

UNIQUE AND SUSTAINABLE SYSTEM FOR PRODUCING GARMENTS WITHOUT WATER DISCHARGES - NEWSLETTER

ISSUE #2, JULY 2024

IN THIS ISSUE:

1. THE LIFE ANHIDRA PROJECT	2
2. WATER MANAGEMENT IN THE EU (TEXTILE AND NON-TEXTILE) INDUSTRY.....	3
3. LIFE ANHIDRA WEBINAR – AN EU GREEN WEEK 2024 PARTNER EVENT	4
4. ATTENDANCE TO EVENTS.....	6
5. CLUSTERING AND NETWORKING PROJECTS	8
6. UPCOMING EVENTS	9



LIFE anhidra



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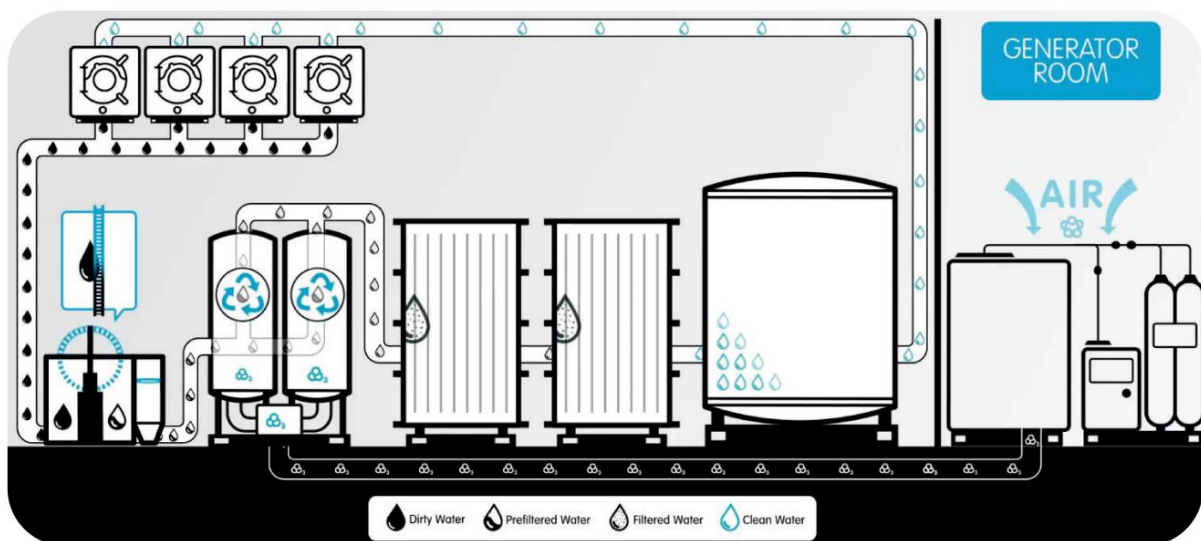
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1. THE LIFE ANHIDRA PROJECT

MAIN OBJECTIVES

LIFE ANHIDRA (September 2022 – February 2025) proposes the **development and validation of an innovative, efficient, and effective solution to water regeneration and reuse of water in situ in textile finishing process**. The project is coordinated by the Spanish company **JEANOLOGIA S.L.** (Paterna - València), being partnered by the Spanish researching and innovation center **ASOCIACIÓN DE INVESTIGACIÓN PARA LA INDUSTRIA TEXTIL – AITEX** (Alcoi - Alacant) and the Portuguese company **PIZARRO S.A.** (Brito - Guimarães).

The new concept will allow **water reuse in industrial washing machines during 60 operation days**, saving up to 21,000 m³ during this period, and 123,408 m³/year in one industrial facility.

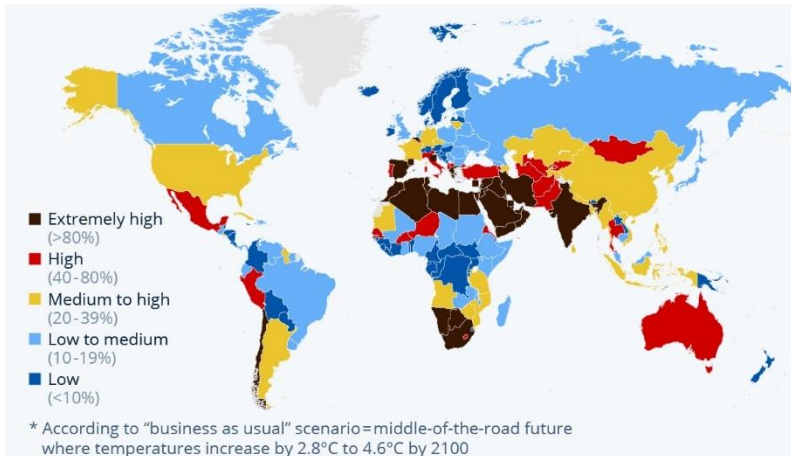


EXPECTED RESULTS

- **Water reuse and savings of 21,000 m³ during 60 operation days**, in industrial washing machines. **In one industrial facility** is expected to reach **savings of 123,408 m³/year**.
- This new alternative concept of **water reuse at close loop** is expected to **reduce the water consumption in 92%**, and **wastewater generation at 98%** from the conventional textile finishing processes, simultaneously **avoiding massive discharges of emerging pollutants, microfibres and pathogens** to the environment.
- **Electric energy consumption is expected to be reduced in 15%**.
- It's expected the **implementation of 36 facilities 3 years after the project and at least 100 systems in the following 5 years** after the project at international locations.
- This fact will derive to **potential savings of water up to 12.34 million m³/year (worldwide)**.
- In addition, **ANHIDRA** technology will recover textile fibres that normally arrive to wastewater treatment plants (WWTPs) together with the water to be treated. **Several routes for valorisation of the released fibres** will be deployed during the project based on a circular economy approach.

2. WATER MANAGEMENT IN THE EU (TEXTILE AND NON-TEXTILE) INDUSTRY

Energy, water and other resource optimisation technologies should be bestsellers during time of high input prices (Source: L. Walter. *ITMA 2023 – Evolution before Revolution*, <https://textile-platform.eu/>). In Europe, some areas of water stress often coincide with areas where the textile industry is developed. Europe experienced its most severe drought in 500 years during summer 2022 (Source: CEFIC, 2022) and science-based data seem to indicate that in the coming decades the situation will worsen.



Projected water stress at worldwide level for 2050. From WRI, *Aqueduct* and Statista (2024).

- Water scarcity affects 30% of Europeans and 20% of land annually (Source: EC - #WaterWiseEU campaign, 2024).
- The interplay between climate change, water availability fluctuations, and energy, food, and industrial needs exacerbates the situation.
- Operational risks rise as droughts become more frequent.



Droughts may cost up to EUR 9 billion every year



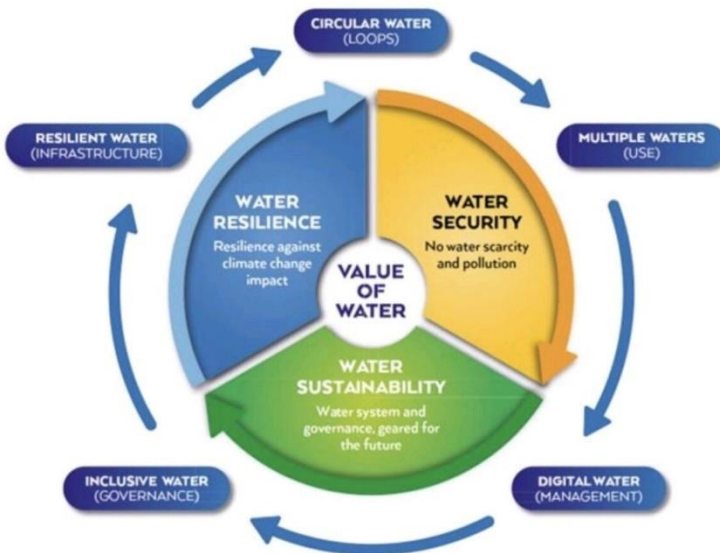
Water scarcity affects 30% of Europeans and 20% of land each year



48% of Europeans think that droughts and water shortages are the main threat to water in their country

In the textile industry, most of the CO₂ and water footprint are generated during the wet processes involving the fabric manufacturing and garment finishing. As stated by the textile expert Lutz Walter reviewing the last ITMA innovations “*cost or material and processing limitations seem to prevent them from wide-spread adoption so far. We will therefore still have to live with conventional textile wet processing for a long time. Constant evolution towards closed-loop water reuse, energy-efficient wastewater treatment and (...) zero liquid discharge is needed*”.

The strategy in Europe is based on a wide legislative framework combined with a multi-pillar industry response. EU policies like the ‘Industrial Emissions Directive’ and ‘Eco-design for sustainable products’ promote water efficiency and reuse. EU water policy is one of the cornerstones of environmental protection in the EU. The rules protect water resources, fresh and saltwater ecosystems, and ensure our drinking and bathing water are clean. In the context of the European Green Deal, the Water Framework Directive provides the main framework and the objectives for water policy in Europe (Source: https://environment.ec.europa.eu/topics/water_en).



Water Europe's model for a Water-Smart Society (Source: Water Europe).

In addition to the EU policies, other organisations also contribute to water resiliency, e.g., Water Europe advocates for building a water secure, sustainable, and resilient, Water-Smart Society across Europe and beyond. This model emphasizes the crucial interplay of innovative concepts in:

- Circular water,
- Resilient infrastructure,
- Multiple water uses,
- Inclusive governance, and
- Digital water management.

Here is where **LIFE ANHIDRA** is acting, in the core of the problem, as it's a project focused on circular water contributing to other important topics in water like digitalisation, resiliency and circular economy. However, it must be said the whole manufacturing EU sector, including those industries highly dependent about water (chemical, textile, food, ceramics, metal/surface treatments...), faces challenges due to water scarcity. This is one of the reasons **LIFE ANHIDRA** organized its webinar, as a partner event in the frame of the EU Green Week 2024.

How companies, research entities and academia are addressing the problem, to improve efficiency and eco-friendliness during water scarcity? Have a look to next chapter of our newsletter.

3. LIFE ANHIDRA WEBINAR – AN EU GREEN WEEK 2024 PARTNER EVENT

On June 17th 2024, the project launched the webinar “Demonstration of water management in the industry by EU-funded and LIFE projects”, a partner event part of the EU Green Week 2024, which this year has the water resilience as the main theme. In May 2024, the EU launched the #WaterWiseEU campaign, encompassing many water-related aspects, but above all, it's about how we can be smarter with water, whether that's in our daily lives or on a much larger scale. This includes how the EU can ensure our water security and what measures we are taking to adapt to our ever-changing climate in relation to water.

EU Green Week
PARTNER EVENT

Demonstration of water management in the industry by EU-funded and LIFE projects

Online (via Teams)
June 17th, 2024

#WaterWiseEU



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PIZARRO

SESSION 1. MANAGEMENT OF WATER: CLOSED-LOOP SYSTEMS AND SMART TOOLS

10:05 Unique and sustainable system for producing garments without water discharges

LIFE ANHIDRA. Víctor Herraiz (AITEK, ES)

10:20 Helping the textile industry reduce its water footprint

REWAFT. Rick Hogeboom (WATER FOOTPRINT NETWORK. University of Twente, NL)

10:35 Reuse of laundry wastewater

LIFE RECYCLO. Lisa Rouvière (TREETWATER SAS, FR)

SESSION 2. REMEDIATION AND REMOVAL OF POLLUTANTS FROM WATER

10:50 Multimodal orchestrated removal of emerging pollutants from textile wastewater

LIFE CASCADE. Carla Joana Silva (CITEVE, PT)

11:05 Efficient removal of perfluorooctanoic acid (PFOA) from water with magnetic fluids

LIFE FOUNTAIN. Luca Magagnin (POLITECNICO DI MILANO, IT)

11:20 Multidimensional integrated quantitative approach to safety and sustainability of nanomaterials. Applications to real case scenarios in water treatment

INTEGRANO. Massimo Perucca (PROJECT HUB360, IT)

SESSION 3. RECOVERING AND VALORIZATION OF ENERGY AND WASTE STREAMS

11:35 Anaerobic and autotrophic bioprocesses to transform a WWTP into a resource-generating biofactory with a positive energy balance

LIFE ZERO WASTE WATER. Marta Elvira Castaño (FCC AQUALIA S.A, ES)

11:50 Water smart industrial symbiosis

ULTIMATE. Joep van den Broeke (KWR WATER BV, NL)

12:05 Innovation for water reuse & resource recovery. AnMBR technology in SYMSITES EcoSites

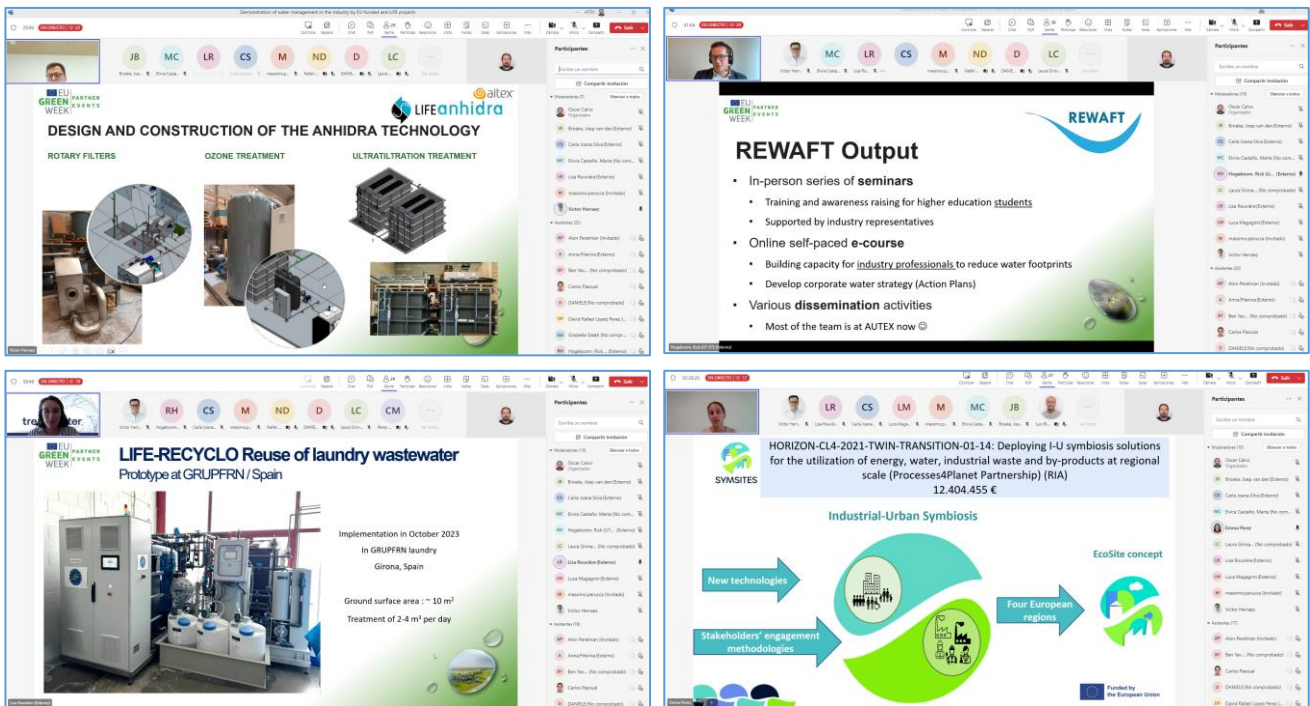
SYMSITES. Emma Pérez (AITEK, ES)

12:20 Brine and metal waste valorization to produce coagulants for wastewater treatment

LIFE WASTE2COAG. Laura Grima Carmena (AIDIMME, ES)

Our webinar brought together up to 10 top EU-funded projects (**LIFE ANHIDRA**, REWAFT, LIFE RECYCLO, LIFE CASCADE, LIFE FOUNTAIN, INTEGRANO, LIFE ZERO WASTE WATER, ULTIMATE, SYMSITES and LIFE WASTE2COAG) which, being divided in 3 sessions (closed loops, remediation of pollutants and symbiosis & valorization of waste streams), provided a broad view about how to manage water, close the loop, take profit from wastes and use them as a raw material in several industrial sectors:

- Textile and cosmetic companies, as well as industrial districts.
- Laundries and water-intensive domestic activities.
- Agricultural and greenhouses.
- Metal manufacturing and hard-surfaces finishing industries.
- Design and manufacturing of water filtration and purification systems.



Did you miss the live session, or would you like to watch the webinar again? Presentations are here

<https://www.aitex.es/wp-content/uploads/2024/06/EU-Green-Week-Presentacion.pdf>

And watch the full session via **LIFE ANHIDRA** Youtube channel, just clicking here

<https://www.youtube.com/watch?v=Nr9nihSDJN8>

4. ATTENDANCE TO EVENTS



AITEX attended the 49th Symposium hosted by the Asociación Española de Químicos y Coloristas Textiles (AEQCT) on 11th April 2024 (Terrassa, Spain), focused on solutions and opportunities for the textile industry. Water was one of the key topics and **ANHIDRA** was described as an example of closed-loop technology for re-using water from textile finishing processes. Some potential routes for valorising fiber fragments coming from the treated wastewater were pointed out, too. In addition, **ANHIDRA** project was also present as a part of the communication bag provided to the audience.



SOLUCIONES PARA LA REDUCCIÓN DEL CONSUMO DE AGUA Y LA PRESENCIA DE PFAS EN PROCESOS DE ACABADO TEXTIL



11 DE ABRIL DE 2024 - TERRASSA
 Museu Nacional de la Ciència i la Tècnica de Catalunya (MNACTEC)

UN EJEMPLO DE SOLUCIÓN PARA EL RECICLADO DE AGUA: PROYECTO LIFE ANHIDRA.



¿Qué podemos hacer con el residuo fibroso recogido en la zona inicial de filtrado mecánico / desbaste?



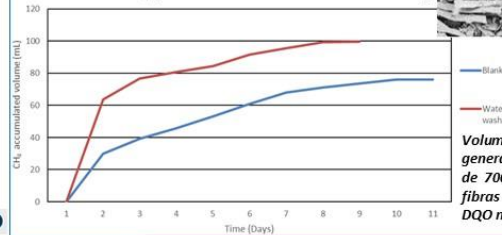
Varias estrategias de valorización del residuo fibroso:

- Como **refuerzo/carga** para plásticos o composites.
- Posibilidad de **uso como "pigmento"** para estampación.
- **Generación de biometano, CH₄** (digestión anaerobia).
- **Valorización energética** (por ser celulósico – tipo biomasa).

Triturado y pulverizado de residuos celulósicos (izq.) y dispersión de estos en una resina ligante para recubrimiento/estampación (dcha).



Volume of CH₄ generated from water from 1 domestic washing



Volumen de CH₄ acumulado generado de una muestra de 700mL de agua rica en fibras celulósicas.
 DQO muestra = 1.383mg/L.

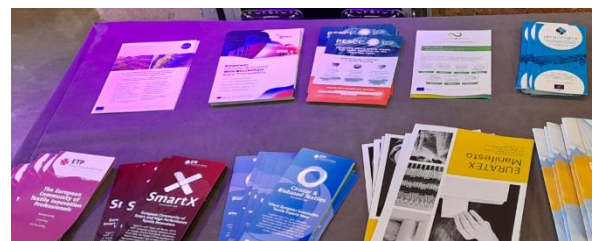


JEANOLOGIA promoted ANHIDRA at Kingpins Show (Amsterdam, NL), on April 24th – 25th 2024, a trade show for the denim and jeans supply chains and industries. More than 1,200 guests were attending the show this year.

Several leaflets were available for visitors, as part of the innovative solutions unveiled in this event, to make the industry aware of a closed-loop solution for treatment of wastewater coming from textile/garment finishing processes.



Our partner AITEX attended the 18th Textile ETP Annual Conference (Mechelen, Belgium) on May 14th – 15th 2024. The event brought together textile industries, experts, and leading innovators focusing on sustainability, innovation, fundings, and the future of the #EU textile sector. ANHIDRA had a visible space with some leaflets available, and our project roll-up informing the audience.



Merhaba Türkiye! **ANHIDRA** has also been in Istanbul attending the ITM 2024 (International Textile Machinery Exhibition), the meeting point of World textile technology leaders, from 4th – 8th June 2024.

JEANOLOGIA provided some information to customers and visitors about **ANHIDRA** project and its technology and shown new process Atmos and last developments in laser devices for garment and denim finishing.



EU Green Week
PARTNER EVENT

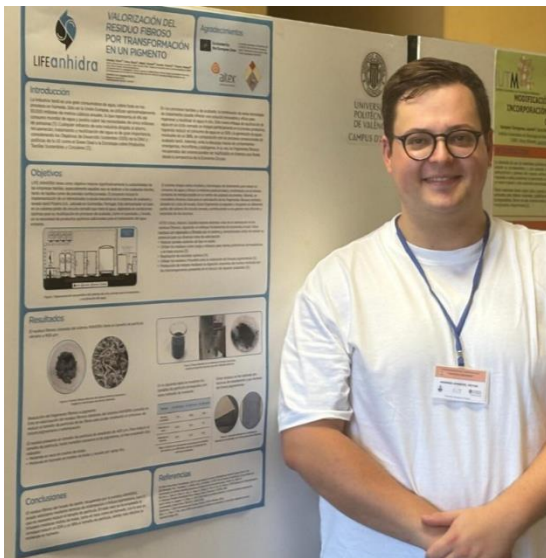
Demonstration of water management in the industry by EU-funded and LIFE projects

Online (via Teams)
Mon June 17th, 2024

#WaterWiseEU



AITEX introduced **ANHIDRA** to the audience during the project webinar organized as part of the EU Green Week (partner event), on 17th June 2024. **AITEX** presented our closed-loop system for re-using water from garment finishing, and what could we do with the fiber-based wastes released from textile finishing processes.



AITEX attended the XI Congreso 'Creando Sinergias' UPV on 4th July 2024 (Alcoi, Spain), presenting a poster describing the project objectives, the expected results, and which are the main valorization routes of fiber wastes recovered from the **ANHIDRA** system.

Could you imagine a t-shirt printed... with fibers released from a t-shirt?

5. CLUSTERING AND NETWORKING PROJECTS

LIFE ANHIDRA performs some interactions and networking actions with other EU-funded projects focused on water management, wastewater treatment, textile technologies, as well as valorization of waste streams coming from several industries, for exchanging experiences, to find inspiration for tasks involving the current (and further) projects and to promote project visibility. In this issue #2 of our newsletter, we highlight the projects:

- SYMSITES <https://symsites.eu/>
- LIFE FOUNTAIN <https://www.fountain-project.eu/>
- ULTIMATE <https://ultimatewater.eu/>

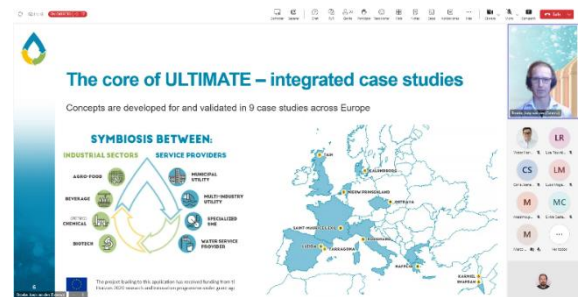


SYMSITES is coordinated by **AITEX**. Staff involved in both projects met along 2024 to share experiences about how to generate biomethane from enriched cellulose wastes. SYMSITES aims to develop new technologies and solutions based on the Industrial and Urban symbiosis (I-US) concept, improving the sustainability of the use of industrial and societal resources starting from wastewater and waste materials.

In May 2024, LIFE FOUNTAIN and **LIFE ANHIDRA** met online for promoting a common press release. A potential further collaboration related to PFAS pollution was also identified by **AITEX**. LIFE FOUNTAIN proposes a remediation solution for PFAS pollution by utilizing innovative functionalized magnetic nanoparticles that will allow the use of treated groundwater in the surface finishing industry.



In June 2024, ULTIMATE and **LIFE ANHIDRA** met online, for agreeing the participation in the **ANHIDRA** webinar. In addition, ULTIMATE and **AITEX** shared some preliminary data and info about the main water-related challenges for the EU textile industry, their main clusters, water qualities and main processes which are water-intensive in terms of consumption. Further discussions for potential collaborations will follow.



All of them are warmly welcome to the network of EU-funded projects already contacted by **LIFE ANHIDRA**:

PROJECT LOGO	ACRONYM & MAIN GOAL	NETWORKING WITH LIFE ANHIDRA
	Life RECYCLO's aim is to propose better management of water resources and to reduce the discharge of polluting substances into the aquatic environment for the laundry sector. To meet this objective, the project will develop a wastewater treatment and recycling process for laundries. +info https://www.treewater.fr/en/recyclo	Common dissemination purposes and promote visibility each other
	REWAFT aims to address the problem of water use in the textile industry by raising awareness and providing practical solutions: development of an online tool to help textile companies measure this indicator, an e-learning course and a series of seminars to increase the sustainability skills. +info https://textilewaterfootprint.eu/	Exchange knowledge on water management. Common dissemination purposes
	Main objective of LIFE ECOdigestion 2.0 is to scale up the technology to produce biogas on demand with WWTP sludge, using agro-food waste and slurry as co-substrate, for maximising green energy production and waste treatment capacity. +info https://www.lifecodigestion.com	Common dissemination purposes. It inspired ANHIDRA to explore biomethane generation from wastes

6. UPCOMING EVENTS

LIFE ANHIDRA is expected to participate next months and be disseminated in these events:

- Final Conference of the REWAFT project (Alcoi, Spain), September 24th, 2024. Language of the conference: Spanish. Register [here](#) and check our Social Media platforms as well as <https://textilewaterfootprint.eu/> for more info about the final programme and agenda.
- Final Event of **LIFE ANHIDRA** project (**PIZARRO**, Brito, Portugal), November 2024. Stay tuned in our Social Media platforms! Exciting news and updates will come.