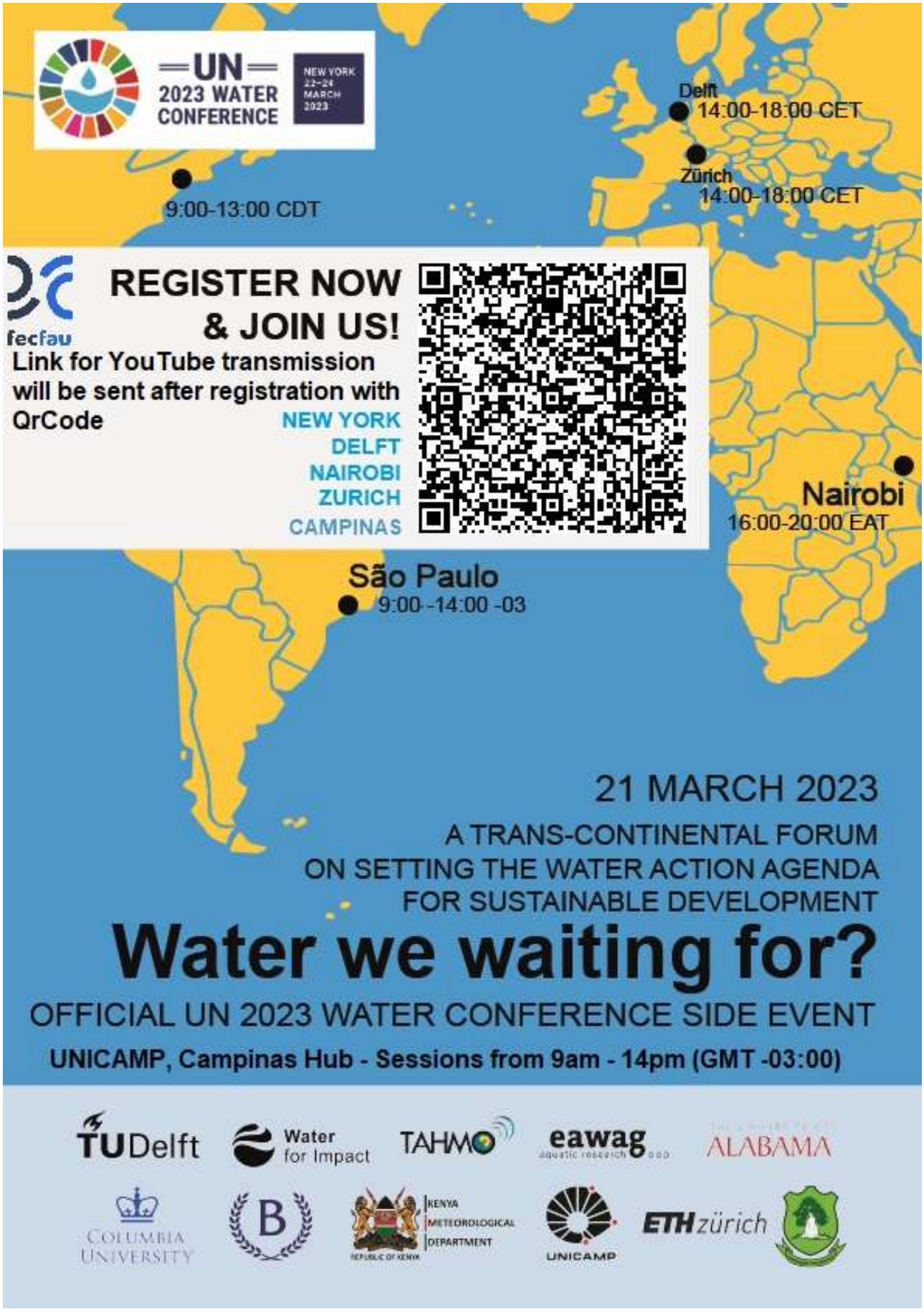
UN
2023 WATER CONFERENCE
NEW YORK
22-24
MARCH
2023
Delft
14:00-18:00 CET
Zürich
14:00-18:00 CET
9:00-13:00 CDT
fecfau
REGISTER NOW
& JOIN US!
Link for YouTube transmission
will be sent after registration with
QrCode
NEW YORK
DELFT
NAIROBI
ZURICH
CAMPINAS
Nairobi
16:00-20:00 EAT
São Paulo
9:00 -14:00 -03
21 MARCH 2023
A TRANS-CONTINENTAL FORUM
ON SETTING THE WATER ACTION AGENDA
FOR SUSTAINABLE DEVELOPMENT
Water we waiting for?
OFFICIAL UN 2023 WATER CONFERENCE SIDE EVENT
UNICAMP, Campinas Hub - Sessions from 9am - 14pm (GMT -03:00)
TUDelft
Water for Impact
TAHMO
eawag
aquatic research
ALABAMA
COLUMBIA UNIVERSITY
KENYA METEOROLOGICAL DEPARTMENT
REPUBLIC OF KENYA
UNICAMP
ETH zürich

Water we waiting for?

UNICAMP, March 21st, 2023

Program

United Nations Satellite Workshop Campinas, Sao Paulo, Brazil

The side event will be held in Unicamp – Campinas on March, 21st and you can join us online!

You can register your email in the link below or in the QrCode:

l1nk.dev/waterwewaitingforcampinas

After registration, you will receive a link for YouTube transmission!

After Participation, you can also receive a certificate!

Schedule:

08.45 – 09.00 **Welcome and Opening**

Prof. Gustavo Paim Valenca, Prof. Patricia Osseweijer, Prof. Marcelo Nolasco, Prof. Luana Mattos de Oliveira Cruz

09.00 – 09.30 **Water: challenges and solutions**

Invited companies (Hélio Gabardo – Solvey and Thiago Fortaleza de Oliveira - General Water)

09.30 – 10.00 Discussion and formulation problem statement

10.00 – 10.30 Break

10.30 – 10.50 **Live link to Delft: Valuable products from wastewater: Kaumera**

Prof. Mark van Loosdrecht

10.50 – 11.00 Break

11.00 – 11.40 **Implementation circular wastewater treatment Brazil: challenges and opportunities**

Rene Noppeney (RHKDHV, NL), Antonio Martins (Aguas do Algarve, Portugal), Harald Mikkelsen (Koppert, NL)

11.40 – 12.00 Discussion and Q&A

12.00 – 13.00 **Live transfer to New York**

12.00 – 12.07 Campinas: Problem Statement Brazil

Prof. Luana Mattos de Oliveira Cruz, Prof. Marcelo Nolasco and Dr. Thiago - Bressani

12.07 – 12.19 New York: Movie Water Mining: product recovery in wastewater treatment

Solutions from experiences Water Mining, Dr. Philipp Wilfert

12.19 – 12.25 Delft: Student pitch on future solutions. Discussion with Prof. Mark van Loosdrecht and Dr. Dimitris Xevgenos

12.25 – 12.45 New York and Campinas: Panel discussion on prepared questions and statements

12.45 – 13.00 New York, Delft and Campinas: Final discussion and conclusions

13.00 – 14.00 **New York Closing session with panel and input from Campinas and Nairobi**

Problem statement wastewater treatment challenges in Brazil

Brazil is a predominantly tropical country with lots of rain and rivers throughout its continental area. Twelve percent of all free-flowing fresh water on the planet is in Brazil. However, many locations have water shortages. For example, the northeast region suffers from intense droughts while the southeast region, despite its large rivers, has a low water availability due to its vast population.

In addition, due to the high population density, mainly in SP state, sewage production is intense, and the lack of adequate collection and treatment can lead to an increase in waterborne diseases and water bodies` contamination, especially by nutrients. Losing aquatic diversity, recreational problems, higher water treatment costs, commercial value loss of the affected area, and toxicity problems are possible.

Although the richest and the most populous Brazilian state, SP, has a high level of water supply (96%), about 10% of the population still does not have sewage collection. In addition, most of the collected sewage is treated only to remove organic material (85.2%). Only 11% provide nutrient removal from their effluents.

For many years, sewage treatment's main objective was removing organic matter. However, even with the increasing damage of nutrient disposal in water bodies, phosphorus and nitrogen removal requirements are not included as an essential step in Brazil's domestic wastewater treatment plants and other southern countries.

Therefore, it highlights the importance of rethinking sanitation for these areas, not only for water supply, sewage collection, and treatment but also for improving existing sewage treatment plants. Thus, it is necessary to plan alternative water sources, consider removing and recovering nutrients in existing plants, and add value to the generated by-products.

Wastewater treatment plants (WWTP) have moved from the concept of “waste treatment”, intended to discharge treated wastewater into surface waters, to the concept of a “water resource recovery facility” (WRRF) or biorefinery. This transformation of pollutant removal into valuable resources places wastewater management in a broader context.

For this chain, it is also important to consider water consumers and potential users of its by-products: agriculture, industry and services.

Last but not least, it is essential to emphasize that, in countries like Brazil, there is significant social inequality, which is also reflected in access to sanitation. The same data about sewage consider septic tanks as adequate access to sewage collection and treatment in rural areas or areas far from large centers. These tanks often do not receive proper maintenance and probably do not work well.

In addition, since the poorest communities sometimes have different sociocultural aspects from urban centers, they are rarely considered in public policies for sanitation access, which makes it challenging to promote health, life quality, and global environmental preservation.

Therefore, to overcome sanitation challenges in southern countries, we must deal with technological and social aspects to implement the best solutions for each community or area.

Action ambition for 2023-2025: *Sustainable desalination and wastewater treatment saving energy and recovering water, materials and nutrients*

State-of-the-art

Access to fresh water is a crucial need for all. In addition to sustainable desalination we also need to improve our wastewater treatment systems to save energy, reclaim fresh water and recover valuable nutrients. Innovation has shown large improvements, but are often difficult to implement due to high investment needs, regulation and local concerns (Interactive Water dialogue theme 2). The EU project Water Mining co-designed implementations of circular wastewater treatment systems with 38 partners from 12 countries from 2020-2024. In 6 different case studies in 5 countries, we showcase and validate innovative next generation water resource solutions at a pre-commercial demonstration scale. Our approach is inclusive and combines viable technologies with stakeholder involvement, quantifying sustainability and proposing adapted policies to design circular wastewater treatment systems. We take local issues, needs and practices into account and pursue the most effective transition pathway that ultimately accelerates societal uptake. Our case studies relate to desalination and urban wastewater systems in water scarce areas and to industrial systems.

Goal and impacts

Our goal is to provide 'easy-to-implement' and 'scalable' sustainable solutions to wastewater treatment and desalination, increasing water availability for urban, industrial and agricultural use in addition to valuable nutrients and materials.

Outlook

The Water Mining project case studies show that over 90% of water savings can be achieved as well as 50-90% energy savings. Desalination can be more cost effective and cleaner, without polluting the sea. GHG emissions can be reduced, contributing to mitigation of climate change. Early integration with stakeholders in local contexts shows that cooperation between companies, energy providers, land owners and farmers can improve water management by adapting the systems to actual local needs and provisions (such as low land availability). Recovered products (salts, fertilisers (Na, P, N) and polymers) can be locally used or traded; use of local waste heat or renewable energy can reduce energy costs and identification of water quality needs for farmers can provide irrigation needs with reduced wastewater treatment costs. The Water Mining demonstration units are mobile (containers)

and can be used to define local scale-up requirements. Such data are important for decision making for investment of commercial circular wastewater treatment and desalination plants.

Resources needed

Water Mining can provide the designs for the desalination and wastewater treatment as well as the mobile demonstration units for replication of the case studies in other countries. Replication would cost circa 40.000 $ for transportation costs (depending on location) plus 3 weeks of engineering expertise to implement the demo per country. Analysis and running costs will require additional inputs depending on local expertise availability.

During the workshop experts of Water Mining demo's will provide advice on technology options with linked environmental, economic and social impacts. The outcomes include a 'white paper' on novel water management solutions (workshop); a 'handbook' on implementation approaches for the efficient uptake of improved water solutions in different context, providing a decision making tool for investment in sustainable water solutions (ambition). Knowledge and skill gaps identification (classified in vocational levels) provide course designs (Massive Online Open Courses for distant learning at no or low costs) and handbooks on skill training which could be organised on-site.