

Innovate
UK

Demonstrate Impact

Transforming lives
through innovation



Round 2 : Phase 1 competition statistics

375

Number of applications

31

Number of businesses funded

£1.8m

Amount of funding allocated in Round 2: Phase 1

Sustainable development goals addressed



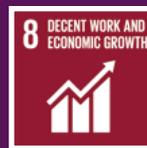
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10%



21%



13%



7%

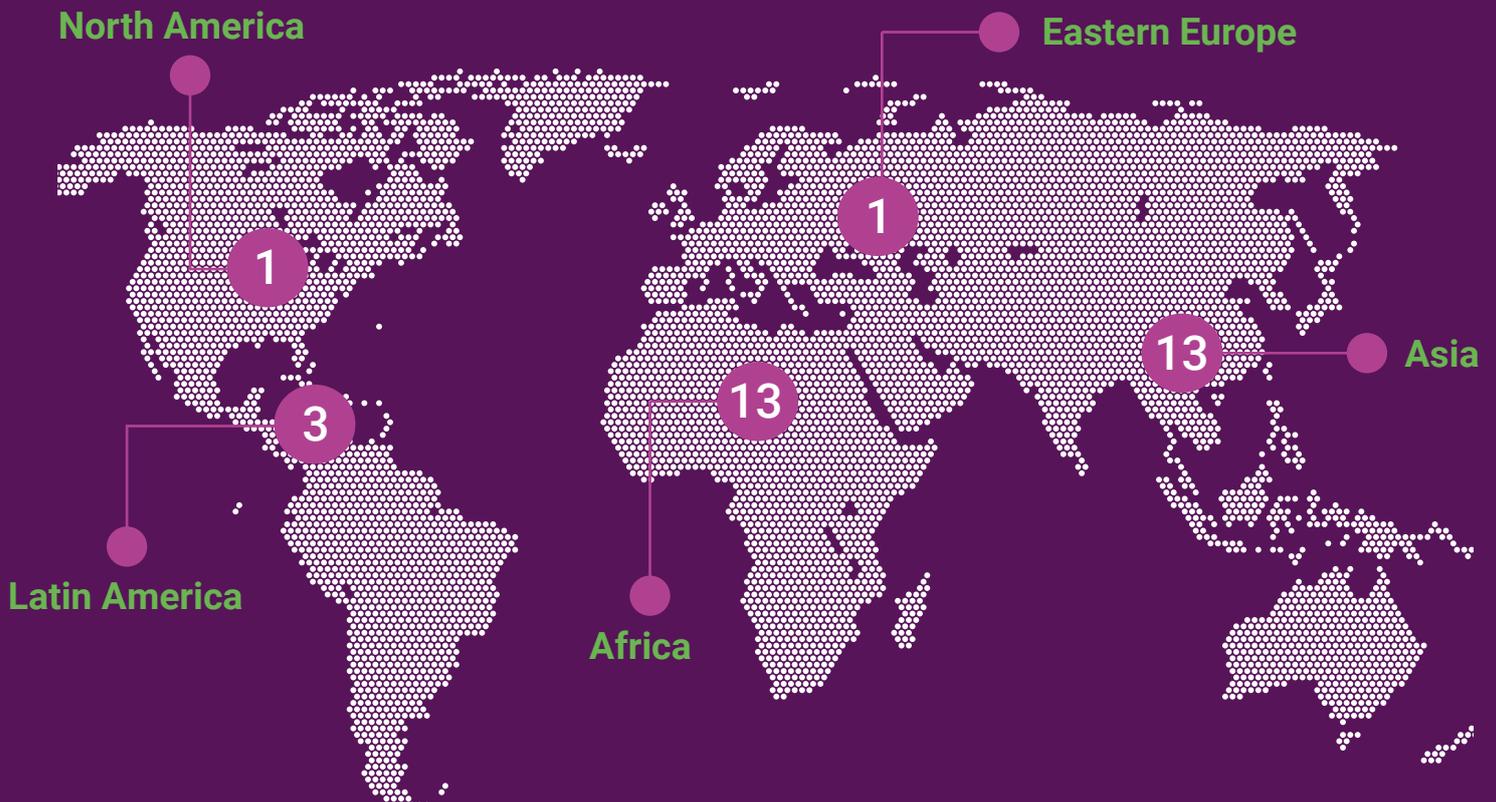


10%



10%

Regional focus across 21 countries



Demonstrate Impact

Transforming lives through innovation

The Demonstrate Impact competition will invest up to £9.3 million in innovations that tackle sustainable development goals in developing countries.

The driving principle behind Demonstrate Impact is that while there are new, innovative solutions to sustainable development challenges out there, they aren't always being applied in developing countries.

There are several reasons for this:

1. Businesses consider entering new markets in developing countries too risky
2. Investors assume that backing untested innovations in developing country markets is too risky
3. Customers in developing countries can be reluctant to buy new and/or unproven solutions

The Demonstrate Impact competition aims to overcome these barriers, helping to get new innovations to market quicker by reducing the level of risk to businesses and investors. It will enable businesses to test the viability of new solutions in the context of a developing country market, as a critical step towards deployment and adoption. The competition has two phases:

Phase I: Discovery

Assisting businesses in carrying out a feasibility study to assess market viability – eg, assessing affordability/appropriateness for customers/users/other stakeholders and, in some cases, technical adaptations required to suit the developing country market. In this phase, we offer grants of up to £60K over six months.

Phase II: Prototyping

Supporting businesses in launching a prototype to commercialise and demonstrate the impact of the innovation in the developing country market. In this phase, we offer grants of up to 500K over 1-3 years.

In the process of developing an innovation, it's all too easy to succumb to tunnel vision when improving technology and tools. Demonstrate Impact helps businesses gain insight from real end users, observe how customers behave, and understand what problems need to be solved.

This competition provides a unique opportunity for businesses to assess the design of their innovations in context, rather than rushing to launch without fully understanding user behaviour. It will bolster confidence in the opportunity, key stakeholders and route to market.

Funding

Funding has been allocated from the [Global Challenges Research Fund \(GCRF\)](#), a £1.5 billion UK government fund supporting cutting-edge research and innovation in addressing the problems faced by developing countries. GCRF forms part of the UK's Official Development Assistance (ODA) commitment, and funding will be awarded within [ODA guidelines](#).

Delivery Partner

Innovate UK is the UK Government's innovation agency and part of UKRI. We fund, support and connect innovative businesses to accelerate sustainable economic growth.

AquAffirm Ltd

Harpenden



Value proposition

AquAffirm is developing breakthrough digital, low-cost, web-connected sensors and associated software for rapid measurement of arsenic (one of the world's most debilitating naturally occurring drinking-water contaminants), delivering a radical new solution to the problem of arsenic mitigation and management.

The innovation

Location: Bangladesh

This project will assess the usability and performance of the innovative AquAffirm-As™ test strips that facilitate rapid, low-cost digital measurement of arsenic levels in water, and will compare these against the results of other field tests and analytical laboratory tests. It will also develop and assess the first working version of the digital platform for data mapping and analysis.

The market need

The WHO estimates that over 140 million people in 70 countries regularly drink water contaminated with arsenic, which is poisonous even in trace amounts. Long-term exposure through drinking water can lead to arsenic poisoning, which causes skin lesions, cancers, childhood learning difficulties and often death. Bangladesh is one of the worst-affected countries, with up to 50 million people drinking water containing excessive arsenic; the WHO called the situation in Bangladesh "the largest mass-poisoning of a population in history". Despite the scale of the problem and the importance of routine testing of the roughly 10 million tube-wells in Bangladesh for arsenic, current field tests use colourimetric methods that are slow, imprecise, difficult to interpret and not web-connected. AquAffirm is addressing this issue with development of AquAffirm-As™, the first rapid, low-cost, easy-to-use digital field test for arsenic in drinking water.

Partners

- Professor Kazi Matin, Dept of Geology, University of Dhaka, Bangladesh
- Asia Arsenic Network, Dhaka, Bangladesh

Lead contact:

David Sarphie

www.aquaffirm.com

Value proposition

Born out of the work being done in-country by Mekong Big Data, DataU is Cambodia's first data science academy. DataU ensures that inclusive and equitable quality education and lifelong learning opportunities are accessible for all.

The innovation

Location: Cambodia

DataU plans to transform skills-based training and recruitment models in Cambodia. Recognising the critical importance of both IQ (intelligence quotient) and EQ (emotional quotient), its flagship data science programme marries both hard and soft skills into a single programme of study linked to employment opportunities. Highly granular course- and skill-level insights, paired with big-data analytics, will enable DataU to better match candidates to jobs. This project will enable DataU to gather insights to further adapt its programme to include women, people with disabilities and other excluded sections of Cambodian society.

The market need

According to the International Labour Organization, 51% of jobs in Cambodia are vulnerable with people underemployed in low-skilled work, part-time work or the informal sector. In contrast, globally over the next five years between 6 million and 11.3 million new data scientists will be needed; 2018 saw 1.7-3.2 million job postings, representing consistent 29% year-on-year growth, while job placement grew by only 14% in the same period. Global supply in this skillset, therefore, does not match demand. The growing disparity between job posting and placement illustrates that this is a compounding, growing problem.

Cambodia's drive to move its workforce from predominantly low-skilled to high-skilled output creates a unique opportunity to establish the nation as both a regional and an international centre of excellence in the field of data science. DataU is a direct response to the growing gap between skills and demand in Cambodia and aims to deliver for Cambodia what software outsourcing did for India, redefining the nation's GDP, employment opportunities and status on the world's stage.

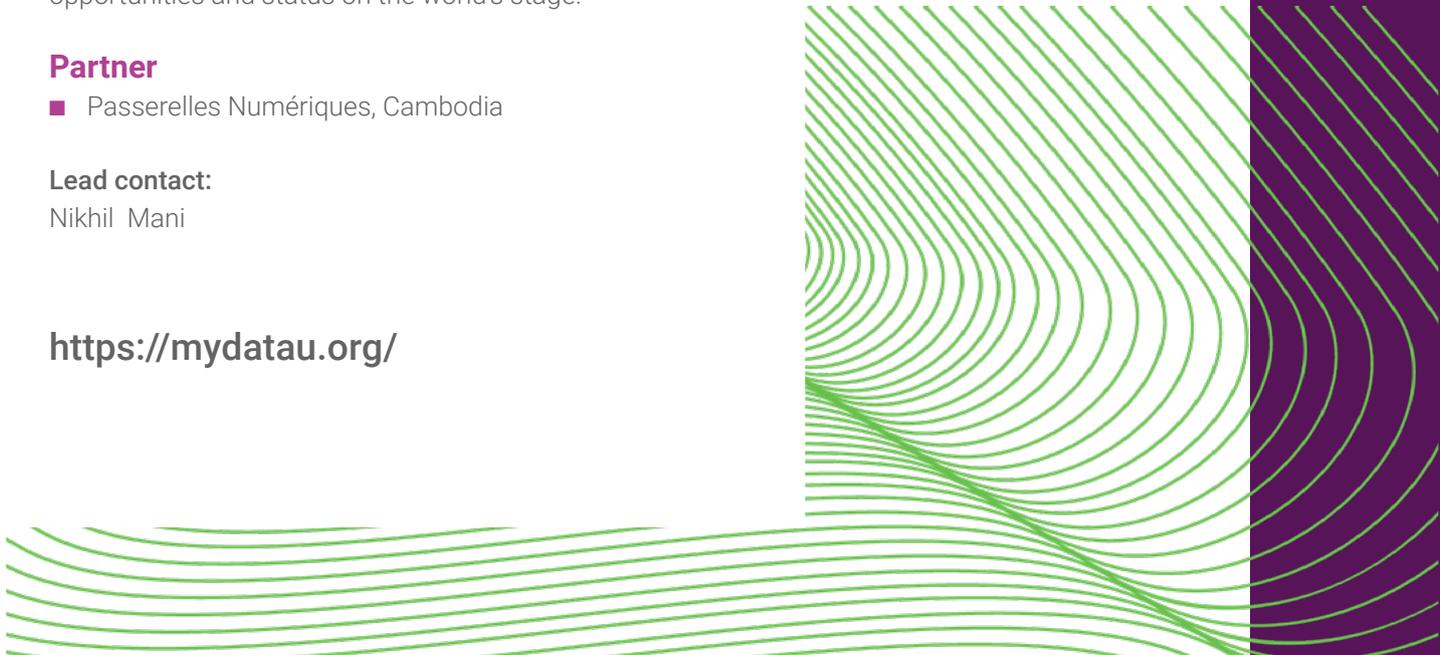
Partner

- Passerelles Numériques, Cambodia

Lead contact:

Nikhil Mani

<https://mydatau.org/>



Aqua-Sense London



Value proposition

Aqua-Sense aims to leverage, build and deploy affordable technology solutions and data insights for societal impact that specifically meet United Nations Sustainable Development Goals.

The innovation

Location: India

Aqua-Sense's innovation uses next-generation technologies to provide critical real-time information on water safety, availability and accessibility at public water consumption points. It also aims to provide continuous water-quality monitoring, detection of contaminants, and early alerts and notifications to citizens (especially the rural and urban poor) and to public bodies across commonly used devices.

The market need

Over 163 million people in India lack access to safe drinking water. Contamination and pollution due to human, natural and industrial causes, combined with testing methods that are reactive and offline, often result in delayed intervention. This leads to high cases of waterborne outbreaks, productivity loss and healthcare costs, amounting to a loss of nearly US\$650 million to the economy each year. This innovation will help in early detection and faster remediation, minimising deaths and diseases, improving productivity and transforming lives.

Partners

- Brunel University, UK
- Indian Institute of Science

Lead contact:

Sudeep Dasbiswas

www.aqua-sense.co.uk

Environmental Monitoring Solutions (EMS) Ltd

Sheffield



Value proposition

EMS provides a holistic service to help companies achieve and maintain environmental compliance. It works with clients as their environmental partner to ensure that regulations, legislation and environmental goals are met.

The innovation

Location: India

MANTIS™ (Monitoring and Analytics To Improve Service) is a simple, remote monitoring system that transmits data about the performance of community hand pumps. Most communities who are served by a hand pump will experience breakdowns and subsequent disruptions in service. MANTIS ensures that there is continuous operation and supply of a safe source of drinking water.

The market need

It is estimated that there are some 10 million hand pumps in the Global South, serving around 1 billion of the world's 7 billion population. Surveys show that many pumps have stopped functioning, with figures of 10-65% of pumps out of action in different African countries. MANTIS serves the United Nations Sustainable Development Goal target which states that by 2030 universal and equitable access to safe and affordable drinking water for all will be achieved.

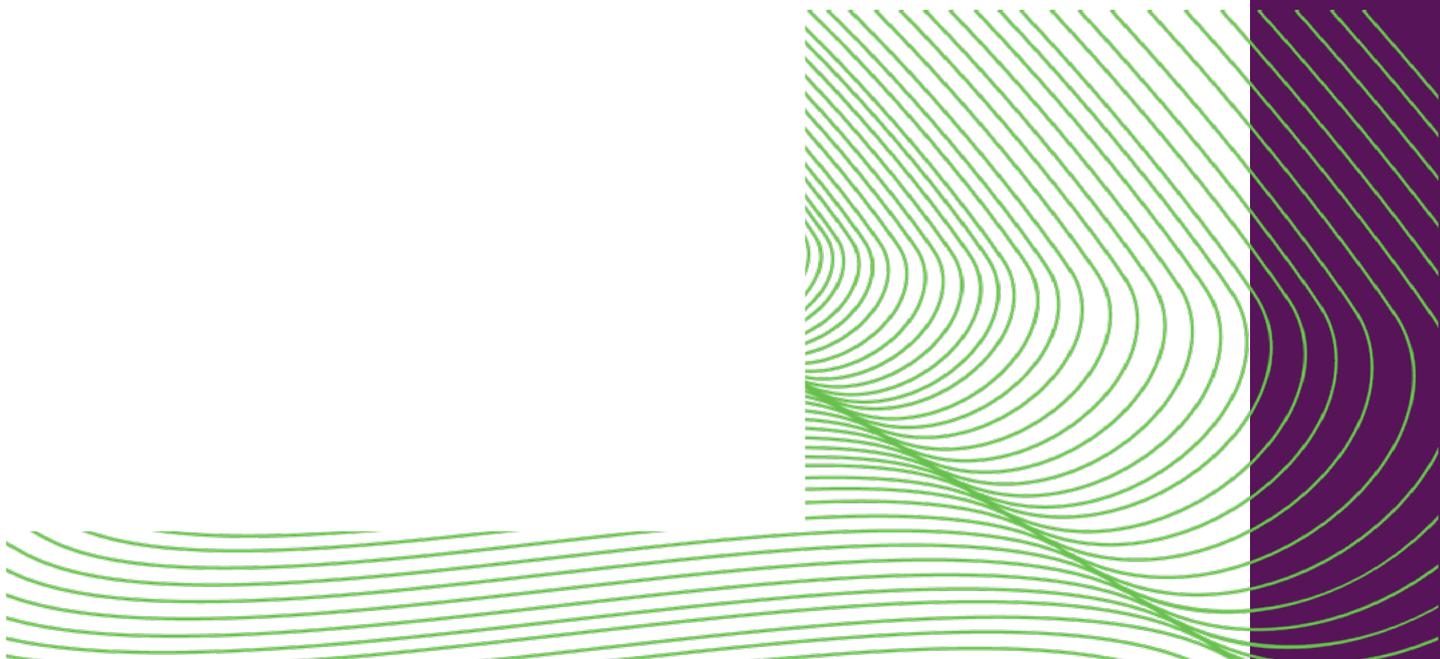
Partner

- Leeds Beckett University, UK
www.leedsbeckett.ac.uk/school-of-built-environment-engineering-and-computing/

Lead contact:

Sonja Ostogin

www.em-solutions.co.uk



Procter & Gamble Technical Centres Limited

Newcastle upon Tyne



Value proposition

Procter & Gamble (P&G) is a global leader in the fast-moving consumer goods industry, focused on providing branded consumer packaged goods of superior quality and value to improve the lives of consumers around the world. P&G has established ambitious goals to minimise its environmental footprint, to innovate with the best and safest ingredients from both science and nature, and to create products that make responsible consumption irresistible for people everywhere.

The innovation

Location: India

Project RESONATE will test affordable, domestic water-saving solutions for Indian households and communities, initially targeting laundry, through testing combinations of novel water reuse devices and/or products and approaches.

The market need

Pressure on water resources is increasing in many regions across the globe. Urban populations are growing, demand is outpacing the water supply and water quality is a recurring issue. P&G recognises this is a complex issue that requires collaboration across private, public and civil society to solve. In India, water scarcity, exacerbated by natural events such as the weak monsoon of 2018 and competing demand from industry, agriculture and domestic use in fast-growing cities, has a real human cost: restricted water supplies for daily life, disproportionate impact in poorest areas and under-cultivation of staple crops due to lack of water.

Helping consumers save water in their homes has been a key focus for P&G. Over the last four years, the company has worked to optimise its existing suite of products as water-efficient products based on the technology they utilise and the habits they inspire. P&G continues to look for opportunities to reduce in-home water use and to educate consumers on the topic. Project RESONATE focuses on water-stressed regions, exploring more disruptive innovative solutions to step-change the reduction in water usage for laundry (which is responsible for, on average, 20% of domestic water demand).

Partners

- Newcastle University, Newcastle upon Tyne, UK
www.ncl.ac.uk
- India Institute of Technology Gandhinagar (IITGN)
www.iitgn.ac.in

Lead contact:

Sophie Berry

www.pg.co.uk

Value proposition

By adapting the concept of co-working spaces to the informal sector, the E[co]work project aims to design a socially inclusive space for e-waste recyclers in Delhi, helping micro-entrepreneurs to develop their businesses in a safe and supported way.

The innovation

Location: India

The E[co]work Space will bring the benefits of co-working spaces, including networking and the sharing of essential infrastructure, to a completely different market segment that is traditionally marginalised and often at the bottom of the social pyramid: electronic waste dismantlers in India. Using a participatory design process, Resource Futures aims to create a socially inclusive co-working space that enables the transition of informal e-waste micro-entrepreneurs into the formal sector. By providing shared infrastructure, training and support, E[co]work will provide access to safe working conditions, improving income and social mobility. It will improve the livelihood and health of the micro-entrepreneurs and their communities, while also contributing to a reduction of environmental pollution and a more equitable circular economy.

The market need

India generates over 3 million tonnes of e-waste annually. The informal sector processes more than 95% of this, often in residential areas using unsound recycling practices that result in environmental pollution and health hazards, affecting not only the workers but also the whole neighbourhood and community in which they work. Over 12,000 people, predominantly from minority and migrant communities, are engaged in dismantling e-waste around Delhi alone. Restrictive rules, as well as costly and difficult authorisation procedures, force micro-entrepreneurs to stay within the informal sector and continue these unsound recycling practices.

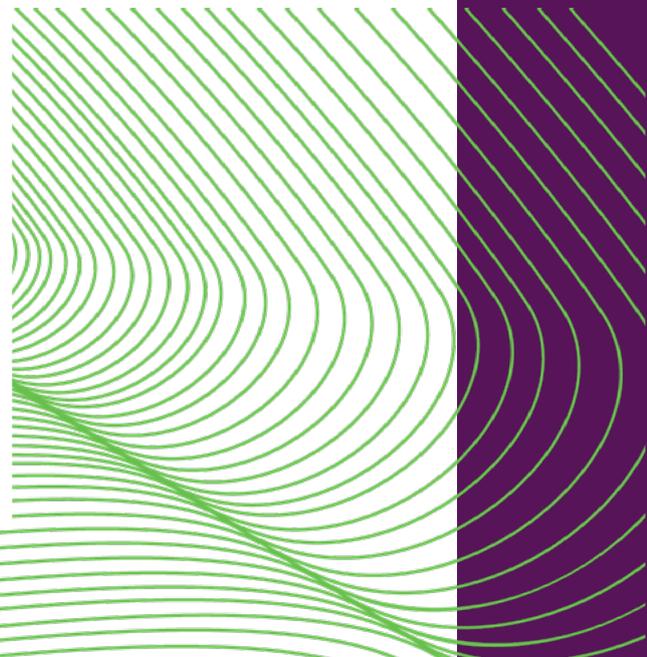
Partners

- E[co]work Association, Switzerland
www.ecowork.international/
- Sofies India
<https://sofiesgroup.com/en/office/india/>
- Curry Stone Design Collaborative, India
<https://currystonefoundation.org/curry-stone-design-collaborative-foundation-2/>

Lead contact:

Carla Worth

www.resourcefutures.co.uk



Value proposition

SteamaCo is developing its data-efficient smart metering solution to connect the unconnected in India's rural areas. By providing clean, renewable electricity through local, financially viable mini-grids, this will enable micro-enterprises to flourish and provide higher-value employment opportunities.

The innovation

Location: India

This project explores the feasibility of integrating SteamaCo's low-cost, data-efficient smart metering systems with the energy management systems that operate and manage solar-powered local mini-grids in each community. The goal is to make the mini-grids financially sustainable and viable for communities, ensuring that residents and entrepreneurs have access to cheap, clean power. Sites are selected that have the best chances of either supporting existing micro-enterprises or generating new micro-enterprises and allowing them to flourish. This in turn creates jobs. Lack of access to electricity is a major barrier to economic growth and a key factor in migration from rural to urban areas.

The market need

India currently has a surplus of power generation capacity but lacks adequate distribution infrastructure. Government programmes to provide universal access to power in rural areas have left an estimated 15-16 million low-income rural households without access to power. These are mostly locations far from existing grid infrastructure, making them uneconomic to connect to centralised facilities; as a result, the most feasible option is mini-grids. However, to ensure that these mini-grid installations are financially viable, it is vital that the grid management system is efficient and effective. SteamaCo is the leading provider of consumer account-management services for mini-grids in sub-Saharan Africa and is developing a presence in India, with early-stage engagement programmes with key stakeholders.

Partners

- Smart Power India, Gurugram, India
<https://smartpowerindia.org/>
- Ampere Hour Energy, Pune, India
<https://amperehourenergy.com/>
- Tara Urja, New Delhi, India
www.taraurja.com

Lead contact:

Tom Townson

www.steama.co



Value proposition

Percheron's mission is to displace the use of carbon-intensive concrete and steel in multi-rise construction with sustainable engineered timber.

The innovation

Location: Indonesia

Percheron will be designing a turnkey multi-rise affordable housing solution made entirely from sustainable engineered timber and suitable to deploy at scale across South East Asia.

The market need

Concrete and steel are responsible for approximately 15% of annual greenhouse gas emissions globally. Furthermore, up to 3 billion people are expected to need affordable housing by 2050, the majority in South and South East Asia. In Indonesia alone, a million new housing units are required each year, 13 million are deemed in poor condition and 29 million people still live in slums. If concrete and steel continue to be used to meet this outstanding demand, it will be impossible to limit global warming to 2°C.

Meanwhile, sustainable engineered timber is not only 100% renewable but also technically comparable and economically competitive. By developing a turnkey affordable housing solution from engineered timber that is suitable for both the people and the climate of Indonesia, governments across the region will be able to decouple their rapid urbanisation from catastrophic climate change.

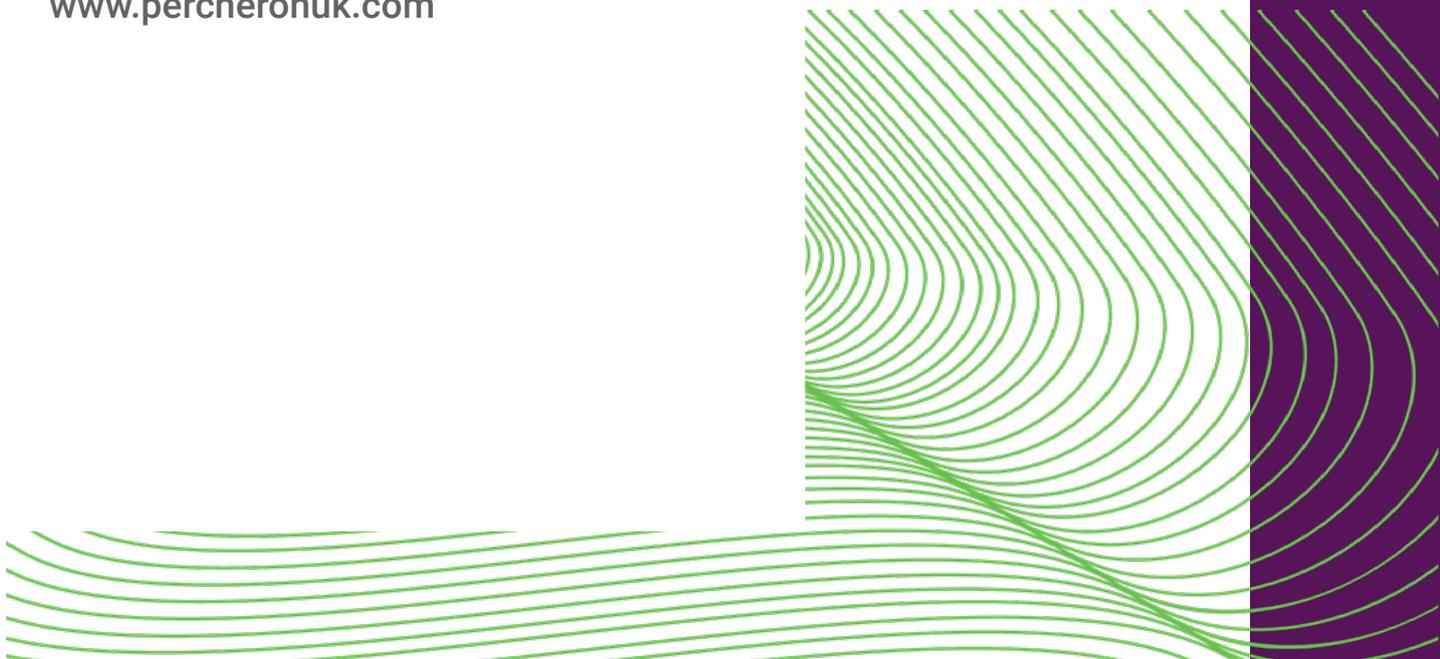
Partner

- NZ Future Forest Products Ltd, New Zealand
www.nzffp.com

Lead contact:

Jay Barrymore

www.percheronuk.com



3B Impact Sheffield



Value proposition

3B Impact works with investors, corporates and start-ups to help them develop practical, human-centred solutions to social and environmental challenges and turn them into scalable business opportunities.

The innovation

Location: Malaysia

3B Impact is working with diabetes device experts at GO-Pen ApS and experienced practitioners at Médecins Sans Frontières UK to commercialise an innovative insulin delivery system, designed specifically for diabetics on low incomes in developing countries.

The market need

Existing insulin delivery systems are designed for affluent markets. Only wealthier patients can afford insulin pens, so 13 million poorer patients with diabetes take insulin through three or four daily injections using syringes. These are not fit for purpose. Syringes make it harder to deliver correct dosages, leading to complications including blindness, amputations and death, and produce significant amounts of hazardous waste. Single-use syringes are often used multiple times, risking infection.

This project will work with diabetic patients in Malaysia, supported by Médecins Sans Frontières, to inform GO-Pen's design process. The innovation will make insulin use safer, more effective and more affordable for the majority of the insulin-injecting diabetics in Malaysia and globally, enabling them to live healthier, longer and more productive lives and reducing reliance on single-use syringes.

Partners

- GO-Pen ApS, Denmark
- Médecins Sans Frontières, UK and Malaysia

Lead contact:

Stephen Blakeley

www.3b-impact.com

Value proposition

Nanoshift is developing an economic and sustainable sanitary pad with enhanced properties by incorporating novel nanocellulose material from local biomass feedstock in Pakistan.

The innovation

Location: Pakistan

The BioSan project will develop a sanitary pad with a core material that improves existing products by incorporating novel nanocellulose composite substances with enhanced antimicrobial properties and high water-holding capacity. This reduces the need for fluff pulp and petrochemical-based polymers, and also reduces gel blocking and the thickness of the pads. The nanocellulose enables the pads to be sustainable and cost-effective, while the embedded antimicrobial nanoparticles make the product washable and reusable even in poor sanitation conditions.

The market need

Pakistan has a population of 59.6 million female citizens aged between 15 and 54. For those who cannot afford or access hygienic menstrual products, the use of cloth ('rags') with a lack of sanitation infrastructure and space to dry them out has created a health hazard. Those who can afford disposable sanitary pads, meanwhile, produce thousands of tonnes of sanitary waste every month. Pakistan has poor infrastructure and systems in place for waste management, exacerbating the problem. The BioSan product substitutes plastic for biodegradable cellulose and the antimicrobial property makes the product washable and reusable even in poor sanitation conditions. The result is an affordable, sustainable solution.

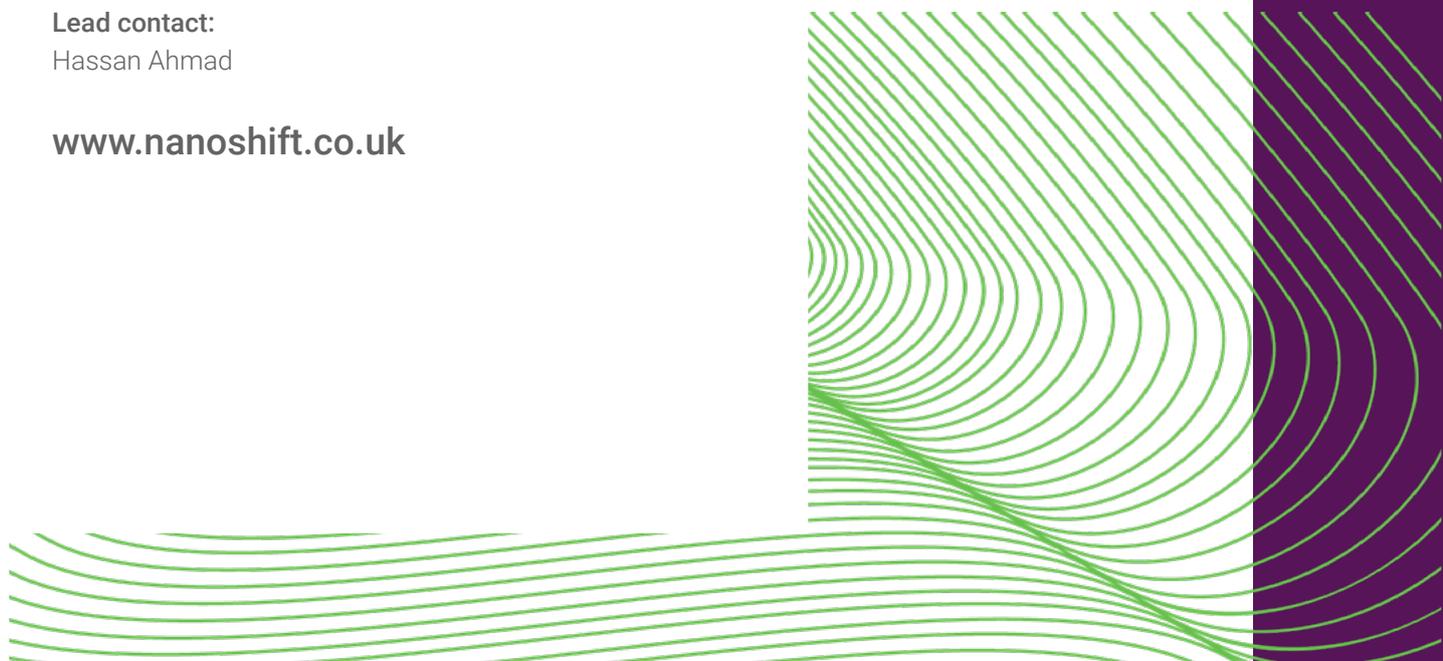
Partners

- Brunel University, London, UK
- University of Agriculture Peshawar, Pakistan

Lead contact:

Hassan Ahmad

www.nanoshift.co.uk



Razbio Ltd

Swansea



Value proposition

Razbio's technologies provide environmentally safe, efficient, sustainable food production and human health solutions.

The innovation

Location: Pakistan

Razbio's innovative technology focuses on improving the monitoring and control of Aedes mosquitoes (*Aedes aegypti*, *Aedes albopictus*) which vector dengue. The company will develop inexpensive traps using disposable soft drink bottles, new lures and a fungus which is effective in killing mosquito adults and larvae. These products can be used alone and in a 'lure & kill' (L&K) strategy where gravid Aedes are lured to a trap containing spores of the fungal pathogen.

The market need

Over half the world's population is at risk of being infected with dengue, with low-income groups being particularly affected. With as many as over 50,000 reported cases of dengue each year, Pakistan is one of the hotspots of dengue outbreaks, affecting the lives of the people and the economy of the country. Despite several outbreaks in the past few years, no effective dengue vector monitoring product is available on the market. Increased urbanisation poses a risk of dengue infections to millions of people in Pakistan, so there is an urgent need to develop inexpensive Aedes monitoring and control products. Razbio's innovation offers three products (traps, lures and bio-pesticides) and so targets multiple customers and end-users.

Partners

- Muhammad Nawaz Shareef University of Agriculture, Pakistan
- Swansea University, UK

Lead contact:

Syed Shah

www.razbio.com

Value proposition

reach52 delivers healthcare for the 52% of the world's population who cannot access traditional services. It establishes sustainable health systems and services in rural regions through its offline-first mobile apps and tech platforms, community-based workforces and partnerships with governments, NGOs and the private sector.

The innovation

Location: Philippines

Using human-centred design, reach52 will establish a virtual marketplace of affordable diagnostic and screening services for rural populations. Focused on supporting maternal child health and tackling non-communicable diseases, this programme is designed to strengthen a neglected component of health services for remote areas through a sustainable social business model.

The market need

52% of the planet's population lacks access to essential health services. In rural parts of the Philippines, lack of diagnostic capacity is a significant barrier to improving health outcomes. Less than a fifth of pregnant women receive an ultrasound due to financial and geographic barriers, contributing to increased rates of maternal mortality. For others living with chronic illnesses such as diabetes or hypertension, their conditions often go undiagnosed until it is too late, causing increased health and financial burdens.

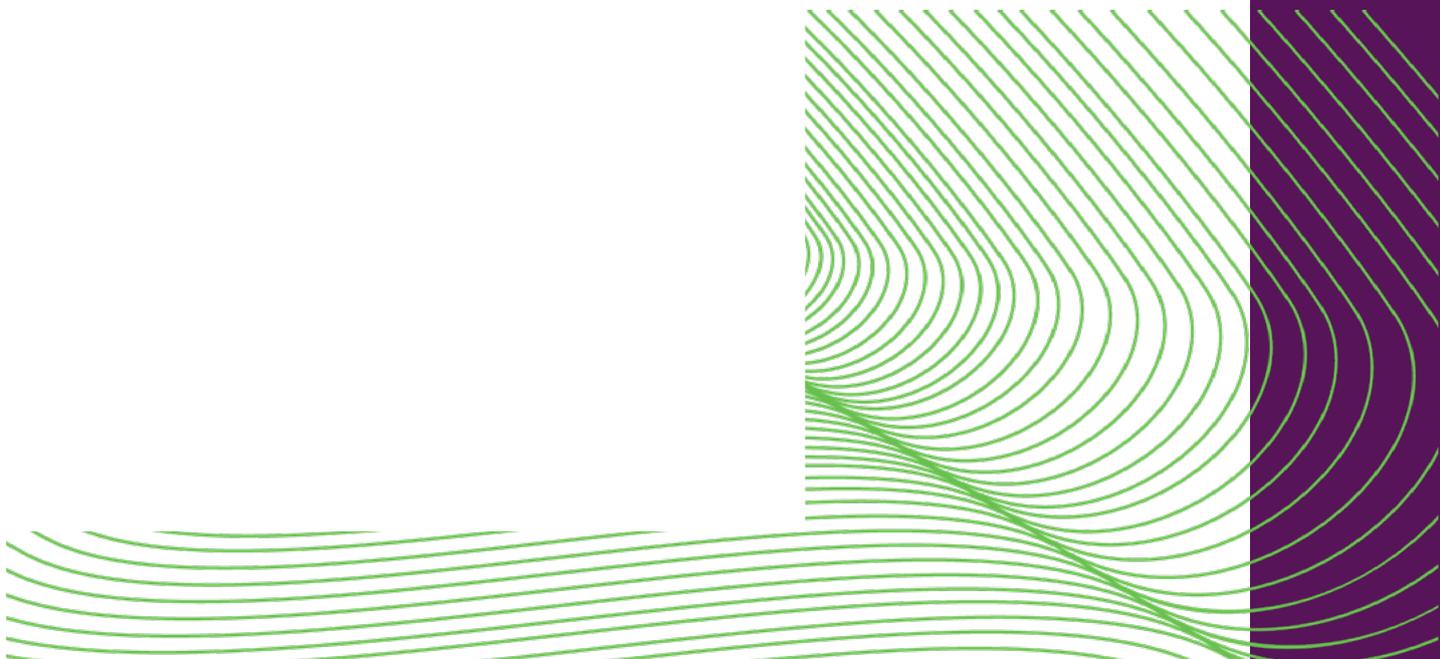
Partner

- Philippines local governmental units and MedTech partners

Lead contact:

Logan Ansell

www.reach52.com



Value proposition

The UtterBerry™ system consists of a collection of miniature, artificially intelligent, ultra-low power sensors. These wireless sensors self-calibrate to form a mesh network and relay data between each other, working as a family of sensors in any particular area. They do not require line of sight between each other. For real-time remote access to the sensor data, the sensors are supported by a base station providing connectivity to the internet or local network.

The innovation

Location: Philippines

The UtterBerry sensor system can improve the safety of construction sites by monitoring the infrastructure of both the project and the site to alert relevant workers when a harmful or fatal event occurs anywhere within the sensor network's coverage. Tested in the UK by Network Rail, Thames Water and Crossrail as well as by the Hong Kong Highway Agency and Singapore Land Transport Authority, UtterBerry's small sensors, embedded in structures, provide predictive tools to mitigate a huge range of events, such as changing weather conditions and structural stability. It enables better-informed decisions about the operation of construction and manufacturing sites, increasing employment stability and protecting the health and safety of workers on site.

The market need

Construction is the deadliest sector in the world. In the Philippines the fatal injury rate in construction has been steadily increasing since 2011 and reflects the same trend seen throughout the Asia Pacific region. According to the International Labour Organization, the region is home to 70% of the world's work-related deaths.

Partners

- Connected Places Catapult, London, UK
cp.catapult.org.uk
- Udenna Infrastructure Development Company of the Philippines
www.udenna.ph

Lead contact:

Heba Bevan

www.utterberry.com

Value proposition

Glyconics saves time, money and lives by exploiting the ability of infrared light to produce a distinctive molecular 'fingerprint' in healthy vs non-healthy samples using a predictive AI algorithm in simple point-of-care devices.

The innovation

Location: Democratic Republic of the Congo (DRC)

Glyconics will test a novel and original technology to detect the presence of diabetes using infrared light measurements of a patient's fingernail without the need to take a blood sample. This handheld device will be low-cost and portable, and does not require any single-use plastic consumables.

The market need

Non-communicable diseases are on course to outnumber infectious diseases as the leading cause of death in sub-Saharan Africa, yet many questions remain unanswered regarding effective methods of screening for type II diabetes in this resource-limited setting. DRC has the fifth-highest incidence of diabetes in Africa (World Health Organization, WHO, 2015) and it is a recognised problem within the country. DRC also understands the challenge of diabetes and is supported by non-governmental organisations (NGOs). Current diagnostic tests are prohibitively expensive, with patients taking two to three days to travel to a clinic. There is a need for a rapid and cost-effective screening programme to identify diabetes early in the course of the disease.

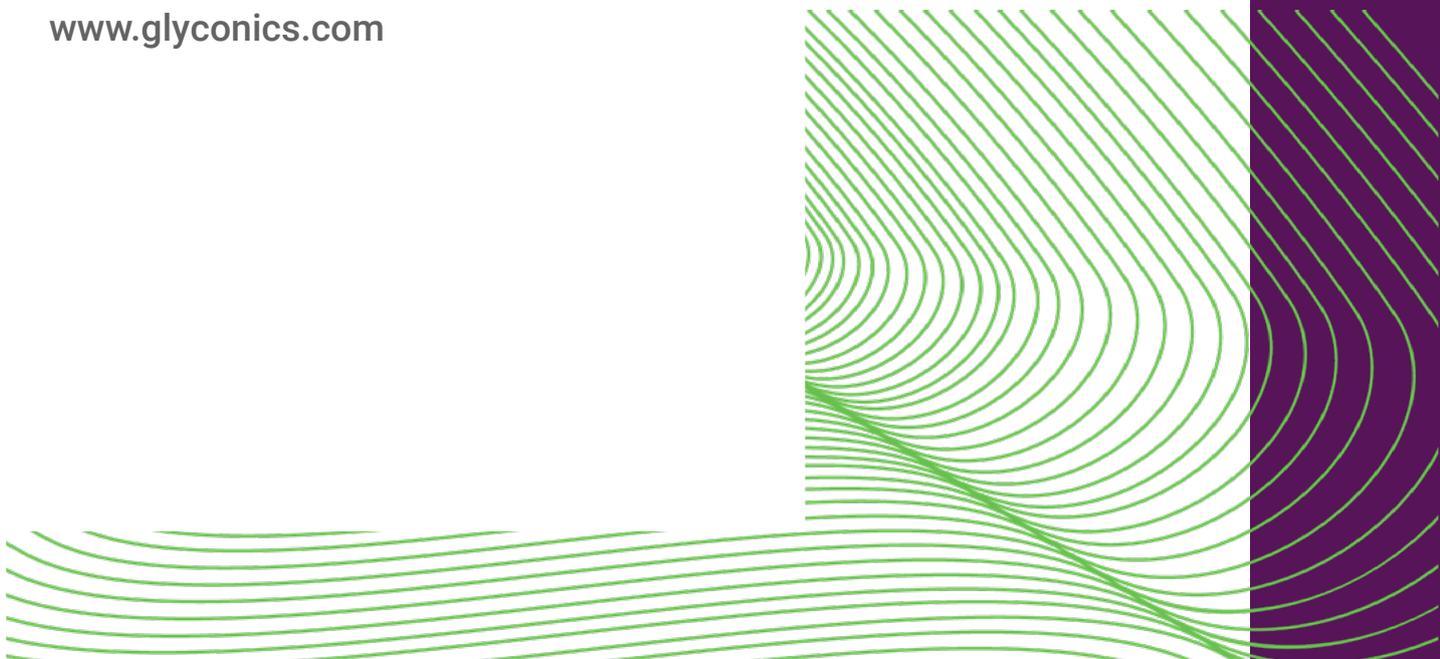
Partners

- Université Catholique de Bukavu, DRC
- Diabetes Africa, UK and DRC

Lead contact:

Gurkanwal Pooni

www.glyconics.com



Value proposition

Clean Water Designs' innovation offers a transformative solution to the need for improved hygiene and equipment sterilisation throughout Ghanaian healthcare facilities by providing a low-cost, mobile and easy-to-operate distillation device that produces type II medical water efficiently at point of use.

The innovation

Location: Ghana

This project aims to demonstrate Clean Water Designs' high-speed, low-energy distillation technology, which has a number of practical and cost-based advantages over other state-of-the-art solutions. The technology produces consistently pure water without expensive replacement membranes, is portable, has low water wastage, is cheaper to run and produces type II medical water at point of use.

The market need

Despite having a comparably well-developed health system within sub-Saharan Africa (SSA), Ghana faces issues of poor hygiene and sanitation. Medical water is not easy to access, costing up to US\$4.99 per 10ml, causing lower hygiene and care levels, with certain medical procedures not conducted locally for those who need the most care (often women; 66% of global maternal deaths occur in Sub-Saharan Africa. Medical-grade water must be available at all health facilities and allow the health professionals there to treat and aid the recovery of all patients. It will deliver a significant reduction in costs and lead times, and promote better health for all. It will promote better health for all.

Partner

- Challenges Worldwide Limited, Ghana
<https://challengesworldwide.com/>

Lead contact:

Duncan Peters

Value proposition

poa! internet provides affordable unlimited home internet access to marginalised communities in Kenya, mostly in urban poor and rural areas.

The innovation

Location: Kenya

This intervention provides a platform and tools for micro-entrepreneurs to monetise their internet connection so that they become more resilient. This sharing model is particularly suited to the informal sector or 'kadogo economy', providing it with additional, sustainable revenue streams.

The market need

Traditionally, people living in urban slums and rural communities are marginalised and 'left behind'. The traditional telecoms operators, mobile or fixed, do not have a justifiable business case to provide high-speed broadband access in these areas. This lack of internet access disproportionately affects women and young people. For these groups, providing connectivity will mean democratising internet access and have a positive impact on gender equality and social inclusion, delivering the 'leaving no-one behind' agenda.

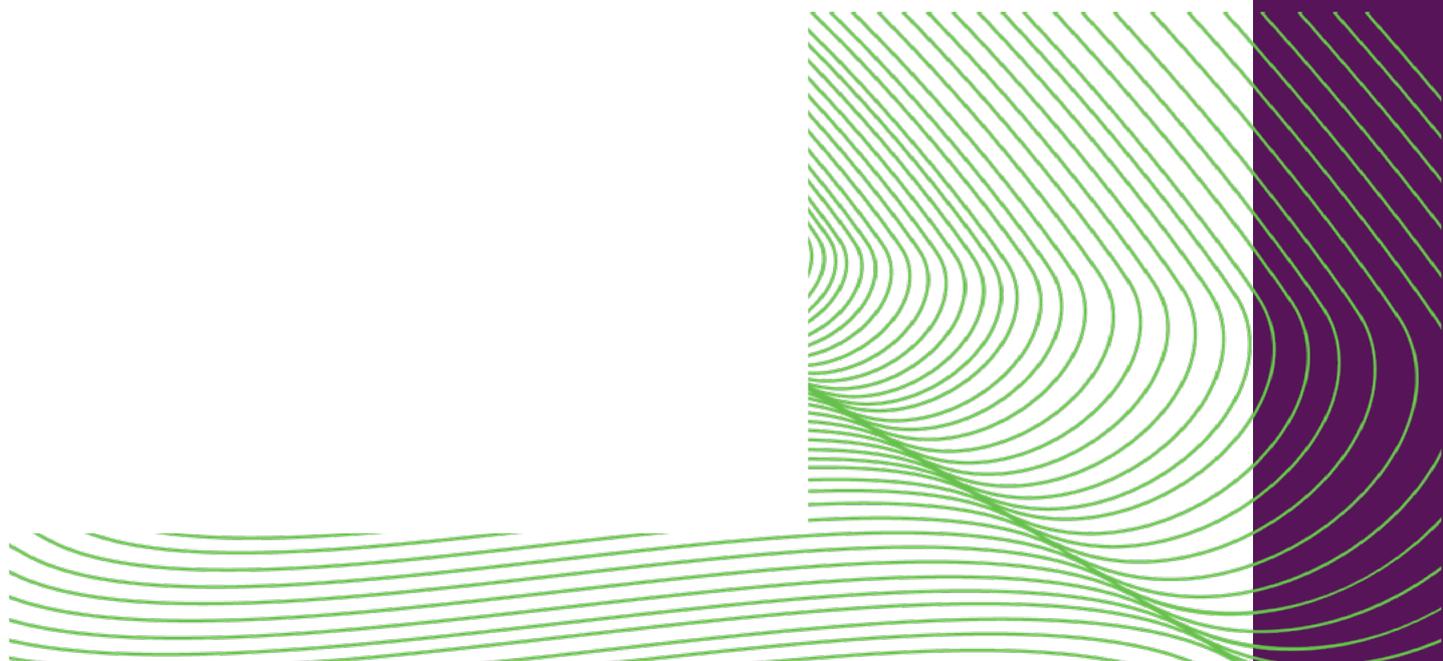
Partner

- Marylebone Consultants Ltd, London, UK

Lead contact:

Andrew Halsall

www.poa.co.ke



Value proposition

Beyond Water is improving the technology, credit offer and social incentives necessary for up to 16 million low-income rural Malawians - including women, children and people with disabilities - to access higher volumes of better-quality water for domestic and irrigation uses. This will enable them to improve their health while increasing and de-risking their livelihoods.

The innovation

Location: Malawi

This initiative combines simple technology that is affordable and easy to maintain with a pioneering market-based approach that is less reliant on aid funding and produces more functional and sustainable outcomes.

The market need

85% of Malawi's population is rural and dependent on rain-fed, small-scale, agriculture- and community-managed water points for domestic consumption. Despite considerable donor investment in accessing deep and clean water through community water points and boreholes, up to 50% of these facilities are not functioning correctly at any one time. 50% of women (who are responsible for water collection) are still walking more than 0.5km to collect water, which limits the amount available in the home and leads directly to poor health. This, combined with increasingly unreliable rains that put agricultural production at risk, means that there is considerable unmet demand for more convenient and reliable water sources for domestic consumption and small-scale irrigation.

Partners

- Challenges Worldwide, Edinburgh, UK and Lilongwe, Malawi
<https://challengesworldwide.com>
- insider-outsider, London, UK
www.insider-outsider.com

Lead contact:

David Waller

www.beyondwater.co.uk



Value proposition

Seawater Solutions restores degraded land by turning salinised and eroded soils into highly profitable and healthy wetland ecosystems that produce crops with saltwater and strengthen the resilience and adaptive capacity of rural communities in the face of threats from climate change and natural hazards.

The innovation

Location: Malawi

This project will use saline groundwater from traditional wells and modern boreholes which have become saline over time, or those that have been dug into deposits of saline water, to build ecosystems-based saltwater farms where nutritious crops and aquaculture are combined in circular production models.

The market need

For rural communities in Malawi, land degradation and the impacts of climate change and natural hazards are key livelihood challenges. The region of Chikwawa is especially prone to environmental strains as it is drier, lower and more arid than other regions of the country. Salinity in groundwater and soils threatens the region's already strained arable land resources and vegetation. Seawater Solutions' innovation will strengthen the resilience and adaptive capacity of rural communities in Chikwawa with regard to the impacts of climate change and natural hazards.

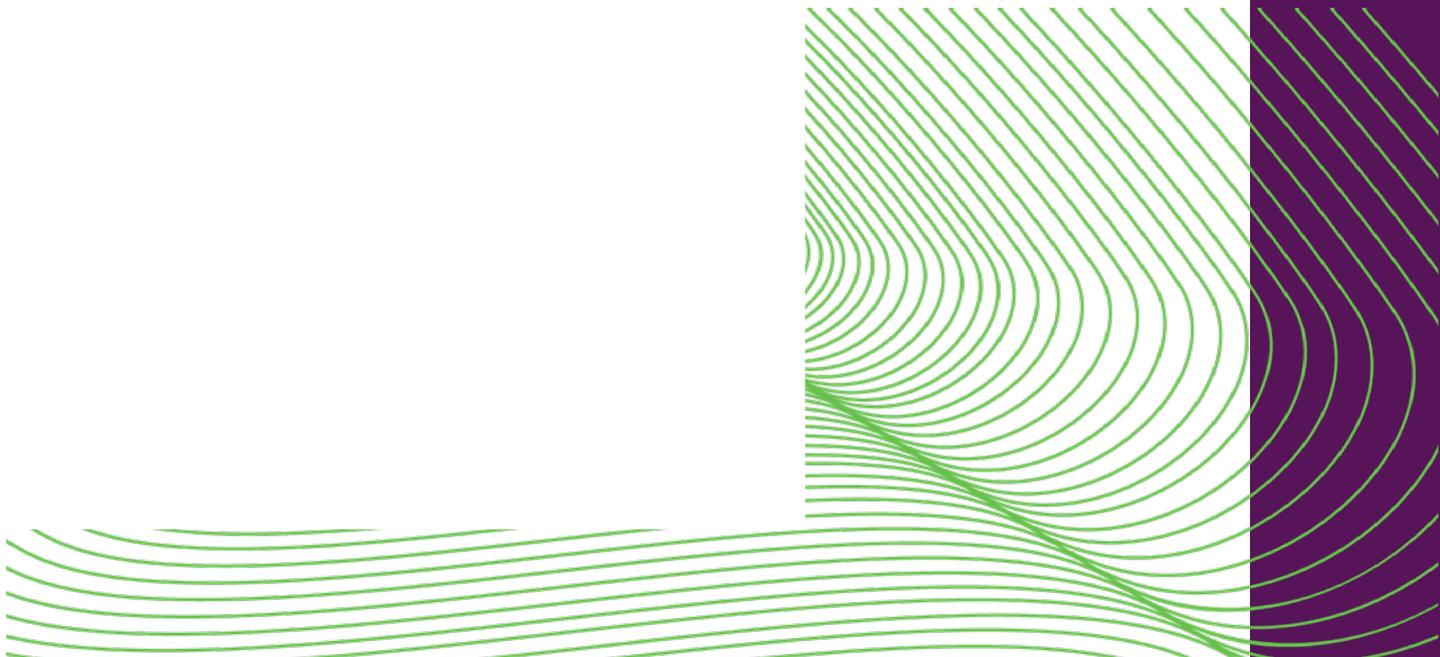
Partner

- Challenges Worldwide, Edinburgh, UK
<https://challengesworldwide.com/>

Lead contact:

Yanik Nyberg

www.seawatersolutions.org



Value proposition

exactEarth Europe is a UK satellite automatic identification system (AIS) data services company, providing the most advanced information on global maritime traffic available today.

The innovation

Location: Mauritius

The Market Evolution for Small-scale fisheries in Africa (MESA) discovery project is based on the integration of three existing UK- and South African-developed technologies and approaches: the ABALOBI ICT 'hook to cook' platform (including a Fisher catch-logging smartphone app and digital Marketplace system); the Stone Three small vessel tracking and safety transponder; and exactEarth Europe's low-cost exactTrax/exactSeNS satellite data communication and vessel tracking services.

The market need

As development takes place under the 'blue economy' umbrella, small-scale fishers are typically overlooked. This project will conduct research with Mauritian small-scale fishing communities to assess their need for an integrated tracing, tracking, safety at sea and digital seafood Marketplace platform, with the goal of enhancing fishers' financial inclusion. Using human-centred design methodologies, Mauritian fishers will determine the suitability of the proposed technological offering and their capacity to engage usefully with the technology. Fishers will act as co-creating participants, ensuring that any future service is fit for purpose, informed by local context and sustainable, and will be readily adopted.

Partners

- ABALOBI ICT4Fisheries, South Africa
abalobi.info
- Federation of Artisanal Fishers of the Indian Ocean (FPAOI), Mauritius
- SoCha Ltd, Mauritius
- Stone Three Communications (Pty) Ltd, Somerset West, South Africa
www.stonethree.com/comms

Lead contact:

Richard Proud

www.exactearth.com

Innovation Consultancy & Entrepreneurship (ICE) Ltd

Rugby



Value proposition

ICE Ltd is a technology consultancy specialising in business entrepreneurship and intrapreneurship support around open and collaborative innovation, new products and services development.

The innovation

Location: Nigeria

A-ICED aims to bridge the gap between food production and market security, mostly caused by poor post-harvest handling. A-ICED combines technology and commercial innovation by enabling modular, scalable, near-real-time, data-logging internet of things (IoT) weight-scales integrated with existing cold-storage technology, to allow intelligent data aggregation as part of a holistic 'Uber-like' on-demand third-party logistics and supply-chain solution.

The market need

With the world's population expected to reach 9.7 billion by 2050, the malnourished population is expected to reach 2 billion. Feeding the growing population requires increasing food production by 60-70% by this date. A cost-effective approach to achieving this should be to ensure that most food produced does not get spoiled from farmer-to-table, and this requires cold storage. The size of the global cold-chain market is forecast to be £224 billion by 2023, driven by rising consumer demand for perishable foods, international trade growth and organised retail food industry expansion. Nigeria's installed cold-chain network's current capacity is 10,000m³, yet Lagos State alone needs over 200,000m³. Nigeria's cold-chain market opportunity therefore exceeds 2,000,000m³ (using a 1-to-10 Lagos-to-Nigeria population ratio).

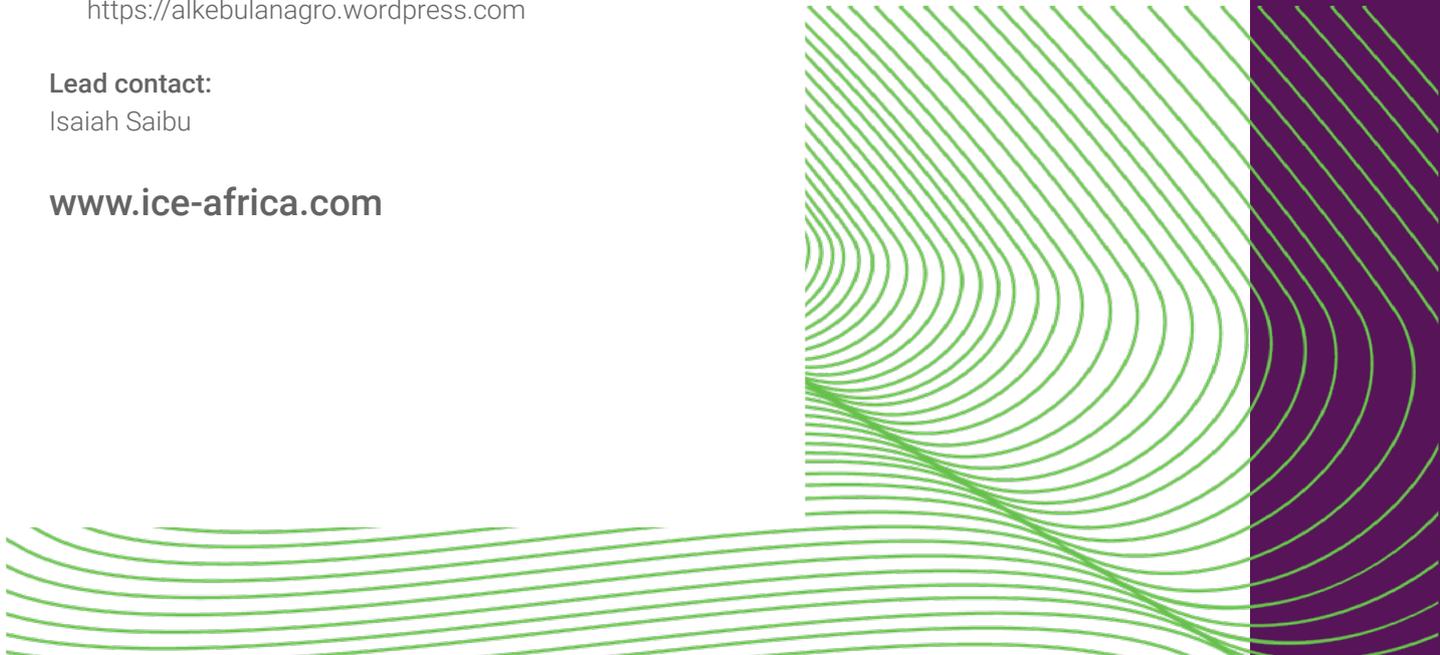
Partners

- AOX Logistics Limited, Nigeria
www.aoxlogistics.com
- Alkebulan Agro-Allied Limited, Nigeria
<https://alkebulanagro.wordpress.com>

Lead contact:

Isaiah Saibu

www.ice-africa.com



Renés-Cartes Energy and Management Consulting Ltd

Coventry



Value proposition

Renés-Cartes provides circular-economy solutions, stakeholder engagement mapping, renewable energy, environmental systems management and industry research and analysis.

The innovation

Location: Nigeria

This project seeks to develop more affordable interlocking paving blocks, by recycling 'unwashed' plastic and sand with ultraviolet stabilisers to prevent degradation. This will lead to higher prices for 'unwashed' plastics and support better, safer, healthier and more-estimable (improved welfare) means of plastics aggregation.

The market need

In Nigeria every year, over 300,000 homes are built (Real Estate Developers Association of Nigeria, REDAN, 2019), over a thousand residential building estates are developed (REDAN, 2019) and thousands of mini-roads are constructed (Oxford Business Group, 2019). All of these commonly use paving blocks (for compound floors in the case of houses and for roads in estates). Paving blocks are also commonly used for the pedestrian paths of city roads. This all amounts to the annual use of over 100 million paving blocks in Nigeria that can be targeted by low-cost, sustainable Replast paving blocks.

Partners

- Synergy Engineering Limited, Nigeria
- Perk Digital Vision Limited, Nigeria
- University of Hertfordshire, UK
- Leeds Beckett University, UK
- Yaba College of Technology, Nigeria
<https://yabatech.edu.ng>

Lead contact:

Abdullahi Ahmed

www.renes-cartes.com/

Nigeria Creative Economy Catalyst London



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Value proposition

Stephen Budd Music Management (SBMM) is an artist and producer management and events management company. It represents some of the most successful and influential music producers, songwriters, mixers, engineers, remixers and programmers from the UK, Europe and the US. SBMM has developed an exciting partnership with Afrinolly Creative Hub and Henley Business School to establish an online Creative Village platform to support and develop the creative community in Nigeria.

The innovation

Location: Nigeria

This innovation provides an integrated discovery plus education, plus incubation, plus acceleration platform for thousands of emerging music talents in Nigeria, culminating in the export of global-quality product on streaming platforms and live performance. A feasibility study is necessary to test the new partnership model between the UK and Africa for advancing Nigeria, to assess the impact of 'incubating' creative talent (instead of purely 'managing' it) and to fine-tune the business model to achieve sustainability in the long term.

The market need

Nigeria's economic recession is being worsened by the global oil price slump. With a population of 180 million, 60% youth and a high poverty rate coupled with 35% unemployment, urgent interventions are necessary. Nigeria's music industry currently contributes 2.6% of GDP and represents a viable non-oil sector that can lead to economic diversification of the economy. However, it operates in a disconnected and fragmented way across informal, semi-formal and formal systems. The intervention summarised here, combined with the global growth of the music market and a huge demand for Nigerian music, can be leveraged to generate jobs, a more cohesive industry and increased contribution to GDP.

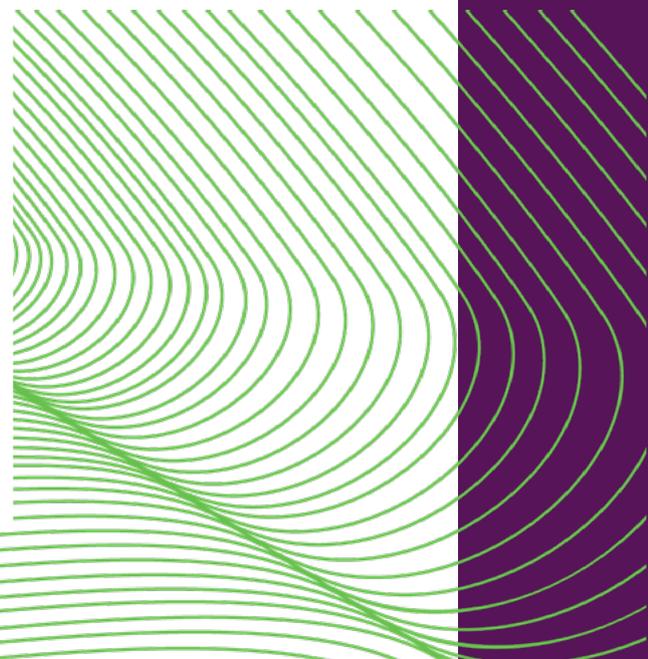
Partners

- Afrinolly Creative Hub, Nigeria
www.afrinollycreativehub.com
- Henley Business School, UK
www.henley.ac.uk

Lead contact:

Stephen Budd

www.record-producers.com



**Value proposition**

The Dem Dx clinical platform increases the broader medical community's capacity and expertise by supporting more healthcare professionals to take on increased diagnostic roles previously undertaken solely by doctors.

The innovation**Location: Rwanda**

Dem Dx will tailor its ophthalmology platform, currently used in the UK, to a tool that trains and supports Rwandan ophthalmology clinical officers to provide much-needed local ophthalmology expertise, contributing to more patients receiving treatment and reducing instances of preventable eye problems.

The market need

The WHO has stated that providing eyecare services contributes significantly to economic growth and development and is integral to any universal health coverage ambition. In Rwanda there are currently only 16 ophthalmologists and 140 ophthalmology clinical officers to serve the 12.3 million population and a key challenge to providing appropriate levels of eyecare remains a lack of ophthalmic expertise, training and resourcing.

Partners

- University of Rwanda
<https://ur.ac.rw/>
- Kenya Medical Training College
<https://kmtc.ac.ke/>
- London School of Hygiene and Tropical Medicine, UK
www.lshtm.ac.uk/

Lead contact:

Lorin Gresser

www.demdx.com



Value proposition

Koalaa's mission is to make prostheses comfortable and affordable for anyone on the planet.

The innovation

Location: Sierra Leone

A 'mitt' is a slip-on-and-go prosthetic arm made up of a soft fabric sleeve and interchangeable tools. The aim of this soft-shell design is to be as comfortable as your favourite pair of trainers, but multifunctional like the best builder's toolbox. This project will find out how Koalaa and the mitt can work for amputees in Sierra Leone.

The market need

In Sierra Leone, limb loss due to conflict is a recognised countrywide challenge. About two-thirds of those with limb differences face unemployment, forcing many to turn to begging on the streets and to become marginalised by the rest of society.

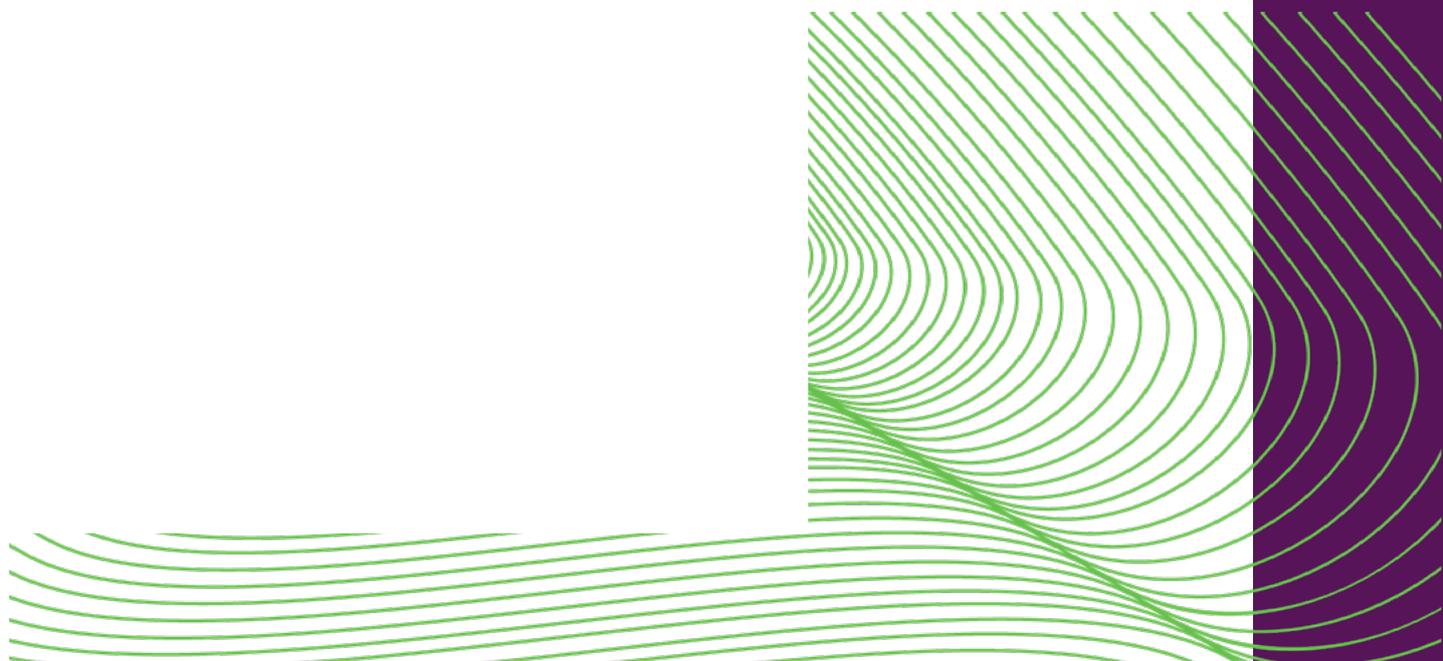
Partners

- Leonard Cheshire Disability, Sierra Leone
www.leonardcheshire.org/

Lead contact:

Mark Clayton

www.yourkoalaa.com



Science Technology and Innovation for Development (STI4D) Ltd Oxfordshire



Value proposition

STI4D is interested in the transformative power of appropriate technology and innovation for development impact, and develops and implements integrated rural development solutions in sub-Saharan Africa, particularly in agricultural productivity and the catalytic power of access to energy and ICT.

The innovation

Location: Tanzania

The aim is to explore an innovative approach to rural healthcare whereby a community can access the services of a qualified medical professional remotely at a fixed time each week via videoconference. The system will also incorporate a degree of basic medical record-keeping and simple medical diagnostic measurements, such as temperature and blood pressure. The intention is to co-design this system with local communities, medical practitioners and health officials, to ensure it complements and supports the national healthcare system and practices. Such teleconsultations will be sufficient to address many basic problems and questions and will also highlight cases where the expense and time of a trip to visit a clinic in person is justified.

The market need

Access to good healthcare is often challenging in the developing world. But this is greatly compounded for people living in remote off-grid rural communities, where access to healthcare is consistently rated amongst the highest priorities, especially by women. Such communities usually do not have any local health officer or clinic and, if they do, the facilities are often under-resourced and lacking power, communications and equipment. To access even basic healthcare may require a walk of hours, or even days, and/or paying for public transport to the nearest town or city, which is expensive and time-consuming even though a journey may prove quite unnecessary.

Partner

- Orkonerei Maasai Social Initiatives NGO, Tanzania
www.orkonerei.co.tz

Lead contact:

Bernard Jones

www.sti4d.com

Entrust Smart Home Microgrid Ltd Lancaster



Value proposition

Entrust Microgrid is a smart, innovative power system, with all the benefits of renewable energy and energy storage, providing high power-efficiency for homes and businesses alike, cutting grid connection costs, saving money and providing truly scalable low-carbon energy solutions.

The innovation

Location: Uganda

This project involves assessing the feasibility of the design of a smart community electric-vehicle charging hub to facilitate light electric vehicles such as motorbikes, tuk-tuks and small minibuses in Kampala, Uganda.

The market need

Motorbikes, which use gasoline, account for 60% of transport in Uganda's cities and municipalities. Providing access to affordable and sustainable smart community electric-vehicle charging hubs for charging light electric vehicles, including but not limited to electric motorbikes, tuk-tuks and minibuses, can enable an affordable and sustainable transport system for all. Transitioning from fossil fuels requires maximising the efficiency of solar photovoltaic (PV) power, which would bring associated improvements in air quality and pollution as well as employment opportunities in the renewable energy and electric vehicle sectors.

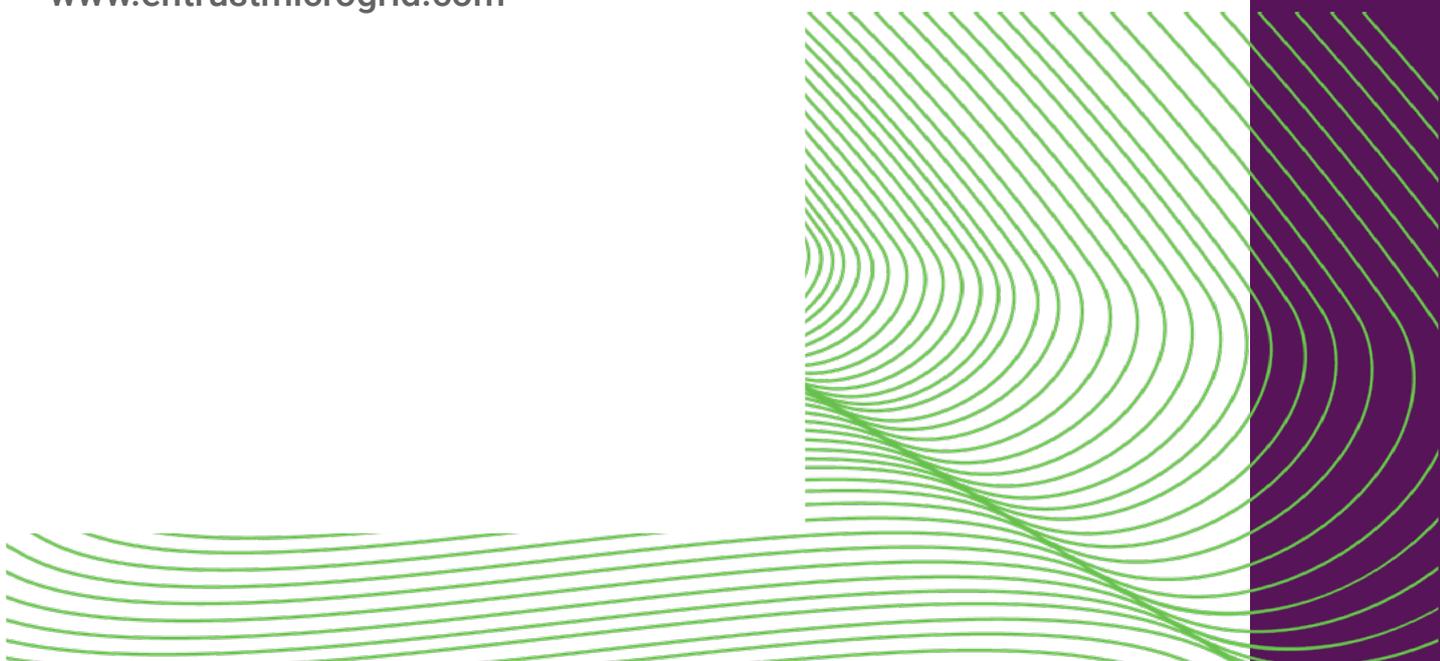
Partners

- Ecare Tech Ltd, London, UK
- Kee Bee Consultancy Ltd, Kampala, Uganda

Lead contact:

Xiongwei Liu

www.entrustmicrogrid.com



SEIP 7 Technology and Research Ltd

Birmingham



Value proposition

SEIP 7's mission is to enable green sustainable technologies in the water, oil & gas, and plastic sectors.

The innovation

Location: Brazil

This project proposes a horizon scan of the Brazilian market to commercialise a sustainable biotechnology for water decontamination invented by the University of Birmingham. Called Daphne Water Solutions (DWS, patent GB1918129.6), this technology is a single solution to full regulatory compliance and is sustainable, green and scalable, enabling water reuse. DWS works as a microscopic 'vacuum cleaner' that absorbs, concentrates and retains both suspended and dissolved contaminants from wastewater, with an efficiency of up to 99%. Following the principle of circular economy, DWS converts the biowaste resulting from the decontamination process into clean water and harmless gases.

The market need

More than 2 billion people worldwide have no access to clean water because over 80% of wastewater returns to the environment untreated. Inefficient removal of contaminants from wastewater has critical consequences for downstream water resources because treated water represents a major component of river flows, irrigation and managed aquifer recharge. Inadequately managed water exposes individuals to health problems and contributes to malnutrition, poverty and disparities of wealth. In Brazil, 35 million people have no access to clean drinking water and 100 million do not have sewerage. State-of-the-art tertiary wastewater treatment has been proven to be inefficient, generates toxic by-products and is prohibitively expensive for low- and middle-income countries. Brazil is therefore in need of a technology that enables water reuse and meets regulatory requirements.

Partners

- University of Birmingham, UK
- Mangaba User Experience, London, UK
- SBR, Sorocaba, São Paulo, Brazil

Lead contact:

Luis Carlos Rosa Pasquale

www.seip7.com

Value proposition

SpaceTimeAI gains actionable insights from geo-tagged and time-stamped data.

The innovation

Location: Brazil

This project will assess the technical feasibility and validate the demand for iHotSpot, a prototype-stage Artificial Intelligence (AI)-enabled system that provides real-time predictive analytics for traffic conditions (flow and accidents). iHotSpot is aimed at enabling users to better plan and allocate resources to avoid traffic accidents and congestion. The project is also expected to promote iHotSpot in the public safety domain.

The market need

In Brazil, where 85% of the population live in cities, traffic congestion has been identified as one of the nation's most pressing urban challenges. In the last 15 years, Brazil's public transport ridership dropped 15%, while the country's car fleet tripled. These trends exacerbate congestion and pollution. Every year the country registers over 45,000 road accident fatalities, which has an annual cost of US\$9 billion. This project will facilitate the reduction of traffic congestion and incidents by providing real-time prediction data for hotspots. A range of users can adopt the iHotSpot solution to improve decision-making and take cost-effective preventive actions that mitigate consequences of traffic congestion and incidents at city, regional and national levels.

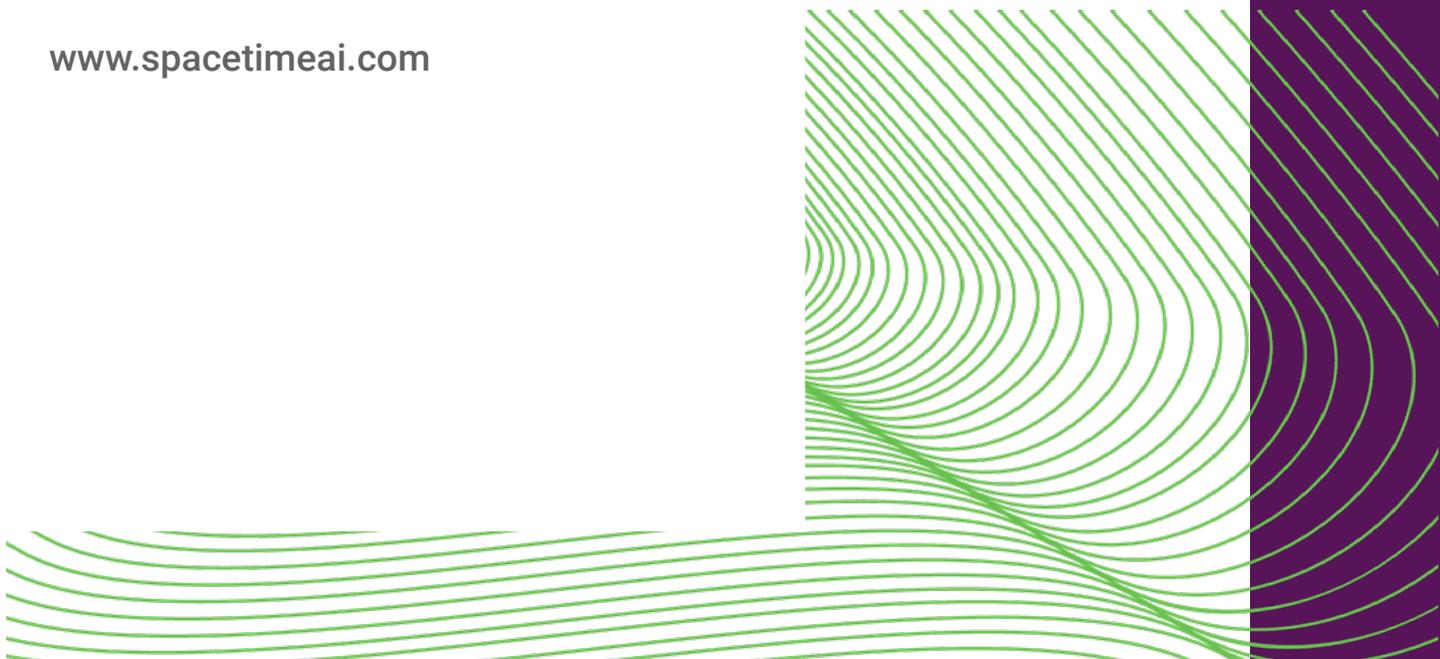
Partners

- Connected Places Catapult, London, UK
cp.catapult.org.uk
- Development Agency of the Metropolitan Government of Belo Horizonte, Brazil
www.agenciarmbh.mg.gov.br/

Lead contact:

Chen-Yu Chang

www.spacetimeai.com



Value proposition

Fair Business Alliance creates sustainable business opportunities for small and medium scale farmers, indigenous communities, producers and companies from developing countries in Latin America to improve their livelihoods, their communities and their environment.

The innovation

Location: Peru

This project introduces an inclusive approach to strengthening community resilience and rainforest conservation in rural Ecuador by exploring the creation of an Ecuadorian premium vanilla market with active and participatory value-chain integration of smallholder farmer cooperatives from Amazonian Kichwa communities. The project will assess the international market potential of this 'Queen of Spices' and its potential to be cultivated and commercialised through indigenous community enterprises. The objective is to generate a higher, more stable economic income for local communities, strengthen female indigenous leadership opportunities, protect endangered vanilla orchids and forest habitat, and facilitate new vanilla products in Ecuador and Europe.

The market need

Trade and market access have proven to be key drivers of economic stability and poverty reduction globally. Yet for many indigenous Kichwa farmers living in Amazonian Ecuador, significant barriers exist that prevent them from reaping the full benefits that trade and markets provide. Chronic poverty is still very present in these rural areas and deeply intertwined with environmental degradation of highly biodiverse ecosystems through large-scale resource extraction and unprofitable mono-crop agriculture. Women are disproportionately affected by poverty cycles in these traditionally male-dominated contexts and often excluded from economic development and social mobility. Amazonian premium vanilla has the potential to generate a profitable, stable and more diversified economic income for inclusive community development and provides a strong incentive to protect globally important tropical forests, especially when value chains are driven by indigenous communities themselves.

Partners

- University of Edinburgh, UK
www.ed.ac.uk
- Fundación Aliados, Ecuador
www.losaliados.org
- Gesellschaft für Internationale Zusammenarbeit (GIZ), Germany
www.giz.de

Lead contact:

Juan Santelices

www.fairbusiness-alliance.com

Value proposition

Desolenator's 100% solar desalination and purification technology provides clean water at scale for those at the forefront of the water crisis.

The innovation

Location: Haiti

This innovation merges sustainable desalination technology with a water distribution model catering specifically to the most economically disadvantaged communities in Haiti.

The market need

Almost 70% of Haitians do not have access to a reliable and safe potable water source. Additionally, ground water is becoming increasingly saline due to overextraction and climate change is exacerbating general water scarcity. The Desolenator system uses 100% solar energy to purify seawater at scale, protecting fragile and overexploited freshwater sources. This technology is to be merged with a water distribution model specifically designed to reach underserved communities.

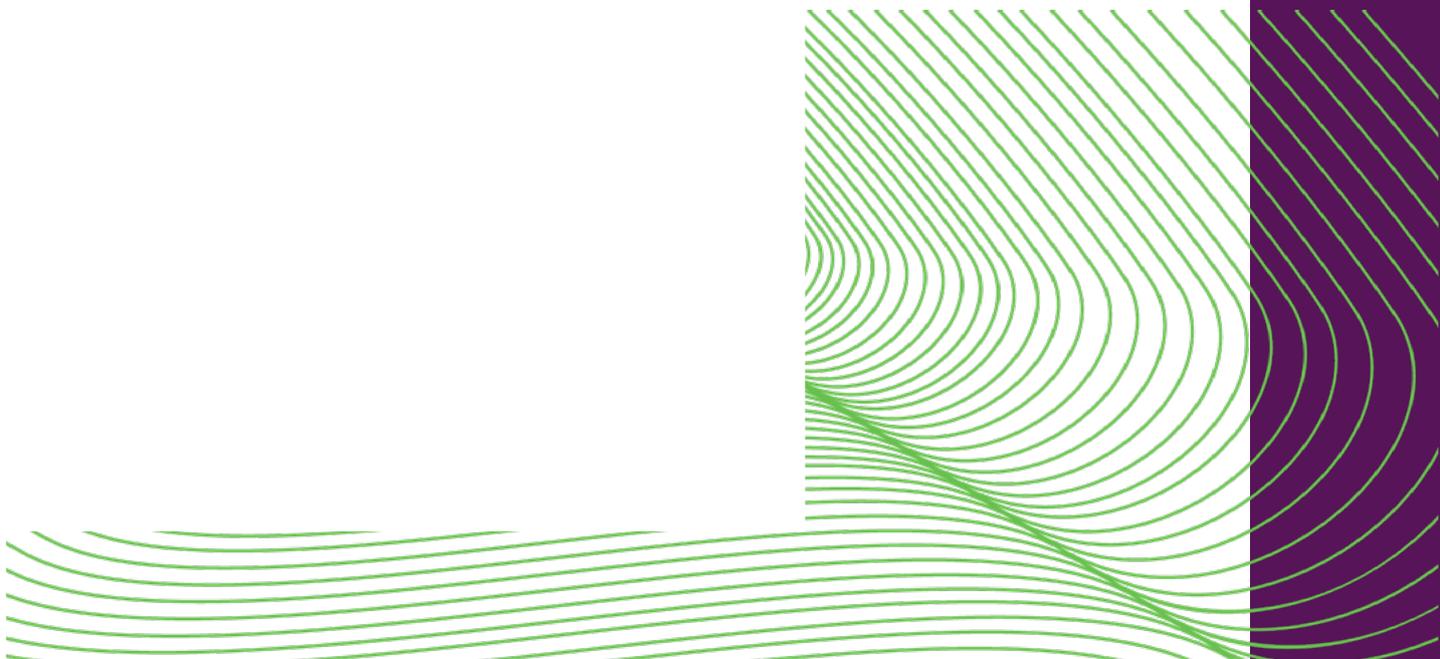
Partners

- V2 Studios, UK
www.v2studios.com/
- Dlo Haiti
<https://dlohaiti.com/>
- Ecolog, Haiti
<https://ecolog-international.com/>

Lead contact:

Louise Bleach

www.desolenator.com



Value proposition

KISPE provides specialist space business, project management, engineering, system design, integration and operational services.

The innovation

Location: Caspian Republics (Azerbaijan, Kazakhstan, Turkmenistan)

KISPE is partnering with GHGSat to test the need for greenhouse gas monitoring services in key Caspian Republics. GHGSat is the technical and delivery lead for the service. The project builds on a peer-reviewed 2019 case study in which GHGSat demonstrated the technology for Central Asia. The purpose of this feasibility study is to engage the local stakeholders to build the market, and to capture their specific service needs.

The market need

This discovery project focuses on market development for a service to monitor onshore industrial methane emissions in Central Asia, where greenhouse gas emissions present a significant environmental problem. The service draws on public and commercial satellite measurements of greenhouse gases at different resolutions, with a heavy reliance on the commercial GHGSat data. This data is critical for the service because it is the only commercial satellite data at a sufficient resolution for attributing emissions to specific industrial facilities.

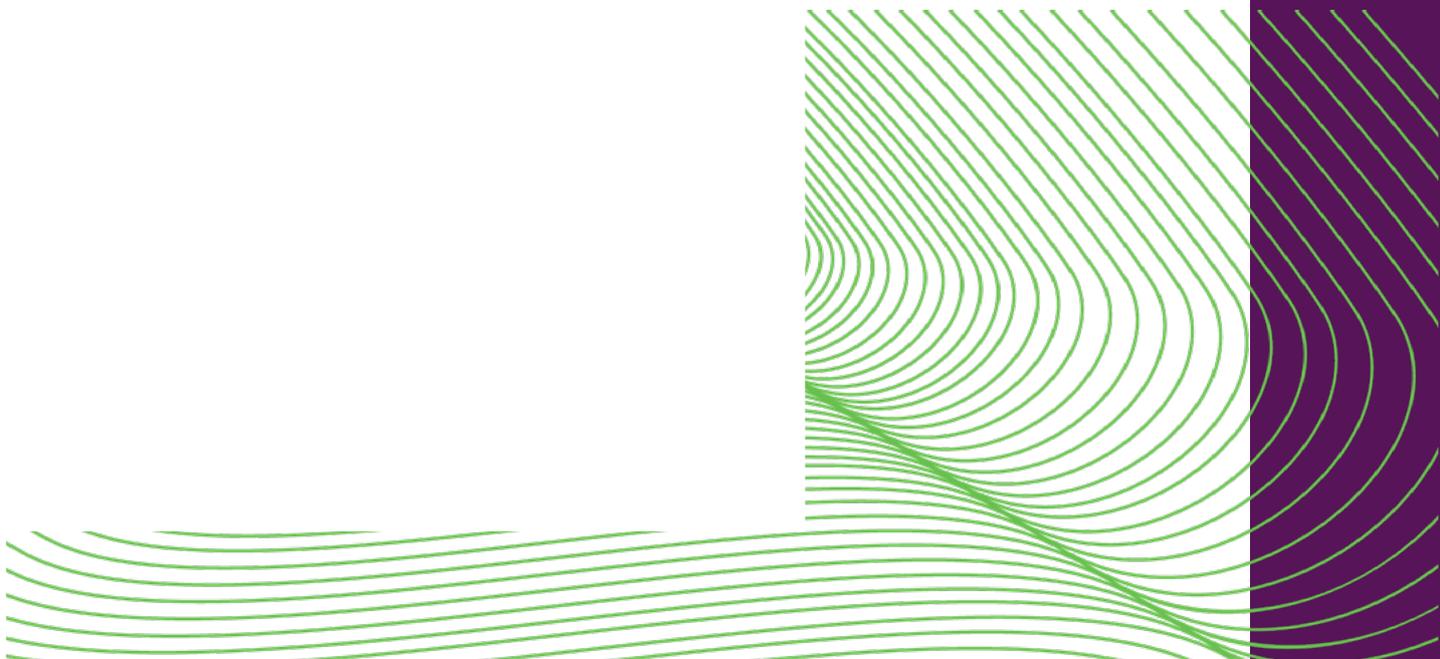
Partners

- GHGSat, Canada and UK
www.ghgsat.com

Lead contact:

Adina Gillespie

www.kispe.co.uk



To find out more about Demonstrate Impact contact Jo Hill on jo.hill@innovateuk.ukri.org