# 

## m.sc. Waste

## A Summer of Success in Ghana

### PAULA MURIEL NÚÑEZ & MOHAMED KOTAISH, GENERATION 2023

This summer, we had an experience of a lifetime!
In July 2024, we had the privilege to participate, along with six other students from the University of Stuttgart — four from the M.Sc. WASTE program — in the Sustainable Cities and Circular Economy in

Sub-Saharan Africa (SuCCESS 24) Summer School in Accra, Ghana through a scholarship fully funded by DAAD German Academic Exchange Service.

Success 24 is a joint research project between the University of Stuttgart, Addis Ababa University, and the University of Ghana. It aims to promote sustainable development in the sub-Saharan region using a circular economy approach centered on implementing sustainable and resilient waste management techniques and practices.

The Summer School program was dense with informative lectures, interactive workshops, and educational and social excursions, each catered

to build our knowledge and skillset while indulging in the rich culture of Ghana. The program kickstarted with the Transferability Workshop which presented the stakeholders and the goal of this year's summer school which was centered around the adaptation of a formerly-developed life cycle assessment (LCA) tool to the Ghanaian setting.

The workshop set the stage for interactive lectures offered by experts and researchers and focused on topics such as waste management actors and policy tools, waste characterisation, life cycle thinking, Sustainable Development Goals (SDGs), and e-waste management. The knowledge acquired from these learning sessions was directly applied in the intercultural group exercise that aimed to adapt the UN SDG-based LCA tool used in the Ethiopian setting to the waste management scenario and sector dynamics of Ghana.

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# MESSAGES FROM THE m.sc. waste office

"I have been part of the M.Sc. WASTE family since the first of October 2024 and I am very happy to be able to work in such a warm team and with students from so many different backgrounds.

Many thanks to everyone who welcomed me so warmly and gave me a wonderful start! It's a pleasure to work with everybody of you in such a wonderful environment.

For the past three years, I worked on a post-doctoral position in the field of medical technology at IGVP of the University of Stuttgart and Fraunhofer IGB. The years before, I studied Technical Biology in Stuttgart and conducted my PhD at the German Sport University of Cologne. My PhD topic was historical sword fencing as a special educational support measure. I have taught sword fencing to young people with learning difficulties to successful support their socio-emotional development.

I spend my free time with my three children and a lot of sport, preferably in nature.

If you want to know more, please join me in the M.Sc. WASTE Office!"

Dr. Janina Ulmer Course Manager, M.Sc. WASTE



"My team Sin comp Educe Interest Scient Har work few y to an experiment of the service of the se

"My name is Lu Chen and I joined the M.Sc. WASTE Office team in April 2024, as Course Manager.

Since 2013, I have been living in Germany. Here, I completed my Bachelor's and Master's degrees in Educational Sciences. After graduating, I worked at the International Office of Osnabrück University of Applied Sciences until the end of 2023.

Having been an international student myself and having worked closely with international students over the past few years, I understand how challenging it can be to move to a new country and to complete studies here. My experiences motivate me to support our students when they are facing difficulties or challenges during their studies and in their personal lives.

I feel proud to see them successfully graduate. My tasks as a course manager are diverse and varied, which makes the job highly enjoyable for me.

In my free time, I love traveling to discover different landscapes and cultures and learning new languages. I am also passionate about sports, such as tennis, surfing, skiing and more."

Lu Chen, M.A. Course Manager, M.Sc. WASTE

## **GENERATION 2024**

## class speakers



Amira Vasconez



Every individual experiences events in their own unique way. When I was selected as class speaker, it came as a complete surprise. Initially, I had little interest in participating, as I tend to be more shy. However, upon reflecting on the opportunities this role could offer, I decided to step out of my comfort zone and take on the challenge.

Although Melike and I are just beginning this new journey, our classmates have already shared some of the concerns they anticipate facing. While it is impossible to predict how the next two years will be, I am genuinely excited about the opportunity to serve in this role. I hope to earn my classmates' trust and assure them that I will advocate for what is in the best interest of everyone.

From what I have learned about previous class speakers, this role offers a unique and enriching experience that requires both responsibility and diplomacy. I am eager to participate in upcoming events, collaborate with the class in organising them, and strengthen our bonds to become the close-knit family that the M.Sc. WASTE program is so well known for.

I would like to sincerely thank my classmates for voting for me, as well as the course managers and everyone involved in maintaining these valued traditions. Rest assured, we are committed to upholding and continuing these traditions for future generations.

I hope that this period will be one of growth and success for all of us, filled with happy memories to cherish.

I am Melike Ayar, an environmental engineer who graduated from Istanbul Technical University. I love outdoor sports, including orienteering, hiking, and climbing, and I am also a former swimmer. During my undergraduate studies, I actively contributed to sports clubs as chairwoman, organising various events and competitions. Additionally, travelling and exploring new cuisines have always been among my greatest passions.

Starting Master's studies in Germany has been one of the most significant milestones in my life — a sentiment I believe is shared by many of my peers. This journey not only brings excitement but also offers a unique opportunity to connect with people from diverse cultures and share experiences.

At the Official Welcoming Event for the M.Sc. WASTE program, I had the honour of being elected, together with Amira Vasconez, as class speaker for the generation of 2024. Reflecting on my social and professional experiences from my Bachelor's studies, I saw an opportunity to use those skills to contribute meaningfully to our generation.

I firmly believe that we will do our best to become a generation that works together to overcome any challenges we may face while building strong and lasting friendships. I am happy to serve as a class representative and look forward to fostering a strong sense of community among us.



Melike Ayar



# SUMMER SCHOOL SUCCESS in ghana

Our knowledge was further strengthened through excursions to Adipa Waste Management Centre and the informal e-waste processing district in Agbogbloshie. The most shocking part: witnessing the informal sector and its high involvement throughout the entire waste management process in Accra. The informal sector is present in every single step of the process.

These hard-working women, men, and children endure terrible conditions and tolerate the fact that waste is a core part of their lives. It was a strong awakening that "out of sight, out of mind" does not apply in waste management as the waste generated in one country hugely influences the lives of people in another corner of the world. It was an indirect reminder for us to reflect on the impact that our consumerist behaviour has on the planet and to challenge ourselves to change.



The summer school was also a journey of cultural immersion. From the fascinating nature to delicious cuisine, Ghana offered a lot to embrace. We experienced the local food and live music and everyone had a great time dancing to the Afrobeat. We learned Ghanaian history of independence at the Kwame Nkrumah National Park and Mausoleum. The crowdedness, the scents, and even the haggling during our visit to the Makola Market, the largest market in Ghana, where you can buy everything (even snails!) are all elements of this unique experience that made us fall in love with the country. Everywhere we went, we felt the true Ghanaian love, warmth, and hospitality.



We did not explore one country but actually two since our Ethiopian colleagues their own beautiful culture with us. However, we agree that the cherry-on-top was our colleagues from team Germany with whom we shared wonderful memories, and who became friends for life. It is indeed the people we embark on journeys with who make it worthwhile.

As we reflect on our experience in SuCCESS 24, we can honestly say that it was a two-week journey of connection forging, knowledge sharing, capacity building, and cultural immersion that will shape the individuals and engineers we are and aspire to be.



## campus days autumn magic

#### ISANKA UDAYAKANTHA, GENERATION 2023

As the crisp autumn air sweeps across our campus, the University of Stuttgart transforms into a stunning canvas of warm colours. Through my lens, I've been capturing the magical moments that make this season truly special.

For a photographer, autumn is a gift. The early morning light bathes our modernist architecture in a soft, warm glow, while fallen leaves create natural carpets along the pathways between buildings.

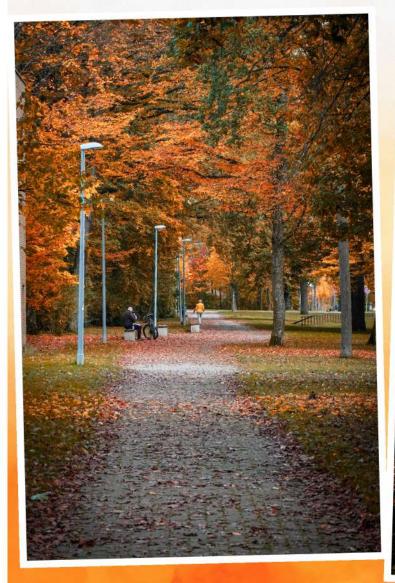
I've especially enjoyed capturing the contrast between our contemporary glass structures and the vibrant fall foliage — a perfect representation of how tradition and innovation coexist in Stuttgart.

What makes these moments even more special is how our student community embraces the season.

You will find students beneath colour-changing trees, their books and laptops surrounded by scattered leaves. Others take breaks between classes, enjoying the mild weather and serene atmosphere only autumn can bring.

The area around the dormitories has become my favourite spot for both studying and photography. There is something incredibly calming about watching the leaves dance in the breeze while preparing for exams or working on assignments. The natural beauty of our campus provides a reminder to pause, breathe, and appreciate our surroundings.

These moments, captured through my camera, will forever remind me of these golden days at the University, where studying, relaxation, and creativity come together in perfect harmony.





# ASIAN NIGHT Colours and cultures

#### **KAZI AKIB BIN ASAD, GENERATION 2022**

On May 3, 2024, the M.Sc. WASTE program brought together students and faculty for an enchanting celebration of Asia's rich and diverse cultural heritage.

The Asian Night was a vibrant presentation of traditions, artistry, and gastronomy, fostering unity and a deeper understanding of the multicultural fabric within the program.

The event, a highlight of our academic calendar, was designed to promote cultural exchange and celebrate multiculturalism.

Students from various Asian countries presented the unique aspects of their homelands through colourful and engaging presentations. From traditional cuisine to historical insights, each presentation offered a window into the rich histories, breathtaking landscapes, and cultural treasures of Asia.

The evening's culinary journey was more than memorable, with Asian students preparing an array of snacks and dishes that highlighted the continent's gastronomic diversity. A special attraction this time around was the serving of food at the start of the event, so no hungry faces were found during the country presentations.

Guests savoured delicacies such as Indian palak paneer, Bangladeshi payesh, Sri Lankan kottu roti, Iranian kashke bademjan, Chinese spicy pancakes and moon cakes, Maldivian folhi, Turkish kısır, Lebanese banana bread and Taiwanese boba tea, immersing themselves in the culinary richness Asia has to offer.

Entertainment was at the heart of the celebration, with a captivating musical performance by alumni best friends Shakir Allawi and Chung-Sheng Chang that brought the cultural essence of Asia to life. A postevent, impromptu dance session added a fun twist to the festivities, engaging attendees from all backgrounds.

Asian Night was more than a celebration; it was a tribute to the study program's commitment to diversity and inclusion. By showcasing the unique backgrounds of its students, the event fostered mutual respect and admiration among participants.

As the night drew to a close, the shared laughter, learning, and connections made it clear that such gatherings are essential in nurturing a vibrant, inclusive academic community.

This unforgettable evening served as a reminder of the beauty in cultural exchange and the strength found in diversity — a cornerstone of the M.Sc. WASTE experience.







# recycling with purpose







#### DIANA MAZORCA GUERRERO, GENERATION 2022

During my studies in the M.Sc. WASTE program, I had the opportunity to work part-time remotely with rePurpose Global, a company that funds plastic recycling projects in countries in the global south.

The projects range from strategies to minimise plastic pollution in rivers and oceans to initiatives that turn plastic waste into recyclables for building houses and schools. rePurpose collaborates with governments and brands to raise awareness of plastic pollution, reduce plastic use in packaging, and fund recycling projects in areas with limited waste management.

From my dormitory in Stuttgart, I focused on evaluating and monitoring rePurpose Global's projects in South America, particularly in my home country, Colombia. In the summer of 2023, I had the chance to turn this remote role into a hands-on internship. My manager recommended that I work on projects in India, and I knew this was a once-in-a-lifetime opportunity. It was the perfect chance to put into practice what I had learned during my Master's.

I spent over a month in India, starting in Bangalore, a vibrant city in southern part of the country. I visited landfills and open dumpsites, where I saw unsegregated waste and the harsh conditions informal waste pickers face.

As part of my internship, I also worked on the *Sada Shakti* and *Saaf Samudra* projects, which have helped hundreds of waste workers and improved recycling systems in Bangalore and Goa. Another unforgettable experience was a beach clean-up in Goa, where we collected 270 kilograms of waste in just three hours.

The challenges I observed in India are very similar to those in my home country Colombia and other countries in the global south: systemic plastic pollution, unsegregated waste, and reliance on informal waste pickers. This experience made me think about how important waste management professionals are to creating sustainable solutions that adapt to different social and geographical contexts.

The warmth of the Indian people, their resilience, and the vibrant flavours of their food made this experience unforgettable. India taught me that collaboration and diversity might be the keys to tackling difficult global challenges. There is immense power in bringing together minds from different backgrounds, cultures, and perspectives to work toward a shared goal.

This is also something I love about the M.Sc. WASTE program — getting to meet people from all over the world with the same passion has really opened my mind and changed how I see things.

# new beginnings

#### **AMIRA VASCONEZ, GENERATION 2024**

Studying abroad offers opportunities to meet new people, make friends, and immerse oneself in different cultures. However, this journey also comes with its set of challenges, particularly when studying in a language that is not your native tongue while simultaneously learning another one.

My partner Jair and I were filled with immense excitement when we were accepted into the M.Sc. WASTE program. This program offers a unique opportunity to engage with students from around the world and work on cutting-edge projects. As soon as we received our admission letters, we enrolled in a basic German language course to prepare for the life ahead.

One of our first encounters with the language barrier happened at the airport. We were familiar with the basics: how to introduce ourselves, ask for directions, and even count to hundred. But we quickly realised that we had not been taught the most essential words — terms like "exit," "door," or "baggage claim" were a mystery. Despite these challenges, we were excited to dive into this new environment, knowing that mastering the language would be an important part of our journey.







Our first introduction to M.Sc. WASTE took place at the welcome event in September. Although not all students could attend, those present were warmly welcomed by the course managers, Lu Chen and Dr Janina Ulmer. One of the most enjoyable aspects of the event was an ice-breaker game, where we were paired with another student and asked to introduce one another to the rest of the group. This exercise highlighted the diversity of the program, as students from various countries, backgrounds, and cultures came together in a shared academic pursuit.

Later that day, we went on a walking tour near the city center, which allowed us to explore some of the city's most iconic sights. We wandered through historic streets and climbed the city's stairways to reach a panoramic viewpoint. From there, we were able to take in stunning views of Stuttgart and reflect on the fact that this program was not only about academic learning but also about embracing and understanding different cultures and perspectives. This experience of discovering the city reinforced our belief that studying abroad offers much more than just an education — it is about personal growth, building a global network, and adapting to new environments.

In just two months of classes, we have come to appreciate why Germany is so highly regarded for its engineering programs and education system. The M.Sc. WASTE program has impressed us with its rigorous academic standards, its focus on interdisciplinary learning, and its practical approach to education. The lecturers are not only experts in their fields but also passionate about engaging students in real-world problem-solving.

With this in mind, we are eager to continue our studies and explore more of Germany's diverse landscapes, cities, and rich cultural history. As we embark on this academic journey, we look forward to gaining new insights, both from our coursework and from the experiences that come with living in such a dynamic and innovative country. We are excited to continue learning, growing, and discovering all that Germany has to offer.

## student achievements



#### **DAAD** scholar receives Young Ambassador Award for South Asia

#### ISANKA UDAYAKANTHA, GENERATION 2023

As a proud Sri Lankan, M.Sc. WASTE Generation 2023 student and DAAD scholarship recipient, I am excited to share my journey. The DAAD scholarship has been pivotal, offering not just financial aid but a gateway to professional growth, cultural exchange, and global collaboration in engineering.

Joining M.Sc. WASTE provided an unparalleled platform to explore cutting-edge solutions in water and sanitation technologies. Recently, I was honoured with the DAAD Young Ambassador Award for South Asia Engineering. This recognition reflects the program's dedication to nurturing talent and fostering international cooperation.

The DAAD experience extends beyond academics, emphasising interdisciplinary learning, real-world problem-solving, and networking opportunities. For aspiring students, the scholarship provides invaluable exposure to innovative research and practical challenges. It encourages critical thinking, innovative solutions, and a commitment to addressing pressing environmental issues.

My journey with DAAD has been transformative, shaping my academic and professional trajectory while inspiring me to contribute to global sustainability. Future candidates should embrace this unique opportunity for growth and learning, believing in their potential and preparing diligently. And I will do my best to help them.

## M.Sc. WASTE students selected to join the **Femtec** network

Femtec is an organisation dedicated to empowering women in STEM by promoting gender equality and fostering personal and professional growth. It achieves this through collaborations with universities, companies, and female professionals, building supportive communities and enhancing career development.

The Femtec journey begins with an application and assessment process, focusing on self-confidence, teamwork, and motivation. The Career Program spans one year, consisting of three intensive one-week sessions during semester breaks. These sessions emphasise soft skills, confidence-boosting, and personal career planning.

Beyond workshops in Berlin, participants embark on field trips to partner companies like ABB, Porsche, and Deutsche Telekom. These visits provide insights into production processes and organisational structures, with employees sharing their career paths and achievements.

Carolina Armendáriz Ovalle and Chia-An Lin, both from Generation 2023, have recently earned their places in the latest intake of the Femtec network.

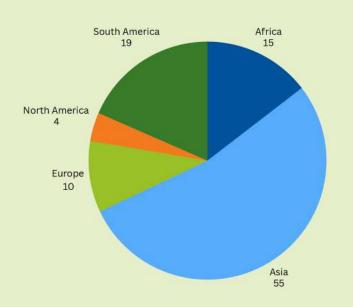
"From my perspective, the part that I cherish the most is the safe and supportive space that our class creates. It is an environment filled with high-achieving women, in which we can freely share our thoughts and experiences, while being able to contribute to one another's growth," shares Carolina.

Chia-An adds, "One thing I really like about Femtec is that they give you space and time to reflect on yourself and to find your own answer. After the sessions, I not only have a clearer goal of my career path, but also a vision for my future."



## WASTE STUDENTS statistics

Bringing together students from diverse corners of the world, the M.Sc. WASTE program embodies international collaboration and multiculturalism, fostering a vibrant community united by a shared passion for environmental sustainability and innovation.



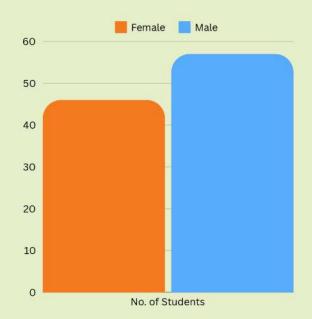


Figure 1: Continents of currently enrolled students.

Figure 2: Gender of currently enrolled students.

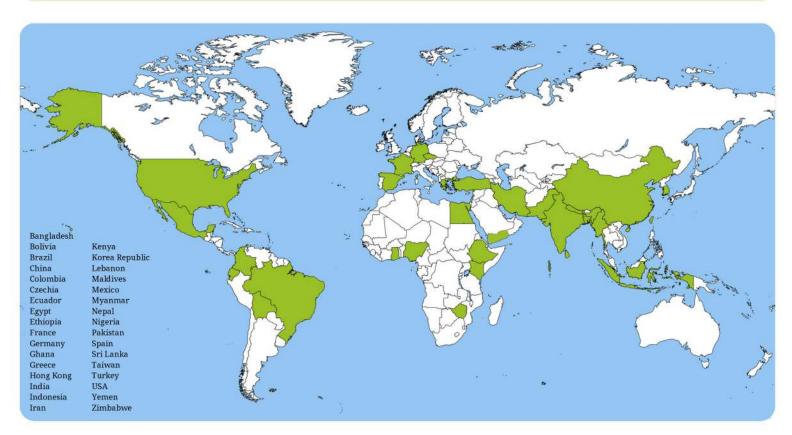


Figure 3: Country list and world map illustrating countries of currently enrolled students.

# a field trip to mars

#### **JENISH ZALARIA, GENERATION 2022**

As engineering students, we often encounter various case studies throughout our coursework. However, nothing compares to the thrill of experiencing a case study in real life. Our module Principles of Bioremediation and Bioenergy Processes, taught by Dr. Katharine Thompson at ISWA, provided us with such an opportunity. And to our delight, we embarked on a 7-day field trip to the Rio Tinto in Nerva, Spain.

This excursion provided an exceptional hands-on learning experience. Over the first five days, we immersed ourselves in intensive fieldwork, absorbing knowledge, and applying what we had learned. Coming from ten different nationalities and diverse undergraduate backgrounds, we each brought unique perspectives, leading to enriching discussions and insights.

One of the most fascinating discoveries was witnessing an active microbial ecosystem thriving in Rio Tinto's extremely acidic conditions (pH 2-3). This observation raised thought-provoking questions about microbial adaptation and resilience in such environments. To delve deeper, we conducted a sampling and measurement campaign along the river, from its origin near the Peña de Hierro mines to its confluence with the Rio Jarrama.

Reaching each sampling site was an adventure in itself, involving hikes through Nerva's stunning landscapes with our equipment in tow. Over three days of fieldwork, we collected grab samples for heavy metals, DNA enrichment, soil sediments, and algae to

trace microbial activities. At each site, we measured parameters such as pH, conductivity, dissolved oxygen, redox potential, and  $CO_2$  levels.

Under the guidance of our faculty, we honed critical skills, from calibrating instruments like the multi-meter and portable FTIR spectrometer to preserving enrichment samples in real-time while accounting for factors that could influence field data.

A highlight of the trip was visiting an active mining site and its processing plant. The vast expanse of the mines and the impressive machinery used for copper extraction left us in awe. Observing the ore processing operations provided us with a deeper understanding of end-point pollution sources and the challenges involved in managing environmental impacts during resource extraction.

The experience also introduced us to an otherworldly aspect of Rio Tinto: its Mars-like terrain. NASA has used this site for testing Martian projects, including rover drills, due to its unique surface conditions created by historic mining waste deposits. Riding a historic train along the old mining tracks added a nostalgic touch, transporting us back to the region's industrial past.

This excursion offered far more than technical skills —it broadened our perspectives, sharpened our critical thinking, and provided a profound understanding of environmental challenges. Such experiences are invaluable for aspiring environmental engineers, preparing us to address complex issues and implement sustainable solutions.





## GENERATION 2022 Congrats, graduates!



The M.Sc. WASTE program marked a momentous occasion with its graduation ceremony for Generation 2022, held in November in a fresh and elegant setting at the University of Stuttgart's city campus. In a departure from previous traditions, graduates donned academic gowns and caps, adding a formal touch to the event as they celebrated their achievements alongside friends, colleagues and family. The ceremony highlighted the program's commitment to fostering global leaders in environmental engineering.

The event, moderated by course managers Dr. Janina Ulmer and Lu Chen, began with a speech from the study dean Univ.-Prof. Andreas Kronenburg, who commended the graduates for their resilience and academic excellence. It was followed by an emotional, heartwarming speech by the class speakers Sahar Babazadeh and Georgios Koilaridis, who took the students down memory lane and thanked everyone for a memorable two years.

A key moment was the speech by former course director Dr.-Ing. Carolina Acuña Caro, the graduating generation's elected Godmother — an honorary title bestowed upon a mentor who had a profound impact on their academic journey. This symbolic gesture showcased the strong bonds formed within the M.Sc. WASTE community.

Another highlight was the awarding of the "Best

Student" distinctions, sponsored by a Teckwerke Bürgerenergie. These awards recognised exceptional academic performance within the program. The company representative, Felix Denzinger emphasised their pride in supporting graduates as an investment in a sustainable future, and handed out the awards to the top performers: a joint third place for Joumana Rushdi and Mingyan Zhong; second position for Angelica Zapata; and the top prize for Georgios Koilaridis.

The chair of the examinations committee, Prof. Ph.D. Carsten Mehring handed out the certificates to the graduating class of 2022, among cheers and applause. Graduates, guests, family members, and faculty took the stage to share congratulatory messages and take photos. The moderators then shared the importance of alumni network of the university and recommended that the students stay in touch, especially through the initiatives of the WASTE Club.

Adding to the vibrant atmosphere, Diego Jarrin and his band delivered a captivating performance, blending energetic tunes with heartfelt melodies, to bring the event to a close. The musical conclusion provided a celebratory backdrop, leaving attendees enthralled.

This year's ceremony set a new benchmark for the M.Sc. WASTE program's future graduations, emphasising community, excellence, and a shared commitment to a sustainable future. Congratulations to Generation 2022!

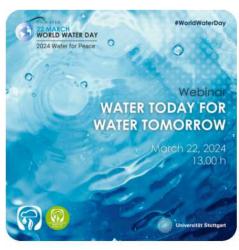
## NEWS FROM THE Waste club

#### Webinar marks World Water Day 2024

A webinar was held on March 22, 2024, to mark World Water Day, bringing together M.Sc. WASTE students to discuss water challenges and sustainable practices.

Speakers included Prof. Dr. Ir. Doris van Halem, Professor, Drinking Water Quality & Treatment at TU Delft; M.Sc. WASTE alumni Sanchita Khandelwal, Project Engineer at aqua & waste International GmbH; and Dr. Katharine Thompson from the Department of Environmental Microbiology at ISWA. The webinar, moderated by Kazi Akib Bin Asad of Generation 2022, highlighted the challenges and innovations in water conservation and quality enhancement.

Through dynamic discussions and expert insights, the event reinforced the significance of collective efforts to ensure sustainable water management and emphasised the role of education and awareness in addressing global water challenges.



#### M.Sc. WASTE at IFAT Munich 2024



M.Sc. WASTE students attended IFAT Munich 2024, the leading trade fair for water, waste, and resource management. The event showcased cutting-edge solutions for sustainable waste treatment and water management through exhibits, demonstrations, and discussions, providing practical insights beyond classroom learning.

A key highlight was networking with alumni, now professionals in leading companies across Germany. The alumni shared career advice, insights, and their journeys, inspiring students about post-graduate opportunities.

IFAT underscored the global scope of environmental challenges and aligned with the program's international focus. This impactful visit bridged academia and industry, leaving students eager for the next edition in 2026.

#### Hike to Schloss Solitude, and barbecue!

The WASTE Club recently organised a hike to Schloss Solitude, bringing members together for a day of fun. Led by the club's newly-elected chairperson Dr.-Ing. Carolina Acuña Caro, the group explored the trails leading to the palace, enjoying picturesque views and camaraderie along the way.

The hike concluded with a barbecue event in the Pfaffenwald where members indulged in delicious food. During the gathering, Dr. Acuña Caro shared her vision and plans for the club, emphasising initiatives aimed at fostering greater member engagement and collaboration.

With renewed energy and fresh ideas, the WASTE Club is set to strengthen its role as a hub for students pursuing shared interests and professional growth.



## NEWS FROM THE Waste club

#### Generation 2024 students host **Christmas WIM**

The M.Sc. WASTE program students of Generation 2024 hosted a vibrant Christmas WIM this year, turning their classroom into a festive haven filled with joy and cultural exchange. The event showcased the program's diversity, with students contributing to every aspect of the celebration.

The students transformed the lecture room with decorations that radiated holiday cheer. The highlight of the evening was an array of dishes prepared by students, offering a culinary journey around the world. Guests indulged in flavours representing their home countries, reflecting the international aspect of the program. Of course, there was Glühwein and Kinderpunsch.

Adding to the festivities were presentations on Christmas traditions across Latin America, Turkey, Myanmar, and Africa. These talks provided insights into how different cultures celebrate the holiday season, sparking lively moments and a deeper appreciation for global diversity.

A heartwarming Secret Santa gift exchange included not just students but also faculty members, creating an inclusive and joyful atmosphere, with tons of laughter. Teachers joined the fun, making the event even more memorable.

The evening concluded with a lively dance party where students came together to celebrate the holiday spirit. The event exemplified the unity and warmth that define the M.Sc. WASTE community, leaving everyone looking forward to another year of shared traditions and new memories.





## Students visit **EnBW**hydroelectric power plant in Forbach

On December 7, the M.Sc. WASTE students visited the EnBW hydroelectric power plant in Forbach. We set off from IFK on a bus to the Black Forest, where we arrived at the valley station of the Rudolf Fettweis plant. After a short tour, we were given a presentation and a few short films about EnBW's oldest hydropower plant. Among other things, we were explained the differences between different turbines as well as a special feature of the power plant: the fish elevator.

"The Rudolf Fettweis plant consists of a total of four individual power plants, which were built in two construction phases and together produce around 105 million kilowatt hours of renewable electricity per year from natural tributaries with a total output of 71 MW. This amount of electricity can supply around 30,000 households with CO<sub>2</sub>-free electricity," explained Erich Wunsch, an employee of the power plant and our guide.

After a short break, we took the bus to the mountain station, known as the Schwarzenbach dam. In two groups, we first visited the reservoir and the tunnel in the dam wall. It was particularly remarkable that the dam wall regularly sways with small deflections of up to one centimeter in each direction, allowing earthquakes and tsunamis to be measured in the power station with a time delay. In addition, back-up water is pumped into the tunnel to reduce the pressure on the dam wall.

A pleasant side effect of the power station is that the Schwarzenbach dam can be used as a swimming lake in summer.

"Maybe we'll come back next summer," joked course manager Dr. Janina Ulmer.



M.SC. WASTE GENERATION 2024
PHOTO: ANAAN MOHAMED

Newsletter of the International Master Program M.Sc. Air Quality Control, Solid Waste and Waste Water Process Engineering (M.Sc. WASTE), Universität Stuttgart & WASTE Club Stuttgart e.V.

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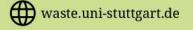
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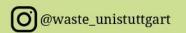
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