PROJECT CARE

Royal Academy of Engineering

COVID-19 African Rapid Entrepreneurs

Impact report: March 2020 to November 2021

Overview

In March 2020 the World Health Organization declared a global pandemic; the extent of COVID-19 has had a significant impact on lives across the globe.

National lockdowns, pressures on health systems and critical infrastructure have set back sustainable development with significant impacts on the global economy, food security, education, gender relations, mental and physical health, and the environment.

The lack of knowledge surrounding the virus and fear of potentially disastrous consequences for poorer populations, which might set back years of development on the African continent, was a driving force for action, and motive for Project CARE (COVID-19 African Rapid Entrepreneurs).

Between March 2020 and November 2021, the Royal Academy of Engineering leveraged its networks and influence to mobilise over 50 expert volunteers to support more than 50 engineering entrepreneurs from the Africa Prize for Engineering Innovation and Leaders in innovation Fellowships programmes in 11 African countries to address the consequences and impacts of COVID-19.

The project benefited especially from generous support-in-kind from the University of Leeds as a core partner, providing engineering support, clinical testing and advice, and creating extensively illustrated guidance documents for manufacturing and usage of the various personal protective equipment (PPE) items.

With thanks to individual donors, the Ezrah Charitable Trust and the Global Challenges Research Fund, over £336,000 in funding, in addition to materials, has supported over 40 entrepreneurs to produce PPE, scale their business operations, and build their technical capacity in 3D printing and manufacturing. A further £120,000 in grants has supported ten entrepreneurs to pivot their business to increase their chances of business survival.

Across both initiatives, entrepreneurs collectively generated £244,585 in revenue; helping them create over 75 jobs and build 28 partnerships to sustain their ventures.

The investment goes beyond business statistics reported by individual entrepreneurs. The value created from being part of a community and connections built have helped this resilient network of entrepreneurs develop the skills necessary to respond to future shocks and bring benefit to their communities.

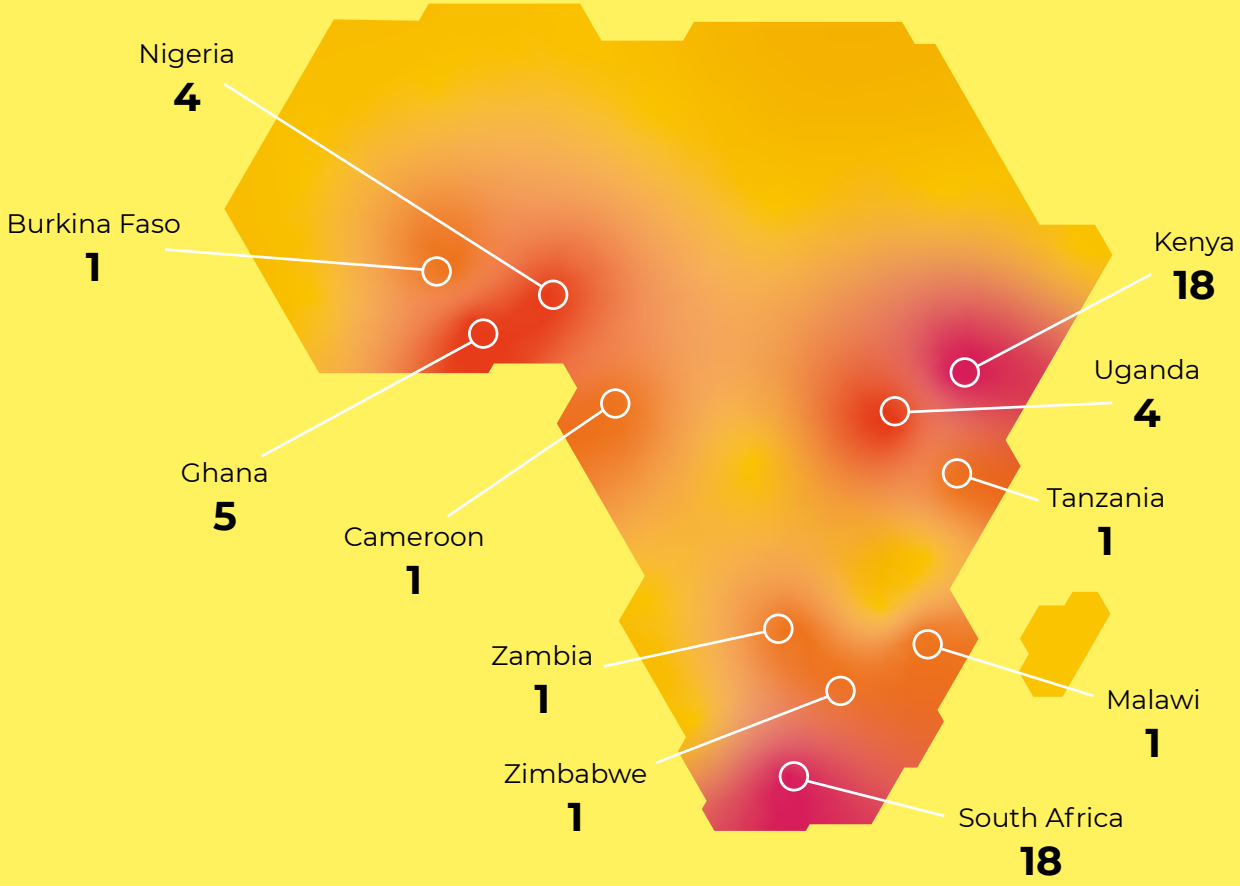
“With the resources and skills we have gained through this project, we have managed to create new jobs and help families. By extension, Project CARE has not just helped one entrepreneur, but communities and nations have been greatly impacted.”

Gift Moyois, Malawi

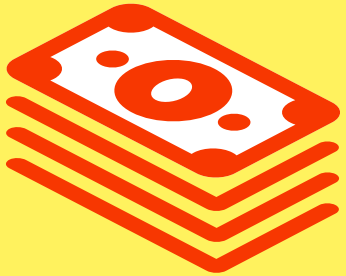
Overview

Between March 2020 and September 2021 Project CARE has supported 59 entrepreneurs across 11 countries with materials to manufacture PPE or business pivot grants to respond to the impacts of COVID-19 in their communities:

Number of entrepreneurs 59 across 11 countries



Donations



£127,124

Volunteer experts

+50

each bringing diverse skillsets from 3D printing to clinical experience in Africa

Overview

Between March 2020 and September 2021 Project CARE has supported 59 entrepreneurs across 11 countries with materials to manufacture PPE or business pivot grants to respond to the impacts of COVID-19 in their communities:

Expert-led training sessions

12

4

Peer learning sessions

New partnerships

28

Top three skills developed

26

Teamwork and business leadership

22

Expanded knowledge in the healthcare sector

20

Partnering

**Other skills reported included 3D printing, licensing products, pricing strategies, marketing and branding.*

89%

of entrepreneurs surveyed reported their original business is back up and running

72%

of entrepreneurs reported that Project CARE has provided them with a skillset to respond to future shocks

PPE manufacturing and materials

Overview of activities

Over 40 entrepreneurs received materials and small kick-starter grants to manufacture PPE masks in their markets.

With the help of expert volunteers, a total of five masks were designed and tested, three of which proved to be viable products in some markets:

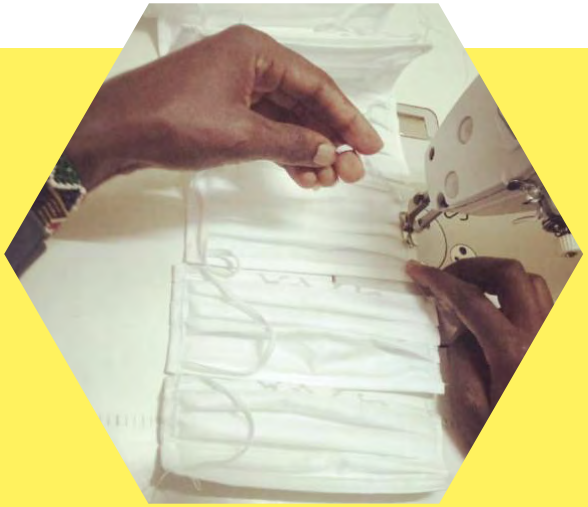
Corran Faceshield – a pandemic emergency response open-sourced disposable design, developed and used in the NHS in Scotland.

CARE3D – a reusable 3D-printed protective mask with a removable, disposable filter, designed for use in the COVID-19 pandemic by Project CARE volunteers.

CARE-Mayku – a vacuum-formed reusable protective mask with a removable, disposable filter, designed for use in the COVID-19 pandemic by Project CARE volunteers.

CARE-Soft – a sewn protective mask, using repurposed Hoover bags to overcome material supply constraints, intended as a reusable community face covering.

CARE-IM – an injection-moulded mask used with a removable, disposable filter and a 3D-printed funnel clamp.



Clockwise from left: Entrepreneur sewing soft face masks, CARE3D, quality testing soft masks.

Over 40

entrepreneurs received materials and small kick-starter grants to manufacture PPE masks in their markets.

The CARE3D and CARE-Mayku mask designs and associated guidance are endorsed by the Academy and made open source via the **Leeds University Intellectual Property website**.

Alongside the designs and materials, the entrepreneurs downloaded extensively illustrated documentation providing manufacturing guidance and for them to provide hospitals and individual mask buyers with comprehensive user guidance.

While the CARE-Soft mask proved to be a sound community face covering, testing showed filtration efficiency to diminish after washing; because of profitability and environmental factors the Academy took the decision to not endorse CARE-Soft.

Despite this decision, entrepreneurs have independently manufactured soft masks as community face coverings.

The CARE-IM mask design is in the testing process, led by a team of volunteers and independent from the Academy, and will hopefully still be produced and sold – with the assistance of government and university innovation agencies – in both South Africa and Kenya.

After receiving his Project CARE materials and 3D printer, Kenneth Guantai has secured a tender award with the Government of Kenya.

He will supply reusable masks through the Kenya National Chamber of Commerce for use in schools.

"This will boost our production capacity and sustainability into the future."

Kenneth Guantai

Clockwise from left: CARE-IM, CARE-Soft, Ender 3D Printer.

In some markets, by the time the CARE-donated materials had been delivered (after lengthy logistics and customs delays) manufacturing PPE was no longer a viable business due to increased supply of readily available and cheap products. In other markets, entrepreneurs were able create a successful business and innovate their PPE offering through branding, competitive pricing packages, and manufacturing replaceable parts.

Local and national regulatory bodies in several countries were supportive of home-grown product development and valuable relationships were established along with the experience of the approvals process.

Entrepreneurs who were not able to create a viable business through manufacturing PPE made the most of the equipment provided to them by donating their materials to other entrepreneurs or communities in need, or by using the 3D printers to create non-PPE products and deliver technical training to youth.

The 3D printers will provide these entrepreneurs with additional capacity to expand their businesses on an ongoing basis.

PPE sold and gifted

Over 52,700 units of PPE have been sold to private clinics, businesses, shops, and households; over 34,000 units have been gifted to hospitals, refugee camps, schools, places of worship, government ministries, and other organisations.

Breakdown of units gifted or sold by mask type

Corran Faceshield		
Units (gifted)	**Units (sold)**	**Average price**
33,283	52,020	$1.50
CARE3D		
Units (gifted)	**Units (sold)**	**Average price**
325	628	$4.50
CARE-Mayku		
Units (gifted)	**Units (sold)**	**Average price**
450	500	$5.60

Clockwise from left: Faceshield cover, Mayku Vacuum Former, CARE-Soft.

PPE manufacturing and materials

Number of masks designed

4

CARE3D, CARE-Soft, CARE-Mayku, CARE-IM

Alongside Project CARE masks, entrepreneurs were equipped with materials to manufacture the Corran Visor.

Units of PPE gifted

+34,000

Units of PPE sold

+53,100

Total revenue from PPE sold

£131,031

Materials supplied were used to:

35%	Manufacture PPE
23%	Manufacture other products
21%	Deliver training in 3D printing
18%	Donated
3%	Unused

Other products manufactured included inhalers for children, STEM tools for children and rickshaw parts.

Alternative uses of equipment

From creating makerspaces in townships, to manufacturing STEM tools and learning materials for visually impaired people, entrepreneurs have built their technical capacity in 3D printing and made the most of the materials provided to them:

"We have used the 3D printer to build a new solar car for engineering students to compete in an international competition. We have also used 3D printers and materials to build inhalers for small children in one of the hospitals around North West University."

Ketlareng Polori, South Africa

"I am using the 3D printer to print toys for babies which I have been selling to my friends. I am also using the vacuum forming machine to make small moulds for chocolates which is a business I want to expand."

Beth Koigi, Kenya

"We are piloting a low cost toolkit that contains 3D printed educational biology models to improve comprehension of biology and science basic education among pupils in Uganda. We've also established a digital manufacturing hub to help people bring their 3D design to reality."

William Wasswa, Uganda

"We've delivered 400 CARE-Mayku masks to the University of Pretoria; they will be used as part of a community research project to test for TB and COVID-19 antibodies. Our team are also in the process of establishing Mayku workshops in schools."

Andre Nel, South Africa

Case studies

William Wasswa from Uganda, the founder of Global Auto Systems – a company specialising in digital health, 3D printed masks and medical devices – has used the Mayku machine to create innovative models of the Corran Faceshield:

By capturing customer feedback, William and his team have iterated the design of the faceshield to include a branded popper model with replaceable foam, helping to reduce waste; and experimented with the Mayku vacuum former for quick and cost-effective manufacturing.

"During the first COVID-19 wave, PPE was very limited and many people in Uganda were making masks out of their clothes. We identified a need for producing face masks using new technologies and based on our customers feedback were able to come up with three design variants."

How did your customers influence the design variations for the Faceshield?

"Our customers fed back that the staple wires on the Faceshield came off very quickly, and the sponge around the head gets very dirty. We replaced the stapling wires with jumper pins to hold the elastic, and we added poppers so the foam could be easily detached and replaced. We also came up with an idea to cover the foam in a material case, however a lot of our customers said this was uncomfortable. So, we went ahead with the detachable foam version, which we are now selling at 1,000 Ugandan Shillings and the mask sells at 5,000 Ugandan Shillings.

"We also wanted to create a design that was made with 3D printers, however the first head piece we made was expensive and people did not like it so much. So instead, we used a mould and the Mayku vacuum former using polyethylene terephthalate glycol (PETG) material to create a head piece that does not require foam, only a vacuum former and the popper pins. We have sold around 300 of this type at 10,000 Ugandan Shillings. We have also iterated the design so the faceshield can move up and a person can easily take a drink."

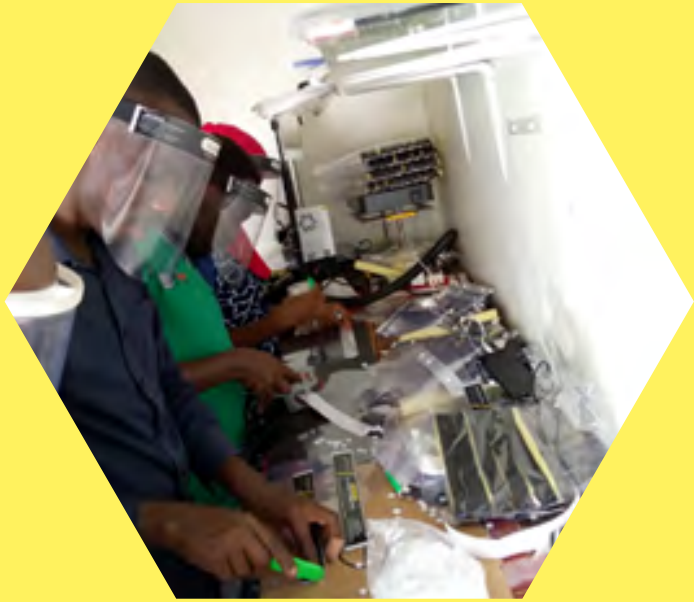
What's next for your organisation?

"In Uganda people are refusing to get the vaccination because of misconception and misinformation. This is leading to the COVID-19 numbers going back up again so our face masks are continuing to sell and we are starting to make visors for children."

William and his team are also piloting a low-cost toolkit that contains 3D-printed educational biology models to improve comprehension of biology and science basic education among pupils in Uganda.

"We identified a need for producing face masks using new technologies and based on our customers feedback were able to come up with three design variants."

William Wasswa



Case studies

Muzalema Mwanza from Zambia, the founder of Safe Motherhood Alliance, is strengthening local supply chains and developing the skills necessary to respond to future pandemics:

The benefits of 3D printing helped Muzalema's organisation become more flexible in its manufacturing and production processes, reducing dependence on global supply chains and logistic expenses.

"During times of uncertainty, when manufacturers are under increasing pressure to deliver essential products and services, the fact that we can use 3D printing when and where it's needed most, is a huge advantage to us."

How has entering a new market helped change the way you operate your core business?

"Our business is already in the healthcare sector focusing on maternal health. Because of COVID-19 we had to pivot into 3D printing face masks and assembling faceshields to support the frontline health workers and midwives we work with. As a result our staff have been upskilled in 3D printing.

"We are now less reliant on importing products and we are using existing channels/systems to involve local communities in supply chains. We are also training women from poor communities to function as frontline health workers, distribute essential kit supplies and other healthcare products."

What's next for your organisation?

"The project has helped us gain knowledge on product certification, 3D printing, digital design and increase quality assurance in meeting our customers' needs and wants.

"Beyond Project CARE, we are focusing on local production of 80% of our baby delivery kit through 3D printing of key kit items such as the umbilical cord clamps and scalpel blades. There are many benefits to this approach, including increased transparency of supply chains, adapting products to individual or regional tastes and reduced product carbon footprint."

Find out more about Muzalema's organisation and how she helps to reduce maternal and child mortality in Zambia **here**.

Muzalema Mwanza

"The project has helped us gain knowledge on product certification, 3D printing, digital design and increase quality assurance in meeting our customers needs and wants."

Case studies

Dele Sanni from Nigeria is diversifying his business and partnering with other entrepreneurs to address challenges relating to health, environment and consumption:

While manufacturing PPE proved to be a less viable business in Nigeria, entrepreneurs teamed up to start a new venture that produces other non-PPE products through 3D printing and trains young entrepreneurs and students.

"Project CARE has helped the three of us from different Africa Prize for Engineering Innovation cohorts to form a new company called BSW Technologies, which combines the names for each of our individual businesses (B for Bespoke founded by Femi, S for Sandel founded by Dele and W for Well NewMe co-founded by Obi).

"The new partnership has helped increase opportunities to supply products to corporate customers and helped me to clean up my own company's financial and legal documents, which are required for doing business with corporates in Nigeria."

How has the equipment provided benefited you?

"I set up a 3D printing and vacuum-forming laboratory located within the premises of the Obafemi Awolowo University Ile-Ife. The centre has become very useful for training many youths who never had the opportunity to learn 3D printing and vacuum forming before.

"I have also used the equipment to manufacture and distribute some 3D masks and face shields, as well as other products and upskilling the technical skills among youth through training."

What's next for your business?

"My business recently diversified into production of affordable patterned ceiling boards using wastepaper and cement.

"It is a cold press process and my team have become the first in Nigeria to use 3D printing to produce the patterned mould boards of different designs. Today our ceiling boards are fast becoming popular because of 3D injection moulds."

Find out more about Dele's business Sandel Engineering Services **here**.

"Project CARE has helped the three of us from different Africa Prize for Engineering Innovation cohorts to form a new company called BSW Technologies."

Dele Sanni

Case studies

Brian Turyabagye from Uganda is using 3D printing to respond to sectors hit hardest by the pandemic such as education:

Participating in Project CARE has taught Brian how to respond quickly to market needs and he is now turning his focus to support other sectors impacted by the pandemic.

“The equipment donated by Project CARE has helped us establish a new line of business in 3D printing.

“We are now focused on printing practical learning aids for kids (to use for learning at home).

“These included alphabetic letters and other simple toys. So far our products have been bought by many families (about 500 packages each at GBP £6) and we have distributed our products to families and retail stores (especially supermarkets).”

Is COVID-19 still around in Uganda and how do you plan to address similar pandemics in the future?

“COVID-19 is still in the country and a likelihood of other strains emerging is possible.

“Our plans are still in place to address COVID-19 especially using related tools that may not directly be used by frontline health workers (as it was initially intended), but rather for other sectors like education and design.”

What’s next for your business?

“The biggest impact we’ve made is to the young children who still use our 3D-printed items for their learning across many homes.

“This was something that we didn’t envisage to happen and plan to continue.”

Find out more about Brian’s company MamaOpe Medicals **here**.

“The biggest impact we’ve made is to the young children who still use our 3D printed items for their learning across many homes.”

Brian Turyabagye

Business pivot grants

Overview of activities

The disruption caused by COVID-19 and its impact on the global economy has hit industry sectors in different and unpredictable ways, resulting in a need for entrepreneurs to respond quickly and pivot their businesses offering.

To support entrepreneurs in a changing landscape and increase their chances of business survival, the Academy offered business pivot grants between £5,000 and £20,000 to 10 selected alumni SMEs between the period of May 2020 and September 2021.

Through the grants, entrepreneurs purchased new machinery for effective manufacturing, piloted new products and built the necessary partnerships to scale operations, leading to the creation of new jobs and business growth activities.

A variety of projects were implemented and focused on some of the sectors hit hardest by the pandemic, such as education, health, and the environment, as well as those that livelihoods have a great dependency on such as agriculture.

Increasing access to education

Project	Country	Awarded	Impact
Lab & Library on Wheels	Ghana	£20,000	Ananse@Home is a STEM and art home-schooling app for children aged 8 to 14 – 80% of 854 students engaging with the e-learning app reported an increase in test scores.
Afyakit	Kenya	£15,000	COVID-19 checklist to support schools and factories to assess their COVID-19 readiness and support to improve their COVID-19 control measures – partnered with 60 schools to deliver information on COVID-19 prevention.

Supporting the agricultural sector

Project	Country	Awarded	Impact
Farmz2U	Nigeria	£12,500	Supporting over 8,000 farmers with data-driven insights to increase production and online distribution channels to increase sales – the team scaled into Kenya and launched a new product (Farming Vendor Platform).
Farmers Assistant	South Africa	£12,500	Connecting smallholder farmers with local consumers, repairing informal supply chains – farmers in South Africa and 13 other African countries reached with £15,000 in funding applications coming through the platform.
Farmazao	Kenya	£7,500	A mobile and web platform to help farmers make purchases and get affordable farm management services – over 150 farmers reached and selected for seed funding by Africa Impact challenge in Kenya (awarded Kes. 1,000,000).

Managing PPE waste

Project	Country	Awarded	Impact
Silmak Agencies	Kenya	£15,000	Pivoted incinerators for sanitary pads to make and sell seven incinerators to safely dispose of used PPE on-site – new machinery purchased with the grant has helped reduce production costs by 32%.
GIVO (Garbage In, Value Out)	Nigeria	£5,000	Production of affordable WHO-standard faceshields from recycled PET bottles – manufactured up to 10,000 units of PPE from recycled materials and contributed to removing 200 kg of waste sustainability.

Improving sanitation and hygiene

Project	Country	Awarded	Impact
ChanjoPlus	Kenya	£5,000	A USSD platform for real-time contact-tracing and to disseminate health information – the team focused on places of worship and reached over 63 paying clients.
Mobi-Water	Kenya	£7,500	Water monitoring tanks – installed Mobi-Water Sensors in 50 schools with 95% device uptime.
Macjames Global Resources Limited	Nigeria	£20,000	Manufacture of MACJAMES ® HandSafe instant hand sanitiser with moisturiser that meets WHO standards – production capacity increased by average of 550% monthly with 17 suppliers/partners distributing the product for use by national and multinational companies.

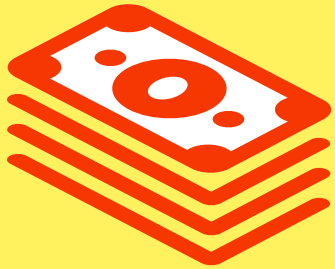
Macjames Global Resources Limited hand sanitiser gel production facilities.

Business pivot grants

Entrepreneurs awarded

10 across five countries

Total grant funding:



£120,000

Total revenue from business pivots

£113,554

Number of jobs created

75

Beneficiaries reached

+808,000 total

includes

+170,000 women

+149,000 youth

Business pivot grants

Sectors impacted:

Education

Two projects

"80% of students who engaged with our e-learning app experienced an increase in test scores."

Josephine, Ghana

Sanitation and hygiene

Three projects

"Our production capacity has increased by 550% monthly, and we've partnered with 17 suppliers to sell our new hand sanitiser gel product."

Justin, Nigeria

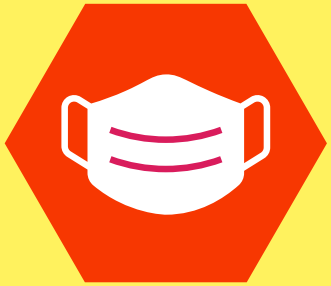
Agricultural support

Three projects

"We have supported farmers to access funding in South Africa and 13 other African countries, over £15,000 in loans has been applied for through our app."

Linah, South Africa

Environment-friendly PPE



Two projects

"We've manufactured up to 10,000 units of PPE from recycled materials"

Victor, Nigeria

Case studies

Increasing access to education

Josephine Marie Godwyll from Ghana – Lab & Library on Wheels by Young at Heart – awarded £20,000

Young at Heart Ghana is an initiative improving access to digital education for children and young people in rural and disadvantaged communities.

Prior to COVID-19 Josephine's business had two focuses – physical access to schools and online engagements through ed-tech products.

Through Project CARE Josephine and her team have tested the efficiency of their e-learning app and reached a total of 1,425 students across urban, peri-urban and rural communities.

Since the start of Project CARE, the team has generated over £39,400 in revenue and hired two project officers to grow the business.

In partnership with researchers in the Information and Communication Technology Education unit in the University of Cape Coast funded by the Jacobs Foundation, Young at Heart plans to reach 500 more school-aged learners and 10 educators in Ghana, West Africa.

Josephine Marie Godwyll and Martin Bruce

"Students who engaged with our home-school e-learning app saw an 80% increase in test scores."

Josephine, Ghana

Supporting the agricultural sector

Aisha Ajibola Raheem from Nigeria – Farmz2u – awarded £12,500

Farmz2U helps farmers farm better using data and provides tailored agricultural expertise to increase the sustainability and profitability of farming operations.

Project CARE has enabled Farmz2u to launch a new offering (Farming Vendor Platform) and scale its operations in Kenya through the UNDP Kenya country challenge.

Through the Farming Vendor Platform it has onboarded financial institutions for the purpose of funding farmers through affordable loans over a three-month period.

Since the start of Project CARE the team has generated over £36,500 in revenue and increased the user growth of the platform by 400%.

There are now over 6,150 farmers using the app and Aisha has been featured in the recent **One Young World impact report (page 139)**.

Aisha Ajibola Raheem

"We will continue to scale our operations with existing and future partnerships. Our regional strategy will be fulfilled through current operations in Nigeria serving the West African region, and in Kenya serving the East African region."

Aisha Ajibola Raheem

Case studies

Managing PPE waste

Catherine Wanjoya from Kenya – Silmak Agencies – awarded £15,000

Silmak Agencies manufactures menstrual hygiene products, sanitary pad vending machines and incinerators for waste disposal.

In response to COVID-19 Catherine pivoted her business to respond to environmental and hygiene concerns related to PPE waste disposal.

Pay per use PPE incinerators have been installed in hospitals, schools, factories, and households, reaching over 350,000 beneficiaries.

The grant helped grow the existing business through procurement of new machinery, which reduced production costs by 32%, and through partnerships with Safaricom, which has digitised its sanitary pad vending machines.

Since the start of Project CARE the team has generated £10,207 in revenue since May 2020 and gained international attention from news sources such as the **BBC**.

Silmak Agencies

"The company could afford to call back the employees who had been sent home and hire two new staff in sales who have increased our revenues and one software developer, a skill we did not have before."

Catherine, Kenya

Improving sanitation and hygiene

Chinenye Justin Nwaogwugwu from Nigeria – MACJAMES – awarded £20,000

MACJAMES manufactures and supplies affordable hand sanitiser gel. Through the Project CARE grant the team was able to scale up its offering and introduce a new hand sanitiser product.

Over 155,000 beneficiaries have been reached and the production capacity has been increased by an average of 550% monthly.

The team hired five new employees and 50 temporary hires.

To meet the demand, acquire and maintain equipment the team worked with 17 suppliers / partners to distribute its new hand sanitiser product to national and multinational companies.

Chinenye Justin Nwaogwugwu

"The Academy's continuous wholesome support and assistance have been a stamp of credibility to our business and a major contributor to the growth of Macjames and the Brand, enabling us to serve our customers' needs and gaining their trust."

Justin, Nigeria

Project legacy

Although Project CARE comes to an end, the impact of the COVID-19 virus is not over, especially in Africa where vaccination rates are lower, and the threat of future pandemics remains.

Masks and respirators have played an essential role in the response to the COVID-19 pandemic for both healthcare workers and the public, yet so many people continue to be without access to proper protective equipment.

A recent study by **The Johns Hopkins University** has shown that medical masks and respirators are essential pieces of PPE needed to save lives and prevent societal disruption.

The masks designed through Project CARE, which are made publicly accessible via the University of Leeds IP website, and manufacturing skillset developed by entrepreneurs will trickle through to communities and create access to proper PPE to respond to the current COVID-19 and future pandemics.

When asked if entrepreneurs thought COVID-19 was over in their countries, 72% of entrepreneurs said it was not; 14% said people were learning to live with the virus; and 14% said it was over but considered there may be future diseases or pandemics that entrepreneurs will need to respond to.

Further to the technical skillset developed by entrepreneurs, a strengthened peer network has been created. Through peer learning sessions, entrepreneurs have shared best practice and lessons learnt in skills such as pricing, 3D printing, marketing, and branding.

They have established channels of communication where events of interest and funding opportunities are shared regularly. They continue to access community support activities provided by the Academy's Africa Prize for Engineering Innovation and Leaders in Innovation Fellowships programmes.

Anne Rweyora, an industrial designer from Uganda.

“This programme helped us learn how, as engineers, we can use our skills to respond to pandemics – solve problems through collaboration etc. I believe the skills learned will be very useful for similar diseases and/or more lethal variations of COVID-19.”

Ian Mutamiri, Zimbabwe

The dedication and engagement from expert volunteers throughout Project CARE have been an asset to the Academy and further expanded its networks to support capacity building among entrepreneurs for both hardware and software skills.

The Project CARE experience has provided alumni with technical support and new skills development that the Academy continues to support through community-building activities and events that engage experts who can provide specialised masterclasses.

If you have experience to share or knowledge on a subject that would help our entrepreneurs to continue to build and develop their technical capacity, we would love to hear from you. Please contact: **africaprize@raeng.org.uk**

The connections made and expansive networks built through Project CARE help to make this project sustainable and continue to nurture the skills required for entrepreneurs to adapt to change in uncertain times.

A key learning taken from Project CARE is on the importance of co-design, in responding rapidly to the needs of entrepreneurs, and supporting them to develop products and adapt to their market needs.

Entrepreneurs have been able to drive the development of new mask variations and provide innovative products and services for their customers.

Children collecting water in Kenya.

Acknowledgements

Many individuals and organisations have played a crucial role in Project CARE.

Without their generous contributions and support, entrepreneurial leaders in sub–Saharan Africa would not have been able to make the impact made to date in helping communities face the biggest public health crisis of our time.

We take this opportunity to acknowledge all entrepreneurs and what they have achieved, as well as the individual donors, expert volunteers, organisations such as the University of Leeds and National Rail, the Global Challenges Research Fund, Academy Fellows, and staff.

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Malcolm Brinded CBE FREng

Dr John Lazar CBE FREng

Professor Anne Neville OBE FREng

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The Wishing Well Fund

NetworkRail

Network Rail

Who provided extensive and sustained storage and pro-bono logistics support.

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Clive Berrington
Caroline Mauchlen
Milla Mazilu
Robert Morton

University of Leeds

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William Bolton
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Cheryl Harris
Professor David Jayne
Professor Nikil Kapur
Dr Gareth Keevil
Professor Maria Lonsdale
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