

THE PA CONSULTING Project

PA Consulting, the global innovation and transformation consultancy, partnered with Global Access Diagnostics Ltd (GAD) to displace single-use plastic in lateral flow tests (diagnostic cassettes) by replacing them with a cellulose fibre-based product, and ultimately producing these from local agricultural waste.



Sustainable Manufacturing and
Environmental Pollution



In 2018, World Health Organisation reported over 400 million lateral flow tests for malaria had been supplied globally: with 80% going to sub-Saharan Africa (World Health Organisation, 2020) . This equates to ca.2,000 tonnes of plastic waste from malaria diagnostics alone, and over three times for all disease groups. The use of lateral flow devices is also routine in low- and middle-income countries for the diagnosis of HIV and is expected to increase significantly for a range of other conditions, such as Dengue, Measles and Cholera. The COVID-19 pandemic has also contributed to several billion additional single-use diagnostic cassettes to what is already a significant environmental challenge. The solution developed through this project is expected to lead to a reduction in plastic waste. Evidence of success will be collected after the 3 phases of this project, focusing on the amount of in-country plastic waste reduction.

Selection for SMEP funding

PA Consulting's project partner, GAD Ltd – an independent social enterprise that develops and manufactures lateral flow tests for neglected diseases, will lead the distribution of cassettes to their in-country manufacturing hubs across LMICs. The current lateral flow market is expected to grow due to illnesses that use these tests, such as Malaria, Covid-19, HIV, West Nile disease, Ebola, Dengue, Measles and Cholera, in addition to the mass adoption and acceptance of these devices during the Covid-19 pandemic, thus increasing waste from single-use plastic. These single-use petrochemical-derived plastics end up in the environment, being land-filled, incinerated or litter. Due to their size, application, and the regions in which they are used, it is believed that very few, if any, are recycled. This causes environmental damage, harming marine animals/ecosystems and increasing microplastics. The material and end of life solutions of current testing kits mean there is a strong case underpinning the intervention.

Operating Model

The cellulose fibre-based products will aim to offer cost and performance parity to the single incumbent plastic product. We aim to roll this out as a replacement for the incumbent products by Global Access Diagnostics and their in-country manufacturing partners to meet an existing supply chain. The design intends to create a product that works on existing assembly equipment with minimal changes, thereby reducing the associated barriers by avoiding the need to invest in new equipment. Moving to a comparable cost product with significant environmental performance will facilitate rapid adoption.

Progress to date (May 2022)

The project has developed the platform for follow-on phases. Critical activities have been to establish governance arrangements across the project team, external stakeholders, and interested parties committed to supporting the development to scale of GIVO. The team has identified critical risks to the project and developed mitigations as far as possible. The Funding Plan has assessed the critical needs for the project and identified opportunities and priorities for future funding across grant, commercial, and benefactor sources. The team has evaluated and categorized its stakeholders - the priorities for engagement have been identified from this activity, alongside a 'keep watch list' and regulatory development opportunities. The GIVO-Warwick project has also identified the priorities for focus in Phase 2 on community engagement and assets to support effective education and community support.

Anticipated benefits

By integrating wood pulp based materials, the dry moulded fibre lateral flow test cassettes are biodegradable, with a reduction in the amount of persistent plastic generated from lateral flow tests.

Solutions can include (but are not limited to) the following:



Material substitution (e.g., the use of alternative paper-based materials or natural substances like seaweed)



Accelerated biodegradation (e.g., the use of biodegradable materials that do not create contaminants in the manufacturing process and during and after use)



Improved manufacturing (e.g., the modification of products to improve recyclability or enable remanufacture or the development of local manufacturing capacity from recycled materials)



Remanufacturing (e.g., the recovery and rebuilding of used product to its original performance)



Recycling (e.g., solutions to enable waste materials to be recycled for other uses). This may include technology solutions that connect waste providers with waste collectors and recycling companies or enable the production of products using waste materials.

Project Details

Project Name	Finding a sustainable solution to rapid diagnostic tests for neglected diseases
Lead implementor	PA Consulting
Consortium members and sub-contractors	Global Access Diagnostics Ltd (GAD) Pulpac
Plastics Pollution mitigation category	Substitution: Biomaterials
Market segment	Pharma/Healthcare
End users / Beneficiaries	The lateral flow cassettes will be used by clinicians and patients, in a similar manner to the current device
Project duration	Phase 1: January 2022 to March 2022 Phase 2: May 2022 March 2023
Project size	GBP 481 039 (2022- 2024) * This sum is a tentative investment from FCDO, pending ongoing project performance and funding availability.

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Media links

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