

Annual operational report 2020

Report by Hilda Liswani & Beatrice Scarioni
Tech4Dev
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Section 1: Overview

1.1 Executive summary

Research and innovation have the potential to tackle many of the malfunctions of our socio- economic systems. Despite the potential for accelerating sustainable development and reducing inequalities in some of the poorest regions in the world, most of the current research approaches aimed at solving global development challenges are subject to two major fallacies: 1) the vast majority of research projects are not embedded in concrete socio-economic and cultural contexts; 2) the research projects are not sufficiently oriented towards implementation of the results for true impact. As a result, many innovations do not bridge the gap between the lab and the real world.

At the same time Non Governmental Organisations (NGOs), International Organisations (IOs) and other actors of humanitarian programs are faced with the difficulty of making their interventions sustainable and long- lasting, as well as to scale their impact across different contexts. In both cases, appropriate and affordable technological and entrepreneurial solutions could play an important role, yet access to such solutions is not always possible, often due to financial constraints, or a lack of knowledge about the existence of such solutions.

EPFL Tech4Impact with its dedicated global South program, Tech4Dev, aims at addressing the shortcomings outlined above. It focuses on innovation acceleration and aims at bridging the theory-practice gap in order to research

and successfully implement innovative technological solutions that can scale and reach a growing number of beneficiaries in the global South. The initiative is one among a few that explores novel ways for universities to contribute to the economic, social, and environmental development in the global South, and advances these current approaches with its dedicated technological entrepreneurship angle. Tech4Dev builds on the foundations of Tech4Impact's NGO Council.

Tech4Dev aims to play a pioneering role for accelerating and scaling innovative and beneficiary- centered technological solutions that have a tangible and lasting social impact in the global South. To ensure the success of the program, we have implemented several innovative elements: embedding the development of innovative business models in joint academic-NGO research collaborations; rigorous evaluation and selection process of research projects based on an international expert evaluation panel; step-wise milestone-contingent implementation, impact oriented M&E system; and scaling of solutions through social entrepreneurship.

1.2 Objectives

Tech4Dev focuses on the following overall goal:

- To promote relevant, actionable, and human-centered research that has the potential to have a positive tangible impact in the global South

In order to achieve the strategic goals mentioned above, Tech4Dev builds on the foundations of Tech4Impact, EPFL's sustainability initiative, with its NGO Council. The NGO Council is a cross- cutting and collaborative platform comprising 22 NGOs including WWF, Human Rights Watch and Terre des Hommes and other well-established organizations to collaboratively source EPFL's research and innovation that could strategically accelerate their impact on the field. The NGO Council is the main source for identifying the research challenges.

Adopting a transdisciplinary approach, we foster large-scale implementation of innovative technological solutions in the global South (See Annex 1 for NGO Council criteria).

Tech4Dev achieves this goal by:

- Providing a unique platform to identify, promote, support and accompany impact-oriented, human- centered technology development for the global South:

Housed at the Vice-Presidency for Innovation at EPFL, Tech4Dev provides a unique platform for the development of robust technological solutions jointly identified by key stakeholders from the global South (NGOs, IOs, policy-makers, corporates, entrepreneurs, citizens) and researchers from EPFL. This partnership promotes actionable research and the



deployment of research findings in the form of scalable solutions. This latter element is particularly relevant for implementing solutions in the global South, where urgent and large-scale transformative change is required to shift to a sustainable and resilient path.

- Adopting a step-wise, milestone-contingent implementation at the intersection of technology and sustainable development in the global South:

Projects often suffer from falling into the “research-practice gap” and fail to achieve the desired impact. Given our set of expertise and our impact-driven mission, we make the implementation of the identified solutions a top priority. Drawing on our expertise in social venture capital processes, a milestone- contingent deployment and impact plan will be an essential component of the funding process, so that effective deployment and the achievement of impact on the ground can be ascertained.

- Empowering a new generation of global engineers and entrepreneurs, who accelerate the implementation and adoption of innovative solutions in the global South:

Tech4Dev engages in entrepreneurial capacity building in the global South to promote entrepreneurship as a means for reducing inequalities (e.g. Sustainable Business Model trainings). Moreover, we intend to explore two paths to scale the technological solutions in the global South: 1) Involving students (from EPFL and from the global South) to act as change agents by offering internships, research projects, study trips and final theses that support the roll out of technological solutions for solving complex social and environmental development problems; 2) Empowering

individuals in the global South by equipping them with social business models that provide them with an opportunity to become active as social entrepreneurs and disseminate the technological solution in their specific local contexts.

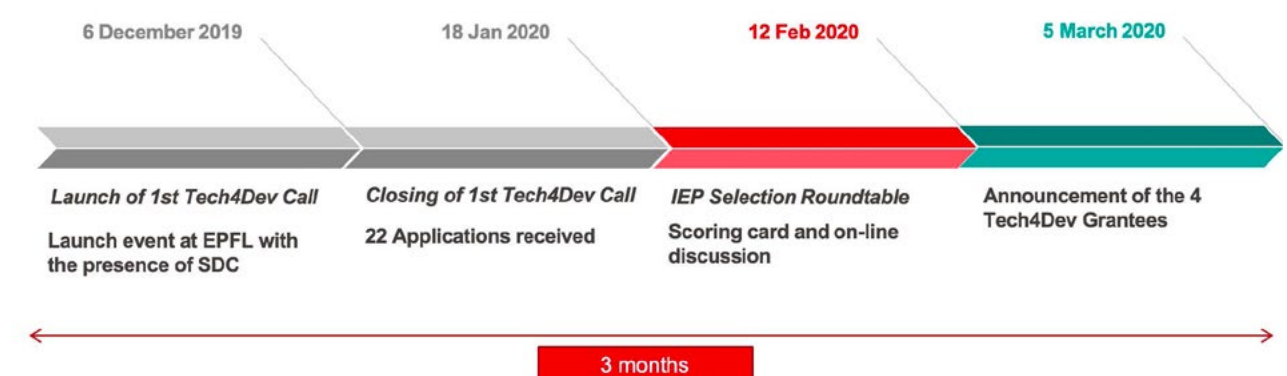
Section 2: Driving technological innovation for impact in the Global South

2.1 Our process

Tech4Dev’s approach to driving technological innovation in the global South is anchored on connecting the competencies and expertise of the EPFL community to various stakeholders in the global South to ensure a truly needs based and collaborative approach. This needs based approach prioritises challenges faced by the constituencies of the NGO partner therefore the technological competencies of EPFL researchers follows as a second priority. To guarantee cohesion Tech4Dev’s process is focused on facilitating, nurturing and maintaining these partnerships to ensure a truly collaborative approach to designing technological innovations not only for the global South, but with the global South as well.

2.1.1 Collaborative Research Grants

Tech4Dev consists of two calls for collaborative research projects between Non-Governmental Organisations (NGOs) and EPFL researchers, each for a duration of 2 years with a CH300’000.- milestone-based grant. The first call was launched in December 2019. The application and review process took approximately 3 months and as a result of the Tech4Dev International Expert Panel’s (IEP) judgment, 4 collaborative research projects were selected based in Kenya, Cameroon, Bangladesh and Colombia. The second Tech4Dev call will be launched on 12 November 2020 and will on-board the 4 final collaborative research projects.



Step 1- Matchmaking

Sourcing technological solutions for challenges in the global South from the EPFL researcher community

Members of the Tech4Impact NGO Council submit a one-page description of a research challenge. NGO challenges are divided by sector and theme and shared with the EPFL research community (370 Labs, more than 2,000 researchers). The researchers are then matched with the NGO(s) that submitted the challenge in order to develop a joint transdisciplinary research proposal.

The proposals are evaluated by the Tech4Dev International Expert Panel, which will meet once a year and select a maximum of four projects to receive funding based on specific selection criteria (see Annex 2).

Step 2 - On-boarding

On-boarding the awarded projects to ensure alignment and consistency in Tech4Dev expectations and requirements.

KPI's and impact metrics are set collaboratively at the on-set between the EPFL Researcher and the NGO/Global South partner in order to map out the forecasted impact for the duration of the 2 year grant

A Budget split letter is submitted by each project to the Tech4Dev team, to ensure the allocated funds are divided appropriately as outlined in the Tech4Dev requirements. At least 40% of the budget must be allocated in the global South. As per EPFL protocol, an Ethics review (see Annex 3) is conducted to determine whether the research being carried out is consistent with the requirements of the EPFL Human Resource Ethics Committee (HREC).

Step 3 Researching and Innovating

Co-designing innovative human- centered solutions based on multiple iterations between EPFL researcher and NGOs

Researchers develop the potential solutions to the identified problem in close collaboration with the NGO and its global South partners. Prototypes of the solution are tested by the field teams of the respective NGO(s).

The multiple iterations will allow for a human-centered design process and feedback loops between the field and the lab until an appropriate, robust and affordable solution has been identified.

Step 4 - Implementing and Scaling Implementing the solution and identifying most appropriate social business model to scale solution

Facilitating connections and empowering local entrepreneurs to act as social entrepreneurs: Tech4Impact experts will accompany each project from the beginning in order to explore routes to implementation of this technology, including for profit and social business models, respecting equitable partnerships.

Student teams will support the roll out of technological solutions through dedicated programs such as INSSINC.

Tech4Dev International Expert Panel (IEP)



Evelyn Namara (Uganda)



Darelle von Gruenen (South Africa)



Jessica Ocampos (UK)



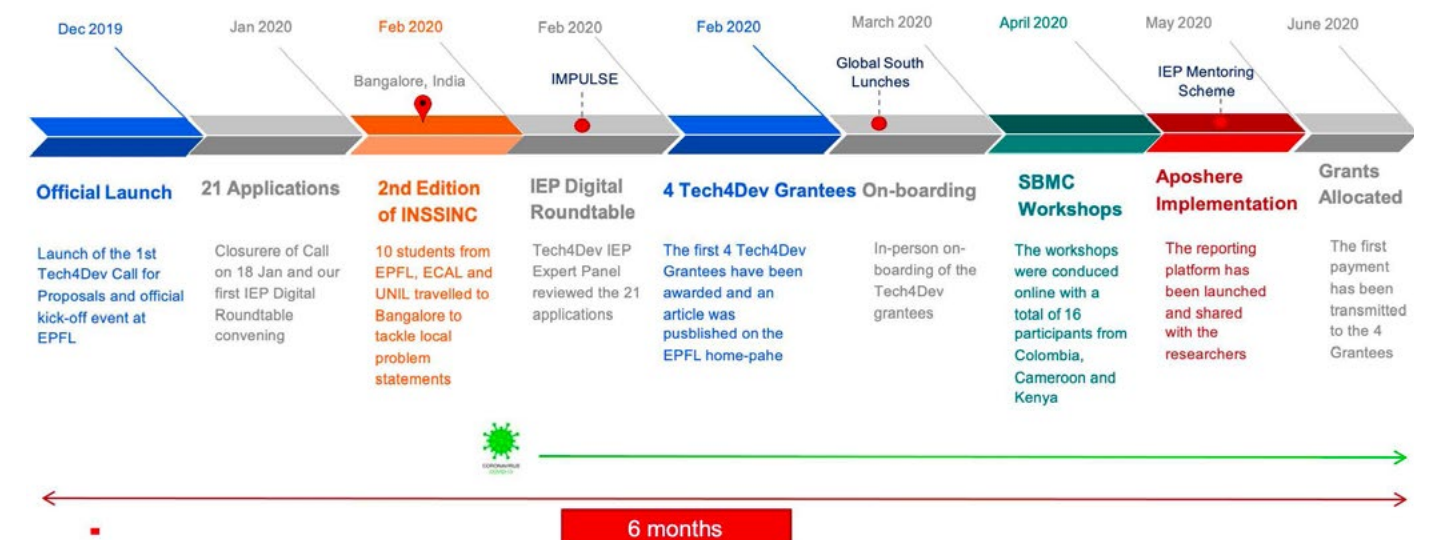
Catherine Bragg (Canada)



Shashi Buluswar (India)

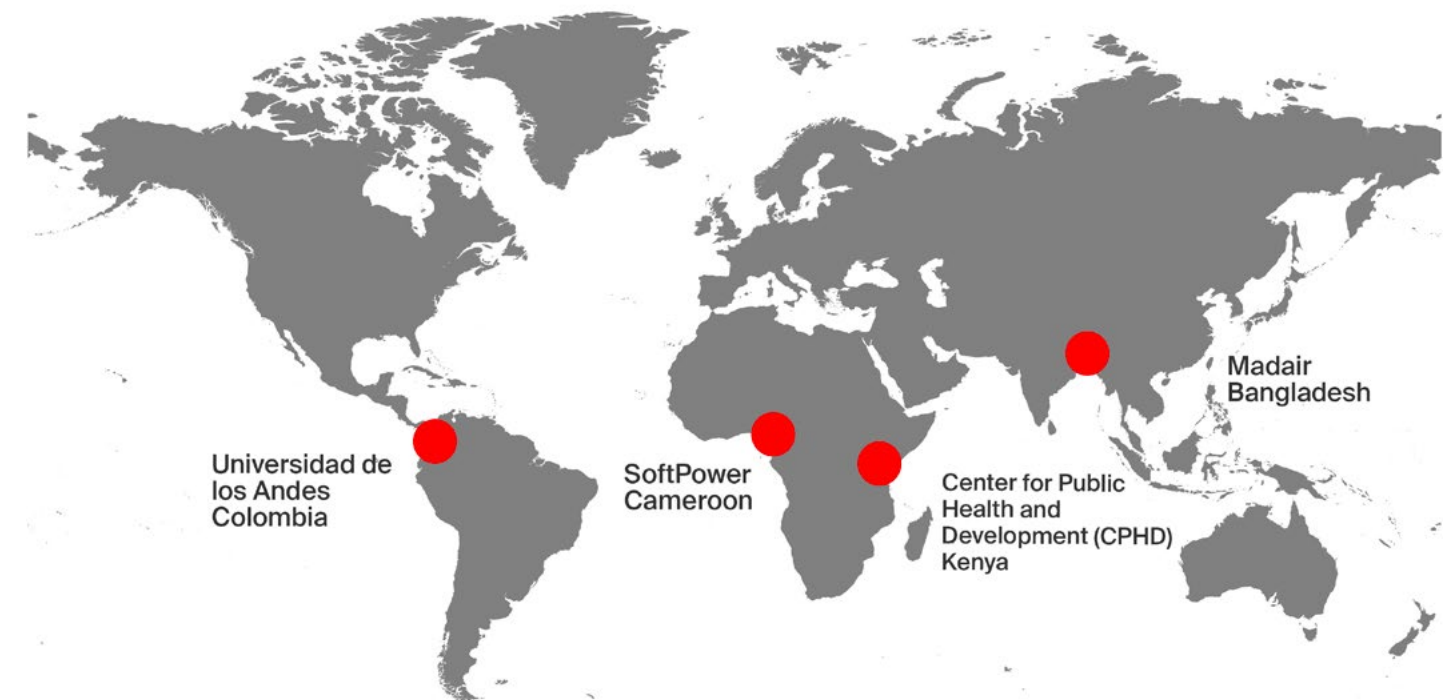


Lise Birikundyavi (Sierra Leone)



2.2 Status of 1st Tech4Dev Grantees

Although all four of the first awarded Tech4Dev collaborative research grants have differing trajectories and KPI's, they have all received the first part of their milestone- contingent grant as of June 2020 after a rigorous on-boarding process (detailed in the previous section). Moreover each of the 4 Tech4Dev Grantees has been in touch with the EPFL Human Research Ethics Committee (HREC) in order to discuss any ethical dimensions related to the testing, deployment and scaling of technologies in the global South. Given the current COVID19 pandemic, unfortunately all the Grantees had to delay their field visits.



Global South partners of 1st 4 Tech4Dev Grantees

2.2.1 Sustainable tarpaulins for refugees in Cox's bazaar



The EPFL Laboratory of Sustainable and Catalytic Processing (LPDC) has partnered with Medair to propose a sustainable alternative to the current plastic tarpaulins being used in many informal settlements from refugee camps to urban slums. Their objective is to close a circular bio-economy loop by transforming locally under-utilized wastes into tarpaulins. They will be bringing this solution to rohingya refugees in Cox's Bazaar, Bangladesh.

Violence in Myanmar has driven over one million Rohingya, a stateless ethnic minority, to seek refuge across the border in Bangladesh. An overwhelming majority of refugees have fled to Bangladesh

since 25 August 2017 with the speed and scale of the influx resulting in a critical humanitarian emergency. Today, most of the refugees are living in Cox's Bazar Kutupalong camp, with around 700,000 people crowded onto just 13 km² of land. It is the largest refugee camp in the world! In Bangladesh, as well as in the rest of the world, plastic tarpaulins are the fastest and most efficient assistance given by all agencies and organizations in the world seeking to provide basic emergency shelter. For instance, 700'000 tarpaulins were distributed in Haiti alone after the 2010 earthquake.

Plastic tarpaulins are the most basic,

fast and efficient solution to provide basic emergency shelter in humanitarian crises. It is a quick impact solution, which saves lives, but such excessive use of plastic significantly impacts the local environment. LPDC has recently developed a disruptive technology to convert agriculture residues to polyester, which is 100% bio-based and fully bio-degradable. The objective is to close a circular bio- economy loop by transforming locally under-utilized wastes into tarpaulins. For this study, wastes from Bangladesh will be collected, transformed to polyester granules at EPFL and sent back to a Bangladeshi partner for yarn spinning and tarpaulins fabrication.

The sustainable tarpaulins team is currently looking for a viable manufacturing partner in Bangladesh who can fulfill their needs to spinning the yarn. The next steps will be to see whether the polyester is suitable for spinning, in which case the project can follow the planned outcome and a suitable partner will be sought in Bangladesh. Should the polyester not be spinnable, the team at LPDC and MEDAIR will discuss alternative applications for the polyester, which could also be beneficial for the people in need. Accordingly, a partner who can perform the production of such products (e.g. injection molding) will be identified in Bangladesh

The case in which the teams cannot find a partner in Bangladesh will lead to the expansion to the territory to neighboring countries in the Global South. The preliminary screening of partners for fiber spinning has shown that it is not trivial to find a partner with the right capabilities for tasks that still contain a fair amount of development work. Nevertheless, the team is convinced that the polyester can be developed to a sufficient maturity level to bridge potential gaps in capabilities between EPFL and the Global South.

Partner Profile

The EPFL Laboratory of Sustainable and Catalytic Processing (LPDC)

The Laboratory of Sustainable and Catalytic Processing is generally interested in reaction engineering at fluid solid interfaces.

Applications of such systems include:

- Biomass conversion
- Heterogeneous catalysis
- Lignin chemistry Biocatalysis
- Green solvents

Medair

Medair is an international humanitarian organisation inspired by Christian faith to relieve human suffering in some of the world's most remote and devastated places. Since 1989, we've been helping people in crisis – regardless of race, creed or nationality – to survive and recover.

2.2.2 Global neonatal incubator for Kenya



The EPFL Essential Tech Centre and The Centre for Public Health and Development (CPHD) in Kenya have partnered to develop and distribute the Global Neonatal Incubator. Their solution is tackling a major challenge being faced in the global South. In 2017 2.5 million newborns died – about 7'000 every day – 98% of them in developing countries and 89% could be saved if the global neonatal mortality rate were as low as it is in the most developed countries.

To further reduce neonatal mortality quickly and efficiently, simple but reliable means such as thermal management of the newborn, treatment of asphyxia or

sepsis prevention must be made available to the least developed regions and the medical staff must be trained to handle these newborns.

The Global Neonatal Incubator utilises a new technology for heat storage which is developed and patented and allows the incubator to resist the frequent power outages encountered in developing countries. This technology relies on phase-change material which was integrated into a heat exchanger. When electrical power is available, the phase change material is melted. When there is a power outage, the phase change material will solidify and revert to its solid state, releasing heat.

The incubator can thus be kept warm for around 4 hours without any electrical power. This process is reversible and can take place over many thousands cycles without any maintenance.

Since having been awarded the Tech4Dev grant in February 2020 and going through the on-boarding process, The Global Neonatal Incubator team have made strides in solidifying their partnership with CPHD Kenya and they have identified hospitals in Nairobi and Bungoma, Kenya to begin testing their solution. They have also developed a final prototype (picture above) together with designers from the esteemed Ecal University of Art and Design.

Partner Profile

EPFL Essential Tech Centre

The centre harnesses science and technology to drive sustainable development, support humanitarian action and foster peace.

The cornerstone of The Essential

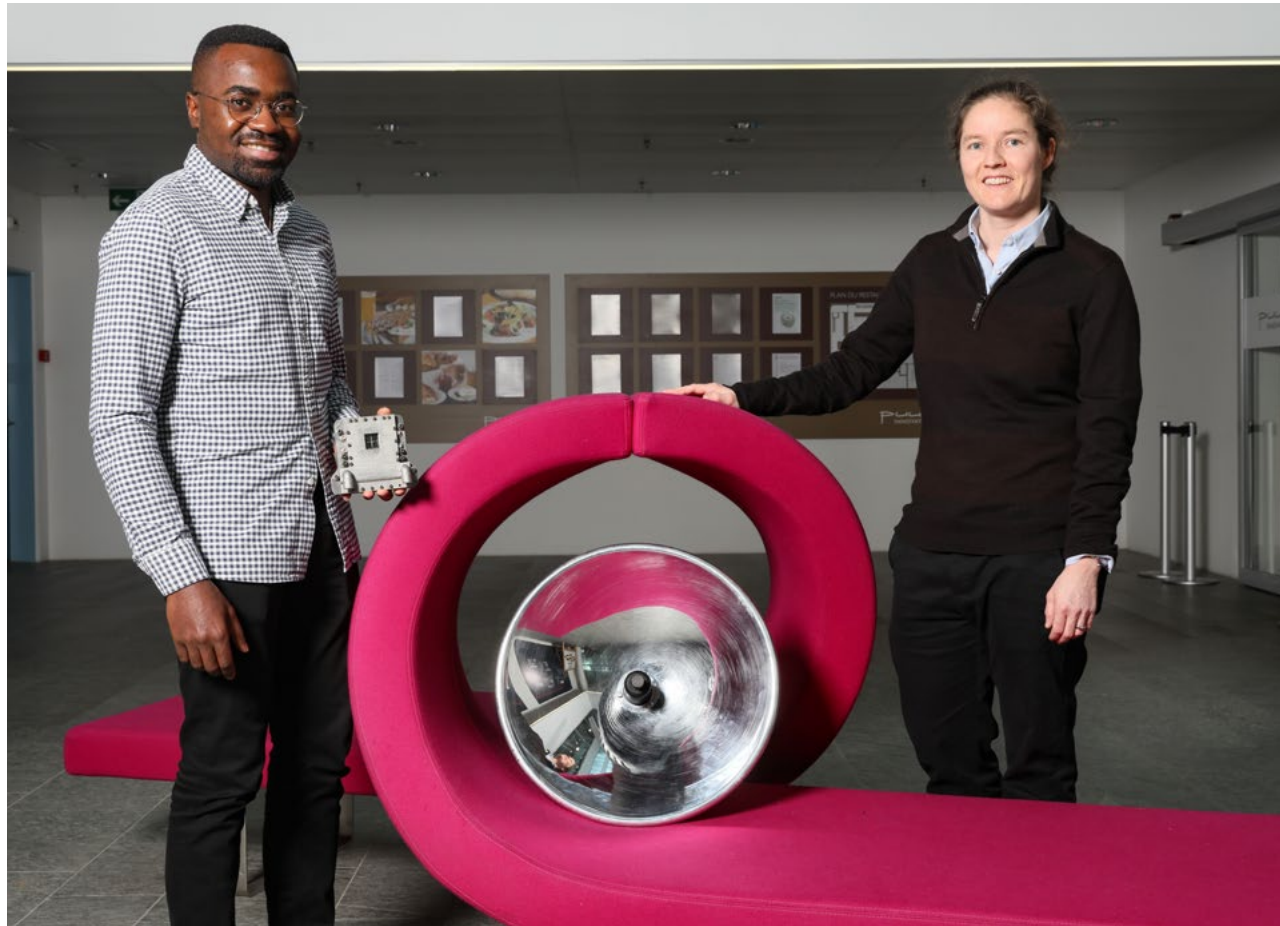
Tech Centre's approach is a unique methodology that involves both technology development and conception of the relevant deployment business model concurrently.

CPHD Kenya

CHPD is a public private institution in Kenya which helps improve access to quality health services in developing countries by complementing the governments' efforts to provide training in operation of essential medical equipment and other critical infrastructure for effective health service provision.



2.2.3 Affordable solar cooking in Cameroon



The EPFL Laboratory of Renewable Energy Science and Engineering (LRESE), Soft Power and the University of Douala in Cameroon have joined in a partnership to develop and implement an affordable solar fuel clean cooking solution in Cameroon.

The project aims at a practical demonstration of the use of solar hydrogen as a promising and competitive fuel for clean, safe and modern food cooking in the Global South. Today, in developing countries, food cooking represents the largest energy end-use, and more than 2.7 billion people still use charcoal, firewood, agricultural waste and animal dung¹. The main problems related to the use of those

solid fuels are household air pollution and greenhouse gas emissions.

Together the affordable solar cooking team are combining both production and consumption aspects in a complementary way, through the design and installation of a solar hydrogen production power plant in Cameroon. It will be coupled to an efficient storage solution for fuel delivery to households, the latter being equipped with homemade hydrogen-powered stoves. As an interesting side effect, the combustion product is drinkable water as well as oxygen.

The team has currently solidified partnerships with Soft Power and The

University of Douala. They are now awaiting the results of their ethics review by the EPFL Human Research Ethics Committee and will proceed with their plans for testing and implementation once they receive the required approval.

Partner Profile

The EPFL Laboratory of Renewable Energy Science and Engineering

The Laboratory of Renewable Energy Science and Engineering (LRESE) at STI investigates the conversion of renewable energies (solar, wind, biomass, hydro and geothermal) into storable fuels, materials and commodities. A special focus lies on novel, solar driven energy conversion processes based on solar thermal, thermochemical and electrochemical processes.

Soft Power

Soft Power's is a social enterprise whose vision is built on three key cornerstones :

- Provide sustainable and affordable energy solutions ;
- Develop products and solutions that directly fulfill the needs of the consumer, and conform to the local geo-climatic and socio-economic conditions ;
- Integrate the local enterprises in developing countries into value chains and markets.

University of Douala, Cameroon

This academic institution based in Douala Cameroon will be responsible for:

- Ethical and environmental impact assesment of the project and technology,
- In-situ measurements for productivity and durability studies,
- Public outreach

2.2.4 3D printing for peace in Colombia



The EPFL Lab for Processing of Advanced Composites (LPAC), The Omnis Institute and The Universidad de Los Andes (UNIANDES) are coming together to bring sustainable 3D printing for peace in Colombia.

Colombia is heavily impacted by armed violence as a result of 50 years of conflict between the government and the Revolutionary Armed Forces of Colombia (FARC), and is the second most mined country in the world after Afghanistan.

Nearly half of casualties are civilians who live in the most remote and deprived areas in terms of health and rehabilitation care.

26% of casualties are children, who are particularly vulnerable. These accidents have serious consequences, including death, injury, long-term disabilities and psychological trauma. As a result of a conflict lasting more than 50 years, combined with drug-trafficking and a soaring crime rate caused by the country's gaping social inequalities, Colombia has a very high level of armed violence.

In this context, the concept of assistive technology with the manufacturing of accessible solutions to overcome daily difficulties contributes to the resumption of functional abilities, expanding and facilitating inclusion and independent

living. People who have disabilities often have difficulty performing activities of daily living (ADLs) independently, or even with assistance. Assistive technology promotes greater independence and economic resilience by enabling people to perform tasks they were formerly unable to accomplish, by providing enhancements to, or changing methods of interacting with, the technology needed to accomplish alone. In Colombia, disability equipment and assistive technologies are inexistent and/or unaffordable for the large majority; the only devices available are imported and are not covered by health insurance.

The project proposes to boost their impact by addressing key development challenges through scientific and technical assistance, amplifying their work in international platforms, as well as helping in the achievement and upscaling of the proposed activities. In parallel, in Colombia as in many countries in the world, the collection and recycling of plastic waste is not yet perceived as a potential source of income and development, as most is landfilled or incinerated, if not left in nature.

The 3D4Peace team has received approval from EPFL HREC to conduct their research. They are currently liaising with their partners in Colombia in order to determine a strategy to manage the current COVID-19 restrictions.

Partner Profile

The EPFL Laboratory for Processing of Advanced Composites

The objective of the Laboratory for Processing of Advanced Composites (LPAC) is to establish the scientific base for the next generation of materials and processes in the fast-growing fields of polymers and composites. This involves novel approaches to tailoring material systems and process cycles, development of new materials with controlled rheology, solidification kinetics and surface characteristics, process simulation and costing, and quantitative durability analysis for optimal life cycle strategies.

The Omnis Institute

The Omnis Institute is an independent non-profit organisation committed to challenging critical global issues through the empowerment of emerging local leaders. Providing a voice and platform for local leaders, particularly women and youth leaders, we offer leadership acceleration and mentorship opportunities to those with an interest in international peace and security, human rights and sustainable development.

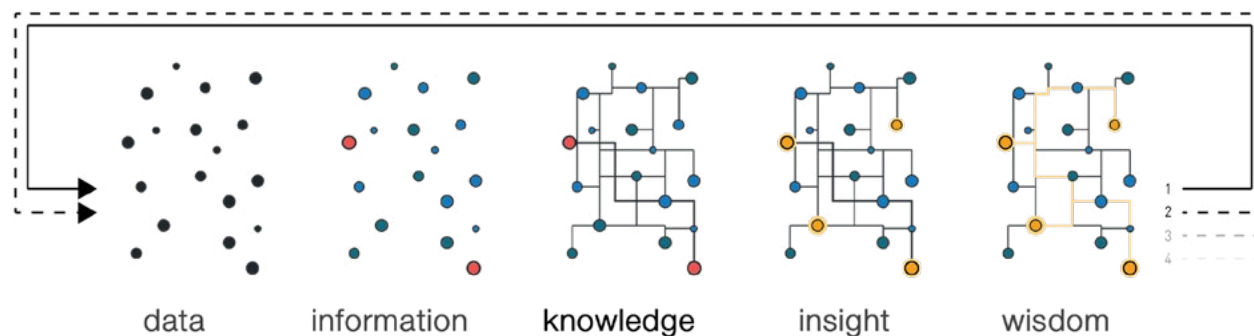
The Universidad de Los Andes Universidad de los Andes was founded in 1948, and it was the first private university in Colombia that was independent from political or religious movements or parties. It was conceived as a study center, a research center, and a place where truth could be upheld. Ever since the university was founded, its activities have focused on excellence.

2.3 Monitoring and Evaluation

A particular focus of Tech4Dev is put on monitoring the progress, as well as on evaluating and reporting the impact of the different projects. This is the reason Tech4Dev has partnered with Aposphere, a configurable platform that allows for adaptive project management and reporting, particularly in cases where a multitude of partners are involved and where information might be difficult to compile, merge and disseminate.

This will ensure that each Tech4Dev research project's outcomes are captured in a formal way allowing for project reporting to be of high quality and to assess progress in real time. As a result, project progress and results will be tracked and supported by a tailored online platform and dashboard, which will allow for comparison and aggregation across the different research projects.

To date, all current Tech4Dev grantees have been on-boarded onto the platform and have conducted training to get familiar with inputting their respective data as their projects progress.



Sustainable Tarpaulins ⓘ ★ On Track

EPFL T4D - Sustainable Tarpaulins ⓘ

Performance
38%

Progress
0%

Assigned To
Maxime Hedou

Last edited a month ago

EPFL Tech4Dev Projects

EPFL T4D Sustainable Tarpaulins (BMC) ●

EPFL T4D Sustainable Tarpaulins (EPFL TOC) ● 📅 ⓘ

Impact ⓘ ⓘ ⓘ ⓘ

Scope

Alternative tarpaulin made with eco-friendly materials for global humanitarian aid

Global humanitarian aid has an alternative tarpaulin made with eco-friendly materials that reduce the

Tags

Description Add more information here ...

Referenced Boxes

Referencing Boxes

1. A local waste is identified as potential feedstock for the ...
2. Polyester granules with chemical and physical characte...
3. An ecological tarpaulin prototype is produced that mee...
4. The tarpaulin produced is tested in the field to verify th...
5. An eco-friendly humanitarian tarpaulin is obtained, and ...

Add Field: TEXT

Project interface on Aposphere

Section 3: Cultivating Interdisciplinary Partnerships

Tech4Dev's bold approach in breaking silos and bringing seemingly disparate stakeholders together for sustainable innovation in the global South goes beyond its grant activities with EPFL researchers and NGOs. In order to be truly holistic and target ecosystems to leverage change and action, Tech4Dev has proactively led various initiatives which intend to lay the foundation for collaboration and interdisciplinary partnerships for impact in the Global South.



3.1 Hosting African Social Innovators at EPFL

In February 2020, Tech4Impact, together with MassChallenge Switzerland, Impulse Accelerator and The OCP Group, hosted the Africa start-up connect event. This event offered a platform for the EPFL Community to build bridges with local African innovators.

They were given an opportunity to pitch their ideas and innovations in front of a packed audience at EPFL's Rolex Learning Centre. This was followed by networking with EPFL community members as illustrated in the pictures on the right.

3.2 Second edition of INSSINC in Bangalore, India

The India Switzerland Social Innovation Camp (INSSINC) is a 2 week-long social innovation program that immerses EPFL and UNIL students in Bangalore to tackle social innovation challenges on the field. Participants work in interdisciplinary teams, mixing engineering, design and social science competencies to address local problem statements with SELCO Foundation and swissnex India.

The second edition of INSSINC took place in February 2020 in Bangalore, India. The problem statement which was the focus for this edition was "Improving learning & teaching conditions in Bridge schools."

With this problem statement in mind, 10 students worked in interdisciplinary teams,

mixing engineering, design and social science background to address 3 sub challenges within this problem statement proposed by SELCO. They prototyped 3 different solutions and tested them in the field.

The setting of this problem statement was bridge schools which are located on the outskirts of Bangalore. 'Bridge schools' are temporary learning spaces for children from migrating or vulnerable communities. They act as a bridge for a child to transition into formal education.

Usually, with one teacher onboard, a small space, fluctuating attendance, and a wide range of students' ages representation, these schools have to manage multiple day-to-day challenges.



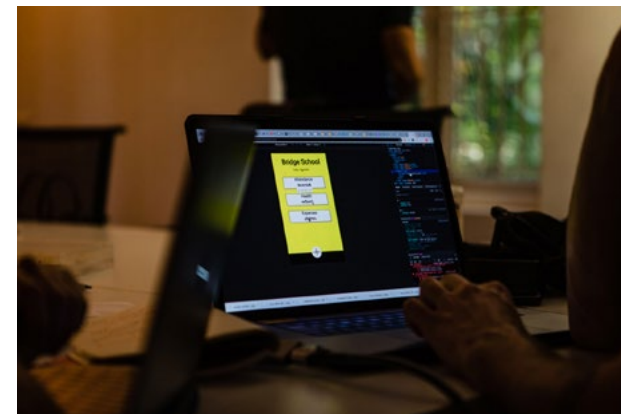
Sub-challenge n.1 - Overall Learning Comfort

The team has proposed to develop a mobile, modular and washable display panel that could be used to present different types of student projects in different settings. The underlying idea is to help students to increase their self-esteem, as well as their parents' acceptance of the school and teacher, which in turn would create an impact on the community's perception of education.



Sub-challenge n.2 - Teacher Workload

The team came up with the idea to use Airtable, an existing, free, flexible and robust cloud collaboration service to build the proper data management system. And to connect it to a light and simple web app to facilitate user experience.



Sub-challenge n.3 - Classroom Management

This team has prototyped two sets of modular activity boards, ready to be tested in real conditions, in two different bridge schools but with a similar protocol: launching a writing activity that some of the students would quickly leave to do something else. It appeared that the proposed solution was clearly supporting the teachers' effort to reduce disturbance and foster other students' concentration on the main activity. However, the team has also observed that the solution would require some extra technical iterations in order to support an adoption test and longer-term project impact tracking.



3.3 Global South Lunches

Tech4Dev launched the Global South Lunches as an attempt to streamline the efforts of the EPFL community directed towards sustainable development in the Global South. Initially intended to be in-person events at EPFL to drive thought leadership around innovative and collaborative solutions for the global South, they were eventually moved to a virtual format given COVID-19 restriction which were introduced in March 2020.

The lunches are open to all EPFL community members who are running a project in a developing country, who are conducting field research/trial in the Global South or who are generally interested in the topic.

To date Tech4Dev has hosted four global south lunches which in total reached over 100 virtual participants. Each virtual lunch was organised around specific themes related to each of the Tech4Dev grantee projects. Tech4Impact hopes to continue hosting these lunches as we on-board the second batch of Tech4Dev grantees.

3.4 Tech4Dev Spark

Tech4Dev Spark is an event which seeks to provide a platform for EPFL researchers and NGO Council members to meet, connect and hopefully collaborate and apply for Tech4Dev's CHF300,000 Grant.

Though Tech4Dev brings Academic researchers and NGOs together to partner for Technological innovation in the global South, there remains the challenge of nurturing these partnerships, as researchers and NGOs do not naturally connect and lack touchpoints of engagement. This is why Tech4Dev Spark is pivotal in cultivating interdisciplinary partnerships as it proactively curates spaces to inspire collaboration and

showcase the great potential that these partnerships have. The first Tech4Dev Spark event took place on Monday 19th October with a total of 15 participants representing both the NGO Council and the EPFL community. The keynote was presented by Tech4Dev grantees leading the sustainable tarpaulins project.

The EPFL Laboratory of Sustainable and Catalytic Processing (LPDC) presented their partnership with Medair and their experience as Tech4Dev grantees, followed by presentations from The Human Rights Watch, We Robotics and the EPFL Environmental Computational Science and Earth Observation Laboratory. Given

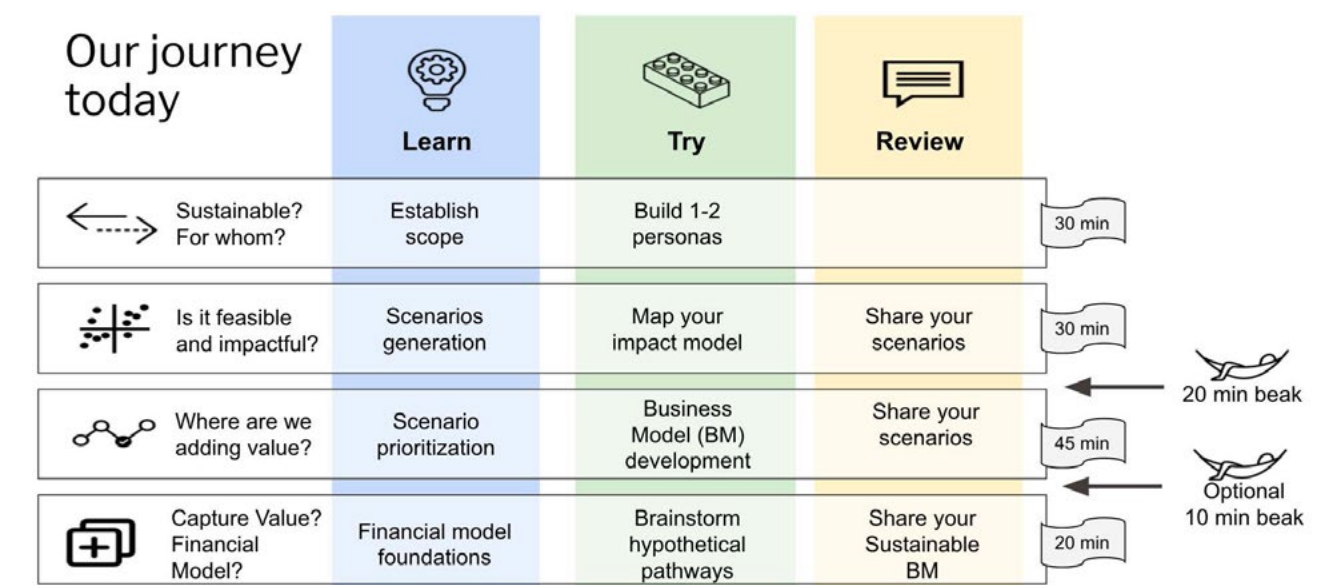
the recent restrictions which have been put in place by the Swiss Federation in late October 2020, we will be hosting future Tech4Dev Spark events virtually.

Please refer to Section 3 for more information.

3.5 Sustainable Business Model Workshops

Embedded in Tech4Dev's approach is the mission to enable technological solutions to eventually evolve into social enterprises which have the appropriate financial and impact models to allow them to reach as many beneficiaries as possible within various markets in the global South. It was therefore critical to introduce ideas and principles of sustainable business models to the Tech4Dev grantees from the onset during their on-boarding process.

To ensure a human centred approach, aspects of the design thinking methodology were adopted in conducting the sustainable business model workshops, integrating researchers, NGO's and global south partners from the onset. The ultimate goal of these workshops are to determine social business models which can guide the grantees and global South partners in their journey to commercialising their solutions in the long run. Below you will see the structure that each workshop took.



The workshops begin with the establishment of the profiles of the beneficiary (who are we innovating for) as this is an integral part of developing models which are relevant to on the ground needs. Following this, we explore various ways of embedding impact within a business model before unpacking the specific dynamics around creating, delivering and capturing value. This part of the workshop takes quite some time as we collectively fill out parts of the business model canvas, dividing it into, creating, delivering and capturing value.

Create Value

Overview: We need to answer the question: Who cares enough to change their behavior and part with their money? Then we need to figure out the value proposition we can deliver to them. A value proposition specifies why your customers will choose your product or service over other alternatives.

End Goal: Size and segment the market, refine the value proposition, and hypothesize about how we will actually reach our customers.

Deliver Value

Overview: When you found a social enterprise, it is essential to consider your value chain or the full range of activities needed to bring a product, service or platform to customers. These activities can be performed by one company or multiple companies.

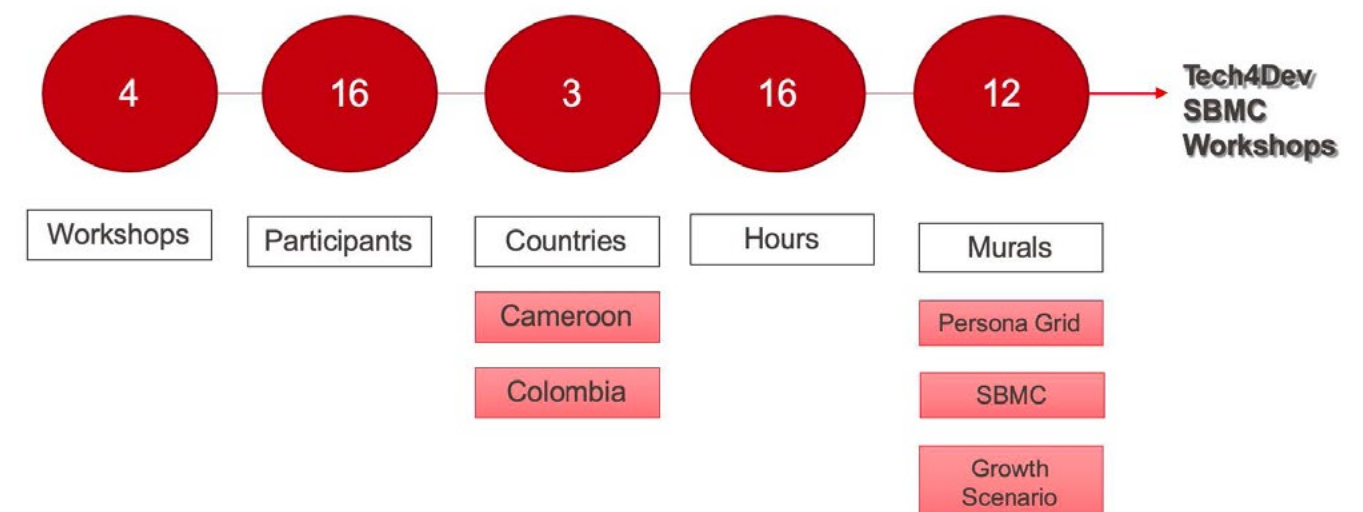
End Goal: Mapping out our key players and identifying potential weaknesses and contingency plans we could pursue.

Capture Value

Overview: As a social entrepreneur, you prioritize social impact and creating life-changing value for customers. However, coming up with a revenue engine to power your business is critical to its long-term sustainability. How will we capture the value we create? How will the money flow within the company to enable it to continue creating impact? A revenue engine is the strategy to make money from each customer segment. This is distinct from pricing, which are the tactics employed to actually get the money

Once the workshops are completed, Tech4Dev creates bespoke sustainable business model mapping according to the trajectories of each Tech4Dev grantee (see example below).

Tech4Dev successfully conducted 4 workshops with a total of 16 participants (See figure below). All workshops were held virtually due to the COVID-19 restriction which were in place at the time.



Tech4Dev sustainable business model workshop results

Section 4: Road Ahead

4.1 Effects of COVID-19

The COVID-19 pandemic has had a resounding effect on Tech4Dev as it has in the rest of the world. These effects were first felt in Europe and in particular in Switzerland in March 2020 when the Swiss federation declared a nationwide lockdown. The restrictions which have the most implications for Tech4Dev are the regulations around traveling and around conducting in-person meetings.

On the one hand, for Tech4Dev's research activities, the collaborative research grantees were not able to conduct in person testing and implementation as originally planned. This is a particularly difficult circumstance to navigate and manage as there are 4 respective countries of testing for each

project (Kenya, Colombia, Cameroon and Bangladesh), so each project needs to consider the conditions in Switzerland and compounded on that, the restrictions which have been put in place in their partner countries.

On the other hand, Tech4Dev's student activities are also exploring virtual alternatives. Given the immersive nature of student exchange activities, COVID-19 also has serious implications on the students' ability to travel and exchange with students from the global South. The Tech4Dev team is currently engaging with stakeholders and partners from previously run student engagement programs such as INSSINC to assess the feasibility of such an alternative.

4.2 Launch of 2nd Tech4Dev Call

In preparation for the second Tech4Dev call, Tech4Dev has pooled 54 challenges from the 23 NGO Council members to be presented to the EPFL community of researchers when the call opens on November 12, 2020. The application and review process will span for 3 months before announcing the next 4 awarded projects and commencing the on-boarding process. Please refer to the Tech4Dev website for any upcoming updates.

4.3 Adapting to a New Normal

Virtual pivoting for student programs

In light of travel restrictions, Tech4Dev is exploring designing programs which can integrate the participation of students in the global South

Relying on in country global South partners for testing and implementation

To account for the inability of Tech4Dev project leads to carry out in-situ testing and implementation, Tech4Dev is pivoting towards mobilising in-country staff and other ecosystem players to lead the testing and implementation.

Virtual engagement events

In order to continue growing Tech4Dev's audience and building a community around driving technological innovation for impact in the global South, virtual events such as the global South lunches will continue to be held.



Meet the team

Credits

Tech4Dev is proudly managed by Beatrice Scarioni, Head of Tech4Dev and Hilda Liswani, Tech4Dev’s Business Development Manager.

They have followed the program from the onset and together maintain and bring the goals of Tech4Dev to life while also finding new and innovative ways to expand its mission to broader frontiers. The team is ultimately driven by the passion to demonstrate a more equitable and inclusive approach to development cooperation technological innovation for the global South.



Béatrice Scarioni
Head of Tech4Dev
beatrice.scarioni@epfl.ch



Hilda Liswani
Business Development Manager
hilda.liswani@epfl.ch

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