ABSTRACT

Information Technology Department – **E-Waste Policy of Tamil Nadu 2010** – Approved - Orders Issued.

Information Technology (e.Gov.II) Department

G.O.Ms. No.18 **Dated 07.05.2010**

ORDER:

While moving the 'Demand No.31 - Information Technology Department', in the Tamil Nadu Legislative Assembly during the Budget 2009-2010, the Hon'ble Minister for Information Technology, made an announcement that a comprehensive Policy of the State on **"E-Waste and its management"** will be released in 2009-2010.

2. Technological advancement and increased usage of Telecom, IT, Electronic digital equipments etc. have created an alarming situation of increased stream of electronic waste (e-waste) globally known as Waste Electrical and Electronic Equipment (WEEE). In a digitized information technology world, the use of computers, cell phones, consumer electronic appliances and the like have reached enormous proportions, and have become an integral part of routine lifestyle. The high rate of obsolescence of these modern equipments and the fast changing technology gives rise to replacement of the products, thereby increasing e-waste. The main reason why e-waste has become a global concern is the presence of toxic and hazardous substances in these equipments.

3. Chennai being a major Information and Communication Technology (ICT) Hub and with the ICT industry now expanding to Tier II, Tier III cities and Towns and indeed into villages in Tamil Nadu, it is felt that it is indispensable to have a comprehensive policy for Environmentally Sound Management (ESM) of e-waste.

4. Accordingly, the Government have entrusted the work of preparation of "Policy on E-Waste and its Management" to ELCOT.

5. The Managing Director, ELCOT, has submitted a proposal for Policy on "E-Waste and its Management" which was discussed before a Core Committee constituted for this purpose.

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6. After arriving at a consensus by the Committee, the Government of Tamil Nadu have decided to introduce the Policy on e-waste and its management with the following objectives:

- Minimize e-waste generation.
- Utilize e-waste for beneficial purposes through environmentally sound recycling.
- Ensure environmentally sound disposal of residual waste.

By implementing this policy the Government of Tamil Nadu is committed to:

- Create an efficient and uniform infrastructure for collection, utilization and disposal of E-Waste.

- Promote recycling and reuse of E-Waste which has high resource potential by suitable measures such as disposal through a specified authorized process which may include a deposit refund system and similar measures.

- Promote pollution prevention practices that reduce E-Waste generation.

- Mandate the owners and generators of E-Waste to properly recycle E-Waste through recyclers authorized by the Tamil Nadu Pollution Control Board and facilitate establishment of adequate numbers of authorized E-Waste collection centres and E-Waste recycling facilities.

- Support the development of markets for recyclable materials.

- Insist for the submission of certificate on ROHS (Restriction Of Hazardous Substances) by bidders in respect of tenders floated by the Government department/Organizations.

- Mandate labeling of computer monitors, television sets and other household/individual electrical, electronic devices for declaration of hazardous material contents with a view to identify environmental hazards and ensuring proper material management and E-Waste disposal.

- Encourage coordinated actions by groups of communities or industries in researching, developing, and sharing knowledge for environmentally sound management of E-Wastes.

- Prohibit the disposal of domestic E-Waste landfills.

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- Deter unauthorized collection and handling of E-Waste.

- Promote Extended Producer Responsibility in collection, recycling and disposal of E-Waste through suitable mechanism.

- Create awareness through information and education programs on E-Waste management to all sections of society.

- Create a data base on best global practices and failure analysis for development and deployment of efficacious E-Waste management and disposal practices within the State.

- Mandate Government departments and Undertakings to include a paragraph on E-Waste generated and disposed as part of annual policy note.

- Constitute a working group comprising of Regulatory Agencies, Non Governmental Organisations, Industry Associations, experts etc. to keep pace with temporal and spatial changes in structure and content of E-Waste.

- Mandate all Electronic equipment manufacturers and bulk consumers of such equipments to maintain an inventory of all the individual component items received and despatched goods including the inventory of rejected items.

7. A Detailed booklet containing the "Policy on E-Waste 2010" is annexed to this Order.

8. The implementation and monitoring in respect of this Policy shall be done by the Tamil Nadu Pollution Control Board (TNPCB) in consultation with Government in Environment and Forests Department.

(By order of the Governor)

P.W.C.DAVIDAR,
Secretary to Government.

To
All Departments of Secretariat, Chennai-9.
The Chairman, Tamil Nadu Pollution Control Board, Chennai-32.
The Commissioners of All Corporations in Tamil Nadu.
The Commissioner of Municipal Administration, Chennai-5.

..4

The Director of Information and Public Relations, Chennai -9.
The Managing Director, ELCOT, Chennai-35.
The Works Manager, Government Central Press, Chennai-79.
(with a request to print 550 Copies)

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The Personal Assistant to Minister for Information Technology, Secretariat, Chennai-9.
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SF/Scs.

// Forwarded : By Order //

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Section Officer.

ANNEXURE TO G.O.(Ms.) No. 18 Dated 07/05/2010

E-waste Policy 2010

GOVERNMENT OF TAMIL NADU

E-WASTE POLICY
2010

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1. Executive Summary

E-waste is generated from used electrical and electronic equipment, which are no longer fit and useful for its original intended purpose.

A Core Committee was constituted under the guidance of the Secretary (IT), Government of Tamil Nadu and Managing Director, Electronics Corporation of Tamil Nadu Ltd., (ELCOT) to prepare a policy on e-waste. The composition of the Committee is mentioned at the later part of the document. This Committee discussed in detail the current scenario in respect of e-waste and examined the methods being adopted in different countries for effective management of e-waste. After several sittings of the Committee, a draft policy has been prepared for consideration of the Government of Tamil Nadu.

The proposed e-waste policy of the Government of Tamil Nadu

- Establishes the roles of different stakeholders in the e-waste value chain viz., manufacturers, distributors, dealers, end-users, recyclers and the Government Agencies .
- Emphasizes the need for minimizing the generation of e-waste recycling it in an environmentally sound manner and safe disposal of residues.
- Identifies the requirement of a well-designed system to collect and process e-waste in the State.
- Recognizes the role of the informal sector in collection and segregation of e-waste.
- Indicates the responsibility of formal recyclers in the e-waste recycling value chain.
- Recommends manufacturers, dealers and their authorized representatives to devise methods to take-back their products at the end of its useful life.
- Facilitates deposition of e-waste to authorized agencies for environmentally sound recycling.
- Recommends that the monitoring and implementation of the policy will be done by the Tamil Nadu Pollution Control Board (TNPCB).
- Recommends providing awareness to stakeholders about e-waste handling and proper disposal of residues.

2. Preamble

Technological advancement and increased usage of Telecom, IT, Electronic digital equipments and leisure/toy gizmos have created an alarming situation of increased stream of electronic waste (e-waste) globally known as Waste Electrical and Electronic Equipment (WEEE). In a digitized information technology world, the use of computers, cell phones, consumer electronic appliances and the like have reached enormous proportions, and have become an integral part of routine lifestyle. The high rate of obsolescence of these modern equipments and the fast changing technology gives rise to replacement of the products, thereby increasing e-waste. Developing countries including India also face the threat of the “replacement market” of developed countries by way of transboundary shipments of used electronic goods and items. The main reason why e-waste has become a global concern is the presence of toxic and hazardous substances in these equipments such as Lead, Cadmium, Mercury, Arsenic, Barium, Beryllium and Brominated Flame-Retardants (BFR). In the absence of an effective method for collection of e-waste and managing the hazardous constituents, it is likely to be disposed of in land-fills resulting in high environmental risk and health hazards to human beings and animals or end up at the backyard units recycling such wastes using highly polluting technologies.

The disposal of e-waste containing such hazardous substances in an environmentally sound manner has become a challenge in India and at the

global level. Many countries have initiated steps for collection and safe disposal of e-waste. In India, the Ministry of Environment and Forests (MoEF), Government of India (GOI) has published “Guidelines for Environmentally Sound Management of E-waste” in March 2008. The guidelines are optional and not mandatory and a proposal for regulating e-waste through a set of rules that would govern the management of e-waste in an environmentally sound manner is under consideration at the GOI level

Chennai being a major ICT Hub and with the ICT industry now expanding to Tier II, Tier III cities and Towns and indeed into villages in Tamil Nadu, it is imperative that a comprehensive policy for Environmentally Sound Management (ESM) of e-waste is in place. As and when the National Policy or regulations on e-waste is introduced, this policy shall be alligned to accommodate changes if required.

3. What is e-waste

Electrical and electronic waste (e-waste) is defined in the 'Guidelines for Environmentally Sound Management of E-waste' published by the Ministry of Environment and Forests (MoEF), Government of India. As per this definition, "E-waste comprises of wastes generated from used electrical, electronic devices and household appliances which are not fit for their original intended use and are destined for recovery, recycling and/or disposal". Such wastes encompass wide range of electrical and electronic devices such as computers, handheld devices, domestic electronic equipments , including refrigerators, air conditioners etc. E-waste also includes rejects from electronic manufacturing units. According to WEEE Directive (EU, 2002a) of the European Union, "Waste Electrical and Electronic Equipment" (WEEE) is defined as waste material consisting of any broken or unwanted electrical or electronic appliances.

For the purpose of this policy e-waste shall be defined as follows:

"e-waste means waste electrical and electronic equipments, whole or in part that are not fit for their original intended use and are destined for refurbishment, dismantling, recycling or disposal, it also includes scrap rejects from the manufacturing process of electrical and electronic equipments"*.

* definition in the proposed e-waste rules under consideration of the Government of India

E-waste mostly contains recyclable materials such as metals including

precious metals, plastic, glass etc., which can be recovered using simple technologies that are currently being adopted by recycling units. This is one of the main reasons that e-waste is not disposed of in landfill and finds its way towards recycling in the informal sector. E-waste also contains toxic and potentially hazardous substances that pose significant environmental and health hazards, if not properly handled.

4. E-waste Scenario

The e-waste inventory in India for the year 2005 showed approximately 1,46,180 tonnes and is expected to exceed 8,00,000 tonnes by 2012 as projected in the ”Guideline for Environmentally Sound Management of E-waste” published by the Government of India, MoEF and the Central Pollution Control Board (CPCB) in March 2008. An assessment made in Chennai city in 2004-05, on the e-waste generated from personal computers, televisions and mobile phones revealed that about 26,183 tons e-waste was generated in the year which was estimated to increase to 1,32,778 tones by 2013-14***.** Considering the rapid growth in the IT industry and the use of IT, especially in the major cities and towns in Tamil Nadu, it is obvious that a large part of the e-waste is generated in Tamil Nadu.

E-waste arises from Manufacturing Units, Software Companies, Business Process Outsourcing Organizations (BPOs), Government and Private offices/Institutions, households etc. Increased consumption and rapid obsolescence of electronic goods contributes to the ever increasing e-waste problem in India. The magnitude of this problem has grown to such an extent that it requires Governmental intervention .

The “Guidelines for Environmentally Sound Management of E-wastes” published by the Government of India in 2008 provides procedures and other details for safe handling of e-waste. These guidelines are optional and are not mandatory. Further, several provisions

*Source: Electronic Waste Generation and Management in an Indian City, a study on the assessment of e-waste in Chennai by Anna University, published in 2006).

under the existing rules such as the Hazardous Waste (Management and handling) Rules, 1989 amended as Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008, Municipal Solid Wastes (Management and Handling) Rules, 2000 and the Basel Convention for the Control of Transboundary Movement of Hazardous Wastes are all relevent to e-waste management.

4.1 Prevailing Disposal Practices

According to the MAIT-GTZ study “E-waste Assessment in India - a Quantitative assessment on the generation, disposal & recycling of Electronic Waste in India” conducted in 2007, 95% of e-waste is recycled in the informal sector and only about 5% reach authorized recyclers. . The e-waste is either processed by the unauthorized recyclers (informal sector) or being resold, or refurbished and resold, or recycled in an unhygienic and unsafe manner at many remote parts of our country. .

4.2 Unauthorized recycling

E-waste recycling in the unauthorized units have been found to be seriously polluting the environment and causing adverse effects to the health of the workers. The process includes open burning of plastic wastes and printed circuit boards (PCBs), use of acid bath for extracting precious metals, pulverization of cathode ray tubes (CRTs) and so on .These activities emit highly hazardous chemicals into the air, water and land and the toxic fumes

produced by open burning pose health hazards. The spent acid is often poured into common drainage systems or on land, thus contaminating both with highly toxic substances.

4.2.1 Consequences of Unauthorized Recycling and Health Hazards.

The consequences of current disposal practices of e-waste are:

- Toxic materials being released into the environment , thereby causing adverse effect to environment, humanbeings and animal health .
- Resources being wasted when economically valuable materials are not recycled properly
- Workers engaged in informal e-waste recycling operations being exposed to hazardous working conditions.

Some of the Toxic Chemicals present in electrical and electronic equipment when not properly disposed may lead to serious healt hazards that may even be fatal.

To minimize the hazards due to toxic chemicals and substances in e-waste, it is essential that the disposal of e-waste be done in an environmentally safe and sound manner in accordance with well established procedures.

5. Objective and Scope of the Policy

The alarming increase in e-waste generation and the consequent threat of environmental degradation arising from unauthorized recycling establishes the urgent need for an effective regulatory framework. In the absence of effective legislation or regulations to deal with this emergent situation and also to protect public interest, the Government of Tamil Nadu is now introducing a Policy on e-waste .

5.1 Objectives of the Policy

The e-waste Policy is formulated with the following objectives:

- Minimize e-waste generation.
- Utilize e-waste for beneficial purposes through environmentally sound recycling.
- Ensure environmentally sound disposal of residual waste.

5.2 Scope of the Policy

This Policy sets forth the position of the Government of Tamil Nadu on e-waste management by identifying the roles and responsibilities of all stakeholders including the public to manage the e-waste in an environmentally sound manner in Tamil Nadu, through reduction in the generation of e-waste and providing a system for collection, segregation and recycling of e-waste.

The Government. of Tamil Nadu envisions to effectively address the growing e-waste problem with contribution from and co-operation of all stakeholders. This is planned to be achieved in a structured manner by:

- Adopting the e-waste Policy
- Detailing the Action Programme for implementing the Policy with definite timelines.
- Setting up of a Monitoring Committee to monitor the implementation of the Policy.
- Promoting E-waste recycling as a socially good and viable industry in Tamil Nadu.
- Creating awareness and involving all stakeholders to be responsible in fullfilling their role in environmentally sound management of e-waste.
- Involving the Small & Medium Enterprises (SMEs) in Tamilnadu in environmentally sound management of e-waste.

6. Policy Statement

The Government of Tamil Nadu (GoTN) recognizes that e-waste is a material resource and its management should encompass the short and long-term economic, environmental, and social costs and benefits. GoTN is committed to implement the "Guidelines for Environmentally Sound Management of e-waste" as approved by the Ministry of Environment and Forests (MoEF), Government of India vide Letter No. 23-23/2007-HSMD dated 12th March 2008 and the obligations from similar National Policies and regulation on e-waste from time to time. It may prescribe more stringent norms as deemed necessary considering the local conditions. The Policy is intended to:

- Minimize e-waste generation.
- Utilize the e-waste for beneficial purposes through environmentally sound recycling.
- Ensure environmentally sound disposal of residual waste.

6.1 Elements of the Policy

The policy elements are identified as follows:

- **Regulations and Regulatory reforms**

  The policy shall enable compliance with the existing regulations and identify the areas for regulatory reforms.

- **Environmentally Sound Management of e-waste**

  The policy shall facilitate in the management of e-waste through the 3R principle of Reduce, Reuse and Recycle e-waste ensuring that

such wastes do not cause any adverse effects to the environment or human health.

- **Capacity building**

  E-waste management activities shall be strengthened through capacity building and continued efforts on Research and Development.

- **Partnership Programmes**

  E-waste management involves many stakeholders in its value chain and the policy envisages the need for partnership programmes involving these stakeholders.

- **Awareness and information dissemination**

  The Policy shall provide for creating awareness and dissemination of information. E-waste by nature being a post-consumer waste, there is need for community participation in e-waste management activities.

7. Strategies and Action Programme

The elements identified in the Policy are realized through strategic interventions based on the legislative framework and concrete actions involving the State and local level authorities and other stakeholders.

(1) It will be the duty of all those, who generate e-waste to adhere to the Policy and dispose of their e-waste in Collection Centers authorized by TNPCB and/or Recycling Facilities registered with Central Pollution Control Board (CPCB).

(2) Tamil Nadu Pollution Control Board would be responsible for the implementation and monitoring of the Policy.

(3) The Government of Tamil Nadu (GoTN) will encourage and promote necessary infrastructure for collection, storage, utilization, recycling and disposal of e-waste.

(4) All stakeholders in the value chain of e-waste management are responsible to ensure environmentally sound management of e-waste.

(5)Public-Private-Partnership (PPP) model may be encouraged for setting up facilities for the collection, storage and recycling of e-waste.

The following Strategic themes and action programmes are envisaged through the policy with the focus on on-going activities and the new initiatives required. Detailed action plans will be prepared for each of the activities based on specific requirements.

7.1 Extended Producer Responsibility (EPR)

In Keeping with the Supreme Court's Policy in Writ Petition (C)No.657 of 1995 (With S.L.P. (C) No. 16175 and C.A. No. 7660 of 1997) by Research Foundation for Science Technology and Natural Resources Policy vs Union of India and another in which the polluter pays principle has been clearly laid out.

The policy recognizes the Extended Producer Responsibility (EPR) as an essential element in e-waste management system. EPR is the environmental protection strategy that makes the producer of electrical or electronic equipment responsible for the entire life-cycle of his product including the 'end-of-life management' of the product through its take-back, recycling and final disposal. The producer needs to ensure that e-waste from the products developed by the producer is handled without adverse effects to human health and the environment**.**

The following actions are necessary:

(1) EPR to be made an integral part of the policy.

(2) Ensure that the producer of electrical and electronic equipment is responsible in providing services to the post-consumer stage of the product life-cycle.

(3) To make it possible that the producer(s) sets in place a system and finances the costs involved in the 'end-of-life management' of their products including disposal of e-waste.

(4) To make it possible for a consortium or an association of producers and other stakeholders to finance and organize a system for 'end-of-life management' of all e-waste.

(5) The producer to facilitate in setting up collection centers for collection of e-wastes either individually or collectively and ensure that e-waste thus collected are channelized to the registered recyclers for environmentally sound recycling.

(6) Producers to facilitate and enable application of reverse logistics for their products in order to facilitate use in manufacturing, refurbishing and recycling of the 'end-of-use products' in an environmentally sound manner.

(7) Producer to submit annual returns of the sales as well as e-waste collected.

7.2 Regulations and Regulatory Reforms.

The implementation of the regulations and compliance with the conditions laid down are essential for managing e-waste. The lack of regulations may cause impediments in effective implementation . The policy shall facilitate proposal and framing of regulations for e-waste management. In view of the high recyclable potential of e-waste, the regulations should focus on e-waste recycling in an environmentally sound manner.

The following action will be taken:

(1) Ensure compliance with all applicable Central, State and Local laws and regulations by the stakeholder in the e-waste value chain.

(2) Review the existing regulations from time to time, identify the lacunae and provide suggestions for regulatory reforms after holding consultations with the stakeholders.

(3) Propose newer regulations from time to time with better scientific understanding encompassing economic and social requirements.

(4) Ensure that the regulatory framework prescribes appropriate measures to safeguard occupational and environmental health and safety (OEHS).

(5) Provide requisite legal instruments to prevent illegal dumping of e-waste into Tamil Nadu .

7.3 Environmentally Sound Management of e-waste

Environmentally sound recycling refers to recycling without leading to adverse impact on environment and health. E-waste recycling in India is mostly carried out in the informal or the unorganized sector that use polluting technologies leading to extensive environmental degradation and adverse effects on health of the workers engaged in recycling activity. The use of environmentally sound technologies needs to be encouraged in order to increase efficiency in processes, maximize recovery of materials and conserve energy subsequently reducing waste generation. The policy shall enable access to such technologies and make the informal sector accountable.

Environmentally sound recycling under Public Private Partnership will be encouraged

Self Help Groups(SHGs) will also be encouraged to take up this activity.

Environmentally sound recycling of e-waste can be achieved through the following measures:

(1) E-waste recycling only in authorized/registered units.

(2) Ensure use of environmentally sound technologies to maximize recovery and minimize waste generation.

(3)Appropriate Technologies for recycling e-waste to be accessible to recyclers.

(4) Informal sectors to be provided legal recognition, brought into mainstream recycling activity and made accountable.

(5) Training and skill development to be encouraged for using environmentally safe operations in handling e-waste.

7.3.1 Standards for recycling and residue disposal

In order to encourage environmentally sound recycling of e-waste, these operations have to be carried out in controlled conditions by providing appropriate standards for emissions, effluents discharges and residue disposal. Environmental standards have to be evolved for various levels of operations in e-waste recycling industries. In case of any notification of the National Standards for recycling and residue disposal, the same will be made applicable

and if need be, more stringent norms prescribed.

(1)Efforts to ensure that e-waste recycling units comply with the emission and effluent standards and prevailing residue disposal norms.

(2) Specific standards will be formulated as required for e-waste recycling units based on the technologies used.

(3) Continuous monitoring system to be installed for monitoring compliance.

(4)E-waste recycling units shall be provided with a a compliance certification mechanism and this in turn may be outsourced through an independent agency if required so by the TNPCB.

7.3.2 Reduction in e-waste generation

The 3R principle advocates - Reduce, Reuse and Recycle such that the product generates less waste or no waste, thereby reducing the waste destined for disposal and the burden on the environment. The strategy for reduction in e-waste generation applies to different levels in the e-waste value chain.

The reduction in the generation of e-waste will be achieved through the following:

(1) Ensure reduction in e-waste generation at all levels of stakeholders.

(2)Marketing of products with maximum life span and indicating the same on the product labels.

(3)Maximization of the use and reuse of electrical and electronic equipment, thereby delaying e-waste generation.

(4) Encouraging authorized refurbishment of used electrical and electronic equipment to extend the life of the equipment.

(5) Maximizing the recovery of materials from e-waste, thereby reducing residues from e-waste recycling.

Obsolete equipment, where suitable and usable, may be considered and given as donation to non-profit/charitable institutions.

7.4 Collection systems for e-waste

The flow of e-waste is through a complex supply chain, comprising of many stakeholders. Therefore, there is a need for a collection system for e-waste. The collection system can be organized individually or collectively with the participation of stakeholders and can even involve communities and Community Based Organizations [CBO]. This system shall facilitate collection and segregation of e-waste and channelize such waste to the recyclers for environmentally sound recycling.

Following action will be initiated for establishing collection systems:

(1) Encourage CBO for establishing collection systems for e-waste .

(2) Public-Private-Partnership (PPP) model may be encouraged to establish collection facilities.

(3)Individual manufacturers or producers may organize the collection of end-of-use product of their own brand or outsource this activity to authorized recyclers and collectors of e-waste.

7.5 Capacity building

E-waste management is at a nascent stage of its development and it involves multi-stakeholders of a diverse nature. Capacity Building is required for updating the knowledge and practices for the benefit of all stakeholders and growth of the system. In this process, the available resources need to be augmented to suit the requirements of the e-waste recycling sector.

The following actions shall be taken for initiating capacity building activities:

(1)A review of the existing institutional capacities in the State shall be carried out and

(2)Suitable programmes to be formulated for enhancing the capacities; new institutions and agencies may be identified for the same.

(3) Efforts for collaborative activities shall be explored involving stakeholders, national and international agencies.

(4) Continuous up-gradation of knowledge and skills of the persons involved in the various activities associated with e-waste management shall be organized through dedicated capacity building programmes.

7.5.1 Research and Development

Research and Development activities for developing innovative recycling technologies and their application in the field are essential for advancement in the recycling sector. It is also essential to compile information on the Best Available Technologies (BAT) worldwide in order to

promote recycling activities to meet international standards.

The following actions are envisaged:

(1) Research and Development shall be directed to develop indigenous technologies for recycling e-waste.

(2) Linkages shall be established with research institutes and the government to enable flow of information on the availability of viable technologies for processing e-waste.

(3) Areas of research shall be prioritized on specific need-based research activities and these may be initiated in co-operation with academic and research institutions.

(4) Research shall be directed towards energy efficient technologies and calculation of carbon footprints in recycling activities.

7.6 Restriction on the use of hazardous substances (RoHS)

The electrical and electronic equipments are known to contain hazardous substances such as lead, cadmium, mercury, polychlorinated biphenyls (pcb) etc., which are being restricted for use in the products to make these products safer for use and recycling (RoHS compliance). The European Union (EU) Directive 2002/95/EC dated 27th January 2003 restricts the use of hazardous substances in electrical and electronic products and these are applicable for those imported into the EU. Many other countries have also adopted the RoHS compliance requirements. In the absence of a national legislation/ regulation

binding for RoHS compliance, products sold in the Indian market may contain hazardous substances. The policy shall facilitate the achievement of global standards in reduction of hazardous substances present in all electrical and electronic equipments and the certification of such equipments.

The following plan of action will be pursued for RoHS compliance for the products manufactured in Tamil Nadu and sold in India:

(1) Targets shall be set for reduction in use of hazardous substances in electrical and electronic equipment.

(2) Detailed information on hazardous constituents in the equipment shall be provided in the product information

(3) In the event of reduction in hazardous substances used in electrical and electronic equipments, the product information shall be updated accordingly.

(4) Imports or placement in the market for electrical and electronic equipment shall be permitted only for RoHS compliant products.

7.7 Information Education Communication (IEC)

Awareness needs to be created among all stakeholders in the e-waste value chain i.e., beginning from commercial and domestic users, industries, recyclers, government agencies and the public on environmentally sound management of e-waste. Training and awareness programmes need to be organized involving other stakeholders, i.e., NGOs, specialists and

professionals. The following Training and awareness programmes will be organized for different stakeholders educating them on various aspects of e-waste handling:

(1) Consumer awareness programmes to be organized on the selection of eco-friendly and green products.

(2) Information to be provided to consumers to deposit the end-of-life used equipments (e-waste) in the designated collection boxes or collection centres. The location of such facilities along with the address and contact details to be provided to consumers.

(3) E-waste collectors and waste pickers to be given specialized training through identified organizations for handling different categories of e-waste.

(4) Professional Training to be imparted to workers employed/likely to be employed in e-waste recycling units, through well-designed training programmes and participants to be certified. Such training to be made a prerequisite for employment in e-waste recycling units.

(5) Industries may be encouraged to conduct awareness programmes for their employees and their families.

(6) Awareness programmes on safe disposal / recycling of e-waste may be included in the curriculum / co-curriculum at the School and College level.

(7) All types of media will be used in the awareness campaign.

8. Mechanism for Implementation of the Policy

. TheGovernment of Tamil Nadu, IT department and the Tamil Nadu Pollution Control Board are responsible for formulation and implementation of the policy respectively.

The policy identifies the following stakeholders with roles and responsibilities in the e-waste value chain:

1)Government /Government Departments/Agencies

2)Tamilnadu Pollution Control Board

3)Corporations / Municipalities / Town Panchayats / Panchayats

4)Manufacturer / Producer

5)Dealers / Retailers

6) Bulk Consumers

7) Consumers

8) Collection Centers/Collection Agencies

9) Dismantlers

10) Recyclers - Informal Sector

11) Recyclers – Formal Sector

12) Industry Associations

13) Research & Development Organizations

14) NGOs

8.1 Roles and Responsibilities of Stakeholders

All stakeholders in the e-waste value chain have both specific and collective responsibilities . Some of the key responsibilities under the policy are enumerated in this section. However, it must be stated that this list is not exhaustive and will be reviewed from time to time.

8.1.1 Government/Govt. Departments

Government of Tamil Nadu (GoTN) shall be responsible for the formulation of the e-waste management policy and its effective implementation. The GoTN shall ensure that a monitoring system is in place for effective implementation of the policy. Government and the government departments being bulk consumers of electronic and electrical equipments must ensure compliance with the policy.

GoTN shall take the following steps to facilitate the implementation of the policy:

(1) Create infrastructure for collection, utilization and disposal of e-waste in an environmentally sound manner.

(2) Encourage establishment of Collection Centre(s) under Public Private Partnership (PPP) framework.

(3) Mechanism for collection and disposal of orphaned e-waste generated from unbranded and mix of brands shall be the responsibility of agencies determined by GOTN. Local bodies shall play a prominent role. However, the final disposal shall be only through those authorized

to do so. Whenever necessary, local bodies and other Government bodies may follow due procedure as determined by TNPCB and set up their own e-waste disposal facility or enter into a Public Private Partnership for the same (PPP) .

(4) GoTN shall promote pollution prevention practices by reducing e-waste generation and encouraging the use of eco-friendly technologies to produce Green Products and provide incentives to reduce e-waste.

(5) Promote recycling and reuse of e-waste which has a high resource potential by suitable measures of awareness creation among various stakeholders and capacity building among the informal sector for up-gradation of such facilities.

(6)Mandate labeling of electronic products for declaration of hazardous material contents.

(7)Mandate the Government Departments and Undertakings being a bulk customer to ensure proper disposal of their e-waste as per the following options:

(i) Equipments suitable for use may be donated to government, non-profit or charitable organisations.

(ii)Disposal only through—authorized collection agencies or recyclers with CPCB registration by inviting tender.

(8) Government departments and Undertakings to include a paragraph on E-waste generated and disposed as part of their annual policy note.

8.1.2 Tamil Nadu State Pollution Control Board (TNPCB)

Tamil Nadu Pollution Control Board is vested with the responsibility for effectively implementing this Policy and will also coordinate with different agencies responsible for the effective implementation of the policy.

1. TNPCB shall lay down the requirements and procedure for a recycler to be registered with TNPCB. These modalities and requirements may also be amended from time to time to ensure that the regulations are appropriate and upto date.

2.TNPCB shall maintain the list of registered recyclers in the State put up in the public domain.

3. Ensure compliance of the policy and regulations

4. Ensure monitoring by the Port and the Custom authorities in ensuring that e-waste from other countries are not reaching the State for disposal.

5. Prohibit the disposal of e-waste in landfills.

6. Prohibit unauthorized collection and recycling e-waste.

7. Encourage coordinated actions by groups of communities or industries in research, development and dissemination of knowledge for environmentally sound management of e-waste.

8.Wherever deemed necessary by TNPCB, ELCOT and TNeGA shall assist TNPCB in the implementation of this policy.

8.1.3 Corporations/Municipalities / Town Panchayats / Panchayats

The role of Corporations / Municipalities / Town Panchayats / Panchayats is important for organizing the collection of e-waste especially from household and other end users and segregation of e-waste from other household waste. They will also have to arrange to send collected waste to authorized collection centres or registered recyclers for recycling.

8.1.4 Manufacturer/Producer

Manufacturer/Producer refers to entities that manufacture and/or sell and/or resell electrical and electronic equipment either manufactured by itself or by others or imported under its brand name. Manufacturer/Producer will be required to strive to reduce the environmental impact of their products through influence on product design, choice of material, manufacturing processes and product support system including product take-back at the end-of-life of the product.

The responsibilities of the producer in e-waste management are as follows:

(1) The producer of electrical and electronic equipment shall be required to provide services to the post-consumer stage of the product lifecycle and organize a take-back system for all used electrical and electronic equipments (e-waste) of their own brand.

(2) The producer shall finance costs involved in the management of e-waste from his products.

(3) A consortium or an association of producers and other concerned stakeholders shall finance and organize a system for 'end-of-life management' of all e-wastes.

(4) The producer shall facilitate setting up of collection centres either individually or collectively for collection of e-waste.

(5) The producer shall ensure that e-waste thus collected is channelized to the registered recyclers for environmentally sound recycling.

(6) Producer shall provide information to the consumers to deposit the end-of-life used equipments (e-waste) in the designated collection boxes / collection centres. The location of such facilities along with the address and contact details shall be provided to consumer along with the product.

(7) Producers may also give incentives to their customers for product return.

(8) Producers shall enable application of reverse logistics for their products in order to facilitate use in manufacturing, refurbishing and recycling of the 'end-of-use products' in an environmentally sound manner.

(9) All manufacturers / producers of electrical and electronic equipment

shall maintain an inventory of all the individual items despatched including the inventory of rejected items. Annual report of the same shall be submitted to TNPCB.

(10) Producer shall submit annual return of the sales and the e-waste collected.

8.1.5 Dealers / Retailers

Dealers receive equipment from Manufacturers and sell the equipment to the consumer or to the next level retailers. The dealers authorized by producers shall be responsible to collect used electrical and electronic equipment (e-waste) by providing the consumer a box / bin or demarcated area to deposit e-waste. The dealers should ensure that the e-waste thus collected are safely transported back to the producer or to an authorized collection center as the case may be. The dealers may also promote buy-back or exchange schemes offered by the producers.

8.1.6 Bulk Consumers

Bulk Consumers are bulk users of electrical and electronic equipments such as Central or State Government Departments, Public Sector Undertakings, Banks, Private Companies, Multinational Organizations etc. Such bulk consumers should ensure that used equipments (e-waste) which are not fit for the intended use are deposited with the dealer or authorized collection Centres in order to be sent to a registered recycler.

(1) The bulk consumers may also be permitted to auction e-waste, but,

only to authorized collection centres or registered recyclers or avail take back services provided by the producers.

(2) Bulk consumers may organize their own collection centres/agencies and warehouses to collect and store e-waste. However, they must ensure that the e-waste thus collected are either channelized through the take-back scheme to the manufacturer or sent to registered recyclers.

(3) The bulk consumers of such equipments should maintain a record of inventory of all the individual items received and despatched including the inventory of rejected items. An annual report of the same should be submitted to TNPCB by them.

8.1.7 Consumers

Consumer refers to any person using electrical and electronic equipments primarily for personal, home or business use excluding bulk consumers. All consumers are responsible to ensure that their end-of-the-life electrical and electronic equipment are disposed in the prescribed manner in accordance with the instructions provided along with the equipment.

8.1.8 Collection Centers / Collection Agents

They are the intermediaries between the E-waste generators and the dismantlers / recyclers. These centers may be set up individually or jointly by producers, importers, refurbishers and recyclers in pursuance of their responsibilities to collect E-waste and to channelize the same for reuse or

refurbishment or recycling. Collection agents are responsible to transfer e-waste collected by them only to authorized recyclers/ refurbishers / dismantlers. GoTN may envisage a Public Private Partnership model involving other stakeholders to set up collection centers.

8.1.9 Dismantlers

Dismantlers are authorized to dismantle used electrical and electronic equipments (e-waste) into their components and to hand over these to authorized recyclers. The dismantler should ensure that no damage is caused to the environment during storage, dismantling and transportation of e-waste. The dismantling processes should not have any adverse effect on the health of the workers and environment. The dismantled e-waste should be segregated and sent to the registered recyclers for processing and recovery of materials. The dismantler shall not process any e-waste for recovery of materials.

8.1.10 Recyclers – Informal Sector

The Informal Sector plays a major role in collection and segregation. The informal sectors may be engaged in the collection and segregation alone and are not permitted to undertake further processing such as dismantling and recycling. These informal sectors may be identified and efforts taken to convert them to be a part of the formal group or association which can be allowed to dismantle e-waste and provide such dismantled e-waste to formal recyclers. These units may be authorized and brought to the main stream.

8.1.11 Recyclers – Formal Sectors

Recyclers are authorized to process e-waste or components thereof for recovering various constituents for reuse. The recyclers should be approved and authorized by the State Pollution Control Board. They should have obtained necessary consent for establishment and operation of the facility and authorization under hazardous wastes rules. Such recyclers are required to be registered with the Central Pollution Control Board and ensure strict compliance of the terms and conditions of authorization / registration required. Recyclers may also facilitate collection and transportation to recycling facility from bulk consumers and other collection agencies.

8.1.12 Industry Associations

Industry Associations represent collective group of specific industry segments. They shall be encouraged to share their responsibility to promote and help in implementation of the policy among their member organizations. They should also play an effective role in creating awareness through seminars and conferences with support of the Industry and Government.

8.1.13 Research and Development Organizations (R&D)

The R&D organizations shall be facilitated to carry out specific research to evolve cost effective recycling technologies and effective adaptation of the best available technologies. The processes should provide for energy efficiency

and maximize recovery of resources leading to reduction in waste destined for disposal. R&D methods should also help in calculating carbon footprints

8.1.14 Non Governmental Organizations (NGOs)

The NGOs have a very important role to play in the e-waste cycle as most of the recycling, is currently in the unorganized sector. The NGOs have been very active in imparting training to the unorganized sector. The services of NGOs will be utilized to hand-hold the unorganized sector to be brought into the mainstream.

8.2 Advisory Committee

The Government of Tamil Nadu shall constitute an' E-Waste Policy Advisory Committee" in order to

- Oversee implementation of this Policy.
- Minimize any unintended consequences due to e-waste handling.
- Encourage decisions consistent with the national policies and regulations
- Provide flexibility to adopt the changes required from time to time.
- Review inputs from all stakeholders.
- The Committee may review the implementation of policy annually
- The Committee may advise revisions in the policy from time to time.

9. Committee Members

1	Thiru. P.W.C. Davidar, I.A.S.	Chairman/IT Secretary	ELCOT/Govt. of Tamil Nadu
2	Dr. Santhosh Babu, I.A.S.	Managing Director	ELCOT
3	Tmt. V.Poonguzhali (Convenor)	Manager(P)	ELCOT
4	Dr.Lakshmi Raghupathy	Expert Advisor	Delhi
5	Thiru. S.Balaji,	Additional Chief Engineer	Tamil Nadu State Pollution Control Board (TNPCB)
6	Dr. C.R.Muthukrishnan,	Advisor, Former Professor,	TCS, IIT, Chennai.
7	Dr. Kurian Joseph	Assistant Professor,	Centre for Environmental Studies, Anna University, Chennai
8	Thiru. Iniya Nehru	Technical Director	NIC (National Informatic Centre)
9	Thiru. K.Premjith,	Deputy Director	MAIT (Manufacturers Association of Information Technology)
10	Dr. Chellappan,	Head of the Department	Computer Science Department, Anna University, Chennai
11	Thiru. K.Balasundaram	Chief Engineer,	Solid Waste Management, Corporation of Chennai
12	Thiru. G.Arun Senthil Ram	Regional Programme Co-ordinator	Toxics Link Ltd.

10. Glossary of Terms

For the purpose of this policy some of the terms used are defined as follows:

1.‘e-waste’ means waste electrical and electronic equipments, whole or in part that are not fit for their original intended use and are destined for refurbishment, dismantling, recycling or disposal. It also includes scrap rejects from the manufacturing process of electrical and electronic equipments”.*

2. **‘Producer’** means any person who, irrespective of the selling technique used; (i) manufactures and sells electrical and electronic equipments under his own brand; or (ii) resells under his own brand, the electrical and electronic equipments produced by other suppliers; or a reseller not being regarded as ‘producer’ if the brand of the producer appears on the equipment as provided; or (iii) resells imported electrical and electronic equipments; imports or exports electrical and electronic equipment on a professional basis into a Member State. Whoever exclusively provides financing under or pursuant to any finance agreement shall not be deemed a ‘producer’ unless he also acts as a producer within the meaning of sub-points (i) to (iii).*

* definition as proposed in the proposed e-waste rules under consideration of the Government of India