



## 2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST

**Akim Svisva**

Oakwood Academy

**Zimbabwe**

Science Communication

Akim, 12, created an aluminium–air battery that produces electricity from the reaction of oxygen in the air with aluminium. Producing up to 1 volt, the battery consists of 3D printed parts, aluminium foil, salt, water, copper wire, a facemask, and activated carbon (charcoal).





## 2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST

### Ali Ammar Almoiz Hussain

Beira International school

**Mozambique**

Coding With Commitment Category

Ali, 12, was encouraged to code by friends, teachers and the environment. Ali's project aims to help the education system by making a cheap and extraordinary AI to expand quality education access. Ali writes, "Thanks to the festival for helping me and my future".





## 2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST

# Alya Ünsal, Elif Koç & Hamza Yunus Kayahan

Buca Municipality Buca Science

**Turkey**

Research and Innovation

Alya(16), Elif(16) and Hamza(16) designed a device that monitors the CO<sub>2</sub> gas formed due to the formation of microorganisms in food over time and determines how many days have passed since the production of the food. Measurements were made with different foods such as milk, cheese types, eggs, and a library was created according to these measurement results and added to the device. The device is simple and practical to use since it can be measured directly by holding onto the food.



## **2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST**

**Amelia Stolz**

Summerhill Prep School

**South Africa**

Research and Innovation

Amelia(13) observed her grandmother making red mats on a frame that she made. This inspired Amelia to reduce plastic litter by making mats using braided plastic shopping bags.





## 2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST

**Andressa Banze**

Beira International School

**Mozambique**

Research and Innovation

Andressa made an easily accessible water purification device to help people in Mozambique who do not have access to clean water. These people end up drinking water from rivers and unprotected areas.



## **2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST**

**Anesu Camilla Chiwona**

Dominican Convent High School

**Zimbabwe**

Research and Innovation

Anesu(14) analysed and compared regular asphalt used in many roads in Zimbabwe and rubberised asphalt. The project aims to create an alternative to the expensive asphalt.







## 2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST

**Anika Ranjan**

Novi High School

**United States of America**

Research and Innovation

Anika(17) discusses the possibilities of CRISPR to decipher specific substitutions for all three eye disorders. CRISPR (Clustered Regularly Interspaced Short Palindromic Repeats) technology is a useful tool to insert, delete, and substitute DNA in the genome. This is done by separating DNA via double-stranded breaks and can be performed through two different mechanisms: Homology-directed Repair (HDR) and Non-Homologous End Joining (NHEJ). Double strand breaks would be used for a tracrRNA:crRNA to guide the enzyme cas9 to insert, delete, or substitute the desired DNA. CRISPR has limitations on which DNA sequences it can work with. Other concerns include ethical questions and base-pair limitations. X-linked Congenital Night Blindness, Snowflake Mitochondrial Degeneration, and



## 2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST

**Asher Marowa**

ZRP High School

**Zimbabwe**

Science Communication

Asher(14) aims to make an electrical generator that does not use petrol or diesel. The generator produces electricity but does not need petrol. Its voltage to start it is supplied by a battery. The main part of it consists of three propellers with cog wheels on them. The main idea is to make sure that the battery gives off and at the same time receives (charges) such that the battery is always fully charged. The prototype is made in such a way that it can charge a cell phone.



## 2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST

### Aslı Karataş & Fatih Damar

Buca Municipality Buca Science

**Turkey**

Research and Innovation

Aslı(17) and Fatih(15) investigated the conductance quantisation with a simple interferometer system and measurement of displacement at microscale. The project aimed to measure the displacement on the micrometer scale by developing a simple interferometer system. For this purpose, a simple and low cost interferometer system was developed without the use of expensive optical elements such as a beam splitter and lenses.



## **2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST**

**Ayannah Mudarikiri**

Riverside Primary School

**Zimbabwe**

Science Communication

Ayannah(11) presents on Global Warming which has brought about climatic changes which have proven to be very difficult to predict. Ayannah shows that serious and very difficult decisions will have to be made to curb or reduce the impacts of this global problem.





## 2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST

### Batsirai Nyambiya

Kutama College

**Zimbabwe**

Research and Innovation

Batsirayi(19) evaluated the effect of enhancing the photovoltaic cells with metamaterials for higher efficiency in power production and also intergrating it with a thermoelectric generator.This creates a hybrid power generation system that is capable of harvesting energy from both sunlight (pv) during daylight and temperature differences during the night.



## **2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST**

# **Blessed Kutyaauripo & Atupele Phiri**

Prince Edward School

**Zimbabwe**

Research and Innovation

Blessed(16) and Atupele(16) designed a modern day tile based on IoT, interlinked with multiple sensors, fitted with sensitive piezoelectric cells which create an electric charge (electricity) when stepped on or when a force is applied to the tile.





## 2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST

### Bradley Tavonga Usenga

Irene Christian College

**Zimbabwe**

Research and Innovation

Bradley(15) solves the potholes challenge by substituting natural rocks for rumble from construction sites. The rumble is dumped into an impact crusher to break up the rumble to either a course or fine aggregate instead of natural rocks. The impact crusher will make the rumble usable in road construction.





## 2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST

**Brendon Jounet**

Christ Ministries High School

**Zimbabwe**

Research and Innovation

Brendon(18) developed LightSafe, which makes use of a smartphone (which most drivers already have) to detect and analyse the presence of an oncoming-vehicle and control the car's light-beam accordingly. In order to make sure it works consistently, the system was tested on different roads, having varied conditions. The project aims to make night-driving safer.





## **2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST**

# **Bright Bauleni, Nathaniel Mupopa & Princess**

Maranatha Junior School

**Zimbabwe**

Research and Innovation

Bright(7), Nathaniel(6) and Princess(12) sought to address water shortages both in rural and urban areas by harvesting rain water, store in a tank and then use it for farming.



## **2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST**

# **Bulelwa Siphumelele Ncube & Tendai Chamunorwa**

Dominican Convent High School

**Zimbabwe**

Research and Innovation

Bulelwa(13) and Tendai(13) explored the conversion of plastic into electricity for urban and peri-urban households in Zimbabwe. The hypothesis is that it is possible to turn plastic waste into electricity not only home use, but industrial and national use. The prototype involved altering plastic into electricity through a process called pyrolysis.



## **2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST**

### **Caitlyn Nozipho Sithole**

Dominican Convent High School

**Zimbabwe**

Research and Innovation

Caitlyn(12) generated electricity from a green, unripe *Solanum lytopersicum* Extracts combined with ethanol. The project uses the *Solanum lytopersicum*, ethanol, copper wire, large paper clips, beakers, alligator clip leads and headphones.



## 2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST

### Callum Paul Morris

Beira International School

**Mozambique**

Research and Innovation

Callum(10) developed the Grabber 2022, which is a device for lifting up small items when one breaks an arm. Callum's device uses a simple lifting method using a pulley and an old fishing rod. The device was able to lift an empty school bag, scissors and when a magnet was attached pins were lifted.





## 2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST

# Catherine Dzviti & Tintotenda Chikwanha

USAP COMMUNITY SCHOOL

**Zimbabwe**

Research and Innovation

Catherine(19) and Tintotenda(19) researched on methods to kill staphylococcus aureus which has recently become resistant to the antibiotic vancomycin. Ways of treating staphylococcus are important since approximately 7% of the population in Zimbabwe have been registered to be affected by the bacteria. This does not include those who do not go to the hospital to get tested for other reasons and it is the most resistant bacteria in Zimbabwe with a percentage of 42.3 (Mhondoro, Marvellous, et al 2019). Also in Zimbabwe, medication is not easily accessible to people, therefore the use of locally available resources and little additions to it would ensure access to health facilities for a lot of





## **2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST**

# **Chiedza Mukarakate & Munenyasha Mugwisi**

Westridge Primary School

**Zimbabwe**

Science Communication

Chiedza(11) and Munenyasha(11) worked on fireproof ash bricks to answer the question if litter can be burnt and the ash be used fireproof bricks for building houses cheaply.





## **2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST**

**Chilemu Mulambwa**

Yengwe Combined School

**Zambia**

Research and Innovation

Security door





## 2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST

**Chrispen Makoni**

High Achievers Coach Educational

**Zimbabwe**

Research and Innovation

Chrispen(16) looked at the potential of salt water to replace the use of metals in electric cables.





## **2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST**

**Claire Muponda**

St Dominics Chishawasha

**Zimbabwe**

Science Communication

Claire(17) focuses on how our brains work over-time to keep us safe from more traumatic experiences . The brains trauma , resilience and healing process. Claire strongly advocates for mental health and greatly wants to increase the world's access to professional help concerning this.





## 2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST

**Craig Mazarura**

Gutu High School

**Zimbabwe**

Research and Innovation

Craig(17) developed a home security system which aims to improve service delivery by authorities so that human life can be observed.



## 2022 AFRICA SCIENCE BUSKERS FESTIVAL FINALIST

**Craig Ndudi**

Woodcreek International School

**Kenya**

**Research and Innovation**

Craig(17) looked at the current methods of enhancing bacterial bioremediation of xenobiotic pesticides. The accumulation of recalcitrant xenobiotic compounds is due to continuous efflux from population and agricultural and industrial inputs that have created a serious impact on the pristine nature of our aquatic and terrestrial environment.

