Innovate UK

Results of Competition: Newton Fund - Brazil-UK Collaborative R&D Competition 2016

Competition Code: 1611_CRD1_NEWTON_BRAZ2

Total available funding is £2.45m

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
Inavya Ventures Ltd	CityZen: Connecting cities to citizens	£248,901	£174,231
Future Cities Catapult		£148,372	£148,372
Space Syntax Limited		£99,768	£69,838

Project description - provided by applicants

Cities are under increasing pressure to meet rising demand to provide high-quality services for their citizens, and to do so in the most cost-efficient way possible. Delivering health and well-being services for older citizens is a major challenge. Our plan is to engage directly with older citizens and policy-makers from Campinas City and São Paulo to develop a novel, citizen-centric digital platform that matches the needs of older people with responsive products and services provided by the city, whilst protecting user data privacy and security. For policy-makers, we will create an enhanced data analytics toolset to enable a novel citizen-centric view of user demand, combined with advanced locational analytics, leading to improved efficiency and resource deployment. This project will enable export-led growth for Inavya (UK) and Industria-I (Brazil), aiming to create £1.6m revenue, £5m inward investment, and 35 high-value jobs within three years. Campinas City Hall and IMA, Associação Paulista de Municípios, São Paulo City, and Federal University of Minas Gerais Medical School will provide in-kind contributions of labour and technology, as well as route-to-market channels.

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Aurelius Environmental Ltd	NUOVOpb - A complete lead recycling system to boost Brazil's urban sustainability	£424,509	£297,156
University of Cambridge		£167,986	£167,986
Project description - provided by applicants			
With no active lead ore mines in Brazil, recycling LABs is a well-established market. After significant efforts to clean up Brazil's highly polluting LAB recycling industry, LABs are today smelted in modern furnaces. However, this energy intensive "pyrometallurgical" process is highly energy inefficient, expensive and only economically viable at large-scale, resulting in hazardous waste shipment over long distances. This project brings together eco-innovative SMEs Aurelius Environmental (UK) and Antares Reciclagem (BR) to conduct vital industrial research that will lead to NUOVOpb being introduced across Brazil. NUOVOpb is a new "hydrometallurgical" process that is highly energy efficient, clean, scalable and cost effective. By successfully operating 10 NUOVOpb plants across Brazil, by 2024, we will collectively save 96,000 tonnes of CO2 and 288 GWh of energy, meeting Brazil's growing energy demands in a cleaner, more efficient and safer manner. As a result, our cumulative profits will be BRL15m (£4m), representing a 24 x ROI and generating 200 jobs while helping Brazilian cities become more resilient and sustainable urban environments.			

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The Bio Nano Centre Limited	Software for Optimal Least-Cost Network Design: Decision support tool for greywater reuse networks in Parana state, Brazil.	£444,784	£311,349
Project description - provided by applicants			
Currently, Brazil reuses less than 0.1% of the clean water produced, compared to the global model offered by Singapore with 30% water reuse. However, with severe water crisis in many parts of Brazil and the sustainability efforts by many water utility companies, there is strong evidence that water reuse will experience a massive growth in the coming years. To facilitate the significant investments needed, decision makers in both private and public sectors require innovative tools/methodologies to assess the cost-benefit and socio-institutional impact of undertaking major infrastructure projects and ways to deliver these projects at optimum capital (CAPEX) and operating (OPEX) cost levels. This project will design and optimize a water reuse network for Curitiba city in Brazil using our advanced software-based water reuse network (WReN) methodology.			

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Advizzo Ltd	CLEPSYDRA - a behavioural customer engagement solution for the Brazilian water challenge	£484,672	£339,270
Project description - provided by applicants			
Managing water supply is one Brazil's greatest challenges. Encouraging more sustainable behaviours amongst consumers around water use is widely recognised as making a critical contribution to this country wide issue, whilst at the same addressing key problems such as water affordability and consumer delinquency. With Utility companies still relying on untargeted letters posted/e-mailed in high volume to educate consumers, it is this unmet market need that Advizzo Ltd (UK) & Sinapsis Energia (Brazil) seek to address through the development of a novel cloud based consumer engagement solution aimed at the Brazilian Utility market. The approach combines the concepts of Big Data, behavioural science and machine learning to produce actionable insights to predict where issues such as poor water practice, delinquency and pipe blockages will occur and in turn produce tailored intervention material for consumers which seek to encourage new sustainable behaviours. IMPACT: Improved consumer education/engagement, Reduced water bills, Reduced household water consumption, Reduced Pipe Blockages through behavioural changes, New market opps for both partners.			

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Manik Ventures Limited Brunel University London	Heat Pipe based pyrolysis for waste to fuel in Brazil (HERU Commercial)	£287,044 £122,606	£200,931 £122,606
Project description - provided by applicants			
Disposal of solid waste and access to sustainable sources of energy are real issues in developed and developing countries. It takes energy to collect waste and most is sent to landfill, incurring costs, generating greenhouse gases (methane & carbon dioxide) and hazardous residues. This project proposes the development of a process and integrated system safely disposing of waste at commercial facilities and generating a solid clean fuel for heating & hot water or cooking. Pyrolysis has been used for centuries to produce charcoal. Organic material is heated in the absence of oxygen, producing a combustible gas (syngas), oils and a solid carbon product (char). Current pyrolysis systems are inefficient as uniform temperatures in the pyrolysis chamber are difficult to achieve and heat is poorly extracted. This project progresses the development of a novel, integrated heat pipe based pyrolysis unit to commercial scale, with compaction of the solid pyrolysis products into briquettes. The project will design, build and monitor complete prototypes in Brazilian supermarkets over 6 months, evaluating technical performance, commercial potential and impact on waste collection and supply of fuel.			

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Scene Connect Ltd	Aquárius Solar (AS)	£198,120	£138,684
Dryden Aqua Ltd		£114,125	£79,888
Manchester Metropolitan University		£89,917	£89,917
Coventry University		£35,000	£35,000

Project description - provided by applicants

Water treatment issue in Brazil is a multifaceted problem, however high operational costs, poor sensing & filtration technology alongside excessive water losses exacerbate the current situation and limit resources spent on other value adding projects. Aquárius Solar aims to integrate latest technological innovations with an Internet of Things (IOT) solution and solar technology to deliver clean, affordable and high quality water services to the urban population in Brazil. Integrating a smart system for sensing technology & filtration systems offers unprecedented real-time oversight on the quality of water and the technologies proposed drastically reduce cost for the water utilities providers. As part of connecting context-specific sensing technology to an IoT and ICT backend, our consortium will build a state-of-the-art real-time bio-sensor that does not exist in the market and is an output of our project. Furthermore, distributed power systems allows proliferation to areas with unreliable grid connectivity. Aquárius Solar has the potential to be a holistic, disruptive, modular tehcnology, increasing efficiency and reducing costs whilst providing many social benefits.

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FGV Cambridge Nanosystems Limited Cranfield University	Plasma Modified Natural Fibre Reinforced Green Building Structures for Urban Development in Brazil and UK	£298,907 £92,822	£149,454 £92,822

Project description - provided by applicants

Currently 80 percent of Brazil's 186 million residents live in urban areas. It is estimated that 20 percent of Brazilians currently live in favelas, or informal, low-income housing settlements in urban areas of Brazil. The construction materials used in favelas is not up to a standard to offer good quality housing. The goal of this project is to build affordable and good quality housing components for low income families living in crowded urban settlements. Brazil is gifted with most abundant natural fibres (derived from plants and agricultural waste products) which are low cost and have high mechanical properties. Hence we will use the low cost, eco-friendly and strong natural fibre such sisal, curauá, coir, banana plant fibres, sugarcane baggage fibres to manufacture high quality construction components such as wall sections and roofs which will be used for low cost but quality housing for low income population living in urban areas of Brazil. These components developed in this project can also be used in portable housing/shades in UK and for temporary shelters used for disaster management (such as temporary shelters to accommodate people displaced due to flooding).

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