



## THE WORLD WATER QUALITY ALLIANCE NEWSLETTER

December 2023

---

*The World Water Quality Alliance is convened by the United Nations Environment Programme and supported by the Swiss Confederation. It proudly presents its monthly newsletter, YEMAYA, named after the ancient African goddess of the ocean and motherhood. She is associated with fertility, femininity, protection, healing, and childbirth. Her domains are symbolized as water creatures: the seas, rivers, and lakes. She is honoured and revered in the African diaspora, particularly in Cuba, Haiti, Brazil, and the United States.*

*We, the World Water Quality Alliance Coordination Team, welcome articles about water quality. Tell us about your experiences. Describe the challenges you and your people face. Talk to our global community; talk to people from around the World. Send your articles to [wwqa-coordination@un.org](mailto:wwqa-coordination@un.org).*

---

## IN THIS ISSUE

---

*Please join us in delving into the theme of food and water through the following articles:*

---

- *Unravelling the Mystery: The Presence of Toxic Heavy Metals in Our Vegetables*
    - *Results from COP 28*
  - *The December Interview: Marc Watum, Chairman of Vision 2030 Fund and Founder of Vertex Ecosystem*
    - *Youth Embracing Actions Caravan*
  - *Chamie Organics, Kenya: A perspective on Water Quality and its Effects in Dandora - GEOfood Production*
    - *The WWQA BULLETIN BOARD*
- 

- *The World Water Quality Hub - Please share your views!*
    - *Job Openings*
-



---

SEASON'S  
GREETINGS

---

THE WWQA WISHES YOU AND YOUR LOVED  
ONES A VERY HAPPY HOLIDAY AND ALL THE  
BEST FOR 2024

# Unravelling the Mystery: The Presence of Toxic Heavy Metals in Our Vegetables



वस्त्रलोक  
गोदोल्या ( मारवाडी अस्पताल गेट के बगल में, वाराणसी )  
15% OFF  
Raymond  
Suits & Shirts

K.K. COMPUTER  
TRAINING & LABS CENTRE  
श्री टीव्ही और पेंटिंग्स

संदीप केशरी  
संदीप केशरी  
संदीप केशरी

3174744

---

The latest study on the detection of high levels of heavy metals (HMs) in vegetables from Bengaluru's supermarkets has raised concerns among the urban population. The authors of the report concluded that irrigating crops with wastewater is one of the reasons for the accumulation of toxic metals in the vegetables. Before exploring how heavy metals end up in vegetables, it is crucial to understand the role of Karnataka State Pollution Control Board (KSPCB) in monitoring and managing surface water quality in Karnataka. The KSPCB is mandated to prevent water pollution and maintain or restore the wholesomeness of surface water bodies. To achieve this, it regularly monitors effluents from wastewater treatment plants (WWTPs) and water samples from surface bodies, ensuring adherence to water quality targets for intended uses.

The definition of "wholesomeness" means meeting the water quality targets for the intended use. A water body that is intended to be used for irrigation (E), should meet water quality targets for pH, conductivity, boron content, and sodium adsorption ratio (SAR).

Despite KSPCB regulating the quality of effluents from WWTPs (industrial and domestic), why do we still observe the HMs in urban rivers? Our one-year study at ATREE aimed to identify the source of HMs in the Vrishabhavathy River flowing through Bengaluru. We set up three stations to assess HMs and flows in the stream every hour for 24 hours. The study revealed that industries discharge untreated effluents during the early morning and midnight hours. The lack of night-time monitoring and dilution of industrial effluents with domestic wastewater in the morning hampers KSPCB's ability to capture peak HM concentrations in the stream. Furthermore, the absence of flow data hinders quantifying the HM load entering the water body.

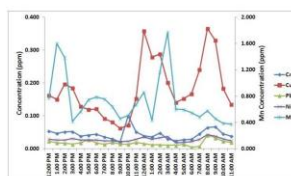
Additionally, the exclusion of HMs from irrigation criteria raises concerns about water bodies being considered suitable for irrigation, even in the presence of heavy metals. Addressing these issues is crucial for safeguarding public health and the ecosystem.

To read the full article: [A multi-pronged approach to source attribution and apportionment of heavy metals in urban rivers | Ambio \(springer.com\)](#)

Article contribution by Dr. Priyanka Jamwal, ATREE

---

CHO : 14-07-15



1 - Image contribution by Dr. Priyanka Jamwal, ATREE



2 - Image contribution by Dr. Priyanka Jamwal, ATREE



3 - Image contribution by Dr. Priyanka Jamwal, ATREE

## Results from COP 28

**UNITE.ACT.DELIVER.**



United Nations  
Climate Change



**COP28**  
**UAE**

---

*COP28 marked a significant shift by placing water at the forefront of climate discussions, recognizing it as a crucial catalyst for both adaptation and mitigation strategies. Under the COP28 Presidency's strategic program, water gained unprecedented political visibility and backing, effectively integrating it into the core discussions of the conference.*

*The momentum began with the World Climate Action Summit's dedicated session on Water, extending across themed events covering Finance, Energy, Multilevel Action, and Urbanization. The pinnacle of this focus arrived with COP28's flagship programming on Food, Agriculture, and Water Day. Throughout these engagements, COP28 emphasized the criticality of safeguarding and rejuvenating freshwater ecosystems for effective climate action. It underscored the urgency of fortifying urban water resilience. It highlighted the interconnectedness of water and food systems, stressing the need for an integrated approach, especially in the face of climate change.*

*A significant highlight was the collaboration between the COP28 Presidency, the Netherlands, and Tajikistan, building upon the outcomes of the UN 2023 Water Conference they have co-hosted earlier in March.*

#### *Key Moments at COP28:*

---

- ***Freshwater Challenge:*** 43 nations pledged to protect and restore 30% of deteriorated freshwater ecosystems—equating to 300,000 km of river and 350 million hectares of wetlands by 2030.
  - ***Ministerial Dialogue:*** Over 20 countries engaged in the inaugural ministerial dialogue focusing on building water-resilient food systems. They committed to reshaping water and food management approaches, urging all nations to incorporate integrated strategies into their revised Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs). A two-year technical working group will support this call to action.
  - ***Partnership Launch:*** The UNFCCC Climate Resilient Food Systems (CRFS) Alliance initiated a two-year partnership to bolster countries and non-state actors in implementing integrated water and food system management. This collaboration aims to deliver on commitments, especially about NDCs and NAPs for COP30.
- 

*COP28 also spotlighted pioneering initiatives, including the Urban Water Catalyst Initiative, centred on financing water and sanitation utilities, contributing significantly to the climate-resilient future we strive to build.*

*These milestones stand as pivotal advancements, paving the way for a more inclusive and integrated approach to addressing the nexus between water, food, and climate resilience.*



You can read the full summary document from COP28 here: <https://prod-cd-cdn.azureedge.net/-/media/Project/COP28/Dec-10.pdf?rev=081a819a524e47189c3730d82ea57b3d>

You can see some reflections from the Stockholm International Water Institute (SIWI), who organized the Water for Climate Pavilion (<https://waterforclimate.net/schedule/>) at COP28 together with over 60 partner organizations, on important strides for water at the COP28 here: <https://siwi.org/latest/closing-cop28-important-strides-for-water/>

---

## **Marc Watum, Chairman of Vision 2030 Fund and Founder of Vertex Ecosystem**

**Please provide a brief introduction of yourself and your role as the Chairman and Founder of the Vision 2030 Fund? What does Vision 2023 Fund do and how did your journey lead you to these significant positions?**

---

*I am the son of Congolese migrants who gave me a beautiful life against all odds. I grew up in very interesting corners of Africa including Mali, Uganda, and South Africa. After completing my undergraduate studies in London, some students and I created a summit called Vertex Summit to be the intersection where aspiring entrepreneurs would meet industry leaders from all backgrounds. Fast forward 7 years and we're based in Africa, Johannesburg to be specific, and over one thousand ventures have been supported through our incubator.*

*Vision 2030 Fund was borne out of this when it became increasingly obvious that we need to make radical changes about how we deploy capital to achieve social impact. Did you know that despite so many bright and brilliant ideators, inventors, and creatives we have here, only 0.4% of global venture capital investments flow into Africa per year? Our fund wants to rebalance this while proving that investing in human ingenuity is the most efficient way to confront Africa's food and water vulnerabilities.*

---



4 - Image provided by Marc Watum, Chairman of Vision 2030 Fund and Founder of Vertex Ecosystem

**As the founder of Vision 2023 Fund, can you shed light on how organization contribute to addressing the nexus challenges between water quality and food? What do you see as the most pressing challenges in ensuring the link between food security and water quality on a global scale, and how does your role as the chairman of the Vision 2030 Fund position you to address or mitigate these challenges?**

---

*Africa imports over \$900 billion of food each year. This is more than the GDP of our bottom 44 economies combined. Our research estimates that for Africa to become food independent, it will need at least \$500 billion of investments in food, water, and logistical infrastructure per year until at least 2030. Our work on the nexus begins with recognizing this disparity. The good news is that through innovation you make the entire process of capturing this development gap a much simpler and quicker task. With the right technology, not only can the necessary infrastructure become available, it becomes accessible, affordable, and adaptable. What's even better is that if these innovations are developed locally, we move into localized value creation, addition, and capture. This directly positions locally developed nexus solutions to improve the livelihoods of stakeholders who are usually excluded from the development process.*

*To be clear, water quality and food insecurity go hand in hand. The most significant infrastructural constraint in food insecurity is irrigation. Water scarcity and the unavailability of clean drinking water rank among the top 5 global risks - being in the league of nuclear bombs when it comes to the potential devastation that lies ahead if we do nothing. Every single person on the planet needs clean air, water, and nutritious food - it is business and economics 101 (read: Maslow's hierarchy of needs). In Africa's case, more than half of the population experiences hunger, malnutrition, and poverty.*

*Our fund is driven to harmonize the world's response to this crisis in a way that is sustainable and rapid. We sit at the intersection between the heavily resourced, financialized, development finance community and the under-resourced, marginalized, developing economy. We are taking on the risks associated with investing in people who come from vulnerable socio-economic contexts and dedicating our venture-building expertise to ensure that global challenges can be solved through local impact.*

---

**Given your leadership in the Vision 2030 Fund, which focuses on sustainable development, how do you see the link between the fund's objectives and the global initiative for water quality that the World Water Quality Alliance (WWQA) strives to achieve?**

---

*We share a common goal, and want the world to be such that all people have access to clean and safe water - our success in pursuing innovation in this sector means the WWQA's success and vice versa. Recently I was able to connect with some of the WWQA workstreams and to observe the Africa use cases which include remarkable progress on data capturing in the Great Lakes. When we work together, we find that investing in local innovation ecosystems can help to streamline and dramatically improve the data component of these initiatives. We have already proposed to assist in producing an index that allows for total visibility across regional water value chains in a way that provides any member of the public actionable data off which real decisions can be made about how to respond.*

---

**Having been at COP 28, what are your reflections on the outcome and discussions so far concerning the negotiations and water as a whole, especially around the Water and Food Day (December 10th)?**

---

*From an investing and innovation perspective, we have shown some strong progress toward a complete behavior change in valuing water. Some innovations have reduced the water burden of subsistence agriculture by 98%. In other cases, from a political and multilateral standpoint, conversations around flawed water policies in recognition of the cross-border and underground dynamics of this resource. I'll say, however, that the most promising efforts haven't been onstage. They have been through individuals, scientists, and those at the ground level.*

*I was shocked by some colleagues discussing how water didn't seem to be of such high concern during the speeches we saw. How are you so excited about creating mobile nuclear reactors of the future but you haven't addressed water? You need water for everything.*

*Lastly, I'd like to recognize, congratulate, and commend the African Development Bank for its announcement of the new billion-dollar Africa Climate Risk Insurance for Adaptation (ACRIFA) extreme weather insurance facility. This initiative demonstrates the capability to finance our food and water dependents, and demonstrates, in numbers, the size of our environmental vulnerability.*

---

**Youth Embracing Actions Caravan**



---

*Move Northern Kenya is a dynamic youth-led organization headquartered in Marsabit County, with a mission that transcends geographical boundaries to encompass all counties in Northern Kenya. Focused on driving positive change, channel our efforts into addressing key Sustainable Development Goals (SDGs) through community-based strategies.*

*Our commitment lies in transforming lives in the North, and our primary focus areas include*

---

- *Zero hunger*
  - *Gender equality*
  - *Quality education*
  - *Good health and well-being*
  - *Clean water and sanitation*
  - *Climate action*
  - *Peace, Justice, and Strong Institutions.*
- 

### **Challenges and Successes:**

*Being a youth-led organization, our journey has been marked by challenges in establishing and implementing projects. However, despite these obstacles, we have successfully executed various initiatives in Northern Kenya, thanks to the collaboration of dedicated young individuals. The challenges we've faced have only strengthened our resolve to continue making a positive impact in the region.*

*In our pursuit of sustainable development in Northern Kenya, Move Northern Kenya extends a warm invitation for potential partnerships. We believe that through collaborative efforts, we can amplify the reach and effectiveness of our initiatives, contributing significantly to the well-being of communities in the region.*

*Move Northern Kenya has strategically devised projects to address critical issues in the region and contribute to sustainable development. Two flagship initiatives, the Tujikimu project and the Youth Embracing Actions Caravan, aim to enhance food production and tackle water and sanitation challenges, respectively.*

**Tujikimu Project - Enhancing Food Production:** *The Tujikimu project is designed to enhance food production in Northern Kenya. Our strategy involves educating communities on efficient farming practices to increase agricultural output. By promoting responsible water usage and situating farms near boreholes, we aim to ensure sustained access to water during dry seasons. This multi-faceted approach not only addresses the issue of hunger but also contributes to the overall well-being of the community.*

**Youth Embracing Actions Caravan - Water and Sanitation:** *Addressing water and sanitation challenges is at the core of the Youth Embracing Actions Caravan initiative. Through this project, we aim to educate communities on the importance of water quality, responsible water usage and sanitation practices. By implementing programs in schools, we not only combat malnutrition but also create a conducive environment for enhanced educational opportunities. Improved food availability encourages increased school attendance among children, promoting a holistic approach to community development.*

### **Conclusion:**

*Move Northern Kenya is dedicated to transforming the lives of individuals in Northern Kenya through targeted initiatives that align with key SDGs. As we navigate challenges, we remain steadfast in our commitment to making a positive impact. We believe that through partnerships with different organizations, we can amplify our efforts and contribute significantly to the sustainable development of Northern Kenya.*

*Article contribution by Riptoya Elema - Move Northern Kenya*

---



## Chamie Organics, Kenya: A perspective on Water Quality and its Effects in Dandora - GEOfood Production



---

*The availability of water in urban regions affects food production in various ways, including the availability of direct irrigation. Through diversion of river water to riparian food farms, farmers are able to grow cash crops and earn a living. This idea has existed for quite a while but the increased pollution of the Nairobi river water has increased the river toxicity therefore posing a risk to those relying on the river water for farming. Chamie Organics has identified that the sewage water originating from Nairobi River has various harmful bacteria like Escherichia coli. When it comes into contact with food on the farm this can lead to zoonosis and other health impacts following the incidence of waterborne diseases in the community.*

*Chamie Organics was set up in January 2021 in Nairobi, Kenya. It was set up by Victor Otieno (who holds a degree in Agriculture and Applied Economics) in a partnership and works with other local CBOs and NGOs to improve the sociodynamics that combat food and environment upon noticing that pollution was impacting food production.*

*Through this discovery, Chamie Organics decided to offer knowledge to the community on alternative ways of farming without overreliance on techniques that can be perilous to the farmer and the consumer. Through engagement in closed looped aquaponic and hydroponic systems that enable the recycling and*

*reuse of water which is being used for vegetables and fish (catfish and tilapia) production processes, Chamie Organics is able to increase farm yield while recycling and re-using their water. Hence, through closed loop systems, less water is used in food production and the quality of the water can be monitored through pH and electrical conductivity before it is used for farming. Chamie Organics further engages the communities around Nairobi (in Korogocho, Dandora, Babadogo, Mathare, and Kibera). Through the WWQA's citizen science workstream using the Earthwatch testing kits to test water used on a monthly basis, they are able to identify the levels of nitrates and phosphates affecting food production in the river water. Testing over the last 4 months has showed that the level of phosphates in the water is increasing which would indicate more waste discharge in the river. This is alarming because they are looking to move to a more sustainable way of living but at the same time the river they depend on keeps deteriorating. This also affects the aquatic life and ecosystems depending on the river.*

*The tap water is also tested through use of devices and instruments that measure the electrical conductivity to ensure the levels of chlorine do not limit the growth of plants and fish. The analysis are vital to ensure informed decisions are made as that will impact the yield of the communal farmers that Chamie Organics engages with through their mentorship program. The mentorship program is important because many of the city food systems in informal settlements are fed by the river which which currently holds a lot of the cities raw sewage. This is why Chamie Organics is trying to spread the knowledge gained through i.a. university degree and the training received through Earthwatch which ascertains the argument. Through citizen science Chamie Organics the data to make the conclusion that there's a high amount of phosphates in the river and water is not fit for farming.*

*Chamie Organics is able to self sustain by selling the vegetables they are growing and installing these systems in other communities and sharing the knowledge, thus providing an excellent model for other local initiatives.*

*Article contribution by Charo Otieno Victor - Chamie Organics*

---



*5 - Hydroponics*

*Image contribution by Charo Otieno Victor - Chamie Organics*



6 - Hydroponics

*Image contribution by Charo Otieno Victor - Chamie Organics*



7 - Hydroponics

*Image contribution by Charo Otieno Victor - Chamie Organics*

## The WWQA BULLETIN BOARD

### The World Water Quality Hub - Please share your views!

---

*The World Water Quality Alliance (WWQA) has its beginnings at the third session of the UN Environment Assembly in 2017 when solution 3/10 "Addressing water pollution to protect and restore water-related ecosystems" was adopted, which requested the UN Environment Programme (UNEP) to develop a World Water Quality Assessment. With support from the World Meteorological Organisation (WMO), UNEP organized a workshop in December 2018, bringing together different stakeholders to design an action plan with regard to emerging issues in water quality. This marked the founding of the WWQA.*

*The WWQA has identified 10 areas of focus for the World Water Quality Assessment, and the World Water Quality Hub was developed to support this initiative and gather information on these focus areas.*

The World Water Quality Hub provides access to freshwater quality datasets and products contributed by members of the [World Water Quality Alliance](#) and other partners to support the development of a [World Water Quality Assessment](#). More information on current contributors can be found [here](#).

We value your feedback regarding the hub. Please click on the link below to be directed to the survey

[Feedback form :World water Quality Hub](#)

[Additional Resources for World Water](#)

---

## Job Openings

---

**Vacancy announcement, deadline 15 December 2023!!**

**Researcher in Global Water Quality Modelling**

### **Position description**

The [AXA Research Chair of Water Quality and Global Change](#) is looking for a researcher on **global water quality modelling** with the following responsibilities:

---

- Building a global water quality model using SWAT+ (focus on nitrogen and phosphorous)
  - Collaboration with research team of the Water Quality sector of [ISIMIP](#)
  - Processing and publishing the results in peer-reviewed papers
- 

For this function, the department of [Water and Climate](#) at our **Brussels Humanities, Sciences & Engineering Campus (Elsene/Brussels)** will serve as your home base. You will be part of the AXA Research Chair team of prof. Ann van Griensven.

### **Interested?**

*Is this the job you've been dreaming of?*

Send us **ONLINE** and **at latest on 15/12/2023** your CV, letter of motivation using this form: <https://forms.gle/rz5jNmCjRGkjFQQM8>

Do you have questions about the job content? Contact Prof. Ann van Griensven ([ann.van.griensven@vub.be](mailto:ann.van.griensven@vub.be))

**Vacancy announcement:**

**Scientist in large-scale water quality modelling at the Helmholtz Centre for Environmental Research (UFZ) in Leipzig, Germany. Deadline: 5 January 2024**

**Your tasks**

We presently have opened a postdoc position in the field of model-based hydrology and hydrogeology, working within a long-term international project with experts from Germany, Sweden, Italy, and Israel.

Based on extensive previous analysis, the main task for the next 3 years (extension possible) is the development of a Europe-wide multi-scale regional groundwater model coupled with the catchment scale hydrological model mHM which takes heterogeneous elements into account. The candidate will be hosted in the department CHS (Computational Hydrosystems) within a larger international modeling team. Some stays abroad with our project partners are possible.

**Important**

Please submit your application via our online portal with your cover letter, CV (please omit your photo, age, or marital status), and relevant attachments by 5 January 2024.

See more details at: <https://recruitingapp-5128.de.umantis.com/Vacancies/2847/Description/2>

---

## In the January Issue of YEMAYA

- 
- *One Year Later: The Kibera Local Water Forum*
  - *January Interview: Richard Munang, Unit Head, Global Environment Monitoring.*
  - *A perspective of Water Quality in South Africa*
- 

---

Please follow our social media handles at:

Facebook: <https://www.facebook.com/profile>

Twitter: [https://twitter.com/UN\\_WWQA](https://twitter.com/UN_WWQA)

LinkedIn: <https://www.linkedin.com/company/wwqa>

Visit our website at: [www.wwqa.info](http://www.wwqa.info)

---



\*Unless otherwise indicated, all contributions are by the WWQA coordination team.

YEMAYA is a publication of the World Water Quality Alliance. The World Water Quality Alliance is convened by the United Nations Environment Programme and supported by the Swiss Confederation. All rights are reserved. For further information about the World Water Quality Alliance see the website [www.wwqa.info](http://www.wwqa.info) or contact the WWQA Coordination Team at [wwqa-coordination@un.org](mailto:wwqa-coordination@un.org)

YEMAYA welcomes articles, opinions and audio-visual material related to the issue of water quality. Please send any contribution to [wwqa-coordination@un.org](mailto:wwqa-coordination@un.org) with a short 100-word biography, the name of your organisation and a phone number where you can be contacted.