

**SUSTAINABILITY OF THE
MOZAMBICAN PROSTHETICS
PROGRAM**

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Executive Summary

USAID can be proud of the success of its prosthetics assistance to Mozambique. This assistance was born in the flames of war as a humanitarian response to the needs of civilians injured during the 16-year conflict that destroyed the country and took a significant human toll. Since the design of USAID's Prosthetics Assistance Project in 1989, peace has returned to Mozambique, and free and fair elections have been held. The warring parties, plus others from across the political spectrum, now do battle from their seats in parliament and in the media. Economic growth, investment, and access to health and other social services all show positive trends.

With respect to objectives of the Prosthetic Assistance Project, it is estimated that about two-thirds of the country's 9,000 civilian amputees have been fitted with prostheses. A national orthoprosthesis program with the capacity to serve about 1,600 patients a year has been established. About 1,000 prostheses are being produced annually, and backlogs of patients are experienced at only a few service sites. The principal problem is that actual demand for services is much lower than estimates of need.

This national orthoprosthesis program is under the direction of a new unit in the Ministry of Health that sets policy and coordinates activities between the central government and the provinces. This last function is especially important because the government continues to decentralize budgeting and programs to local authorities and seeks a broader voice for communities in the political system. Perhaps even more impressive is an Interministerial Working Group, established in late 1996, which has representatives from the government, nongovernmental organizations, and those in the donor community with an interest in orthoprosthesis. A principal focus of this group has been sustainability, including issues such as cost recovery, legislation impacting on the disabled, and fundraising.

It is estimated that the basic budget to cover the recurrent cost of a national orthoprosthesis program is about \$667,000 per year. The Ministry of Health is now providing about 42 percent of these costs. If the Ministry were forced to immediately absorb the total cost of this program, it would represent about 2.4 percent of its 1997 budget, an amount that seems reasonable given competing priorities. This is not to suggest that further donor funding cannot be put to use effectively. Rather, it is to point out that concerns that a national program would collapse in the absence of donor support seem unfounded.

Nongovernmental organizations representing the disabled are established and functioning. Although still young and institutionally weak, they have been successful in keeping the needs of disabled Mozambicans before the public, members of parliament, and government officials. The private sector also appears increasingly willing and able to assist the disabled, and its help needs to be pursued more aggressively. None the less, it should be recognized that the main responsibility to ensure the sustainability of services for the disabled rests with the government and the disabled themselves, as represented through nongovernmental groups that are active on their behalf.

In this environment and to top-off success already attained, USAID would be well served to focus continued assistance on sustainability. In this regard, support should be given to the further integration of orthoprosthesis services into the Ministry of Health since such services are an appropriate component of its health services mandate. In addition, studies should be undertaken to determine which functions could appropriately remain within or be moved outside the ministry's responsibilities. Support should be provided to train two Mozambicans to replace senior expatriates currently assisting the national orthoprosthesis program. Increased participation of the private sector and civic society to support the disabled should be encouraged, including help for institutional strengthening of local nongovernmental organizations. Special attention should be paid to outreach, including efforts to inform the disabled of available services and support as well as mechanisms to enhance their economic and social reintegration into their communities.

List of Acronyms

CBA	Community-based assistance
ADEMIMO	Mozambican Association of Military Disabled
ADEMO	Association of Disabled Mozambicans
CFDA	Child, Family, and Development Association
CRIM	Children's Rehabilitation Center of Malhangalane
DAG	Directorate of Administration and Management
DAM	Department of Medical Assistance
DANIDA	Denmark International Development Assistance
ECU	European currency unit
EU	European Union
FDC	Foundation for Community Development
FINIDA	Finland International Development Assistance
GDO	General development officer
GRM	Government of the Republic of Mozambique
HI	Handicap International
HPN	Health, population, and nutrition
ICRC	International Committee of the Red Cross
INSS	National Social Security Institute
IOM	International Organization for Migration
ISPO	International Society of Prosthetics and Orthotics
IWG	Interministerial Working Group
MOU	Memorandum of Understanding
MICAS	Ministry for Coordination of Social Action (Welfare)
MISAU	Ministry of Health
MRC	Mozambican Red Cross
OIA	Orthoprosthetics Implementing Agency
NGO	Nongovernmental organization
POWER	Prosthetic and Orthotic Worldwide Education and Relief
PVO	Private voluntary organization
SADC	Southern Africa Development Community
SCF	Save the Children Federation/US
SMFR	Medical and Physical Rehabilitation Section
SNS	National Health System
SO	Strategic Objective

TAACS	Technical Advisor in AIDS and Child Survival
UNDP	United Nations Development Programme
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations International Children's Fund
USAID	United States Agency for International Development
USDH	U.S. direct hire
WHO	World Health Organization
WVF	War Victims Fund

I. Background and Setting

A. Background

USAID/Mozambique has supported prosthetics assistance since 1989. At that time, the civil war continued to rage and civilian deaths and casualties from armed attack as well as mines continued to mount. In response to the obvious need, USAID moved to support the ongoing efforts of the International Committee of the Red Cross (ICRC) and those of Handicap International (HI) to assist the Ministry of Health (MISAU) in operating prosthetic and orthotic workshops in five provinces. Since that time, the program's purpose was expanded to include increasing the capacity of nongovernmental organizations (NGOs) (in addition to the government) to meet the needs of the disabled. Additional assistance for this expanded effort was provided through Health Volunteers Overseas, Save the Children/US, and Prosthetic and Orthotic Worldwide Education and Relief (POWER) as well as the Association of Disabled Mozambicans (ADEMO), a local nongovernmental organization. USAID's financial support is currently directed to POWER.

POWER's current role is to continue the efforts initiated by ICRC, strengthen Mozambican management capabilities, improve outreach, and support private sector opportunities to assume production and distribution of devices to achieve some degree of financial sustainability for a prosthetics program.

To date, the mission has authorized \$8.03 million using funds available through USAID's own budget and the War Victims Fund (WVF), whose resources are appropriated by the U.S. Congress to address the needs of victims of war. It appears that about 31 percent of the obligations to date (about \$7.4 million) has been from the WVF.

In October 1992, a peace accord was signed, ending the civil war in Mozambique. Two years later, the first elections in the country's history were conducted, and about six million Mozambicans who had been displaced or had been in refugee status during the conflict had returned or were returning to their homes.

B. Setting

Mozambique is among the poorest countries in the world. Its infrastructure has been devastated by war, cyclical droughts and floods, and government policies that crippled the financial, agriculture, and private sectors.

Although serious problems remain, the country is bouncing back impressively. Economic growth, agricultural production, foreign investment, tourism, access to education and health services, and civic participation in local and national affairs all show positive trends. An estimated 100,000 troops representing both sides in the conflict have been demobilized. As an example of the peace dividend, the defense and security budget was cut by 25 percent in 1995, while social investments in education and health were increased.

Although originally thought to number about two million, mines are now estimated at about 300,000. Although more than 3,000 kilometers of priority roads have been cleared through efforts supported by USAID and other donors and mine-clearing activities continue, approximately 20 people are killed or injured by mines each month. About 30 percent of the 250 annual leg amputations in Mozambique are the result of mines.

USAID's involvement in the country's prosthetics program has been very successful in meeting the objective of increased access to prostheses. For example, two-thirds of Mozambique's estimated 9,000 amputees have been fitted with prosthetic devices. A system of workshops will soon be in operation in all ten of the country's provinces as well as a prosthesis production facility in Maputo, and transit facilities (including two major centers in Maputo and Beira built with USAID funding). In addition, a cadre of Mozambican managers, technicians, and skilled laborers has been trained. As part of the ongoing program of integration into the country's health system, MISAU has assumed financial responsibility for all Mozambican staff of the workshops as well as the cost of utilities. Concurrently, the Ministry of Social Action (MICAS) has assumed responsibility for the transit centers, including the provision of transportation and food to those awaiting prosthetic services. However, serious problems need to be addressed with respect to the ministry's financial and human resource capacity to perform this role.

To improve policy and develop practices and systems to sustain prosthetic and orthotic services, an Interministerial Working Group was established in late 1996. Its meetings are generally held weekly with representation from the MISAU; MICAS; Ministry of Culture, Sports, and Youth; Ministry of Defense; USAID; UNICEF; HI; POWER; the Mozambican Red Cross; ADEMO; and ADEMIMO. A range of issues relating to policy, strategy, logistics and budgeting, cost recovery, standards and norms, human resource requirements, and sustainability are addressed at these meetings.

Since the end of HI's grant in June 1996, USAID has continued to provide assistance to prosthetics efforts through its ongoing \$1,762,050 grant to POWER. This grant includes provision for a relatively small, follow-on subgrant to ADEMO.

USAID/Mozambique's strategic objectives include increasing rural household income, developing an effective partnership between government and civil society in democratic governance, and increasing the use of essential maternal and child health and family planning services. Prosthetics assistance is not envisioned as an important and critical element in USAID's current program, although it clearly contributes to the agency's broader humanitarian assistance objectives. However, in addition to the desire to help sustain a national program to which it has made a major contribution, of significant importance to USAID is the opportunity the prosthetics project offers to work with MISAU--the counterpart for the mission's \$21 million Primary Health Care project--and other public and private entities on broader issues in the health sector such as decentralization, cost recovery, program planning and budgeting, and capacity building.

II. Implementation of Prosthetics Activities

A. Assessment of Need, Demand, and Cost

USAID's Prosthetics Assistance Project is aimed at assisting civilians who have been disabled as a result of the war, whether from mines, unexploded ordinance, or firearms. The project also targets those suffering from other crippling mobility disorders including persons suffering from congenital anomalies such as club foot, victims of poliomyelitis and leprosy, persons with spinal cord injuries, and others who would benefit from orthoprosthesis services.

1. Estimated Need for Prosthetic Services

The total number of amputees nationwide is estimated at 9,000, of which about 6,000 amputees have been fit with prostheses. Each prosthesis needs replacement about every three years (every year in growing children). In 1996, about 20 new mine victims were reported each month; about one-third required amputation of one or both legs. This agrees with the fact that Maputo Central Hospital performed 20 leg amputations on Mozambicans injured by mine explosions in 1996. About one-third of lower limb amputations occur as a result of weapons. A nationwide estimate of 250 annual leg amputations from all causes seems reasonable. The currently most accepted estimates are the following:

- C Some 3,000 to 4,000 amputees still require prostheses.
- C About 6,000 amputees have been fitted. Each year, about 2,000 will need replacement prostheses.
- C About 250 new amputees require prostheses each year.
- C A local consulting firm (Austral) has estimated the annual requirement for new and replacement units at just over 3,000.

Indirect evidence, however, suggests that these currently accepted estimates may understate the problem:

- C ADEMIMO, the association of disabled ex-military, claims to have 7,000 registered active members, about 6,000 of whom are amputees. Although, ADEMIMO has incentives to overstate its constituency, this would put the total number of military and civilian amputees above current estimates.
- C A 1995 IOM survey identified 2,700 disabled in Nampula province alone. Extrapolating this number would push the nationwide estimate to about 13,000. Such extrapolation may not be valid, however.

- C A recent Oxfam survey of 750 amputees in Zambezia found 500 in need of prosthetic services (170 have been fitted since then). This may indicate that the estimate that more than two-thirds of the existing nationwide need has been met is wrong.

The national census scheduled for August 1997 and improvements planned for national Health Information System will help to more clearly define of the problem in Mozambique in the next couple of years.

2. Demand for Prosthetic Services

Effective demand is much lower than estimates of need. Only three of the ten orthoprosthesis centers have backlogs of patients: Maputo (about 30 patients, or about 1½ months at the current rate), Beira (about 60 patients, or about 3 months at the current rate), and Quelimane (theoretically, 330 patients are still unfitted according to the Oxfam study; it is unclear how many are actually seeking services). All the other centers suffer from a lack of demand for services.

Three explanations for the low demand are offered: the low occupancy of the transit centers (reportedly functioning at only about 25 percent of installed capacity), lack of transportation to the centers from rural areas, and lack of information about the services. The low occupancy of the transit centers is due to the lack of spontaneous demand (for the reasons cited above) and lack of operational capacity (food, staff, etc.), which causes the transit centers (such as the center in Maputo) to turn patients away.

Prosthetic replacement statistics also shed light on the problem of demand. As of the end of 1995, ICRC/POWER had fit 4,427 new patients with prostheses. Assuming a three-year durability, it would be expected that roughly 1,400 replacements would be necessary in 1996, yet POWER fit only 340 replacements that year. There are several possible explanations. Patients might not have access to a center, might not appreciate the need for a new prosthesis, or may not view the prosthesis as helpful in improving their quality of life or economic opportunities. Statistics from HI on the ratio of new prostheses to refitting's were not available.

The level of provision of orthoprosthesis services in Mozambique is somewhat better than that in most other African countries, where the number of inhabitants per workshop is between two and four million (the reported number for Western countries is 200,000 to 400,000). In Mozambique, the number of inhabitants per workshop is about 1.8 million.

3. Type of Demand and Trends

In orthoprosthesis centers managed by POWER, 42 percent of the patients who were fit in 1996 were mine victims. But according to Austral's 1992 study, only 23 percent of amputations nationwide are the result of weapons (including mines). There are two possible explanations for the high percentage of mine victims seen at the centers. First, mine victims, who tend to be younger than other amputees, may be more likely to seek treatment than other amputees. Second, a camp for disabled demobilized military is located near Beira, giving this group better access to services than the general population. As demining operations continue, the percentage of amputations caused by mines can be expected to fall.

HI's workshops, which provide a wider range of services than those of POWER, reflect broader demand. In 1995, HI fit only 157 lower limb prostheses but manufactured and fit 664 orthopedic shoes, club foot splints, and leprosy sandals.

As time passes, the demand for orthoprosthesis services will come to resemble that of other poor countries that have not experienced conflict, and orthoprosthesis providers will need to be prepared to serve the needs of a more diverse physically disabled population.

4. Recurrent Costs

It is difficult to estimate what the recurrent costs of the current program would be if all current donor support were withdrawn. At the present time, nearly all technical personnel are being paid by MISAU, as are physical space and utilities for the workshops. HI and POWER are supplying technical and managerial assistance, support for supervision, materials for production, and some office expenses.

Table 1 presents a rough estimate of recurrent program costs that MISAU would have to assume if expenses were transferred to MISAU and all expatriates withdrawn. This estimate does not take into consideration the commercial value of the hospital space occupied by the workshops, depreciation on existing capital equipment, storage and transportation costs for supplies, costs of patient transportation or operation of the transit centers, or training and continuing education.

Table 1. Recurrent Program Cost by Type of Cost

Item	Current external	Current MISAU	Total
Salaries and benefits		\$195,900	\$195,900
Local travel and per diem (@ about 30% of previous level)	\$118,164		\$118,164
Materials for production	\$123,280		\$123,280
Other Materials	\$16,000		\$16,000
Other direct expenses (photocopying, insurance, utilities, etc.)	\$53,794	\$83,500	\$137,294
Maintenance (other than salaries)	\$76,041		\$76,041
Total	\$387,279	\$279,400	\$666,679

MISAU is currently absorbing just under half (42 percent) of the recurrent costs for orthoprosthesis, mostly in salaries and utilities. External support is concentrated in materials and supervision costs. This estimate yields a total recurrent cost of about \$225 per beneficiary (including prostheses, orthoses, and orthopedic shoes but not crutches or wheelchairs).

POWER has developed a much more sophisticated model that projects the costs of orthoprosthesis services established through an Orthopedic Implementing Agency (OIA), totally outside MISAU. The model includes projections for increasing production to 3,661 prostheses, 1,598 orthoses, and 2,280 pairs of orthopedic shoes annually by 2005, an approximate doubling of manpower at all levels (including training costs), a total phaseout of expatriate staff by the year 2000, the commercial value of workshop space, and depreciation of existing and additional equipment necessary for equipping all ten workshops for polypropylene production. POWER's model also includes physiotherapy services, which have been supported principally by HI. However, the model does not include the costs for patient transportation; outreach, social, and

economic reintegration; operation of the transit centers; or production of crutches or wheelchairs. Yet the model assumes that orthoprosthesis services would function at full capacity, which would depend on effective outreach services.

According to POWER's projections, the total annual cost for the OIA in 2005 would be \$1.24 million, or \$164 per beneficiary, about 4.8 percent of MISAU's total budget (see Table 2).

USAID has authorized \$8.03 million to date for its prosthetics program, with a completion date of December 1998. At current rates of production and fitting, about 7,000 patients will have received prostheses by then, and another 5,000 replacement prostheses will have been fit, yielding a cost per new beneficiary of about \$1,147 and a cost per prosthesis of \$669. This cost includes the capital investment and training necessary to mount a now largely sustainable program. It does not take into account the large number of orthoses, crutches, and wheelchairs manufactured, nor does it include the investment of HI or MISAU (which together probably do not account for more than 25 percent of the total spent on prostheses to date).

Another way to estimate the cost per beneficiary is to add the production and fitting components of the program. POWER estimates that the cost to produce and fit a below-knee polypropylene prosthesis is about US\$55 and an above-knee device about \$82. If one doubles these figures to include administration, management, training time, supervision, and physiotherapy services, they agree roughly with the estimates above.

B. Institutional Structure and Funding

1. Public Sector

a. Ministry of Health (MISAU)

The Ministry of Health (MISAU) is responsible for medically related services such as orthopedic surgery, physiotherapy, and orthoprosthesis manufacture and fitting. Within MISAU, policy issues are made at the national level, whereas program issues and day-to-day administration are handled at the provincial level. The Department of Medical Assistance (DAM) is the national-level body responsible for overall policy. Dr. Manuel Simão is its chief. Under DAM, the Medical and Physical Rehabilitation Section (SMFR) is responsible for coordination, oversight, and policy in orthoprosthesis and rehabilitation. Francisco Baptista, a category II (mid-level) orthoprosthesis technician is chief of SMFR. The national-level Directorate of Provincial Health (DPS) oversees the provincial hospitals (HPS), which have both orthopedic departments (including surgery) responsible for orthoprosthesis centers and physiotherapy centers.

Another important department in MISAU is the Directorate of Administration and Management (DAG), which is responsible for logistics, supplies, and importation, including negotiation with Mozambican and foreign suppliers.

The creation of the SMFR in 1994 was an important step toward ensuring continuation of orthoprosthetics in Mozambique. The SMFR coordinates human resource allocation, training, and logistics; sets policy and standards; and lobbies for budgetary allocations within MISAU. The SMFR can intervene to redistribute valuable personnel between provinces to correct imbalances, even over the objections of the DPS. The SMFR is currently represented in the national MISAU budget by only a single salary allocated to the section chief. Most other resources are allocated to orthoprosthetic services through provincial budgets. It is also important that the chief of SMFR is a mid-level (Category II) prosthetics technician, as Mozambique's only Category I technicians are expatriates. Training at least one Category I technician to assume responsibility of SMFR would further strengthen the section, improve the quality of services, and help guarantee sustainability.

It must be remembered that MISAU has many competing health priorities, including the provision of basic and preventive services, AIDS treatment, and treatments of epidemic levels of other transmissible diseases. Orthoprosthetic services are a relatively low priority within MISAU because they are costly and serve a relatively small population. However, they may carry a disproportionately high priority in relation to the population served due to the political importance of disabled ex-military and the advocacy roles played by ADEMO and ADEMIMO.

Table 2 shows the 1997 MISAU budget for Recurrent Expenses.

Level	Recurrent expenses	Recurrent expenses as a percentage of total GRM budget
National	\$9,868,100	6.4
Provincial	\$18,004,200	18.4
Total	\$27,872,300	9.6

Note: The figures shown are based on a 1996 exchange rate of 10,000MT per US\$1.

It is estimated that up to 50 percent of MISAU's recurrent budget and 60 to 70 percent of its total budget are financed by donors. An additional \$5.7 million is spent on investment at the national level. The total budget for MISAU for 1997 is expected to grow by 6.8 percent over that for 1996. Assuming that recurrent expenses of all medically related orthoprosthetic services delivered at the current level total about \$666,700 (see Table I), these services represent about 2.4 percent of the MISAU budget for recurrent expenses, which seems reasonable given MISAU's competing priorities. POWER's proposal for an expanded program would cost about twice as much and is perhaps unsustainable given competing priorities in the sector.

MISAU policy requires all patients to pay for ambulatory services, though the fee is only about \$0.10 per consult. MISAU generates about 5 percent of the recurrent costs of ambulatory services through this fee. To date, all orthoprosthesis services have generally been provided to patients free of charge. There is a legal basis for providing all health services free of charge to the disabled, though this reportedly is not a universally applied practice.

MISAU decided unequivocally in March 1997 that management of orthoprosthesis is to remain within the ministry, putting to rest POWER's concept of the Orthoprosthesis Implementing Agency. Legislation is under consideration that would permit MISAU to contract out non-health-related services such as hospital laundry and food service. The DAM is willing to consider contracting out or privatizing of the prosthetic production facility in the hospital in Maputo, although other options are also under consideration.

b. Ministry for Coordination of Social Action

The Ministry for Coordination of Social Action (MICAS) created in December 1994, is responsible for orthoprosthesis outreach services, transit centers, and social reintegration. The assistant director specifically excluded economic reintegration of the disabled from the responsibilities of the ministry, alleging that such reintegration is unrealistic in view of the current social and economic situation in Mozambique. MICAS is not a fully operational ministry but a "coordination" ministry between other social ministries, including education, labor, health, and other social services. A serious injury kept the minister from her duties for more than a year, hampering the ministry's effectiveness. She has been formally replaced by the vice minister.

As with MISAU, responsibilities within MICAS related to orthoprosthesis services are divided between national and provincial levels. A National Directorate of Social Welfare has two departments with responsibilities for orthoprosthesis services: the Department of Disabled, Aged, and Social Reintegration, whose Programs for the Disabled unit sets policy for outreach, handles social reintegration, and trains national level staff; and the Department of Social Services, whose Section for Institutions is responsible for the operation of transit centers. The Provincial Directorate of Social Welfare have sections or bureaus for disabled, aged, and social reintegration, with Programs for the Disabled units that operate outreach programs, including a community-based assistance program for the disabled.

It is of note that in 1997 social welfare was elevated to a full directorate at the provincial level giving it a seat in provincial government for the first time.

As a "coordination" ministry, MICAS does not receive adequate funds for full operation of its programs. The budget was increased by 15 percent from 1996 to 1997, but it still represents only a minuscule percentage of the national budget. The low level of resources is felt to be related to the government's emphasis on the productive sectors rather than the social sectors. In addition,

MICAS must compete for limited social funds with older, better-established ministries such as education and health.

MICAS seeks funding for specific projects from individual donors. Most funds are then channeled to provincial programs, though some larger projects are administered centrally. Notable is the lack of an explicit policy encouraging coordination with local private and voluntary services, though this coordination occurs in practice. For example, MICAS has negotiated with private transporters to provide discounts for the disabled.

Table 3 illustrates the 1997 MICAS budget (1996 prices).

Table 3. 1997 MICAS Budget for Recurrent Expenses (in 1996 prices)

Level	Recurrent expenses	Recurrent expenses as a percentage of the total GRM budget
National	\$567,100	0.4
Provincial	\$665,700	0.8
Total	\$1,232,800	0.5

Note: The figures shown are based on a 1996 exchange rate of 10,000MT per US\$1

MICAS's responsibilities to the disabled include identification, round-trip transportation to the service site, accommodations for patients while being fitted, and psychosocial reintegration.

While the transit centers are the responsibility of the national level, outreach services (including community-based assistance and transportation) are the responsibility of provincial authorities. Since the transit centers became MICAS's responsibility only recently, they must compete for funds with older, more established facilities such as those for children and the aged. MICAS therefore covers the fixed costs of the transit centers (mostly salaries) and seeks donor funds to cover operating costs. About half of the recurrent costs of the transit centers is being covered by donors (largely HI). Of the five centers under MICAS's responsibility (see section below on outreach), only the Nampula center has a line item (\$6,000) in MICAS's budget.

The annual recurrent costs of the five transit centers total about \$88,768 (\$2/person/day with 152 beds and 80 percent occupancy, per MICAS's estimates), or 7 percent of the MICAS annual budget, at a cost of about \$60 per beneficiary. This calculation does not take into account identification, transportation, and social and economic reintegration (for which we have no cost estimates). Given other competing priorities within MICAS, this amount is probably unacceptably high for a program that would benefit fewer than 1,500 disabled a year. Outside support is clearly needed.

c. Other

The National Social Security Institute (INSS), a department within the Ministry of Labor, is financed through mandatory payroll contributions from private sector employers. INSS pays employees during illness, provides them pensions and job-related disability payments, and pays for their funeral costs. Only a small percentage of workers are covered by this insurance. It may, however, eventually provide a source of funding for prosthetics for the small percentage of injuries that are work-related.

The Ministry of Defense provides disability pensions to disabled ex-military personnel, irrespective of their former allegiance (RENAMO and FRELIMO alike). Pensions are being paid to about 5,000 people, most in the range of \$60 per month. The Ministry of Defense treats acutely injured soldiers at its own medical facilities. However, soldiers who are disabled are discharged, and prosthetic services and long-term care are the responsibility of MISAU. There is currently no mechanism for the transfer of funds for the care of disabled ex-military personnel from the Ministry of Defense to MISAU.

2. Private Voluntary Organizations

During the war, a large number of international private voluntary organizations (PVOs) provided assistance to Mozambique. At the time of the peace accord, about 80 such organizations were providing support to the country. Since that time, some involved with emergency assistance have terminated their operations and been replaced by organizations with more developmentally focused goals. Among this latter group, two PVOs are principally involved in prosthetics activities: Handicap International and Prosthetic and Orthotic Worldwide Education and Relief.

a. Handicap International

Handicap International (HI) has operated in Mozambique since 1986. It is large and active and has the broadest scope of any foreign organization working in prosthetics and orthotics. As of the end of 1995, it had a staff of 16 expatriates and 65 Mozambicans.

USAID provided about \$1.7 million to this organization to support prosthetics activities during 1989-1996. This amount represents about 30 percent of the total donor support HI received during this period. Other major donors have been the French Alliance and the European Union (EU). Canada, the Netherlands, UNICEF, and UNDP have also provided assistance. Prior to its termination in June 1996, USAID support to HI was directed at the production of prosthetic and orthotic devices, staff training, vocational training for the disabled (provided through a subgrant

with a local nongovernmental organization [ADEMO]) and, more recently, support for MISAU's Medical and Physical Rehabilitation Section (SMFR), supervision, and management improvements.

HI believes in using indigenous materials to produce prosthetic devices, wood and bamboo in the case of Mozambique. Research financed by the EU and HI is underway on the use of cashew nut oil as a PVC plasticizer, thus making it more flexible and durable with properties similar to polypropylene. Research has also been conducted on using this oil for the production of the hard internal keel of orthopedic feet, with the aim of replacing imported polypropylene. However, polypropylene technology is widely accepted, including within the MISAU, as the most appropriate. Moreover, duties on imported polypropylene were recently reduced to 8 percent, making the pursuit of an import substitution strategy flawed.

Other recent activities undertaken by HI have included efforts to integrate workshops into MISAU; training and exchanges; decentralization of physiotherapy services to rural areas; support for the Children's Rehabilitation Center of Malhangalane (CRIM) in Maputo; "social programs," including the integration of transit centers in Inhambane and Vilanculos into MICAS and sport, school, and scholarship programs for the disabled; collaboration with ADEMO and ADEMIMO; support for other transit centers in Maputo, Beira, and Nampula, including enhanced use of existing transportation; the development of a "disability" card conveying rights such as free public transportation to the disabled and tax and other measures to cover the costs of physical therapy and rehabilitation; and mine awareness activities and a campaign in support of international efforts to ban mines.

b. Prosthetic and Orthotic Worldwide Education and Relief

Prosthetic and Orthotic Worldwide Education and Relief (POWER) is a relatively new organization, headquartered in the United Kingdom and registered with USAID/Washington. Many of the staff and trustees of POWER have worked with the Cambodian Trust, an NGO established to assist mine victims in that country. Its focus is on the production of prostheses and orthoses, training, and the management of clinics and workshops.

To fully appreciate the environment into which POWER settled, it is helpful to review the most critical agreements relative to its presence in Mozambique. In 1995, with the end of the conflict and stability returning, ICRC carried out its announced termination of "emergency" assistance, including prosthetics, to Mozambique. MISAU officials report that during ICRC's tenure they had felt uninvolved with many facets of the prosthetics assistance provided and looked forward to regaining control over the provision of health services for which the ministry was responsible.

In August 1995, USAID prepared a project amendment to the Prosthetics Assistance Project and its Grant Agreement with the GRM. The project paper amendment anticipated total USAID

funding of \$8.03 million and provided continued support for increasing the production and use of prosthetics, improving case management, training, increasing access of the disabled to rehabilitation services, and engaging the disabled in economically productive activities. In addition, a new objective was identified: train a Mozambican entity to assume full managerial responsibility for the production and distribution of prosthetics. The most recent (1995) amendment to the Grant Agreement with the GRM brought USAID commitments to \$7,397,500. However, the agreement fails to address the new objective. The agreement added a covenant that addressed only financial sustainability through a requirement that the GRM agree to increase its counterpart contributions and solicit funds from other donors beginning in the last year (1998) of the project.

To implement this grant, in late 1995 USAID provided a Cooperative Agreement to POWER in the amount of \$1,762,050 for September 1, 1995, to August 31, 1998. A balance of \$362,050 is required by USAID to fully fund this agreement. As of the end of March 1997, the midpoint of the grant, POWER had expended about \$800,000, with a pipeline of about \$601,000.

Under its agreement with USAID, POWER is to maintain and expand production of prosthetic and orthotic devices, strengthen Mozambican program management capabilities, improve outreach to rural amputees, and identify and support local NGO or private sector opportunities for assuming responsibility for production and distribution of prosthetic and orthotic and other orthopedic devices. This last activity was seen as a means of achieving some degree of financial sustainability. POWER was to specifically identify or help establish a local NGO or private sector company to take over management, production and distribution of devices on a contractual basis with MISAU, while seeking other means to cover costs.

POWER reportedly had a difficult time negotiating its April 27, 1995, Memorandum of Understanding (MOU) with the minister of MISAU. This MOU indicated that POWER was to be responsible for full management control of all "allocated" resources, including human, financial and materials. Whether "allocated" meant only resources to be provided by POWER with its own or USAID funding or MISAU's resources as well is not clear. The latter interpretation appears unreasonable because the agreement was put into effect at the same time that HI was pressing ahead with efforts to help integrate prosthetics activities into MISAU and the ministry was moving to absorb into its budget all previously supported HI and POWER workshop staff and running costs. All workshop staff are now employees of MISAU. In addition, it is reported that ICRC transferred ownership of USAID-funded equipment to MISAU. It is unreasonable to expect the ministry to turn total control of these resources over to POWER. More likely, MISAU intended for POWER to provide day-to-day supervision.

Beyond this, the Grant Agreement amendment signed by USAID and MISAU made no reference to the intent to convey all management of resources to a USAID-funded grantee, nor was reference made to USAID's goal of achieving financial sustainability through the creation of a private sector or NGO entity to assume responsibility for production and distribution. The Grant

Agreement's requirement was for MISAU to increase its counterpart funding or to seek other donor funding. One could readily conclude that, with the absorption of staff and running costs, the GRM had already met the 1998 target of the Grant Agreement's covenant.

POWER currently has three expatriates, five Mozambican administrative staff and one Mozambican technician. This technician was trained by POWER and then put on MISAU's payroll, along with other workshop staff. However, he was fired after traveling to Angola for a stint with ICRC without ministry approval. Although reportedly in line with ministry policy, the firing has created tensions between ministry officials and POWER's country director, especially since the technician was employed by POWER after the firing and continues to work on the premises of Maputo Central Hospital.

POWER has yet to submit an annual report. The last available monthly and bimonthly reports are for August 1996. However, based on discussions with USAID and POWER officials, it is clear that a principal focus has been on the maintenance and expansion of production. Other activities have included training, a significant effort to quantify the number of amputees and the requirement for prosthetics, and the development of a model for sustainability of prosthetics and orthotics services in Mozambique.

3. Nongovernmental Organizations

A phenomenon of Mozambique's new peace and stability has been the growth and increasing importance of NGOs. These groups range from professional associations to community groups. Most have weak structures and limited track records. Nonetheless, they are playing important roles in advocacy, public awareness, and fund raising as well as in the provision of support to development- and social welfare-related activities. Several have access to community networks made up of both paid and voluntary members. Some of these NGOs are playing or have the potential to play a role in helping the disabled.

a. Association of Handicapped Mozambicans

The Association of Handicapped Mozambicans (ADEMO) was established in 1989 to represent the interests of the disabled. The national organization has no budget or permanent staff. Capacity-building efforts, including plans by HI to provide institutional support, are not apparent. ADEMO has received a variety of assistance from a number of groups, including HI, OXFAM, UNICEF, Swiss Cooperation, the governments of the Netherlands and Japan, and Manica (a private sector transportation company).

The secretary general and founder of ADEMO is widely recognized as an active and outspoken advocate for the disabled. To a great extent, ADEMO is identified with her. She takes pride in the fact that the organization had its roots in the provinces. As an operating principle, she

believes the disabled should be provided loans, not grants, to start income-generating activities, so they value the assistance more highly. ADEMO supports legislation to help the disabled without creating more dependency.

Provincial delegations of about six members each are the principal vehicle through which the organization carries out program activities. The association is estimated to have 50,000 members. Proposals for activities are expected to be developed at the provincial level.

National-level activities have included working with relevant ministries to help the disabled. For example, under funding provided by the World Bank for school rehabilitation, agreement has been reached that schools will include specially designed ramps and bathroom facilities to meet the needs of the disabled. ADEMO has working relationships with the Ministries of Labor, Health, Defense, and Education. Its association with MICAS is reportedly strained due to the ministry's inaction in providing assistance for the disabled through funding available from UNICEF.

ADEMO lobbies parliament on legislation affecting the disabled and to resolve problems with line ministries. ADEMO is also a member of the Interministerial Working Group (IWG) dealing with prosthetics and orthotics.

USAID previously provided \$50,000 in funding through a subgrant from HI to support ADEMO. Under the subgrant, ADEMO was to provide income-generating opportunities for the disabled. Included in the assistance was a mini-bus, which reportedly has traveled over 200,000 miles and is broken down. Additional assistance was contemplated by USAID in the 1995 project paper amendment to expand ADEMO's income-generating and advocacy activities. The plan was for POWER to provide this support through a subgrant with ADEMO. However, POWER reports that it has not had the time to assess ADEMO's grant worthiness and consider a proposal to follow up on the support previously provided by HI.

b. Mozambican Association of Military Disabled

The Mozambican Association of Military Disabled (ADEMIMO) was established in 1992 as a spin-off ADEMO. Its purpose is to represent the interests of the estimated 10,000 former members of the armed forces (both government and RENAMO) who are disabled. Of this number, ADEMIMO indicates that more than 9,000 are amputees, with about 6,000 of these registered with the organization.

ADEMIMO has received support from a number of assistance organizations, including HI, Trocaire (an Ireland-based PVO), and the governments of Italy and Holland. It has also received technical assistance funded by FINIDA. The dues from its estimated 7,000 active members total about \$15,000 each year.

ADEMIMO is associated with the Jaipur Limb Campaign, which is setting up a privately run orthopedic workshop in Chibuto in Gaza province. ADEMIMO is to be the local agent for the society. It is also a member of the IWG dealing with prosthetics and orthotics and would like to strengthen its relationship with POWER.

Unlike ADEMO, ADEMIMO has a national headquarters office (a GRM building provided rent free) and a staff, most of whom are reportedly volunteers. ADEMIMO has representatives in each province and delegations in 90 districts throughout the country. Its priority activities include defending the interests of the military disabled, assisting with social and economic reintegration of its members, advocacy, civic education, and participation in international fora. Fundraising activities have been limited. A music festival was held in Maputo recently to raise money, and the organization would like to do more in this area.

A number of interlocutors indicated that ADEMIMO tends to be relatively militant in its approach. It reportedly carries a weight disproportional to its size with the political establishment.

c. Child, Family, and Development Association

Child, Family, and Development Association (CFDA) was established in 1996 by Mozambicans who had worked on the Children of War project of Save the Children/US. It is receiving support for a two-year transition from a Save project to a local NGO from the Dutch organization, Beter ter Been.

CFDA's mission is to promote positive changes in the lives of disadvantaged Mozambican children and families. It also aims to promote the rights of Mozambican children. It actively seeks and encourages community participation in improving the social and economic well-being of the needy. During the Save project, a network of 14,000 volunteers served as the foundation for community action to assist children orphaned or separated by the war. The size of each group of volunteers ranged from about 10 to 30. The association indicates that this same network can be reactivated to help carry on programs at the community level. Its strongest presence is in Maputo and Nampula provinces. Its staff of 16 is split between these two locations.

Current programs are small and focus on income generation, the rights of children, community mobilization, and skill training for war-affected youth.

d. Mozambican Red Cross

The Mozambican Red Cross (MRC) is well established and was widely used by donors to provide assistance throughout the country during the war. Recently, its reputation was soiled due to a scandal associated with food aid. Until its withdrawal, ICRC reportedly provided significant assistance to the MRC.

The MRC has a broad and well-established network of paid workers at the provincial level and unpaid volunteers at the district level. MRC focuses on community development, carrying out social, health, and youth programs. It also stands ready to respond to emergencies. The MRC has little interest in providing organizational strengthening support to other local NGOs, although it is willing to carry out programs in conjunction with such organizations. It is in the process of reviewing current priorities and programs, which may affect its structure and priorities.

e. Rotary Club

The Rotary Club has provided assistance to the disabled through donations of wheelchairs to individuals. Rotary Clubs are operating in Maputo, Matola, Beira, and Chimoio. The club in Matola, a suburb of Maputo, was established in late 1995 and is made up of a relatively young group of professionals from the public and private sectors. The club focuses its charitable work in the areas neighboring Maputo. One project involved the distribution of used clothing to the needy. It is seeking support for the construction and provision of school furniture. Fund-raising activities have been limited. Club representatives stated that among its strengths are a private sector membership able to undertake feasibility studies and its ability to meet donors' accountability and reporting requirements.

3. Donors

a. U.S. Agency for International Development

USAID has authorized more than \$8 million in support of prosthetics assistance since 1989. The bulk of this funding has been from the mission's bilateral assistance program and 30 percent through the War Victims Fund.

In 1995, following the end of the war in Mozambique and successful national elections, Washington approved USAID's country strategy and Strategic Objective (SO) framework. The SOs for this program include (1) increased rural household income, (2) development of an effective partnership between the government and civil society in democratic governance, and (3) increased use of essential child health and family planning services. Assistance to prosthetics is not included among the interventions contributing to the mission's objectives, although it is

recognized that it contributes to the agency's broader humanitarian assistance objectives. It could also be argued that USAID assistance directed at NGOs representing or assisting the disabled contributes to a key result sought under the democracy and governance objective, i.e., helping NGOs advocate for members' interests.

USAID management of the Prosthetics Assistance project is under the general supervision of the General Development Officer (GDO), who heads the mission's Health and Population Office. More specific responsibilities are assigned to the Health, Population, and Nutrition (HPN) Officer, who is the designated project officer. Direct oversight and supervision of the project rests with the Mozambican medical doctor assigned as project manager. The 1995 project paper amendment provides funding for a full-time Mozambican physician/disability specialist as well as 25 percent of the time of a project manager. However, due to participation in other activities related to the mission's SO 3, the project manager is reportedly able to spend only between 50 percent to 60 percent of his time on the Prosthetics Assistance project. In addition, the HPN Officer position is being eliminated; this position is to be replaced by a Technical Advisor in AIDS and Child Survival. It is expected that this change will result in the increased participation of the GDO in the management and direction of the Prosthetics Assistance project.

Given the anticipated phaseout of War Victims funding for this project and USAID's current priorities, USAID/Washington and the mission requested that a position paper be developed setting forth options for the continued implementation of prosthetics activities. Following review by the mission, it is anticipated that this paper will be used to help guide a dialogue with MISAU and other ministries of the GRM on the sustainability of a prosthetics program in Mozambique.

b. European Union

While a significant donor to HI, the European Union (EU) has little staff or time to devote to monitoring prosthetics assistance. The EU office responsible for this assistance consists of a coordinator, an administrator, and a secretary. The EU currently has no plans to phase out support, which will be contingent on the availability of funds. It is not opposed to studying the issue of sustainability in anticipation of an eventual phaseout of donor assistance for prosthetics. The EU doubts the feasibility of privatizing prosthetics assistance in Mozambique, especially in the absence of assurances that sufficient resources will be available to serve those in need. The EU believes the Mozambican prosthetics program should be operated on as small a budget as possible given more important priorities in the health sector. Two components of the current program--outreach and community involvement-- are seen as needing increased attention.

With respect to its current five-year program of assistance to Mozambique, the EU is now in year three and has yet to disburse about 250 million ECUs (US \$325 million). Under consideration is the development of eligibility criteria to permit European PVOs and local NGOs to submit proposals for funding. Social sectors, including health and to a limited extent education, as well as agriculture and food security are areas of priority for the EU.

c. French Alliance

France provided significant support to HI during the war. Assistance to support production of prostheses has been terminated, and the focus of assistance has turned to the social needs of the disabled.

Under a three-year agreement recently signed by the French and Mozambican governments, approximately \$1 million is being made available to support HI in providing assistance to MICAS. This effort has three components: (1) development of an information system to inform the disabled of the existence of orthoprosthetic services and the means to access these, (2) provision of administrative and management support to all transit centers, and (3) creation and introduction of a card for the disabled to define their rights and mechanisms for reimbursement of service costs for physical therapy and rehabilitation.

The French are also considering assistance to the provincial hospital in Cabo Delgado, a province of focused attention for this donor. Further support may be provided to HI in this province if a viable proposal is put forth.

d. UNICEF

UNICEF is providing assistance to both POWER and HI. A UNICEF representative is a member of and normally attends the IWG. ADEMO and ADEMIMO are judged to be principally advocacy groups, with little capacity to implement program activities. UNICEF reports that tensions within the IWG have been running high between POWER and HI, especially with regard to a proposal by POWER to establish an OIA. Both organizations are judged to be bringing to the table preset ideas and debate is characterized as being "badly engaged." In sum, UNICEF believes more objectivity and flexibility are needed with respect to sustainability issues.

When queried about possible interest in supporting the training of a Mozambican at the Category I level, UNICEF indicated that it would be given consideration. The availability of such Mozambican talent would go far to eliminate the need for foreign expatriate expertise in prosthetics and orthotics. UNICEF has serious doubts about MISAU's capacity to take over the production of prosthetic devices at the Maputo workshop. It also believes there is a need to examine many of the current policies with respect to the prosthetics program, with special attention to increasing the use of transit centers and transportation.

UNICEF indicated that 65 percent or more of the MISAU budget is provided by donors, with Swiss Cooperation alone picking up a reported 30 percent of the ministry's recurrent expenses.

e. Swiss Cooperation

Swiss Cooperation previously provided significant humanitarian funding for ICRC and HI in support of prosthetics assistance. Funding was terminated about two years ago when the "emergency" in Mozambique ended. This donor now provides about \$2.4 million per year to cover recurrent costs of MISAU, approximately 90 percent to support provincial budgets. At the central level, funding is used for forms required in the health system and for private sector transport of health commodities and supplies (other than medicines) to the provinces.

Under a "pooling" arrangement between the governments of Norway and the Netherlands, funds are provided for technical assistance, principally to fill gaps in hospital staffing caused by the departure of former eastern bloc specialists. Discussions are now under way with respect to hospital needs in nonmedical areas. Another pooling arrangement is in place with Norway and Sweden for the procurement of drugs. Procurement is in accordance with allocation plans developed by MISAU and is subject to several conditions, including that the requirements for primary health care have been met, measures such as cost recovery are undertaken, overall planning of needs is done transparently and shared with donors, and cost and quality criteria are established for the importation of drugs.

It was estimated that Swiss Cooperation financed 20 percent of MISAU's total 1996 budget, with its contribution representing about 35 percent of all external funds provided to support the ministry's programs. It is anticipated that the World Bank and the EU will be providing budgetary support for the ministry for 1998. The bank's assistance will also support recurrent costs, while the EU's will be focused on support of recurrent costs only in Zambezia province. Other donors to the sector include FINIDA in Manica province, DANIDA in Tete province, and the Netherlands in Nampula province.

The Swiss Cooperation's assistance is not yet integrated into MISAU budget for two reasons: (1) the agency could not ensure that the national health budget was increasing by 4.5 percent in real terms in accordance with agreements with the IMF and World Bank and (2) counterpart funding is generated through the secondary market, with generations going through the Ministry of Finance to provincial authorities, thus ensuring that this ministry can track the funding being provided to support MISAU operations.

With respect to prosthetics as well as other assistance, caution was voiced about the development of vertical projects, which require the establishment of procedures and systems not integrated into MISAU. A strong preference of the Swiss Cooperation is to work to improve the capacity of the ministry rather than create parallel project structures. Several additional actions needed to strengthen the ministry include; (1) improving horizontal communications within MISAU; (2) seeking other support for programs, such as from the private sector or NGOs, so as not to rely excessively on donors; and (3) improving technical, strategic, and policy competence. The efforts of the IWG to address these issues as they relate to orthoprosthesis were commended.

4. Private Sector

There is little history of active participation by Mozambique's private sector in charitable and social activities. However, this situation may be changing as the business environment improves. NGOs must demonstrate more initiative in seeking support, both financial and in-kind, from the private sector. However, a constraint to increased participation by the private sector is Mozambican tax law, which does not offer deductions for contributions to charitable organizations.

The running of the country's customs service has been contracted out to Crown Agents, which won the contract about a year ago. Reportedly the services of Lloyd's of London were sought, but the company did not view this type of venture as within its mandate. Although Crown Agents is still in the process of setting up required systems and equipment, improvements in customs clearances have been observed. Both the government and customers are reportedly satisfied, and GRM revenues are already improving.

a. Manica

Manica is one of the largest freight companies in Mozambique. A representative of the firm in Maputo believes the environment for the private sector is much improved. Increasingly, the GRM is seeing the benefits of privatization actions already taken, including its ability to focus on policies rather than operations. State enterprises related to water supply, ports and rail, insurance, and postal service are reportedly being eyed as privatization targets.

About two years ago, Manica provided an in-kind donation (cloth) valued at about \$100,000 to ADEMO.

b. CALTEX

CALTEX is an international petroleum company with operations in Mozambique. Current business is focused on the provision of bunker fuel to ships calling at ports.

The company has a policy of providing help to the needy, preferring such help to go directly to those to be benefited rather than to a third party. The company has been providing financial contributions to members of a cooperative of disabled artisans in Maputo.

A CALTEX official opined that the business environment now is a "paradise" compared with the environment during war years. He said new foreign investments are being made in a number of sectors and profits are improving. As evidence of the improved environment, he said three oil companies planned to begin retail operations in Mozambique. CALTEX plans to build new

stations for its entrance into the retail market. He also indicated that plans are under way to establish a private company, with capital contributions from participating oil companies, that would be permitted to import petroleum into the country. Currently, only the state-owned oil company, PETROMOC, is permitted to import.

c. Johnson & Johnson

This company's operation is its smallest in Africa. It entails only consumer products, not other lines such as hospital supplies and pharmaceuticals. Although some production was formerly carried out in Mozambique, difficulties in maintaining product standards due to uncertain water supply as well as shortages of packaging materials have resulted in the company's move toward imports.

The Johnson & Johnson official opined that the business environment is improving gradually; while still difficult to work in Mozambique, it is now easier. He noted the difficulty in obtaining an import license; the requirements apparently date to colonial times. On the positive side, foreign travel is now much easier, and foreign exchange is readily available. A special problem faced by Johnson & Johnson is the availability of smuggled, and thus duty-free products, on the local market. To compete, the local operation has cut prices, which has had a negative impact on profit margins.

Although Johnson & Johnson has a philosophy of supporting those in need, the financial situation of the operation in Mozambique has constrained the ability to support charitable causes. The company has made some donations of its products to hospitals and representatives have made presentations on hygiene in local schools. The company representative was queried about his willingness to provide an accountant or bookkeeper to train the staff of NGOs supporting the disabled. He said the company outsources all such functions, but noted that many companies might be willing to provide such help because it is clearly trackable, as contrasted to financial contributions.

C. Coordinating Mechanisms

The primary coordinating body in orthoprosthesis is the Interministerial Working Group (IWG). The IWG has met five times since it was created in December 1996 to examine issues related to the sustainability of orthoprosthesis. The following organizations are represented on the IWG:

Public Sector: MISAU, the Division of Medical Assistance, represented by Dr. Manuel Simão, who chairs the group; SMFR; MICAS; the Ministry of Defense; the Ministry of Culture, Youth, and Sports.

PVOs: HI and POWER.

Donors: USAID and UNICEF.

Local NGOs: Mozambican Red Cross.

Beneficiaries: ADEMO and ADEMIMO.

The IWG has designated working groups to examine the cost of the transit centers, existing legislation regarding the disabled, and cost recovery and fund raising. The first two of these reports were available at the time of this writing. They were serious, informative, and complete. The IWG plans to elaborate and submit a series of proposals for consideration by the Council of Ministers before June 1997. This should result in legislation to help ensure the sustainability of orthoprosthesis services.

The breadth and depth of discussion in the IWG is impressive. Discussion was observed to be dominated by MISAU and HI. Other participants (especially beneficiary organizations) should be encouraged to take a more active role. In addition, a role for the private sector (such as plastics manufacturers and Rotary Clubs) and other PVOs and NGOs would be beneficial to the program over the long term.

The SMFR is another coordinating agency in the sense that it sets policy at the national level and coordinates provincial activities relating to prosthetics. In this context, SMFR organized the first National Seminar on Physical Medicine and Rehabilitation on July 2-5, 1996, with the support of USAID, among others. The seminar brought together MISAU officials, representatives of SMFR from every province except Maputo, MICAS, Ministry of Defense, USAID, POWER, and some other local community organizations. Several decisions were made at the seminar: (1) both indigenous and polypropylene technology should continue, (2) orthoprosthesis centers should be opened in Xai-Xai (Gaza Province) and Chimoio (Manica Province) and the underutilized center in Vilanculos should be closed, (3) there is a need for increased integration between orthopedic departments and SMFR, and (4) human resources should be distributed around the country in a more rational way.

D. Legislation and Regulations Affecting Foundations and Associations

POWER's earlier proposal, set forth in its interim report for the period September 1995 to February 1996, recommended the establishment of a foundation that while operating under the policy direction of MISAU would run the prosthetics program independently and have the capacity to mobilize, generate, and manage external resources. POWER has reconsidered the organizational mechanism to achieve independence from MISAU and is characterizing the external entity as an Orthoprosthesis Implementing Agency (OIA). The OIA would be established outside MISAU but would be managed by a council whose members included representatives from MISAU and MICAS.

MISAU and the IWG rejected this latest proposal. Yet some GRM officials continue to point out the need for an entity, such as a foundation or an association, to support orthoprosthesis that is outside the government yet under the control of government officials. Although the likelihood of

such an entity being established is judged to be remote, the requirements for establishing a foundation and association in Mozambique are reviewed briefly below.

1. Foundation

A foundation structure is often used to protect an endowment. An endowment is generally made up of long-term assets held in the form of a trust or capital fund. Earnings from the assets are used to support individuals, causes, or an organization. An endowment managed by an entity other than the beneficiary is referred to as a trust. If the beneficiary manages the endowment itself, the endowment is commonly called a capital fund.

There are very few foundations in Mozambique. One is the Foundation for Community Development (FCD), founded by former first lady Graca Machel. In addition to start-up funding from foreign sources, this organization was reportedly to receive the meticais equivalent of about \$22 million from the GRM, derived from a commercial debt buy-back financed by the World Bank and the Swiss, French, and Dutch governments. This sum would provide a sufficiently large endowment to support the programs of the FCD. Reportedly, FCD's statutes contained rigidities resulting from the Mozambican civil code's emphasis on the establishment of clear fiduciary responsibility for the management of trust funds.

It is hard to imagine that such an endowment could be created to support a prosthetics program in Mozambique, especially an endowment that took on responsibilities that have been largely integrated into MISAU and to a lesser extent MICAS and that would use earnings to support government programs.

2. Association

The only legally recognized organizational model for NGOs in Mozambique is the association. Recognition by the Ministry of Justice establishes the legal basis for a national associations operations. No tax benefits currently exist for such an entity. Because implementing regulations have not been issued, each ministry is responsible for defining how it will relate to association's. It takes about eight months to obtain legal recognition for an association.

The top authority in an association is the members, whose single function is to elect the board of directors. An association structure gives an organization stronger democratic orientation than does a foundation.

E. Program Components, Responsibilities, and Options

The prosthetics program in Mozambique consists of the following components:

- C Identification of the locations and numbers of people in need of prostheses.
- C Outreach, including providing knowledge and information to the disabled as well as activities such as advocacy and public awareness to improve their lives.
- C Production of components for prosthetic devices.
- C Transit centers that provide lodging and meals to those unable to support themselves during fitting and rehabilitation.
- C Workshops and fitting services where the devices are produced and fit.
- C Training, both initial and in-service, for Category I, II, and III employees involved in the provision of prosthetic services.
- C Economic and social reintegration of the disabled into their families and communities.

Efforts to date have focused on identifying the need, training employees, and establishing, maintaining, and increasing production. Too little attention has been given to outreach and reintegration. In addition, the generally low use of transit centers is a problem. These and other issues are discussed below.

1. Outreach, Advocacy, and Public Awareness

Outreach involves increasing access to orthoprosthesis services for the disabled by increasing public awareness of services, identifying the disabled in communities, providing transportation to service sites, and even locating services closer to the community. Outreach is an extremely weak element in the overall orthoprosthesis program. Indeed, the poor outreach effort is partly responsible for underutilization of the services. Most involved in the program report that most disabled are either unaware of the services or unaware that the services are free of charge. In addition, barriers that prevent the disabled from seeking care include the cost of transportation, cultural and language barriers, embarrassment and shame on the part of the disabled, and ostracism of the disabled from the community. Some workers report that there are amputees who do not want prostheses because they see their disability as a way to make money by begging. These reports are unconfirmed.

MICAS, which has overall responsibility for outreach sees the “referral problem” as one of the two most important problems with their operation; the second is a lack of funds. No organization is involved in systematic outreach activities, though there are some intermittent, local activities.

MICAS's strategy is to employ a nationwide network of 249 agents under its Community-based Assistance (ABC) program. These district-level workers, who have seven years of basic education and two years of special training, are paid by MICAS to guide and coordinate the activities of a larger number of *Ativistas* (community volunteers). MICAS could not provide an estimate of the number of volunteers in the network. A group of 25 trained agents is working in Inhambance, Cabo Delgado, Zambezia, Gaza, and Maputo provinces. MICAS is training another group of 21 agents to aid the disabled in social reintegration. These agents are also to increase the number of volunteers and communities in the network by encouraging volunteers to expand outreach activities and to seek the assistance of churches, schools, and health centers in their work. This program is embryonic, and its expansion is expected to be seriously slowed by the ministry's budgetary constraints.

Lack of transportation for the disabled has hampered outreach activities. MICAS has few vehicles and no budget to subsidize transportation. There have been recent efforts to encourage private transporters to provide discounts for the disabled. MICAS plans to issue a "disability card" that would identify the disabled and presumably provide them with some benefits, including discounted transportation, free medical and prosthetic services, and perhaps eventually pensions. However, beyond the ABC program and this effort, there is little evidence of efforts by the ministry either to increase public awareness of the problems faced by the disabled or to increase the disabled's knowledge about available support and assistance.

Oxfam reportedly identified 750 amputees in Zambezia and there are scattered reports of efforts by orthoprosthesis center staff to visit health districts to identify and register prospective clients. Beneficiary groups and NGOs, such as ADEMO and ADEMIMO, apparently have not played a significant role in outreach to the disabled. However, the Mozambican Red Cross has a network of about 3,000 community volunteers and is willing to play a role in identifying the disabled. In addition, the CFDA has network of about 14,000 in Gaza, Maputo, and Nampula that could potentially also participate in outreach.

Advocacy and public awareness have been limited to the efforts of ADEMO and ADEMIMO, both of which are said to be outspoken in defending the rights of the disabled and seeking actions by the parliament and government. Both groups are judged to have done a good job in this area, given their limited resources and capabilities. As a representative organization made up of disabled ex-soldiers, ADEMIMO carries a political weight among politicians beyond its numbers. Yet both ADEMO and ADEMIMO are characterized as institutionally weak. Although the private sector is judged to be a source of increased support for these organizations as well the disabled in the society, ADEMO and ADEMIMO appear to have an inadequate knowledge of how to tap this source.

2. Production

In addition to prostheses, HI and/or POWER produce orthotic and other devices, wheelchairs, crutches, shoes, and other orthopedic devices. Where as HI uses indigenous materials such as bamboo and wood for the production of prosthetic devices, POWER uses polypropylene. The debate over which technology to use has received a great deal of attention. The justification for using local materials was much stronger during the emergency period, when access to foreign exchange was tight and supply lines were precarious. Obtaining foreign exchange is no longer an issue, however, and the amount of polypropylene used for the production of prostheses is minuscule compared with the volume of other products being imported by private industry and commerce today. With the end of the war, centralized component production has become more attractive, as supply lines have become more regular. Electricity is also more reliable than before in provincial capitals. Issues relating to cost, quality, durability, and efficiency of production should therefore drive the debate today. There is evidence that beneficiaries are more satisfied with the lower weight, comfort, and aesthetics of the plastic prostheses. A rapid qualitative investigation of “customer satisfaction” may be in order.

Although MISAU has decided to maintain both technologies to give beneficiaries a choice, a recent decision to train all Category III technicians in polypropylene technology, including those in HI workshops, and provide related equipment will in time ensure its use in all workshops nationwide. Although it costs more to produce a polypropylene prosthesis than to produce prostheses from local materials (twice the price, by some estimates), economies of scale may close the gap.

The largest prosthesis production unit is at Maputo Central Hospital, where prosthetic components for all POWER-assisted centers, including knees, feet, drums, and adapters, as well as orthotic and other devices and appliances are produced and shipped to POWER workshops throughout the country. It is the most extensively equipped unit in the prosthetics program--in effect, a small factory. It consists of administrative offices, a classroom, casting room, leather workshop, and production facilities including a furnace, grinding machine, work benches, lathes, hand tools, and secured storage. Most of the equipment was originally provided with USAID funding to ICRC.

Together, POWER and HI produce about 1,000 prostheses a year. In 1995, ICRC, and subsequently, POWER, produced 827 polypropylene prosthetic devices; HI produced 169. POWER's 1995 production was below the peak achieved by ICRC in 1992, when 1,027 prostheses were produced. ICRC produced 972 prostheses in 1993 and 790 in 1994. The lower production for 1994 was blamed on the termination of food incentives for technicians by the Swiss Cooperation as well as less vigorous recruitment of amputees by the Ministry of Social Affairs (now MICAS), a reflection that outreach has been a problem for some time. In 1993 and 1994, HI produced 171 and 136 prostheses, respectively.

In 1996, POWER's production dropped about 23 percent, to 640 prostheses due to both lack of demand and the death of the country director late in the year. HI's 1996 production is assumed to be close to its average of about 154 for 1990-1995

Although outreach is the principal bottleneck to serving additional amputees the potential for expanding production exists. Current national capacity to manufacture and fit prostheses is based on the theoretical number of patients that could be attended by a Category II (mid-level) technician. With adequate support, such a technician might be expected to fit one patient a week (minus about 20 percent for holidays, vacation, and sick days). POWER estimates that the current annual production capacity is as follows (1995 production):

	Capacity/year	Production	% capacity	
POWER centers		1,104	827	75%
HI centers		528	169	32%
Total		1,632	996	61%

Of the various activities being carried out by MISAU as part of the prosthetics program, the production of component parts in the Maputo Central Hospital is the only activity that might be moved elsewhere. However, this may not be the most viable alternative. Three options might be considered.

- C *Expand the workshop to serve as a general facility supporting the production and repair of medical equipment, devices, and appliances for the entire hospital system.* The workshop is already doing this on a limited scale. This option would most likely generate support from medical staff throughout the system and help the workshop gain increased support among officials within MISAU. The aim would be to have operation of the facility recognized through a line item in the hospital's or ministry's budget. Given efforts by the ministry to seek cost recovery, it is not unreasonable to expect the hospitals to pay for part, if not all, of the services and support received from such a workshop.
- C *Turn the workshop over to the private sector.* The advantage of this option is that the MISAU would get out of a business that it recognizes is not within its mandate. A management contract could be awarded to operate the facility or the existing equipment and tools could be sold or donated to a private sector plastics producer. It is understood that at least one private plastic manufacturer that uses injection equipment is operating in Maputo. Moreover, there may be an export market for polypropylene prostheses in southern Africa. If a viable internal and external market exists, the cost of prostheses might decline.

This option would be viable if the ministry's and some donors' concerns about supply and price were allayed. An assurance of discounted or guaranteed prices for a period of time following the transition would most likely be required.

- C *Retain the facility within MISAU.* In this case, additional efforts should be made to increase efficiencies in procurement, production, distribution, and management over the short run, with an aim to reduce component cost. Additional efforts should be taken to integrate the facility into the ministry, to have the ministry assume total responsibility for the cost of the facility's operations, and to train MISAU staff to assume full responsibility by the end of the Prosthetics Assistance project. However, this option faces the constraints that financial and human resources are expected to be relatively thin and other priorities more pressing.

3. Workshops and Fitting Services

The ten orthoprosthesis workshops (HI started six, and POWER manages four) are the heart of the orthoprosthesis program. It is in these centers that patients are examined, prostheses and orthoses made to order, and patients trained to use their devices. Six workshops are managed as part of the provincial hospitals (or in some cases, District hospitals) under the direction of each hospital's orthopedic surgery department. POWER manages its own workshops. The workshops also provide physiotherapy services. The table in Appendix 3 illustrates the staffing and production of the workshops ("production" includes production of the custom device and its fitting on the patient). There are a total of 28 physiotherapy units. Production statistics for 1996 were similar to those for 1995.

The National Seminar on MFR set the stage for changes in the number and distribution of workshops. The following have been suggested:

- C The two centers in Nampula will be merged
- C POWER will oversee the establishment of a new center in Chimoio (Manica). The hospital will furnish some rooms, surplus equipment will be moved from Beira, and staff will be reorganized.
- C The underutilized HI center in Vilanculos will be closed, and a new center will be established in Xai-Xai.
- C Jaipur Limb Campaign is negotiating with ADEMIMO to establish a private center in Chibuto, in Gaza province.

All existing workshops are located on the grounds of MISAU hospitals. Staff have been absorbed into the MISAU payroll (at the provincial level), and no personnel are paid from donor funds. MISAU is paying utilities and some office expenses of all workshops as well as

transportation (when available). Donors are still financing all supplies for prosthetic production. HI and POWER both continue to supervise the workshops, POWER more so than HI.

POWER's workshops concentrate on fitting prostheses (rather than orthopedic shoes) and use polypropylene technology. In each workshop, a cast is made of the patient's stump, and heated polypropylene sheets are molded over the cast using a suction pump to produce a custom socket. The prosthesis is then assembled and adjusted to the patient. In some cases, polypropylene or foam sheets are molded over the prosthesis to produce a more aesthetically acceptable result. Throughout the process, which takes about three weeks, the patient receives physical therapy and practice in walking using temporary (and later permanent) prostheses. Workshops also produce custom orthoses, mostly braces, from steel and polypropylene sheets and repair prostheses and orthoses.

Each workshop requires access to electricity and basic equipment, including an oven with air extractor hood (for heating the plastic), vacuum table and pump (for molding the plastic sheets), and hand tools (heat guns, routers and sanders, and jigs). Polypropylene sheets are imported. Some are recycled from melted chips to produce the solid components (such as knees and drums), but new sheets are always required for the custom sockets.

Along with day-to-day management of its four centers, POWER is responsible for all logistics, including bidding, purchasing, imports, storage, and distribution (including transportation). POWER has plans for management training of key workshop personnel as well as representatives of DAG and SMFR in 1997. It is unclear that POWER is providing this training in anticipation of handing complete management responsibility to MISAU. However, this should be the case.

HI's centers have been fully transferred to MISAU. Technical assistance and supplies are supported by HI. HI is using indigenous technology. All components are fabricated on site, with no centralization of production facilities. Appliances are made of wood, leather, and other materials, which may facilitate repair and replacement of worn parts in the field. HI's centers have also focused on the production of a wider range of orthoprosthesis devices, such as orthopedic shoes (including for club feet), sandals for lepers, crutches, and wooden wheelchairs. Though less complex than that of POWER, the process of fitting a prosthesis takes about the same length of time.

Supervision of all the orthoprosthesis centers (including those managed by POWER) is the responsibility of a team of two orthoprosthesis (one each from HI and SMFR) and two physical therapists (one each from HI and SMFR). HI continues to pay for transportation and per diem,

though the frequency of visits has been reduced. Expatriate staff from POWER visit their centers periodically at their own cost.

It is clear that the centers are not functioning optimally. This is most often explained as being due to a lack of patients at the transit centers. This may indeed be the case, as Maputo, where about half of patients seen do not depend on the transit center but rather live in the city, has the highest production related to capacity, at 80%. The center in Beira, where the transit center is reportedly working relatively well, also functioned at 80% of estimated capacity. Other explanations for low productivity include difficulties in importing polypropylene and low staff morale due to low wages and the removal of incentives such as food.

There are two options:

- C POWER has proposed creating an Orthoprosthesis Implementing Agency (OIA) outside MISAU that would manage all aspects of prosthesis production and fitting including logistics and payroll under MISAU policy guidance. Those supporting this option argue that its advantages include better salaries and thus potentially higher productivity, tighter management and supervision, lack of reliance on sometimes precarious logistics and supply, and high-quality orthoprosthesis services.
- C The alternative is to continue the full integration of the orthoprosthesis workshops into MISAU health services. This is justified by the following factors:

--MISAU has already decided on this course of action, and any other position risks alienating the ministry

--All Mozambican personnel (with the exception of a few POWER central office staff), most equipment, and the physical facilities belong to the ministry. Orthoprosthesis workshops/fitting services are an integral part of hospital orthopedic departments, together with physical therapy and surgery. Most supervision is also under MISAU responsibility, as are management and logistics at HI centers. If an outside agency were to assume these responsibilities at this stage, it would be very difficult and costly.

-- Orthoprosthesis workshops/fitting services are an integral part of hospital orthopedic departments, together with physical therapy and surgery.

--MISAU has worked hard at improving its management capacity in all areas, including planning, budget, financial management, logistics and supply, and supervision and is now considered by most donors as the most capable of all the ministries. Integration of orthoprosthesis services, including management training and support, would contribute to MISAU's capacity.

--It is time for prosthetics to be considered within the context of the competing health and budgetary priorities of MISAU. Removing the services from MISAU perpetuates the verticalized "project" mentality and gives these services a favored status among health priorities. It must be recognized that while these services may be of paramount importance to some donor agencies and PVOs, they must eventually take their place within the many priorities in health in Mozambique.

4. Human Resources and Training

(Note: Much of the technical information in this section was taken from POWER's development plan.)

The levels of training for orthoprosthesis personnel recognized by the International Society of Prosthetists and Orthotists (ISPO) are as follows:

- C Category I Prosthetist/Orthotist--3 years of university-level training. The only Category I technicians in Mozambique are expatriates: Max Deneu (POWER) and Isabelle Urseau (HI).
- C Category II Orthopedic Technologist--3 years of formal training (after primary school). There are 24 Category II technicians in Mozambique, 23 employed by MISAU (one was dismissed); 20 are employed in centers supported by POWER and three in HI centers.
- C Category III Prosthetic/Orthotic Technician--Trained on the job to assemble appliances. There are 34 in Mozambique, all employed by MISAU.
- C Category IV Technician--No formal training. There are 44 technicians working in Mozambique.

The table in Appendix 3 illustrates the distribution of these technicians. The HI centers in Lichinga, Pemba, and Nampula have no Category II technicians at this time. Of 25 physiotherapy technicians, all but two work in HI centers.

As noted in a previous section, the capacity for production and fitting of prostheses is determined primarily by the number of Category II technicians. Each one can fit approximately four patients a month.

There are no Mozambican Category I prosthetists. Reportedly, many poor countries with prosthetics programs have no Category I prosthetists. Not only is training costly, it takes a relatively long time. It also seems that there are no courses in Africa at this level, although this fact needs to be confirmed. As currently envisioned, both expatriate prosthetists would leave Mozambique by the end of 1999.

One or more local Category I prosthetists would provide the following advantages:

- C Provide leadership in management and visibility of the SMFR at a national level, including policy.
- C Increase the sustainability of the program by enhancing the effectiveness of lobbying for funds through the budget process and with funding agencies.
- C Provide the capacity for dialogue with international bodies and at seminars and conferences and thus keep the program abreast of international developments and funding possibilities.
- C Support local research into new appropriate technologies.
- C Widen the range of patients served and thus better utilize the relatively expensive resource of an orthoprosthesis program.
- C Maintain and improve the quality of services provided.
- C Provide a mechanism for continuing education and training of new Category II technologists both for replacement and expansion without the need for expatriate personnel.

POWER estimates the cost of training a Category I prosthetist at \$27,000 per year, or \$81,000 per prosthetist (in addition to the cost of local English language training before travel). Three Category II technicians are studying English and would be ready to begin training in the second half of 1997. Mechanisms would have to be put in place to ensure that these technicians would return to Mozambique and the orthoprosthesis program once they were trained.

There is also an argument for training more Category II technologists to increase the national production capacity for prosthetics to a level more compatible with estimates of need. There is a Category II course in Ethiopia that could train a few technicians at a time. POWER has estimated the cost of training a Category II technician in Ethiopia at \$8,540 per year, or \$25,620 per technician (in addition to local English language training before travel). Given the low demand for services at present, however, other aspects of the overall program seem to need greater attention

It should be kept in mind that training funds are usually easier to arrange than are funds for recurrent costs. Training funds may be available through UNICEF, the EU, the embassy of the host country where the training is offered, or USAID through its training budget.

The following training courses were held:

- C 1981--ICRC ran an 18-month course for all staff working in Maputo.
- C 1986--HI ran a one-year training course for Category III technicians.
- C 1990-1993--ICRC ran a three-year course in Beira for Category II technicians, from which the current 24 technologists graduated.
- C 1996--HI ran a basic-level training course for 34 physiotherapists.

POWER plans to hold a training course for all Category III technicians in polypropylene technology in 1997.

In addition, HI has carried out short courses in management, administration, and logistics for key personnel in HI centers. POWER plans more formal training in these areas in a management course for key Category II technicians and representatives of DAG and SMFR in 1997.

There are two options with regard to training:

- C Since the program is functioning below capacity now, there is no pressing demand for more personnel. Moreover, other issues, such as outreach and financing of existing activities, seem to be more important. One option therefore is to leave things as they are. However, given the time it takes to train this level of personnel and the sustainability objective, advance planning should begin immediately.
- C Training one Category I prosthetist is probably warranted for the reasons noted above. Investing in a second prosthetist would be justified because the first one would probably assume a management role at the ministry level. A second prosthetist would be available for more technical and operational duties, including continuing education and training of new Category II technicians, and for research and program development. This investment may be justified on the grounds that it would significantly lower the cost of training the 20 or more Category II technicians that will be needed in the future (the cost of training three Category II technicians overseas is equivalent to the cost of training one Category I prosthetist). Sending candidates overseas for Category II training is probably not warranted at the present time.

5. Transit Centers

The transit centers are facilities where the disabled receive food and lodging while they are being fit and trained to use their prostheses. The following table lists the centers administered by MICAS:

Location	Comments	Capacity (N° of beds)
Maputo	Built by SCF/USAID for about \$250,000 Inaugurated 3/95.	40
Beira	Built by SCF/USAID for about \$250,000. Inaugurated 9/95.	32
Nampula	House provided by MICAS.	24
Inhambane	Built and inaugurated by HI in 1993. Turned over to MICAS in 1995 (HI pays 83% of operating costs).	32
Vilanculos	Built and inaugurated by HI in 1993. Turned over to MICAS in 1995 (HI pays 95% of operating costs)	24
TOTAL		152

The following facilities also function as transit centers:

- C Tete--A “transit house” in a church facility on the grounds of the hospital.
- C Pemba--A small transit center had the participation of ADEMO and MICAS for some time. The current status is unknown. The hospital was studying the possibility of making some beds available for the disabled.
- C Lichinga--The hospital made some beds available for the disabled.
- C Quelimane--A tent center set up by ICRC and now administered by MICAS as a center for the aged. About 30 beds are reportedly available for the disabled.

SCF provided management training for staff at the Beira and Maputo centers and provided funds for Maputo's first six months of operation.

Underutilization of the transit centers is usually cited as the most important reason for the underutilization of the orthoprosthesis workshops: “There aren’t enough patients.” In turn, the

low utilization of the transit centers is most commonly blamed on lack of outreach services. These translate in lack of transportation for the disabled from their communities to the centers, and a lack of resources for transit center operation.

Several observations were made about to the centers:

- C MICAS has a specific budgetary line item for only Nampula. In the case of the other centers, MICAS pays the staff salaries but then “looks for other funding” for operating expenses such as food, fuel, maintenance, and transportation.
- C The center in Maputo is accepting only 13 patients at a time because of a lack of food (there were 14 patients registered during a visit). Food was being cooked over a wood fire in the back yard instead of on the new industrial stove because there was no cooking gas. The toilets in the women’s bathroom and the exterior light fixtures had been stolen. There are no activities for the disabled at the center because of a staff shortage.

A study of the operations of the Inhambane, Vilanculos, and Maputo transit centers during 1996, by the IWG, found the following:

Indicator	Inhambane	Vilanculos	Maputo
Capacity (No. Beds)	32	24	40
Occupancy	26%	28%	14%
Average length of stay (days)	29	22	43
Operational cost	\$8,242	\$5,370	\$6,012
Cost per occupant per day	\$2.67	\$2.21	\$2.78
Projected cost per occupant per day at 80% occupancy	\$1.65	\$1.22	\$1.40
Average cost per beneficiary	\$77.43	\$48.62	\$119.54

Anecdotal reports indicate the situation is similar in all transit centers, with the possible exception of Beira, which reportedly works somewhat better (though for unknown reasons). Inhambane, Vilanculos, and Maputo all have extremely low occupancy rates (as do most of the other centers, according to reports). In Maputo, the low occupancy is blamed on the lack of a budget for food. In Inhambane and Vilanculos, where HI finances almost all recurrent costs, the

problem apparently is a lack of demand. This leads to the conclusion that weak outreach and transportation are seriously reducing the impact of the overall orthoprosthesis program.

In Maputo, only 47 people were lodged at the transit center in 1996, yet the orthoprosthesis center in Maputo manufactured and fitted 213 prostheses and about half that many orthoses during the year. Thus only about 15 percent of the patients seen at the orthoprosthesis center in Maputo depend on the transit center. This is probably due to the size of the urban area, and these observations should not be extrapolated to the other sites. It does suggest that the continued operation of the center in Maputo should be reconsidered unless successful outreach programs to increase occupancy can be carried out in the near future.

The operating costs of the centers seem reasonable in absolute terms. They are very low in relation to the capital investment in the facility (only 2.4 percent per year in the case of Maputo). However, the cost per patient is similar to the cost of fabrication of a polypropylene prosthesis (\$55-\$82; see above). Adding the cost of outreach, transportation, and social and economic reintegration might push the total cost of the social services related to orthoprosthesis to well over \$100 per beneficiary, or close to a level similar to that of the medical services (fabrication and fitting of prostheses)..

These are two options with regard to the transit centers:

- C Although an important part of the overall orthoprosthesis operation, the centers are unable to fulfill their role without effective outreach. It is clear that MICAS will not be able to assume the full cost of transit center operation, especially if it assumes other outreach activities. It would seem possible for MICAS and the transit center directors to coordinate with existing community and private resources to keep the centers running. The groups with the most direct interest, ADEMO and ADEMIMO, represent the beneficiaries themselves. Given the relatively modest cost of operation of each center (about \$1,500 per month at capacity), community-based organizations such as ADEMO, Rotary Clubs, schools, or the Scouts could have a significant impact. Initiative and creative solutions are needed. Unused beds could even be rented out to provide operating revenues for the centers.

- C Another option would be to shut down the centers and rely on existing community resources to house the disabled. Church groups, community groups, and others might be counted on for this service. ADEMO, MICAS, or others could coordinate this activity. This might be a viable option in Maputo, for example, where only a small number of beneficiaries use the center and community resources are more plentiful.

6. Economic and Social Reintegration

USAID's involvement in this area has been extremely limited. Under an earlier sub-grant through HI to ADEMO, two pilot income-generating activities were to be undertaken. A follow-on sub-grant through POWER for related activities is anticipated but has yet to be executed.

Two snack bars operated by ADEMO at the Pedagogic University and within the social center of the Natural Sciences and Mathematics Faculty were visited on March 26, 1997. If designed to assist the disabled through employment and income-generating opportunities, they were unimpressive. Of the six employees at the two facilities, three were reportedly disabled, although none were present at the time of the visit. At the Pedagogic University, a private snack bar was open and busy, while ADEMO's operation which was dirty and drab, had yet to open. At the second location, the snack bar had tables and chairs for about 20 customers; three were present during the visit. Competition at this site is offered by the university itself, which provides free meals to students. Both are judged to be marginal as viable commercial operations.

There is little evidence that HI's support in this area has fared much better. As of July 1996, HI reported that it was supporting an income-generating micro-project in collaboration with ADEMO. The one project identified, a mill, had been held up for three months due to a mechanical breakdown.

In addition, HI has provided wheelchairs for a basketball program at Eduardo Mondlane University. But as of July 1996, this program too was on hold due to a lack of transportation to carry disabled athletics to and from the university. Athletic equipment was turned over to an association in Maputo to help develop sports programs for the disabled throughout the country. Another program, carried out in collaboration with Caritas, included scholarships for disabled students. As of July 1996, this program was temporarily suspended due to lack of funding.

MISAU does not see economic reintegration of the disabled as falling within its mandate. And although MICAS has responsibilities for social reintegration, its capabilities, as discussed earlier, are extremely limited.

While there have been some efforts to provide reintegration support to the disabled, vocational training programs in general have had only limited success in Mozambique, in large part due to the tightness of the labor market in general and the lack of linkage to the labor needs of the private sector. For the disabled, these obstacles are amplified. Where the disabled have been targeted, results are mixed. One program to provide skills training, along with tool kits, reportedly resulted in self-employment for some beneficiaries. However, others were reported to have sold off their tool kits for current income, resulting in familial conflict.

Four steps should be taken to improve the economic and social reintegration of the disabled:

- C Encourage ADEMO and ADEMIMO to devote increased attention to issues related to the economic and social reintegration of the disabled, to include public relations campaigns to combat taboos and encourage hiring of the disabled. These organizations also should work more closely with other NGOs, especially those with community-level networks, to assist in the social reintegration of the disabled and strengthen their linkages to the private sector to identify employment and training opportunities for the disabled.
- C Use opportunities in meetings and discussions with private and public representatives to encourage the employment of the disabled.
- C Support legislative or regulatory changes, including tax incentives for private businesses to employ the disabled and donate to charitable organizations, building code modifications and changes to public transport regulations, and school construction to accommodate those with special needs.
- C Provide support to a community-based organization(s) to develop a replicable model for community-based actions to assist the reintegration of the disabled and use existing networks to increase the awareness of disabled populations in urban and rural areas about available services and assistance.

7. Funding

The most critical issue affecting the sustainability of orthoprosthesis services in Mozambique is future funding. The current USAID project completion date is December 31, 1998. Project-oriented donor support (as contrasted with donor support provided through the budgetary mechanisms) from most other sources (e.g., Swiss Cooperation, French Alliance) will probably end or be significantly reduced by the end of 1999. The EU indicates no plans to phase out its support.

It is important to keep in mind that financial sustainability is not synonymous with maintaining the current level of funding. Sustainability means ensuring that the Mozambicans have the resources (human, technical, and managerial) and the political process and representation to sustain the program within the context of other competing national health priorities. It is also important to remember that the single largest potential source of funds for health, including prosthetics, will be the Mozambican people themselves and the Ministry of Health. Sustainability implies an end to the donor-driven, project-oriented funding justified by the war and a transition to a democratic and participatory process of setting priorities and implementing programs. Much of the stage has already been set.

a. Medical Services

A group of European donors, with the leadership of Swiss Cooperation, has worked to strengthen the financial, budgetary, and planning systems of MISAU. International audits of MISAU finances were carried out in 1995 and 1996 (for 1994 and 1995, respectively). The 1995 audit found many weaknesses (most related to lack of documentation rather than misuse of funds); the 1996 audit found far fewer. There are plans to continue this process and to extend it to the provincial level in 1997.

Swiss Cooperation also has been supporting an annual provincial “planning exercise” to improve budgetary planning and allocation in support of the ministry’s decentralization process. As a result of the budgetary and planning efforts, MISAU is considered to be among the best-managed of the government ministries.

The establishment of the SMFR and the work of the IWG on defining the costs of the prosthetics program will help support prosthetics from within the ministry. In addition, the disabled, including ex-military, have a relatively well-organized and vocal lobby compared with other constituency groups. These two forces--one within the ministry, the other without--will help guarantee that prosthetic services are given fair consideration in the planning and budget process.

As outlined previously, the Ministry of Health is currently responsible for about 42 percent of the recurrent costs of the orthoprosthesis program. Most donor support is being spent on raw materials, logistics and transport, and supervision. Nearly all technical salaries, physical space, utilities, and equipment are the ministry’s responsibility. The cost of the entire program is equivalent to about 2.4 percent of MISAU’s 1997 budget for recurrent expenses, a level that seems to be within reason. In the event that additional funding is needed, limited support may be available at the provincial level, especially from provinces that receive special assistance (Manica from Finland, Tete from Denmark, and Nampula from Holland).

Several other mechanisms have been mentioned as possible funding sources for prosthetics. INSS currently provides payments to participating employees who are sick, disabled, or retired. Even though it is obligatory, INSS currently covers only a fraction of the employed (urban employees in the formal sector only), and in its present form the system does not pay for health services. INSS would have to be altered and expanded significantly if it were to provide a significant proportion of the cost of prosthetic services. Also mentioned was the Ministry of Defense, which is providing pensions to disabled ex-military. However, it is highly unlikely that this ministry would also consider providing ongoing health care services (prosthetics) to the ex-military.

Nor is mandatory third-party automobile insurance a viable source of funds. Only a fraction of Mozambicans drive vehicles, and an even smaller fraction of amputations are caused by motor vehicle accidents. Vehicles at highest risk, including clandestine public transport (“chapas”), are

the least likely to be insured. Also, there is no means to enforce a law requiring such insurance. And it is doubtful that this insurance would cover health care beyond acute care after an accident. Lifelong coverage for prosthetic services is unlikely. A more likely source of funds in the future will come with the inevitable growth of private health insurance.

A note about the mechanism of payment is warranted. MISAU has implied that the aforementioned payment sources might make direct transfers to MISAU for prosthetics, as opposed to making direct payments to beneficiaries. This point of view is likely to reflect Mozambique's socialist past, and is not considered to be the most efficient from the point of view of most health economists.

The issue of cost recovery has also been raised, usually synonymous with fees for services. At the present time, MISAU charges about \$0.10 for a medical consult and generates about 5 percent of recurrent costs for ambulatory care through these fees. Prosthetic services are currently free of charge. It should be kept in mind that the poor are more likely to suffer from disabilities than the better off and that being disabled often further impoverishes the individual. Also, legislation is moving toward confirming free services to the unemployed, disabled, and ex-military. Significant cost recovery through fees seems unlikely.

A financing option that has received wide support among members of IWG is that of forming an entity outside MISAU that would seek donor funds and channel them directly into prosthetic services. This entity would be controlled by a committee with heavy representation from the public sector, with a composition similar to that of the IWG itself. This strategy is unwise. The heavy public sector representation in the organization short-circuits the assigning of priorities through the budgetary process by stimulating lower functional levels of government to compete for funds directly. In addition, it propagates the vertical, project-oriented mentality that is inconsistent with sustainability.

It is probable that the public sector, through MISAU (and with the help of willing donors), will have to directly fund most of the costs for prosthetic services for the foreseeable future. However, the ministry should be able to pay the recurrent cost of these services.

The IWG has designated a working group to study options for financing, focusing on the mechanisms cited above. Its report will undoubtedly be more definitive than the brief treatment here and may shed light on other options as well.

b. Social Services

The situation regarding the cost of social services related to prosthetics is quite different from that of the medical side. Although MICAS is officially responsible for the cost of outreach, transportation, transit centers, and social reintegration, its budget is not adequate to cover these costs. The cost of the transit center operations alone amounts to 7 percent of the ministry's operating budget.

The type of services required lend themselves to participation by the private sector and NGOs. There is no single best answer to the funding of these services. Strengthening local organizations, especially those of beneficiaries such as ADEMO and ADEMIMO, supporting tax incentives to the private sector for charitable giving, and training or hiring the disabled would all be positive steps.

Strong beneficiary associations such as ADEMO and ADEMIMO could seek donor funding that would benefit prosthetic services. For now, it might be appropriate to channel such funds into neglected social areas such as advocacy, public awareness, outreach, transit centers, and economic and social reintegration rather than into the relatively well-funded medical prosthetic services. The mechanisms for channeling such support, whether through financing of institutions and programs or through direct payments to beneficiaries (such as transportation vouchers), deserve further discussion.

8. Models

Two models with similar characteristics have been suggested. Under the first, a foundation would be responsible for the operation and funding of the national orthoprosthesis program. This model assumes that the principal ministry involved, MISAU, is incapable of managing and financing such a program. Under the second, an Orthoprosthesis Implementing Agency would be established. In both cases, it was proposed that MISAU and other government officials would serve on the entity's board, thereby ensuring that GRM policies were taken into account.

Both MISAU and the Interministerial Working Group rejected both models, principally because MISAU believes it is responsible for the delivery of public sector health services and as such is also responsible for the provision of prosthetic services. In fact, MISAU is well on the way to integrating these services within the National Health System.

A variant of these models has found some support with MISAU and MICAS. Under this scheme, an entity would be established outside the ministries with the principal objective of fundraising in support of government and nongovernment orthoprosthesis-related programs, support, and services. Such an entity would have the ability to pay salaries and provide benefits and incentives not available under the government's personnel system. In effect, such an entity

would result in the creation of a supplemental budget and alternative personnel system for government programs. This model is too transparent in its purposes to be judged a viable option. Nonetheless, it may be pursued by some in MISAU and MICAS and may find support among others involved in orthoprosthesis in Mozambique. It should not, however, be encouraged.

III. Working Parameters for USAID

As it considers its further and future involvement with the orthoprosthesis program in Mozambique, USAID should:

- C Recognize that the Prosthetics Assistance project was designed to address problems associated with the war. The project has succeeded. About two-thirds of amputees have been fit with prostheses, services are being integrated into the Ministry of Health, and a core staff of Mozambicans is trained and on the job.
- C Build on this success, focusing additional efforts on sustainability.
- C Recognize that the principal responsibility for the sustainability of services for the disabled rests with the GRM and the disabled themselves through groups such as ADEMO and ADEMIMO.
- C Recognize the many constraints on its options: only one principal PVO, POWER, active in prosthetics; the general weaknesses of local NGOs; a strategic framework that does not include prosthetics and that therefore limits the mission's continued support; and the need for staff and managerial time to be spent on higher health priorities and therefore the need to apply this resource selectively.
- C Support the further integration of orthoprosthesis services into the Ministry of Health, recognizing that these are an appropriate component of the ministry's health services mandate.
- C Appreciate that, although the Ministry of Health is willing to consider options to direct manufacture of prostheses, complete privatization of production will not be an easy sell in view of the ministry's and other donors' concern that the neediest continue to have assured and free access to prosthetic devices.
- C Support the Interministerial Working Group, using USAID's influence with the Ministry of Health and other donors to encourage enhanced beneficiary, NGO, and private sector participation. This group could eventually become an Orthoprosthesis Working Group, in effect losing its identification with the government.
- C Increase the support of the private sector and civic society, including NGOs, in the national orthoprosthesis program.

IV. Recommendations

Following are two sets of recommendations for USAID's consideration. The first deals with potential actions in relation to the Cooperative Agreement with POWER, and the second set concerns more general and longer-term actions.

A. Cooperative Agreement with POWER

1. Seek a director with the skills and sensitivity to deal effectively with the Ministry of Health on policy, strategy, and major programmatic issues as well as to shape a consensus among major donors and NGOs on common policies regarding the orthoprosthesis program. If this staff change is not possible, more senior USAID staff would need to play these roles.
2. Revise the objectives of the Cooperative Agreement to delete the creation of a private sector or NGO entity to address sustainability and add concrete objectives related to integrating management and logistics associated with polypropylene technology and production into the Ministry of Health structure. This would include the provision of polypropylene-related equipment and training of Category III staff in workshops supported by HI.
3. Delete the proposed grant to ADEMO for outreach.
4. Assess the option of retaining control of the production unit within the Ministry of Health and expanding production capacity to supply a broad range of products/appliances needed by hospitals throughout the country. This option could contribute to the creation of a national workshop to support the hospital system.

B. General

More generally, USAID should give consideration to;

1. Extending the Prosthetics Assistance project and POWER Cooperative Agreement until December 31, 1999.
2. Involving higher-level USAID officials in a dialogue with the Ministry of Health and Interministerial Working Group on substantive policy issues related to sustainability, cost recovery, and privatization options. Not only does this have importance for prosthetics

assistance, but it may also provide experience and lessons for the mission's objectives under its major primary health care intervention.

3. Not supporting the establishment of an NGO or other entity controlled by the GRM for purposes of fund raising, and providing incentives not available under current Ministry of Health policy and supplemental to its budget.
4. Studying the commercial viability of the production unit at Maputo Central Hospital, including expanding the product line at the existing facility, shifting management to a private company under a management contract, and selling or donating equipment and tools to an existing commercial or South African producer of plastic products. If donated, the Ministry of Health must be assured of discounted or guaranteed prices for prosthetics components for some period of time. The study also should assess the feasibility of and market for producing for export.
5. Providing institutional strengthening to ADEMO and ADEMIMO, preferably as a component of a small program such as support for transit centers. If judged a high enough priority, this could be done through the NGO institutional strengthening component of PVO Support II project. Both groups could also benefit from additional assistance to strengthen their advocacy, public information/education, and fundraising capabilities. Again, if considered a high enough priority, this type of assistance could be provided through the mission's current grant to the African American Institute under its democratization objective.
6. With respect to the transit centers that are currently the responsibility of the Ministry for Coordination of Social Action (Maputo, Beira, Nampula, Inhambane, and Vilanculos), as an option to USAID funding for ADEMO and ADEMIMO as suggested above, encourage the ministry to invite ADEMO and/or ADEMIMO to assist in managing and supporting these facilities and to undertake efforts to enhance the involvement of churches, Scouts, and school children. If necessary, limited funds for this purpose would be sought from the ministry's budget.
7. Supporting the training of two Mozambicans to the Category I level to create the human capacity to manage the orthoprosthesis program without a future need for expatriates. The training would take about three years and once completed would significantly reduce the costs of sustaining a national orthoprosthesis program. Other donor funding (e.g., UNICEF, UK, EU) should be sought for this training, with USAID willing, if necessary, to assist.
8. Providing a grant to Save the Children/US to act as a pass through and mentor for a sub-grant to the Child, Family and Development Association (CFDA), a local NGO. Several activities could be considered under this sub-grant, including development of a replicable

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model for community-based actions to assist with reintegration and using established networks to increase the awareness of disabled populations in urban and rural areas of available services and assistance.

APPENDIX 1

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APPENDIX 2

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APPENDIX 3

Scope of work

The purpose of the consultancy is to make recommendations to the Mission on the implementation of prosthetics activities in Mozambique with particular focus on institutional structure, roles and responsibilities of the public sector, NGOs, the donors vis a vis this structure and the financing of prosthetics activities. The consultants will analyze the options now on the table before the Inter-Ministerial Working Group and identify issues related to these and other possible options for continued implementation of prosthetics activities when USAID funding is phased out.

The final product will be a position paper that the Mission will use in continuing this dialog with the MOH and other Ministries. The Mission is concerned that the document serve as the basis for clarifying the requirements of prosthetics management and in particular, address the issue of adequate oversight in Mozambique.

The specific tasks include the following.

- 1) Participate with the Mission in the discussions at the Inter-Ministerial Committee to clearly identify the issues that need to be addressed for continued management/financing of prosthetics in Mozambique.
- 2) Review existing laws which may affect the creation of an NGO, foundation or other entity established for prosthetics implementation and/or oversight and funding of other entities involved in prosthetics management.
- 3) Explore potential interest of local, international corporations in supporting prosthetics activities in Mozambique.
- 4) Review and assess the viability of existing “models” for the implantation , management and financing of prosthetics. These models may include the Customs Service, the Blindness Prevention Program.
- 5) Assess the health policy environment and the prospects for public sector management, service delivery and funding of prosthetics over the next several years.
- 6) Assess the various cost analyses conducted by the MOH, POWER, and HI on the financial requirements for prosthetics services on a facility basis as well as total annual financial requirements for the country.
- 7) Present findings to the Mission and others, as determined appropriate by the Mission.
- 8) Complete a draft report to be left with the Mission before departure from Mozambique.

APPENDIX 4

TABLE 3.01
ORTHOPROSTHETIC CENTRES IN MOZAMBIQUE

CENTRE SUBCENTRE LOCATION	DATE EST	AGENT NGO	DESCRIPTION	PRODUCTION IN 1995					STAFF NUMBERS						
				PROS	ORTH	SHOE	WCH	CRUCH	PROTHETIST/ORTHOTIST				OTHER		TOTAL
									I	II	III	IV	PHYS	OTH	
Maputo	1980	POWER	based in the Hospital Central de Maputo which is the national referral centre, this orthoprosthesis centre is the logistical base for POWER's expatriate staff; established originally by ICRC and provides a comprehensive range of services including manufacture of polypropylene prosthetic componentry for all POWER-managed centres, orthotic and other devices and appliances	307	39	n.a	0	2.362	1*	7	13	15	0	3	39
Nhambane	1987	HI	this small centre is integrated in the National Health system and produces the whole range of prosthetic and orthotic devices; wheelchairs are made of wood	55	29	156	18	378	0	1	2	4	1	0	8
Vilankulo	1986	HI	there is a possibility that this small centre may be closed and moved to Xai Xai; it currently provides a full range of prosthetic and orthotic services	48	33	111	24	239	0	1	3	4	1	0	9
Beira	1986	POWER	based on the site of the central hospital this is a major centre serving the province of Sofala and the base for the former prosthetics training programme established by ICRC; 24 Category II prosthetists were trained in this Centre and all other centres now employ staff who were trained in Beira; the facility still exists;	229	178	n.a	0	0	0	6	3	2	0	4	15
Tete	1990	HI	provides the complete range of prosthetic and orthotic services; wheelchairs are made of metal; there is a physiotherapy service and an outreach programme, but provided by the MISAU and not under HI management	14	7	60	16	295	0	1	3	2	2	1	9
Quelimane	1990	POWER	a small orthoprosthesis workshop integrated into the provincial hospital in Quelimane city and servicing the needs of patients in Zambézia province; prostheses and orthoses are currently manufactured	175	33	n.a	0	0	0	4	1		2	2	9

CENTRE SUBCENTRE	DATE EST	AGENT NGO	DESCRIPTION	PRODUCTION IN 1995					STAFF NUMBERS						
				PROS	ORTH	SHOE	W'CH	CRUCH	PROSTHETIST/ORTHOTIST				OTHER		TOTAL
									I	II	III	IV	PHYS	OTH	
Nampula	1989	POWER	the smallest of the POWER centres, and is not located in a hospital compound. It is somewhat old and the building in need of repair. Nonetheless the prosthetists and other employees provide an excellent service; there are plans to move the facility onto the hospital site and combine it with the HI Nampula centre	116	0	n.a	0	0	0	4	3	5		1	13
Nampula Nacala Monapo Angoche Namapa	1989	HI	HI's centre in Nampula is on the site of the provincial hospital and provides a range of orthotic and physiotherapy services to disabled patients; it manufactures crutches and two types of wheelchairs (one a hand cycle type); there is no prosthetic service; see above re amalgamation plans site	1	30	261	64	349	0	0	2	4	1	5	11
													1		1
													1		1
													1		1
Chinga Cuamba	1994	HI	currently under direct control of HI but to be integrated into MISAU at the end of 1996; produces the whole range of prosthetic and orthotic devices; one variety of wheelchair made of wood	23	0	8	26	195	0	0	2	2	3	1*	9
													1		1
Pemba Mocimboa d P Mueda Montepuez	1994	HI	this new, 400m ² centre is a major HI operation under direct HI control and supporting three subcentres; the centre produces prostheses, orthoses, wheelchairs, crutches, shoes and other orthopaedic devices; it has treated 250 patients since March 1994; it will be integrated within MISAU at the end of 1996	28	18	64	11	233	0	0	2	3	2	1*	8
													1		1
													1		1
Totals: Centres Subcentres	10 8			996	367	660	159	4,051	3	24	34	43	17	16	138
													8		

Key: Year Est = Year Established; Agent NGO = Managing NGO; PRO = Prostheses; ORTH = Orthoses; SHOE = Orthopaedic Shoe; W'CH = Wheelchair; CRUCH = Pair Crutches; 1* = Expatriate Staff; I, II, III, IV = Category I, II, III, IV orthoprosthesis technicians; a description of the training skill levels of these of technician appears in the text below; PHYS = Physiotherapist; OTH = Other staff, mainly administrative

Notes: Expatriate Staff are not necessarily qualified orthotist/prosthetists- the only practising Category I expatriate prosthetist is Max Deneu at the Maputo Centre; in addition, HI employee Isabelle Urseau is adviser to SMFR in MISAU

Sources: Data included in this Table have been collected from a variety of sources, including (a) Collectivo da SMFR (Maio 1996) *Documento de Trabalho para o 1º Seminário de Medicina Física e Reabilitação* Maputo; (b) ICRC (1995) *Production of Each ICRC Orthopaedic Centre, Maputo, Beira, Quelimane and Nampula for 1994 and 1995*, Maputo (note, this source contains data from January to September 1995 only) (c) POWER Mozambique (1996) *Estatísticas de Produção de Setembro 1995 à Janeiro 1996 dos Centros Ortopédicos Maputo/Beira/Quelimane/Nampula*, Maputo; (d) Max Deneu (1996) personal communications (e) HI (1996) *Annual Report, 1995 Mozambique*, HI, Maputo; (f) HI (1996) *Report of Activities, January-February-March 1996, Mozambique*, HI Maputo and (g) Stéphan Badonnel, 28th August 1996, personal communication