e – WASTE AND ITS IMPACT IN
THE SOUTHERN AFRICAN DEVELOPMENT COMMUNITY (SADC)

EXECUTIVE SUMMARY

The electrical and electronic waste (e-waste) is one of the fastest growing waste streams in the world. The increasing "market penetration" in developing countries, "replacement market" in developed countries and "high obsolescence rate" make e-waste as one of the fastest growing waste streams. Environmental issues and trade associated with e-waste at local, trans-boundary and international level has driven many countries to introduce interventions. The Southern African Development Community (SADC) is yet to seriously take steps in this regard. SADC comprises of 15 Member States within the Southern and Eastern Africa namely Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe.

Maseru Resolution

At its 30th SATA Annual Conference in Maseru, Lesotho, the Southern Africa Telecommunications Association (SATA) which is a forum of telecommunications/ICTs Operators in the SADC Region, raised concern on the amount of equipment that will be laid idle after migration process from the legacy networks into next Generation Networks (NGN). The Chief Executive Officers of SATA unanimously decided that there was a need to facilitate the recovery and/or reuse of useful materials from waste generated from a process and/or from the use of any material thereby, reducing the wastes destined for final disposal and to ensure the environmentally sound management of all materials. The SATA Secretariat was then directed to come up with Regional Guidelines on e-Waste Disposal covering the Reduce, Reuse, Recycle (R^3) approaches. We expect to **reduce** the generation of e-waste through "smart procurement" and good maintenance; **reuse** still functioning electronic equipment by donating or selling it to someone who can still use it and **recycle** those components that cannot be repaired.

The SATA Secretariat has already embarked into the drafting of the Guidelines for e-Waste Disposal. The objective of these Guidelines is to provide guidance for identification of various sources of waste electrical and electronic equipments (e-waste) and prescribed procedures for handling e-waste. The Guidelines also call for an establishment of SADC e-Waste Recycling Plant. In particular considering the high recyclable potential of e-waste such wastes should be subject to recycling in an environmentally sound manner. These Guidelines shall apply to all those in the region who handle e-waste which includes the generators, collectors, transporters,

dismantlers, recyclers and stakeholders of e-wastes irrespective of their scale of operation.

Composition of e – Waste

e - Waste comprises of wastes generated from used electronic devices and house hold appliances which are not fit for their original intended use and are destined for recovery, recycling or disposal. Such wastes encompass wide range of electrical and electronic devices such as computers, hand held cellular phones, personal stereos, including large household appliances such as refrigerators, air conditioners etc. e - wastes contain over 1000 different substances many of which are toxic and potentially hazardous to environment and human health, if they are not handled in an environmentally sound manner.

Composition of e-waste is very diverse and differs in products across different categories. Broadly, it consists of ferrous and non-ferrous metals, plastics, glass, wood & plywood, printed circuit boards, concrete and ceramics, rubber and other items. Iron and steel constitutes about 50% of the e-waste followed by plastics (21%), non ferrous metals (13%) and other constituents. Non-ferrous metals consist of metals like copper, aluminum and precious metals such as silver, gold, platinum, palladium etc. The presence of elements like lead, mercury, arsenic, cadmium, selenium, and chromium and flame retardants beyond threshold quantities in e-waste classifies them as hazardous waste.

Export of e –Waste to Developing World

e - Waste is routinely exported by developed countries to developing ones (Africa and Asia), often in violation of the international law. In the 1990s, governments in the EU, Japan and some US states set up e-waste 'recycling' systems. But many countries did not have the capacity to deal with the sheer quantity of e-waste they generated or with its hazardous nature. Therefore, they began exporting the problem to developing countries where laws to protect workers and the environment are inadequate or not enforced. It is also cheaper to 'recycle' waste in developing countries; for example the cost of glass-to-glass recycling of computer monitors in the US is ten times more than in China.

International Conventions on e – Waste Management

There are two key international conventions regulating waste management, namely the Basel and Bamako Conventions. The Conventions emphasise that signatories must ensure that the generation of hazardous wastes, and other wastes within a country, is reduced to a minimum, taking into account social, technological and economic aspects. Secondly, where a country exporting the hazardous waste does not have the technical capacity, necessary facilities, or suitable disposal sites to dispose of the waste in question in an environmentally sound and efficient manner, steps must be taken to minimize pollution and its health consequences as far as possible. This also applies to raw material exported for recycling or fraction recovery.

Need for the SADC Regional Guidelines on e - Waste Management

Based on the consensus arrived at the 30th SATA Annual Conference an assessment was made of the existing practice on e-waste management in the SADC Region and concluded that there was need for Regional Guidelines due to:

(a) Increasing amount of e – Waste in the Region:

Product obsolescence was becoming more rapid since the speed of innovation and the dynamism of product manufacturing/marketing has resulted in a short life span (less than two years) for many computer products. Short product life span coupled with exponential increase at an average of 15% per year will result in doubling of the volume of e-waste over the next three to four years.

(b) Toxic Components

e - Wastes are known to contain certain toxic constituents in their components such as lead, cadmium, mercury, polychlorinated bi-phenyls (PCBs), etched chemicals, brominated flame retardants etc., which are required to be handled safely. The recycling practices in the Region were found to be more in informal sectors leading to uncontrolled release of toxic materials into the environment as a result of improper handling of such materials.

(c) Lack of environmentally sound recycling infrastructure:

It was established that e-waste, in the absence of proper disposal, find their way to scrap dealers, which are further pushed into dismantlers' supply chain. There was no existing environmentally sound recycling infrastructure in place that was equipped to handle the increasing amounts of e-waste. The major dismantling operations are occurring in unorganized/informal sector in hazardous manner.

The potential of increased e-waste generation and lack of adequate recycling facilities have attracted the attention of a number of recyclers globally, thus expressing interest to start recycling facility in the Southern African Development Community (SADC).

(d) Lack of Policy and Regulation for e-Waste Management:

While the SADC Governments have recognised the challenges posed by e-waste, the level of preparedness in-terms of policies and regulations was still low.

Conformity and Interoperability Testing and Test Beds

The existing International Standards on testing and interoperability of IT/Telecommunications/ICT equipment are not enough to ensure a successful systems' operation. Furthermore, Standards are only meaningful if they are implemented in a consistent way and that there is surety that the implementations adhere to the few available standards with the following understanding:

- What is expected of implementations in order to claim conformance – i.e., what are the requirements?
- How will we know if an implementation conforms?
    - test beds, test tools

Whilst Conformance is necessary it is not directly sufficient to ensure smooth systems' interoperability. Also Interoperability does not necessarily imply conformance as defined hereunder:

- ➤ **Conformity** – is the fulfillment of a product, process or service of specified requirements. Each unit/system acts independently;
- ➤ **Interoperability** – is a property referring to the ability of diverse systems to work together (inter-operate or inter-work). Units/Systems therefore depend upon each other;
- ➤ **Conformity Testing** – **a way** to determine directly or indirectly that relevant requirements are fulfilled;
- ➤ **Interoperability Testing** – **a way** to determine that 2 or more systems or components can exchange information and use the information that has been exchanged.

The rapid growth and change of technology in developed world leaves a lot of e-articles. These obsolete e-articles are sold to Africa (where they look new/modern) and most of e-articles that arrive in the continent are independent from the existing ones i.e. there is no interoperability. Typical examples are the switching and transmission equipment. Therefore the arrival of a "new" e-article means throwing away the existing or rather "old" e-article and NGN systems pose even greater risk of non-conformity and non-interoperability in Africa and the rest of the developing world.

NGN Conformity and Interoperability Testing in Africa is to ensure that the new system respects the existing and the expected or future systems while behaving itself by providing the expected outcomes.

Recommended Way Forward

As a way forward, it is expected that SADC Member States:

(a) Develop specific policies and regulations on e-waste management to govern and handle e-waste processes from collection to final disposal;

(b) License key actors of e-waste;

(c) Develop an e-waste collection system;

(d) Launch a consumer awareness campaign;

(e) Launch capacity development programmes in the e-waste sector, possibly funded by fees levied on importers of second-hand equipment;

(f) Develop an e-waste management system comprising of a multi-stakeholder process, which includes the participation of the civil society;

(g) Support and promote the establishment of e – Waste Recycling Plant in the Region; and

(h) Support and promote the establishment of NGN Conformity and Interoperability Testing Centre in Africa.