Chlorine free drinking water without infectious diseases in the Netherlands

17 MLN People

120 liter per person per day

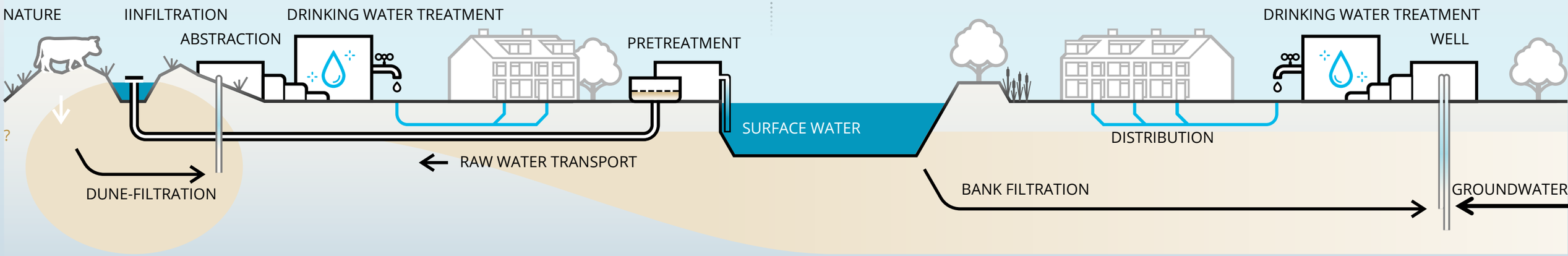
60% groundwater

40% surface water

No chlorine disinfection or residual

Prevent carcinogenic effects from disinfection by products (DBP's)

Avoid taste and odor issues



Quantitative Microbial Risk Assessment (QMRA)

Sufficient treatment steps to ensure water is safe

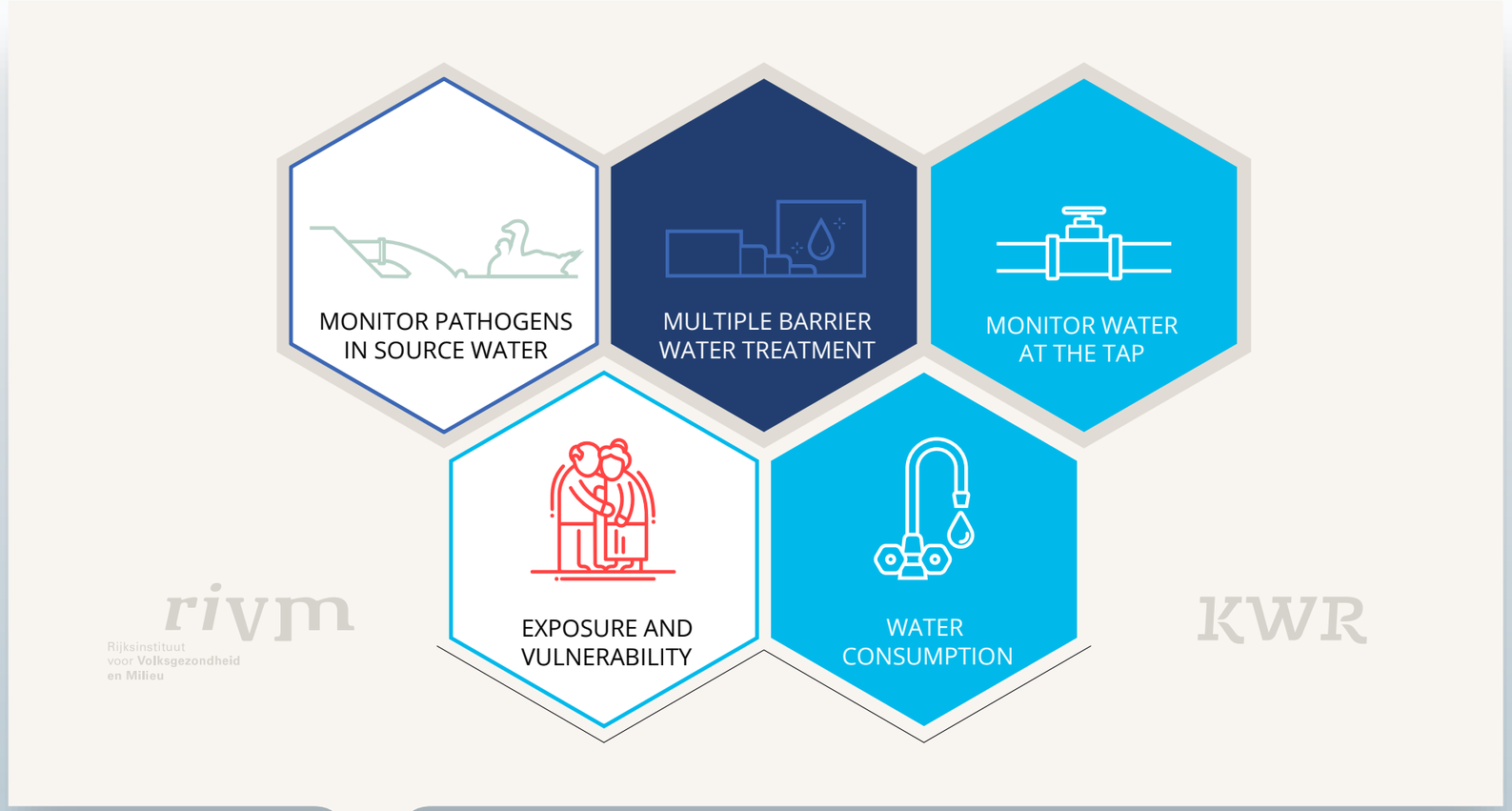
Monitoring

Pilot experiments

Modeling

Research

Stochastic calculation of health risk



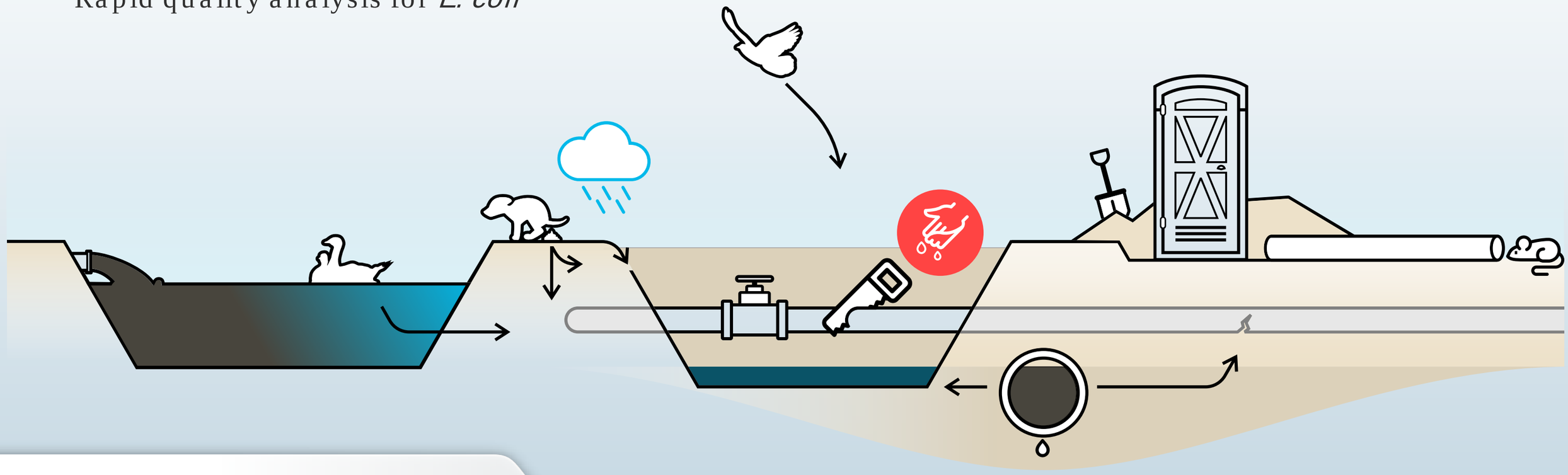
Protect water during distribution

Minimal leakage (2%-4% non-revenue water)

Always pressurize >2 Bar 24/7

Repairs or works: strict working procedures for hygiene

Rapid quality analysis for *E. coli*

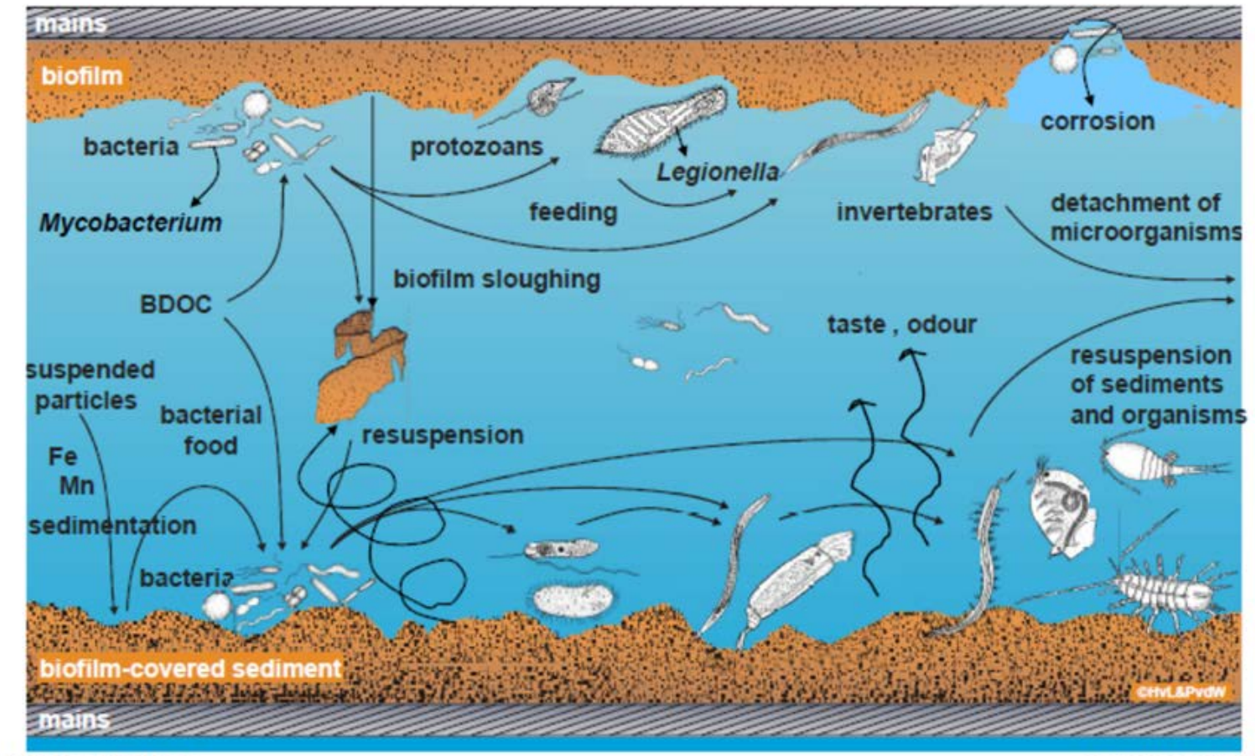


Prevent growth of opportunistic pathogens (e.g. Legionella)

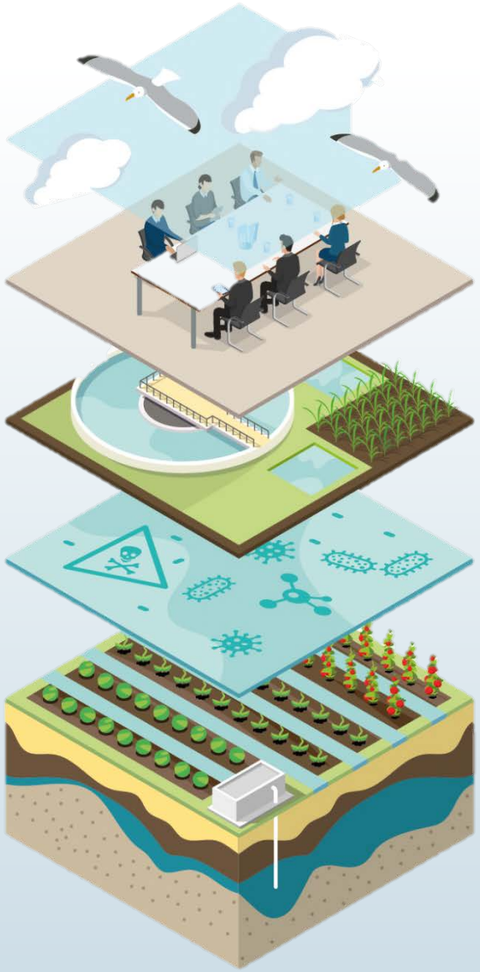
Minimize food availability for bacteria (AOC)

Manage temperature in buildings (<25°C)

Regular water quality check of vulnerable locations (e.g. Hospitals)



Water reuse: new challenges



Sustainability and environment (LCA)

Legislation and regulations

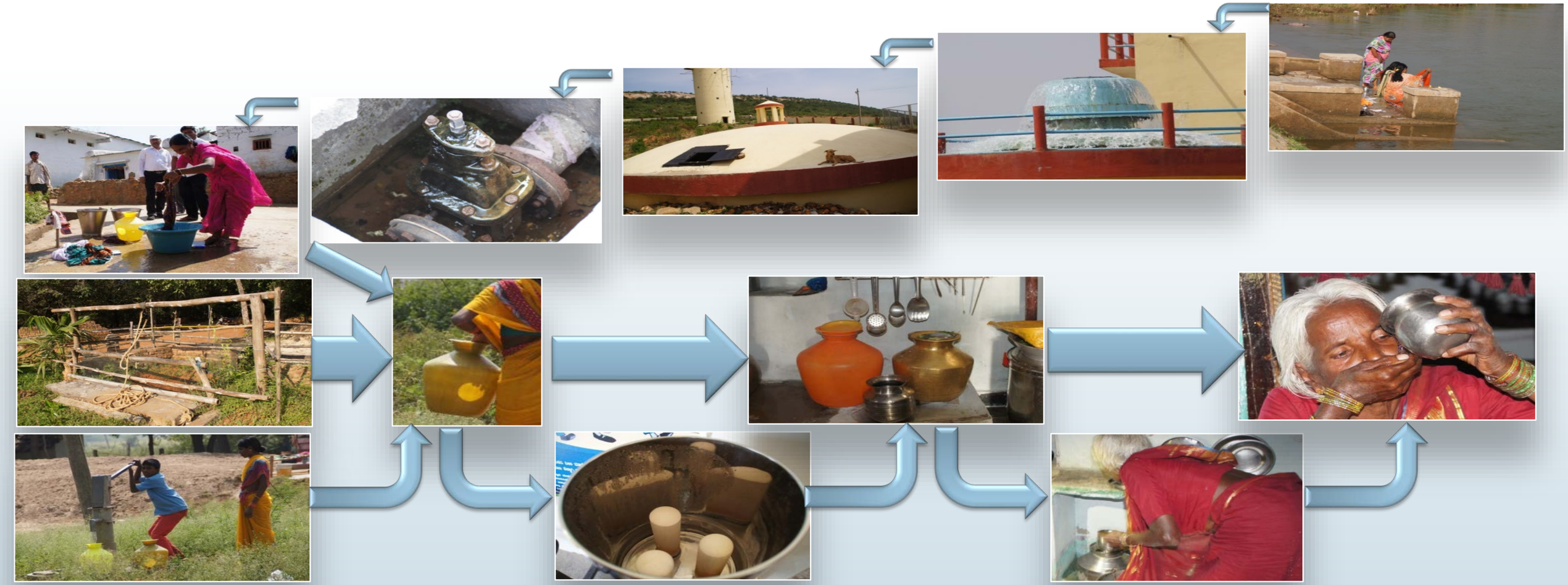
Water treatment technologies

Health and safety

Reuse in agriculture or industry

Subsurface water storage

Different context, same priciples

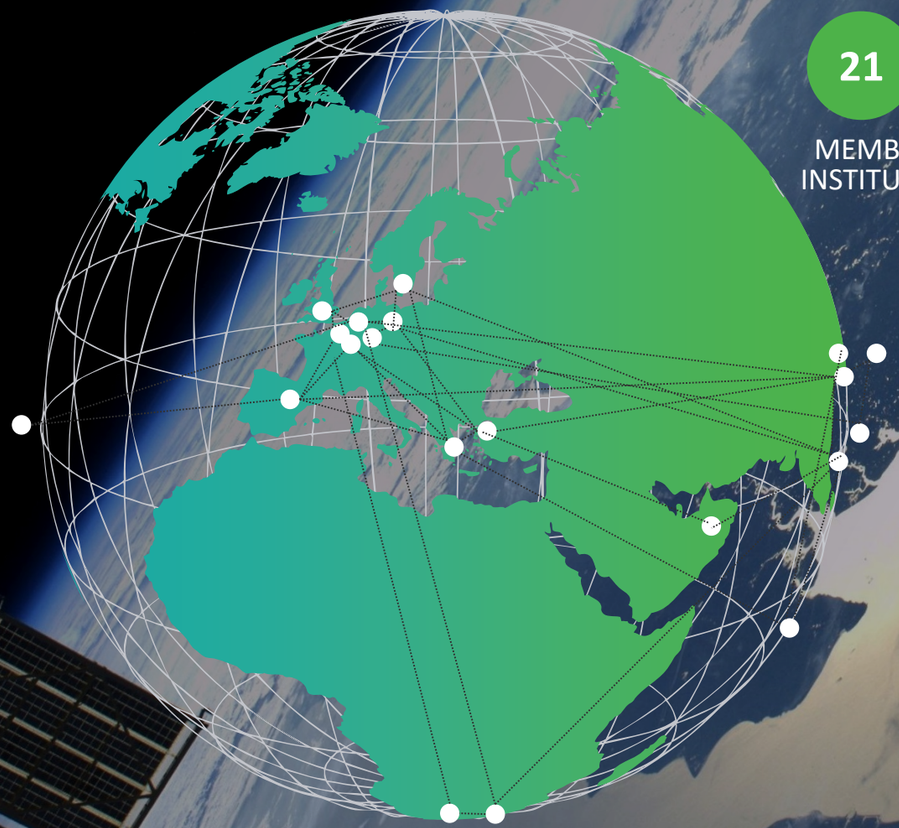


Smeets, P. W. M. H., Cruddas, P., & Linneck, S. (2016). *Public health and socio-economic considerations of drinking water supply in India*. Paper presented at the International Conference on Innovations in Sustainable Water & Wastewater Treatment Systems (ISWATS), YASHADA, Pune, India.

GENERATE AND SHARE KNOWLEDGE ON SAFE WATER FOR ALL

KWR WATERCYCLE RESEARCH INSTITUTE

BRIDGING SCIENCE TO PRACTICE



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MEMBER INSTITUTES

HEALTH

THINKING AHEAD

WATER-WISE WORLD

ENABLING TECHNOLOGIES

SOCIETY

SUSTAINABLE WATERCYCLE

watershare®

WHO Collaborating Centre on Water Quality and Health

KWR

THANK YOU FOR YOUR ATTENTION

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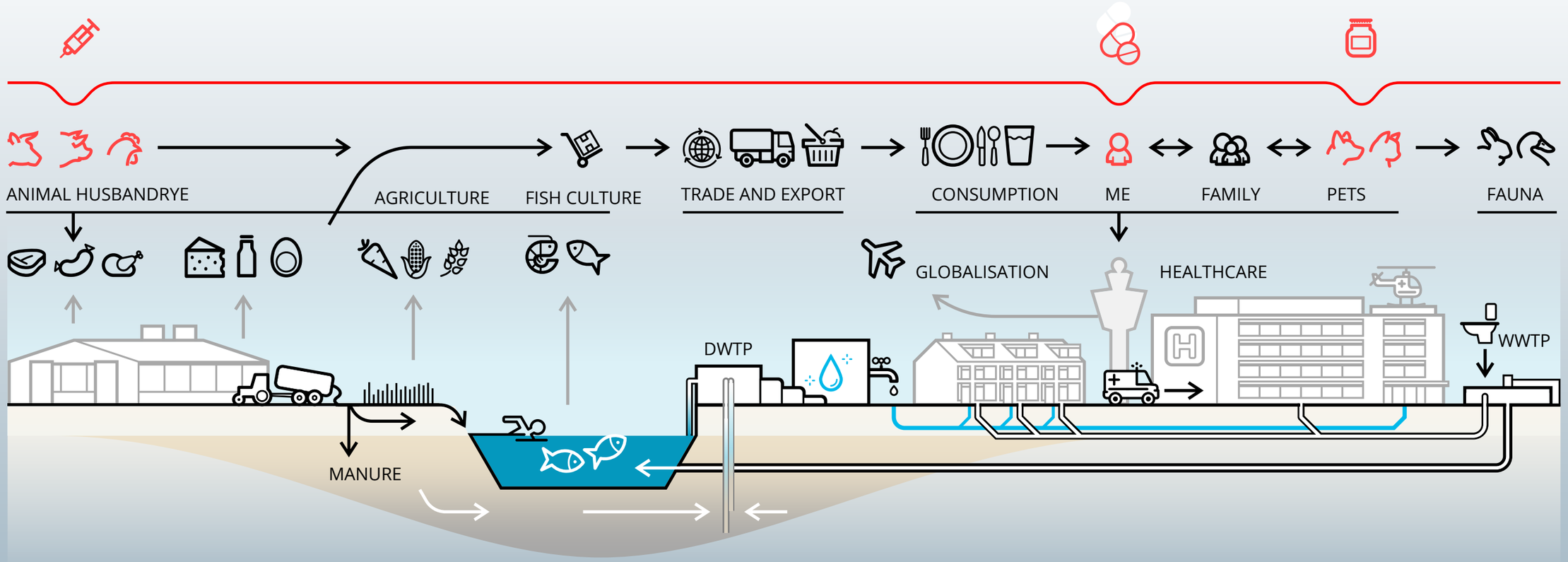
ARG routes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FISH CULTURE
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CONSUMPTION
ME
FAMILY
PETS
FAUNA
GLOBALISATION
HEALTHCARE
DWTP
WWTP
MANURE