

---

**LETTER TO THE EDITOR**

**BUILDING ONE HEALTH THROUGH SCHOOL-COMMUNITY-UNIVERSITY MODEL IN SIERRA LEONE**

Njai, Alhaji U.<sup>1,2,3</sup> and Vakunta, Linda Y.<sup>1</sup>

<sup>1</sup>Project 1808, Inc., <sup>2</sup>University of Sierra Leone, <sup>3</sup>University of Wisconsin-Madison

Project 1808, Inc. is a multi-generational and multi-layered One Health based school-community-university partnership model for sustainable development in Sierra Leone. The country, Sierra Leone has faced successive years of war (Abdullah,1998), a deadly Ebola outbreak (Owada et al., 2016), and in 2017 severe environmental disasters in the form of floods and landslides (Usamah, 2017). It was precisely for these reasons that Project 1808, Inc. was conceived in 2011 to help break this logjam of community challenges and build sustained health by engaging, exciting, empowering youths with tools that foster community well-being in Sierra Leone. Building resilient and thriving communities in Sierra Leone is central to the Project 1808 Model and embodies the One Health concept of the interdependence of health (and disease) among humans, domestic and free-ranging animals, and our shared ecosystems (CDC, 2010). Our One Health concept further embodies an integrated, holistic, multidisciplinary life cycle of programs from school to university that aims to tackle significant global or public health problems. We draw upon the global thinking and local action akin to a World Without Borders, where our collective thoughts and efforts are used to develop tools that enable the individuals, families, and their local communities to empower themselves, sustainably manage and utilize their natural resources, and at the same time ability to adapt, anticipate, and better respond to changes in their environment. To this end, we engage and connect students, teachers, community members through small pointed and targeted projects that address disconnects between learning and community problem-solving in Kabala, Koinadugu

Districts and Freetown, Western Area of Sierra Leone.

Project1808, Inc has successfully developed, implemented, and evaluated strategies for preparing youth and future leaders in Sierra Leone through a School-Community-University Partnership (SCUP) Model. This partnership includes several primary and secondary schools in Kabala, Sierra Leone, and Universities of Sierra Leone, University of Makeni, programs in the University of Wisconsin-Madison, and Institute for Medical Sciences at University of Tokyo, Japan. Critical to Project 1808 (SCUP) model is knowledge flows from ideas in school and university to community practice and vice versa, where community ideas shape school and University pedagogy. Fundamental to the Project 1808 SCUP model is integrating research, development, and learning (reflections) based on three core pillars of education, community, and opportunity. Young people who can read, write and do arithmetic are more capable, and open themselves up to opportunities to be trained for better jobs. They are better able to think of and create their own new opportunities. Additionally, better-trained teachers are the key to helping build better-trained pupils. The community has always been the bedrock of our culture. Channeling youthful and adult energy towards service learning and community projects, such as health, agriculture, environment, arts, and entrepreneurship helps to make good things happen, as well as to build awareness of the link between individual and community (animal and ecosystem) success (Wallerstein and Edward Bernstein, 1988;

Vakunta, 2015; Younis and Yates, 1997). Our students will participate in not just learning but in community-betterment activities. We also wanted our students we work with in the schools to be empowered to create opportunities out of challenges they experience either in school or in the community. Opportunities for self along with internships with companies and or organizations further down the line will help develop new possibilities for employment for our pupils. From our first cohort of 64 students recruited in 2011 from various primary and secondary schools in Kabala, Koinadugu District, Project 1808 now supports 500 students with educational support (books, uniforms, tuition) and a strong after-school program supplemented with nutrition.

From our three fundamental pillars of education, community, and opportunity, we have built a wide moat of programs centred around youth empowerment and one health. Indeed, when we began supporting our first cohort of 56 students, we soon realized that the child's education is dependent on environmental factors such as access to clean water, food and nutrition, health care, public health system, infectious diseases, socio-economic conditions, and so on. After two of our students from the Kabala School for the Blind died of malaria and numerous school absences due to malaria, typhoid or other health issues, we launched a unique community health education and promotion program to address current and emerging issues of public health concern. We developed a unique global health field course program that brought 15 University of Wisconsin-Madison (UW-Madison) students and 15 University of Sierra Leone (USL) student to engage and connect with over 400 primary and secondary school students, teachers, and community members through small-pointed and targeted activities aimed at building local health capacity. From 2012 to 2014 in Koinadugu District and Freetown, Project 1808, Inc. teams of students from UW-Madison and USL engaged in global health and sustainability innovation projects focused on nutrition (non-communicable disease prevention through nutrition education), clean water, hygiene and sanitation (Understanding

water sources, use, purification, sanitation, water-borne disease, and prevention through best hygiene practices (innovation for better sanitation), waste management (Understanding safe ways of handling, disposing waste, innovations for solid waste management, and waste to worth ideas), women health and sexual health education (understanding women's health issues, education on healthy lifestyles, hygiene, disease prevention, and reproductive health), teenage pregnancy (workshops addressing teenage pregnancy including culturally sensitive approaches to prevent teen pregnancy, little libraries in remote communities (innovation to enhance literacy and numeracy in remote hard to reach regions of Koinadugu District), in the Kabala community where western literacy and numeracy rates are low, Infectious Disease (community education on infection, symptoms, prevention, treatment of infectious diseases), community mapping ( understand community health including animal and ecosystem health through walks, field trips to sites, discussions, and learning), climate change and mitigation (understand the issues around deforestation, land degradation, renewable alternative energy sources, and climate smart agricultural and sustainability innovations) , and workshops on career, self-empowerment and leadership for individual success. The global health field programs increase awareness about one health and practical intervention approaches to address community challenges. It also allowed for knowledge transfer between locally from university students to primary and secondary school students in Kabala and between students from UW-Madison and USL. Because of the global health and sustainability innovation programs, we also saw increase engagement, ownership, leadership about public health issues in the community. This was evident in 2014 to 2015 deadly Ebola outbreak in Sierra Leone, with young people from Project 1808 leading social mobilization and IPC education efforts to prevent the spread of the disease into their communities. Our global health and sustainability innovation programs provided the tools needed to adapt and respond effectively to the threat of the deadliest Ebola outbreak in history.

The linkage between human, animal health to our shared ecosystems was fundamental to Ebola life cycle (Meseko et al., 2015). The deadly nature of the outbreak in Sierra Leone was also largely dependent on social, cultural, environmental, and economic determinants of health (Alexander et al., 2015). In our efforts to combat the deadly Ebola outbreak and build health systems capacity, Project 1808, Inc. successfully established Ebola control research program with the University of Sierra Leone, Joint Medical Unit(JMU) at 34 Military Hospital, University of Wisconsin-Madison, and University of Tokyo Institute for Medical Sciences, Japan. These Program has resulted in the 1) establishment of collaborative Ebola projects in Sierra Leone and a laboratory at JMU, 2) understanding the epidemiology of Ebola virus infection in Sierra Leone, 3) understanding the Host responses to Ebola virus infection (Eisfeld et al., 2017) (<https://news.wisc.edu/in-the-heart-of-devastating-outbreak-research-team-unlocks-secrets-of-ebola/>), and 4) development of an Ebola vaccine that is on track for phase 1 clinical trials (ref). Along these lines, Project 1808, Inc. organized two conferences focused on, 1) Ebola control research partnership and cooperation 2016 in Freetown that brought stakeholders, scientists, and professionals to discuss progress, capability, and future directions, and 2) Africa and Environment symposium 2015 in UW-Madison engaged academics, students, community members on emerging and contemporary issues of the environment beyond Ebola in Africa. Our collaborative work on Ebola control has now expanded to long-term action and surveillance on known neglected and unknown infectious diseases in Africa.

Post-Ebola outbreak in Sierra Leone, Project 1808, Inc. in partnership with US Embassy has established an Ebola Survivor Livelihood Skills Development Training Center at Rokel, Freetown that provides training in tailoring, computer, driving, and catering. So far, the centre has graduated 100 survivors and plans are in place to continue with other sets of survivors. In March 2017, Project 1808, Inc. in partnership with SONY Corporation, Asia Pacific Alliance for Disaster Management (APAD), University of Wisconsin-

Madison, Institute for Medical Sciences at University of Tokyo, and Sierra Leone Association of Ebola Survivors (SLAES) launched a community health education and movie public viewing events dubbed “Wellbodi 4 Tidae en Tumara- Nah Fuh Check Am”. Hundreds of people came out in Makeni city and Rokel community, Freetown for the SONY movie public viewing events, which included health checks (blood pressure, heights, weights) and screening of public health messaging videos on Ebola, malaria, hypertension, cholera, and environmental sanitation in between Hollywood blockbuster movies such as Spider-Man, Karate Kid, and Queen of Katwe. This SONY public viewing event was innovative and provided opportunities for strengthening the health and pandemic disaster preparedness capacity in Sierra Leone (Cancedda et al., 2016). Project 1808, Inc. in partnership with Strides for Africa in Madison has also launched the Wata4Wellbodi program in Koinadugu District to provide clean portable water for various communities. Access to clean water is not just a human right, but it impacts health, children’s education, biodiversity, and overall human productivity. Zoonotic water-borne diseases provide an important linkage between human, animal health, and our shared ecosystems. Through our partnership with Strides for Africa, we have installed our first hand dug well at Bilmaia Community in Kabala this year. We plan to install few more wells in water-stressed communities this coming year (2018) along with community education on water, health, and sustainability.

Critical to one health and sustainable livelihood is building community capacity at all levels and functions. To this end, Project 1808, Inc. has organized Science and Leadership Festivals in Koinadugu District to promote science, technology, engineering, and mathematics (STEM) and leadership, which are fundamental to advancing the quality of life. In 2017, over 500 students and community members attended the festival in Kabala where they observed, experimented, and explored the fields of biology, chemistry, physics, ecology, leadership, and more etc. through hands-on experiments and demonstrations. At the university level, Project 1808, Inc. in partnership with the University of Sierra Leone is developing a

Center for Infectious Disease Molecular Sciences Environment and Toxicology (CIDMETS) that will focus on interdisciplinary one health research, teaching, and training collaborations. CIDMETS will enhance the capacity of students, faculty and staff to engage in one health-related community work. Finally, Project 1808 plans to build a University in Koinadugu District that will be a multigenerational place for all forms of learning, creativity, innovation, and community engagement focused on one health, agriculture, technology, entrepreneurship, and leadership with the unique African culture in mind. The university will offer a unique and sophisticated open learning environment that will be supported by Project1808's collaborative network of schools, communities, universities, and partners (SCUP) globally and locally. It will promote Project1808's SCUP model as a means for sustainable livelihood in Koinadugu District, Sierra Leone, and the region.

## References

Abdullah, I, 1998, 'Bush path to destruction: the origin and character of the Revolutionary United Front/Sierra Leone', *The Journal of Modern African Studies*, vol. 36, no. 2, pp. 203-235.

Alexander KA, Sanderson CE, Marathe M, Lewis BL, Rivers CM, Shaman J, et al. (2015) What Factors Might Have Led to the Emergence of Ebola in West Africa? *PLoS Negl Trop Dis* 9(6): e0003652. <https://doi.org/10.1371/journal.pntd.0003652>

Corrado Cancedda, Sheila M. Davis, Kerry L. Dierberg, et al. Strengthening Health Systems While Responding to a Health Crisis: Lessons Learned by a Nongovernmental Organization During the Ebola Virus Disease Epidemic in Sierra Leone, *The Journal of Infectious Diseases*, Volume 214, Issue suppl\_3, 15 October 2016, Pages S153–S163, <https://doi.org/10.1093/infdis/jiw345>

Centers For Disease Control and Prevention, 2010, Operationalizing "one health": a policy perspective—taking stock and shaping an implementation roadmap: meeting overview. Stone Mountain, Georgia.

<http://www.cdc.gov/onehealth/pdf/atlanta/meeting-overview.pdf>

Eisfeld AJ, Halfmann PJ, Wendler JP, et al. Multi-platform 'Omics Analysis of Human Ebola Virus Disease Pathogenesis, *Cell Host Microbe*. 2017 Dec 13;22(6):817-829

Meseko CA, Egbetade AO, Fagbo S (2015), Ebola virus disease control in West Africa: an ecological, one health approach, *Panfrican Medical Journal* 21:6. doi: 10.11604/pamj.2015.21.6.6587. eCollection 2015.

Owada, K, Eckmanns, T, Kamara, K, Olu, O (2016), "Epidemiological Data Management during an Outbreak of Ebola Virus Disease: Key Issues and Observations from Sierra Leone". *Frontiers in Public Health*. 4.

Usamah, M (2017), Analysis of Causal and Trigger Factors of the August 2017 Landslide in Freetown, Sierra Leone: towards a Sustainable Landslide Risk Management in Sierra Leone, technical publication, UNDP Sierra Leone and Environmental Protection Agency, Freetown.

Vakunta, L (2015), Young People's Environmental Perceptions, Future Orientation and Perceived Instrumentality of Education: A Case Study in Post Conflict Sierra Leone. By Linda Yebong Vakunta. A dissertation submitted in partial fulfillment of the Requirements for the degree of Doctor of Philosophy. (Environment and Resource) at the University of Wisconsin-Madison

Wallerstein, N and Bernstein, E (1988), Empowerment Education: Freire's Ideas Adapted to Health Education, *Health Education Quarterly*, 1988 Winter;15(4):379-94.

Youniss J and Yates, M (1997), Community service and social responsibility in youth, Publisher: University of Chicago Press; 1 edition (August 18, 1997); Language: English; ISBN-10: 0226964833; ISBN-13: 978-0226964836