



## Creating Successful Formal-informal Partnerships in the Indian E-waste Sector

Practical Guidance for Implementation under the Indian E-Waste Rules

As a federally owned enterprise, GIZ supports the German Government in achieving its objectives in the field of international cooperation for sustainable development.

**Published by:**

Deutsche Gesellschaft für  
Internationale Zusammenarbeit (GIZ) GmbH

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Bonn and Eschborn

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**Commissioned by:**

GIZ Sector Project – Concepts for Sustainable Solid Waste Management and Circular Economy,  
on behalf of the German Federal Ministry of Economic Cooperation and Development (BMZ).

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**Photos:**

Cover: © GIZ | Dirk Ostermeier

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**Printing:**

Druckreif GmbH, Frankfurt

Printed on 100% recycled paper, certified to FSC standards

Eschborn, November 2018

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# 1

## BACKGROUND

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### 1.1 E-waste Management in India

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**India is the fourth largest generator of waste from electrical and electronic equipment (WEEE or e-waste) with some 2 million tonnes (20 lakh tonnes) generated in 2016 alone [1].** Having undergone a period of steady economic growth of above 5% through recent years [2], the country has developed an aspirational middle-income class with diverse materialistic needs and consumption habits. Paired with short innovation cycles and product lifetimes of many electronic products, generation of e-waste will continue to grow without showing any signs of diminishing returns.

As of today, **95% of e-waste generated in India is collected and processed by the informal sector [3].** The sector consists of a wide-spread network of unauthorised collectors, dismantlers, recyclers and other intermediaries which engage in e-waste management as a major livelihood strategy. Due to a lack of the most basic environmental, health and safety standards, prevalent recycling and dismantling practices induce massive environmental pollution and have adverse health impacts for India's poorest people who often seek unskilled labour in the informal sector. Unacceptable activities which are carried out on a day-to-day basis include open burning of cables for retrieval of copper, processing in open acid baths without any protective gear whatsoever or de-soldering of printed circuit boards by using torch blows, amongst others.

Despite these challenges, the informal sector is highly effective in collecting electrical and electronic goods at the end of life. Due to its network-like structure, long-standing personal relationships and knowledge about local e-waste flows, **the informal sector presents a tremendous asset which can be harnessed by producers to fulfil their obligations under the current policy regime.** One option is to engage with informal collectors via so-called interface agencies\* which unite them under the umbrella of a formal organisation, such as Non-Governmental Organisations (NGOs) or cooperatives for waste collection.

Such forms of formal-informal partnerships need to be approached in a well-planned manner in order to be successful. This guiding document is directed at the following target groups: a) producers – or, where applicable, those organisations which are mandated with the fulfilment of producers' obligations; and b) informal collectors who (seek to) pursue e-waste collection in a formalised fashion and their representatives (e.g. NGOs) which function as interface agencies between the formal and informal value chain.

This document complements the analysis made in the 2017 report “Building the Link: Leveraging Formal-Informal Partnerships in the Indian E-Waste Sector”[4] and builds upon the findings from a number of previous publications[5][6][7][8][9]. It goes beyond existing recommendations in that it provides practical guidance under the recast policy framework of the E-waste Management Rules, 2016. This document was authored by adelphi in cooperation with Toxics Link and Strategos

Advisory, and commissioned by GIZ sector project “Concepts for Sustainable Solid Waste Management and Circular Economy” on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ).

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## 1.2 The E-waste Management Rules, 2016

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Having recognised that closing material loops in the e-waste value chain is associated to various environmental and socio-economic benefits, the Government of India reconfirmed its regulatory efforts by passing the revised E-waste Management Rules, 2016. The legislation effectively shifts the responsibility for collection and channelisation onto producers – a principle which is known as Extended Producer Responsibility (EPR).

### THE BUSINESS CASE FOR EXTENDED PRODUCER RESPONSIBILITY

E-waste is one of the world’s fastest growing waste streams, **amounting to some 44.7 million (i.e. 447 lakh) tonnes globally in 2016**. From a producer’s perspective, e-waste possesses considerable secondary value as it contains a plethora of precious materials, such as gold, copper, rare earth metals and miscellaneous plastic contents [1].

**The global intrinsic material value of e-waste is estimated at about 55 billion (i.e. 5,500 crore) EUR in 2016**; yet, this value remains largely unexploited due to a lack of concerted public-private efforts. Given that India is the world’s fourth largest generator of e-waste, tapping into such value streams through Extended Producer Responsibility (EPR) promises to unlock additional cash flows and increase the profitability of producers’ business operations [1].

McKinsey Global Institute states that since the turn of the century, the **average annual volatility of resource prices has been almost three**

**times as high as in the 1990s**. Likewise, **average prices for metals have increased by 176 percent in nominal terms between 2000 and 2013**. Driven by a combination of investors’ perceptions that metals represent safe assets during times of economic uncertainty as well as rising production costs and fewer discoveries of high-grade deposits, prices for gold and copper have increased by 519 percent and 344 percent respectively [10]. Although metal prices have come down somewhat since 2013, price volatility is increasingly recognised as a threat to business development as it can seriously hamper long-term investments.

In this light, closing material loops in e-waste value chains through EPR **enables companies to gain control over their own resource supply, thus hedging their operations against volatility-induced risks**. Partnering with the informal sector and their representatives (e.g. local NGOs) is one of the jigsaw pieces to implement such strategies on a broader scale.

In order to increase performance of collection efforts, the E-waste Management Rules, 2016 follow a target-based approach and prescribe collection rates which are measured by either number or weight, using the average lifetime and weight across different product groups in connection to sales data as a basis for calculation. An amendment to the E-waste (Management) Rules 2016 was published in 2018 and provides revised collection targets for producers: starting from a collection target of 10% in 2017, targets will increase annually by 10% a year to reach 70% in 2023 [14]. To keep authorisation for selling products, producers need to elaborate EPR plans which explain how collection targets will be met. Upon submission, the EPR plans are reviewed by Central Pollution Control Board (CPCB) and approval is made public on the authority's website [11]. In addition, producers are obliged to create awareness through media, publications, advertisements, posters or others means which communicate how and where e-waste should be safely disposed of.

The Rules are open as to how producers shall fulfil their responsibility. In principle, they can opt to do so either individually or collectively. In case an individual solution is preferred, producers can set up collection centres, implement in-house take-back systems or launch buy-back schemes themselves. If producers opt for a collective solution, they can do so by contracting a so-called Producer Responsibility Organisation (PRO). Further, the Rules suggest two complementary instruments for the fulfilment of EPR obligations, namely E-waste Exchange (e.g. via innovative

## THE ROLE OF PRODUCER RESPONSIBILITY ORGANISATIONS

Producer Responsibility Organisations (PROs) are service providers that are **(collectively) financed by producers and assist in fulfilling their EPR-related obligations** by conducting or delegating collection and channelisation on their behalf. They can come in many forms, either as fully-fledged service providers, as a collective of formalised waste-collectors or as part of NGOs which offer PRO-like services.

Partnering with PROs or PRO-like institutions offers several advantages to producers. For one, such organisations typically **possess high levels of expertise** with regards to waste collection and channelisation, and (in the case of NGOs) may provide **local knowledge** and **well-established links to the informal sector**.

Particularly in early phases of transitioning towards an EPR regime, producers can **mitigate risks from internal restructuring processes and pool their resources** by contracting PROs.

It needs to be highlighted however that **entering a contractual agreement with PROs does not free producers from their original obligations under the EPR regime**. Such organisations should not be used as scapegoats in case they fail to meet collection targets but need to be viewed as strategic partners for creating a competitive edge through good product stewardship.

start-ups or platforms such as Sanshodan: An online E-waste Exchange supported by the Telangana government) and Deposit Refund Schemes (i.e. a premium on the retail price of products which is returned to consumers when the product is retrieved at the end of life). Discussions are ongoing regarding different implementation mechanisms for EPR in India, as detailed further in a recent GIZ study [15].

Regardless of whether producers in India opt to fulfil their responsibilities individually or collectively, they need to familiarise themselves with the requirements of their obligations under the current EPR regime, e.g. by consulting the E-waste Management Rules 2016 [12] and the implementation guidelines issued by CPCB [7]. Ultimately however, successful collection and channelisation largely depends on establishing functioning partnerships with the informal sector – either bilaterally between producers or PROs and informal collectors or indirectly via so-called interface agencies. With the introduction of the new E-waste Management Rules, informal collectors can no longer receive authorisation for setting up collection centres. Instead, they now need to register and enter agreements with producers or PROs to collect materials on their behalf and continue operations under the ambit of the Rules.

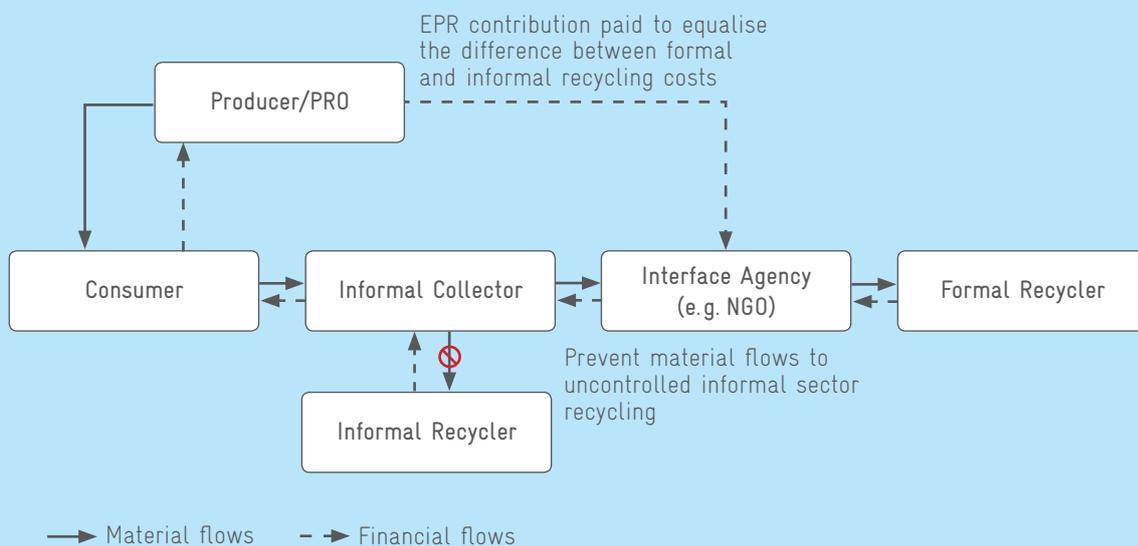


Figure 1: The role of interface agencies in the e-waste value chain; adapted from [13].

The role of interface agencies is to prevent material flows to uncontrolled informal sector recycling. This is illustrated in Figure 1 above. The following sections provide guidance regarding the minimum requirements for such partnerships.

# 2

## REQUIREMENTS FOR FORMAL-INFORMAL PARTNERSHIPS

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### 2.1 Identify existing collection and recycling channels and stakeholders involved

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Initiating successful formal-informal partnerships requires a thorough ex-ante analysis of existing collection and recycling channels as well as stakeholders involved. Ideally, the number of informal sector workers should be estimated to gain an understanding about the scope of informal activities. This should also assess the types of waste-related work performed. An assessment of stakeholders should cover all relevant parties of the informal economy (collectors, dismantlers, aggregators and recyclers) and analyse their willingness to formalise. This could result in a map of informal hotspots which illustrates the quantities of e-waste collected and types of processes carried out [6].

While it is advisable to enter a general dialogue with informal representatives, collecting additional information on waste collection activities can help to identify possible challenges in formal-informal partnerships [6]. Producers and PROs can identify and enumerate informal collectors by name, gender, address and phone numbers where available. Further helpful pieces of information may include the type of waste work involved, where waste is collected from, where recyclables are sold, work times, number of work days per week, estimated daily income, years of waste-related work experience, number of children and the challenges faced in the daily routine of waste collection.

Needless to say that such analysis can quickly consume considerable internal resources. As such, producers and PROs need to prioritise which types of information to collect. There is no one-size-fits-all approach but the collected information should suffice to preconceive potential hindrances when partnering with the informal sector.

**A more viable option for producers and PROs can therefore be to cooperate with local interface agencies**, possibly represented by NGOs or cooperatives of waste pickers operating in the e-waste sector. Another option is to identify the leaders who coordinate informal activities and enjoy a strong standing within the local community. Those individuals often function as nodal points in the e-waste value chain and can reveal substantive information about the situation on the ground. Further, they can play a vital role in reaching out to additional informal collectors once partnerships have been launched.

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### 2.2 Discuss and determine options for partnering with formal organisations and informal collectors

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Results from the ex-ante analysis can be used to discuss options for partnering with formal institutions and informal actors. Since directly partnering with last-mile collectors (LMCs) will consume a lot of resources while resulting in comparatively low collection rates, **it is advisable for producers and PROs to initiate partnerships**

**with larger collectors or aggregators.** This was a key learning from a previous project conducted on behalf of the International Finance Corporation (IFC) where interactions with LMCs were too time-consuming and ultimately resulted in discontinuation of formal collection activities. If informal collectors are to function as aggregators on behalf of the producers, they need to formalise first; in a second step, producers or PROs should ensure that minimum requirements for the handling of e-waste and for reporting on the sources are agreed upon, established and followed at all times.

Since most collection, dismantling and recycling activities are carried out in the informal economy, there will be a need for establishing new partnerships which formalise prevalent informal structures. This can be a long-term and time consuming process as it requires developing personal relationships and building trust with informal actors. **To monitor this progress, baselines for collection and formalisation need to be defined.** This can include a variety of target metrics. For instance, the percentage of e-waste collected (based on the amount put on the market) should be monitored to ensure that the responsible organisation remains on track for meeting the prescribed collection targets. CPCB's guidelines to the E-waste Management Rules [7] provide helpful advice for calculations of target values.

**Before entering agreements, the partnering institutions need to be thoroughly evaluated.** Interface agencies should be able to provide a credible justification for the cost of waste management services, e.g. based on a catalogue of cost criteria for the tasks performed to fulfil producers' EPR obligations. This includes, but is not necessarily limited to, capacities needed for activation of informal collectors, logistics for channelisation to authorised recyclers and awareness raising activities. **Where such criteria do not exist, they need to be elaborated with producers or PROs in a step-by-step process.**

Further, interface agencies should be able to present a track record and explain how they seek to partner with the informal sector. Ideally, they should also have a binding self-commitment in place (a Code of Conduct of sorts) which ensures that the needs of the informal community are respected. Here, **interface agencies should take the role of mediators which communicate the needs of informal collectors and align them with the expectations of producers or PROs.** For this, they could receive funds from producers or PROs so as to ensure that their collection targets are met under the provisions of the E-waste Management Rules.

Partnerships with interface agencies are usually based on bilateral agreements. Here, working out the right level of detail is a key success factor. Agreements can either be designed in an open-ended fashion (e.g. a Memorandum of Understanding) or entail a high degree of formality with legally binding clauses (e.g. contracts). Which option to pursue will depend on the type of organisation that producers (or PROs)

(or PROs) seek to partner with: whereas collectives of waste pickers are likely to prefer non-binding agreements, established NGOs may be more willing to enter formal contracts. **In any case, payments made by producers under such agreements should not be minimal but realistic in order to effectively bridge the price gap between the formal and informal sector.** Moreover, producers and PROs can provide other non-financial incentives to interface organisations or informal workers in order to increase the attractiveness of formal-informal collaboration. This may include provision of trainings, protective gear, social benefits or advocacy services for informal workers, amongst others. For more information regarding non-financial incentives, please refer to chapter 2.4.

When determining models for cooperation, producers and PROs can choose to design EPR activities in a business-friendly way, for example by providing other incentives to households through vouchers for product rebates. Here, options for partnering with certain retailers could be explored.

## THE PRICE GAP BETWEEN FORMAL AND INFORMAL TRANSACTIONS

Authorised recyclers are often unable to purchase materials at competitive prices from informal collectors. This can be attributed to the fact that they need to adhere to certain environmental, health and safety standards and are burdened with administrative requirements from public authorities. The consequence is the **existence of a price gap where informal recyclers compete at the expense of decent working conditions.**

This price gap also affects interface agencies which are unable to compete with informal recyclers. **Without dedication of external (financial) resources from producers,** this situation is likely to remain unsolved and **can present a major barrier to establishing successful formal-informal partnerships.**

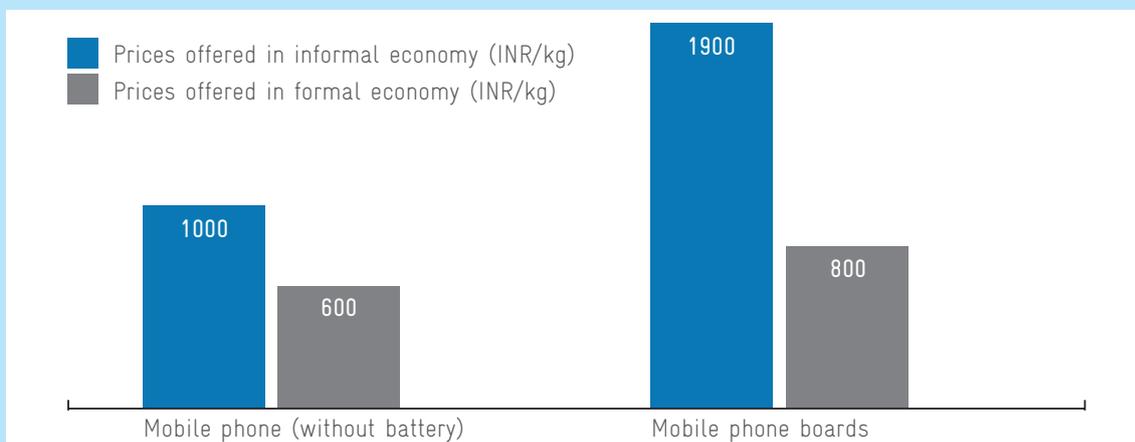


Figure 2: Differences in prices paid for exemplary products by the informal economy and formal recyclers; adapted from [13].

Prices in the informal sector can fluctuate on a day-to-day basis. Hence, producers or their partners need to **conduct regular assessments on the magnitude of price gaps**. This will help to determine the amount of payments needed so that, from the perspective of informal collectors, selling e-waste towards formal channels becomes at least equally attractive

as channelling materials towards informal recyclers. While financial mechanisms play a predominant role in achieving this, producers can **complement or partly substitute payments with a range of non-monetary incentives** (see textbox on page 11) to increase the attractiveness of formal-informal transactions.

Regardless of the nature of agreements, the payment systems agreed upon need to be tailor-made to the needs of informal actors. Collectors, aggregators, dismantlers and recyclers occupy very different positions in the e-waste value chain and thus face dissimilar cost structures. These can be evaluated in the ex-ante analysis and need to be adequately reflected by the agreements. Payment systems can be designed in many different ways – e.g. paying per weight of collected wastes or paying a lump sum for comprehensive services – yet they should be high enough to ensure that producers’ collection targets can be met. Again, determining the type of payment system will depend on the nature of the partnering organisation and it should therefore be decided on a case-by-case basis.

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### 2.3 Elaborate inclusive EPR plan

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Once partner organisations are determined and agreements are worked out, EPR plans need to be elaborated. Producers are required to file such plans at CPCB to fulfil their obligations under the current EPR regime and retain authorisation for production of electronic goods. Mandatory information to be contained in the application is set out in Form 1 in the Annex of the Rules. A key piece of information is the amount of electronic goods put on the market and the collection targets based thereon. **Providing additional information on the company’s view on the informal sector can strengthen the credibility of EPR plans** and increase the likeliness of acquiring authorisation.

However, some information can be confidential in nature and the E-waste Management Rules do not specifically address the informal sector per se. The relation between producers and collectors from the informal economy is not specified either. In this light, **it is suggested that producers do not state quantitative targets for the number of informal workers to collaborate with but outline the approach to formalisation in qualitative manner**, e.g. by describing relations to local interface agencies or PROs which facilitate formation of cooperatives and cooperate with authorised collectors, dismantlers and recyclers only.

## DESIGNING INCLUSIVE EPR PLANS

The E-waste Management Rules require producers to provide details on the “overall scheme to fulfil Extended Producer Responsibility obligations [...] through dealers and collection centres, Producer Responsibility Organisation, buy-back arrangement, exchange scheme, Deposit Refund Scheme, etc. whether directly or through any authorised agency” [1]. In this context, “**authorised agencies**” may include interface agencies such as cooperatives of e-waste collectors which have undergone a process of formalisation.

When elaborating plans in accordance with these requirements, it is recommended that producers **describe the mechanisms through which informal collectors are integrated into**

**the company’s EPR strategy**, either directly by partnering with collectives of waste pickers or indirectly via PROs, collection agencies, aggregators and recyclers. More detailed information may comprise the **means of outreach and activation, support provided to increase their rate of formalisation, the types of incentives offered** (identity cards, social benefits, educational services, advocacy of workers’ rights etc.) as well as **awareness raising activities** which address sound collection, dismantling and recycling of e-waste in the informal economy.

**For internal purposes however, defining quantifiable metrics is paramount for monitoring and evaluating the performance of formal-informal partnerships.** Useful indicators can include a) the number of informal workers engaged as part of the EPR-related activities, b) the number of informal sector workers formalised under the umbrella of a formal organisation and c) the amount of e-waste (by weight or number) to be sourced from informal workers.

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### 2.4 Establish protocols and provide incentives to foster formalisation among informal collectors

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The up-scaling of formal-informal partnerships relies on the establishment of good protocols to which all parties need adhere at all times. Protocols can already be integrated into the design of agreements but may also be issued as separate documents, e.g. as a Code of Conduct or Joint Declaration of Intent. To streamline interactions in accordance with such protocols, establishing focal points of contact between the partnering organisations appears recommendable.

As part of such protocols, **producers and PROs should determine reporting frequencies** for the amount of e-waste collected together with representatives from the informal sector. Reporting should be carried out on a regular basis to be in line with the prescriptions of the E-waste Rules which require producers to make collection records available to CPCB when directed. **Good protocols also include provisions on a number of occupational aspects**, such as decent health and safety standards in collection, dismantling and recycling, transparency and reliability of prices paid to informal workers and strict exclusion of child labour. In addition, partnering organisations (both on the formal and informal side) should be given the opportunity to voice complaints when codes are violated, e.g. during regular feedback sessions which provide room for adjustments of the partnership model.

## PROVIDING THE RIGHT MIX OF INCENTIVES

Successful partnerships need to create value-added for all parties involved; yet, such value is unlikely to materialise unless incentives are provided to informal workers which **encourage them to collect and channel sufficient amounts of materials towards authorised recyclers**. Providing the right mix of incentives must consider the needs of informal collectors and should be based on common practices encountered in the informal economy. Generally, incentives can be both monetary and non-monetary in nature.

Monetary incentives can comprise weight-based **payments** for waste collected or the **provision of fixed salaries/subsidies** which are paid on a monthly basis. Since informal collectors often operate at very small economic margins, **advance payments** can help to increase collection efforts. However, providing upfront payments presents undeniable economic risks and – from the perspective of producers or PROs – appears to be feasible only once a trustful relationship has been developed.

There is a wide spectrum of non-monetary incentives which can increase the likeliness of informal collectors to channel e-waste towards formal organisations. This includes the **provision of ID cards** to avoid harassment from authorities, the implementation of **educational facilities for workers' children, social benefits** (e.g. free health care), **advocacy or workers' rights, provision of protective gear and trainings**, or the **allocation of land, infrastructure and technology at subsidised rates**.

It is worth noting that although non-monetary incentives **can help bridging the formal-informal price gap, they are unlikely to be sufficient if provided in isolation**. Instead, they should be understood as complementary tools which can help increasing the success of partnerships when applied appropriately. The appropriateness should be discussed with the interface agencies or, where possible, directly with informal collectors to give a strong impetus for formalisation and ensure that enough e-waste is obtained so that collection targets can be met.

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## 2.5 Monitor partnerships and provide long-term support to partnering organisations

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In order to monitor the progress of formal-informal partnerships, producers and PROs are advised to agree on regular reporting periods as outlined above. Form 2 in the annex of the E-waste Management Rules can be used as a basis but should be modified to fit the purposes of internal monitoring and evaluation procedures. **Designing an implementation schedule can be useful monitoring tool for producers and PROs.** Further, it is advisable to conduct periodic audits at the partnering organisation to assess the adherence to previously established protocols. Ideally, these should be unplanned so that the organisation in question is unable to predict when an audit might happen. Data from audits needs to be thoroughly documented and, in coordination with the partnering organisation, should be considered for public reporting (e.g. via the company's website or the EPR plan) to enhance the credibility of collection efforts.

Generating revenues and meeting collection in the interest of all parties involved are the key success factors for any formal-informal partnership. However, the importance of obtaining reliable data should not be underestimated as this will form the basis for evaluation and future planning activities. Further, research conducted by adelphi has shown that **transparency is paramount to ensure that once e-waste is collected, it does not leak back into the informal system.** Hence, there is need for a mechanism which can establish such transparency, e.g. in form of web-based applications which track e-waste flows across all stages of the value chain.

At times, **interface agencies may lack the necessary resources and capacities for reaching out to a sufficient number of informal collectors. In this case, producers and PROs should provide direct support,** e.g. by granting access to in-house communication channels, establishing contacts to bulk consumers or offering tailor-made capacity building measures. This may include trainings on correct handling of e-waste or establishing an additional business case for dismantling and refurbishing in case mere collection is not profitable enough to maintain a steady influx of materials.

Informal collectors are often marginalised and frowned upon in their day-to-day lives. Publicly recognising their importance and legitimising them is therefore crucial to the success of partnerships. This is closely linked to the **provision of incentives** (see textbox above). Producers, PROs and interface agencies should additionally consider offering useful modes of transportation (e.g. rickshaws or three-wheelers) for door-to-door collection and ensure that collectors are paid fair wages. Through provision of ID cards or uniforms, informal collectors can be

protected from harassment and gain access to bulk consumers. Where ID cards and uniforms are provided, these should showcase the name, ID number, address and phone number of the worker as well as the date of issue and expiry [6].

It is likely that regular revisions to the structure of partnerships are necessary, e.g. in case deviations from established protocols are detected. **From the perspective of producers or PROs, relationships with the informal sector need to be perceived as long-term investments** where building mutual trust and reaching a respectful relationship are crucial success factors. This can only be developed in an iterative learning process between producers, PROs, interface agencies and the informal sector.

# 3

## RECOMMENDATIONS

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### 3.1 Recommendations to producers and PROs

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**Cooperating with local interface agencies can help setting up effective systems for collection and recovery of precious materials.** Since an ex-ante analysis can quickly consume considerable internal resources, a more viable option for producers and PROs can be to cooperate with locally embedded interface agencies, such as NGOs or cooperatives of waste collectors. Such organisations often possess relevant tacit knowledge about prevalent informal practices and have established contacts in the e-waste sector.

**Working out the right agreements and protocols (including payment systems) is a key to the success of formal-informal partnerships.** Generally, agreements can be designed in a non-binding, open-ended fashion or entail a high level of detail with legally binding provisions. In any case, producers and PROs payments made by producers should not be minimal but *realistic* in order to effectively bridge the price gap between the formal and informal sector. Good protocols need to determine reporting frequencies, the quality of materials and include provisions on a number of occupational aspects. The technical details of agreements and protocols should be discussed with the partnering institution.

**Launching partnerships with larger collectors and aggregators can increase collection rates.** Due to the low level of consolidation in the informal economy, it is advisable for producers and PROs to initiate partnerships with organisations which possess relevant contacts to informal collectors and can ensure that collection targets are met. Ideally, the partnering organisations include leaders from informal communities which function as nodal points and can further leverage the effectiveness of collection efforts.

**Providing information on the formalisation of informal collectors in downstream processes can strengthen the credibility of EPR plans.** Since the E-waste Management Rules 2016 do not directly touch upon partnerships with informal collectors, it is suggested that producers describe the approach to formalisation in qualitative manner, e.g. by highlighting cooperation with local interface agencies which foster formalisation.

**The performance of partnerships needs to be closely monitored, regularly evaluated and developed on a long-term basis.** At times, interface agencies may lack the necessary resources and capacities for reaching out to a sufficient number of informal collectors. In this case, producers and PROs should provide direct support and build their capacities. In order to become durable and economical, relationships with the informal sector need to be perceived as long-term investments. As part of the monitoring and evaluation process, designing an implementation schedule can be useful tool for producers and PROs.

## 3.2 Recommendations to interface agencies and representatives of informal collectors

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**Interface agencies should take the role of mediators which communicate the needs of informal collectors and align them with the expectations of producers or PROs.** Informal collectors often lack the necessary negotiating power to express their needs. It is paramount that interface agencies advocate the interests of informal collectors to ensure that partnerships remain fair to all parties, economically viable and collection targets can be met.

**Ensuring transparency is paramount for entering successful partnerships with producers and PROs.** Ideally, interface agencies should be able to provide a transparent explanation for prices of e-waste collection services offered to producers and PROs. Where these do not exist, they need to be elaborated in a collaborative step-by-step process. Further, transparency is paramount to ensure that once e-waste is collected, it does not leak back into the informal system. A transparency mechanism (e.g. web-based applications) can help track material flows and ensure accountability along the e-waste value chain.

**Choosing the right mix of incentives provided to informal collectors is important.** It is therefore necessary that interface agencies identify the need for specific non-financial among informal networks (e.g. provision of ID cards, health care, advocacy of workers' rights, or else) and communicate those to producers or PROs. Since monetary incentives are preferential means in formal-informal transactions, the importance of market price payments needs to be conveyed to and advocated amongst producers. All in all, interface agencies should ensure that the chosen mix of monetary and non-monetary incentives provides a sufficiently strong impetus for informal collectors to divert e-waste towards formal channels.

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This guide forms part of a Circular Economy Briefing Series by the GIZ Advisory project “Concepts for sustainable solid waste management and circular economy”. This sector project develops guidance papers, conferences, trainings and policy advice on resource efficient and climate friendly waste management in cities of low and middle-income countries. On behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ), it advises on marine litter prevention, the sustainable management of waste electrical and electronic equipment and climate change mitigation in the waste sector through circular economy approaches.

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