Technology without Borders Newsletter III / 2019

Solutions applied Together

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Editorial

Dear members, dear friends and dear facilitators of **Technology without Borders**,

CO_2 - everyone is talking about it - we do something ⇨ just do it!

In 2016, the Munich regional group came up with the idea of offsetting the carbon footprint of our flights as part of development cooperation. The Executive Board decided to set up a separate fund for this purpose, into which each project had to pay CO_2 compensation since 2016. Meanwhile more than 4000€ have accumulated and at the last members meeting the application for a CO_2 compensation project was announced. 3 regional groups have registered and the board decided to increase the funds to carry out all three projects. Thus, now on the three continents Europe, America and Asia CO_2 compensation projects are accomplished.

- **Europa – Germany:** Project afforestation of a forest in Schwarzenborn, North Hesse, which has massively lost its tree population in the last few years due to the bark beetle and environmental influences. We combine this with a nationwide TeoG networking event.
- **America - Brazil:** The aim of a preliminary exploration of the Brazil National Group is to generate knowledge about the theoretical and practical implementation of reforestation projects for CO_2 offsetting in Brazil, in order to gain insights into the approach of a TeoG-led reforestation project in Brazil.
- **Asia - India:** A biogas plant for the demo farm ("Toranam") has the potential to increase the sustainability of agricultural operations there and reduce CO_2 emissions. In this training centre for the surrounding farmers, they are supported in adapting their agricultural methods to climate change. Besides the reduction of CO_2 emissions, another aspect should not be ignored: The biogas is then used for cooking, thus avoiding the deforestation of trees as fuel for the stoves. This preserves valuable biomass for CO_2 compensation!

It is striking that we urgently need to involve our African friends in this action. Maybe our regional group at the University of Energy and Natural Resources (UENR) in Sunyani will soon send us an application for a CO_2 compensation project in Ghana.

At this point we would like to ask all **members and readers** to consider whether they would not like to offset the carbon footprint **they** leave to our children through their next flight or cruise. Our CO_2 fund has the following bank-account at the apo-Bank:

IBAN: DE73 3006 0601 0107 5832 90

In this sense: We do something for our environment and our children, because also the longest way begins with the first step! ⇨ **Just do it!**

Your board of directors

F. Neumann F. Regler R. Schullan N. Nguyen Ch. Zeidler M. Stephan J. Schlund A. Fenn D. Schaffert J. Fassnacht

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Climate protection at TwB – three projects regarding CO_2-saving to be launched

Climate change is one of the biggest challenges of our time, although some folks don't want to see that yet. By now, we can't exactly predict the consequences of the global warming, but it is quite sure that they will affect all of us, change our way of living fundamentally and make parts of this planet uninhabitable. How can we slow down, stop or turn back this development? What must each person, organization and politics do to maintain the earth temperature on a level comfortable for all of us?

The answer is, unfortunately, not very easy, since climate change does, as many big challenges, have various causes. One of those is, as most leading scientists agree, the emission of so-called greenhouse gases. A greenhouse gas shows the characteristic that the single gas molecules can be excited by the sunlight, so energy. The molecules then start to swing or rotate, which causes, in a nutshell, heat; this is the greenhouse effect. The most "popular" greenhouse gas of our time is CO_2, although water molecules or methane are way better in „swinging and rotating"; the difference is that

methane is only present in small amounts in the atmosphere and the water concentration is, by condensation and a natural water cycle, kept relatively constant as long as the temperature is constant up there. In contrast, the amount of CO_2 is highly increased by process like combustions or industrial production; we emit more CO_2 than nature can compensate by plant growth. Therefore, saving or compensation of CO_2 emission is one way to limit the human caused climate change.

Technology without borders causes quite a lot of CO_2 emission due to projects in developing countries, as material and people have to go from point A to point B via airplane. As initiated by RG München in 2016, TwB projects are paying money into a TwB CO_2-account to compensate their flights. We do now have enough money, almost 4000 €, to launch a TwB project which binds as much CO_2 as possible.

There was a call for projects within the organization to apply for the money from the CO_2-account. Therefore, three very promising projects were suggested, which made a decision difficult. Consequently, the executive board decided to stock up the project funds, so that all projects can be carried out. All of them have additional advantages for Technology without borders, such as the acquisition of qualified knowledge about reforestation and team building, as well as serving as a flagship project in certain regions or countries. Hence the decision was made to support TwB projects instead of donating to projects of other organizations. In the following, the three projects will be briefly introduced; we wish them a successful implementation and as much CO_2-savings as possible!

Franziska Enzmann, RG Rhein-Main

Reforestation in Brazil – Preexploration

Planned route: Four competence centres will be visited in a two-day journey

The main objective of the preliminary exploration of the country group (CG) Brazil is to generate knowledge about the theoretical and practical implement-tation of reforestation projects for CO2 compensation in Brazil and to bundle existing know-how.

For the theoretical part of the project, it is planned that the members of the Brazilian CG together with members of German Regional Groups (RG) with theoretical and project experience will conduct a literature search on best practices in Brazil, Germany and other countries.

For the practical part in Brazil an excursion of the student members and professors to different institutions and projects in the Brazilian State of Santa Catarina is planned. In two days, a training center with competence in agroforestry, the campus of the Federal University of Santa Catarina in the state capital Florianopolis, a public research institute as well as a non-governmental organization carrying out its own reforestation projects will be visited. The aim is to visit practical projects up close and to get an assessment of the effort and procedure of a TeoG-led reforestation project through interviews with experts.

The project partner in Germany is RG Rottenburg, which is based at the Rottenburg Forestry University and has already carried out research projects in this field with Brazilian universities. An exchange with the already experienced RGs Munich and Rhein-Main, that carry out CO2 projects, is also planned.

The results and recommendations will then be summarized in an English final report or guide and made available to the association in the knowledge pool.

Lutz Michaelis, RG Araranguá (Brasilien)

Reforestation in Schwarzenborn

During our project, we will replant trees on an area in Schwarzenborn in the north of Hessen, which lost lots of trees to the bark beetle and environmental factors during the last year. We are planning a TwB-reforestation-weekend in autumn 2020, where we will seed as many trees as possible. The project funds from the TwB-CO_2-account and additional donations will be invested in tree seedlings completely. In cooperation with the “Kuratorium für Waldarbeit und Forsttechnik”, forestry technical schools and tree nurseries we care to sustainably replant the area using suitable tree species. Each hectare of forest replanted will bind approximately 13 tons of CO_2 per year! We plan to reforest around 3 ha using the funds from the CO_2-account and hope that it will become even more by additional donations.

Before our reforestation-weekend, the “Kuratorium für Waldarbeit und Forsttechnik“ holds one of the worlds largest forestry fairs in that area, the KWF-Tagung (1.-4.7.2020). TwB will also be there and present information about sustainability in development projects and especially about our projects dealing with „Agro-forestry“.

Construction of a biogas plant as part of the "Agriculture in Madanapalle, India" project

In cooperation with the Indian organisation "Movement for Rural Emancipation", RG München has started agroforestry cultivation on a demo farm ("Toranam") to cope with the effects of climate change. A training centre for the surrounding farmers is helping them to adapt their agricultural methods to climate change.
A biogas plant has the potential to increase the sustainability of the farm and reduce CO2 emissions there. In order to build a sustainable and efficient biogas plant, an analysis of the composition and quantity of available biomass is required. Based on the results on site, a concept for a biogas plant will be evaluated in cooperation with a German university (contacts to several relevant departments have already been established).

Franziska Weissörtel, Detlef Eisenkrätzer RG München

Maintenance of an anaesthetic machine and preliminary exploration of two hospitals in Ghana

The Project Team in Front of the Repaired Incinerator

In November 2017 two members of the regional group Erlangen equipped the maternity ward at St. Martin's Hospital in Agroyesum, Ghana. Now, in addition to the annual service of their anaesthetic machine, two hospitals were explored for future projects.

Our project started in Agroyesum, a small village in the middle of Ghana. There, we wanted to carry out the annual service of the anaesthetic machine of the maternity ward. For this we received training from the manufacturer Löwenstein Medical in advance. Unfortunately, it became clear during the maintenance that so many components of the device were broken that the costs and the effort for the repair were not proportional to the value of the machine. Together with our partners, we are considering replacing the device with one which is serviceable by Ghanaian technicians. We also introduced the inventory application TeoG Swift (see Newsletter III 2018).

A big thank you goes to Löwenstein Medical, the project would not have been possible without the commitment of numerous employees. Before the project, we were prepared in the best possible way through their training courses. In addition, we had the opportunity to call the technicians at home and obtain practical tips in the event of problems on site, which we greatly appreciate.

From Agroyesum we went to Berekum, where we explored the hospital for future projects. In order to strengthen the cooperation of the RG Erlangen with the Ghanaian RGs, we met the RG Sunyani on our way from Sunyani to Berekum. Since the technicians in Berekum are very good, there is no need for further Hospital Support projects there. Although this was not a pre-planned task, we, together with workers from the hospital, managed to repair their severely damaged incinerator.

Our last destination was Eikwe, a small fishing village in southern Ghana. The technicians of the hospital are regularly supported by a Ghanaian technician, who is able to get spare parts, which is often difficult in Ghana. They are set up well and are running self sufficiently.

Lena Augustin, RG Erlangen

World Water Summit & Rotary International Convention

On 31st of May, the 11th World Water Summit of the Water & Sanitation Rotarian Action Group (WASRAG) was held at the Chamber of Trades in Hamburg. The regional group of Hamburg attended this special event with several members and had the chance to visually present its projects “Water for Eritrea” and “Clean Water for Everyone - Chiro (Cambodia)”. Both projects are financed by Rotary clubs, namely RC Norderstedt and the RC Itzehoe.

WASRAG’s World Water Summit is an annual event in combination with the Rotary International Convention. 200 Rotarians from all over the world met in Hamburg to discuss WASH (**wa**ter, **s**anitation

TwB booth at the
Rotary International Convention

and **h**ygiene) programs and to strengthen joint co-operations - an interesting event and truly a unique opportunity to present our work.

Additionally, a wide range of information desks were set up in the context of the Rotary International Convention along the large promenade of the Binnenalster. Next to various Rotary-related projects and organizations, TeoG. was represented with a booth for two days. The two regional groups from Hamburg and Leipzig presented their current projects and particular technical solution approaches applied in the projects. The shared stand together with the Rotarian organization Water Without Borders Germany caught interest from Rotarians from all over the world as well as from pedestrians passing by.

Jan Marc Schwidtal, RG Hamburg

Spring Regeneration in Ghana

Many villages in the Brong-Ahafo Region in Ghana suffer from an insufficient water supply. Members of our Ghanaian regional group in Sunyani did field studies in several villages in the Brong-Ahafo region and analyzed the water quality. Afterwards, they successfully increased the water flow rate at two boreholes by applying the ecofriendly chemical Wessoclean to remove clogging.

Preperation of the Wessoclean solution

Many boreholes in the rural area of Ghana are limited or even not usable due to poor water quality, low water flow rate or broken pumps. A low water flow rate can be explained by clogging of the well through chalk and manganese and iron oxides. This clogging can be removed by the eco-friendly chemical Wessoclean to enhance the pump effort.

After the first borehole regenerations were conducted in a joint team of German and Ghanaian TwB members the project is now continued by our Ghanaian Regional groups independently. In the past months the members of RG Sunyani did field studies in 10 different communities in the rural area around Sunyani. To reduce the temporal expenditure for our Ghanaian members we developed a detailed questionnaire based on an Excel sheet in which all relevant data can be entered during the field studies.

Additionally, the project team examined the quality of the borehole water by means of the lab equipment which was supplied to the Sunyani team in one of the previous projects. After evaluation of all data RG Sunyani successfully regenerated two boreholes. The water flow rate was distinctly enhanced. As a result, the inhabitants can fetch an increased amount of water. The number of members who participate at the field studies, water analysis and borehole generations was constantly around 10 to 15 which shows the high motivation and dedication of our Ghanaian members in this project. Furthermore, experienced members transferred all the knowledge to new members. Further borehole regenerations as well as the visit of new communities are planned as soon as the new semester at the University of Energy and Natural Resources, Sunyani starts.

Additionally, RG Sunyani will keep in touch to all communities and visit them regularly. This is very important in terms of sustainability as even experienced during the project. Our project team found a borehole drilled by an international organization around one year ago. It has a low water flow rate and poor quality and the community did was not in touch with the organisatioon. Only through our Ghanaian members the organizations attention was drawn and they promised to go to the community and resolve the problems as soon as possible.

Finally, we would like to thank the Rotary Club Göttingen-Hann, Münden for their monetary contributions and the company Wesso AG for the donation of further 200 Kg Wessoclean for future borehole regenerations.

Anthony Hunkpe, RG Sunyani and Jannik Mechau, RG Bayreuth

Teaching Computer Basics – Where we are today

In March, Julian Deyerler and Ina Reichmann went to Ghana, meeting George Osei and Derrick Fio, in order to evaluate their implemented project series Teaching Computer Basics. This project series aims at the development of ICT (Information and Computer Technology) skills in Ghanaian schools by equipping those with computers. Furthermore, an offline server as extension of the already existing hardware was installed, as the schools lack access to the world wide web.

Julian talks to the children about their experience in the ICT lessons

The concept of TCB is simple: Laptops are donated, a new operating system is installed, and old data is deleted. After the preparation, the volunteers take the laptops to Ghana in order to be able to prepare computer labs at the school. After that, a workshop is given to educate the teachers about computers in order to enable them to include the laptops in their own lessons. As many projects were already implemented in Ghana and the working group organizing TCB projects decided to get a report of the status quo of the projects, Julian and Ina developed an evaluation in order to test a projects sustainability. According to Phineo (an organization providing support for NGO, for example by developed concepts), different levels in form of aims were established. Each level had to be proven by back up data – and if the highest level was reached, the project is considered to be sustainable. Besides the evaluation, an offline server was prepared by Julian und Maximilian for installation at the schools which already had a computer lab. Those should act as video platform for educational videos and provide an offline Wikipedia. To access the server, a local network was established which also enabled the teacher to share files in between each individual computer. The server was called „KnoBo“ - short for Knowledge Box. The international team visited four schools, two based in Agona Abodom and two based in Cape Coast. Workshops about the KnoBo were given, laptops repaired and data for the evaluation collected: Interviews were held, an inventory completed, classes were visited. But free time activities were also a part of the project, such as a visit to a national park. After collecting it, the data was evaluated: Is TCB actually sustainable? The highest level was defined as „improving the life situation of the students by the TCB initiative“. As professional data collection was impossible for this question, the evaluation was based on anecdotes of students: Some decided to study computer science as a consequence if working with the computers. One student was able to gain some money by providing technical support of local events – skills, which he learned through dealing with the schools computers and projector. So, TCB is sustainable, but the concept of the evaluation is not perfect. An organization should not control itself, it should be controlled by an independent institution. Also, the question arises on how to define sustainability, whether the chosen definition is valid to enable us to call sustainable.

But despite of that, fundamental work was done by collecting information on the ground which will be used in a follow up project.

Ina Reichmann und Julian Deyerler, RG Erlangen

Matheus Akio presents the TwB-project

Regional Group Araranguá in Brazil visits Brasil ao Cubo

For the MakerSpace project, members of TwB-Brazil travelled to the city of Tubarão in Santa Catarina state on May 9 to visit Brasil ao Cubo. The company was created in 2016 and is active in the civil construction sector for commercial buildings.

The company is a pioneer in the development of “Plug and Play” system which consists of steel framed modular structures. The modules have standardized dimensions and can be connected with each other. With this system, the products developed by Brasil ao Cubo are adapted to what the customer is looking for. Energy efficiency and use of renewable energy are part of their projects. These may be present in aspects such as thermal insulation or use of photovoltaic plates.

The purpose of the visit was to consolidate a cooperation for technical support with the container project. After the presentation of TwB and the MakerSpace project to Brasil ao Cubo employees, the team visited the construction sector of the company. The project was presented by project leader Matheus Akio and co-leader Heitor Marcal and TwB Germany representative Lutz Michaelis.

During the meeting Brasil ao Cubo offered to support the students with the planning and construction of a steel frame version of the MakerSpace. Though this deviates from the initial sea shipping container approach, the decision to change came considering two aspects: financial resources savings and more flexible design. Brasil ao Cubo agreed to donate the construction material and transport the steel frame module over the 76km from Tubarão to Araranguá.

The team at the production site

Because of the full project pipeline, project start is expected to begin in the first quarter of 2020. However, this additional time is well used by the project team to overcome the still complicated bureaucratic obstacles to put the actual TwB-Office at the Federal University Campus.

For more information about the company and example projects, access: https://www.brasilaocubo.com/.

Lutz Michaelis, RG Araranguá (Brasilien)

Short Messages

Move of our bank accounts to apo-Bank

TwB has established more than 15 regional groups during the last years. Unfortunately, not all of them succeeded in opening a nonchargeable bank account. Therefore, we are paying fees of around €1000 to various banks. The executive board declares in favor that we rather invest that money in development cooperation. For this reason, the bank details for our association will change as of 1 October 2019:

APO-Bank:	BIC: DAAEDEDDXXX	
Main bank account:	**IBAN: DE29 3006 0601 0007 5832 90**	for membership fees and donations
CO_2 bank account:	**IBAN: DE73 3006 0601 0107 5832 90**	donations for CO_2 compensation

Executive board

New foundation of the Rhine-Neckar regional group

picture of our new regional group

Our family has grown again! Since August 25th there is the new regional group Rhine-Neckar.

Markus Reinhard, RG Rhein-Neckar

Article concerning TwB, published in Neumarkter Nachrichten

Four students of Friedrich-Alexander-University Erlangen-Nürnberg built a biogas plant, provided laptops and technical equipment and taught teachers and pupils at a Haitian school. Following a translated article published in the German local news.

The main issues of the regional group Erlangen are “Environmentally friendly Disposal of Medical Waste”, “Water Supply”, “Hospital Support” and “Teaching Computer Basics”. Many of those projects have already been implemented in Africa, South America and Asia. The main focus is always to transfer

knowledge and to provide training. Thus, the association aims to implement projects as sustainable as possible.

In April and May of this year, Lehmann, Bauer, Gutwill and Strobl were in Haiti, the poorest country of the western hemisphere. The country has a population of approx. 10.7 million inhabitants. The unemployment rate amounts to 60 percent with an average age of 23 years. 20 percent of the Haitians are illiterates. The most basic supplies are lacking, such as clean water and controlled waste disposal. Due to the insufficient medical care, the child mortality is extremely high.

The four students travelled to Limonade, a region in the North of Haiti where stayed at the school “St. Yves” to implement the project. The school is attended by up to 400 pupils and ran by the non-government organization NPH. Together with local workers, Strobl and Bauer built the bio gas plant. Lehmann and Gutwill set up the school’s IT room. In advance, they prepared the project by working on a project plan, collecting donations and used laptops on which they installed educational and Office programs.

In the biogas plant, waste water from toilets, organic waste and cow dung are fermented. As a result, dung for the school’s garden and methane gas are produced. With the gas, it will now be possible to cook in the school’s kitchen. “That enables the school to provide for itself, which is sustainable,” Julian Bauer says.

The school’s computer room was equipped with 13 laptops, a beamer, three USB memory sticks with teaching materials as well as multiple sockets with lightning protection fuse. Teachers and pupils were then trained by Lehmann and Gutwill, which was challenging since the teachers spoke only French and some pupils did not even understand French but only Creole. In addition, the pupils were told to only use the toilet flushing if necessary because the water in the biogas plant must not be too much.

The four students said that, overall, the training was accepted very well. Above that, they benefited from the project themselves. “We have really learned a lot,” assured Bauer and Lehmann during the interview with the news agency “Neumarkter Nachrichten”. For instance, that even with only few and simple tools very good results can be achieved. Furthermore, they learned that the own limits can be surpassed. They also emphasized the importance of cooperating with the locals.

Translated by Laura Gutwill, RG Erlangen

Internship opportunity at Country Group Brasilien

The country group of Technology without Borders (TwB) in Araranguá, Brazil offers an opportunity to gain experience in the sectors of communication and marketing and fundraising. TwB-Members can apply as students for the period between March and July 2020. In addition to working with different departments, the trainee can volunteer to participate in the Sustainable University Community project, that will be carried out by TwB-Brazil at the Universidade Federal de Santa Catarina, Campus Araranguá. The project aims at engaging university campus community in sustainability. Candidates have to communicate in English. Portuguese or Spanish speakers is welcome too!

Lutz Michaelis, RG Araranguá (Brasilien)

TwB Brazil introduces new selection process

Since the founding of the TeoG National Group Brazil in 2017, many members have joined and left, which has led to some learning effects. One consequence of this was the introduction in April 2019 of a new membership selection process consisting of four stages:

1 – Students register via a virtual platform through and answer a questionnaire about the candidate's course, the sector within TwB where they want to volunteer and other comon questions.

2 – The second step consist of interviews, carried out by the directors of TwB Brazil with the students in order to select among them those, who demonstrated abilities and interest in building an effective collaboration with the members and projects of the respective sectors.

3 – After the selection, the applicants have time to adapt and get to know the activities of the selected sector.

4 – Lastly, the final admission of the new members takes place during a board meeting

Lutz Michaelis, RG Araranguá (Brasilien)

V.i.S.d.P. Dr.-Ing. Frank Neumann, Ina Reichmann, Annika Mücke