



PROJECT MIDWOR-LIFE Deliverable

E4- After-LIFE Plan



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² **Dissemination level:** PU = Public, RE = Restricted to a group of the specified Consortium, PP = Restricted to other program participants (including Commission Services), CO= Confidential, only for members of the Consortium (including the Commission Services)



Contents

1. Introduction	4
2. Project key results.....	5
3. Actions to extend the project after-LIFE	6
3.1 Actions to continue policy recommendations	7
3.2 Actions to support industry substitution	7
3.3 Actions to provide continuity to the MIDWOR-LIFE webtool	9
3.4 Actions to develop new fluorine-free DWORs with oil-repellence capabilities	9
4. After-LIFE Communication Plan.....	10
4.1 Objectives of communication and dissemination	10
4.2 Target groups	10
4.3 Project communication tools.....	12
4.4 After-LIFE Communication channels	12
Digital channels:	12
Physical channels:	13
4.5 After-LIFE calendar of activities and events.....	13
4.6 Evaluation and Monitoring	14
4.8 Budget for after-LIFE communication	15



1. Introduction

The main objective of MIDWOR-LIFE project is to mitigate the environmental, health and safety impacts of current and future Durable Water and Oil Repellents (DWOR)' alternatives by analyzing their environmental impact and technical performance in order to assess manufacturers on the best available technologies to provide fabrics with a repellent finishing. Moreover, the risks of the DWOR alternatives have been evaluated for human and environmental health in the textile finishing industry. In this perspective, policy recommendations have been prepared in order to promote the widespread implementation of the less toxic and most effective DWOR alternatives to fulfil REACH Regulation.

Experimentally, this process has been developed divided into four main parts which are i) the selection of the DWORs and the textile materials, ii) the pre-industrial demonstration of the DWORs' application onto textiles, iii) the industrial demonstration of the DWORs application onto textiles and iv) validation on site, at industrial scale of the risk assessment of the DWORs' application.

In this LIFE Environmental Policy and Governance project, three textile clusters from Spain, Italy and Czech Republic (AEI TÈXTILS (Coordinator), CLUTEX and CS-POINTEX), two technological centres (LEITAT and CETIM) and one research centre (IQAC-CSIC) have collaborated during three years.



2. Project key results

Technical results

The major project outcomes have been the technical and environmental assessments of different alternative DWORs versus conventional ones.

At environmental level, the results from the life cycle assessment (LCA) revealed that conventional fluorinated products have a negative impact in the range of 10 to 40 times larger than fluorine-free alternative products.

On the technical level, alternative DWORs achieved a water repellency matching the performance of conventional fluorinated products (both C8 and C6); however, its performance against oil did not reach any acceptable level.

This fact raises the need to establish an equilibrium and rationalization of the requirements at the design stage to find a balance between environmental impact and technical properties according to the final application of the treated textile material.

Alliances built

Key alliances built and reinforced during the course of the project like with Euratex, ECHA, Inditex Sustainability Area, SWEREA (Swedish Research Institute for Industrial Renewal and Sustainable Growth), RISE (Research Institutes of Sweden), etc. need to be continued in order to maximize the impact beyond the consortium partners' reach.

All project partners need to keep building and maintaining those relationships to promote the dissemination and communication beyond the consortium team at EU-wide level. Synergies with other projects with alike topics such as [POPFREE](#), which goal is to transition from PFAS to feasible fluorine-free substitutes at different applications, shall be seek and fostered to enable transferability and replicability of the project.

During the later stages of the project, the team has reached out to the OECD/UN Global PFC group, which brings together experts from OECD member and non-member countries in academia, governments, industry and NGOs as well as representatives from other international organisations. The aim of the group is to reduce emissions and the content of relevant perfluorinated chemicals of concern in products and to work toward global elimination. Several of the partners have joined this working group (LEITAT, CETIM and AEI TÈXTILS). This decision was deemed to be key for reaching out major policy makers from the EU and beyond to promote best practices and the project results at high-level groups.



3. Actions to extend the project after-LIFE

Main actions foreseen to extend the project during the after-LIFE are based on the implementation of the roadmap developed under action B5, particularly the actions to overcome the different barriers that are currently limiting the application of sustainable and greener DWORs.

Three main barriers have been identified:

1. **Strategic barriers:** PFC-free DWORs show very low oil and stain repellency when applied on textiles. Hence, there is a need for dedicated research and development on PFC-free DWORs, which needs to be multidisciplinary and multi-sectoral including the environmental and human health assessment besides technical performance.
2. **Social and economic barriers:** As shown within a recent consumer survey, the primary repellency function required in outdoor apparel is water repellence but is currently using fluorinated finishing, therefore using over-engineered solutions. Non-fluorinated chemistries tested in the project can currently meet repellency requirements for most outdoor apparel consumers.
3. **Technological barriers:** Dendrimers, silicone and paraffin analyzed in the project meet the standard levels of technical performance for water repellence and durability required by the consumers but there are still difficulties to attain the oil and dirt repellency required by the consumers. This might limit their use in workwear and other textiles treated with these non-fluorinated DWORs

Several actions are planned in order to extend MIDWOR-LIFE beyond the project lifetime focused towards overcoming the abovementioned barriers.

MIDWOR-LIFE partners present the approach to overcome the barriers based on both regulatory push and industrial commitment and awareness raising. Several policy recommendations have been identified to promote, from regulatory perspective, the adoption of best practices and facilitating industry solutions and comprehensive data (section 3.1). In parallel, awareness raising campaigns with textile companies' members of the participating clusters will be carried out to become them aware of the different ongoing activities by regulatory agencies and the different solutions available in the market in terms of sustainable DWORs (section 3.2). Lastly, textile companies need access to the data generated in the project for conducting self-assessments of their current products used and the potential alternatives available. This point is where MIDWOR-LIFE partners will promote the use of the developed web tool for helping the textile industry evaluate their current technologies and identify potential substitutes in an informed approach preventing regrettable substitution (section 3.3). Lastly, the technological barriers, which require actual R&D and are envisioned for the long term, are addressed in section 3.4 with the identification of future funding to develop new chemical products and approaches for replacing PFCs where oil repellency is a safety requirement.



3.1 Actions to continue policy recommendations

MIDWOR-LIFE results have been compiled in policy recommendations reports at three different levels (REACH, BREF, voluntary schemes) and included in the project web tool to support industry in assessing their currently used DWORs and alternatives considering the environmental and technical aspects. The commitment from MIDWOR-LIFE partners does not end with the project, they will continue involved in policy follow up.

The different policy recommendations generated in the project (Deliverables B6.1, B6.2 and B6.3) will be followed up by the partners. For instance, MIDWOR-LIFE BREF recommendations arrive in time for the ongoing revision started on June 15th 2018, which will last for the next 2-3 years. BREF revision will have a significant impact on the textile industry, as it will become mandatory due to the new emission directive that is linked to. Thus, the partners contacted and sent the recommendations to the Joint Research Center (coordinator of BREF), EURATEX (as EU chair from the textile industry), ATEVAL and TEXFOR (Spanish representatives in BREF review) and with the recently assembled Novel Techniques 'Innovation Observatory' where some team members will join in the coming months as expert reviewers on novel techniques.

The new BREF will in turn benefit the voluntary schemes like ECOLABEL and other mechanisms like public procurement by incorporating the new best available techniques as the reference for certifying products.

Other examples of channels that the partners will exploit to communicate those policy implications will turn globally through the active participation of LEITAT, CETIM and AEI TÈXTILS in the PFAS working group from the OECD where the team already submitted some recommendations on the recent call for data on PFAS and alternatives. The partners will be giving a webinar detailing the MIDWOR-LIFE project as a case study.

3.2 Actions to support industry substitution

The addition of PFOA and its related substances (including polymers) into the REACH restriction list (annex XVII) accelerated the rate of substitution of long-chain chemistries by short chain PFAS in the textile industry. Hence, C8-chemistries are already barely used due to the effective restriction foreseen in 2020. In addition, the warnings raised by regulatory actions makes textile companies start considering the complete shift from fluorinated chemistries and this is where the partners will push for the different fluorine-free alternatives evaluated during MIDWOR-LIFE project.

Some of the companies that actively participated with the project partners showed already a huge interest in fluorine-free technologies to replace current chemistries. These include the Italian companies TF2000 and BMT who have already ban by internal protocol the use of C8 and are looking for fluorine-free chemistries, and Inotex (Czech Republic) which offered themselves to test some developed formulations with fluorine-free chemistries. Spanish companies (E.CIMA and Hidrocolor) and other Czech company (NanoMembrane) have also expressed their commitment to replace them by safer alternatives.



It has been detected, through the different meetings and workshops that a lot of emphasis has to be performed at the end of the value chain in order to promote the upstream replacement of hazardous chemicals. Thus, the ongoing alliance with Inditex Sustainability Area and their ongoing platform Roadmap to Zero (<https://www.roadmaptozero.com/>) has been found as an extremely important channel to transmit directly to consumers the need to rethink on the functionality requirements. Real transformation will become effective either by consumer driven changes (focus on whether functionalization is needed) or through policy changes and restrictions as it is currently happening with C8-based chemistries.

Best practices from MIDWOR-LIFE project will be promoted to be incorporated within the next Textile Industry BREF, which implementation will become mandatory. Thus, the partners have already established contact with the BREF revision committee and follow up will be guaranteed through LIFE-FLAREX project where further recommendations will also be provided.

All clusters participating in the project (AEI TÈXTILS, CLUTEX and CS-POINTEX) will organize follow up workshops focused towards a sustainable textile industry to transfer the knowledge acquired by the Project to the companies in order to fasten the adoption of fluorine-free chemistries to provide fabrics with water repellence. The goal of those workshops is to make companies, and particularly SMEs, aware of the upcoming regulations affecting DWORs that will impact their businesses (i.e. regulation of C6 and other short chain perfluorocarbon products that are the “easy” drop in substitute) and support them in the process of substitution of chemicals from a conscious and informed perspective. Regular follow-up is envisioned with participating companies to identify challenges during the substitution process as part of the cluster activities and to monitor the impact of the substitution within their members.

Synergies with ongoing activities and projects like LIFE-FLAREX (being carried out by AEI TÈXTILS, CLUTEX, CS-POINTEX, LEITAT, CSIC-IQAC and 2 other partners) and Ecodistex (being carried out by AEI TÈXTILS and LEITAT) will be used to further showcase and benchmark the results of the MIDWOR-LIFE project as well as the methodology for substitution towards a greener textile industry. LIFE-FLAREX is using a methodology for addressing informed substitution with focus on flame retardants similar to the one used in MIDWOR-LIFE incorporating the different learnings and best practices identified during MIDWOR-LIFE project. Ecodistex, on the other hand, is focused towards adoption of eco-design principles in the textile industry by taking into account the whole life cycle of a product at the design stage, therefore, adopting mitigation measures at earlier stage. Here, substitution of harmful chemicals is of utmost importance to make safer and sustainable products by design. In addition, AEI TEXTILS will create a circular economy and sustainability working group among their members to promote greener and safer solutions in the textile industry.

Other relevant stakeholders from the project like the European Textile Platform, EURATEX and ECHA have also been using MIDWOR-LIFE project as a referent for chemical substitution to avoid regrettable substitution cases. Thus, it is foreseen a raise



in industrial commitment now that the results are published and the different stakeholder will have the different documentation available.

3.3 Actions to provide continuity to the MIDWOR-LIFE webtool

The web tool platform developed within MIDWOR-LIFE project provides useful information of the different DWOR chemistries tested in MIDWOR-LIFE project in terms of environmental impact, human health impact and technical performance based on the results from the project implementation actions. This web tool will also become a crucial platform for the textile industry to perform self-assessments in terms of life cycle impact and performance of the different alternative DWORs available.

The platform will remain online in the project website for at least 5 years and it is intended to be further complimented with results from other ongoing projects (i.e. POPFREE) making it a dynamic and growing platform to support companies succeed in the substitution process.

Additionally, the web tool will be promoted among the members of the clusters to help them identify different alternative products, assess the environmental footprint of those in comparison with more conventional technologies and enable them make informed decisions towards substitution preventing regrettable substitutions.

3.4 Actions to develop new fluorine-free DWORs with oil-repellence capabilities

Development of new fluorine-free DWOR products requires going back to the whiteboard with comprehensive multidisciplinary approach to address lower TRL solutions (technological readiness level). For that, the consortium envisions the participation in Research and Innovation actions from Horizon 2020 and the next framework program (Horizon Europe). In order to bring together the main research actors, the project partners will build upon other actions like CONTEXT COST action, where Ariadna Detrell (cluster manager in AEI TEXTILS) is the main proposer. This will enable both a continued EU-wide dissemination of the project results and the creation of new research lines within the European network experts focused toward sustainability of textile industry with better designs and informed substitution of hazardous substances used in the different textile processes.



4. After-LIFE Communication Plan

Communication plays the main role in supporting the successful implementation and results' dissemination of the project as well as the global long-term impact of the project in the participating countries and to whole European Union territory.

This After-LIFE Communication Plan contains information and promotion activities of MIDWOR-LIFE project, which will be used for the communication strategy during the 5 years after the project completion.

4.1 Objectives of communication and dissemination

In order to continue the widespread and the promotion of the achievement and results of MIDWOR-LIFE, a communication strategy, dissemination actions, and the adoption approach have been defined to be performed after the end of the project and during at least the five upcoming years. The communication and dissemination approach is aimed at:

- Promoting the benefits and opportunities generated by the project outcomes.
- Reinforcing the partners vision and project objectives towards a more sustainable textile industry.
- Encouraging a consistent, timely, targeted, accurate and secure flow of information among the key stakeholders identified.
- Supporting effective knowledge sharing of the project outcomes to avoid regrettable substitution.

4.2 Target groups

To foster targeted communication activities, a clear identification of the target groups is crucial in order to spread the right key messages.

Target groups are identified on the basis of the following motivations:

- To disseminate its topics and results.
- To support the sharing of information through partnerships with research institutions and actors operating nationally in the sector.
- To favor multiplying effects of the MIDWOR-LIFE results with the academic world through the involvement of universities, environmental associations, stakeholders and decision-makers.

The following target groups have been identified:

1. Key industrial members and associations: from all the different target audience groups (textile industry associations and SMEs, material and chemical suppliers,



distributors, retailers or consumers) several strategic partners have been closely involved in the project. In this sense, trade associations such as EURATEX, The European Apparel and Textile Confederation, was considered as target audience and the relationship with them during the project has been strengthened becoming a key alliance in disseminating the project.

2. Textile manufacturing companies, apparel and fashion retail companies and chemical products' manufacturers: comprising mainly the production of fabrics, finishing activities and manufacturing of final products such as garments, home textiles or technical textiles.
3. Key experts: the project established and External Advisory Board formed by key experts which have contributed to the achievement of the project goals. Those include experts from Inditex (Sustainability area), Politecnico di Torino and Euratex.
4. Scientific organisations: valuable knowledge on subjects dealing with sustainability is not only present in the involved beneficiaries of MIDWOR-LIFE project, but in many other study centers, research centers, sector organizations, etc. For this, also these stakeholders have been consulted including RISE and SWEREA
5. Organisations and interest groups: they include environmental organisations, socio-economic organisations, workers and citizens' associations, professional and trade associations, research and consulting organisations, business development services.
6. Public authorities (governments/policy makers) at local, national and European level: local government agencies, industry and environmental departments at the state and central government levels (ministry for production activities, ministry for the environment etc.), National and/or European agencies for environment protection have been consulted to make sure that the dissemination and provided information keeps in track with the latest legislation/policy developments. This have included active information exchange with the European Chemicals Agency (ECHA) and the German Federal Environmental Agency among others.
7. Consumer organisations such as the European Consumer's Organisation (BEUC) to increase consumer's awareness on the environmental, health and safety impact of the textile finishing sector.
8. Media representatives.
9. General public: MIDWOR-LIFE contributes to pursue the raising of awareness regarding the issues PFOA and other PFC-based repellents pose.



4.3 Project communication tools

Communication tools developed during the project will be used for the After-LIFE communication activities. These include:

1. Layman's Report (English, Spanish, Italian, Czech and Catalan)
2. Project public deliverables
3. Project Brochure
4. Logo
5. Presentation layout
6. Project website
7. MIDWOR-LIFE web tool
8. LinkedIn group

All communication materials include the EU acknowledgement for the funding, LIFE logo and the project reference for identification.

4.4 After-LIFE Communication channels

Different channels will be used to direct communications during the upcoming years:

Digital channels:

1. MIDWOR-LIFE website: will remain active for at least 5 years after the project completion.
 - a. The website <https://www.midwor-life.eu> provides information on the project, its partners, background material and all projects' public documents (i.e. deliverables and reports).
 - b. Related news will be updated at least twice a year during the upcoming years.
 - c. Monitoring of the website will continue through Google Analytics and download counter to follow main KPIs.
2. MIDWOR-LIFE web tool will be available within the project website for the industry to facilitate access and know-how on environmental, risk assessment and toxicity of DWORs analysed in the project.
3. MIDWOR-LIFE LinkedIn group (<https://www.linkedin.com/company/midwor-life-project/>) will remain active and related news will be posted as well as sharing relevant information (i.e. ECHAs' activity in PFOAs or other DWORs)
4. [ECHA's LinkedIn group on substitution to safer chemicals](#) where team members have joined will be used as a platform to share the results across main substitution promoter stakeholders.



Physical channels:

1. Participation and presentations in technical conferences where the partners are regular attendees/presenters (listed in section 4.5).
2. Publication of scientific papers foreseen in the Roadmap (i.e. DWOR state of the art reviews, results publications from LCA and technical, etc.).
3. Participation and presentation of the project results in other projects' events (i.e. stakeholders' workshops where other projects are invited). For example, it is envisioned that the project results from MIDWOR-LIFE will be used in LIFE-FLAREX project during the upcoming years as a benchmark for substitution approach.
4. Active participation in BREF update process (currently ongoing) as this will be crucial for the textile industry for its enforcement approach rather than recommendations as of current BREF.
5. Meetings with the industrial partners (i.e. general assemblies of the Clusters or technical visits by the technological centers).
6. Workshops on sustainability organized by regional development agencies or other actors in the participating countries.

4.5 After-LIFE calendar of activities and events

Planned dissemination activities

Date	Where	Event	Attendees
Oct 30th 2018	Worldwide – OECD webinar	Webinar title: Toward greener water and oil repellents in the textile industry case study	LEITAT, CETIM, AEI TEXTILS
Nov 2018	South Africa	ATF conference	AEI TEXTILS, CS-POINTEX, CLUTEX
Nov 2018	Barcelona/Valencia	Substitution workshop	AEI TEXTILS
Q1 2019	Israel	Tbc	AEI TEXTILS, CS-POINTEX, CLUTEX
May 2019	Brussels	ETP Conference	CLUTEX
Jun 2019	Barcelona	ITMA 2019: conference	CS-POINTEX, CSIC-IQAC
Oct 2019	Taiwan	TITAS Congress	AEI TEXTILS, CS-POINTEX, CLUTEX
2019	Scientific journal	Publication of DWOR chemistries review	CSIC-IQAC
2019	Scientific journal	Publication of LCA results	CETIM
2020	Europe	Final event LIFE-FLAREX, toward substitution workshop	AEI TEXTILS, LEITAT



Other follow up activities:

Date	Activity	Partner responsible
2018-2021	Textile BREF update (kick off Jun 18 and foreseen duration 2-3 years): - recommendation follow up and support - synergies with LIFE-FLAREX project	LEITAT, CSIC-IQAC
2018+	Follow up on REACH and Ecolabel recommendations	LEITAT
2018+	Active participation in the PFC group from OECD	LEITAT, AEI TEXTILS, CETIM
2018+	POPFREE information exchange (project transferability and replication)	CETIM, LEITAT
2020+	Horizon Europe new calls with focus on substitution of chemical and with end-of-life scope risk assessment	LEITAT with support from all partners

4.6 Evaluation and Monitoring

Evaluation of the impact will be ensured by regular monitoring most relevant key performance indicators defined within the project. .

Communication tool	KPI	Target
Project website	Visits	1.000 / year
	Number of downloads	250 / year
Social media	Number of likes / shares	10 / post
	Reach number	100 / post
Events	Nº of participants	20 / event
	Feedback received	10 / event
	Media mentions	5 / event
Media coverage	Press release impacts	3 / year
Printed materials	Nº of leaflets, brochures, layman's report etc. printed and distributed	300 / year



4.8 Budget for after-LIFE communication

Partners will use their current activities in the field of textile finishing and their own funds to promote the results of the project beyond the project ending. Partners will try to benefit from synergy effects with other ongoing projects and actions when communicating about MIDWOR-LIFE to thrive a more sustainable textile industry. Some of the foreseen digital communication channels have a very low cost of usage but can have a large outreach.

Below an estimation of the costs for the upcoming years of the after-life period of the project.

Concept	Cost	Allocation of funds
Travelling: 7 travels at 700€ each (average)	4.900 €	Each partner participating from their own funds and/or within other related projects
Website maintenance (5 years)	2.500 €	AEI TÈXTILS own funds
Participation at conferences (fees)	1.000 €	Each partner participating from their own funds
Communication materials	2.500 €	Each partner from their own funds
Organization of workshops	8.000 €	AEI TÈXTILS, CS-POINTEX and CLUTEX with own funds and synergies with other ongoing actions and projects
TOTAL	18.900 €	