



E-MAGIN GHANA E-Waste Management in Ghana

Promoting a positive recycling attitude in Ghana – a policy brief for awareness campaigns

Key Messages

A large proportion of Ghanaian households, institutions and organisations have not heard of the challenges associated with handling e-waste despite several ongoing e-waste initiatives.

In order to change this trend and promote a positive attitude towards recycling, the different actors in the waste sector need to coordinate their efforts and develop an integrated public awareness campaign that will

- Engage diverse consumer groups via both traditional (TV, radio, newspapers) and non-traditional (social media, information vans) media channels and in educational trainings.
- Simultaneously address use-, risk- and value-barriers: ensuring accessible collection points; reduction in collection, transport, and handling costs; and sustainable treatment of e-waste through formalised recycling facilities.
- Establish appropriate procedures to evaluate campaigns by tracking short-term success on improving the level of knowledge of target groups; assessing level of attitudinal change in the medium-term; and monitoring success towards behavioural change in the long term



Managing digitalisation

Electrical and electronic equipment (EEE) has become a mainstay of the modern life in Ghana and is a vivid reflection of the accelerating pace of digitalization and the rise of a middle-income class; yet, short cycles in innovation and product lifetime paired with the increasing market penetration of (consumer) electronics also give rise to a darker side of modernity: rapidly growing amounts of waste from electrical and electronic equipment (WEEE or e-waste) which need to be disposed of and recycled responsibly.

Despite a dense network of informal e-waste collectors¹ found in all parts of the country collecting and buying e-waste and a growing number of formal recycling facilities¹, there are still major hurdles for efficient management of e-waste. Among challenges such as low prices offered to owners of WEEE by informal collectors, high cost and inconvenience in sending e-waste to formal collection and recycling companies; a key challenge that has widely been mentioned and has frequently been observed by the E-MAGIN project is the lack of consumer awareness and appreciation of the value and hazards in e-waste. This in turn leads to a large proportion of Ghanaian households, institutions and organisations not properly disposing of their e-waste. To successfully counteract this trend and raise public awareness of the proper disposal and treatment of e-waste, coordinated awareness campaigns are required.



Background

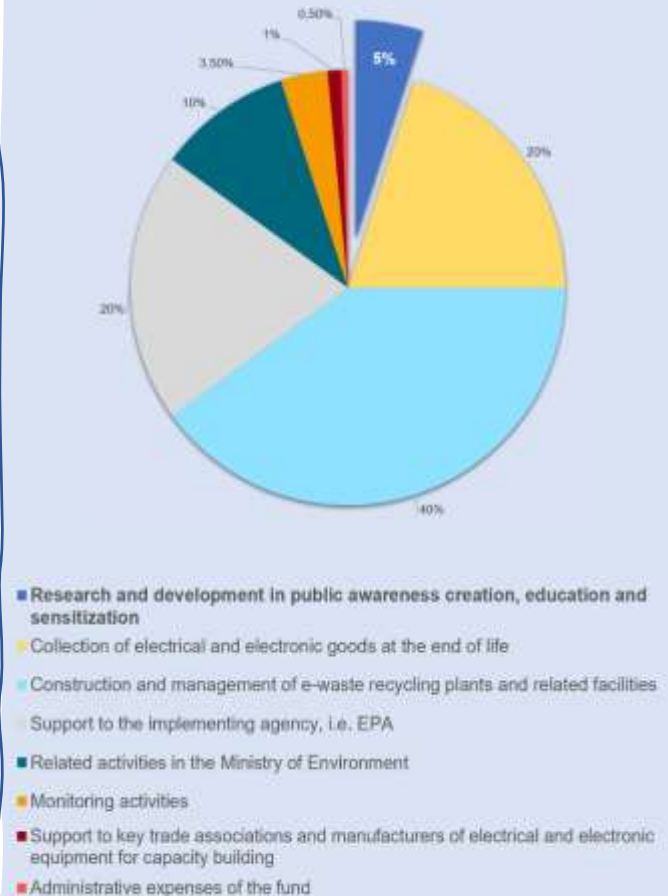
There are several on-going projects in the E-Waste Sector (E-MAGIN, MESTI/GIZ E-waste Technical Cooperation Project, SRI initiative, amongst others) that aim to minimize negative environmental and human health impacts from improper management of electronic wastes and to further formalize the sector. While some of these projects have already been successful in raising awareness on important issues related to e-waste management, activities have for a large part been focused on manufacturers, importers and distributors of electrical appliances. This is underlined by the results of a local survey by the E-MAGIN project in which more than half of the respondents stated that they had not heard of the challenges associated with the e-waste sector. Hence, there is a clear need for coherent public awareness raising efforts that provide stakeholders such as households, commercial centres, shops, and institutions with practical answers to questions such as: What items can be classified as e-waste? What value and hazards does e-waste contain? How should e-waste be correctly disposed of?

With respect to the financing of such efforts Act 917 provides for a 5% share of the Advanced Eco Levy on EEE to be used for promoting public awareness, education and sensitisation at national, regional, district and community levels. So far, however, there is only little evidence that funds have been made available for these activities.

Approach

This policy brief aims to analyse the main factors of a successful implementation of consumer awareness campaigns on e-waste recycling in Ghana. It further provides a set of recommendations for political decision-makers, which are derived from an analysis of existing secondary data, in the form of government accounts,

Figure 1: Share of disbursements from ACT 917 EPR





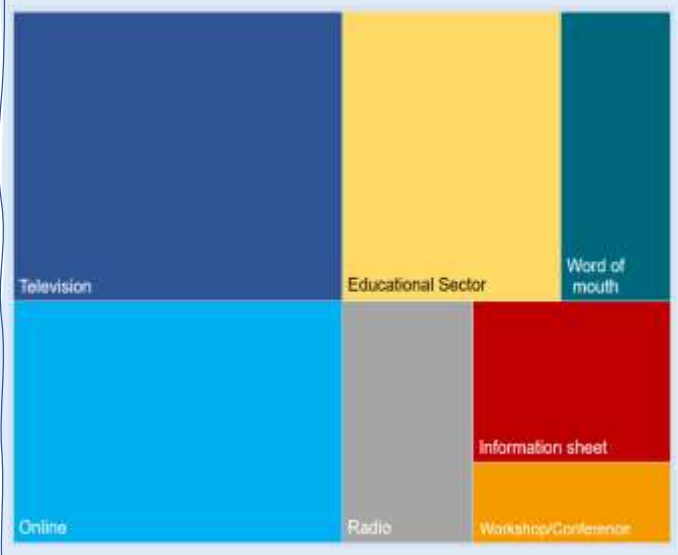
publicly available literature, reports and a deep-dive assessment of twenty e-waste awareness programmes, that have been successfully implemented in other countries. This is further supplemented with primary data from the previously mentioned non-representative survey on e-waste awareness amongst Ghanaian households

Designing effective measures

BROAD DISSEMINATION IS ESSENTIAL

Not only are the relevant consumer target groups for an e-waste education campaign quite diverse, but so are channels through which they can be reached. Effective campaigns should therefore seek to address their target groups via several mediums of dissemination, including traditional forms such as printed newspaper articles, public screenings of information material and interpersonal communication channels, while keeping in mind the differences in religion, languages, and level of education. In this regard, recent studies show that smartphones in particular have become an indispensable item in Ghana across different income groups through which Ghanaians obtain their information and exchange information with others (Okae 2018). This coincides with the findings of our survey, where 33% of the respondents suggested social media interactions as a way to raise awareness on e-waste. In a follow-up question to the respondents on the originating source of information on e-waste, the answers again reflect the emphasis on broadcast media and social media (figure 3), as television and online formats were the most frequently mentioned information sources. Another important channel through which

Figure 2: Where did you hear about it e-waste?



information on e-waste reaches the population is the education sector. Radio, word to mouth or workshops were also mentioned as information sources, although less frequently.

ENGAGING CONSUMERS THROUGH ON THE GROUND EFFORTS

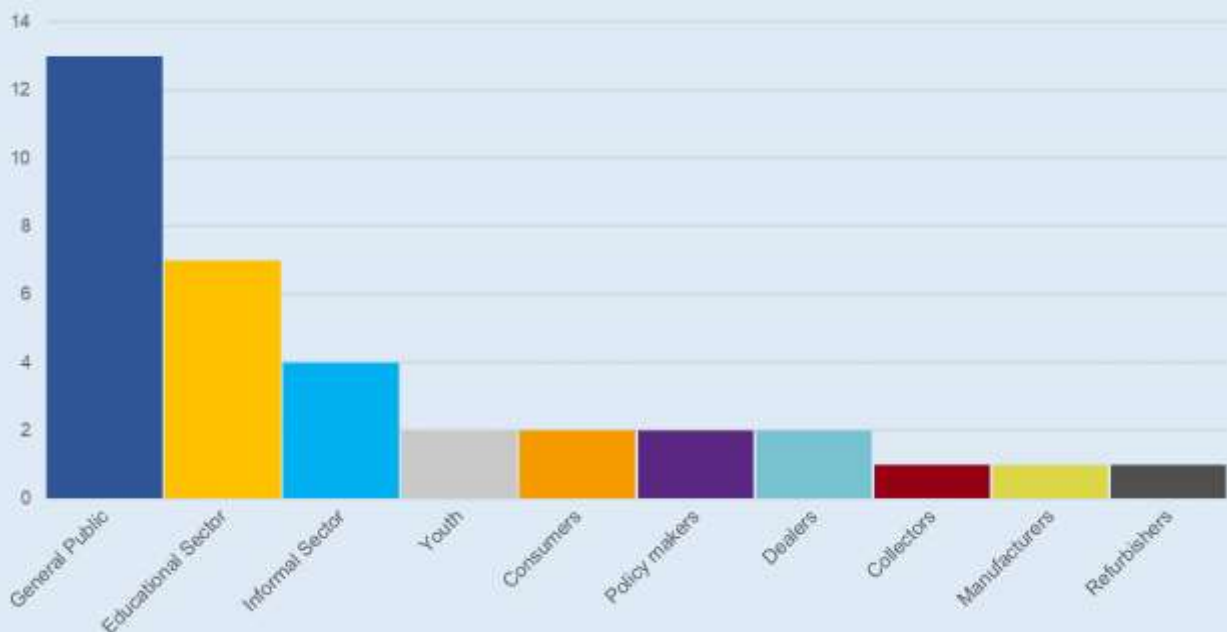
The broad dissemination of information via different communication channels, should be supported by on the ground efforts in local communities. The importance of this approach, that is implemented by most of the analysed e-waste awareness programmes around the globe (Figure 3), is also highlighted by the respondents of the survey, with a majority suggesting that communities and/or schools should be an integral part of an awareness campaign. While students and pupils can often be effectively involved via “e-waste competitions”,

community engagement can for instance be supported through activities such as the use of a promotional vehicles (see best practice box on the next page for further info). Other activities may include the demonstration of real time recycling processes to members of the general public and the educational sector as well as the integration of consumers into the conception of e-waste management policies for affiliated institutions. For example, a recent study in Kenya found that many universities working on ICT-related issues often do not yet have a strategy for the management of their accumulated WEEE. To address this issue, students could be encouraged to participate in the conceptualisation and implementation phase of such strategies under the guidance of experienced professionals.

INCREASING OUTREACH THROUGH COLLABORATION

To reach a diverse and sizeable target group and guarantee effective dissemination, awareness campaigns should make use of existing networks including on-going e-waste projects conducted by NGOs, governmental and development agencies, universities and other civil society groups. It is, however, vital that such a cooperation is sufficiently coordinated and that the experience gained from the various projects is shared. As part of an increased emphasis on extended producer responsibility, the role of ICT manufacturers, importers and brand owners should also be more clearly defined. This will further strengthen the potential for public-private partnerships in future collaborations.

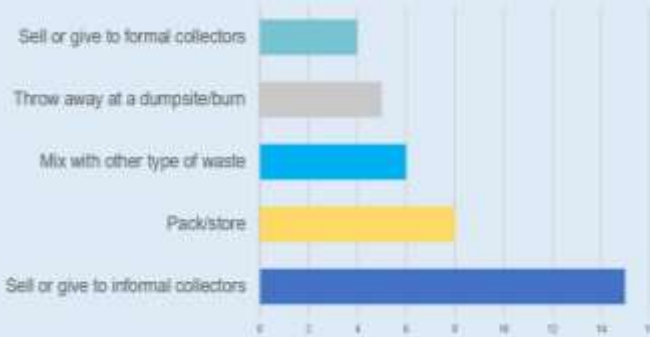
Figure 3: Targeted Groups for E-Waste Awareness Campaigns worldwide



MINIMIZING BEHAVIORAL CHANGE BARRIERS

In addition to raising public awareness and building strong recycling attitudes among Ghanaian households, successfully tackling the e-waste problem in Ghana also requires overcoming use-, risk- and value-barriers. This means that e-waste collection points must be accessible to all (use barrier), sustainable treatment of e-waste must be ensured through formalised recycling (risk barrier) and the costs of collection, such as transport costs or handling costs, must be reduced (value barrier). Only when these hurdles are removed will Ghanaian households be able to change their behaviour according to the insights provided by successful awareness campaigns (Dhir et al 2021). The results from the survey offer an insight to this specific action point, as the respondents, even though more than half of the respondents were aware of the challenges associated with improper disposal of e-waste, a majority still primarily disposed of their e-waste via informal channels. Only a small percentage of the respondents disposed their e-waste at formal sites from accredited collectors, which can be seen in the figure below.

Figure 4: Disposal methods by participants of their e-waste



Best Practice: Engaging Consumers through On the ground efforts

The E-Transformer is a promotional vehicle that was deployed for a WEEE campaign in Slovenia funded by the European Commission. The truck is specifically designed so that it can be used as a mobile exhibition, where visitors can learn about proper treatment of WEEE, as well as the potential health and environmental hazards of inadequate disposal and handling of e-waste. Participants can walk into the truck and view the entire process of WEEE management. Equipped with a solar power station, the E-Transformer can be used both urban and rural regions, as long as they are accessible via road. As part of the WEEE campaign in Slovenia, the E-Transformer tallied a total of 218 schools and attended events in 89 municipalities.



DESIGNING A MONITORING & EVALUATION SYSTEM TO FORMULATED OBJECTIVES

Public awareness campaigns are often carried out too haphazardly, failing to achieve the desired behavioural change. Although formulating programme goals and establishing appropriate procedures to evaluate the progress towards these goals is considered to be a crucial step in the process of realising a successful project (Chih & Zwikael 2015), many of the awareness programmes

examined during the research phase of this policy brief, did not present any long-term goals and only rarely implemented measures to evaluate the desired impacts. One notable exception was presented by the Indian project "Awareness Programme on Environmental Hazards of Electronic waste" (GREENE programme), which included a comprehensive monitoring and evaluation system. This enabled an efficient monitoring of the project's implementation status and thus

contributed significantly to assessing the effectiveness of the respective measures. The best practice box on the left highlights some aspects of the results-oriented monitoring of awareness creation activities. We encourage to follow similar approaches to assess the effectiveness of awareness creation campaigns on e-waste management in Ghana.

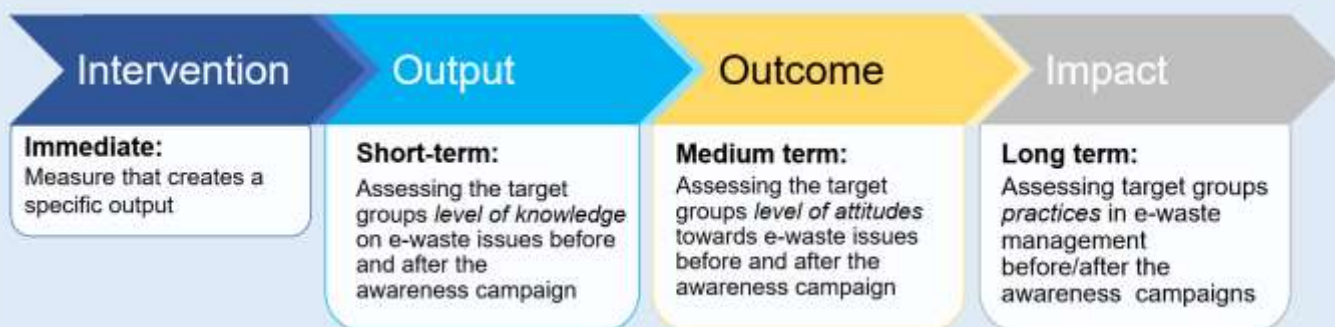
Conclusion

To effect positive environmental behavioural change such as segregation at source, reduce, reuse and recycling e-waste, awareness campaigns should be based on an integrated communication strategy aiming to inform, educate and motivate. Such an integrated approach can encompass TV, radio, printed and electronic press, social media, and educational and training to bring notable changes in perception, awareness, and habits targeting specific groups. The recommendations on the next page can be used as an initial support for the planning phase of such an approach.

Best Practice: Results-oriented monitoring of awareness creation activities

In order to assess the level and the change in participants' awareness achieved by the project, the GREENE programme implemented a framework that distinguishes between three levels; outputs – short-term success on the improving the understanding), attitudes (outcome – medium-term success in their views on the urgency of the issue) and practices (impacts – long-term success towards behavioural change). The results from specific interventions were reviewed according to this typology as shown in figure 5.

Figure 5: M&E Framework



Recommendations

- 1 **Focus on a broad dissemination across different communication channels**
- 1 **Actively integrate communities into the awareness campaign by deploying interactive on the ground activities**
- 1 **Target the educational sector by reaching out and organizing activities with primary & secondary schools, universities and technical vocational training centers**
- 1 **Guarantee an effective integration of communities by including NGOs and other civil society groups into the planning stage of the campaign**
- 1 **Collaborate with existing projects in the e-waste sector and incorporate the lessons learned from these projects within the planning phase of the campaign**
- 1 **Ensure that producers, importers and brand owners adequately contribute to the objectives of the campaign by defining their role**
- 1 **Simultaneously address usage, risk and value barriers within other initiatives so that households can act upon their intentions**
- 1 **Formulate clear objectives and anchor these objectives to a monitoring and evaluation system to track the progress of the campaign**

Imprint

Bibliography

African Clean Cities Platform; UNEP (Hg.) (2019): Guidebook for Environmental Education on Solid Waste Management in Africa. Ahmed, Shamsuddin (2019): e-Waste Management Awareness Program in Solomon Island. In: *International Journal of Information Technology Project Management* 10 (2), S. 41–59. DOI: 10.4018/IJITPM.2019040105.
Ashley, Michael Osei, King, Rudith Sylvana; Lykke, Anne Mette; Inkoom, Daniel Kweku Baah (2021): Urban planning trends on e-waste management in Ghanaian cities. In: *Cities* 108, S. 102943. DOI: 10.1016/j.cities.2020.102943.
Boribakur, Anantha; Govind, Madhav (2017): Emerging trends in consumers' E-waste disposal behaviour and awareness: A worldwide overview with special focus on India. In: *Resources, Conservation and Recycling* 117, S. 102–113. DOI: 10.1016/j.resconrec.2016.11.011.
Dhar, Ananddeep; Koshita, Nitin; Goyal, Raman Kumar; Sakashita, Motokazu; Almetaini, Mohammad (2021): Behavioral reasoning theory (BRT) perspectives on E-waste recycling and management. In: *Journal of Cleaner Production* 280, S. 124269. DOI: 10.1016/j.jclepro.2020.124269.
European Commission (Hg.) (2013): Raising awareness of the importance of environmentally sound management of WEEE among identified target groups in Slovenia. Online verfügbar unter https://ec.europa.eu/energy/sites/energy/files/2013/09/20130925_awareness-raising-activities-2013-2014.pdf.
European Commission (Hg.) (2016): LIFE & Electrical and electronic waste management (WEEE). The EU Life Programme.

Godfred Frempong (2012): Understanding what is happening in ICT in Ghana. A supply- and demand side analysis of the ICT sector. Hg. v. researchICTAfrica.net. Grant, Richard; Osei-Akpan, Martin (2021): Formalising E-waste in Ghana: An emerging landscape of fragmentation and enduring barriers. In: *Development Southern Africa* 38 (1), S. 73–86. DOI: 10.1080/03681073.2020.1823622.
Herrhausen, M.; Akkers, J.; Kuri, E.; Roelofs, P.; Hack, J.; Bauer, T., et al. (2020): Circular Economy in Africa-EU Cooperation. Country report for Ghana. Hg. v. Trinomics B.V., ACEN, adelphi Consult GmbH und Cambridge Econometrics Ltd. European Commission.
I. Madanire, Kuntia Mugandiro, C. Mubvumba: Development of E-Waste Inventory Management Strategy: Case Study. In: *Proceedings of the International Conference on Industrial Engineering and Operations Management*.
National Environment Commission Bhutan (Hg.) (2019): National Waste Management Strategy. Bhutan. Proceedings of the International Conference on Industrial Engineering and Operations Management.
Singhal, Ritiz; Singhal, Archana; Varun, Sharma; Saachi (2019): E-Cloud: A Solution towards E-Waste Management for Educational Institutions. In: *IJRTE* 8 (256), S. 964–972. DOI: 10.35840/ijrte.B1184.07025619.
Vusumuzi Maphosa (2021): E-Waste Management and Practices at Zimbabwe's Higher Education Institutions. In: *JHEP* 21 (1). DOI: 10.33423/jhep.v21i1.4046.