A Forward by

Prof. Frank-Martin Belz

Academic Director, TUM SEED Center

It was a nice day visiting the living lab in India with all participants from the second SEED annual symposium. After a long bus ride, we arrived at the main campus of the Indian Institute of Technology Bombay (IITB). As we left the bus and walked back to our hotel, Dorothy Okello, Professor of Makerere University and Academic Director of SEED Uganda, thanked me for setting up SEED. She said it has an impact on people, including scholars, students, and villagers around the world. The appreciation came from the bottom of her heart.
Before going to sleep, I read the final chapter of the internationally best-selling book “Factfulness: Ten Reasons we’re wrong about the world – and why the world is better than you think.” (this book changed the way I think about the world, and it is highly recommended!). The author Hans Rosling, a Swedish professor, and public speaker writes about the danger of World War III: “My whole life I have done all I can to establish relations with people in other countries and cultures. It’s not only fun but also necessary to strengthen the global safety net against the terrible human instinct for violent retaliation and the worst evil of all: war. We need Olympic Games, international trade, educational exchange programs, free internet—anything that lets us meet across ethnic groups and country borders. We must take care of and strengthen our safety nets for world peace. Without world peace, none of our sustainability goals will be achievable.

Having in mind Dorothy’s remark I started realizing that SEED as indeed a global endeavor with nine leading technical universities from four different continents goes far beyond academic exchange, conducting research, and teaching with impact: It is also about getting to know each other, learning about other countries and cultures, and making friends.

The new SEED newsletter is a visible sign of the vibrant community and the global safety net we build together. In this sense, I would like to thank all of you for engaging in this endeavor, and I wish you, and your families a peaceful festival season and a Happy New Year 2023!

Symposium

Together in Mumbai India: SEED
Second International Symposium
We were once again all reunited for our annual symposium, this time in Mumbai, India. Our SEED team at the Indian Institute of Technology Bombay (IITB) organized this year’s edition of the conference.

The event consisted of a week-long (5-days) program from November 21st, 2022, to November 25th, 2022 – including a symposium for 2.5 days, followed by a day-long visit to IITB- SEED center’s Living Lab (about 200 km from Mumbai – at Pabal in Pune district), and a final day for the steering committee meeting. The delegates came from Germany, Ethiopia, Indonesia, Kenya, Ghana, Uganda, Namibia, Peru, and Nepal. Seventy-five participants from all SEED partner universities joined the week’s activities, along with delegates from the private sector.

It all started on day one with a keynote address by Prof. Frank-Martin Belz (Director of TUM– SEED Center) on “Past, Present, and Future of SEED: Some Reflections and the Way to Move Forward,” which also set the context for the symposium and an introductory presentation on the recently initiated “SEED Himalaya” Project by Dr. Daphne Keilmann–Gondhalekar and Mr. Sanskar Bapat (ASEEM Foundation, partner NGO). The last session included brief presentations by representative IITB faculty from SINE (Prof. Santosh Gharpure), DSSE (Prof. Anuradha Narasimhan), DESE (Prof. Seethamraju Srinivas), and CTARA (Prof. Anand B. Rao). In the following days, researchers from all SEED centers shared their latest research endeavors and took the time to visit different academic units in IITB and network with local academics and researchers.

TUM–IITB–SEED Center has installed three projects at this residential school for tribal students to assist in tackling their problems with electricity supply and
cooking energy. They include a grid-connected Solar PV System, kitchen Waste based Biogas plant, and a biomass gasifier-based cooking system. Delegates spent more than an hour at the school observing and understanding these projects, as well as interacting with the students.

And On to The Next! KNUST–TUM SEED SYMPOSIUM 2023

The year 2023 annual TUM SEED Symposium will take place from September 4th–8th, 2023 at Kwame Nkrumah University of Science and Technology (KNUST), Kumasi - the cultural city of Ghana. TUM SEED Partner Universities (PUs) are invited to participate to present current research activities in the living labs; notably, demonstrating increasing entrepreneurial activities; actions for renewable energy systems (SDG 7), rural electrification, community engagement, advanced technologies and business models of mini-grids, climate change, agricultural practices, the sustainable architecture of mini-grids for inclusive and sustainable economic growth (SDG 8) and poverty alleviation (SDG 1) for sustainable prosperous communities and cities (SDG 11) to drive academic exchange; mobility and global engagement between Technical University of Munich (TUM) and TUM SEED Partner Universities.

Format: Conference/Workshops Paper/Poster presentations by scientific directors, project coordinators, and (entrepreneurship, engineering/related discipline Professors, Post–Docs, Ph.D. Students, or Master Students presenting current research activities in the living labs).
Since mid-November 2022, the TUM SEED Center has a new project coordinator, with Lara Knödler taking over the role. Before joining the TUM SEED Center, she worked as a project coordinator for the Sub-Saharan Africa department at the Hanns Seidel Foundation and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) as a junior advisor.

Lara holds a bachelor’s degree in International Studies from Leiden University in the Netherlands and a master’s degree in Africa and Development from Sussex University in the UK, the top institution for development studies in the world. In her free time, Lara plays passionate handball, cooks, and enjoys escaping to the mountains over the weekends.

Welcome to the team, Lara. We are delighted to have you onboard!

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New Doctoral Researchers Onboard the SEED Journey: JKUAT & NUST Students Selected
During the 2022 SEED Annual Symposium at IIT Bombay, the TUM SEED Center director, Prof. Dr. Frank-Martin Belz, granted two Ph.D. Scholarships relating “SEED Entrepreneurship in the Global South” to Jomo Kenyatta University of Agriculture and Technology (JKUAT) and Namibia University of Science and Technology (NUST). The research proposals were evaluated by three independent Entrepreneurship Scholars at the Technical University of Munich and the final decision was taken by the TUM SEED Selection Commission.

The best proposals were submitted by the JKUAT Supervisory Team led by Prof. Florence Memba (Entrepreneurial Finance), Dr. Anaya W. Senelwa (Entrepreneurship), and Dr. Allan Mugambi (Humanities); and by the NUST Supervisory Team led by Prof. Dr. Sulaiman Olusegun Atiku (Human Resources) and Dr. Asa Romeo Asa (Entrepreneurship). The awarded proposal relates to “Informal Entrepreneurship for Sustainable Development in Kenya” and “Informal Entrepreneurship for Societal Impact: A Focus on Semi-urban and Rural Communities in Namibia”, respectively.
Our Students on The Ground

Bardi’s Journey to SEED Living Lab in Huyro, Peru: Biogas Potential for Community Development

By Mohammed Javad Bardi
The collaboration with the partner universities within the TUM SEED Center is a key element of my Ph.D. project. Recently, I traveled to Peru to conduct field research and to deliver a workshop together with my supervisor PD Dr.-Ing. habil. Konrad Koch at the living lab of the Pontificia Universidad Católica del Perú (PUCP).

After a long journey, I found myself in Huyro, 1,057 kilometers east of Lima, the capital city of Peru. For the first time, I experienced living in the living lab and conducting research on the ground. I realized how the living lab was incorporated into the texture of the environment and utilized all opportunities in hand to maximize profitability. Solar energy, solar dryer, solar panel, and biogas system were found to be examples of potential opportunities available in the field. Besides, I could meet several people who live and work in the field and talk to them about the important potential of renewable energy in their lives. Also, I tried to find out the key barriers to renewable energy applications.

Livestock farmers use the biogas system to produce energy gas for lighting and heating. However, a lack of knowledge about the anaerobic digestion process encounters their system with low efficiency and poor performance. Interestingly, the indigenous people operate the biogas system, not for the sake of biogas production but rather to produce bio-fertilizer. A social awareness regarding the operation and application of the biogas system can
give more insights to the local people to utilize the existing biogas system more efficiently.

For this purpose, we performed a workshop in the living lab about the anaerobic digestion process. In this workshop, the principles and basics of the anaerobic digestion process were introduced to people. Then, a novel and inexpensive method to conduct biomethane potential tests for the estimation of the biogas yield of any organic substrate was introduced. We finally installed such a test system in the living lab and trained the local personnel. May it be used frequently by many interested appliers. This knowledge and resource about anaerobic digestion will hopefully further local people visiting the living lab to overcome the barriers of biogas system operation.

Overall, it was a great opportunity to see a spirited community, and we would like to thank all people who helped, cooperated, and supported us on this journey.

TUM Master Students Venturing into The Jungle Belt of Cusco: Field Research in PUCP Living Lab

By Alexander Sicheneder, Paloma Acosta Rivera, Lucia Casalegno & Harry Griffith
Back in October, Master students from TUM flew to Cusco, Peru to conduct fieldwork for their theses. This first batch of TUM students, from such diverse study programs as Environmental Engineering, Sustainable Resource Management, and Politics & Technology, was hosted by the Living Lab from October 14th to November 11th, 2022.

During this time, Paloma and Alexander interviewed the local community to gather data and study how access to electricity impacts entrepreneurial activities in the district. Harry aims within his Master’s Thesis to assimilate the community-based planning procedure undertaken by PUCP and derive a new planning framework for implementing energy systems in the Global South. He will then use this bottom-up planning procedure to optimally size system components to facilitate the ambitious expansion of the lodge. Lucia, on the other hand, has focused on informal entrepreneurs in this rural area of Peru. She has been collecting qualitative data through interviews to identify patterns in the influence of energy in shaping collective identities, diving deep into the recent history of the district.

"Besides our individual projects, our stay in Huyro meant a great deal to us. Our time at the living lab was truly an enriching experience, breaking the barrier between the real world and academia. Since the lab is well connected with some people from the local community, we were able to visit different chakras – farms in Quechua- and understand how PUCP SEED is fostering the use of sustainable energy for productive uses in the valley. These visits were a great opportunity for us to get in touch with locals and were accompanied by drinking coffee at coffee plantations, attending mushroom cultivation workshops, and sharing stories over drinks on a pig farm. We were invited to birthday parties, approached by friendly municipality officers, collected corn, pumpkins, and tea in exchange for interviews, saw an Andean bear, and installed a micro-PV battery system. For us, these were great opportunities to improve our understanding of the surrounding area and laid the foundation of our own community engagement in our time in the valley."
Meet reStove, The SEED-mobility-funded Enactus Team Tackling Air Pollution in India

By Mayank Garg, Carl Kuzinski, Moritz Nicklisch & Michel Mertens

The reStove team was granted two mobility grants to visit India and accelerate their project. In India, they are trying to solve the problem of indoor air pollution in rural villages by implementing a portable biogas solution for families.

“During the travel, we met our partner NGO in Pune, Maharashtra, and transferred to the village. Here, we spent time with the people in the village, to hear about their problems, and to design our solutions with their input. We conducted various interviews in different villages to learn about traditional cooking practices and interviewed local doctors to delve deeper into the problem. It was a wonderful experience learning about their culture, and about the involvement of cows in their lives almost like an extended part of their family. Our
team was amazed by the amount of love we received from the local people, where the women recited a traditional Hindu ceremony to honor our visit.

Our visit to Mumbai gave us a flavor of modern Indian cities with their rich heritage and history. Commuting via auto-rickshaws became a fun daily routine. At the annual SEED symposium in IIT Bombay, we met people from 7+ nationalities. Here, our team gained valuable insights and connections to further advance the project.

Talking to distinguished professors, startups, and foundations from Kenya, Nepal, Ghana, Indonesia, and India, we realized that the problem of indoor air pollution is also common in other countries, and learned about methods and technologies which are implemented elsewhere in the world. The knowledge exchange was a key learning event for our team. In the next months, our team will also collaborate with startups from IIT Bombay.”

Around The Research Table:
Exchanging Feedback & Pizza at The Chair of Corporate Sustainability
On Friday, December 9th, TUM SEED researchers met in Freising, at the Chair of Corporate Sustainability at the TUM Weihenstephan campus. On the agenda, is the internal research seminar, a format developed by the chair to discuss and exchange ongoing research projects. What made the session special is the attendance of our colleagues from SEED partner universities, JKUAT and Makerere. To directly tackle SEED academic exchange objectives, we happily invited Dr. Allan Mugambi, Dr. Anaya Senelwa, Harold Muriithi (JKUAT), and Dr. Kasimu Sendawula and Shamira Najjinda (Makerere) to join our roundtable to receive feedback on their research relating informal and rural entrepreneurship to renewable energies in the living labs communities. The group made it to Munich through the SEED mobility grants and engaged in different academic activities during the week.

The research seminar offers a great opportunity for discussion and exchange in a comfortable and laid-back atmosphere, competed with Christmas cookies and some pizza for lunch!

❄️ A Winter Wonderland Story for Our Visiting JKUAT & Makerere Scholars in Munich

By Stella-Marion Athieno

“When they said, we would go on a hike, we weren’t sure what to expect, I like to keep my mind open to surprises. Nothing prepared us for the idyllic ambiance after hiking through the forest near lake Tegernsee. We were dazzled by the snow-capped mountains in a distance, against the blue-painted skies and the trees protruding majestically to claim their place in this picturesque frame.”
On December 6th, the Technical University of Munich (TUM) SEED Center organized a hiking trip for its partner university students and lecturers from Makerere University and Jomo Kenyatta University of Agriculture and Technology. As part of the academic exchange program, lecturers and researchers flew to Munich via the SEED Center mobility grants where a week full of activities awaited them. Week-long research seminars and doctoral lectures made way for a much-deserved hike in the Bavarian Mountains, around Munich.
“If we had known Aueralm awaited us at the top, we could have quickened our steps just to enjoy the warm coziness and scrumptious meal at the hut. The lentil soup particularly recommended by Prof. Dr. Frank-Martin Belz was the real deal. The blueberry cake and juice (that I can’t pronounce lol) sent my taste buds into afro dance mode. After almost 1:30 hiking up, arriving at the hut made the entire trip worth it, the perfect combination to make you forget the fatigue, freezing feet, and biting hunger. The views, warmth, food, and laughter made everything else secondary instantly.

To describe the entire experience, I would sum it up as magical. For most of us, it was our first time experiencing snow-up close, let alone winter. We had so much fun as seen through the lens below playing with snow, feeling its softness as it melted between our fingers. Our hands froze but it was worth it! Lol So here is to first times and new experiences all thanks to TUM Seed Center.”

Looking Backward & Moving Forward: SEED Annual Steering Committee Meeting Took Place at IIT Bombay in India

On November 25th, 2022, the steering committee (project coordinators and scientific directors) held a two-hour meeting to conclude the annual symposium 2022 at IITB in Mumbai, India. At the beginning of the meeting, Prof. Frank-Martin Belz thanked the IITB team for their outstanding organization and hosting of the annual symposium 2022 at their institution. In his presentation, Prof. Belz specifically emphasized the expansion of academic exchange between the partner universities. Therefore, workshops focusing on south-south cooperation are planned for 2023, to enhance academic exchange between the partner universities in the global south. Furthermore, in cooperation with Esther Salvi, Prof. Belz encouraged research collaborations with villagers leveraging the living lab potential, to better understand the impact the provision of energy has on their entrepreneurial endeavors.
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