

Editorial

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

the more we succeed in organising a project holistically, the more we have managed to make a difference in this world with our project. That sounds quite theoretical - but what does it look like in practice? Let's take a look at our IDN_03_WM project in Bali. Here we find the ideal

Projekt EndPlasticSoup_RecycleUp!-Plastics (EPS_RU! Plastics)



case of working both on the cause side and on the impact side. The small town of Padang Bai is located on the "Wallace Trench" - a sea depth where the two tectonic plates of Asia and Australia collide. Many coral reefs have formed at this 1,000 metres deep

strait due to the cool, nutrient-rich currents. However, the reefs are increasingly being destroyed by human-made waste - in this case plastic waste in particular. This is precisely where the IND_03_WM project comes in. Initiated by the project, the amount of waste entering the sea is being drastically reduced on land (onshore) and a coral reef is being rebuilt in the sea by our local partner, the NGO Livingseas, represented by its founding member and TwB member Claudia Koch, by means of reconversion. 2,600 square metres of the planned 10,000 square metres have already been created! This is what a holistic project looks like! More on this below.

Sincerely your board

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

Modernisation of Padang Bai's waste management

An international team from Germany and New Zealand, with the support of the Livingseas Foundation, the construction of a Mark9 incinerator and the upgrading of the plastic recycling process there is a first step in the fundamental modernization of the municipal waste management system of Padang Bai, Bali.

The project location Padang Bai, a small town in East Bali, Indonesia, with around 3,500 inhabitants, faced the problem of complete waste disposal from the beginning of 2023, which had previously been carried out by the Bali administration. With the exception of small amounts of residual waste from smaller towns such as Padang Bai, waste disposal and management were completely discontinued. Therefore, the city had to find its own solution. Waste disposal in Padang Bai was inadequate in terms of equipment and processes up to this point. The non-

recyclable part of the waste was incinerated in an old, non-environmentally friendly incinerator, while the majority of the recyclable waste was sold to middlemen without any benefit to the village. The workers were working without proper safety equipment, and much of the waste was simply dumped in public places, from where much was washed into the sea when it rained. In addition to a lack of knowledge in waste management (waste separation, logistics, etc.), the cause of the problems lay in the non-functioning waste station, which does not have the capacity to process all of the city's waste. Claudia Koch, co-founder of the Livingseas Foundation and now also a member of Technology without Borders, drew our attention to the situation and thus the joint project "EndPlasticSoup - ReecycleUp! Plastics, EPS - RU! Plastics"

Together with the mayor and her city administration, the religious leader of Padang Bai and our local partners from LivingSeas, we laid the foundation for a multi-year improvement initiative. In addition to the short-term provision of work and safety equipment for the employees of the waste station, we conducted training courses for the employees of the waste management department, in which we provided background knowledge about the value contained in waste. Building on this, we introduced an improved workflow for the collection, cleaning and pressing of recyclable plastics. As a result, we no longer refer to it as a waste station, but as a "recycling center".

The restructuring was based on a new layout of the recycling center, which in particular provides for waste separation into the fractions organic, inorganic, residual and organic composting. As part of the restructuring, organic waste is now separated and composted on a newly developed neighboring property, so that the residual waste is significantly reduced and also has a much lower water content. The mayor of Padang Bai is so committed to this project that she has closed all waste collection points in the village and residents now have to deliver their waste to the recycling center. As mayor, she personally spent several days at the recycling center and explained the new waste separation system to her residents by placing the waste in the correct compartments according to fraction together with the residents.



In conjunction with training for the foremen, this residual waste is now incinerated smoke-free in a modern, high-temperature incinerator that we built. This system has now proven itself in previous TwB hospital projects at more than 20 sites around the world and is now being used for the first time in municipal waste management to improve employee safety and air quality. A master's thesis is currently being written in Germany with the aim of recycling plastic waste into new products using the waste heat from the second chamber of the incinerator. (More on this in a later newsletter).

Arne Bruns, RG Erlangen (New Zealand)

Restoration of a coral reef destroyed by plastic waste

In addition to addressing the causes on land, a coral reef that has already been destroyed is to be restored. This is being realised by the NGO "Livingseas", which has already made great progress.

As already described in the editorial, Padang Bai / Bali is located on the Wallace Line, which is the biogeographical dividing line between Asian and Australian flora and fauna. At the same time, it is an over 1,000 metres deep sea trench that supplies the coast of Bali with nutrient-rich, cool water. As a result, the main cause of the death of the coral reefs located there is not the warming of the water, but the human-made waste washed into the sea - in this case plastic waste in particular. Livingseas and Claudia Koch, a co-founder of this organisation, have set themselves the task of restoring (reconverting) the coral reef there with a planned area of 10,000 square metres. Claudia emigrated from Germany with her husband ten years ago and is not only a diving instructor but is now also a member of Technology without Borders. She is driving this ambitious project forward together with Florianus on site. Now that it has been possible to remove most of the causes on land in a short space of time, the project is focussing on rebuilding the reef.



Thanks to a donation from the Rotary Club Höchststadt an der Aisch and the Rotary District 1950, the Livingseas team was not only able to plant the planned 110 Reef Stars with approx. 2,000 coral segments under water within two days on the 20th of October, but also managed to plant 150 Reef Stars with a total of 2,700 coral fragments. We would like to take this opportunity to thank the Rotary Club Höchststadt an der Aisch and the Rotary District 1950 for their generous donation.



Together with Rotary, we at TwB are also delighted with this great achievement and take this as an incentive to offer further support with the "technology" in our name. The Tui Care Foundation has donated a pontoon to Livingseas Foundation. This pontoon is a big step towards making work easier, which the TwB regional group in Amberg wants to drive forward with three devices to be designed and built. With these devices, schoolchildren or tourists can place coral fragments on the pontoon reef stars under supervision, as the corals can only survive in the air for around 10 minutes. They then have to be quickly sunk back into the sea water. This would eliminate this time-consuming and very fine motorised "assembly work" by divers under water and the divers would then only have to position and anchor the Reef Stars on the seabed. This would be a huge step forward in productivity and with the same amount of money, significantly more Reef Stars could be stocked and introduced into the reef. In addition, there would be the educational and psychological effect for the students and tourists of having done something positive for the conservation of the reefs and thus the flora and fauna in our endangered seas.

Frank Neumann, Honorary Board Member

Support us in the fight against plastic waste!

Madiba&Nature is a project from Cameroon that builds fishing boats from plastic waste in order to reduce the burden on the environment, offer communities a low-cost alternative to traditional canoes and bring about a rethink in society regarding the use of plastic.

Madiba&Nature is trying to establish a circular economy with self-built and regionally distributed recycling bins. As the amount of plastic collected far exceeds the demand for boats, machines are needed to process the plastic waste.

Our aim is to provide the project with these machines and thus enable financial independence, which guarantees a secure income through the resale of the processed plastic and makes it possible to expand the circular economy. As there is a lack of potential donors, we are asking for your support! Please tell your friends, family or colleagues who are interested in the issue of plastic pollution or who would like to donate to a project that can use every euro. Our first hurdle is to reach the 250€ mark so that our project is visible on the Betterplace homepage!



Thank you very much for every share, spread the word and every donation!

You can find more details and the possibility to donate [here](#) on betterplace.org.

Andre Eichmann, RG Rhein-Main

Incinerator construction in Amberg

In Amberg, the regional group built a two-chamber incinerator together with students from various degree programmes. A video was made of the construction, which will serve as support for future projects.



The idea for the project came about in 2021 when TwB members from the regional group Amberg started a remote project due to Covid-19. They experienced that language barriers were also causing communication problems and therefore errors in the construction of the Mark8a (The Mark 8 and Mark 9 were developed by Prof. D.J. Picken of De Montfort University

in Leicester, UK) . For example, the air gap between the two brick walls used to build the incinerator, was forgotten. Among other things, this serves as an insulating layer and ensures that the incinerator is not damaged when the parts expand due to the heat.

In order to communicate such things better in remote projects, the Mark8a incinerator was built and filmed in Amberg in collaboration with the Ostbayerische Technische Hochschule Amberg-Weiden and Herding Filtertechnik. Animations were also added for further clarification and simplification. The video is currently being edited and finalised. The incinerator will also be used for project work and master's theses. In particular, the exhaust gas values are to be analysed and possible improvement measures proposed.

Leah Ebert, RG Amberg

Sustainability, trees and more in Kenya

In October 2023, together with our partners from Stawisha Africa Initiative, we were able to make a big difference in just one week



As part of our tree planting project, we not only planted trees from the tree nursery in Ng'iya, which was launched in 2022, at local schools, but also held workshops on the United Nations Sustainable Development Goals for over a hundred children, developed ideas on the use of plastic waste, analysed water samples at three hospitals and brought back a large suitcase full of new project ideas. One highlight was seeing how the school gardens planted in 2022 have developed, as our little papaya seedlings from last year in particular have now clearly outgrown the project management.



We are looking forward to three more projects with Stawisha in the coming months: The Teaching Computer Basics project for teenagers, young adults and especially young women, improving garden irrigation at Nyasidhi Secondary School and repairing the water supply for Got Koyembe Hospital.

Franziska Enzmann, RG Rhein-Main

Borehole Repair and Regeneration by RG Sunyani, Ghana

The Water Supply and Maintenance project was the continuation of previously realized borehole repair and borehole regeneration projects implemented by TwB RG Sunyani, Ghana. The aim of the project was to get broken boreholes up and running and to train the communities in how to repair boreholes themselves.

Our borehole project, initiated in 2020, faced a setback due to the COVID-19 lockdown. A team led by Bashiru, the former Student leader of RG Sunyani UENR group, conducted a comprehensive assessment of water situations in all communities of Kanturo (Kantro),

including Kanturo number 1, Kanturo 2, and Kanturo 3. Unfortunately, none of the boreholes in these towns were operational. One borehole had been non-functional for over 5 years. Among the four boreholes in the three towns, only the one in Kanturo number 3 was partially working in 2020 but later malfunctioned.

A team, including Duoh Sylvester, Augustine Awekeya, Anelka Bonsu Rockson, Anthony Kodzo Hunkpe (RG Sunyani Project leader), and Beatrice Afihumah, reactivated the ideas from 2020 and prepared a new concept for the project. In contrast to previous borehole regeneration projects, also workshops for the communities on how to repair broken boreholes were included into the project scope. Furthermore, contact data was provided for the communities so that RG Sunyani can act as technical contact in case of future borehole issues.



The implementation of the project began with community visits to inform them of our impending assistance. Despite initial challenges with our car, we successfully completed the regeneration



of one borehole in Kanturo 1 before moving to Kanturo 2. The second borehole, abandoned for more than 5 years, proved to be challenging to open, revealing more damage than expected. We decided to address those in Kanturo 3, Apaso, and Apaso Junction before returning to Kanturo 2. Overcoming challenges, we replaced the entire system with a modern tube. The project was concluded successfully, and the communities, including women, received training on borehole maintenance. In total, we were able to repair and regenerate six abandoned and broken boreholes within the project. Compared to the project costs of around € 1,000, 6 new wells would have cost more than € 20,000 - profitability factor 1:20!

During our visits to Apaso and Apaso Junction, we identified further broken-down boreholes in other communities, and we plan to address these issues within a subsequent project in the next year. The communities are grateful to the TwB board, RG Sunyani members, and the working group RG Bayreuth for coming to their aid. We, as a regional group, are also thankful for giving us this opportunity to put our skills into use.

Anthony Kodzo Hunkpe, Beatrice Afihumah, und Duoh Sylvester, RG Sunyani

Johannes Häring, RG Bayreuth

Waste collection campaigns in Nkawkaw and Koforidua

Three members of the regional group in Koforidua, Ghana, went to the Holy Family Hospital in Nkawkaw to support a clean-up campaign to raise awareness of plastic pollution among the local community. After a very successful event, RG Koforidua organized their own waste clean-up in the centre of Koforidua.

A lack of awareness among large sections of the population and inadequate waste disposal are leading to major problems with plastic waste in Ghana. It can be found everywhere in the landscape as well as in villages and towns and is finally washed into the sea via the sewage system and rivers.

The Holy Family Hospital in the town of Nkawkaw is also littered with garbage. With the support of the initiative EndPlasticSoup and TwB, Ralf Hardenberg from Rotary Club Nuremberg

Connect organized a waste clean-up in the Holy Family Hospital Nkawkaw during his stay. Abdul Rashid Wumpini Alhassan, TwB member and ambassador for EndPlasticSoup in Ghana, helped in coordination and organization in advance. We, Bright, Robert, and Joseph of the Koforidua regional group made our way to Nkawkaw to take part in the collection campaign on-site. The hospital organized large rubbish containers, gloves, rubbish bags, as well as food and drinks for the participants. A total of 20 people collected 15.9 kg of Sachets and 9.2 kg of plastic bottles. The best collectors were rewarded with prizes. We highly thank Ralf Hardenberg for making the event possible for us, which also gave us the opportunity to exchange ideas and network with great people.

After the successful event, we decided to implement a cleanup exercise also in Koforidua. The cleanup took place in the city centre and 200 highly motivated participants joined to pick up 1-



ton of plastic waste within 3 hours. The waste was brought to the recycling company Zoomlion. We plan to repeat waste cleanup exercises in Koforidua and surrounding communities on a regular basis to make even more people aware of the waste problem in Ghana and to change their behavior. Finally, we would like to thank the RC Brühl, whose donations made this fantastic event possible.

Robert Agbenyega, Bright Amoh und Joseph Maudjorm, RG Koforidua

Newsflash

First project of the regional group Freiburg

Almost a year after the Freiburg regional group was founded, the first project is now underway. Schools in the Sook community in north-western Kenya are to be equipped with locally developed and built highly efficient stoves. These stoves will prevent exposure to smoke from open fires and save over 60% of firewood.

You can find more information about this project [here](#).

Philippe Ruß, RG Freiburg

Reactivation of the regional group Berlin

The currently inactive regional group Berlin is being revived! If you want to join, just get in touch with:

Justin Meyer (kontakt@justin-meyer.com), Frank Neumann (Frank.Neumann@teog.de)

Frank Neumann, Honorary Board Member

Save the date: General meeting on the 11th of May in Erlangen

The Erlangen regional group is delighted to be hosting this year's general meeting! On Saturday, the 11th of May, the meeting will start at 10.00 a.m. at the Technical Faculty of the University of Erlangen. The main part of the meeting will be followed by lunch and a social programme in the afternoon. Members who have travelled a long way (and all others) are also welcome on Friday! Further information will be announced on time.

On the agenda for the meeting is a suggestion for changes to the statutes. You can find the concrete suggestions [here](#):

The following changes are included:

- Electronic membership application as an alternative to the written application
- Possibility to hold future general meetings virtually or in hybrid form
- Inclusion of the Sustainable Development Goals (SDGs)
- Gendering

You are welcome to send any questions and comments to info@teog.de

See you in May!

Maximilian Martin, RG Erlangen

V.i.S.d.P. Robert Schullan, Stefan Leimbach, Sophie Hutzler

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Vereinsregister: Fürth: VR 200 486 - **Steuernummer:** 216 / 111 / 00 865

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