



Editorial

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

not a day goes by without reports about ESG (environment, social and governance), especially in business and financial news - responsible corporate management or sustainability goals. Even among the strategic orientation of many companies with a "purpose", sustainability regularly takes a high priority. But perhaps the recruitment of young talents from Generation Z is also playing an increasing role.

In any case, the business and financial world has jumped on this bandwagon. For us at TwB, however, these are not new issues. According to our statutes, our association's goal is to improve living conditions in developing countries. We focus on our **topics** water, energy, waste, education, agroforestry and hospital support.

The **Sustainable Development Goals (SDGs)**, the **UN's** 17 goals for sustainable development, have long been our guiding principles in our projects. The SDGs define sustainable development as development that is sustainable in the long term and addresses all relevant dimensions (economic, environmental and social) and levels (national, regional and local). At TwB, we have internalized these goals. In the future, we want to make these goals even clearer in our project classification. They are established and fit.

At TwB, we can be proud of being so far-sighted. As a result, the career entry of our young members should also be significantly supported by both the in-depth knowledge of the SDGs and the practical and practiced knowledge of project management.

At the next general meeting, which will take place in Erlangen on May 11, 2024, we will once again give this topic broad attention.

Sincerely, your board

R. Schullan	F. Schofer	L. Hachmann	A. Fenn	A. Bruns
M. Reinhard	C. Zeidler	F. Enzmann	A. Vierling	D. Schaffert
			H. Blumenschein	J. Mechau

RecycleUp! Water Sachets as a school project

Since 2012, Technology without Borders has visited more than 100 schools in Ghana and sensitised students to the topic of recycling water sachets. With the Gymnasium Höchststadt, the topic is now being taken to a new level.

We are Florin Nücker, Johannes Laubinger and Konrad Markus, students at the High School Höchststadt. The water satchet tower, which we realised in a fast-prototyping process, is to be used in Ghanaian schools soon to bundle plastic drinking bags (so-called sachets) and to recycle them. The construction and planning of the column were realised in cooperation with Frank. The aim is to collect so-called water sachets in an orderly and, above all, clean way. This way, they can be processed later and are worth more money when sold.



Picture left:
When the water sachet is placed on the upper plate, it moves downwards and is then pushed upwards again by the counter-weight.

Picture right:
(from left) Florin, Johannes and Markus



We kindly received the materials from the Hoffmann company's recycling centre from their waste containers. Our project is now slowly moving into the practical phase. This means that in the near future, in cooperation with experienced TwB members and coaches, the first columns will be built and tested with Ghanaian pupils via video conference. We will show the Ghanaian students how to build the Water Sachets column via video conference. As soon as we have done this step, the schools are to distribute the columns further and adapt them to their exact conditions, prerequisites or problems. Thus, the column is not a readily built product, but rather a customisable template to contribute to environmental protection wherever it is used. We will start rolling out the idea in Ghana.

Konrad Markus, Florin Nücker, Johannes Laubinger, Frank Neumann, RG Erlangen

Sustainable kindergarten in Tanzania - the first children have moved in

Trinity is a private, English-speaking pre-school and primary school in Boma Ng'ombe at the foot of Mount Kilimanjaro. Of the total of 240 pupils, about 25% are orphans. The kindergarten children aged 3-6 years were previously housed in an empty classroom which was totally unsuitable and not age-appropriate for them.

Thus, we are currently building a kindergarten on the neighbouring property of the school, which is progressing well. After completion, about 60 children aged 3 to 6 years will be able to grow up, learn and play here in a child-friendly environment. The building is up, the toilets are connected and the tank for collecting rainwater is ready. In mid-July, the first two kindergarten groups moved in. With borrowed tables and chairs from the primary school, the kindergarten is now up and running. Everything still has a bit of construction site charm, the courtyard is not quite finished yet and later, real kindergarten furniture will be put in the classrooms. But the children are already happy about more space to play and nice big and bright classrooms. The four swings



that have already been set up are in great demand and it is time for new playground equipment to be added.

In the next phase of the project, we are planning to design the outdoor area with playground equipment and a small garden, as well as the final design of the solar system, which will then be installed at the beginning of next year, so that the kindergarten will have a self-sufficient power supply.

Franzi Enzmann, RG Rhine-Main

“PowerUp” in Sierra Leone

The project "PowerUp" aims at upcycling used battery cells from old devices such as laptops for energy storage systems. In cooperation with the start-up Light Salone Innovations (LSI) and the association Bintumani D-SL in Sierra Leone, RG Aachen is striving to develop a suitable concept. This makes it possible to create new battery packs from old batteries which, in combination with solar panels, serve as a decentralised energy source.

We as RG started by collecting old e-bike battery cells, which were used to build a prototype in Aachen. Subsequently, we created a detailed manual for building and testing the battery packs. Furthermore, we developed a comprehensive safety concept to ensure that the new battery packs are functioning reliably and safe.

On site, LSI has collected about 1000 cells thanks to their high commitment. Afterwards, they tested and assembled them into 5 functional battery packs with the help of the manual. The materials and tools such as nickel, charge controllers and soldering irons were funded by RG to make this project possible. The required solar cells were generously donated by Bintumani. In addition, the RG provided two laptops and covered the cost of an internet connection.



As a result, LSI was able to test the battery packs more intensively. Unfortunately, there were technical problems, probably due to possible defects in the cells and different cell types combined with each other. In response, LSI is now considering the purchase new cells to ensure the safety and performance of the battery packs. As a final step before project completion, we will prepare a financial model to assess the economic feasibility of the project for LSI.



Thanks to regular online meetings, chats and in-person communication on site by Bintumani, the project was able to move forward without the need for another outbound. We would like to thank our partners for the excellent cooperation, without which this would not have been possible.

Hanna Kloy und Sarah Herzog, RG Aachen

Plant watering in Tanzanian school gardens

In Tanzania, water is not available all year round due to the limited rainy season from April to May and November to December. Large amounts of rainfall are not stored but run off superficially or infiltrate. In the months from January to March and June to October, the vegetable beds of schools, for example, cannot be watered sufficiently.

Two of the schools affected by this are in the southwest of Tanzania, which is located in East Africa, south of the equator and bordering the Indian Ocean. Tanzania has 63 million inhabitants, with English and Swahili as official languages.

One of the two schools is situated in Illembula in the administrative district of Wanging`ombe in the northern part of the Njombe region. This town has 18,000 inhabitants and lies 1550 m above sea level. At Illembula Secondary School, 600 pupils are taught by 30 teachers. The 40-hectare school grounds include dormitories and a 2,000 m² vegetable patch which is currently used to grow corn. The second school, Luduga Secondary School, which has existed since 2005, is located about 5 km southwest of Illembula. The village of Luduga has 2,500 inhabitants and is located 1500 m above sea level. At Luduga Secondary School, 700 pupils are taught by 30 teachers. The 242,811 m² school grounds include three vegetable patches, each the size of 2.450 m², which are used to grow corn and vegetables. Both schools are located in a tropical savannah climate.

Through the cooperation of [SchuPa Tanzania e.V.](#) and Char2cool [Char2cool](#), with the help of added plant charcoal, the soil could be made more fertile, so long as the plant charcoal contains enough moisture.

Our task therefore is to collect the precipitation of the rainy season in a pond, store it in tanks and distribute it to the patches by natural slope. This ensures that the plant charcoal is moist all year and makes the intended contribution to soil fertility.

The aim of the project is to provide water for irrigation all year round and thereby be able to offer food in the dry season. In addition, the students and teachers are to be trained in the use of water and receive an introduction to the independent maintenance of the system components. During the whole project and especially during the implementation in August 2024, we will be supported by the Tanzanian school director Mr. Mgaya and the teacher Mr. Kyando.

Jessy Derichs, Leonie Scheible und Merle Grüter, RG Rothenburg

Newsflash

New project in Tanzania: Agroforestry Demonstration Farm in Boma Ng'gombe RG Rhein-Main starts a new project in Tanzania!

Due to climate change, the continuous water supply for the people in Boma Ng'Ombe will become increasingly difficult. Rainy seasons are already skipped or severely shortened. Negative effects, such as low water storage capacity of the soil and soil erosion caused by deforestation, exacerbate the problem. In addition to the resulting crop failures, global inflation and price increases are also leading to food shortages. Local farmers, who often practise subsistence farming, are thus in dire straits.

The aim of this project is therefore to improve the situation of farmers and stabilise crop yields, thus achieving food security. In addition, the project focuses on the resource-conserving use of the environment. To this end, a holistic approach based on agroforestry (AFS agroforestry system) is to be used. In this project, an agroforestry demonstration farm will be set up together with a local NGO in Boma Ng'Ombe and workshops will be held with the farmers. The food grown from the farm will be used for lunch meals at Trinity Primary School, with which we are already cooperating.



Franzi Enzmann, RG Rhine-Main

Agroforestry educational project in Ghana

The Bono and Western North regions of Ghana are highly dependent on agriculture. However, climate change causes major challenges to farmers, as crop failures are becoming more frequent. In addition, monocultures are often planted and biopesticides are used, which damages the soil in the medium and long term. In the upcoming project, the concept of agroforestry is to be communicated to farmers. In addition, teachers will be trained in planting agroforestry gardens in schools to also sensitize children to the approach of sustainable agriculture. The project will be carried out by an international project team with members from Ghana and Germany. Among them are our two new theme leaders for agroforestry Monica Cornejo and Seth Ofofu, who himself grew up on a farm in the Bono region.



Education

Location:
Bono and Western North Region, Ghana

Time:
January 2024 and ongoing

Costs:
Ca. 4500€



GHA_xx – Agroforestry Educational Project



Main goals

- Create awareness of agroforestry in schools and farms in Ghana

Measures

- Network with the chief farmers and school boards
- Create a manual/workshop materials
- Workshop for farmers and school staffs in agroforestry
- Workshops in schools regarding agroforestry school gardens




Agroforestry workshops in Ghana



In cooperation with African Future Kids e.V., our association has already established a first agroforestry demonstration farm with a size of 1 ha in a kindergarten with integrated elementary school in Drobo. The workshops will take place in the kindergarten. In addition to teaching the methods, an exchange with and between the farmers as well as teachers is also

important for us to be able to support each other better in the future. For this reason, personal visits to farmers and schools are also planned as part of the project.

Stephen Takyi, Seth Ofosu, Monica Cornejo, Jannik Mechau, WG Agroforestry

Project Manager Workshop in Aachen

Our project manager workshop in Aachen took place in July. With 11 participants from two different RGs, project plans for new TwB projects were developed as interactively as possible. This time the workshop was held in German. There was a lot of theory and practical knowledge about project management, stakeholders, risk analysis, project budgeting and much more. Our newly trained TwB members can now start as project managers.



Paul Grünefeld and Janika Neuroth from the RG Aachen

V.i.S.d.P. Robert Schullan, Annika Mücke, Stefan Leimbach

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