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**COMESA INNOVATION AWARDS 2014/15**  
**CALL FOR NOMINATIONS**

**Deadline for submission 20<sup>th</sup> February 2015**

(mm)2014

## I. BACKGROUND

The COMESA Innovation Awards was launched in 2013 to celebrate the Africa Union 50<sup>th</sup> Anniversary. The Awards are aimed at recognizing and celebrating individuals and institutions that have used science, technology and innovation advance the regional integration agenda. The inaugural Innovation Awards were successfully given at the 17th Summit of the COMESA Heads of States and Government held in February 2014 in Kinshasa DR. Congo

This focus of the 2014-15 Awards will be on new products, new methods of production and new ways of improving technology. Also included in the criteria is methodology of opening up new markets, new ways of doing business, conquest of new sources of supply of raw materials and implementation of a new form of commercialization among others. Although the Innovation Awards are geared towards all innovators in member-states, the 3 main target groups are SMEs, youth and women.

**SMEs:** COMESA has established an aggressive program to foster the development of technology based new enterprises. It is envisioned that SMEs would serve as the vehicle for harnessing existing technologies and use them to enhance industrial production. However SMEs are expected to be technology-based with high potential for growth. Thus the need to recognized and reward SMEs that contributes to the achievement of this goal.

**Youth:** COMESA seeks to harness nature and grow the innovative capacity of the youthful population in the region for sustainable economic development. The youth will be challenged to harness science and technology to create wealth and employment. Through this they can provide innovative ways of solving challenges facing the region such as food security, access to basic education, healthcare, energy, climate change and industrialization among others.

**Women:** Women have traditionally been under represented in the fields of science and technology. Consequently COMESA will focus on women and like the youth challenge them to harness science and technology to come up with innovative ways of solving challenges in the region.

Below is a summary of the 2013/14 winning innovations.

## II. SUMMARY OF THE 2013/14 WINNING SUBMISSIONS

### a) Youth Category

#### 1. **First Prize** was awarded to **Joshua Mwangemi**

**Project title:** The Remote Weighing System- for safety of cargo and track to save transit time and road maintenance cost

This is a combination of Hardware and Software for the use in the road transport industry to weigh cargo. The invention is more specifically Geographical Interface Service (G.I.S) and has ability to weigh cargo, give location of the vehicle, give the truck details for example the registration number and the ownership details of the truck. The remote weighing system is the technology to enhance flexibility and flow of traffic on the highways.

The device measures weight that is taken and installed in the system and hardware and thereafter transmitted and processed for users viewing. As soon as a truck fitted with the RWS is loaded with cargo, the system immediately measures the weight and sends the data through GPRS to all stake holders in the transport chain. Every so often the unit keeps measuring the weight of the Cargo on the truck and keeps transmitting the data. This allows for transparency and precision in knowing the weight of the trucks during the whole time they are in transit. In the case where there is no proper connectivity for transmission, the unit stores up all the measurements it makes and can be downloaded from it once the vehicles arrives at the next check point or the final destination, whichever comes first.

2. **Second prize** was awarded to **Anthony Mutua**

**Project title:** The mobile phone shoe charger that uses body weight exerted on shoes to generate energy to charge cell phone battery.

Seeking to tackle the low battery problem that all cell phone users face, the founder of Hatua Technologies, set out to create a cheap solution for this problem. He came up with the idea of charging phones using specially designed shoes with microchips that produce electricity while walking. The innovation not only solves the 'low battery' problem cell phone users' face, but also contributes towards reducing environmental pollution.

The charger basically uses the body weight exerted on the sole of the shoe while walking to charge the phone. We have placed crystal chips in the sole, and these are the producers of electricity when the body weight is placed on them. We have made harvesting of the electricity possible through two ways: using a cable that is connected to the sole of the shoe and runs into your phone, so that you can charge while walking; or you can decide to just walk, let the chips to store charge for you due to its storage capability.

The chip has the ability to charge several devices at the same time, as we have special charger designed for this. This however depends on how far or long you walk to give the chip enough charging power. By the way, the chip can also be moved from one shoe to another once the old one gets used up. It can also (be) compatible with any shoe with the exception of shower slippers. We wouldn't want to have electric accidents in the showers! A walking distance of 800 meters is enough to charge a phone fully. About the security of the chip, we have designed them in such a way that they are waterproof, and definitely dust proof

3. **Third prize** was awarded to **Wilson Musonda**

**Project title** –Fuel less Domestic Electricity Generator –to provide off grid electricity to rural communities

This is a Fuel less manually operated generator set. Its ideal application is mainly for domestic purposes in the rural and far flung areas but can also be used in urban areas. It can also be used for light industrial applications as well as outdoor occasions. It is designed to produce 230 – 250 Volts AC at a standard frequency of 50Hertz as well as 12Volts stabilized DC. It has over 40 versions depending on the spring type and gear system employed. It can employ pulleys and belts or chains and sprockets or any combination of the three technologies instead of meshing gears. The gear trains are carefully designed so as to produces the required torque while the flywheels ensure constant and sustained rotary motion of the alternator rotor. The gear train is carried on ball bearing for minimum friction, minimum rolling resistance and maximum momentum.

Climate change, global warming and energy deficits in the country and region are real. Their effects have severely affected the environment. This invention employs green and clean technology which has multiple benefits to the industry, environment and all life in general. It is a potential permanent regional and continental domestic power solution. It is cheap, can be manufactured from local materials and can be purchased at a price of an ordinary local bicycle. The generator operates independently from the national and international electricity power grids. This generator can replace the use of charcoal and fire wood thereby reducing green house emissions by a wide margin as well as slow down the rate of deforestation

## **b) SME Category**

### **1. First prize** was awarded to the **International Trade and Marketing Ltd**

**Project title:** Rice Bran Utilization – from waste material to marketable nutraceuticals and functional food

Rice Bran is regarded as a waste material unfit for human consumption due to its extreme instability where it becomes rancid within a few hours of milling. Rice Bran with the coordination of Dr. Amr Helal (five years of academy-industry cooperation) has successfully found its way into the Egyptian market. In the upcoming years, a waste material of no value will be an essential commodity of high value in different industries as well as a new commodity in new industries in the country and hopefully do the same in African Countries growing rice. Due to successful stabilization process, this rapidly rancid material becomes stable with shelf life more than 12 months. Accordingly it turns into high value commodity. Stabilized rice bran was exported (for the first time from Africa to Europe) at EURO 650 compared to its price as waste material (only EURO 200). Fifteen tons were exported as a sample to Holland. The plan is for it to enter the school nutrition program, 165000 meals daily.

### **2. Second prize** was awarded to **Nuru Energy Ltd**

**Project title:** Simple pedal generator that satisfies over 90% of rural household's lighting needs.

The company designs, develops and manufactures a range of products tailored for rural markets - excellent quality, priced to fit rural budgets and good for the environment. It distributes its products through multiple channels, including its own network of rural village level entrepreneurs. Kerosene is ubiquitously used as it is portable, can be purchased in increments as and when income is available and is generally used to complete tasks. The patent-pending Nuru Lights are designed with the same criteria: small, portable LED-based lights used as individual task lights or combined in a variety of ways to provide even more light. When fully recharged, each Nuru light provides 8-28 hours of light, equivalent to 1 week of usage. The Nuru Light also serves as the power module for a range of snap-on Nuru accessories such as a room light and mobile phone charge.

### c) Group Category

#### 1. First Prize was awarded to **Ahmed Hassan and Mohammed Gouda**

**Project title:** Subsurface Detection Air Vehicle- to solve the landmine detection and removal problem which has a large impact on human life. The team designed and built the product with three major patentable parts; **(1) an innovative architecture for the Ground Penetrating Radar (GPR) utilizing embedded systems, which is lightweight and capable of penetrating the ground from a distance above the surface (unlike available GPR solutions that are very large, heavy, thus need to be location fixed); (2) a combination of the lightweight GPR and a flying drone (Unmanned Air Vehicle- UAV) providing safety & speed of scan; and (3) a decision-making detection algorithm.** GPRs can be used in a variety of media, including rock, soil, pavements, structures, and more. GPRs can detect objects, sediments, changes in material, voids, and cracks, making SDUAV a very relevant product for many industries, especially surveillance and oil companies that want to secure land-fields.

Description of Impact: The GPR air vehicle has a variety of applications solving different client needs. We focus on one target market, landmine detection, due to its large demand and size. There are 110 million mines worldwide. The top 10 countries in Millions (M) of landmines are: Egypt (23M); Angola (9-15M); Iran (16M); Afghanistan (10M); Iraq (10M); China (10M); Cambodia (up to 10M); Croatia (2M); Somalia (up to 2M in the North); Eritrea (1M); & Sudan (1M). **The impact is on three major areas: (1) humanitarian, by eliminating the risk of human lives during detection, (2) cost reduction, and (3) speed-up of the detection process.**

#### 2. Second Prize was awarded to **Moustafa Alzantot and Moustafa Youssef,**

**Project title:** Automatic construction of indoor Floor plans- to leverage standard cell phones and their built-in sensors to automatically and

transparently construct the indoor floor plans and collect the semantic information automatically

The invention that is the core of this nomination is developing a **ubiquitous and automatic indoor geographic information system**. Such a system will allow for the **automatic construction of indoor floor plans** of virtually any building around the world as well as identifying automatically the **points of interest** inside buildings including, elevators, stairs, area type (office, meeting room, shop, restaurant, etc) in addition to other **semantic information** about the building such as the area size and type. The basic idea is to leverage standard cell phones that are available with us and their built-in sensors to automatically and transparently construct the indoor floor plans and collect the semantic information automatically.

The proposed system for the automatic construction of indoor floor plans enables a ubiquitous indoor positioning system that works in any building around the world, i.e. the indoor-equivalent of GPS, which in turn enables a myriad of **commercial and critical applications** that can boost the economy and enhance the life of ordinary citizens including indoor navigation, asset tracking, indoor ads, first-responders safety, among others.

#### d) Institutional Category

1. **First Prize** was awarded to Kenya Medical Research Institute (**Dr. James Kimotho**)

**Project title:** Elisa –Based Kits for Detection of Hepatitis B & C Viruses - affordable kits for screening and diagnosis both of Hepatitis B and Hepatitis C Viruses

This innovation project was conceived to address the ever increasing health problem. It was design to address the challenges related with Hepatitis virus infection. Hepatitis B infection is caused by Hepatitis B Virus (HBV) which is a double-stranded DNA virus coated with an envelope containing Hepatitis B surface antigens (HBsAg). The presence of HBsAg in blood matrix is an important marker for HBV infection and it form the basis the enzyme-linked Immunosorbent Assay (ELISA) and Immunochromatographic strips (ICS) kits currently in the market.

Kenya Medical Institute has developed a cost-effective ELISA kit for detection of HBsAg in plasma and serum using polyclonal antibodies. The kit is being produced locally in Kenya the Kenya Medical Research Institute (KEMRI). The project has also come up with a Hepatitis C Virus (HCV) test kits based on ICS platform. The products are in the commercialization phase.

2. **Second Price** was awarded to Kenyatta University Chandaria Business Innovation and Incubation Centre, (**Alex Kibet**)

**Project title:** A Solid Battery Powered by Chicken droppings to provide off grid energy for farmers

The project was based on performance of aluminum and copper organic battery powered by chicken droppings. It is a form of renewable energy and is

the most preferred in energy production since it is environmental friendly and it does not get exhausted. The electricity supply grid have not diversified to most rural areas and if it does, it is expensive and unaffordable to ordinary people at the village and this calls for a cheaper alternative source of energy. In this project the chicken droppings were treated or doped to give the required optimum voltage, the best electrodes were chosen and finally an appropriate casing designed for the battery. By connecting more cells in parallel, the power generated increased significantly. A larger battery will be able to generate more power and hence be used to light homes in rural areas where there is no electricity supply and where there is need to cut power cost. This project can affordable since the materials are readily available in rural areas.

### **III. CRITERIA**

The aim of the COMESA Innovation Award is to recognize promote and celebrate individuals and institutions that either:

- Have used Science, Technology and Innovation (STI) in practical applications to further the COMESA regional integration and development agenda; or
- Have an invention that has the potential to further the COMESA regional integration and development agenda.

#### **Categories:**

1. Young (35 and below male and female)
2. Woman (Open to all Females)
3. SMEs ( SMSs that meets the definition of SMEs of a COMESA member state)
4. Group (open to all collaborative efforts)
5. Institution (Open to all institutions of any kind)

\* Submissions are not limited to one category therefore a nominee can make submissions in more than one category.

#### **Nominations:**

The Awards will be done through a nomination process. Any person or company from anywhere in the world can submit a nomination.

#### **Who is eligible?**

Only the following can be nominated:

- Citizens or long term legal residents of member states,
- Teams of less than four members with at least one citizen of a member state.
- Teams of 5 or more with at least 3 citizens of a member state.
- A non-citizen member team will be considered if all its team members legally residing in and the project based in a member state.
- SMEs who are based in and operate in member states,
- All institutions who are based in and do a substantial amount of business in member states

#### IV. JUDGING PANEL AND JUDGING CRITERIA

A five member technical evaluation panel chaired by a member of the innovation council shall be constituted by the COMESA Innovation Council to assess the submissions. The panel will make recommendation to the judging panel. A seven (7) person judging panel shall be established to review and recommend the names of the winners for consideration by the Council of Minister before submission to the Chair of the COMESA Authority for the Awards

Criteria	Score	Description
Novelty, Creativity/Innovativeness	35	New Idea, Significant advancement in the field, Product/prototype, commercial viability, Patentability
Scalability	20	National, regional & global (impact on Forex)
Economic Impact	20	Job creation, revenue, value addition, cost savings, efficiency, competitiveness, wealth creation, enhance access to services
Social Impact(actual or potential)	15	Improve quality of life/human development (women and youth productivity)
Environmental Impact	10	Environmentally sustainable
Total	100	

All the submissions must be in English or French, the nominations are to be submitted **by 20<sup>th</sup> February 2015** electronically to e-mail [innovation@comesa.int](mailto:innovation@comesa.int) and copy to [fkongongo@gamil.com](mailto:fkongongo@gamil.com) or by Courier or registered mails to COMESA Secretariat

\* Please see attached nomination form for submission details.