

Assessing MAARDEC

A Comparison with Other Assistive Device Workshop and Disability Organization Models

Innovations Case Discussion: MAARDEC

The workshop and disability organization model for the Mobility Aid and Appliances Research and Development Center (MAARDEC) features a multifaceted approach to serving the disabled community in Nigeria. In this issue of *Innovations*, Cosmas Okoli describes the system model he employs that goes beyond just providing mobility aids, including the mechanisms through which he is able to offer products and services that holistically improve the lives of people with disabilities. Although this model is not new and is practiced in similar forms by many other workshops in the developing world, it is insightful because it encompasses the range of disabled needs. Cosmas Okoli should be commended for working to provide opportunities, advocating for peoples' rights, and running a sustainable organization that has multiple profit streams.

Two major challenges face providers of mobility aids in developing countries: making and providing products that are appropriate for the environment in which they will be used, and finding financial mechanisms through which the products can be produced and purchased. Many of the products Okoli mentions in his article are innovative and were designed specifically for the Nigerian disabled. This is

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key, as 70 percent of disabled people in developing countries live in rural areas that require robust wheelchairs. Donated wheelchairs are often not built for the harsh conditions encountered in the developing world and spare parts can be difficult to find. Rural-appropriate wheelchairs can be made locally, as are MARDEEC's, and those at the Wheelchair Technologist Training Course at the Kilimanjaro Christian Medical Center in Moshi, Tanzania. Alternatively, chairs that are specifically made for rough terrain, like the Worldmade wheelchair designed by Motivation, UK, can be imported.

MAARDEC provides a variety of financial assistance programs to its customers, as well as counseling, physiotherapy, education, and microfinance opportunities, all of which are important to the provision of appropriate mobility aids. By finding ways to help a person purchase a device instead of receiving a donation, MAARDEC creates value for the product and a greater sense of ownership for the client. Microfinance programs help people with disabilities create business ventures and become financially self-reliant. In the future, MAARDEC might also look to provide mobility aid accessories to facilitate running small businesses. At MIT, we have been working to design a number of small business attachments that can be used to turn mobility aids into financial assets.

The MAARDEC model Cosmas Okoli describes, along with his plan to expand in coming years, most closely resembles the organizational structure currently used by the Association for the Physically Disabled of Kenya (APDK). APDK has numerous programs focused on building, fitting, distributing, and servicing mobility aids. They offer business attachments for their hand-powered tricycles, as well as microfinance opportunities for entrepreneurs. Their network, which is composed of eight branches, two manufacturing centers, and 290 outreach clinics around Kenya, is structured such that they can serve the disabled population in the entire country. To reach rural populations, APDK runs many community-based rehabilitation programs.

Okoli is savvy for having started two for-profit businesses to help subsidize MAARDEC. Turning a profit selling mobility aids can be tricky; many of the workshops with which we work have difficulty sustaining themselves solely off the sale of wheelchairs. This is most apparent in Africa, where they try to sell wheelchairs for around \$300 in a market with a per-capita income of only a few hundred dollars per year. Although their chairs are more appropriate for the local environment than donated products, it is difficult to compete with the free imported chairs distributed by donation organizations.

Most well-established organizations have income-generating activities beyond the sale of mobility aids. For example, the family that owns the Kien Tuong workshop in Ho Chi Minh City, Vietnam, runs two profitable gas stations. Having such businesses decreases the pressure to produce profits from the wheelchair workshop, and thus keeps prices low and increases the organization's capacity to provide financial assistance to its clients. The Tahanang Walang Hagdanan workshop outside Manila, Philippines, offers a number of employment opportunities within their facility for people with disabilities, including needlework, pharmaceutical

packaging, and woodworking. In Dar es Salaam, Tanzania, Disabled Aids and General Engineering builds custom metal products when they do not have tricycle orders to fill.

In his article, Cosmas Okoli touched on the important work of advocating for the rights of disabled people. Although policies for disability rights and accessibility are often difficult to implement and enforce, especially in the developing world, advocacy is an important facet of helping people with disabilities integrate into society. MAARDEC is not alone in fighting for its clients' rights while producing mobility products. The Freedom Technology wheelchair workshop in Mindanao, Philippines, was started by the French NGO, Handicap International (HI). This shop was established as a component of HI's mission to increase the self-reliance of people with disabilities around the world. Through Freedom Technology, HI can provide devices to promote independence while pushing for social change. Other examples of workshops and advocacy groups that work in tandem are the Thai Wheel wheelchair workshop and the Thai with Disability organization, located outside Bangkok, Thailand, as well as the Zanzibar Association of the Disabled (UWZ) and the UWZ wheelchair workshop in Stone Town, Zanzibar.

In the coming years, Okoli's progressive vision of MAARDEC will enable him to serve a much larger number of Nigeria's people with disabilities. Through the expansion of MAARDEC, he will hopefully be able to reach more of both the rural and urban disabled population and tune the designs of his products to the unique needs of each demographic. Incorporating many of the best elements of his colleagues' workshops in other countries, Okoli's multi-dimensional approach to providing technical, financial, and social services through MAARDEC will offer solutions to many of the obstacles that currently limit the freedom of people with disabilities.