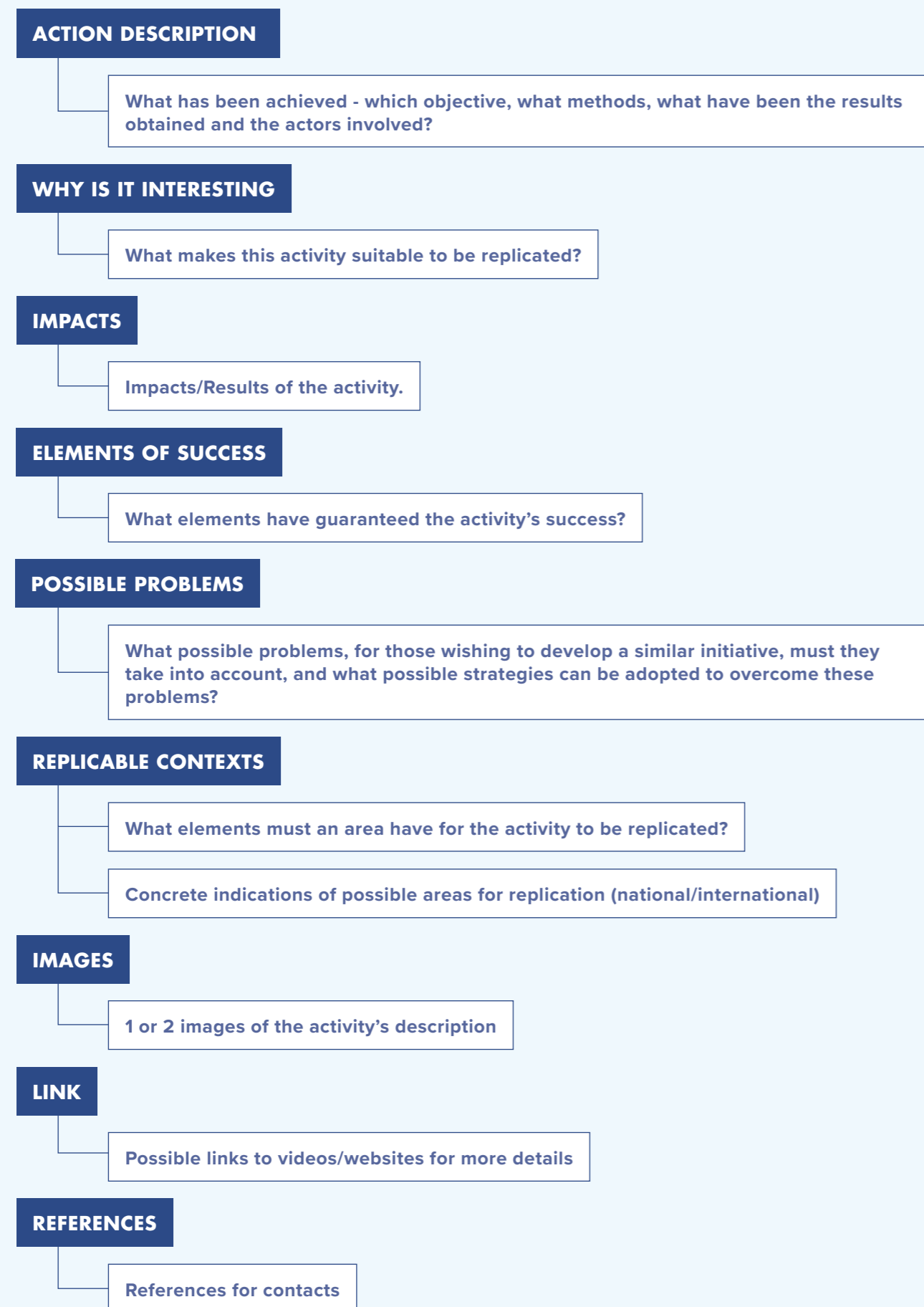
WHAT MAKES THIS ACTIVITY SUITABLE TO BE REPLICATED

These actions aroused interest in the target groups, especially because the scientific theme of microplastics was effectively conveyed through the combination of different languages – education, citizen science, informal education, local events and visual communication. The artistic language encouraged the bringing together of different contexts, allowing for addressing the different targets which otherwise would not have been able to be reached.

WHICH IS THE TARGET OF THIS ACTIVITY

Civil society, school sector, tourists

03. CARD EXAMPLE OF A REPLICABLE ACTIVITY



04. REPLICABLE ACTIVITIES

4.1 CAMPAIGN FOR LOCAL AUTHORITIES AND STAKEHOLDERS

4.1.1 THE LAKE PAPER AND THE PARTICIPATORY PROCESS

ACTION DESCRIPTION (ACTIVITY IN ITALY)

This activity was carried on by LEGAMB in Italy. The Lake Papers drafted within the LIFE Blue Lakes project are specifically addressed to three geographical areas (Bracciano, Garda and Trasimeno). Any Lake Paper includes a list of 10 principles covering various aspects (e.g. policy making, business, daily life, etc.) aimed at reducing the threat posed by micro-plastic to the lake's ecosystem and improve life quality for the lake communities. This document is a voluntary tool addressed to local administrators, citizens and private stakeholders and it was drafted through a specific participatory process (PP) subdivided into three phases:

Preliminary Phase: finalised to identify and involve the categories of stakeholders through semi-structured interviews for the definition of the context. Interviews/ phone calls with local authorities, research organisations and fishery institutes were implemented, providing a concrete overview of the situation and defining the strategic relevant members of the focus groups. A matrix was elaborated as a first draft to discuss measures and to evaluate with the experts in the participatory process the impact.

Initial Phase. Implementation of 3 presentation seminars (one for each targeted Italian lake) in order to involve all the mapped stakeholders of each lake. Due to Covid-19 pandemic emergency the live seminars turned out to be webinars.

The 3 webinars were aimed to:

- present the LIFE Blue lakes project in detail;
- highlight, through the collaboration of experts, the problem of micro-plastics and the potential impacts on lake ecosystems human health;
- present the development of the participatory process,
- illustrate the specific draft of the lake paper and the online platform.

During the 3 webinars, an online platform for the collection of feedback and suggestions was presented. This participatory tool allowed participants not only to read the draft of the 3 Lake Papers, prepared on the basis of the information collected in the activities of the preliminary phase, but also to collect their additional feedback and suggestions, leading to

an active interaction. The webinars were addressed both to stakeholders already involved in the interviews or "mapped" through them and those who wanted to be involved later on in the project.

Central Phase: finalised to share views and opinions between the different actors on microplastics related issues (e.g. waste management strategies, sustainability of economic activities, citizens' information needs; etc.), in order to define a list of commitments for each stakeholder to promote the reduction of plastic use and to accelerate the process for plastic ban. The Central Phase was developed as follow:

- **9 Participatory seminars**, 3 for each lake addressing 3 different stakeholders: Public administrators; economic operators (tourism sector, fishermen, etc.); and environmental and sport associations operating in the targeted lakes.
- **3 Presentation seminars** for each lake targeting all the involved stakeholders.

The objectives of the **3 Participatory seminars** were:

- to share the draft of the Lake Paper developed thanks to the contributions collected through the online platform;
- to promote a discussion among the various stakeholders to collect their different points of view on Lake Paper specific aspects and integrate them in the document where deemed necessary;
- to share the main commitments that each stakeholder has taken, thus contributing to build a pact of mutual responsibility.

After the participatory seminars, the online consultation for the collection of suggestions and integrations of each Lake Paper continued for several weeks and the final version of the Lake Paper was released at the end of this consultation and it was promoted in order to be formally adopted (Final phase).

WHY IS IT INTERESTING

The Lake Paper drafted within the LIFE Blue Lakes project describes the causes of microplastic pollution, proposes measures to prevent microplastics and informs citizens on how they can be made aware of and informed about the problem. It is aimed at municipalities, districts, regional authorities and social groups and offers assistance by means of a list of measures to prevent microplastics. It also constitutes a voluntary commitment to engage them in the fight against microplastics. The innovative aspect of the Lake Paper is that it brings together, in one single document, the viewpoints and varying degrees of knowledge and perception of the different stakeholders who face the issue of micro plastic and plastic pollution, increasing their awareness on this topic and their responsibility for the reduction of this phenomena.

IMPACTS

The main impacts of this activity is the increasing of awareness about the microplastics

presence and effect, the reduction of plastic waste, the promotion of approaches and strategies on how to tackle the challenge of microplastics.

ELEMENTS OF SUCCESS

The Lake Paper constitutes a voluntary tool to contribute to the reduction of plastic waste, through the identification of possible individual measures that could contribute to the reduction of waste in general and the avoidance of microplastics in particular. It is subdivided into different areas of everyday communal life. In each area, individual measures are described as proposals for action, but no binding part of the voluntary commitment is foresaw. Therefore, any stakeholder can contribute to plastic waste reduction, providing their own contribution according to their own skills, role and competence. Moreover, the Lake Paper is a tool specifically addressed to a particular geographic area (say Bracciano Lake, Garda Lake and Trasimeno Lake) thus addressing the main issues, needs and criticalities perceived at local level. Consequently, the adoption and the application of these three Lake Papers are more feasible. At the same time, these tools are transferable to other lake areas, by modifying and readapting the main measures to be adopted according to the needs/criticalities at local level.

POSSIBLE PROBLEMS

Being the Lake Paper a voluntary act, this could lead to the risk of commitments made by individual stakeholders not being taken seriously. However, this problem could be curbed by monitoring the activity of the municipalities, associations and other stakeholders who have signed up to the Lake Paper in order to support/remind them of their commitments.

As regard the implementation of the Participatory Process, the sanitary emergency due to Covid-19 forced has to organise only virtual meetings. These meetings undoubtedly have the added value to reach more people than in person meetings. Otherwise, the discussion among the participants is likely to be less dynamic and interactive during virtual meetings. Therefore, the best solution could be a Participatory Process including both virtual and in person meetings.

REPLICABLE CONTEXTS

The action is replicable in other national and international lake communities

LINK

Carta del lago di Garda <https://lifebluelakes.eu/wp-content/uploads/2021/08/Carta-del-Lago-di-Garda.pdf>

Carta del lago di Bracciano https://lifebluelakes.eu/wp-content/uploads/2021/11/Carta-del-Lago-di-Bracciano_DEF.pdf

Carta del lago Trasimeno <https://lifebluelakes.eu/wp-content/uploads/2021/11/Carta-del-Lago-Trasimeno-2.pdf>

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Chiara Braschi c.braschi@legambiente.it - Stefania Di Vito s.divito@legambiente.it - Elisa Scocchera e.scocchera@legambiente.it - Fabrizio Soddu f.soddu@legambiente.it

IMAGES



4.1.2 THE LAKE PAPER AND THE ROUND TABLES

ACTION DESCRIPTION (ACTIVITY IN GERMANY)

This activity was carried on by GNF and LCF in Germany. The German version of the Lake Paper was drafted in accordance with the Italian version and the document was promoted through round tables. A central goal of the Round Tables on the Lake Paper was to inform and involve communities and convince them to sign the Lake Paper. Round Tables have been held on-site but primarily online (due to Covid-19).

WHY IS IT INTERESTING

Like many lake regions in central Europe the Lake Constance region profits from its roles as leisure destination and tourist magnet and drinking water reservoir. However, many lakes

are both well protected against new pollution that endanger water quality and biodiversity. Microplastics have only recently been identified as a new threat. The Lake Paper helps to reduce and prevent microplastics and plastic waste pollution in and around lakes. It contains (easily) replicable voluntary commitments and measures for municipalities to protect lakes and their tributaries from plastic waste and microplastic pollution and to take measures to prevent plastic waste from accumulating in the first place. The most important aspect of the Lake Paper is to illustrate good examples, sensitise and actively involve citizens.

The Lake Paper provides tools & measures in a matrix divided into different areas of public life ranging from fishing to weekly markets that describe what can be done and concretely applicable by almost every municipality in Europe. The global Living Lakes network, as well as the newly constituted ELLA (European Living Lakes Association) promoted the Lake Paper widely - from Lake Constance to the whole world. This is interesting because the open format attracts various stakeholders from all sectors of society (Government, Civil Society, Academia and Private Sector), even if they have different views, and allows for discussion, as opposed to just a lecture. Hence, very different stakeholders can be brought to a table to discuss an issue (here Micro Plastics) together.

IMPACTS

The activity helps to create attention to a particular issue, in this case micro plastics. After joint discussions, the communities have been more sensitised to the topic and it got more likely that they will sign the Lake Paper.

ELEMENTS OF SUCCESS

The stakeholders must be actively involved in the preparation process. Only when all their wishes and comments have been taken into account, they feel involved in the process and agree to joint measures to combat the micro plastic problem. It takes time to create a favourable atmosphere and trust. Round tables are a very good tool to promote the Lake Paper, since they allow to bring together several stakeholders in an open and constructive atmosphere.

Through the open format, the participants can actively express themselves and contribute their thoughts, wishes and ideas.

POSSIBLE PROBLEMS

One big problem was that the sanitary situation due to Covid-19 slowed down the process and made personal contacts almost impossible in the beginning of the project. The advantage of the Round Table approach is that they can also be organised in a virtual format.

REPLICABLE CONTEXTS

This approach has a very high level of replicability to other geographic contexts and other topics and contents. No specific elements are needed. A good connection to the target group (here regional communities) is an advantage.

LINK

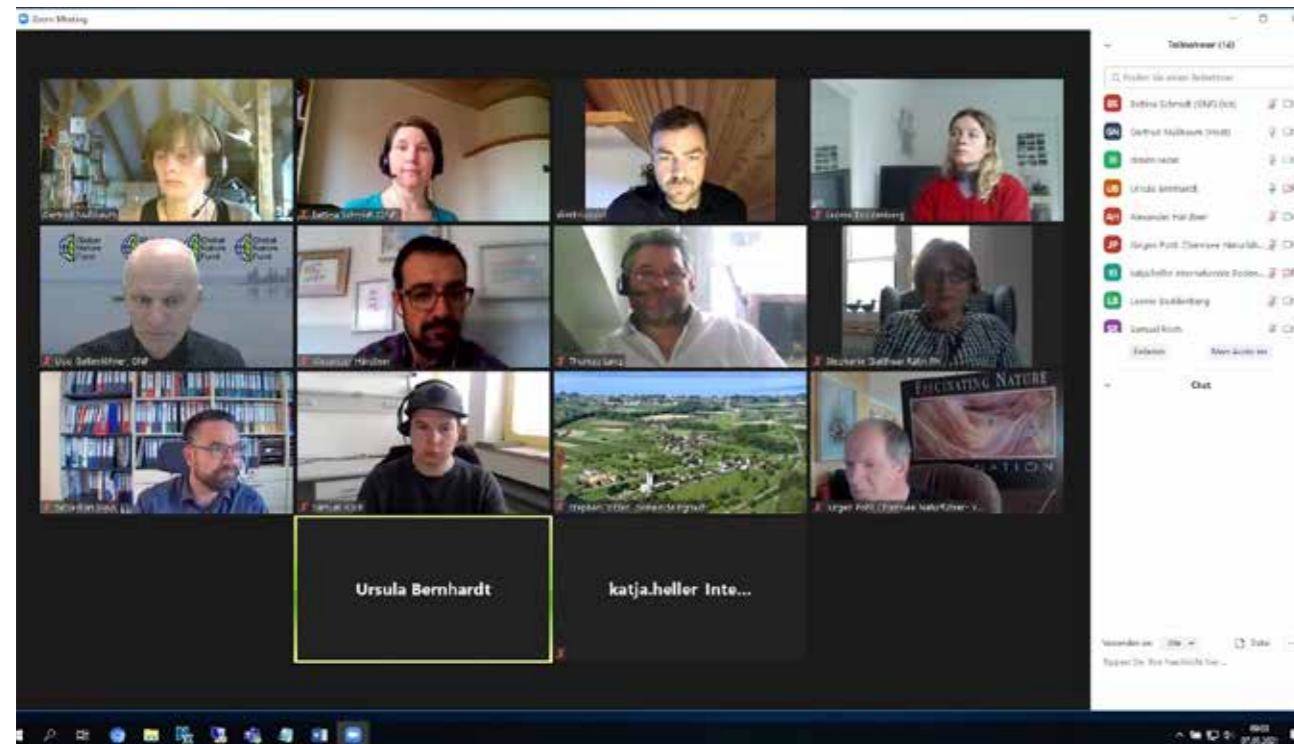
NLSD - Mikroplastik in Seen globalnature.org

Life Blue Lakes Partner Event EU Green Week globalnature.org

REFERENCES FOR CONTACTS

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IMAGES



4.2 MONITORING ACTIVITIES: THE MONITORING PROTOCOL AND THE TRAINING COURSE

ACTION DESCRIPTION

Core of this action, carried out by ENEA and ARPA, was to improve the standardised protocol for the design and implementation of a seasonal microplastics monitoring program functional to the competent authorities responsible for freshwater quality and community policy frameworks. The Monitoring Protocol was developed through a planning process involving the following phases: Preliminary survey, Design of monitoring, Field monitoring operations, Laboratory activities.

The monitoring activities aimed to collect the microplastic concentration and diffusion data

in the water and beach sediment of Lake Bracciano, Trasimeno and Piediluco through the implementation and sharing of protocol developed to standardise the procedures for sampling and laboratory analyses, as well as harmonising methods.

The lakes chosen as pilot-area have been surveyed for some years by ENEA and Legambiente during the sampling campaigns of the Goletta dei Laghi. Optimising the experience and results obtained from previous campaigns, it was possible to integrate data and process information functional to the two planning phases of the monitoring protocol.

Moreover, ENEA and ARPA have organised a national training course in Terni and at Lake Piediluco (end of year 2022), aimed at sharing the Blue Lakes Standard Protocol at the Agency's headquarters. The training course was addressed to technicians and staff of the regional and provincial environmental agencies (ARPA/ APPA) from all over Italy. The course included classroom training followed by demonstration actions, both for sampling the waters of Lake Piediluco and for pre-treatment and analysis of the samples at the Arpa Umbria laboratories in Terni.

During the training days, the activities and results achieved during the project were shared with the technicians of the agencies. The course represented an important opportunity for discussion on the protocol for monitoring microplastics in the waters and sediments of lake beaches, with a rich exchange of experiences, functional to the construction of a monitoring network and the harmonisation of methodologies, useful for the development of inland water monitoring programmes.

WHY IS IT INTERESTING

The importance of this action is related to the fact that most of the research on plastic debris is currently focused on the seas and oceans. As a result, available sampling techniques and protocols have been developed for marine systems. These can be partly applied in freshwater environments but in any case, require a functional adaptation to the different environmental conditions of freshwater, including the moving waters of rivers and streams, subjected to a greater incidence of micro and nano-plastics due to the numerous anthropic activities and to the proximity of heterogeneous urban systems. The differences between freshwater and marine systems are mostly limited to sampling techniques. Many factors specific to freshwater systems influence sampling procedures more than laboratory analysis, which tends to be like the analysis of seawater samples. Therefore, the sharing and application of the protocol by the ARPA through demonstration actions and networking activities on types of Italian lakes with different origins and geo-morphological characteristics makes this action interesting for the purposes of replicability functional to the still incomplete data collection for freshwater.

IMPACTS

The two-year monitoring activity carried out on the pilot areas (Bracciano, Trasimeno, Piediluco) of the project made it possible to collect data and acquire functional knowledge for the development of the protocol. The latter was presented during the training course at the end of 2022 and subsequently through technical seminars which contributed to expanding the collection of data on the presence and diffusion of microplastics in a further four additional bodies: Orta lake (subalpine); Ridracoli lake (artificial reservoir), Scanno lake (mountain), Cavazzo lake (karst).

ELEMENTS OF SUCCESS

The main element for the success of this project activity is the networking that has been created between ENEA and the various Regional Agencies, making it possible to achieve excellent results both in the field and in the laboratory through a collaboration aimed at the joint study of a complex environmental phenomenon. Furthermore, the exchange of experiences on environmental monitoring and knowledge on microplastics in freshwater through technical seminars helped to highlight critical issues and improve the various phases of the protocol.

POSSIBLE PROBLEMS

In the absence of specific regulations not yet envisaged for the monitoring of microplastics in surface freshwater, the main problems that may arise are related to the sampling activity, and specifically to the availability of suitable boats for navigation and towing Manta and bongo nets. Another limit is represented by the scarcity of expert personnel for laboratory activities in addition to the ordinary activities to be performed.

REPLICABLE CONTEXTS

Areas of interest on which to replicate the monitoring and networking activity between research centres and Arpa are the subalpine lakes (Maggiore, Como, Garda), a sort of system of large lakes in which necessarily the surface extension of each lake requires a sampling and analysis effort, related to the number of transects, higher than that assessed so far according to the protocol. Therefore, a subdivision in terms of sampling and laboratory analysis activities among the regional ARPAs of reference is needed (Arpa Piemonte and Arpa Lombardia for the Major lake; Arpa Lombardia, Veneto and APPA Trento for Garda lake).

LINK

Coscia L., Della Bella v., Sighicelli M., 2022. *Microplastiche e Metodiche*. Waste: 22. Disponibile su: <https://www.rivistawaste.com/>

Dossier Blue Lakes. Esperienze modello. In: *La Nuova Ecologia "Rifiuti Oggi" - Speciale Ecomondo 2022*. Disponibile su: https://www.lanuovaecologia.it/wp-content/uploads/2022/11/RO_2-22_web-ok_low.pdf

<https://www.arpa.umbria.it/articoli/monitoraggio-delle-microplastiche>

REFERENCES FOR CONTACTS

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IMAGES



4.3 TRAINING AND DISSEMINATION OF THE TECHNICAL PROTOCOL FOR URBAN WATER SERVICE INFRASTRUCTURE

ACTION DESCRIPTION

A protocol for microplastics determination in drinking water and wastewater infrastructures has been developed, including procedures for sample collection and processing, extraction and identification of microplastics (MPs) and microfibers (MFs) from water and sludge samples collected from different treatment steps. The protocol was developed and carried out during the sampling activities performed under the LIFE Blue Lakes project, concerning the pilots in the wastewater and drinking water treatment plants located in Garda and Castreccioni lake districts.

The analytical protocol and the results obtained from the sampling campaigns performed during the project activities are being disseminated among the professionals of the water sector, to develop a normalised approach for MPs measurement and analysis for drinking water treatment plants (DWTPs) and wastewater treatment plants (WWTPs). Training courses are organised to involve professional expertise working in the water sector and to inform and train them on the procedures and techniques for MPs sampling and characterization. The

goals of the courses are to provide the basics for MPs monitoring in wastewater and drinking water infrastructures, the principles of water and wastewater treatment processes and the operation control measures and solutions to improve the MPs removal.

The techno-educational project is structured to assure for the participants the interaction with both academic and industrial/utility professionals, by allowing theoretical lectures to be coupled with practical experiences.

WHY IS IT INTERESTING

The developed protocol for MPs determination includes methodologies already described in scientific literature and direct experience carried out during the project for the analysis of MPs/MFs in drinking water and wastewater matrices.

Different sampling methods are proposed, according to the matrix and the specific site-conditions. Sample pre-processing methods are proposed, according to the matrix and the specific site-conditions. Sample preprocessing methods could be directly performed by technicians and operators, and suggestions are provided for the presentation and the interpretation of the results. The protocol and the report also include a critical literature review and comparison with benchmarks.

Training courses are planned to be replicated, also including online events, in order to disseminate project results and promote the developed protocol. Teaching and e-learning material is being implemented and distributed among the participants.

IMPACTS

The protocol and the results of project activities were presented during the first edition of the training courses, carried out in Italy, on 5-7 December 2022.

The gained knowledge that allowed to define the Analytical and Technical Protocols will allow not only to inform and train about MPs detection and analysis, but also to optimise the design and operations of DWTPs and WWTPs with the goal to improve the removal of MPs from final effluents.

ELEMENTS OF SUCCESS

The courses have been promoted through the main communication channels and social network of UNIVPM, also with the support of Legambiente, Utilitalia and GNF, to maximise the diffusion among water professionals.

The courses include initial transversal training for all participants and following detailed modules on the basis of different training objectives. In particular, the courses contain two specific teaching modules: one for technical staff and operators employed in wastewater sector and water professionals and another one dedicated to technicians and analysts mainly involved in environmental monitoring and control (i.e., employees from government bodies, environmental authorities, water authorities). Surveying and preliminary interviews of potential targets were prepared to fit the teaching topics to the specific interest of the audience.

POSSIBLE PROBLEMS

Since a specific methodology of Microplastics determination is not currently proposed by European and National legislation, some concerns may support the consistency of the proposed method with the future guidelines. The tested protocol for drinking and wastewaters needs more long evidence-based and experience-based activities especially for the sludge application to reach a standardised level of the normalised proposal.

REPLICABLE CONTEXTS

Existing WWTPs and DWTPs can replicate MPs monitoring actions, by following the suggestions provided in the protocol. The most appropriate sampling equipment is described for each matrix or condition, as well as for the procedures that can be performed directly by the operators and technicians. However, an equipped laboratory has to be selected for MPs characterisation.

LINK

<https://www.linkedin.com/company/wweelab-research-group/>

REFERENCES FOR CONTACTS

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IMAGES



CONSIGLIO DI AMMINISTRAZIONE UNIVPM
FINANZIATO DAL PROGETTO EUROPEO LIFE BLUE LAKES

Le Microplastiche nel Servizio Integrato
PRIMA EDIZIONE
5, 6 e 7 Dicembre 2022

www.lifeforlakes.eu | info@lifeforlakes.eu

INFORMAZIONI
Modello: in presenza
Lingua: italiana
Luogo: Lezioni teoriche (Università Politecnica delle Marche - Sede di Ancona)
Sessioni tecnico-pratiche: impianto di potabilizzazione, impianto di depurazione, piattaforma sperimentale e laboratori di UNIVPM.

5 Dicembre ore 14.00-18.00
» Le Microplastiche: aspetti generali, conoscitivi
» Le Microplastiche nel Servizio Idrico Integrato: stato dell'arte e casi studio
» Metodologie di campionamento
» Metodologie di caratterizzazione

6 Dicembre ore 09.00-12.00
» Sessione di campionamento presso impianto di potabilizzazione / impianto di depurazione (piattaforma sperimentale UNIVPM)

ore 14.00-18.00
» Impianti di depurazione e di potabilizzazione: ruolo dei processi e delle tecnologie nella rimozione delle microplastiche, esempi numerici di bilanci di massa a scala impianto
» Controllo e ottimizzazione della rimozione delle microplastiche nel servizio idrico e nelle diverse unità di trattamento: linee guida gestionali e configurazioni progettuali ottimali, casi studio ed esempi pratici
» Analisi di rischio associate alla presenza delle microplastiche nel settore idrico e prospettive nella legislazione tecnica e ambientale.

7 Dicembre ore 09.00-15.00
» Descrizione delle strumentazioni tecnica di laboratorio
» Sessione di pre-processamento dei campioni
» Sessione di separazione e caratterizzazione delle microplastiche.

INCHIESTA
andata il 15 ottobre 2022
Da inviare via e-mail ad uno dei seguenti indirizzi:
lradini@univpm.it
a.l.eusebi@univpm.it
f.fatone@univpm.it
s.gorbi@univpm.it
s.radini@univpm.it
specificando Nome, Cognome, ruolo e Azienda di riferimento.

La partecipazione al corso è gratuita e comporta l'iscrizione del materiale didattico e l'invio di eventuali materiali tecnici presso gli impianti per le sessioni tecnico-pratiche.
Il corso ha disponibilità limitata di partecipanti.

UTILITALIA

4.4 AWARENESS CAMPAIGN FOR COMPANIES

4.4.1 ROUND TABLES (ONLINE) AND SPECIFIC FACT SHEETS FOR THE THREE SELECTED BUSINESS SECTORS

GNF and LCF have involved three business sectors mainly responsible for microplastic contamination. We approached various companies from the cosmetics, outdoor and tire industries and tried to engage them in a participatory process. National and international companies have been approached (i.e. via various round tables) and sensitised to contribute by substituting microplastics. The sector specific Round Tables have invited and brought together different players from the selected (three) crucial business sectors. The goal was to exchange ideas on methods for micro plastic prevention.

Sector specific Fact Sheets have been published. The fact sheets summarise on a few pages the problems of micro plastics in the different sectors. They can be used for different events and meetings, as they can be used to explain the topic in a short and easy-to-understand way. Finally we try to motivate companies to sign a Memorandum of Understanding for a more sustainable production. The ELLA Association, already described earlier, has picked up this topic and will be approaching companies in other EU countries, too. Furthermore, GNF has been using the “European Business and Biodiversity Campaign”, a strong consortium including partners from various EU Countries. The campaign aims to emphasise the high importance of biodiversity and to engage companies in the protection and conservation of nature, with one focus on vulnerable water ecosystems and micro-contaminants.

WHY IS IT INTERESTING

The online round table is particularly suitable for bringing together different players from either the industry or organisations and institutions from different parts of the country or even across countries in a simple and efficient way. Since the participants do not have to travel, the willingness to participate in such a round table is very high. Several round tables can be held within a short period of time without much effort.

The fact sheets are mainly used to deal with the topic in a basic way and to summarise the essentials. The creation of Fact Sheets is therefore a very good basis work, which can be repeated for different topics very well.

IMPACTS

The activities have led to the various stakeholders from the companies, to deal more intensively with the issue of micro plastics.

ELEMENTS OF SUCCESS

Above all, they have created links between the companies.

POSSIBLE PROBLEMS

One potential problem is that companies may not want to comment on a sensitive and critical issue if they do not yet have solutions. Not all companies are open and honest enough to speak out in such an exchange. A possible solution to this could be that the round table is held in camera. In this way, it is possible to start with a closed exchange in order to build trust. Moreover, the Round Tables have been organised online due to Covid-19. However, this had the advantage that different players from different regions and departments, such as the sustainability department, can participate in the round table.

REPLICABLE CONTEXTS

The only thing that is needed is an online web conference software such as MS Teams or Zoom.

LINK

Link to the Round Table: <https://www.youtube.com/watch?v=TulbP3FOpVc>
Fact Sheets: <https://www.globalnature.org/en/microplastic-in-lakes>

REFERENCES FOR CONTACTS

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IMAGES



Round Table vom 21.10.22: Mikroplastik in Outdoor-Textilien



4.4.2 ELLA WORKSHOPS WITH INTERNATIONAL LAKE ORGANISATIONS

GNF has constituted the European Living Lakes Association (ELLA), formerly called Living Lakes Europe Partnership (LLEP), as an open partnership or network with the mission to enhance the protection, restoration and rehabilitation of lakes, wetlands and other freshwater bodies in Europe. ELLA already widely disseminates results of the Blue Lakes project in order to foster replication and upscaling. ELLA will also provide information on the above topics to political decision makers on European, national, regional and local level with one focus on the problems of micro plastics and other micro pollutants in freshwater ecosystems. ELLA advocates for the sound implementation of European environmental legislation and through the growing number of ELLA partner organisations, often NGOs, that are already very active in lake management, we can ensure a high transferability and efficient upscaling and replication. In addition, ELLA is linked to the international Living Lakes Network with 114 member lakes that has been well established since 1998. ELLA organised regular webinars and workshops on the topic of microplastics and used GNF’s communication instruments such as website, newsletters and Annual Reports. The main target groups are lake managers, decision makers, multipliers and any other stakeholders and administrations from lake regions in Europe.

WHY IS IT INTERESTING

The replication potential of this approach is limited in view of launching a legal entity, as it takes quite some effort to fill the structure with lies and action. However, one intention of the association is to focus primarily on the dissemination of the results of the project Blue Lakes and foster replication and upscaling. ELLA aims at providing information to political decision makers regarding the problems of micro plastics (and other relevant micro pollutants) in freshwater ecosystems such as lakes and wetlands. ELLA will – together with other stakeholders such as the European River Network (ERN), the Forum “Umwelt und Entwicklung” and the Green League - advocate for the sound implementation of European environmental legislation and efficient lake management.

IMPACTS

ELLA is a newly constituted European network with the mission is to enhance the protection, restoration and rehabilitation of lakes, wetlands and other freshwater bodies in Europe. During the last year ELLA has organised various events and actions linked to Blue Lakes (Micro Plastic Workshop) and will – through its members in different EU countries - continue (during the next years) to inform the public and various stakeholders about the problems related to micro pollutants and micro plastics and improve knowledge as a basis for more efficient involvement and future action. ELLA is assessing the role and activities carried out by NGOs to contribute to the solution of these problems and is promoting joint activities against micro pollution and microplastics carried out by administrations and NGOs.

ELEMENTS OF SUCCESS

- A long term perspective and strategy of ELLA;
- A growing number of ELLA members in different EU countries;
- An open approach towards different stakeholders to join ELLA;

- A clear portfolio of tangible actions and projects;
- An effective communication strategy to reach other NGOs, administrations and other stakeholders

POSSIBLE PROBLEMS

One challenge is that there is no EU law on the constitution of associations. Hence the entity has to be constituted in one of the EU 27. In view on the charity status and tax deductibility and eligibility of donations this creates certain limitations and drawbacks. Furthermore it is not necessarily easy to identify founding members in different countries in the beginning willing to go into certain legal and financial risks and take over responsibility. In addition it takes expertise, efforts and resources to raise funding for such a structure and possible actions and projects.

REPLICABLE CONTEXTS

The actions of ELLA have a very high value of replication on national and international level, a more limited one on a local and regional scale.

LINK

ELLA European Living Lakes Association globalnature.org

REFERENCES FOR CONTACTS

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IMAGES



4.5 GOVERNANCE AT NATIONAL LEVEL

This activity was carried out by ABDAC and its aim was to strengthen the governance processes of key Italian institutional stakeholders responsible in various ways of water management in order to improve existing national policy and legislation including aspects related to microplastic pollution. In general, plastic litter in freshwater systems is not included in any of the EU freshwater legislation.

For this reason, within the LIFE Blue Lakes project, a Working Panel of National and Regional Authorities was instituted. Through the working panel it has been possible to involve various actors, both public and private (i.e. National Association of Italian Municipalities - ANCI -, the Italian Federation of Companies Operating in Public Water, Electricity and Gas Services - Utilitalia), who have expertise in the environmental field on water.

Numerous meetings, both plenary and bilateral, were organised between various subjects involved who were given a special questionnaire to understand their degree of knowledge of the problem related to microplastics and their spread in lake basins.

Through dialogue with stakeholders and on the basis of the other technical lines of the project focused on sampling and monitoring activities and on their replicability, a White Paper was drafted.

The aims of the White Paper are:

1. sharing knowledge on the topic of microplastics in lakes;
2. the identification of actions aimed at reducing microplastics and solutions;
3. the evaluation of the socio-economic effects of the proposed solutions;
4. the proposal to the institutions of specific regulatory actions.
5. The Lakes White Paper was presented at the end of the project at a national conference.

WHY IS IT INTERESTING

The activity provides a spectrum of solutions according to their technical-economic and social sustainability and suggests governance indications aimed at achieving an effective reduction of microplastics in lakes.

IMPACTS

The activity has made it possible to increase awareness of the problem of microplastics in water by the various bodies that make up the complex governance of water resources in Italy, favoring the implementation of the specific European directives for the sector. By sharing the actions tested and the results obtained from the activities of the LIFE Blue Lakes project, the foundations were laid in the White Book of the Lakes to be promptly implemented by the competent authorities to combat microplastics in inland waters.

ELEMENTS OF SUCCESS

The participation and awareness of all subjects on the need to consider the effects of microplastics in the lake environment and the possibility of having feasible solutions available.

POSSIBLE PROBLEMS

The main relevant possible problem should be the difficulty of applying the indications provided in the White Lake Paper for reasons other than technical/environmental ones (for example political constraints).

REPLICABLE CONTEXTS

By suggesting governance indications aimed at achieving an effective reduction of microplastics in lakes, the White Paper is a management tool easily replicable in other countries.

LINK

White Lake Paper <https://lifebluelakes.eu/documenti/>

REFERENCES FOR CONTACTS

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4.6 AWARENESS/DISSEMINATION CAMPAIGN

4.6.1 AWARENESS STRATEGY AND CAMPAIGN

ACTION DESCRIPTION

This action foresees an information campaign to raise local community awareness in Italy and Germany (residents, tourists and students) of the problem of microplastic in lakes. The campaign's objectives are aimed at raising the awareness of the target groups on the importance of protecting lakes from microplastic pollution, as a high level of preserving the lake ecosystems is essential for ensuring human health and well-being and socio-economic development. The action also has an objective to foster sustainable behaviour and consumption.

WHY IS IT INTERESTING

The activities foreseen by the project for involving the citizens and in promoting and encouraging more sustainable habits and lifestyles included:

- summer events planned for residents and tourists (Lakes Days in the pilot areas);
- two editions of the educational programme Blue Lakes a Scuola during the 2022 and 2023 scholastic years;
- the Road Show which in the last year of the project promoted the theatrical show of “Monday”, the Dispersi workshops (see par 4.7.1), talk shows and Beach Litter activities involving 20 stops in 7 Italian regions and different lake locations of the project’s pilot areas.

The Lakes Days was organised differently according to the place where it was carried out, the subjects moving around Italy who were organising them and the priorities of the local situations where they were hosted. The Beach Litter activities included cataloguing the waste, scientific aperitifs, “flash mobs” such as the “big jumps” to introduce the safeguarding of the lakes into the broadest concept of the health of ecosystems heavily hit by the droughts of recent years or those involving the storm manholes of some lake towns being painted with colour-fast paint and decorated with drawings and slogans to remind the passer-bys that “the lake begins here”. A way to make people think about the bad habit of throwing waste into the manholes, being connected to the water basins and, therefore, becoming a direct carrier of plastics and microplastics in water.

The educational programme for the schools of the main municipalities bordering on the lakes of Garda, di Bracciano, Piediluco and Trasimeno, involved pupils in informal workshops on the microplastic problem to raise their awareness and their capabilities to be actively involved in initiatives strengthening ties with their local area. Then, with the competition of Blue Lakes a Scuola, audiovisual products were created and selected that originally communicated how to tackle the problem of plastics and microplastics promoting actions and good behaviour.

These actions aroused interest in the target groups, especially because the scientific theme of microplastics was effectively conveyed through the combination of different languages – education, citizen sciences, informal education, local events and visual communication. The artistic language encouraged the bringing together of different contexts, allowing for addressing the different targets which otherwise would not have been able to be reached.

IMPACTS

The Lakes Days involved about 300 people.

About 400 people participated in the theatrical shows, workshops and talk shows.

The educational programme involved 57 classes of about 1,200 students and 60 teachers, however, with the extra classroom activities that each partner carried out responding to local requests, another 500 students and teachers were reached.

As an element of replicability, the schools recognised the educational and social value of the

action and, therefore, required the continuous integration of the content linked to the issue of microplastics in their education programme.

ELEMENTS OF SUCCESS

The main element that led to the success of this action was the direct contact with people. Meeting with citizens, residents, tourists, students allowed for starting up a collective reflection on the problems which the LIFE Blue Lakes Project wants to overcome and the actions which each of us can take becoming active in bringing about change in their local area. Underlying growth, we have people, with their interests, their projects and their culture.

The direct contact with people was made possible thanks to the widespread actions of the Legambiente association, which was able to count on many members, referents of regional authorities and clubs nationwide involved in achieving a common aim of informing and making known the problem of microplastic. Information materials and gadgets also played a key role in supporting the activities and reaching people.

POSSIBLE PROBLEMS

Use of public spaces -> preliminary meetings and agreements with local authorities

Spaces suitable for hosting a theatrical show -> individuation through sector channels

Costs of holding a show -> fund-raising involving sympathetic targets

Difficulties in meeting the students in person due to school policies -> online meetings or proposals for teacher training workshops

REPLICABLE CONTEXTS

Plastic waste is a pollutant in environments worldwide. It is everywhere and, consequently, we swallow it, breathe it, absorb it in different ways every day. If, at the beginning, studies were focused on the waters of the seas, oceans, rivers and lakes, being located at practically every latitude and longitude, in the successive studies, microplastics were also found in snow, in molluscs and fish, in the Himalayas, in cooking salt, groundwater and, therefore, in our tap water, in the human body – our blood, lungs, placentas, urine.

In short, it is a problem that concerns every place and every person. Therefore, the information campaign and raising of awareness of this issue can be replicated in any other national or international community.

To keep updating the information for the public regarding the dissemination activities at national and European level, as well as every time the methodology and specific methods used in the LIFE Blue Lakes Project are replicated in other local contexts, the project’s website (<http://www.lifebluelakes.eu>) will be consequently updated and the material produced will be visible for 5 years from the project’s end.

LINKS

Dissemination activities: <https://lifebluelakes.eu/en/approfondimenti/dissemination-activities/>

Lakes Days Summer 2021: <https://lifebluelakes.eu/approfondimenti/lestate-di-blue-lakes-a-bordo-della-goletta-in-difesa-dei-laghi-italiani/>

Lakes Days Summer 2022: <https://lifebluelakes.eu/news/>

Press reviews “Monday” 2021: <https://lifebluelakes.eu/rassegne-stampa/19-07-2021-monday-in-scena-al-pergine-festival-tn/>

Blue Lakes School programme: <https://lifebluelakes.eu/blue-lakes-per-le-scuole/>

REFERENCES FOR CONTACTS

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IMAGES



4.6.2 THE LAKE THEATRE

The Lake Theatre (including the MONDAY show and the DISPERSI workshop) is an unconventional scientific communication, aimed at calling into question human choices and sharing the research results, adopted by the LIFE Blue Lakes project. MONDAY is a theatrical performance where art and science come together, comparing and contaminating each other, in the search for new language, new kinships, new spaces to scout together with an ever-increasingly aware public of the issue and so more responsive to change.

MONDAY is not simply a show but attempts to build a bridge between the scientific world and the theatre, increasing abilities to communicate the contradictions of our time and the potential of science, extending the space for dialogue and meeting. To do this, we need the arts, an extraordinary training ground where we can fine-tune our abilities to see, listen to, be aware of the world surrounding us and our sense of belonging to it. The problem of the new pollutants is now a slippery subject, an issue perhaps artistically evitable, but, at the same time, socially unavoidable.

DISPERSI is a workshop involving science and art to face the emerging problem of microplastic pollution and a talk show to encapsulate, yield, provide information and raise doubts. DISPERSI is fed on competences, tells of each actor's world, illustrates saliently what it wants to get across, allowing participants to present the work carried out in the workshop to the public.

WHY IS IT INTERESTING

The Lake Theatre is one of the actions of the LIFE Blue Lakes Project that experiments with the use of theatre and the performing arts such as new approaches in awareness-raising and the communication of environmental issues. A group of ENEA researchers, the theatre company Dynamis, a panel discussion, a European project and new pollutants – plastic and polymers in their many different forms and states of degradation. Discussions, glances, competences, data, styles, different methods and knowledge come together in a polymeric blend of a new material to be experimented with MONDAY. It is particularly interesting how the show spread all over Italy and the active involvement in confronting and discussing the issue that took place at each stop of the tour.

DISPERSI is a workshop that, in bringing together the languages of art and science, two of the instruments of knowledge representing the maximum expressions of human creativity, is a way to raise the awareness of participants of the issue of microplastic dispersion in the environment and spread the tools useful to creating an open and horizontal communication. Science, theatre and drawings. These are the three subjects that guide the training days so as to create an open dialogue and a context that encourages free expression, communication and critical thinking. The participants are involved in giving a new meaning to the complex world of polymers transforming them from simple objects into live characters with a name and a personal story. The transversality of the method used, the complexity of the human interactions in relation to the objects and the environment are especially interesting.

IMPACTS

The show MONDAY was presented in 13 replies with more than 1,000 participants across Italy

from large cities (Rome, Turin, Padua, Udine, Varese) to tiny inland villages (Borgo Pianetto). Large and small theatre stages were used, but also unusual spaces such as cloisters and historical buildings, civic centres, linking up with important festivals (Festival of Two Worlds) and new utopian and transversal festivals aimed at dealing with the environmental theme (SIMPOSIO).

First performance: 17 July 2021 at the Pergine Festival- Replicated 30 October 2021 at Spazio Rossellini Rome

New show, after a rewriting, on 2 June 2023 at the Teatro degli Scalpellini – San Maurizio d’Opaglio, Novara

Replicated:

16 June 2023 at Palazzo Wimmer – Gardone Riviera (BS)

17 June 2023 at Proloco Pianetto ASP – Borgo Pianetto, Galeata (FC)

3 July 2023 at Estate Senza Confini 2023, Civic Centre of San Salvario (TO)

5 and 6 July 2023 at La Mama Spoleto 2023, Festival of Two Worlds, Spoleto (PG)

8 July 2023 at Festival Simposio – Borca Di Cadore (BL)

11 July 2023 at Teatro Botanico, Botanical Gardens of Padua

13 July 2023 at the Gardens of Teatro Astra, La Piccionaia, Vicenza

DISPERSI: 6 intensive days in the field at Lake Bracciano and in the research centre of ENEA Casaccia with more than 60 participants accompanied by 3 researchers, 1 theatre director, 2 actors, 1 cartoonist and 1 graphic artist.

Workshops

Road show 25 June 2023 - Laboratorio Dispersi at Forum delle Acque – Piediluco

Road show 2 August 2023 - Laboratorio Dispersi at Villa Pamphilj - Roma

Road show 5 August 2023 - Laboratorio Dispersi at Castelli In Aria – Alvito

Road show 6 August 2023 - Laboratorio Dispersi, Festambiente Maremma – Rispescia

TALK SHOW DISPERSI

18 December 2022 DISPERSI – Special Talk Show – Kickoff presentation at Spazio Rossellini, Rome

10 June 2023 DISPERSI– Special Talk Show – Final presentation at Spazio Rossellini, Rome

ELEMENTS OF SUCCESS

MONDAY’s success is due to the international breath of the LIFE Blue Lakes Project, the

dialogue with the public, the relationship between actors and participants, the theatre setting, the transversal generational narration able to capture the most representative behaviour of our time, from the repudiation of environmental problems to the pathological eco-anxiety.

The success elements of DISPERSI are the opportunity to explore and experiment with a blend of methods such as environmental monitoring, sample analyses in the different phases of laboratory studies, the narration and illustration with the cartoon technique.

Participants enter the complex world of plastic through the scientific view of the ENEA researchers, analysing its features, history, contradictions, failures and dispersion in the environment with the consequent risks, dangers and damage. They are then taken through theatre and cartoons on a creative artistic path of narration and a re-significance of the objects looked at by the researchers. By means of the artistic and theatrical instruments, the participants create narrations and stories giving a voice, a new identity, a new meaning to the objects analysed. Science and art come together to give rise to new points of view and to create a direct and critical experience about the reality surrounding us.

POSSIBLE PROBLEMS

The difficulties encountered concerned the cultural maturity of the reference target, the knowledge and habit of frequenting the theatre as a space for collective reflection and growth. There are no technical and/or methodological difficulties for MONDAY nor DISPERSI as they were designed to be flexible and adaptable to different locations and/or technical conditions and different targets, both in age and culturally. The complexity of the method is the strength of an instrument to dismantle the prevalent way of thinking, and bring out contradictions and make people question.

REPLICABLE CONTEXTS

The performance of MONDAY was held under very different conditions, from typical theatres (small and large) to the cloister of an abbey, from a botanical garden to the small stage in a civic centre, in corners of famous festivals (Festival of Two Worlds) and in large cities (Rome, Turin, Padua, Udine, Varese), as well as in tiny inland villages (Borgo Pianetto). Therefore, its intrinsic ability in being able to be replicated can be guaranteed even in very different technical and environmental situations.

The complex methodological blend of the DISPERSI workshop is used by school groups, for different themes, issues and subjects. It can be fully replicated (field activities, laboratory activities, narration, illustration) or partially in different contexts – primary, intermediate and secondary schools, heterogenous or temporary communities, art, study and research groups, art and drama schools, and in spaces for more in-depth scientific and artistic studies.

It is aimed at:

- raising awareness of the issue of microplastic dispersion in the environment and, in general, of emerging pollutants;
- acquiring skills concerning the complex polymer family;
- providing a protocol for the study of the issue which includes sampling, sorting and recognising polymer interaction in the water and sediment matrices.

LINKS

Sito progetto LIFE Blue Lakes <https://lifebluelakes.eu/news/>

Sito Progetto Dispersi <https://progettodispersi.it/>

Video conferenza finale 10 giugno 2023 <https://www.youtube.com/watch?v=YT0ecJuLvBo>

Canale Youtube <https://www.youtube.com/@progettodispersi>

Pagina Instagram <https://www.instagram.com/dipartimentog-gettidispersi/>

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IMAGES





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LEGAMBIENTE

ASSOCIATED BENEFICIARIES



Autorità di Bacino
Distrettuale
dell'Appennino Centrale



AGENZIA NAZIONALE PER LE NUOVE TECNOLOGIE,
L'ENERGIA E LO SVILUPPO ECONOMICO SOSTENIBILE



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