

Maturity Matrix for e-waste Management System Development



Level Dimension	Level 1: Business as usual (ad hoc)	Level 2: Establishing a baseline (identify areas where need improvement)	Level 3: Gearing up for improvement to achieve a certain performance (starting to initiate activities)	Level 4: Envisaged performance is being achieved (e-waste system is fully functioning) with sufficient volumes to attract private sector as the engine for market development	Level 5: Everything that should be done is being done, is self- improving and going beyond - with outlook to the future
Understanding of the E-waste Value Chain	Credible data on e-waste is not available	Some reports/studies (e.g. collection, only on recycling) done by some actors not covering whole value chain Segregation of e-waste	Baseline established (market segmentation) shows significant waste streams (value, quantity, hazards): e-waste generators & collectors are identified, how much is being generated, where it goes. How much e-waste with what type of end of life: disposal, exported, refurbished, etc.	Documentation of e-waste flows and traceability E-waste circular economy business has evolved; contributing to GDP Policy makers/regulators and private sector actors envisage future e-waste streams coming from various sources e.g., e-mobility, renewable energy (solar), Industry 4.0)	e-waste is strongly identified with circular economy. Circular economy businesses are continuously evolving
Public Awareness & Citizen Behaviour with Respect to E-waste	No awareness that e-waste is a separate waste stream; all waste is disposed in common area	Awareness campaigns have informed citizens, industry & workers of hazardous effects of e-waste on humans & environment Information campaigns are run through public media to build awareness of hazardous waste and citizens' responsibility in this domain	Civil society responds to public campaigns; Citizens starts to separate hazardous waste from common waste stream (e.g. not throwing batteries into common bins) Citizens are willing to sell or freely provide their e-waste to collectors (informal or formal sector)	Consumers fulfil their expected role in EPR (pay fees) Civil society demand something to be done to go beyond mere compliance: (destructive- demonstrations at dumping sites & constructive means). Abolish dumping sites, asking for construction of specialised facilities Advocates are driving reduction of impacts of e-waste on humans & environment and pushing for setting robust science-based targets	Approach to dealing with all waste (i.e. following 9Rs pyramid)) is fully integrated into daily life (part of culture/mindset; not questioned) Producers fulfil their expected role in EPR (including design change to reduce impact, improve easy and safety of recycling

<p>Policy and Legislative Framework for E-Waste</p>	<p>e-waste is not yet considered by the government as a challenge</p>	<p>Government statement recognizing importance of e-waste and need to work on it Draft policies are being formulated Relevant government authorities have begun to take interest in e-waste topic</p>	<p>Policy exists that provides guidance on how to deal with e-waste & sets country's direction for work on e-waste, including EPR scheme with procedures (fees, mechanisms, who collects, how revenue is channelled to dismantle, recycle, safe disposal) Schemes defined for extended responsibility (producers, importers) for products' post-consumer life, reflected in EPR launch Environmental regulations exist that outline maximum allowable emissions/discharges, social standards provide protection to workers.</p>	<p>A legislative framework on e-waste is established (e.g. national Waste/e-waste policy (with implementation framework), which enables actors in public sector to implement and enforce the policy and supports widespread adoption of appropriate sustainable recycling approaches Implementation framework: Once you have a policy, then you need certain legislation that puts responsibility on certain organisations, defines which organisation have which roles on e-waste, provides implementation framework</p>	<p>Institutionalisation of implementation: a relevant authority with mandate and sufficient resources is now taking care of all execution required, as per policy and implementation framework (e.g. WMRA in future that has everything it needs to work: staff, financing) Legislation introduced that promotes import and export of products that reflect EPR (including design change to reduce impact, improve easy and safety of recycling)</p>
<p>Institutionalisation of Development of E-waste Management System</p>	<p>No relevant institutional actors, apart from a few individuals, who see the importance of working on e-waste</p>	<p>A group of relevant actors (in public & private sectors) perceive themselves to be part of a nascent e-waste system and join forces to address common interests but they are not yet sure of roles & contributions</p>	<p>Relevant actors have a common understanding of the e-waste system and its development trajectory Roles & responsibilities of relevant actors are defined The 'right' institutional actor (with credibility, mandate, technical capacities, and resourcing) takes the lead. This public sector e-waste "motor" is functioning, steers the advance of overall e-waste ecosystem and is the 'go-to' entity for e-waste. The motor is the catalyst that moves from Level 2 to Level 3)</p>	<p>The e-waste management system is established and led by the 'right' institution, which implements the established policy, norms, and standards through enforcement (audits, restrictions) and enablers (incentives) – and is able to attract the required resources to sustain its functioning</p>	<p>Holistic, integrated approach to e-waste management, considering entire life cycle Financially self-sufficient and fully functioning, the public sector e-waste system custodian envisages and capitalizes on future opportunities and risks to drive e-waste circular economy, reflecting thought leadership in legislative updates, which cascade into revised norms & standards</p>
<p>Normative Requirements and Performance Measures</p>	<p>No standards for social & environmental performance exist that govern e-waste industry (e.g. Informal sector is operating according to its traditions.</p>	<p>Start to understand current performance levels of industry. Know type & quantity of impacts that e-waste value chain is causing (generation, collection, refurbishing, dismantling, recycling, disposal) Need to know what hazards and problems – and their causes</p>	<p>Based on knowing hazards (which includes quantity), define <u>vision</u> (through multistakeholder process) of minimum performance (including targets) and how to attract e-waste value chain to apply the standards – which provides inputs into legislation</p>	<p>National norms & standards for e-waste value chain are established (from collection till end-use/disposal) and conformity assessments are conducted by trained independent bodies</p>	<p>Assessing country as taking a lead and driving the global work on international standard definition Industry is inspired by global standards, SDGs, multilateral agreements and actively going beyond compliance (voluntarily & continuously) introducing eco-friendly practices (increasing RE, nature</p>

					positive), investing in sustainable recycling industries Restore (nature positive), as part of innovation
E-Waste Operational Infrastructure and Performance	Ad hoc collection by informal actors (scavengers, domestic waste collectors, etc.)	Studies and pilots to determine feasibility of an organised collection, segregation, and distribution system, with draft fee structure	Collection, segregation, distribution roles & responsibilities are defined Guided by legislation, infrastructure (e.g. Collection Centres) exists and has started functioning Legislation ensures that the Centre sees its part through	Formal e-waste collection becomes the main e-waste stream, with the largest portion of e-waste coming from all major sources and is distributing. Is main source of e-waste for the formal sector Common facility centres established	Continuous improvement, spotting future trends through investment in R&D to optimise e-waste management system
Industry's Interaction with E-Waste, Market Development	e-waste is wholly dealt with by informal sector (which may or may not recognize and be able to leverage the value from e-waste), typically without training, appropriate tools, and awareness of hazard to human health and environment Ghana: for subsistence. Colombia: money laundering) e-waste is mainly being gathered and sent abroad	Formal players emerge in e-waste value chain where there is tangible business opportunity (profit), typically recycling (to reuse) and extraction (precious metals) Important: the formal players do not disturb informal sector's role as collection is their main livelihood/subsistence	Formal sector frontrunners take the lead in dealing with e-waste Formal sector is recognized by national authorities as key e-waste player, is supported by legislative framework, has received some training, is able to present a case for viable business model Curricula is being developed, first training is preparing workforce for sustainable recycling industry Formal actors join forces (e.g. associations) to ensure the enabling business environment	Viable business models for e-waste circularity have been tested, proven, and are being applied by frontrunners, while improving resource efficiency (=extraction efficiency) Skilled workforce is available through vocational institutions (recycling) or formal education sector (design) with these qualifications recognized by authorities	Viable proven business models for e-waste circularity have been upscaled Industry is driving e-waste sector and bringing new streams. Doing investments and continuous innovation Investing in innovation and technology options (Egypt: investment support Producers have redesigned products to extend their end-of-life and ensure that these products have reduced impacts when treated or disposed of end-of-life
Environmental and Social Performance (including Livelihoods) of e-waste Value Chain	Hazardous waste streams are not handled safely. Little or no awareness on the part of citizens, industry actors	Problematic fractions and their hazardous natures are identified and known due to studies, reports, media Baseline social conditions of e-waste workers are	Sources and impacts of problematic fractions are measured. 1 st solutions to deal with low-hanging fruit (easy, obvious) are developed and start to be implemented (pilots)	Social & labour standards are implemented for e-waste sector: e-waste is dealt with in a safe and environmentally-friendly way Workers are aware of e-waste hazards and demand appropriate protection & controls	Industrial processes have been re-engineered that reflect use of substitutes, removing the need for administrative & engineering controls

	<p>and workers regarding hazards to human health & environment</p> <p>Unregistered informal workers collecting, selling and/or treating e-waste are not aware of their labour rights and protection needs</p>	<p>understood and considered in ongoing legislative work</p>	<p>Social and labour standards in e-waste sector are defined (following legislation). Awareness of these is widespread through collectives (associations, unions)</p>	<p>Industry actors establish administrative & engineering controls to minimize impact on human health and environment</p> <p>Workers (at least in formal sector) are registered and get their rights in compliance with the law (e.g. minimum defined wages, social security, etc.)</p>	<p>Social & labour standards in e-waste sector are aligned with global standards, SDGs, multilateral agreements</p> <p>Workers' livelihoods improve with the increasing business of e-waste</p>
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