ABSTRACT

Small batteries i.e. 1.5V, sizes AA (R6) to size D (R20) and AAA, which are used for various appliances e.g. radio receivers, CD and cassette players, cameras, etc, have short service life and most of the widely used batteries, particularly in the least developed countries, are non-rechargeable. As a result of this situation, used up batteries end up being scattered in the environment or otherwise disposed as domestic waste regardless of their toxic nature. The introduction of rechargeable batteries together with solar powered chargers as an alternative solution to minimise the problem of environmental destruction due to disposal of used up batteries in Tanzania was studied. Size AA - 1.2V and 1.5V rechargeable batteries together with solar powered chargers were developed and tested both under laboratory conditions and in the field in Tanzania; as a possible way of minimising the problem of environmental destruction due to disposal of batteries. A few units of the system were tested under laboratory conditions at the University of Dar es Salaam and under field conditions in Zanzibar. The study has shown that the batteries can be recharged efficiently and used effectively. The proposed solution is economically advantageous, and so despite of their high initial cost they are economical in the long run. More importantly the rechargeable batteries quantitatively reduce the scale of the problem of battery disposal and consequently pollution to less than 1%.