

Africa Storytelling Challenge— Notable Submissions: In Okey Esse's Words

Committed to championing scientific innovations and advancements, Esse is affecting change in his community and throughout Africa—and this year's judges of the Africa Storytelling Challenge lauded these impressive efforts. Recognized as a runner-up in this year's contest, Esse shares his essay submission below.

Four years ago, I visited Cross River State, in Nigeria and when I saw deforestation in Owai and 7 other neighbouring communities. I got on my knees and wept. At Owai, I stood and watch the night Ekatteh died, it rained endlessly. Her sullen eyes—scarlet and dilated—shut in with a hot, almost steamy tear, as she let out her final cough which also would be her last breath.

Ekatteh had battled myocardial ischemia for 7 years— a heart disease she contracted from her many years of inhaling smoke from cooking with firewood. She worked as a village food vendor to ensure her three children live and get education, something she did not afford herself.

This story is one of the several million stories of over 700 million households in Africa, whose lives have been severely threatened by the harmful consequences of unknowingly inhaling smoke that comes from cooking with charcoal, wood, and dung. Most of these families cannot afford basic healthcare services not because they are not working daily to earn a moderate living. They are poor because they spend roughly US\$500 (25% of their income) annually to purchase cooking woodfuels to prepare their foods. S\$500 per annum is more than what I spend with my family on cooking fuel. So, I told myself that I will devote my entire life to provide clean and safe solutions to combat indoor air pollution that causes 100,000 deaths in Nigeria annually and leave those that survive the smoke with serious health problems like low birth weight, impaired mental abilities and birth defects among children born to women who are exposed during pregnancy.

With the help of my team, family and close friends, we raised funds to establish the company with a very clear mandate. Today, we design, develop and locally manufacture Powerstove: world's first and only 100% smokeless biomass cookstove with built-in self-powered IoT cloud-based remote system to monitor in real time a single day of cooking, the amount of Co2 and biomass saved, Black Carbon prevented, and total electricity generated.

Yes, you read right; electricity generated. Powerstove burns biomass and then the TEG device converts the heat energy from the combustion chamber to micro off-grid electricity as a source of power to charge phones, power radio or power LED bulbs using the built-in USB and DC port providing a convenient source of electricity in remote areas.

After weeks of this technological breakthrough, and to ensure that we achieved our objective, we improved on the technology further to guarantee Powerstove cook foods 5x faster, emitting 65% less CO while burning with 70% less of our proprietary water-resistant Goodlife Biomass Pellets produced from forest and agricultural waste. In so doing, households using Powerstove and Goodlife Biomass Pellets, will actually be saving \$250 annually, giving poor families (who majority of them leaves on less than \$2 per day) another chance to pay school fees, start a business, pay health-related costs or simply save for a rainy day.

Today, when we look back in the same communities that families struggled to feed and expose themselves toxic smokes and see how far their livelihood have been improved since they started using our products, we became motivated to do more for them. Hence, we pushed the boundaries further with the introduction Data-Enabled Climate Finance (DCF) and Pay-As-You-Cook (PAYC) Asset Finance. PAYC asset finance has made it possible for most poor families in need of our products but are hindered to acquire it because of the high retail cost to make only 10% down payment, start using the products and pay the balance within 6 months. Like moth to the light, families flock to our retail points to upgrade the cooking stove. This strategy has deepened our technology usage and help poor families come out poverty because these families can use their monthly savings on cooking woodfuel to pay off the balance of Powerstove before the due date.

Also, tapping into climate financing as a tool to spread clean cooking is not a new idea. However, many clean cookstove distributors keep the rewards of carbon mitigation for themselves, for instance as a way to subsidize the cost of improved cookstoves. However, Powerstove believes that getting the financial rewards of carbon mitigation directly to the women who cook has both strategic and moral benefits. This approach closes the loop between the woman changing her cooking behavior and the market-motivated climate credits generated by CO₂e reductions from clean cooking. The poorest 700 million Africans will be the hardest hit by global climate change. We work to ensure that all people have access to the benefits of their own carbon emissions mitigation activities, including the monetary benefits.

Powerstove IoT enabled data is used to get cash payments to rural households for their carbon offsets when they use Powerstove. In collaboration with our Project partners, we developed the Data-Enabled Climate Financing (DCF) model. With this model, Powerstove works with partners to enable mobile payments from a climate fund to reach the women who use improved cookstoves directly.

Finally, we are more than happy to share our story not only of how we are changing lives but also how Powerstove positively impacts on 10 out of 17 Sustainable Development Goals namely: Goal 1: No Poverty, Goal 2: Zero Hunger, Goal 3: Good Health and Well-being, Goal 4: Quality Education, Goal 5: Gender Equality, Goal 7: Affordable and Clean Energy, Goal 8: Decent Work and Economic Growth, Goal 11: Sustainable Cities and Communities, Goal 13: Climate Action, and Goal 15: Life on Land.

Thank you.

The content and views presented here are those of the individual Challenge participant.

About the Africa Storytelling Challenge

The inaugural [Champions of Science—Africa Storytelling Challenge](#) took place between May and August 2018. Open to all scientists doing innovative work in Africa, the contest drew more than 100 submissions. An independent selection committee of scientists, policymakers and science journalists reviewed the applications and selected the winners. Each winner will be awarded \$5,000 and will have the opportunity to share their stories at the 2019 American Association for the Advancement of Science (AAAS) annual meeting in Washington, D.C.