

„Water Resources Management in Visitor Attractions - FIT4USE Water Recirculation Technology“

LIFE22-ENV-CZ-LIFE4ZOO



PHOTON
ENERGY
GROUP



Water Resources Management in Visitor Attractions - FIT4USE Water Recirculation Technology LIFE4ZOO

PROJECT LOCATION: Liberec (CZ)
Barcelona (ES)

BUDGET INFO:

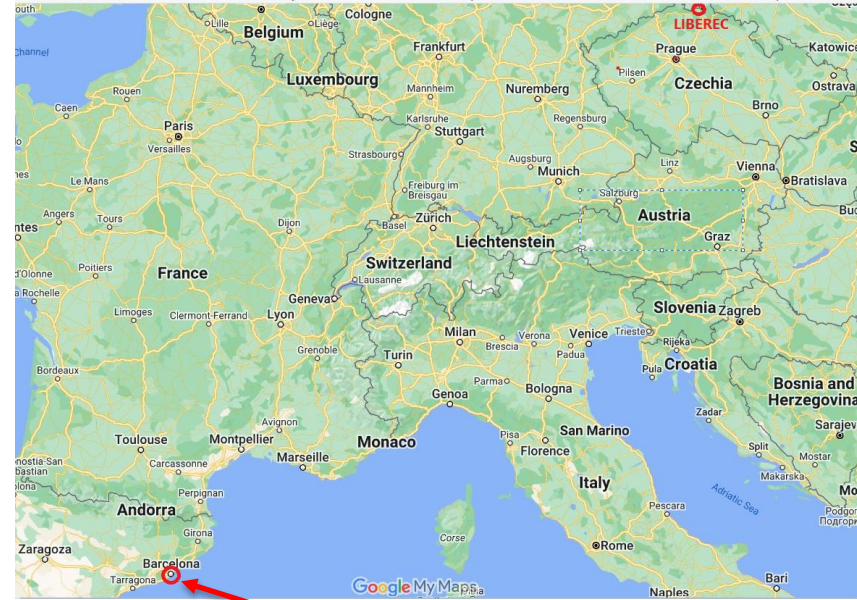
Total amount: 2,775,395.96 €

EC 60%, Czech Gov. 30% for czech participants

DURATION:

Start: 01/09/2023

End: 28/02/2027



Coordinating Beneficiary:

Technical University of Liberec

Associated Beneficiaries:

Zoo Liberec

Photon Water Technology

University of Girona

Fundació Solidaritat - University of Barcelona

Zoo Barcelona



Ministerstvo životního prostředí

GENERAL INTRODUCTION



Water is one of the basic, priority, and crucial raw materials for meeting the economic, social, and environmental needs of society

Water determines the conditions for a sustainable environment and national economy worldwide now and for ages.

Water is crucial for life!“, *LIFE4ZOO proposal 2022*



GENERAL INTRODUCTION

Key addressed topics

An excessive **water consumption** in city zoos is a significant environmental problem – suboptimal water management

Excessive **Waste Water treatment** impacts surrounding surface water.

Zoos consume a **large amount of drinking water** – high operating costs.

Zoos face particular challenges at times of **water shortage** and are not designed with water resilience in mind.



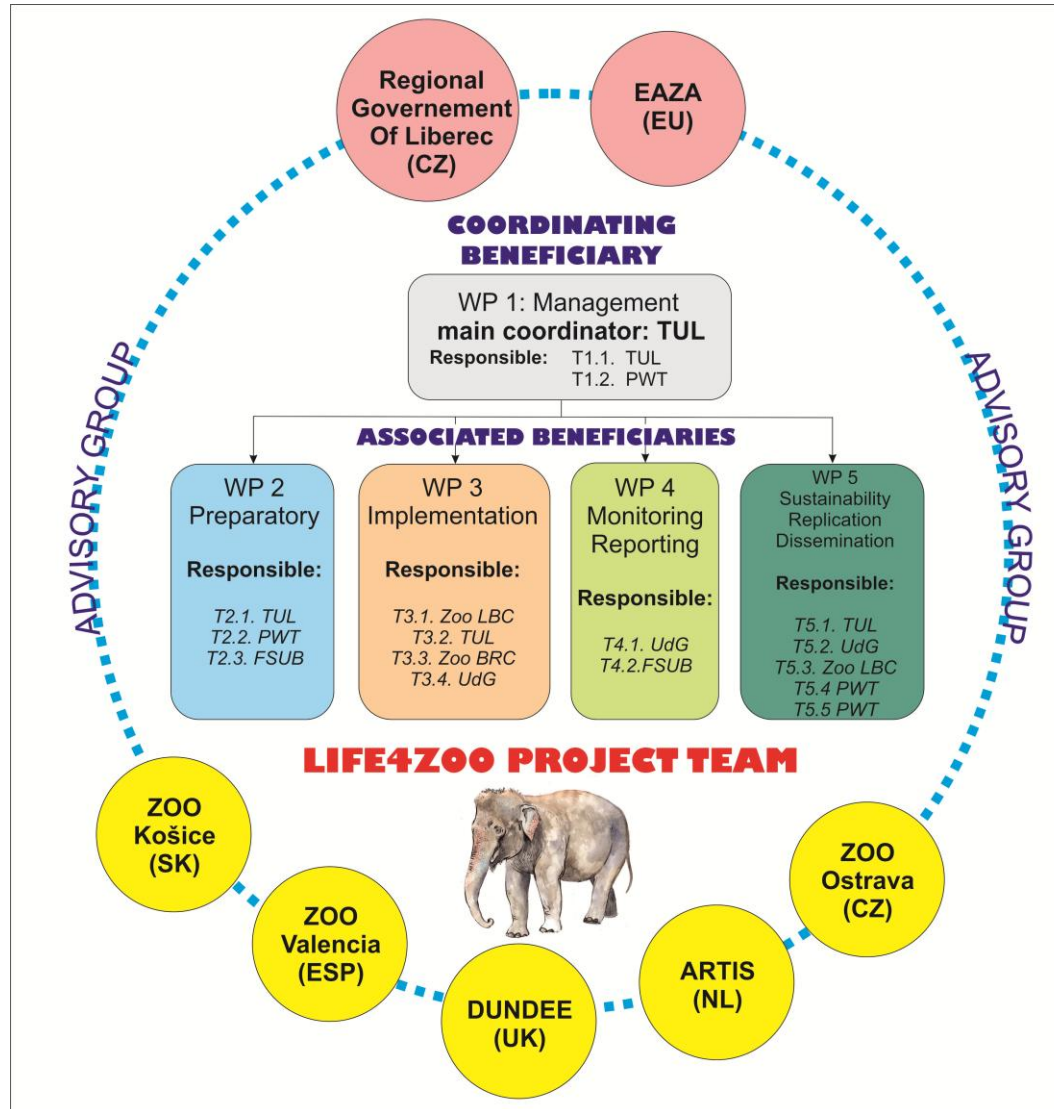
OBJECTIVES & SCOPE

The main objective is the application of **Circular water management system** (*Watersave+*) based on low energy demanding **Natural Based Systems** and the demonstration of the efficacy of *Watersave+* system in two very different situations of 2 European ZOOs: in full scale real conditions (ZOO Liberec) and in a pilot scale (ZOO Barcelona).

The specific objectives are:

- **Reduce high consumption of drinking water** by reusing water with FIT4USE concept, which means treating grey water to quality necessary for animal husbandry
- **Increase the low resilience of ZOOs to climate change** (maximum water demand during summer period)
- **Reduce energy demand and fossil carbon footprint** of the ZOO's for water supply and treatment
- **Improving animal welfare** and community well-being (ZOOs in cities as heat islands)
- **Replication** of this approach to other ZOOs and visitor attractions.

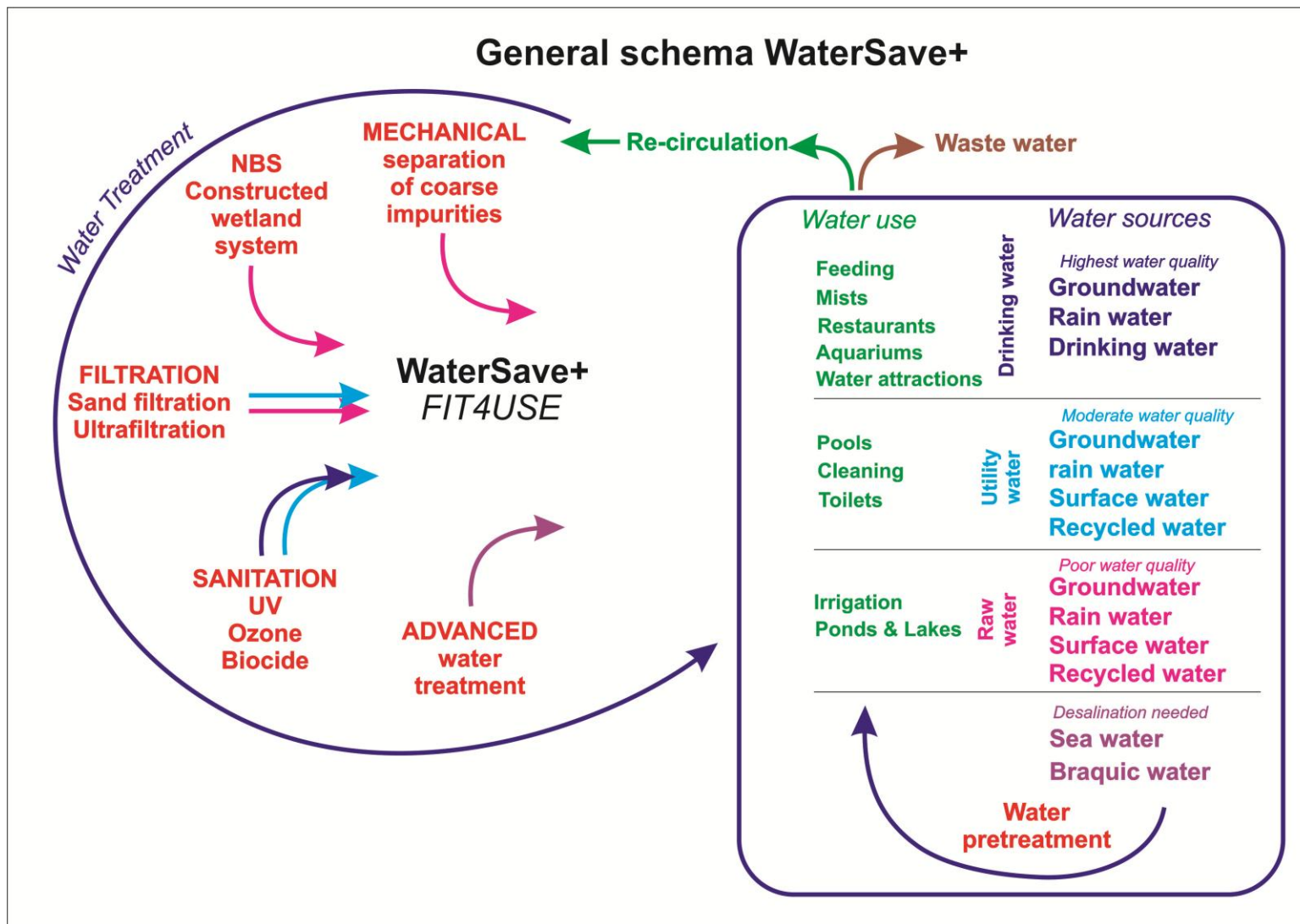
Project structure



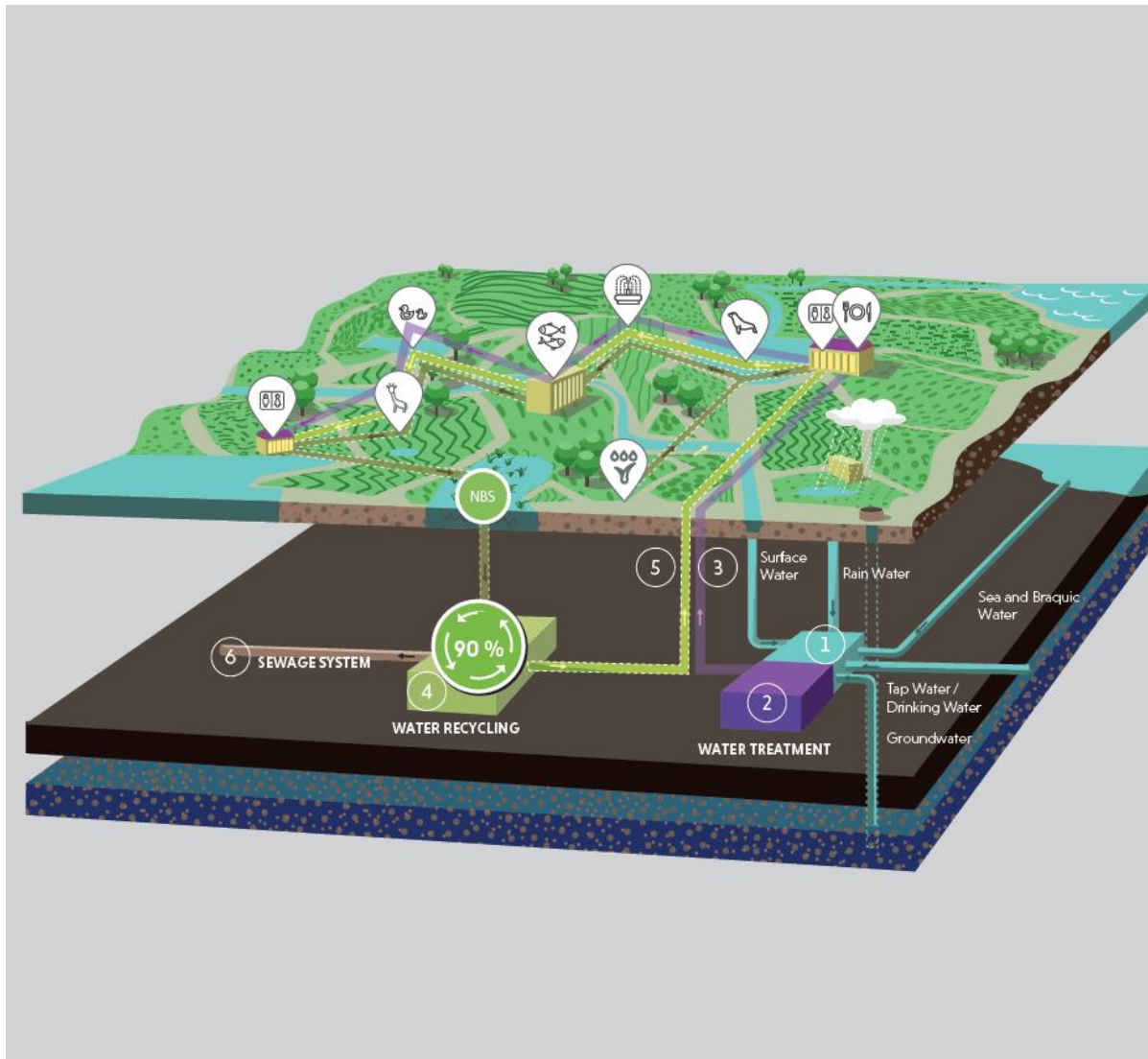


Full scale *WaterSave+*

General schema *WaterSave+*



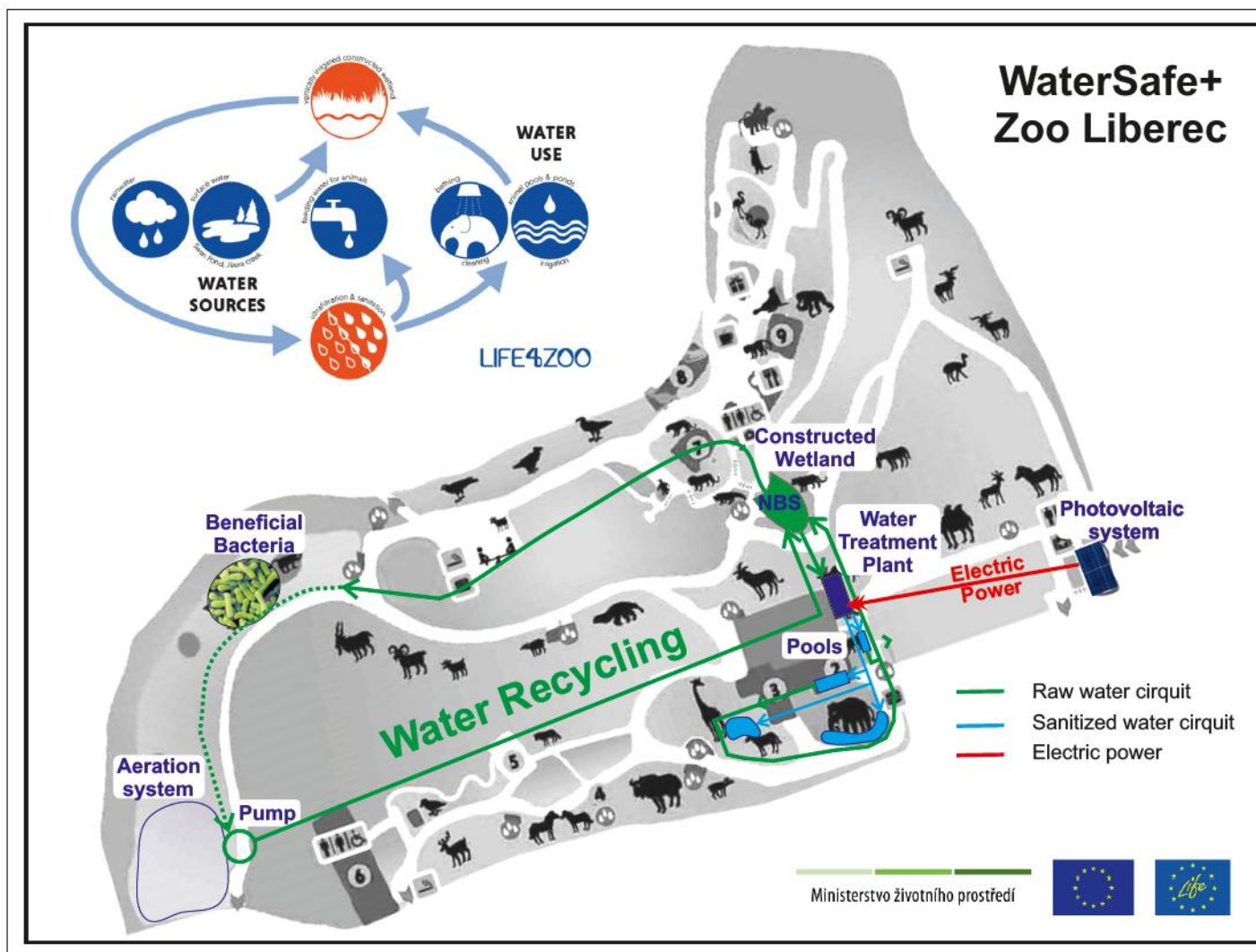
Full scale *WaterSave+*



- 1 **WATER SOURCES**
 - a) Surface Water
 - b) Rain Water
 - c) Tap Water / Drinking Water
 - d) Groundwater
 - e) Sea and Braquic Water
- 2 **WATER TREATMENT**
 - Sedimentation
 - Filtration
 - Sorption
 - Ionexchange
 - UF – Ultrafiltration
 - NF – nanofiltration
 - RO – Reverse Osmosis
 - Sanitation
- 3 **TAP WATER DISTRIBUTION**
 - Pools
 - Ponds and Lakes
 - Washing & Cleaning
 - Irrigation
 - Aquariums
 - Bathrooms
 - Restaurants
 - Feeding of animals
 - Water attractions
 - Mists
- 4 **WATER RECYCLING**
 - Sedimentation
 - NBS - Constructed wetland / biofilter
 - Filtration
 - UF - Ultrafiltration
 - NF - Nanofiltration
 - RO - Reverse Osmosis
 - Sanitation
- 5 **DISTRIBUTION OF RECYCLED WATER**
 - Bathrooms
 - Pools
 - Ponds and Lakes
 - Washing & Cleaning
 - Irrigation
 - Aquariums
 - Feeding of animals
 - Animal Water attractions
 - Mists (greenhouses)
- 6 **SEWAGE SYSTEM**

Full scale *WaterSave+*

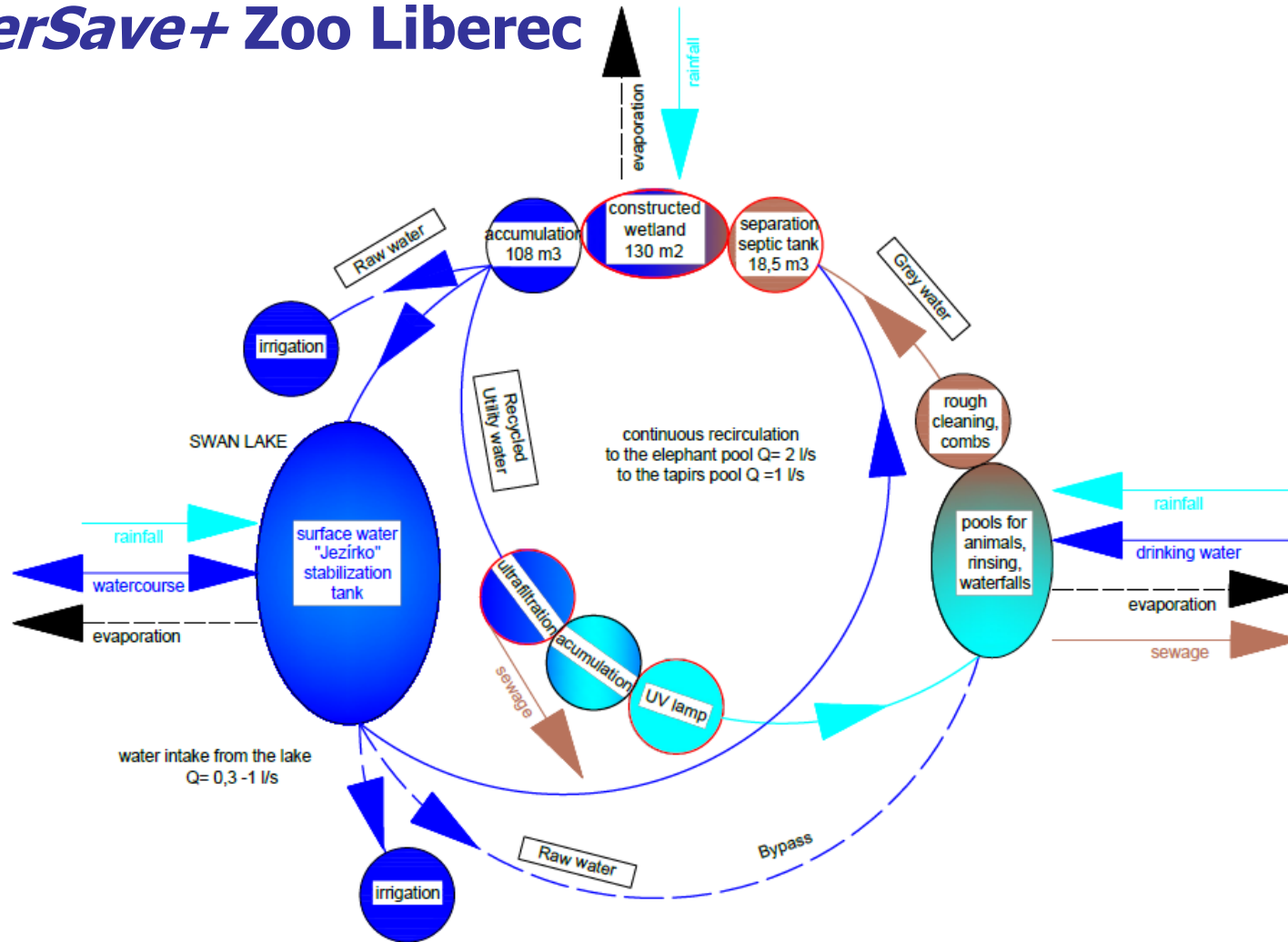
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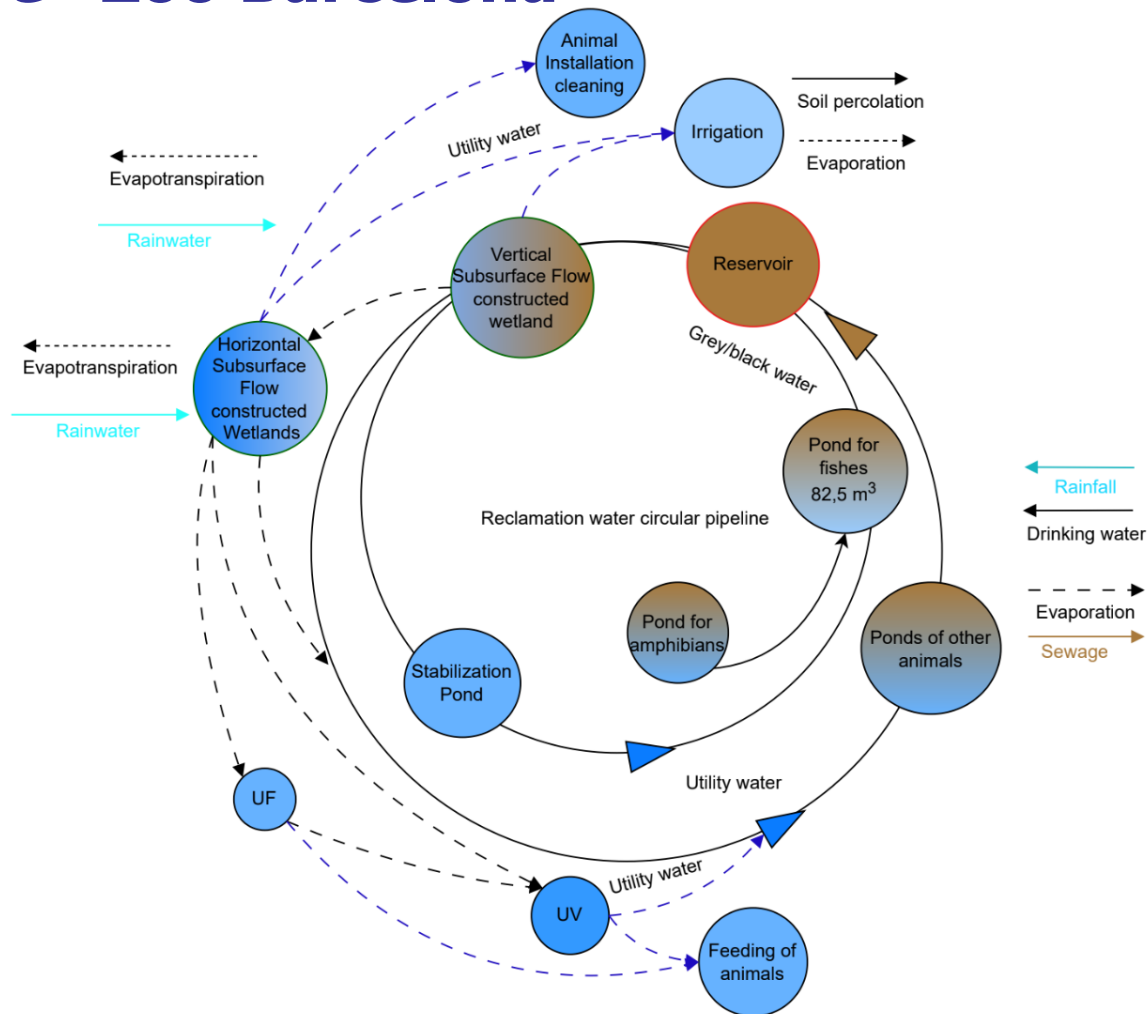
OBJECTIVES & SCOPE (Part II)

WaterSave+ Zoo Liberec



OBJECTIVES & SCOPE (Part II)

WaterSave+ Zoo Barcelona





EXPECTED IMPACTS, KPIs

1. **Reduction of drinking water consumption** in both city ZOOs by **up to 50%** and reduction of the associated carbon footprint for production and distribution of tap water.
2. Application and demonstration of **Natural Based systems** (constructed wetlands and vertical flow biofilters) with low energy demand and low GHG production.
3. **KPI water efficiency**: reduction of water consumption from **120 000m³/year** at the beginning to **78 000 m³/year** at the project end.
4. **Water quality**: 0,0092 km² start value - 0 end value
5. **Energy saving**: 0,24 GWh/year start value - 0,156 GWh/year end value
6. **Renewable energy**: 0 GWh/year start value - 0,042 GWh/year end value
7. **Reduction of GHG** 264 t/year start value - 172 t/year end value, CO₂e/year

Impact of the project will be monitored through:

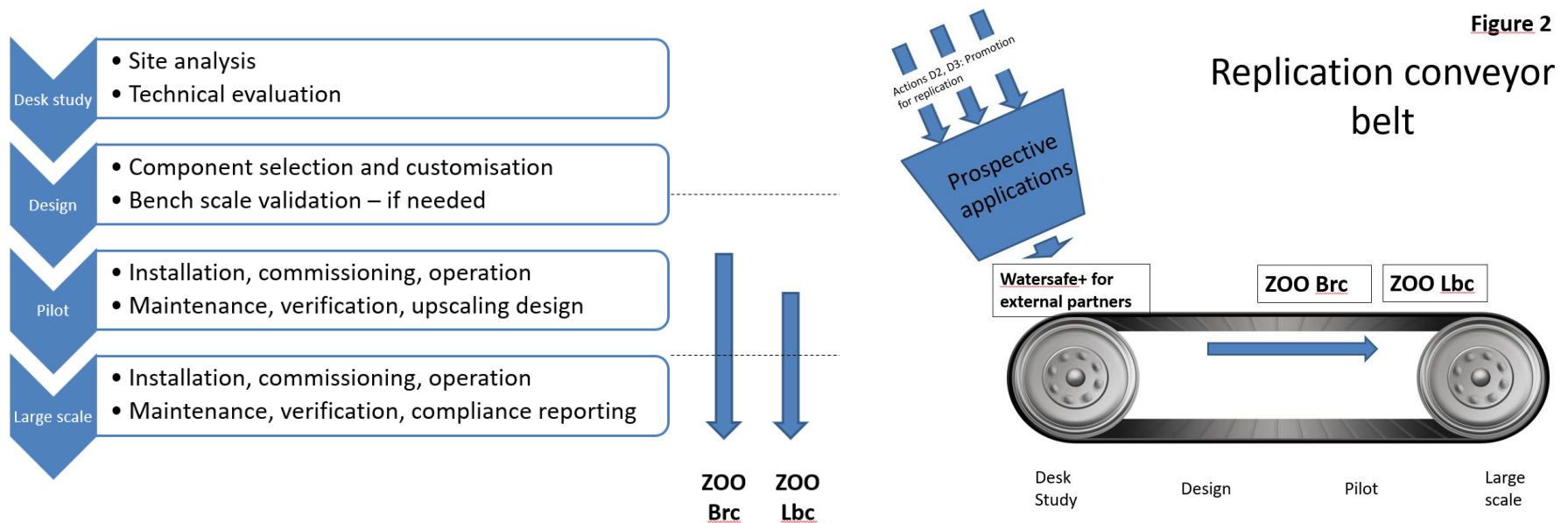
- 1) performance, deployment and cost monitoring for both ZOOs;
- 2) wider sustainability performance considering all elements of development (environmental, economy, society).



CONTINUATION (REPLICATION, TRANSFER, DISSEMINATION)

LIFE4ZOO will use **Advisory Group** to disseminate and replicate the project results of *Watersave+* water recirculation technology to other ZOOs, initially focusing on ZOOs that are members of the **Advisory Group** and **EAZA** (European Association of ZOOs and Aquaria).

Both prototypes demonstrated under project actions will be operated after the project end as proven examples of low operation costs for water reuse. Photon Water will ensure the transfer of *Watersave+* approach to other visitor attractions (botanical gardens, golf courses or farms).



Ministerstvo životního prostředí



COMMUNICATION (DISSEMINATION)

Our effective awareness campaign helps to spread the word about the LIFE4ZOO project and its importance in reducing drinking water consumption at the zoo, increasing water retention in the landscape, reducing the carbon footprint and making life better for the animals. Without sufficient public awareness, it may be difficult to achieve the full objectives of the project and ensure the sustainability of its conservation efforts.

01 - BRANDING

Visual Identity LIFE4ZOO - Done
The branding helps us to better communicate our strong message: ZOO saves the drinking water

02 - WEBSITE

<https://life4zoo.cz/> - done
Website is open for your news!
Create the content with us.

03 - MEDIA

Create the news, expert articles, social media posts etc. And share whats new in the project

04 - NEWSLETTER

Life Programme published its own newsletter, we can also contribute with LIFE4ZOO news.

Please, share all your activities
and news with us.
Open to project communication
Eva.dolezalova@tul.cz

Thank you,
looking forward for your cooperation 😊