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HUMANITARIAN ENGINEERING AS A CAPACITY DEVELOPMENT EFFORT: AN IEEE SMART VILLAGE CASE STUDY

Irvine Lumumba [1], Mercy Chelangat [2]

[1]IEEE Kenya Section, P.O Box 9378, Nairobi Kenya

[2]IEEE Kenya Section, P.O Box 9378, Nairobi Kenya

chelangat_ke@ieee.org

Abstract

As corporate citizens, Engineers have a unique opportunity to apply and test their skills in helping the community overcome various humanitarian challenges that plague our society especially in given the rapid transformation that Covid-19 has forced society into.

Traditional philanthropic activities generally comprise of activities such as corporate giving and volunteer programs, as well as new efforts such as impact investing and skills-based volunteerism. Skills-based volunteerism programs have a strong business case for organizations as they increase personnel engagement and retention, while also measurably increasing the skills and talents that personnel obtain and stack up.

This paper draws lessons for skills-based volunteerism from IEEE Smart Village Global that we hope can introduce new paradigms for capacity development, mentorship and overall engineering involvement in solving the problems we face in our society while enhancing the individual's skill set.

Keywords: capacity development, mentorship, skills-based volunteerism, professional development, humanitarian engineering

1 Introduction

A lot of agreement is emerging pointing to the consensus that capacity development is the main cog in the engine of human development. According to the UNDP, capacity development is the process through which individuals, organizations and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives over time. The bedrock of the UNDP approach to capacity development is transformation. The said capacity development initiative must result in a transformation that is generated and sustained over time from within. Capacity therefore, is development.[1]

Capacity development can take many forms and paradigms following the UNDP primer, however for this case study, the focus will be on skills based volunteering based on the IEEE Smart Village model.

Using a volunteer combination of engineers, motivated entrepreneurs and community members, the IEEE Smart Village has realized resounding success in using engineering technologies to lift marginalized communities out of poverty using access to power, education and entrepreneurship as pillars.

2 Methodology

For this study, the methodology used is three-fold:

i. Understand the role of skill-based volunteering as a capacity development measure
ii. Understand IEEE Smart Village methodology regarding skill-based volunteering
iii. Recommend approaches for IEK to employ for member capacity development

According to the National Volunteerism Policy, volunteerism is considered as a critical national asset to facilitate Kenya`s attainment of its socio-economic goals; including the MDG's and thereafter contributing to the Sustainable Development Goals.[2]

Volunteerism contributes immensely to the country's social, economic and political development. In fact, according to a research done by the Ministry of Labour in 2016, volunteering in Kenya amounts to about 3.66% of Kenya's GDP.[3]

According to the same study, in the same year, volunteering contributed more to the country's GDP than the health sector, mining, professional services, the hospitality sector, water and electricity supply sectors.[3]

The IEEE Smart Village is a humanitarian outreach program of the IEEE that is member-led and not-for-profit with a mission to deliver impact to the world's poorest and most energy-deprived populations.

IEEE Smart Village supports these efforts with volunteers spanning multiple disciplines including fund development, technology, education, proposal evaluation, marketing, program operations and partner engagement. Many of the ISV Volunteers are IEEE members. However, that is not a requirement and volunteers are needed from a wide range of backgrounds.[4]

The program therefore runs like a skills and entrepreneurship accelerator, empowering both the volunteers and the target communities in the process. For its organizational structure, the IEEE Smart Village has a Governing Board, a Management Committee, different departmental committees and continental working groups including the Africa Working Group.

Through this structure and working model, IEEE Smart Village has funded and is leading multiple projects in Africa all focussing on energy, education and entrepreneurial development. These projects are reviewed and supported by IEEE volunteers who check the feasibility, implementation, delivery and operational aspects of any given project.

In Kenya for instance, through its local and foreign volunteers, IEEE Smart Village has deployed and is currently supporting the following flagship project:

- The Maa Trust [4]
    - The Maa Trust is an independent non-profit organization that works towards successful environmental conservation through sustainable community development in the Maasai Mara ecosystem.
    - The 2 year program has five elements:
        - Design and build a solar powered ISV IT hub with capacity for 25 people.
        - Teacher IT training and ongoing support to ensure that schools in the area have access to adequate electricity and computer technologies.
        - Career guidance to help the youth get linked to opportunities for training and employment.
        - Develop a solar enterprise, Maa Solar, with a focus to identify and address rural electrification needs.
        - Offer vocational skills training for the uneducated youth by employing innovative building technologies

Across Africa, IEEE Smart Village volunteers are also implementing and supporting projects. These include a mobile power system project (Shaybis Nigeria Ltd), an off-grid energy project (Darway Coast Nigeria Ltd), and a sustainable electrification and connectivity project (Renewable Energy Innovators-Cameroon).

All the above volunteer-run projects provide immense professional growth and community immersion opportunities for the Engineer volunteers resulting in capacity development and transformation from within as highlighted and recommended by the UNDP.

3 Results

Volunteerism Status in Kenya

According to research by the Ministry of Labour, volunteers in Kenya indicated they had contributed an average of 48 hours per annum. Factoring this to the total estimated number of volunteers, the total number of volunteer-hours computes to 669,630,288 hours annually.
Table 1 below shows, based on average wages per job category, the monetary contribution of volunteers to the economy. It can thus be concluded that, volunteer work contributed Kshs. 236,277,890,000 to the national economy in 2016, amounting to 3.66% of the GDP.[2]

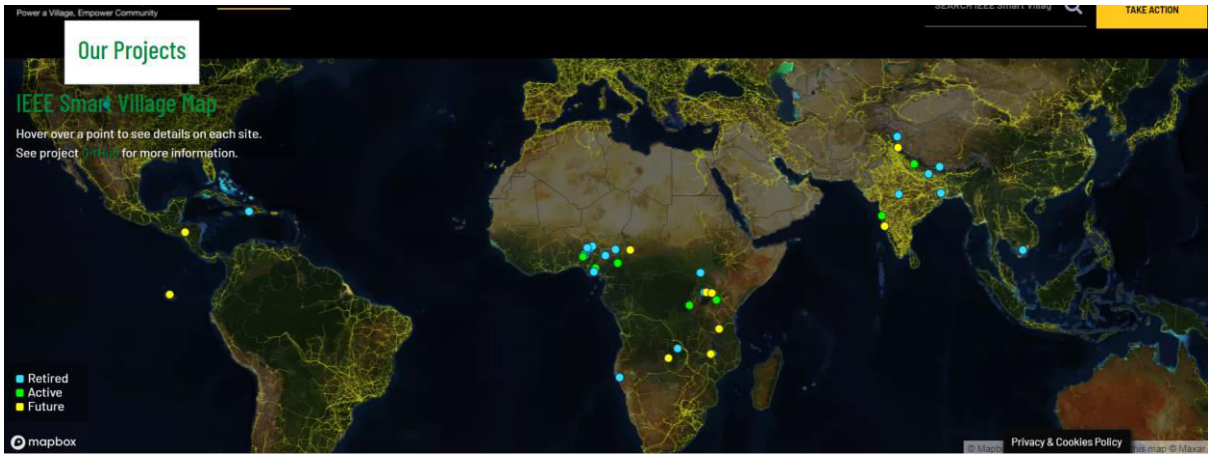
Table 1: Volunteer contribution to the economy

Education Level	Percentage	Average monthly Salary*	Hourly rates	Total Hours annually	Total Salary
No schooling	8.62	22,000	137.5	57,722,131	7,936,792,989
Primary	18.46	25,000	156.25	123,613,751	19,314,648,620
Secondary	30.84	50,986	318.66	206,513,981	65,807,745,128
Diploma	26.62	65,956	412.23	178,255,583	73,482,298,842
University Degree	15.46	107,779	673.62	103,524,843	69,736,404,422
Total				**669,630,288**	**236,277,890,000**

Map of IEEE Smart Village Projects Globally

With volunteers spread across the world, IEEE Smart Village is able to engage them to deploy and monitor projects across the globe as shown in the map below. The Africa Working Group has over 100 volunteers from over 30 countries across the African continent. The volunteers collaborate and volunteer on the different projects based on interest and capability.

Map 1. IEEE Smart Village projects globally, click to view site.[4]



4 Discussion

For any organization interested in sustainability and human development, capacity development of its human resource, be it members or staff, then becomes a necessity rather than an afterthought. Increasingly over time, businesses and corporate organizations have become more socially aware and active with a rise in impact investing and social awareness.

From the wide variety of corporate citizenship programs, skills-based volunteering has a strong business case as it has been shown to increase employee engagement and retention as well as measurably enhancing the skills that employees bring back to the organization.

There are a variety of skills-based volunteering models available the go-to ones being: the shorter term "skilled-day of service" and the longer term "project consulting". IEEE Smart Village utilizes the latter in its projects across societies.[5]

The shorter term skilled-day of service model is best for organizations that want to engage a large number of employees to achieve a flash consulting model. In this model employees are engaged with the community/clients over a short period of time such as a day consulting on their challenges and seeking rapid responses and potential solutions.

On the other hand, the project consulting model links individuals or teams to triaged non-profit projects for a longer period of time spanning weeks to months. The project problems in this case are much more complex and cannot be solved in rapid consulting. The projects could well span strategy and design, implementation, commissioning and training as it would be in a standard industry project.

The engineering fraternity in Kenya would benefit both the society and themselves by applying both of these models while reaping massive capacity development in the process.

This paper recommends a joint effort between IEK and EBK as the leading Engineering bodies in Kenya to explore and develop a framework of the professional development and capacity enhancement of its members through skills-based volunteering.

This could be addressed through a cohort based system where a formal program is organized and interested applicants invited to apply to participate. Through partnerships with other organizations and corporations, IEK and EBK can then deploy the said cohorts to support specific engineering or project aspects of the organizations while gaining professional value during the program. The cohorts and the programs can be organized based on career progression levels so that professionals at different rungs of their career can be adequately placed and catered for i.e. early career, mid/senior and executive levels.

5 Conclusions

There is an abounding potential for skills-based volunteering to be used as a game changer in addressing the engineering challenges that plague our society today. From civil and structural mistakes by real estate developers, poor energy management/utilization by organizations, digital transformation strategies in the wake of the pandemic and a general under-utilization of the engineering professional.

The careful review and consideration of the opportunities laid out in this paper could help us tackle some of these challenges as we seek to engineer a better society in light of the SDGs, Africa Agenda 2063 and the Kenya Vision 2030.

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References

1. Capacity Development: A UNDP Primer, https://www.undp.org/content/dam/aplaws/publication/en/publications/capacity-development/capacity-development-a-undp-primer/CDG_PrimerReport_final_web.pdf, last accessed 2021/09/23

2. National Volunteerism Policy, https://www.labourmarket.go.ke/media/resources/FINAL_VOLUNTEERISM_POLICY.pdf, last accessed 2021/09/23
3. Measuring Contribution of Volunteer Work, https://iave.org/iavewp/wp-content/uploads/2017/07/Report-Measuring-Contribution-of-Volunteer-Work-rev-1.pdf, last accessed 2021/09/23
4. IEEE Smart Village website: https://smartvillage.ieee.org/about-ieee-smart-village/, last accessed 2021/09/25
5. Stanford Social Innovation Review webpage, https://ssir.org/articles/entry/the_promise_of_skills_based_volunteering, last accessed 2021/09/25