

Editorial

Dear members, dear friends and supporters of Technology without Borders,

despite the ongoing COVID pandemic, we are continuously growing. Since June 2021, we have a new regional group in at the university and technical high school in Bayangam, Cameroon. In the name of the board and all TeoG / TwB members we welcome you and wish you success in your projects.



As in Newsletter IV / 2018 we asked ourselves the question: Is Technik ohne Grenzen (TeoG) / Technology without Borders (TwB) a living and learning organization? Already at that time we answered this question with a clear yes. The reason that this is still the case today is that we have decided in the steering committee to appoint country coordinators to look especially at the countries in which we realize many projects. The country coordinators are to establish, maintain and improve the connection between the German board and the members there. We now have country coordinators for the following countries:

- **Ghana:** Jannik Mechau, jannik.mechau@teog.de
- **Uganda:** Julia Güntherodt, julia.guentherodt@teog.de
- **Brazil:** Lutz Michaelis, lutz.michaelis@teog.de
- **Cameroon:** Franziska Enzmann franzi.enzmann@teog.de

Thankfully, we were able to find competent representatives for each of these countries. Additionally, Jannik will represent our country coordinators in the executive board so that we don't lose contact with them.

We are pleased about these positive developments. In this sense

Sincerely

Your board

F. Neumann	M. Reinhard	M. Graf	L. Hachmann	J. Schlund	D. Schaffert
	R. Schullan	Ch. Zeidler	F. Enzmann	A. Fenn	A. Bruns
				A. Vierling	J. Mechau

Teaching Computer Basics in Bayangam

After months of planning and collecting donations in Germany, the TCB project in Cameroon was implemented at the technical high school of Bayangam (LTB = Lycée Technique de Bayangam) in November 2021. The project team arrived in Bayangam mid-November, while the material had been sent before.

On the first day the project team met with the local teachers and discussed the details of the workshops for the following days. Further, we arranged the time schedule with the two classes which took part in the workshops so that we could work with them while respecting their regular schedule.

In the discussion with the teaching staff, it turned out that currently there is no room available for long-term usage of the laptops. Thus, we decided to use the laptops in the form of a mobile computer room.

In the afternoon, we started the workshops with two separate classes with different levels of IT experience. First, we used a text processing tool to create individual CVs. Afterwards, we applied the spreadsheet application to learn about handy tabular calculation functionalities.

On the second day of the workshops, we finished teaching the office programs by introducing the pupils to the presentation software. As an exercise each student had to create a presentation with two slides providing pictures and information about the LTB. They conclude the exercise, one student presenting his results.

In the following days we continued the workshop with a focus on specialized software for electrotechnical purposes. As the final and most complex program, KiCAD was presented to the pupils. KiCAD is a free software for electronic design automation. It facilitates the design and simulation of electronic hardware. Together with the students, we worked through each step of designing a LED timer such that they know how to design a PCB board which can be sent to a manufacturer.

Although the workshop provided a lot of information in short time, all pupils took part in all of the classes and maintained a very high level of concentration throughout the program. We, as the project team, were also very happy to see that the pupils helped each other during the sessions and that all of them got very comfortable in working with the laptops. The LTB received 18 laptops, USB-Mouses, multi-outlet power strips, a beamer and a visualizer by TwB. Furthermore, the project team commissioned the construction of a metal cabinet to store the hardware securely.

Tilman Beck, RG Rhein-Main

Regeneration of a Well in Bayangam

Another project in Bayangam was carried out in November. It consisted, on the one hand, of the regeneration and maintenance at the technical high school and the installation of a solar system so that the well can be operated continuously even during the power outages.



The 20 m deep well at the technical high school in Bayangam was regenerated with an electric pump using the cleaning agent "Wessoclean". Within an exposure time of about two days, deposits in the well's filter pipe loosened. The water was then pumped out until it was clear. The difference in the turbidity of the water by itself was already remarkable. Further, a water analysis was carried out using a test kit, which showed that the water did not contain any questionable amounts of heavy metals or alkali metals. The students were involved in the regeneration as part of a training session.

In addition to the regeneration of the well, the pipe to the tank was also renewed so that the water quality would not be endangered by biofilms or other impurities in the pipe. The pipe was now laid underground to prevent it from heating up in the sun. The tank was flushed out and the existing well house cleaned and the windows replaced to improve the protection of the well

from outside contamination in the future. A new water point was also built, which is now tiled and provides two taps for the children. Thus, it can be avoided in the future that stale water or water mixed with rainwater is consumed.

The existing pump will continue to be used, but a new pump is ready as a replacement. Furthermore, a new control system was installed to switch the pump on and off automatically depending on the level in the water tank. A dry-running sensor protects the pump when the water level in the well drops. Thus, after our regeneration, the well automatically supplies clean water that can be used by all students.



To allow the operation of the electric pump also during power outages due to the unstable power grid in Bayangam, a small solar system was installed. The system consists of three solar panels, a corresponding inverter and a battery storage. First, the roof of the well house had to be renewed, as the statics were not sufficient to support the solar system. As a result, the project took a little longer than planned. The solar system was installed in cooperation with a local contractor who had already supported another TwB project in the region. After the roof was replaced, the system was installed and connected to the pump. Mains electricity is still used, but in case of breakdowns, water can now still be pumped for the students.

In addition to the actual project work, a TeoG regional group consisting of students, teachers, staff of the local university and other interested people was founded at the technical high school in Bayangam. Bienvenue, Bayangam! A first project leader workshop was held and the students have already designed and installed waste bins for the school grounds as a first small project. In addition, posters on the water cycle and water-related diseases have already been put up at the school. The first new project ideas are already being developed. We are looking forward to a good cooperation in Cameroon!



Franzi Enzmann, RG Rhein-Main

Trees for Primary Schools in Tanzania

Planting of fruit and shade trees is planned as a pilot project at three primary schools in Hai District in the region around Boma Ng'ombe. The shade trees provide natural cooling and reduce soil erosion. The fruits of the fruit trees provide food for the pupils. The project is carried out together with Jali-Foundation, a Tanzanian NGO. The foundation is committed to education, environmental and sustainability goals, and social issues.

Hai District is located on the western slope of Mount Kilimanjaro. The region is hot and dry. There are two periods of rainfall: from March to May there is a larger amount of rain and from November to December there are short rain showers. In the meantime, climate change is also becoming noticeable here and it happens that a lack of rain occurs. The region is characterized by a high degree of agriculture and the planting seasons depend on the rainy seasons.

Planting trees can reduce soil erosion and other negative effects of climate change. By growing fruits and vegetables, schools can become self-sufficient and save money on school meals. Our goal is to establish "environmental clubs" at the schools. Here, the students receive the necessary knowledge in workshops so that they can care for and maintain the trees and garden beds by themselves. The aim is to raise students' awareness of the environment and the sustainable use of resources.

Christine Dillmann, RG Rhein-Main

Kindergarte Kindergarten inauguration Drobo, Ghana

The construction of a kindergarten in Drobo, Ghana, is an attempt to give the children a chance for education and support at an early age. However, donations are still missing to complete the building and the interior.

Despite the progress Ghana has made in improving access to education for all, there are still problems. These keep thousands of children from going to school and learning. The school environment is generally not conducive to learning. Classes are overcrowded, water and sanitation facilities are inadequate, and there is a lack of trained teachers and textbooks. The poor quality of education is reflected in student outcomes. Children living with disabilities face even greater challenges. In addition, adolescent girls are often denied



the opportunity to complete secondary education. Nearly 623,500 children of elementary school age are still not enrolled in elementary school, and one in four children of kindergarten age (from one to ten years old) do not attend preschool. According to the 2015 census, 20 percent of children with physical disabilities do not attend school.

Although Ghana has succeeded in closing the gender gap in school completion at the primary level, it remains wide at the secondary level. Research shows that adolescent girls are generally unable to complete education due to factors such as poverty, gender inequality, and long distances to school. Children with disabilities often do not have a chance at education because they are "invisible" in the data and are not considered when educational programs are implemented. They are rarely counted as children who are not in school or attending school. Due to lack of conveniently located schools, disability-friendly infrastructure, and learning environments, children with disabilities tend to attend school irregularly and eventually drop out.



African Future Kids e.V. & Institution is working with the Ministry of Education, Ghana Education Service and other partners to create a more child-friendly environment in schools so that all children can

learn. But 4000 Euro are still needed to finish the school building so that the children can learn there.

The region around Drobo is known for the cultivation of cacao. As part of our agroforestry projects, we are planning to build a cocoa agroforestry demonstration farm in Drobo. Parts of the funds earmarked for this purpose will therefore also be used for the completion of the building. Thus, these donations serve their purpose in two ways, as we will also use the school building as a multifunctional workshop building within the framework of the agroforestry workshops.

Stephen Takyi, RG Hamburg und African Future Kids e.V.

Kurzmitteilungen

General Meeting 2022

Dear members, on May 21, 2022, it will be time again to hold our annual general meeting. For reasons of long-term planning, the Executive Board has decided that this year, due to the Corona situation, we will once again - hopefully for the last time - hold the General Meeting online. One week before the meeting, all members will receive the online access and the updated agenda.

Agenda for the General Meeting 2022

- Welcome and determination of the quorum
- Adoption of the minutes of the general meeting 2021 for the association year 2020
- Report of the board of directors about the association year 2021
 - Report of the treasurer and the cash auditor about the association year 2021
 - Discharge of the treasurer and the board for the association year 2021
- Elections, appointments and confirmations to board positions
- Elections for the auditors
- Preview of the association year 2022
- Date and place of the general meeting 2023

The Executive Board

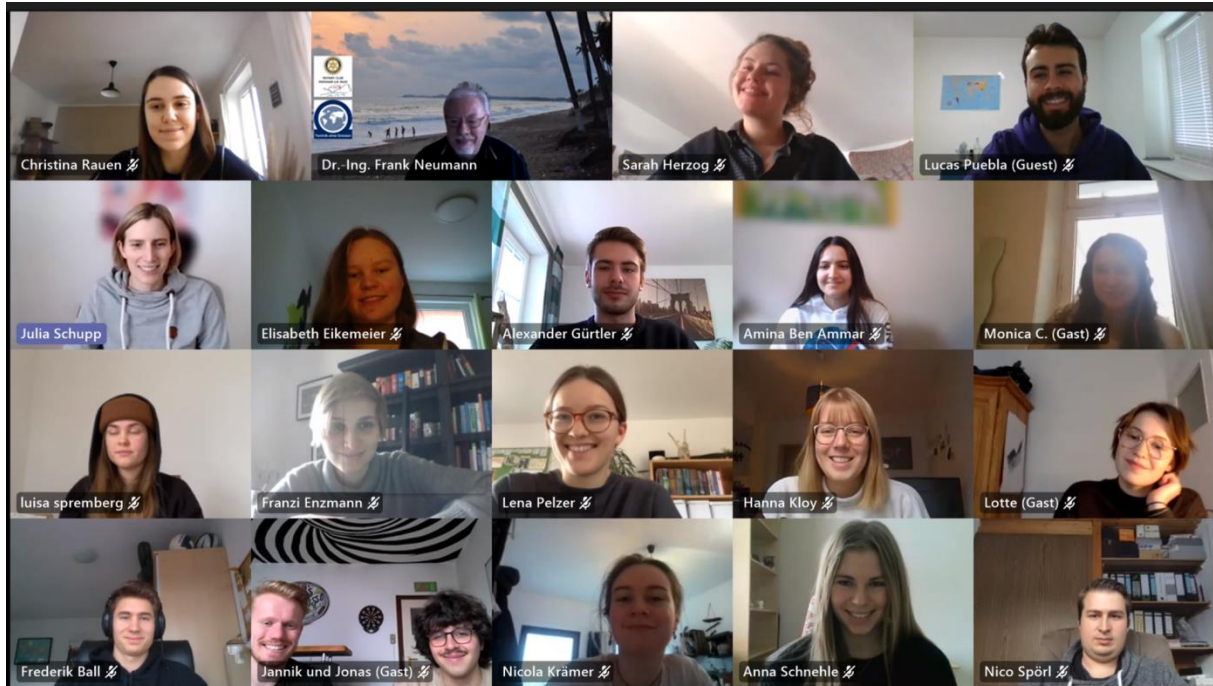
Working Group Agroforestry

My name is Monica Cornejo, I am 25 years old and a bio-process engineer from El Salvador. I came to Germany 7 years ago to study and I am currently doing my Master at the Technical University of Hamburg. During my master studies I had two courses at the Institute of Wastewater Management and Water Pollution Control. "Rural development and resource based sanitation for different climates" and "Nexus Engineering - Water, Soil, Food and Energy". In these courses, we learned about the problems caused by massive urbanization and the importance of developing rural areas. We also learned how valuable healthy soils are to the environment and how, in part, modern industrial agricultural practices damage the soil and lead to erosion. This is one of the main causes of floods and droughts, as well as low biomass productivity. However, we have also learned that these problems can be easily solved by switching to ancient and regenerative agricultural practices. Such as Terra Preta restoration systems, living terraces, and agroforestry. This motivated me to join the TeoG group Agroforestry to spread these techniques around the world. You can find more about these topics on the website of the Institute for Wastewater Management and Water Protection at the Technical University of Hamburg-Harburg.

Great start in 2022: First Project-Leader-Workshop for this year

The first Project-Leader Workshop for 2022 took place in January. Like the three previous workshops before. The workshop was held in digital format. With 20 participants from five different regional groups all over Germany we worked on the project plans for five upcoming TeoG projects. In accordance to that, we had lots of theoretical and practical learnings on project management, stakeholder, risk analysis, project budgeting and lots of further topics.

We are looking forward to the next Project-Leader-Workshop this summer. This time in English language with a new time format (2.-3.7.2022) to offer the workshop to all regional groups world-wide!



Franzi Enzmann and Julia Schupp

V.i.S.d.P. Dr.-Ing. Frank Neumann, Annika Mücke, Stefan Leimbach

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