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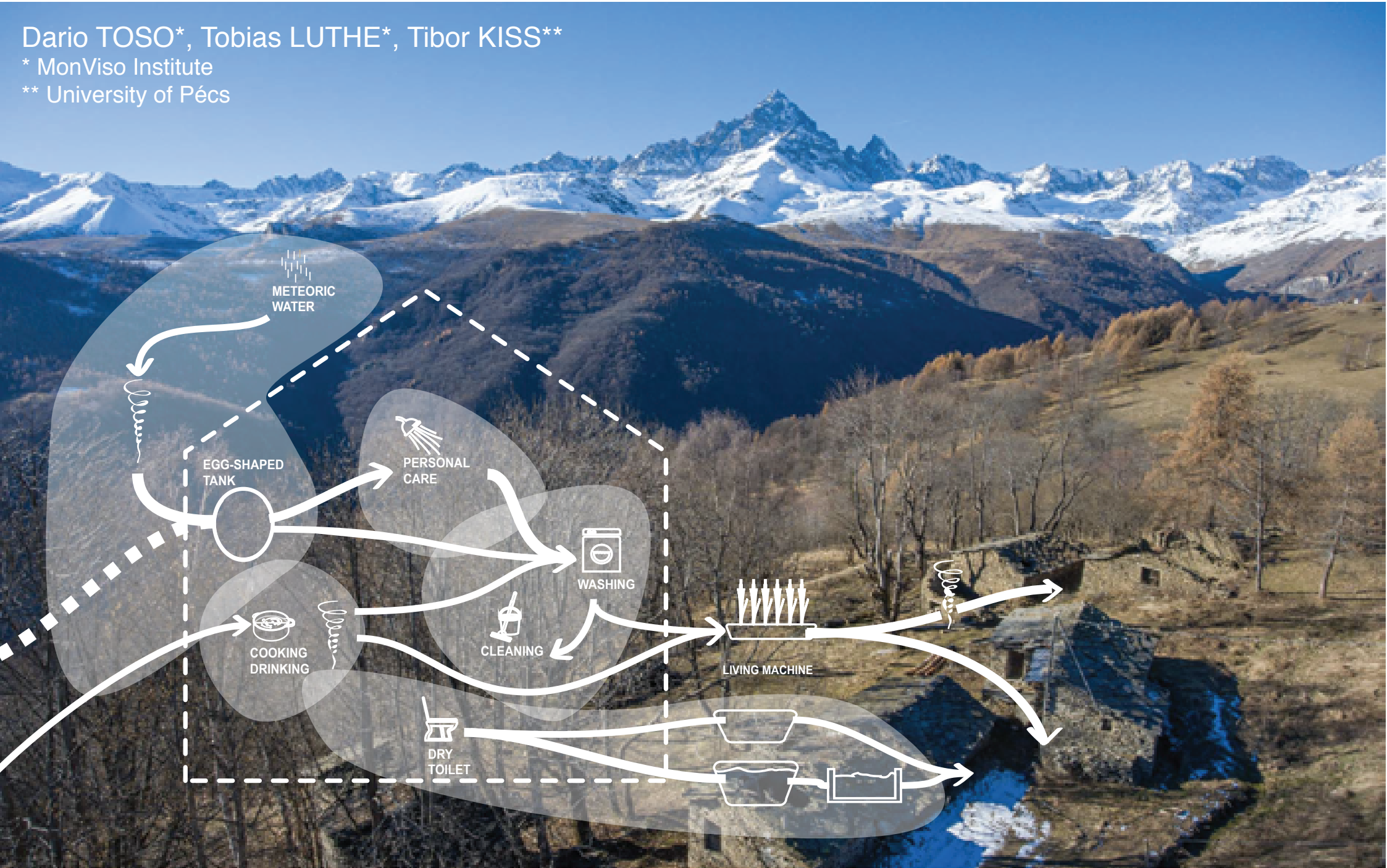
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# THE SYSTEMIC DESIGN APPROACH APPLIED TO WATER TREATMENT IN THE ALPINE REGION

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\* MonViso Institute

\*\* University of Pécs



# SYSTEMIC DESIGN Methodology

Systemic Design methodology here adopted has been developed at Politecnico di Torino with the aim of implementing sustainable productive systems in which material and energy flows are designed so that waste from one productive process becomes input for other processes, avoiding being released into the environment. Starting from the observation of natural phenomena, the SD approach aims to “learn from nature” not just for mimicking the natural technologies, but for designing a product system able to positively interact with a dynamic environment and an evolving society.

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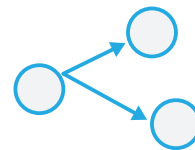
## SYSTEMIC DESIGN GUIDELINES

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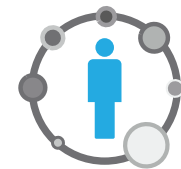
THE SYSTEM IS  
SELF-GENERATING



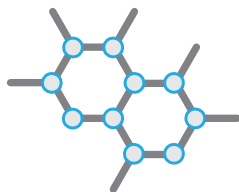
OUTPUT BECOMES INPUT



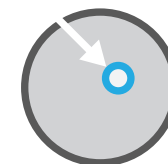
HUMAN BEING IS  
AT THE CENTRE OF  
THE PROJECT

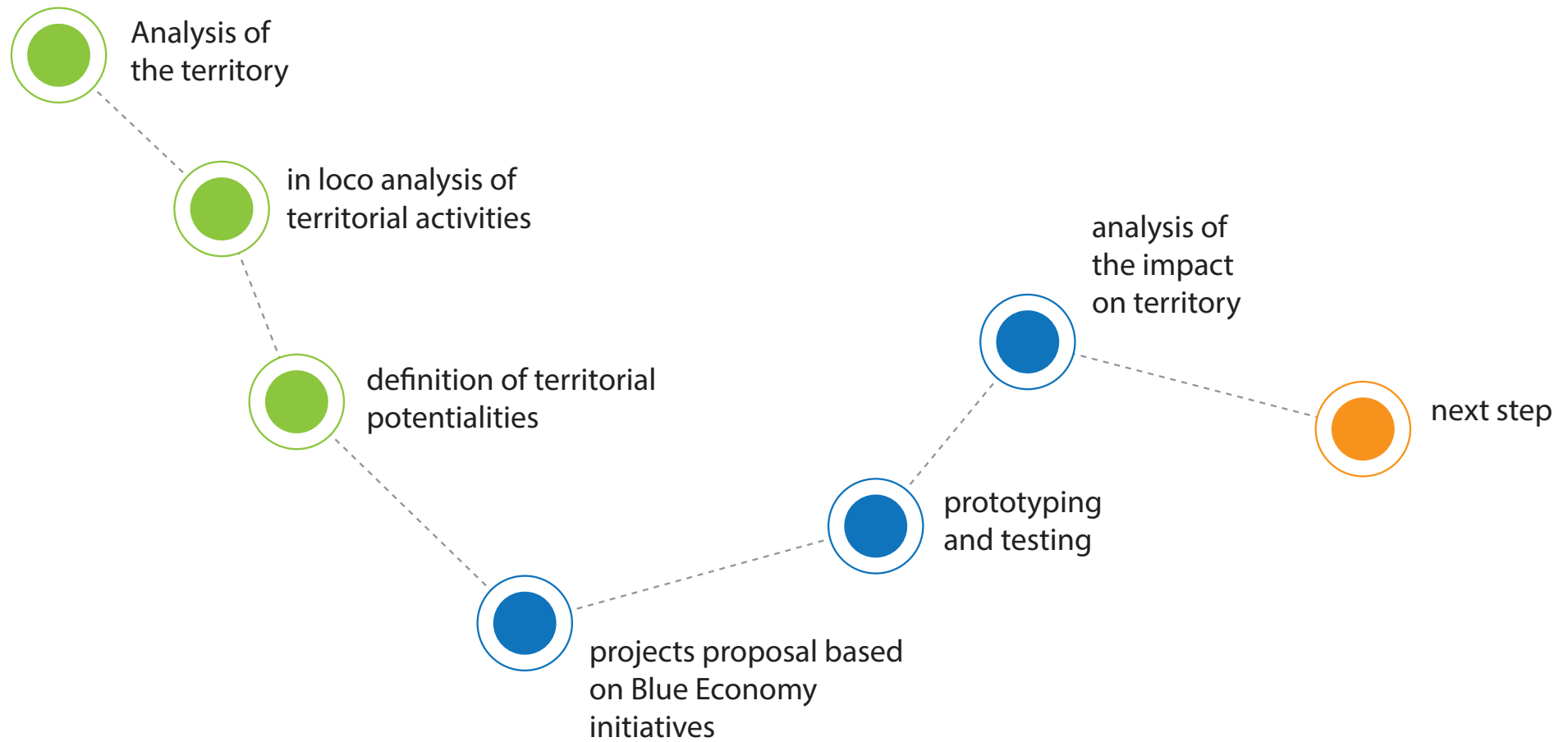


RELATIONS GENERATE  
THE SYSTEM



ACTIONS ARE LOCAL





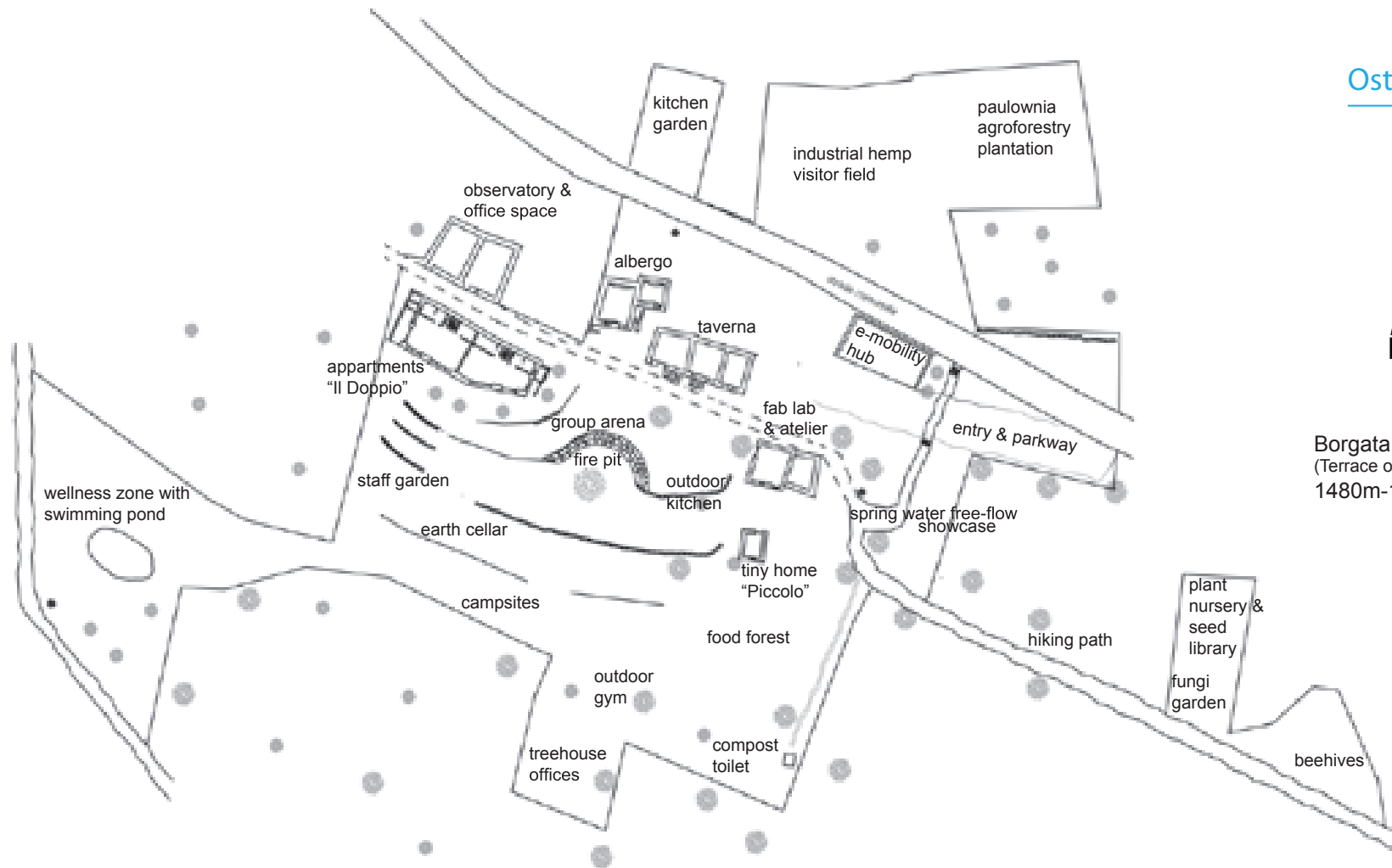
**HOLISTIC  
DIAGNOSIS**

**PROJECT**

**IMPLEMENTATION**

# The MonViso Institute

An experiential hub for research, education, entrepreneurship and new mountain living in sustainability and systemic design.

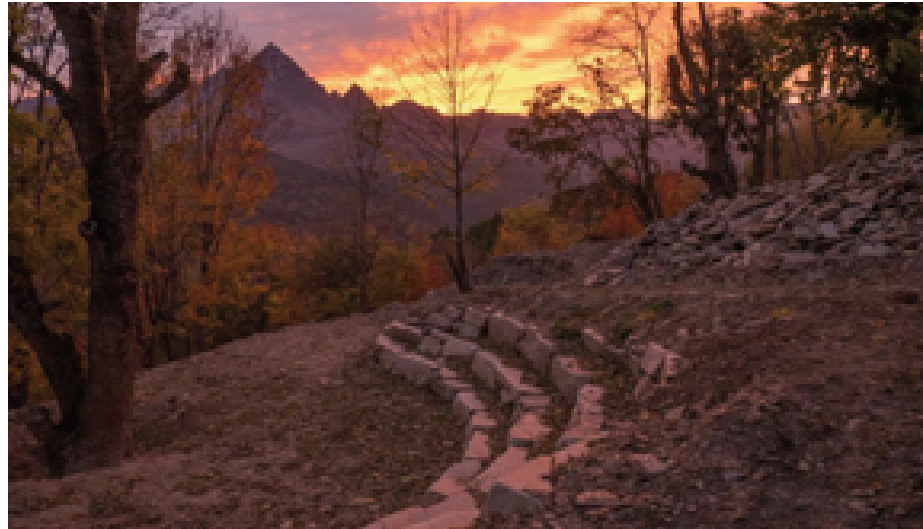


Ostana (CN) Italy



Borgata "Sere de Lamboi"  
(Terrace of the *Laburnum* tree)  
1480m-1520m asl

# The MonViso Institute

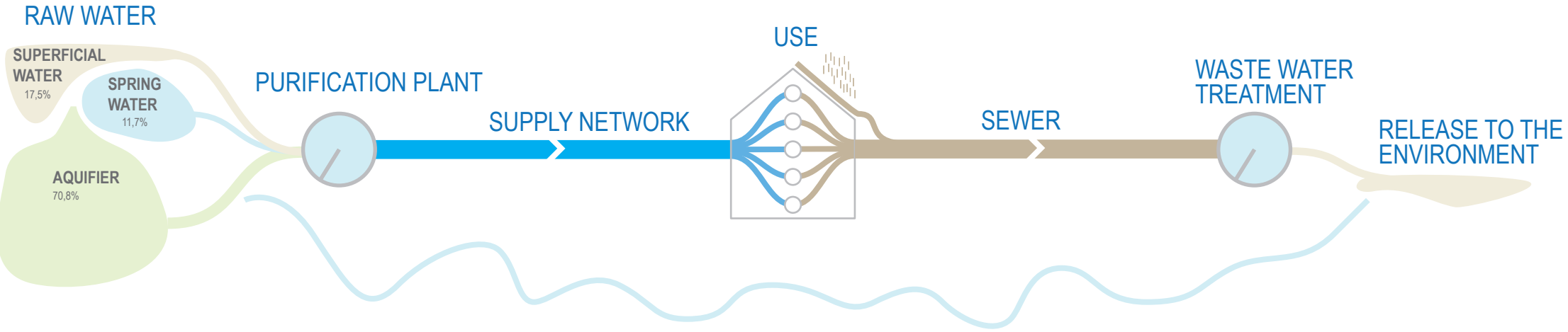


# CURRENT SITUATION



in loco analysis of territorial activities

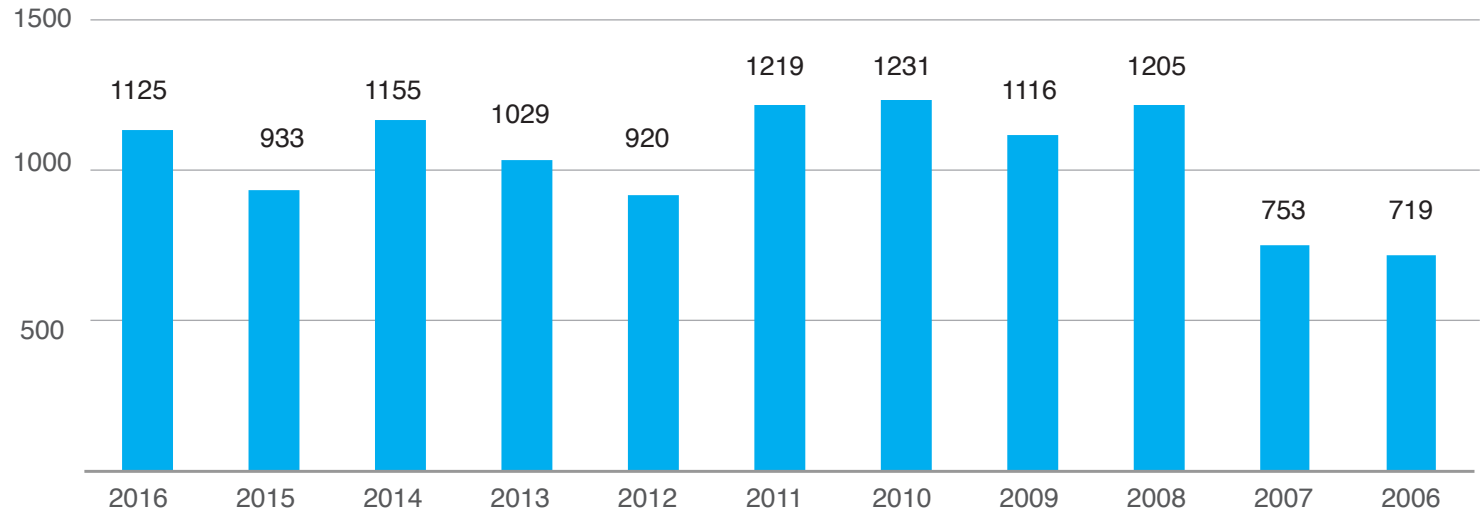
Ostana (CN) Italy



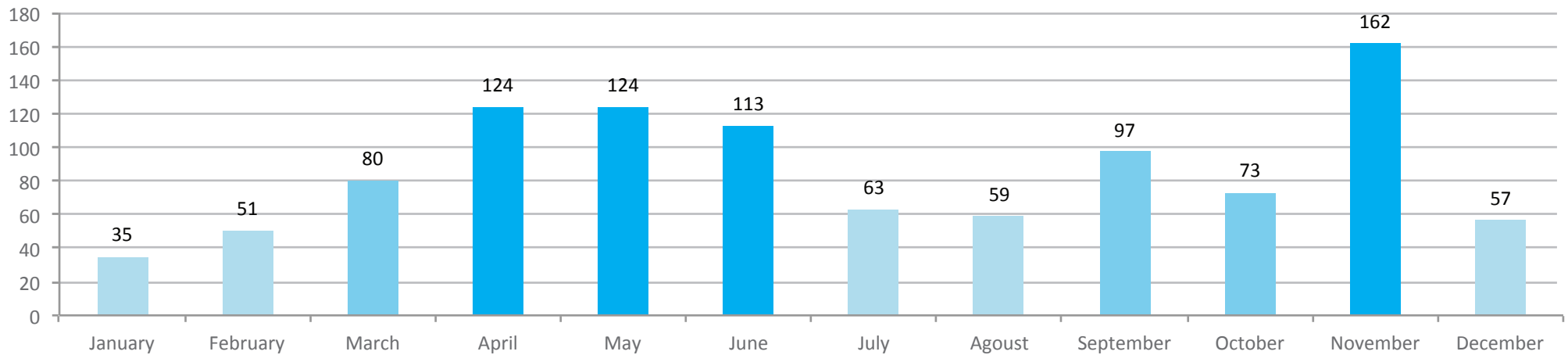
## NATURAL WATER FLOW

The main aim of re-designing the water flow for domestic purposes is to ensure a water quality level at the end of the process at least comparable to that of the natural water flow (zero impact system).

METEORIC WATER of "bacino ALTO PO" per year [mm]

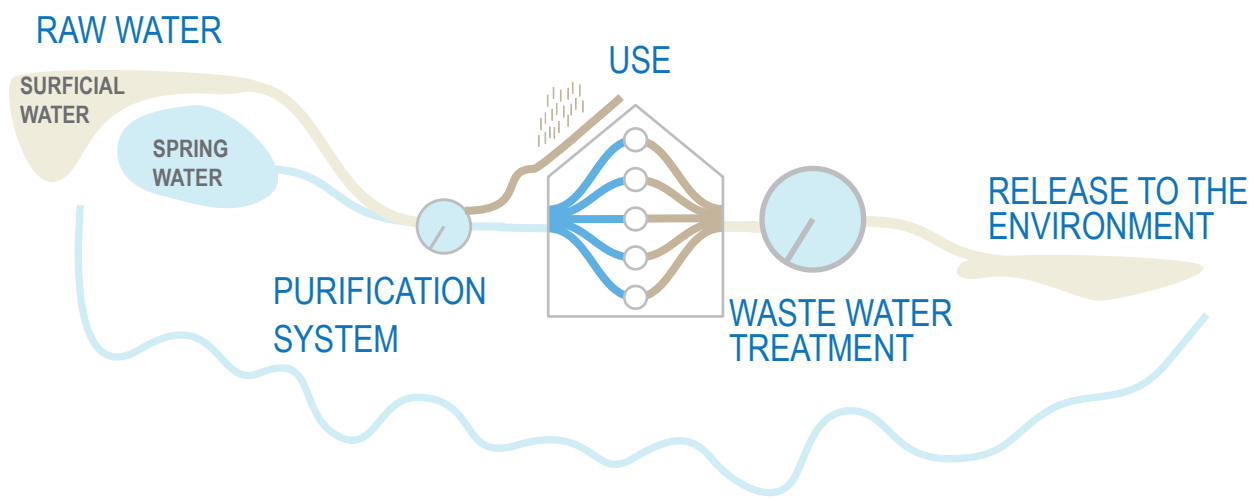


METEORIC WATER of "bacino ALTO PO" per month - Avg 2006-2016 [mm]





projects proposal based on Blue Economy initiatives



### NATURAL WATER FLOW

The main aim of re-designing the water flow for domestic purposes is to ensure a water quality level at the end of the process at least comparable to that of the natural water flow (zero impact system).



Water, from being a vital and life giving element has been deprived from its spiritual value and has been reduced to a cleaning liquid, to the mere chemical formula H<sub>2</sub>O (Illich, 1986), a process defined as “de-socialization of water” (Van Aken, 2013)

BEHAVIOR OF  
FREE WATER IN  
THE **NATURAL**  
ENVIRONMENT

Meandering Mississippi  
United States

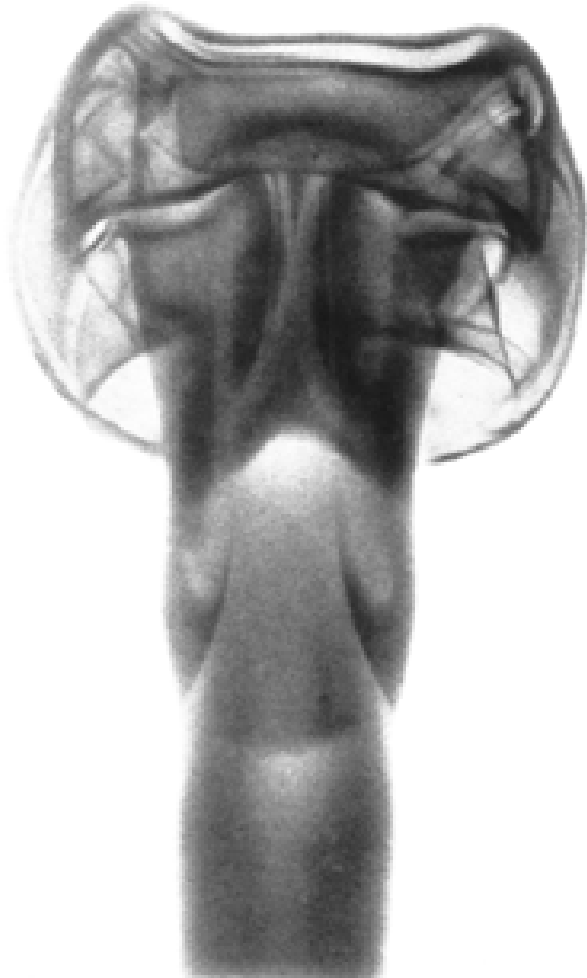




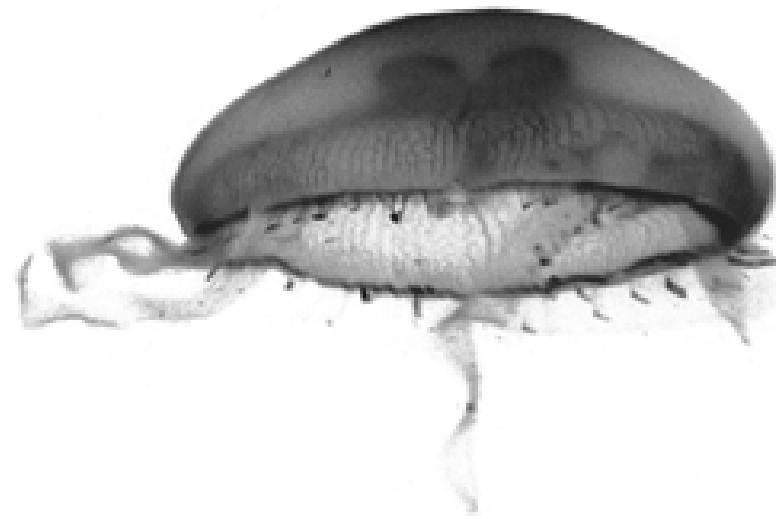
**BEHAVIOR OF  
FREE WATER IN  
THE NATURAL  
ENVIRONMENT**

Why water, in streams and rivers, always takes a meandering course?  
Do common principles and rhythms underlie the movement of water, whether it be in the sea or in a plant - or in the blood of a human being?

ink injected  
in water



jellyfish



..."certain archetypal forms of movement may be found in all flowing media, regardless of their chemical composition." (Theodor Schwenk)

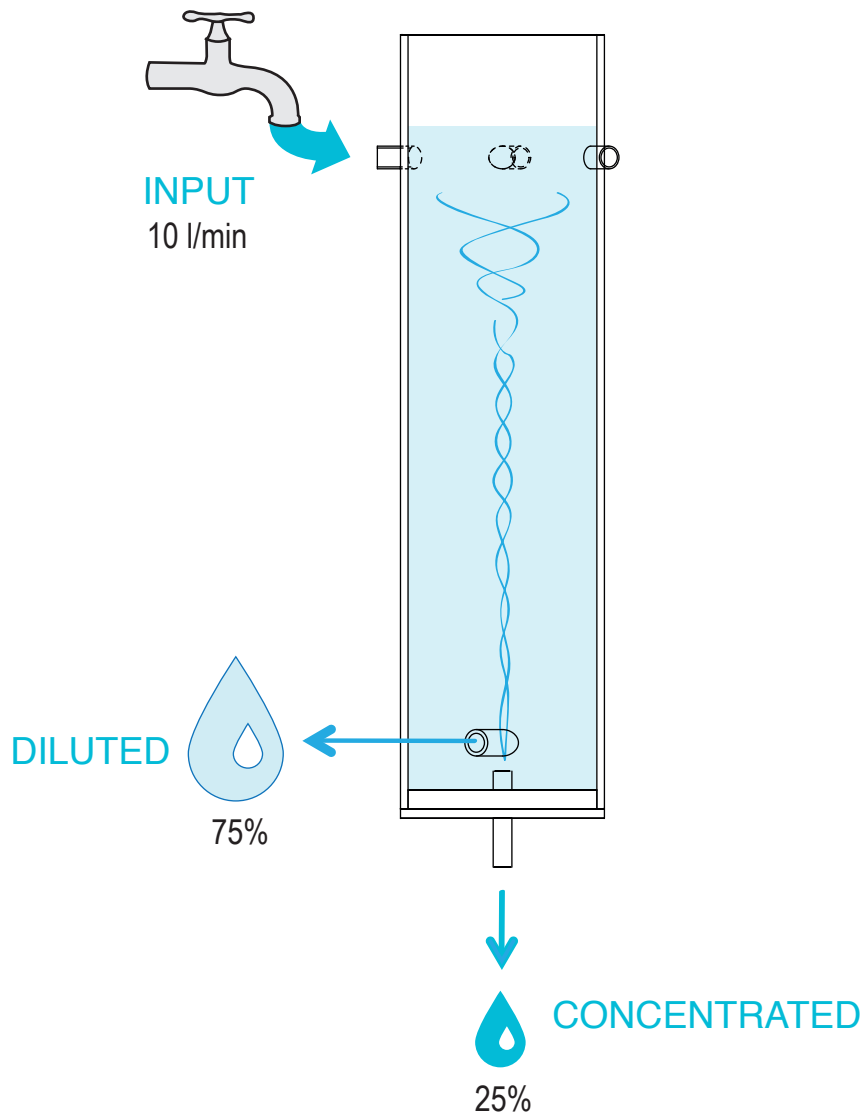
# How does water want to be moved?



# VORTEX TECHNOLOGY

## SUSPENDED SOLIDS SEPARATION

I've also experienced the vortex technology to clean out suspended solids without any physical barrier or chemical agent.



Lab testing have proved a separation of Suspended Solids over the 96-98% in a single pass

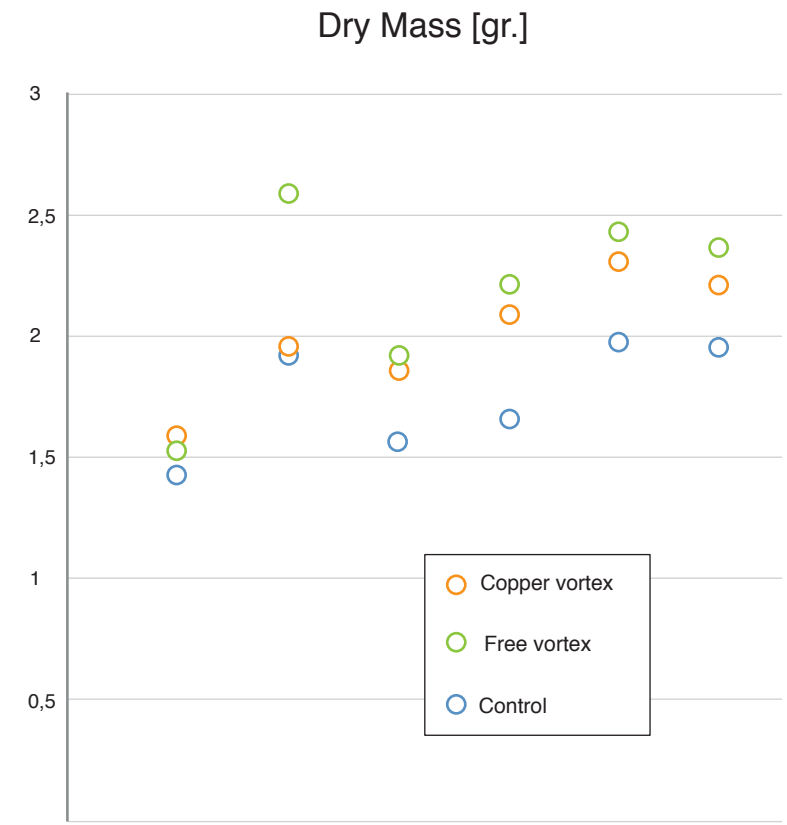
Natural Organic Matter (UV 254)

- 60%

Turbidity (NTU)

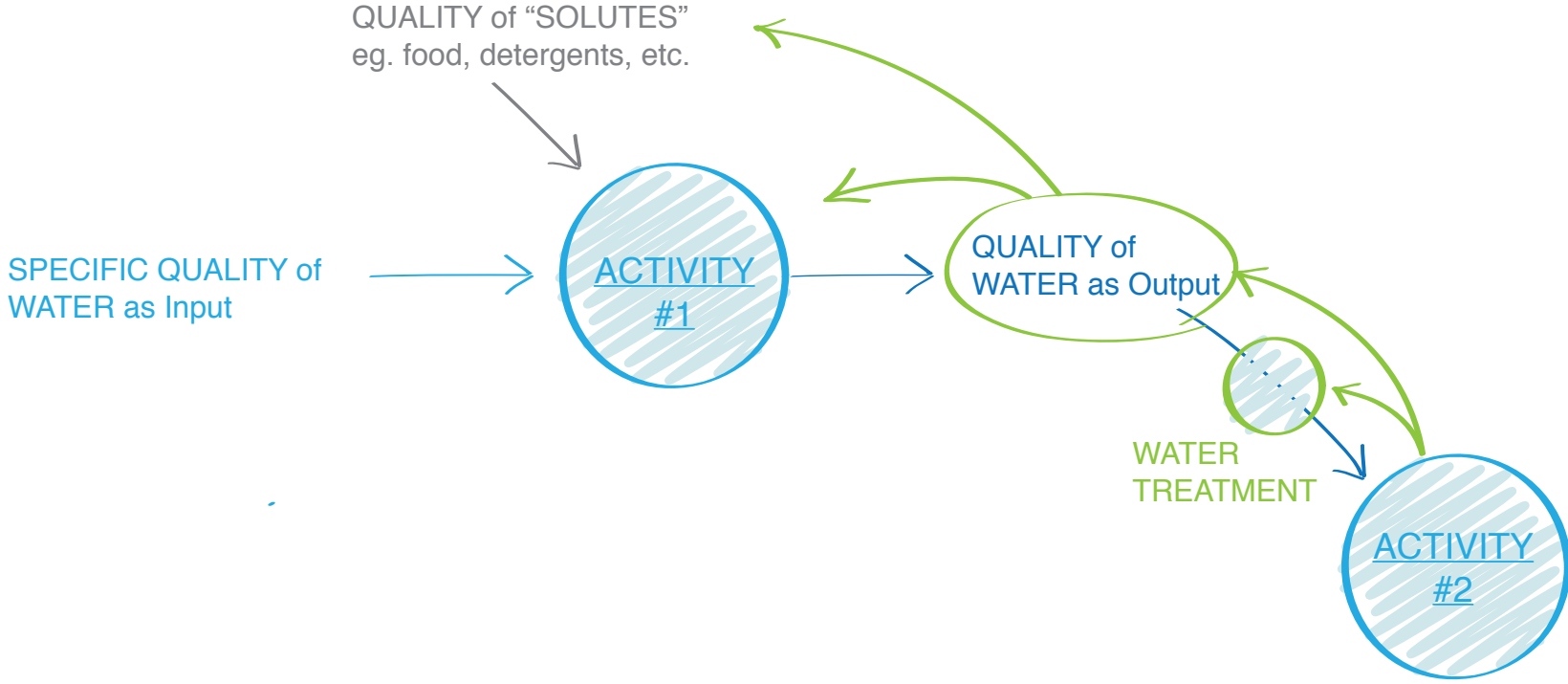
- 43%





# SYSTEMIC PERSPECTIVE

## RE THINKING WATER FLOW AND TREATMENT WITHIN THE HOUSE

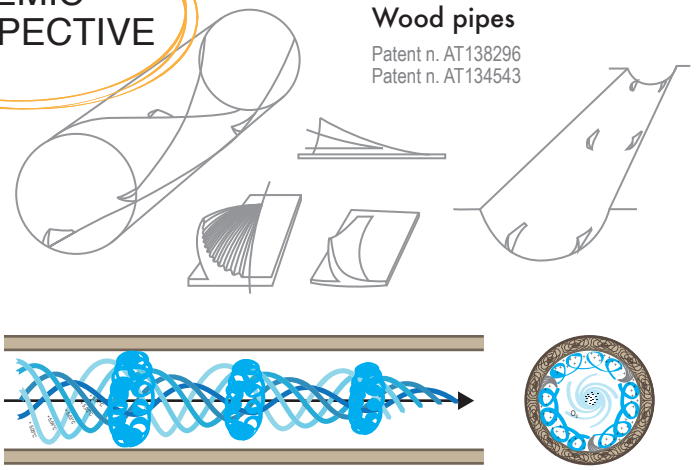




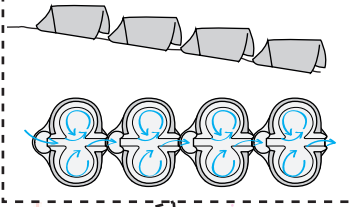
**SYSTEMIC PERSPECTIVE**

**Wood pipes**

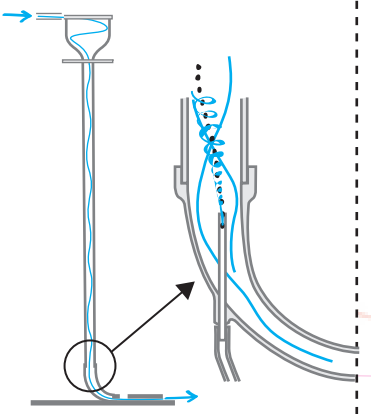
Patent n. AT138296  
Patent n. AT134543



**Flow form**

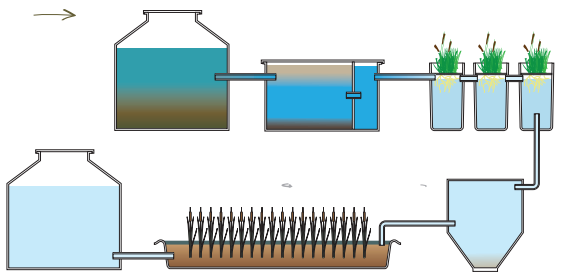


**Vortex particles separator**



solar hot tub/  
sauna/camp shower

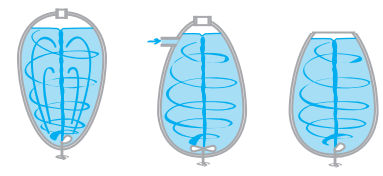
**Living Machine**



Biodigester w/ compost  
for blackwater when camp

**Egg shape tank**

British Patent # 1,187,632



(built 2017)

water connection  
DA net

- Natura
- ACDA
- Rain w
- Sand fi
- Sand filter 1st cycle shower/sink water
- Spring water collector 6000l/each

Observatory

Basecamp

Tribal Hub

Il Doppio

Fab Lab

Piccolo

MonViso Institute

Carport/(bike)  
wash/camping car

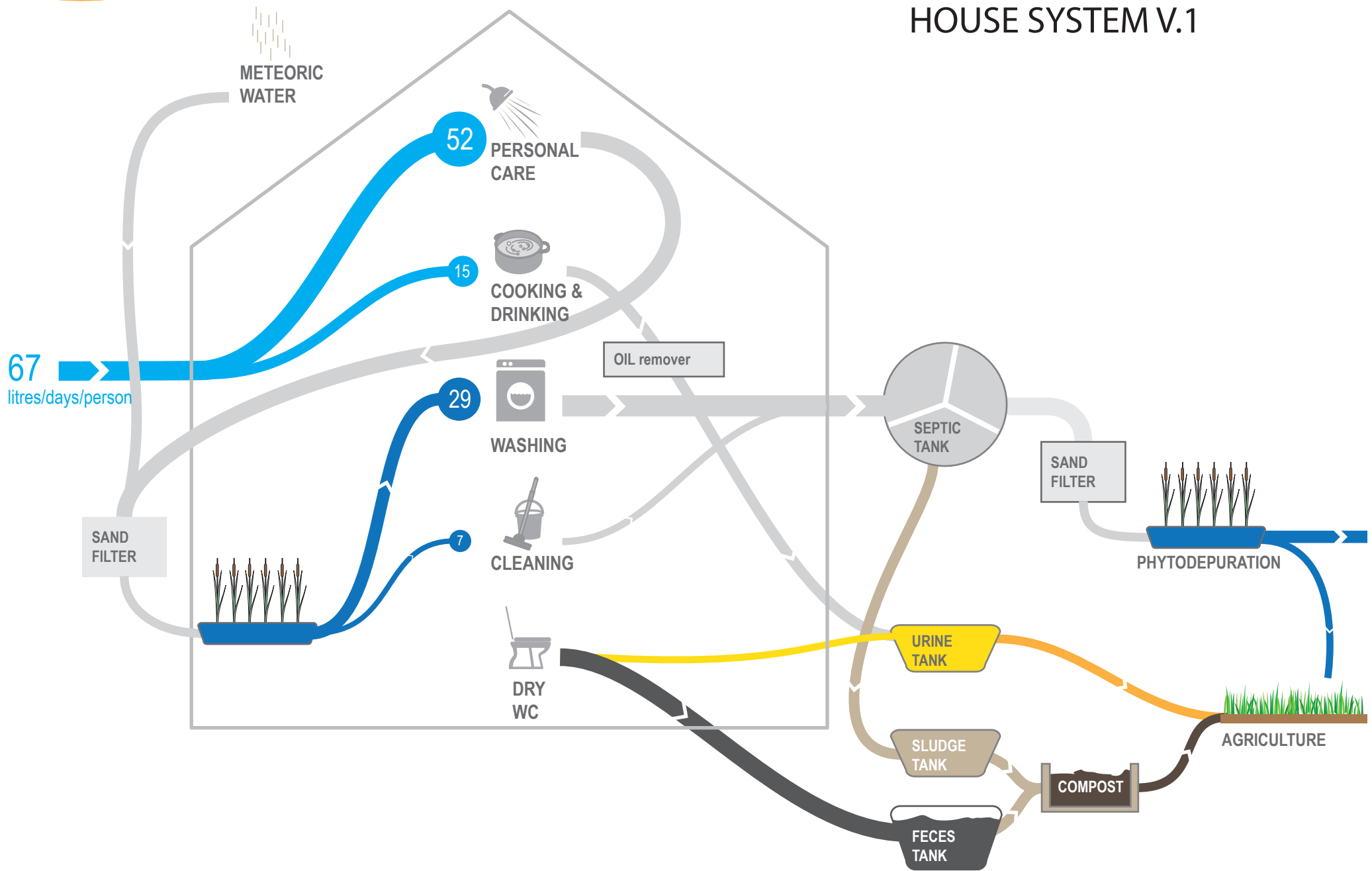
Parkway

Irrigation to remote  
forest garden (appr.  
100m) with extra  
reservoir

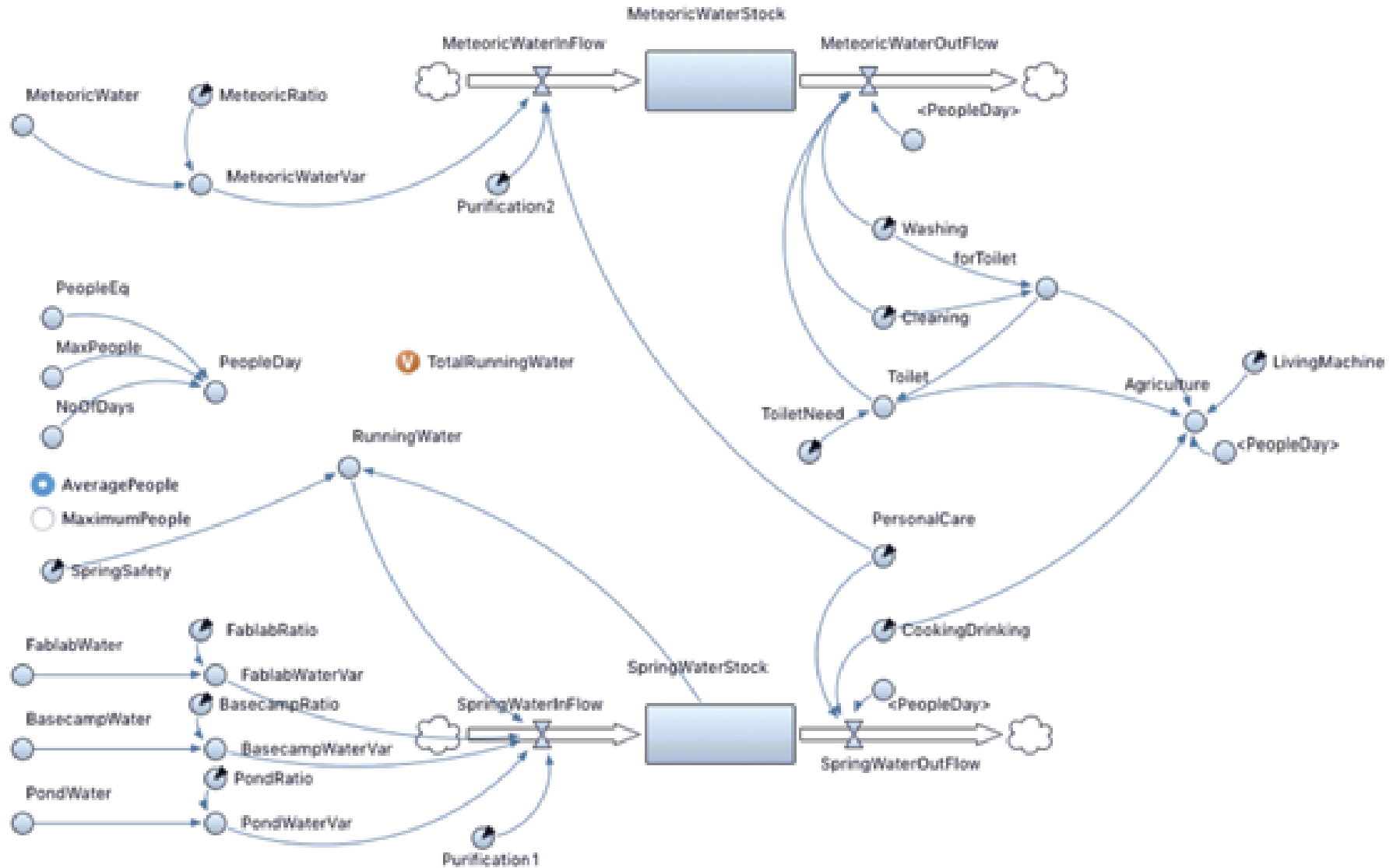
# SYSTEMIC PERSPECTIVE

## DRAFTING WATER FLOW AND TREATMENT WITHIN THE HOUSE

### HOUSE SYSTEM V.1



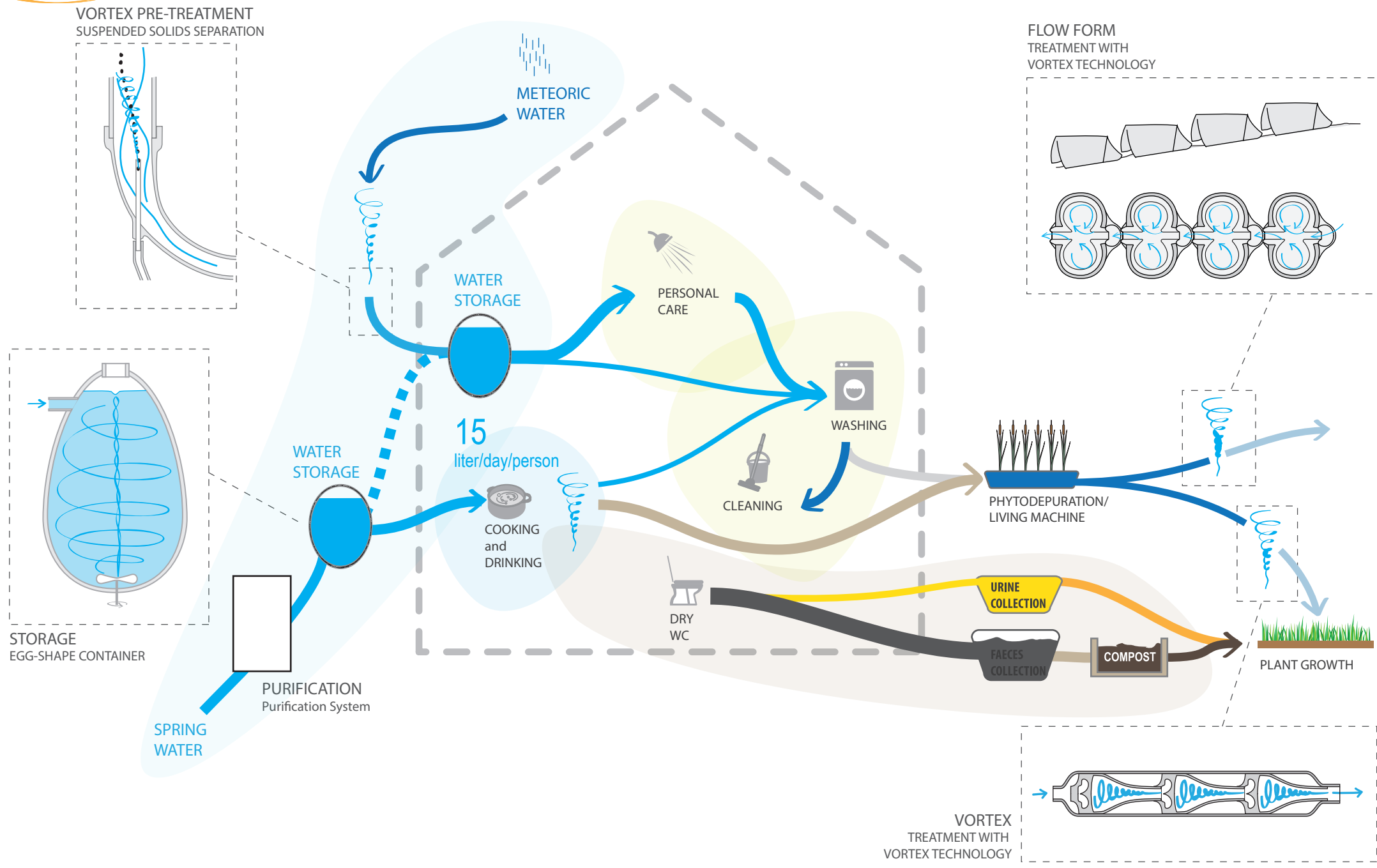
# SYSTEM DYNAMICS MODEL



# SYSTEMIC PERSPECTIVE

## RE THINKING WATER FLOW AND TREATMENT WITHIN THE HOUSE

# HOUSE SYSTEM V.2



**"The true foundation of all culture is the knowledge and understanding of water. Water is the substance or cause of all creation and for this reason is the original accumulator, which readily absorbs both earthly and cosmic substances and conveys them to the body in a purely objective form. This must be done in such a way that the attributes will in no way be modified and that change as such can only first come about in the effect, which the organically correctly structured body mediates and imparts. For this reason a good spirit dwells in a healthy body. Conversely a body full of vitality can be created, maintained and further developed by healing the inhering spirit."**

Viktor Shaugerger

**Thank you for  
your attention**

| Dario Toso, PhD  
| Tibor Kiss, PhD  
| Tobias Luthe, PhD