

REPORT ON VISIT TO MALAWI – JUNE 6-26, 2006

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My recent three-week visit to Malawi began with the “Second Main Stakeholders Meeting” chaired by Jephthah Chagunda at the Malawi Rural Travel and Transport Programme. The results of that meeting were summarized in the minutes.

It was resolved, and later formalized by my visits, that the Polytechnic, under Dr. Ngoma, would conduct a design/structural analysis of the existing AfriCart bicycle-wheel handcart design. Mr. Mkwate is to provide them with a sample of the latest version of the AfriCart, and we delivered three sample handcart wheel-axle sets for Polytechnic faculty and students to use to develop and test appropriate handcart designs. Dr. Ngoma has signified his desire to collaborate with Mr. Singa of the Bunda College Agricultural Engineering Department, as well as with Dr. Harawa of the Millennium Villages Project, and Mr. Kazembe of Chitedze Research Station’s Farm Machinery Unit, to assess these several handcart designs in the field as well as in the engineering laboratory. I pledged funding for Dr. Ngoma to travel to Lilongwe to facilitate this collaboration.

Through the efforts of Mr. Mkwate, twelve wheel-axle sets of the type employed by Chinese smallholder farmers were ordered from Sinolink Investments Ltd. in Limbe, and delivered to the Malawi Handcart Project. These very heavy-duty components (costing US\$ 70 per set) are capable of carrying loads well in excess of one metric ton, far more than needed by the typical household. Five sets were donated to the Millennium Village Project, for communal use, possibly by rental. Individual wheel-axle sets were distributed to Dr. Ngoma of the Polytechnic, Mr. Singa of Bunda College, Mr. Mkwate, Mr. Mughogho, and Mr. Mkandawire of the Malawi Handcart Project. One set was presented to Mr. Chagunda of the MRTTP. for demonstration to the Lilongwe City Assembly, and after that demonstration are to be handed over to Mzungu HIV/AIDS demonstration village, near Chitedze for assessment by Dr. Grace Malindi’s AGRESS group. The 12th wheel-axle set has yet to be assigned, and, along with spare tyres, tubes, bearings, etc., is in the hands of Mr. Mkwate in Blantyre. Suggestions for its placement are welcomed. It is expected that lighter-weight and hence less expensive 26” spoked handcart wheels and axles can be imported through Sinolink, and we are currently exploring that possibility.

I brought with me in my baggage three samples of Chinese wheel-axle sets of pressed steel construction. A 10” x 3.5” set and a 13” x 4” set, each with 5/8” axle were given to Dr. Ngoma for assessment at the Polytechnic. One set had a pair of welded steel brackets that I designed and built, so as to raise the cart body for easier use. The third wheel-axle set of 10” x 3.5” size was given to Mr. Singa of Bunda College. These small wheels, in addition to being rugged, are far cheaper than the larger diameter spoked wheels, and retail in the USA at US\$ 4 for the 10” diameter wheels, to US\$ 7 for the 13” wheels. If comparable pricing were available in Malawi, a very strong handcart could be build for some US\$ 20, less than half the cost of a bicycle, wheelbarrow, or AfriCart handcart!

Several handcart assessment sites were established and/or visited during my stay. The largest site is the Millennium Village Project at Mwandama Village near Thondwe, south of Zomba. There, Mr. Mkwate has trained four carpenters and one bicycle repairman to build both AfriCarts and handcarts using the 26” x 2 ½” wheel-axle sets. I have initially funded this group to build 40 AfriCarts and 5 AfriCart ambulances, as well as 5 heavy-duty conventional handcarts using the Chinese 26” x 2 ½” wheel-axle sets. These are all to be distributed and assessed by Dr. Harawa’s

group. Mr. Mkwate will continue to supervise the construction and maintenance of the carts. A system has been established whereby the cart owners/users will take carts for maintenance and repair to any one of the aforementioned five artisans, who will perform the requisite services at no cost to the owner. They will record the serial number of the handcart, the date and the owner's name, as well as the nature of the problem and their estimated cost of repair. Periodically, Mr. Mkwate will pay them for their services, and will provide them with any necessary spares or repair parts/materials. If the initial owner continues to have problems attributable to his or her carelessness, the handcart will be repossessed and donated to another user. As with the case of the Chambwe Village and Mzungu Village test sites, successful and productive use of these donated handcarts will result in my donating more of them to these villages.

Mr. Singa at Bunda College currently has 5 AfriCarts and will be funded for at least 5 more, to be built by local carpenters, rather than by the Bunda College workshop. These will be distributed to surrounding villages for assessment by his agricultural engineering students. It is expected that a similar maintenance system can be established as was described above for the Mwandama Villages.

Two other village handcart test sites are in place, Chambwe Village and Mzungu Village, both AGRESS HIV/AIDS demonstration sites. The former village was initially approached by the Malawi Handcart Project in 2003, as a test site for goat-carts, but the available goats proved too small for this application. Six AfriCarts were donated in 2004 but there was inadequate supervision and assessment. Mr. Mughogho and I met with V.H. Chambwe and his advisors, and arranged for a supervision and maintenance programme, similar to that at Mwandama Village, and for the repair of several broken AfriCarts. We later presented two wheelbarrows to Chambwe Village, so that they could better assess the relative merits of AfriCarts as opposed to wheelbarrows.

We met with a committee at Mzungu Village, another AGRESS HIV/AIDS adjacent to Chitedze Research Station. Mr. Brand Mbale, a horticulturist at Chitedze, and an AfriCart user for the past 3 years, introduced Mr. Mughogho and myself to the villagers, who already had some familiarity with the AfriCart from its use on and around the research station. We established a maintenance and repair programme similar to that previously described for Mwandama and Chambwe Villages. It was agreed that Mr. Mughogho would be available to coordinate and execute maintenance issues, and that Mr. Mbale would also exercise some oversight of the programme.

Both the Chambwe and the Mzungu HIV/AIDS Village handcart assessment programmes were discussed with Dr. Grace Malindi of AGRESS, and she stated her department's interest in assessing this labour-saving transport technology within the context of the Ministry of Agriculture's "HIV/AIDS in the Agricultural Sector: Policy and Strategy, 2003-2008" document. This application was also discussed with Dr. Shawa of the OPC's Department of Nutrition, HIV and AIDS, who expressed interest in applying handcart technology to the AIDS arena. What is needed at this juncture is to operationalize this interest and seek donor funding of larger-scale demonstration of the assistance that handcarts can provide to the HIV-impacted farming communities.

We met with Mr. Kachimera of the Ministry of Industry, Science and Technology, and with Mr. Guta of the Malawi Industrial Research and Technology Development Centre. Both indicated their interest in handcart technology, and Mr. Guta stated that he would collaborate with Dr. Ngoma of the Polytechnic in handcart design development and assessment.

Mr. Makwelero of the Ministry of Trade and Private Sector Development was enthusiastic about the potential market for handcart wheels, and suggested that external donor funding might be available for manufacturing them in Malawi. I suggested that we first need to establish the market with imported wheels, and only then act to begin manufacturing of selected components (pressed-steel wheel discs and hubs) requiring relatively low capital investment in Malawi. In any event, the immediate goal is to make the user public aware of the utility of handcarts and their availability. Assuming that the public likes handcarts, and they can be made commercially available at an attractive price, market forces should make the necessary wheel and axle components available, just as it currently makes ox-cart, automotive and bicycle components available. However, despite their demonstrated market, virtually none of these components are currently manufactured in Malawi, as without the necessary infusion of capital, it is evidently more cost-effective to import them.

The possible establishment of standard specifications for handcart wheels was discussed with Mr. Sikwese (and Mr. Chalimba) of the Malawi Bureau of Standards, as was the specification of butyl rubber for handcart and for bicycle inner tubes, so as to minimize the air loss and the resultant increase in rolling resistance, and resulting operator effort, as well as increased wear on the tyre due to sidewall flexing. We also discussed the possible investigation into the possibility of retrofitting a simple derailleur gear (an extra large low-speed sprocket) onto the existing 28" bicycles, so as to facilitate hill-climbing.

In summation, it appears that there is a consensus that the lightweight handcart is a type of IMT that is complementary to the currently available bicycles, wheelbarrows, ox- and donkey-carts that are currently available and employed in Malawi. It also appears that there is an appreciation of the constraints that have negatively affected the uptake of these various IMTs, and that some form of handcart has significant uptake potential for poor farm families. The stakeholder consortium is continuing to explore the potential of handcart technology, and to foster its uptake in Malawi, and elsewhere in the region.

It seems to me that there is a need to engage the commercial sector in this effort, as well as government insofar as there can be a reduction in current customs duties and sales taxation.

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