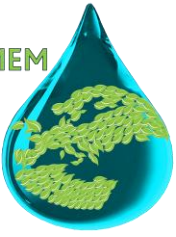




BRAINYMEM



LIFE - BRAINYMEM® ADVANCED-CONTROL MBR FOR WASTEWATER RECLAMATION



After-LIFE Communication Plan

Contract no. LIFE13 ENV/ES/000160





INDEX

1. EXECUTIVE SUMMARY	2
2. THE LIFE-BRAINYMEM PROJECT	3
6. MAIN COMMUNICATION ACTIVITIES	5
7. MAIN DISSEMINATION PRODUCTS	7
8. THE AFTER LIFE COMMUNICATION PLAN	8
8.1. Main goals	8
8.2. AFTER-life communication activities	9
8.3. Plan implementation	11



1. EXECUTIVE SUMMARY

This deliverable is part of Action E. Monitoring of the impact of the project actions, more specifically Action E.3. After-LIFE communication plan. The aim of this action is to set the planning to be carried out after the end of the project that assures the dissemination and communication of the project results in order to obtain an important impact in the target audience.

This report sets out how the beneficiary plans to continue disseminating and communicating results after the end of LIFE funding and indicates a set of detailed actions that will be carried out, when, by whom, the target audience of these actions and the origin of technical and economic resources to continue its implementation.



2. THE LIFE-BRAINYMEM PROJECT.

Introduction

LIFE-BRAINYMEM is a three-year project supported and financed by the European Commission under the LIFE + program with a budget of 506.366 € (EU contribution of 253.183 €). There is only one entity taking part in the project, being ACCIONA Agua. This company has a top position within the field of water treatment worldwide and counts with the required capacities and resources to carry out the project alone, although it has been punctually supported by several advisory board members, including Prof. Anja Drews (HTW Berlin, Germany), Prof. Ingmar Nopens (UGent, Belgium) and Amador Rancaño (Responsible of the O&M Department in South and Central Spain).

The main goal of the LIFE-BRAINYMEM project was to demonstrate that Membrane Biological Reactor (MBR) technology with an advanced control system is the best available technology for wastewater treatment, in terms of environmental impact and effluent quality. To achieve this goal, the project included experimentation in a MBR pilot plant, representative of full-scale conditions.

Activities carried out

More specifically,

- ⤴ An expert control system has been developed and implemented. This control system is designed to control the aeration of the biological unit and the membrane, and to control the addition of a flux enhancer.
- ⤴ An analytical campaign has been carried out monitoring the fate of micropollutants in the plant. To this end, the ACCIONA Agua team has studied the effects of adding the flux enhancer on the removal of emerging pollutants at the WWTP of Almuñécar. In addition, toxicity tests were performed to analyze the effect of the integrated modifications and a cost / benefit analysis was performed to obtain the most efficient procedure.
- ⤴ Finally the implementation and demonstration of the developed system has been carried out. To do this, firstly, N₂O and ammonia sensors were installed to integrate aeration control system into the biological reactor. Finally the flux-enhancer dosing system has been installed and adjusted, which has been followed by a demonstration of the system. Once these actions have been carried out, the results obtained have been evaluated.

Results and conclusions

As a result of this experimentation, two control systems have been developed, one for the biological aeration based on the measurement of nitrogen species and another for the membrane aeration. Moreover, a dosing system that will help improving the water treatment has been implemented.

The results obtained indicated that the implementation of the BRAINYMEM® control reduced significantly the energy consumption associated to the aeration without compromising the permeate quality. The control assured a stable operation during 12 months, demonstrating the



robustness of the system. 22% energy savings were associated to the implementation of the control, corresponding to a reduction of 35% energy consumption of the membrane aeration and a 19% reduction of the energy consumption of the biological aeration compared to operating without a control system.

Regarding to the dosage of substances that could improve the filterability of the activated sludge in situations of high fouling potential, their application did not show a significant effect on membrane permeability, and for this reason their use was dismissed.



6. MAIN COMMUNICATION ACTIVITIES

The following communication actions have been carried out:

- ▲ **Dissemination products** about the project have been sent and **information** has been distributed among target audience.
- ▲ **Networking established**
 - with other LIFE projects:
 - WATOP
 - Dyes4ever
 - TransfoMEM
 - LIFE Effidrain
 - SANEPLAN
 - LIFE-Puriwat
 - with public agencies and governments through technological platforms and clusters:
 - The European Innovation Partnership on Water (EIP Water).
 - Spanish technological platform for water (PTEA).
 - The European Technology Platform for Water (WssTP).
 - ACQUEAU cluster.

Moreover, a database with the main actors for networking has been created, with 203 contacts.

- Networking: website
- ▲ **Dissemination Workshops:**
 - A technical LIFE-BRAINYMEM workshop was organised in the framework of the Feria de Soluciones Innovadoras para la Gestión del Agua (SIGA) – IFEMA, March 2017.
 - In order to celebrate the 25th anniversary of the LIFE programme, a dissemination event was organized on the 18th of May. A workshop for local students was carried out to show them the importance of water reuse in the region, followed by a guided tour through the wastewater treatment plant of Almuñecar and the BRAINYMEM pilot plant (Spain).
 - An internal workshop with the O&M Department of ACCIONA Agua was organized on the 17th of may in Madrid where the results of the project to the Responsibles of O&M of each area of Spain.



▲ **Attendance to congresses and conferences**

- LIFE event CTM November 2016
- Jornada OFREA
- AEAS2015
- Wsttp Brokerage event
- SIGA2017
- Conama2016
- Jornadas ESAMUR 2016
- BRM2016
- BRM2017
- Seminar "State of the Art. Water 2020"
- AEAS2017 (Burgos, Spain)
- IDA Conference 2015 (San Diego, CA, USA)
- OZWater 2015 Conference (Adelaide, Australia)

▲ **Publications in trade magazines such as Conama, Retema and Futurenviro.**

- Internet article in www.sostenibilidad.com
- Article in Retema in January/February 2015
- Article in Futurenviro September 2015
- Article in Retema in June 2017



7. MAIN DISSEMINATION PRODUCTS

LIFE-BRAINYMEM Project website (<http://life-brainymem.com/>): Launched in December 2014 and updated periodically. It contains all dissemination materials and information about communication activities. During the project, it has been visited 17.650 times, by a number of 5948 visitors.

- ⤴ **Press articles releases:** new on the project were released periodically and gathered together in clipping reports.
- ⤴ **LIFE-BRAINYMEM brochures:** distributed at dissemination events as well by mailing to a number of stakeholders. Two versions available, the first one in December 2015, introducing the project to the audience, and a second version in May 2017, describing the main outcomes obtained so far.
- ⤴ **Layman's report:** Launched in June 2017 and available at the website.
- ⤴ **LIFE-BRAINYMEM Video:** Launched in June 2016 and available through this link.
- ⤴ **Posters and Power Point** presentations were created on purpose in order to disseminate the project in conferences and events (see previous section for a full list of events)
- ⤴ **Project's notice boards:** again, two versions were created, one available in October 2015 and a second one describing the results in September 2016.



8. THE AFTER LIFE COMMUNICATION PLAN

The plan is scheduled for a 3 years period after the completion of the project (2017-2020).

8.1. Main goals

The three main objectives of the After-LIFE Communication Plan are the following:

1. To **continue disseminating the project results** in order to boost the implementation of the technology and to raise awareness especially among final end users.
2. To **reinforce those dissemination activities** that have not achieved the expected results, either to reach the defined audience or to properly communicate the results.

In this sense, deliverable *D.D.4.1 Communication plan* defines as part of the target audience the *Group II: Future users of the technology*. Considering the particularities of the municipal water sector, users of the technology are part of the target audience *Group I: Administration and decision-makers*, so target groups I and II can be joint. Besides, a new group of interest is defined now, being that made by competitors, mainly water utilities. From ACCIONA Agua point of view, the interest in reaching this audience is merely commercial and relies on setting its position in the market and differentiating its products from those of the competence.

3. To develop a **communication strategy** for the **actions continuing** after the project.

As described in the proposal, the following actions will continue once the project has finished:

- Action B3: in order to verify the results obtained in the demonstration plant, it was of high interest to implement the expert system in a real MBR plant. In this sense, the technology is being implemented at the Kobaron WWTP (Spain), currently under construction, and has been proposed to be implemented in Deira Island WWTP (EAU), the bid being currently under evaluation. Other potential sites for implementing the technology are assessed, too.
- Once first results at full-scale were obtained, the socioeconomic and environmental impact could be better assessed, as part as Actions C1 and C2.

Moreover, the After-LIFE Communication plan will be useful:

4. To identify **future collaborations** for R&D and demonstration projects.
5. To **bring LIFE-BRAINYMEM closer to the citizens** by showing the positive impact of the project.



8.2. AFTER-life communication activities

Future continuous communication actions are described in this section.

Attendance to conferences and events

The results of the project will be presented at national and international congresses and disseminated among the main water stakeholders. Personnel from ACCIONA Agua will attend professional meetings in order to publicize this LIFE+ project, where the dissemination material will be distributed. By the moment, **the project will be presented at the LIFE Session in the framework of the EIP Water Conference in Porto, on September 26th.**

- ▲ When: periodical, once an organization announce it.
- ▲ Who: ACCIONA Agua members' staff.
- ▲ Support documents: Dissemination products, Power Point presentations, Poster, Layman's report.
- ▲ Resources: Own resources.
- ▲ Target audience: Administration and decision-makers, competitors, technology developers and suppliers.
- ▲ Objectives addressed: #1, #2, #3, #4

Maintenance of the project web site

The project website, accessible via <http://life-brainymem.com/> is used as an important management tool in Internet. Through this website, it is possible to access all the information related to the project and about the results obtained, Layman's report, etc. The information will be available in Spanish and English to increase the potential number of readers interested in the project. The website will be kept alive after the end of the project, for at least five years, and it will be periodically updated with project results, events and possible post-LIFE news of interest related to the use of water management techniques that are environmentally friendly.

- ▲ When: Periodically updates, depending on the information available.
- ▲ Who: ACCIONA Agua
- ▲ Resources: ACCIONA Agua own resources.
- ▲ Target audience: Administration and decision-makers, competitors, technology developers and suppliers, general public.
- ▲ Objectives addressed: #1, #2, #3, #4, #5

Creation of new dissemination products

New dissemination products include posters and project presentations created on purpose for specific conferences and events. Also, rather than updating the existing brochures ACCIONA Agua



would include project results is other dissemination materials created for specific events such as the World Water Day, promotional material of the company, press releases, etc.

- ▲ When: Periodical, ACCIONA Agua has always dissemination products to distribute in their business promotion activities.
- ▲ Who: ACCIONA Agua.
- ▲ Resources: ACCIONA Agua own resources.
- ▲ Target audience: Administration and decision-makers, competitors, technology developers and suppliers, general public.
- ▲ Objectives addressed: #1, #2, #3, #4, #5

Publish the outcomes in scientific and trade magazines

It is expected to issue materials regarding the most relevant results for publication in scientific peer-reviewed journals and trade magazines, at regional, national or European levels, as well as in newspapers and magazines for the general public. Moreover, a PhD dissertation by Beatriz Corzo with the results of the OFREA project will be published.

- ▲ When: Periodically.
- ▲ Who: ACCIONA Agua.
- ▲ Resources: ACCIONA Agua own resources
- ▲ Target audience: Administration and decision-makers, competitors, technology developers and suppliers.
- ▲ Objectives addressed: #1, #2, #3, #4.

Visits to the plant

Future users of LIFE-BRAINYMEM's technology and/or technology developers & suppliers could be interested in visiting ACCIONA facilities in Almuñecar in order to learn more about the pilot plant performance. ACCIONA will invite these entities to visit it, and will provide information about its performing on the site.

- ▲ When: Periodically, depending on the requests.
- ▲ Who: ACCIONA Agua.
- ▲ Resources: ACCIONA Agua own resources.
- ▲ Target audience: Administration and decision-makers, technology developers and suppliers, general public.
- ▲ Objectives addressed: #1, #2, #3, #4, #5



Technology transfer activities

Technology transfer activities are aimed at implementing the technology at full-scale facilities. First, internal technology transfer to the Technical Department of ACCIONA Agua has taken place in order to include the technology in the bids for new plants. The first tender comprising BRAINYMEM® technology is awarded and the plant is being constructed by the Execution Dept., fully advised by the R&D personnel.

After this first case study, the technology can be implemented internationally. Indeed, it is proposed to be implemented in Deira Island WWTP, located in the United Arab Emirates.

- ▲ When: After the end of the project, progressively.
- ▲ Who: R&D Dept. in collaboration with the Technical and Execution Depts.
- ▲ Resources: ACCIONA Agua and potential partners resources.
- ▲ Target audience: Administration and decision-makers, competitors, technology developers and suppliers.
- ▲ Objectives addressed: #1, #2, #3.

Thus, communication strategies planned for each of the stakeholders of the project are as follows:

Table 1. Audience targeted by the After-LIFE Communication Plan

Activities/Target audience	Administration and decision-makers	Competitors	Technology developers & suppliers	General Public
<i>Attendances to conferences and events</i>	✓	✓	✓	
<i>Maintenance of the project web site</i>	✓	✓	✓	✓
<i>Creation of new dissemination products</i>	✓	✓	✓	✓
<i>Maintenance of the project web site</i>	✓	✓	✓	✓
<i>Visits to the plant</i>	✓		✓	✓
<i>Technology transfer</i>	✓	✓	✓	

8.3. Plan implementation

The suitability of this communication plan as well as its effectiveness in implementation will be revised at least once a year.



Evaluation will be performed on the basis of the following key measuring indicators:

- ⤴ Has the target group already been involved or contacted?: yes, no or partially.
- ⤴ Is there any other target group identified? If yes, it should be included in the plan describing its interest in the project results.
- ⤴ Are the already established communication practices effective? If not, a new proposal should be described.
- ⤴ Adequacy of communication products: adequate, not adequate, or partially adequate. In case of any of the two former options, a new proposal should be described.

If as a result of such evaluation a new version of the After LIFE communication Plan will be generated, and it will be distributed between the partners.

Project data:

Project location: Almuñécar (Andalucía)
Project start date: 01/07/2014
Project end date: 30/06/2017
Total project duration: 36 months
Total cost: 506.366 €
EC Contribution: 253.183 €
Project website: <http://life-brainymem.com/#home>
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Partners data:

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