MOBILE PHONE PARTNERSHIP INITIATIVE (MPPI) - PROJECT 2.1

GUIDELINE ON THE COLLECTION OF USED MOBILE PHONES

Revised and Approved Text
March 25, 2009

Foreword

The previously approved Guideline on the Collection of Used Mobile Phones has been reviewed to reflect the practical situation. The Mobile Phone Working Group would like to express its appreciation to France Telecom Orange Group and Vodafone for evaluating the guideline and proposing revisions to previously approved guideline[1].

In addition, special thanks is extended to the chair of the Project Group 2.1, Dr. Joachim Wuttke from German Federal Environment Agency, for ensuring that all proposed changes and comments from the Project Group 2.1 participants have been reviewed and incorporated in the revised guideline.

[1] Report by France Telecom Orange Group and Vodafone entitled ”Practical evaluation of the Guideline on Collection of Used Mobile Phones with reference to existing takeback operations in Egypt and Romania”

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EXECUTIVE SUMMARY

This guideline document is about collection systems for used mobile phones. It offers advice and guidance in two parts:

Part 1 introduces the background, purpose and use of the guideline document.

Part 2 reviews collection systems including an assessment of best practices for the existing collection systems of used mobile phones. It reviews successful collection systems, which typically separate used mobile phones that can be reused (with or without repair or refurbishment) from those that are suitable only for material recovery and recycling. It identifies best practices, possible funding options and logistics for setting up national/regional/international collection systems for used mobile phones, especially in developing countries and countries with economies in transition. Furthermore, it is intended to encourage countries to set-up collection systems that best suits their needs so that most of, if not all, used mobile phones are collected and end-of-life mobile phones are diverted from final disposal operations such as municipal landfills. In many cases landfills or incinerators are not equipped to deal with some of the potentially hazardous substances in mobile phones, and these substances could be released to the environment via leachate or emissions.

Finally, it provides guidance on managing environmental and occupational health and safety issues during the collection and storage of used mobile phones before they are being directed to repair, refurbishment or material recovery and recycling facilities. It is geared for use by: environmental and other regulatory agencies and authorities, any organization that is interested in setting up a collection system for used mobile phones, manufacturers, telecom operators, distributors, repair, refurbishment and recycling facilities. Finally, this information should be of value to users of mobile phones who are encouraged to take their used phones to collection points.

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1 INTRODUCTION

1.1 Background

This document is one of the five guidelines developed under the Mobile Phone Partnership Initiative (MPPI) of the Basel Convention. Project 2.1 addresses the collection and transboundary movement of used mobile phones, and this guideline on collection of used mobile phones is mainly intended as guidance for:

- Any organization that is involved in collecting used mobile phones and shipping them across national boundaries
- Collection and accumulation facilities
- Environmental and other regulatory agencies and authorities
- Environmental and community groups
- Telecom operators
- Manufacturers
- Users of mobile phones
- Distributors of mobile phones.

1.2 Purpose

This guideline is intended to encourage private sector, and companies; that collect used mobile phones to be shipped for reuse, including repair, refurbishment or upgrading, recycling, material recovery and disposal; to implement practices in an environmentally sound manner, which will protect human health and the environment.

This guideline will also assist government authorities who may be responsible for collection systems of used mobile phones.

2 COLLECTION

2.1 Introduction

At the time of approval of this guideline there were more than 3.8 billion mobile phone connections[2] and these will eventually fail to operate or their owners will no longer want them. The environmentally sound management of those used mobile phones - even the best-designed mobile phones - should include the collection of used mobile phones into a system with three goals to:

- divert end-of-life mobile phones from waste streams destined for disposal in landfills or incinerators;
- repair, refurbish and preserve used mobile phones in working order, so that they can be used again; and
- channel unusable (end-of-life) mobile phones into environmentally sound material recovery and recycling.

The challenges of any collection scheme are mainly linked to the number of actors (from manufacturers to end users via telecom operators, retailers, repair centres…) involved to set up an effective and efficient collection processes for a given country.

Such a collection system begins with the user of mobile phones, when the first decision is made to stop using a mobile phone. A user must first decide to give that used mobile phone into a collection system, and then must carry out that decision. The collection system continues through collection points and collection activities that must be located in areas that would be convenient to users to bring their used mobile phones. These collection points and activities must also be well managed. Collection points must then be the initial part of a collection system that includes transport and appropriate storage facilities where evaluation and/or testing and labelling can take place, to determine if a used mobile phone is in working order and suitable for refurbishment and reuse , or suitable for environmentally sound material recovery.

In all EU member states producers have been required to organise collection and environmentally sound treatment of all electronic equipment put on these markets including mobile phones since 2005 and for batteries since 2008. These systems

[2] http://www.gsmworld.com/newsroom/market-data/market_data_summary.htm

typically consist of common collection points for all electronics and/or collection by retailers on a 1:1 basis.

Refurbishment and resale have been described in the guideline of Project 1.1 (Guideline on Refurbishment of Used Mobile Phones). Environmentally sound material recovery and recycling has been described in the guideline of Project 3.1 (Guideline on Material Recovery and Recycling of End-of-Life Mobile Phones). This guideline of Project 2.1 will describe environmentally sound practices for collection systems that will lead into those other guidelines.

2.2 User of Mobile Phone Issues

A mobile phone collection system must be accessible to users - all of the people who are now using mobile phones, and those who will use them in the future. This is the starting point for collection, and these persons need to be aware of their responsibilities to promote reuse and engage in environmentally sound material recovery and recycling of end-of-life mobile phones, and of their opportunities to do so through a collection system.

2.2.1 Used Mobile Phones should not be thrown away

Every mobile phone will eventually be discarded, but if a used mobile phone is in working order, and is providing adequate modern communication service, it may be prudent – for environmental reasons as well as other reasons – to continue to use that mobile phone, either by the original owner or by a family member or friend, or to give it to a collection system within which it will be evaluated for potential reuse. This is not to say that users must always keep using their old mobile phones to help the environment. Modern mobile phone design has continuously improved the efficiency of electronics, batteries and chargers and a consumer should take that efficiency into account in deciding whether to discard an old phone in favour of a new one. (See Project 4.1 Guideline on the Awareness Raising – Design Considerations).

In any case, when a user discards a mobile phone, it should not be discarded with normal municipal waste, where it will be put into a landfill or into a waste incinerator. Furthermore, because a used mobile phone can rapidly lose its re-use and recycling value, users should be encouraged not to store or set aside the used mobile phone, but to promptly deliver it and give to a collection point. If a collection point

is not nearby or convenient, a mobile phone can be safely held in storage by a consumer until the next opportunity arises to go to a collection point or facility, because a used mobile phone is not hazardous in ordinary household storage.

It should be noted that the frequency of the disposal of a mobile phone with normal municipal waste is probably substantially less in developing countries than the more-developed countries. This is because of the very common practice by users in developing countries and CEITs of giving or selling used mobile phones to subsequent users for reuse.

Used mobile phones have considerable value for reuse in many developing countries and CEITs, thus providing a significant and very positive disincentive for disposal. However, these re-used phones will eventually cease to be repaired and re-used and will in time end up in formal or informal landfills as a whole product or discarded parts. There is a need to devise mechanisms to recover this material from the repair sector which is often informal.

2.2.2 Users must first destroy their personal data

Users must make certain that private data is eradicated from their mobile phone prior to passing their phone to any other persons or collection points. Collectors and collection programs should provide access to such information to consumers. Private data includes but may not be limited to: phone numbers, personal information, bank card numbers, security passwords.

Note: Resetting a phone can, appear to erase data, but this data may be retrieved using specialized yet inexpensive software found on the Internet. Data is often stored in flash memory and is retained even if the device's battery is drained or removed. To delete flash memory data, one must undertake a 'hard reset,' which returns the hardware to the original factory condition. Each mobile phone maker has a different hard reset procedure; some can only be done by a suitably qualified person or after contacting the network operator / manufacturer's help desk.

It is advisable to do the following to permanently and securely erase data from your phone:

- Follow the instructions for erasing data in the manual or on the manufacturer's web site or contact them directly if such information is not available.
- Remove your device's Subscriber Identity Module (SIM) card. This portable memory chip, used in some models, holds your personal identity information and may contain phone book information and text messages.

For further information on data security see Section 2 of the Guideline on the Refurbishment of Used Mobile Phones (project group 1.1).

2.2.3 Users require awareness, convenience and incentives

In most parts of the world, even where collection systems exist, users of mobile phones do not know of their existence or how to use them[3]. A collection system requires user awareness, and therefore requires publicity. Users need to know – first – the basic environmental principle that they should not simply discard a mobile phone into waste disposal, but should instead use environmentally sound alternatives, such as reuse, material recovery and recycling. And they need to know next what they should do to identify, find and use an environmentally sound collection system – how to use it, where it is, what they should bring (e.g., chargers and accessories as well as phones), whether there will be incentives[4], etc.

Reuse, material recovery and recycling should be promoted widely in society through advertising to users, and collection of used mobile phones can be cited as an example of an environmentally sound practice. Some advances in user awareness of a mobile phone collection system can be achieved simply and inexpensively. Examples of possible mechanisms for promoting user awareness of a mobile phone collection system could be:

- Information to be disseminated by the Environment Ministry.
- Advertising at the point of sale of the collection system of the telecom operators and other partners with special posters.

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3 INFORM, Inc., Calling All Cell Phones: Collection, Reuse, and Recycling Programs in the US, 2003: "most consumers are not aware of the existence of the collection programs currently available." In a survey conducted in 2001 by Surrey University in the UK on behalf of UK Take back Ltd (now the Mobile Take back Forum –MTF) lack of consumer awareness was the major obstacle to recycling of mobile phones.

4 There are some collectors of high value mobile phones that are only interested in their resale value, and will discard other mobile phones in unsound ways. Users should be sure to use collection systems that follow environmentally sound management systems, such as those described in this guidance.

- Putting information on companies and countries' web sites.
- Information in customer bills.
- Annual reporting.
- New phone packaging can contain a notice for a collection service, and perhaps a mailbag or box for sending in the phone to an appropriate facility for proper management (e.g., reuse, material recovery and recycling), when it will no longer be used.
- Incentives for returning used phones and accessories e.g. T-shirts
- Internal awareness raising on benefits of recycling with operator employees and their friends and family.
- The precise mechanism will have to be determined by what is appropriate based on the habits of the users in the country.

Places of employment can also provide an opportunity to collect used mobile phones, and can display signs and directions about this collection service.

The convenience of a mobile phone collection system is of paramount importance to a user. A user cannot be expected to make a special trip, especially over any long distance, to an isolated mobile phone collection point. Collection by mail should be considered, and is likely to be most effective if packaging and pre-paid postage are provided to users. Collection at user's homes may be possible in some locations, such as in developing countries where such collection of other recyclable materials already takes place. If users are asked to deposit their mobile phones at collection points, there will have to be a large number of such collection points, located in places where users commonly travel in their ordinary lives.

Collection is particularly difficult in remote or rural areas since stores tend to be in urban areas. Governments or industry, as part of Extended Producer[5] Responsibility (EPR) schemes (see section 2.3.3), may need to consider subsidies or incentives for the collection and transport of phones, e.g. provision of reply paid envelopes or small payment on the return of used mobile phones to a collection points.

[5] Producer has been defined by OECD as being manufacturer, importer or distributor of a product as part of EPR responsibilities

And users may need an incentive to participate in a collection system. Many users will do the right thing – turn in a used mobile phone to a proper collection point – if they are aware of the environmental benefits, and if the collection point is convenient to use. If a mobile phone is not very old, has useful features, and is in working order, it may have cash value, and it may be useful if financial incentives are provided by sellers of new mobile phones, such as discounts on purchase of a new mobile phone.

2.3 Collection Point Issues

2.3.1 Collection Methods

There are many possible ways of collecting used mobile phones, and a variety of ways have been used throughout the world. Most ways have been voluntary, but many countries now require, as a matter of law, that all sellers accept the return of used electronic equipment, when the purchase of new similar equipment takes place. Sellers then arrange for used products to be placed into a recycling system ("product stewardship") set up by manufacturers and /or importers (e.g., WEEE Directive[6]). Some systems are combinations; with government requiring a take back system under the principle of Extended Producer Responsibility (EPR), leaving it to manufacturers to decide among themselves the specific mechanisms. While permanent government-mandated programs will provide a solid base for collection, voluntary and temporary campaigns will add special emphasis and will also be useful. See Annex 1, "Worldwide summary of some existing recycling schemes" for examples, descriptions, and internet links to additional information. This section provides a general narrative regarding seven collection methods that might be considered for implementation, alone or in combination.

The need for collection systems and producer's responsibility to create, or participate in them, is especially acute in developing countries where legislation and infrastructure for collection is likely lacking. Producers[7] are encouraged to share the physical and/or financial obligations for such collection and management for used mobile phones as part of EPR systems.

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6 Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on Waste Electrical and Electronic Equipment (WEEE), effective in August 2005.

7 Producer has been defined by OECD as being manufacturer, importer or distributor of a product as part of EPR responsibilities

The primary factor in determining the success of a collection system is convenience to users. There must be a way, and probably several ways, in which users can deliver a mobile phone into a collection system with only a small effort, so that the largest number of used mobile phones will actually be collected, and will flow onward to refurbishment facilities or to material recovery facilities (See Figure 1 for a description of collection system and further steps.). Then, within that paramount goal, a collection system should consider other factors that will improve the environmental benefits of collection, such as careful attention to preserving working order and resale value. The potential list of considerations will vary according to country and circumstances. The collection methods described below have had some success in attracting mobile phones for collection.

2.3.1.1 Collection at points of sale for mobile phones

A mobile phone collection system should include all points where new mobile phones are sold. This will be required in the EU under the WEEE Directive and in other countries and regions (e.g. California in the USA, under state law[8]). In all instances retailers need to post prominent notices of this service. Collection by mobile phone retailers is already taking place on a voluntary basis in many locations. There are many advantages to using points of sale as points of collection. These collection points are already known to users of mobile phones, and are often both numerous and convenient. The costs of making a point of sale into a point of collection may be minimal, but practical consideration of issues such as branding, customer experience, space availability, could provide some challenges. In fact, the use and retention of visible locations at points of sale for the placement of collection containers and related information is a major limitation for many retail establishments. Sellers of new mobile phones should be able to incorporate promotion of their return in an environmentally sound program, as part of their service to their customers. The persons who sell new phones at these points will be familiar with proper handling and storage, so that possible damage to used phones in the collection process will be minimized. And sellers of new mobile phones are already at one end of an existing logistics chain that can transport used mobile phones back into the system. In addition, a seller of new mobile phones will be in the best position to consider the

[8] Cell Phone Recycling Act of 2004, CAL. PUB. RES. CODE § 42494 (2004)

type of incentives for collection of old phones, such as a discount on purchase of a new phone.

2.3.1.2 Collection as part of other stores, businesses and institutions

A mobile phone collection system should include other points where large numbers of people will find it convenient to just leave a mobile phone. Employers can provide such a point for their employees, and stores can offer such a point for their customers. Establishing a collection point can be very simple, consisting of not much more than a box and a person willing to take on the management responsibility. Several organizations provide instructions and assistance (see Annex 1 and links to websites listed there, for greater detail). These instructions include awareness posters and collection box labels that can be downloaded, and a sample e-mail for notifying other people of the collection program.

Such a collection point should be supervised[9] by a responsible person, so that mobile phones are not casually dumped in ways that would damage them, and so that they are not subject to theft by scavengers. But the actual management of used mobile phones should not be a significant burden, because special requirements will adversely affect the efficiency of collection, and will reduce the number of places that are willing to serve as collection points. The phones that are collected should be packed into a shipping box with some attention to minimize possible damage. The box of used mobile phones can be safely stored until a sufficient number of phones are accumulated for transport to another collection point or to an evaluation or a refurbishment facility. No special transportation is required, unless local or national law requires it, such as a special license. The final decision about whether a used mobile phone can be refurbished and resold, or is suitable only for material recovery and recycling, does not need to be made at the collection point[10].

2.3.1.3 Collection as part of general electronic scrap

A mobile phone is a small electronic device. There is no incompatibility in collection of mobile phones with comparable electronic devices. Therefore any collection

9 Even if a collection point is closely supervised, users should also be advised to remove their SIM cards in advance, to protect their private information and to ensure that charges are not made to their accounts

10 See report of Project 1.1 for detailed information about refurbishment and resale.

program that is established to accept electronic scrap can also accept end-of-life mobile phones.

However, if used mobile phones are collected simply as part of a bulk collection of other larger and heavier things, they are likely to be damaged in handling and storage. This damage will reduce, if not eliminate, the possibility that the used mobile phones will be repaired and resold. As a practical matter, if mobile phones are collected as part of bulk waste electrical and electronic equipment (WEEE), they will generally be suitable only for material recovery and recycling. And even in material recovery and recycling, mobile phones are more efficiently processed in separate batches, where their higher concentrations of gold, palladium and silver can be better recovered[11]. So if possible, the separate collection of used mobile phones is recommended. Alternatively, prompt separation is recommended if a collection point manages other WEEE, in order to preserve working characteristics and resale value. But it is also recognized that it may not be possible or practical to have many collection points that deal exclusively with mobile phones. However, if convenient collection points are not available, end-of-life mobile phones may be discarded into waste disposal. So selection of a collection system should balance the need for user's convenience to maximize collection, with the need for mobile phone separation to maximize continued use versus material recovery and recycling of end-of-life mobile phones.

2.3.1.4 Collection by charitable organizations

A number of charitable organizations have organized mobile phone collection campaigns, with goals ranging from donation of working phones to deserving persons to raising money for good purposes. While the Basel Convention does not endorse any particular charitable organizations or goals, it is recognised that these collection campaigns can be part of an environmentally sound system for reuse including refurbishment, material recovery and recycling. As with all other collection methods, the campaigns of charitable organizations must follow environmentally sound management.

[11] See report of Project 3.1 on environmentally sound raw material recovery.

2.3.1.5 Collection by mail

A convenient way of collecting mobile phones is to offer users the opportunity to send their mobile phones by mail to a collection point, or directly to an evaluation and refurbishment facility. This has been done in Europe and the United States with relatively good success, both by charitable organizations and retailers. Some sellers of new mobile phones include a bag or box and mailing label with a new phone, to make it simple for the user to send in a used phone. In some programs, postage may also be paid by the collection system, especially where a larger number of phones are being sent in a shipping box. Some parcel delivery service companies may provide discounted shipping rates for boxes of recyclable devices such as used mobile phones, clearly directed to a recognized collection point, where there is no urgency or short time deadline for delivery. Where there is internet access available, a collection system web site can offer mailing labels to users, so that the correct mailing address will be used.

2.3.1.6 Local informal door-to-door buyers of recyclable materials

In many developing countries, particularly in urban areas, there are significant numbers of collectors who go door-to-door buying recyclable materials[12]. They will pay small amounts of money for recyclable materials, and offer convenience to many persons who cannot easily travel to redemption centres for such materials. Door-to-door collection is an informal activity, usually neither officially recognized nor regulated, and it is driven by simple economic incentives, i.e. the ability of collectors to sell materials to larger material recovery and recycling, or waste redemption facilities. A buyer is likely to take some care to preserve the economic value of a working mobile phone, but may not always be a reliable manager of used mobile phones with little raw material value.

It may be difficult to formally incorporate these collectors of household waste and scrap into a mobile phone collection system, but it would be unrealistic to ignore their existence and value to society. A mobile phone collection system that provides incentives for collection of used mobile phones should be prepared to make contact and deal with door-to-door buyers, and may find that this informal system is a con-

[12] See, for example, “Junk-buyers as the linkage between waste sources and redemption depots in urban China: the case of Wuhan”, Li Shichao, Resources, Conservation and Recycling, 2002.

venient way of attracting large numbers of used mobile phones into their formal collection points.

2.3.1.7 Collection by local government at recycling "bring site"

Some local governments offer points for collection of household recyclable materials, and will accept end-of-life mobile phones, although usually as a part of a larger electronics collection program. A van may circulate around an urban area, stopping in a neighbourhood on a schedule to provide an opportunity for consumers to bring their recyclable materials to a convenient, nearby location. If this service is already being provided, and the logistics are in place, this may be the most convenient way for users of mobile phones to give back their end-of-life mobile phones. As described above, however, collection of mobile phones as part of a bulk collection of other electrical and electronic devices is likely to result in damage, leaving them suitable for material recovery and recycling, but not for reuse. Convenience to users should be balanced against preservation of continued use and maximum material recovery and recycling.

2.3.1.8 Collection of scrap from informal sector

Currently it is believed that in developing countries and CEIT's, used mobile phones are most often passed to the repair sector which is consisting of informal operators working in the electronics open marketplace. These are often the last holders of scrap mobile phone material in a developing country as they finally determine that a part such as a mobile phone circuit board is no longer repairable and it is thus discarded. This mobile phone scrap may end up in landfills, both formal and informal. The amount of scrap that could be collected from such informal operators can be significant. It is advisable then to devise mechanisms that seek to improve waste handling, and thus manage the recovery of the scrap from these sectors in conjunction with the complete used mobile phones if we are to avoid loss of valuable materials and damage to the immediate environment. Effective programs for consideration could include working with charities or others organisations to promote scrap collection within the informal sector in return for a price per-kilo payment based on current commodity prices. Once collected, this material could be stored until there is enough to justify onward shipment to an integrated copper smelter. Where environmentally sound facilities only exist in another country, the

transboundary movement should be in accordance with the "Guideline for the Transboundary Movement of Collected Mobile Phones".

2.3.2 Management of Mobile Phones at Collection Points

Because a mobile phone collection system may include a number of methods of collection, as described above, and a variety of collection points, the management responsibilities may be different at each point. In general, the management responsibilities of the collection points should be simple and limited, leaving the more difficult responsibilities for the refurbishment facilities. Still, at every collection point some management and oversight is necessary to preserve the value of the collected used mobile phones, achieve system goals, and ensure compliance with regulatory requirements. For example, a collection point, such as a store, might carry out an preliminary evaluation of used mobile phones, but should not be responsible for any special sorting or processing, such as separation of batteries. But every collection point should properly package used mobile phones for transport to another facility. That packaging should preserve the good working order of used mobile phones. There should then be a regular pick-up and transportation system that will take all of the collected used mobile phones from a collection point to another facility for evaluation and/or testing and labelling. Where practical every collected used mobile phone should be evaluated and/or tested and labelled, to see if it is in working order and could be reused directly, or is suitable for reuse after repair, refurbishment or upgrade. If a used mobile phone cannot be reused, either because it is too badly damaged or too old, it should be transported to a facility that will recover its material value in an environmentally sound way (see the guideline on material recovery and recycling of end-of-life mobile phones for greater detail).

2.3.2.1 In General

a. Protection against theft

Because some used mobile phones have substantial value, there are likely to be attempts to steal used mobile phones that have been deposited but left unsupervised. Because these more valuable phones will help to support a collection system, they should be reasonably protected against theft by using special locked containers.

b. Protection against deposit of other materials

All points within a used mobile phone collection system should maintain good order and good housekeeping. A used mobile phone collection point should not be allowed to become an unsupervised dump. In that regard, it will be important to prevent the deposit of other materials or waste, in addition to used mobile phones and their accessories. Some users will be inclined, either through lack of information or lack of proper care, to deposit other materials at a collection point. This will make the goals of environmentally sound management more difficult and more expensive. Therefore, the public awareness program should emphasize the limits of a collection point, and discourage attempts to leave other materials, and every collection point should have oversight that protects it against deposit of other materials.

All collection containers should be clearly labeled, identifying both acceptable and unacceptable materials. Special containers can also designed to limit the deposit of unwanted materials.

2.3.2.2 Evaluation

The management responsibilities of collection points should be simple, dealing primarily with collection and packaging for transport. Collection points may have some ability to perform a preliminary evaluation, such as deciding whether a used mobile phone can be potentially reused, or is suitable only for material recovery and recycling. A collection point may, but should not be required, to perform any further testing. Any further testing may be too complex and burdensome for a simple collection point, because it requires special training and equipment. A collection point should separate used mobile phones and accessories from other things that may have been returned and should send only the mobile phones and accessories, evaluated as potentially reusable, for evaluation and/or testing, and labelling[13]. After evaluation it is established which phones will be repaired and re-used, and which will be recycled.

If batteries that have been collected are not already inserted firmly into mobile phones, the batteries should be inserted firmly in their original phones, or they should separated and protected against electrical short circuits (see next paragraph).

[13] Try to avoid collection of anything except mobile phones and accessories. See paragraph 2.3.1.3

2.3.2.3 Management of mobile phone batteries

A used mobile phone should be collected with its battery in place in the phone. Depending on the scheme set-up, collection points could also receive old mobile phone batteries and provide financial incentives.

It should be assumed that every battery retains some degree of electrical charge. If a battery is loose, it may come into contact with a conductor (water, or almost any piece of metal) across its terminals, and generate a short circuit and heat. A loose battery is thus a potential fire hazard. To minimize this risk the first point of collection should identify and properly manage any loose batteries. If an initial collection point is sufficiently large, it may want to remove batteries and package them in a way to avoid contact with their terminals (such as by placing a piece of tape across the terminals). Ultimately, within a collection and/or recycling system, all batteries may have to be removed and safely managed to avoid short circuits and fires. In addition, batteries should not be subject to extremes in temperature during storage. Batteries should be sent only to facilities that are specially qualified to recycle or process batteries for material recovery. If such environmentally sound facilities are in another country, then the transboundary movement should be in accordance with the Guideline for the Transboundary Movement of Collected Mobile Phones.

2.3.2.4 Management of accessories

A mobile phone should be collected with its battery charger and accessories that cannot be used[14] with another device. These items should be kept with the collected used mobile phone, if possible, and transport to an evaluation, testing, labelling and refurbishment facility, so that they may be resold as a complete package.

2.3.2.5 Packaging

A collection point should use appropriate packaging material to separate used mobile phones from one another in storage and transportation, to protect them from undue wear, in order to preserve their surface appearance, operational capability and market value for possible reuse. On the other hand, if used mobile phones have been collected without regard to the possibility of reuse, such as in bulk collection of

[14] There are accessories that can be used with many mobile phones, and there is no need to deliver them to a collection point merely because a mobile phone is delivered. Battery chargers are more likely to be unique to specific phones, and manufacturers are concerned with the use of incompatible chargers, with possible damage to batteries and phones, even with possible fires and explosions.

other electronic devices, packaging and separation of individual phones can be disregarded, and shipments of end-of life mobile phones can be made in bulk to facilities for material recovery and recycling. Large bulk shipments of used mobile phones without protective packaging may be an indication that the phones are intended for material recovery and recycling.

2.3.2.6 Storage

A collection point should store used mobile phones in a way that is appropriate for their intended possible reuse, inside a building, to avoid physical damage or exposure to rain, temperature extremes or other weather damage. Used mobile phones that have already been evaluated and/or tested, labelled and are destined for resale should be packaged in a way that is similar to new mobile phones. Used mobile phones that cannot be refurbished and reused, and therefore are intended only for material recovery and recycling, need not be quite so protected. They can be stored in bulk, for example drums, but should also be stored inside a building to avoid contact with water, which will interfere with subsequent material recovery processes.

From the point of view of actual threat to the environment, there is no practical time limit to proper storage of a well-packaged mobile phone. Depending on the size of a collection point, there should be some reasonable time, being mindful of the fact that a mobile phone can rapidly lose its re-use and recycling value[15] in which storage would end with transport to an evaluation and refurbishment facility, or a material recovery and recycling facility. Used mobile phones that are evaluated promptly for possible re-use are more likely to be suitable for re-use.

2.3.2.7 Accounting

All points in a mobile phone collection system should be accountable in a way that is practical and transparent to audit. National law may specifically require accounting of used and/or end-of-life mobile phones. A collection system should at least keep a written running account of the actual number of mobile phones received, currently in storage, and shipped. That is, a simple count should be required[16]. A collection point may identify all received used mobile phones by brand and model

15 See paragraph 2.2.1

16 This may be important to a system finance scheme. If a recycling fee has been charged to a user at the point of original sale, a collection point may need a count of its collected phones to support a claim of a portion of that fee.

number[17]. If used mobile phones are collected in a general bulk WEEE collection system and they are destined only for material recovery and recycling, they could be accounted for by the mass of each shipment. Periodically, the mobile phone collection system should report upon its actions, such as an annual report.

It is particularly important that collected used mobile phones are sent only to properly managed facilities, whether for intermediate accumulation, for evaluation and/or testing and labelling, refurbishment, repair or material recovery and recycling. All shipments from all collection points should be accompanied by proper shipping papers, fully identifying the shipment, the shipper and the destination, and copies of those shipping papers should be maintained by the collection points for review. Depending on the scheme set-up, collection points also handle all the paper work when collected used mobile phones are shipped to environmentally sound recycling facility in another country.

2.3.3 Government Regulation of Collection

For used mobile phone collection, there may be applicable national or regional laws prescribing specific procedures or certain controls. Collection points, refurbishers, and resellers should be sure that they are in compliance with those laws. This is especially true if or when end-of-life or used mobile phones are controlled as hazardous waste. At present, most collection systems are private and voluntary, and are not regulated or not extensively regulated. But they have also not been successful in collecting a large share of used mobile phones. While voluntary campaigns may become more successful as they mature and spread, some governments have decided to speed up the process by making collection of used mobile phones mandatory, both for users and for sellers, and by establishing specific goals for success. The collection systems required by the Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on Waste Electrical and Electronic Equipment (the 'WEEE Directive')[18] have been in place since 13 August 2005, and their implementation should provide substantial information about how a successful collection system can be made to work.

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17 An evaluation and refurbishment facility may make such determination for mobile phones that can be resold.

18 The EU WEEE Directive requires that for the types of waste electronic equipment that includes mobile phones (category 3 of Annex IA), 75% of the weight must be recovered, and 65% must be reused or recycled

Whether a collection system is mandatory or voluntary, it should be publicly identified and transparent. And a collection system that follows sound environmental practices, such as those described in this guidance, may receive recognition and, if required, operating authorization from its competent authorities. That will help users to identify environmentally sound collection points, and avoid sham recyclers.

However, collection points for used mobile phones should not be required to have licenses, so that they can be simple and efficient. A mobile phone collection system needs may be as simple as collection points located in areas of high population density and movement, easily accessible to members of the general public. For example, a shopping area might be the most convenient place to collect used mobile phones. Alternatively regular mail might be the most convenient way of collecting used mobile phones. So a competent authority should consider the need for operating conditions and requirements that are uniquely applicable to used mobile phone collection, balancing the minimal risks to human health and the environment against the inefficiency that heavy governmental regulation may cause. It should be noted that the final destinations for end-of-life mobile phones – such as facilities for material recovery and recycling – can be and are regulated separately from collection systems.

2.3.4 Finance of Collection Systems

All of the collection systems described above must be financed in some way. At present, many collection systems are financed, in whole or in part, by voluntary efforts and contributions of users, businesses, sellers and manufacturers, as well as by the recovered value of the collected used mobile phones. The greatest value is achieved when a mobile phone that has many features and is not too old can be resold as a working mobile phone. Some of these used mobile phones have a sufficiently high resale value to support the costs of collecting many more. Even if the used mobile phones cannot be reused, they may have value once they are collected in very large numbers. Mobile phones typically contain a small amount of gold, palladium and silver, and companies that specialize in recovery of these metals (see guideline of the MPPI project 3.1 on material recovery and recycling of end-of-life mobile phones) will pay for bulk shipments of end-of-life mobile phones.

In establishing a used mobile phone collection system the long term financial planning should consider related costs such as: start-up and on-going promotion, record keeping, disposal of non-target materials, accounting transparency, payments to partners or agencies, regulatory compliance or licensing fees, etc.

Although some collection systems are self-financing it is possible that the inherent value of used mobile phones donated could not be counted on to fully fund that system[19]. This could be due to the following:

a) the value of used mobile phones in working order donated to a collection scheme is not sufficient;
b) newer mobile phones are manufactured with reduced amounts of gold, palladium and silver reducing the intrinsic value of end-of-life mobile phones for material recycling.

Therefore, additional funds from different stakeholders may be needed to support environmentally sound collection and management of used mobile phones. For instance additional funds can be raised by increased charges to users, at the point of new mobile phone purchase. The collectors of those increased charges, i.e. the manufacturers and/or telecom operators, will then assume the financial obligations for the collection and management of their products, such as under an Extended Producer Responsibility (EPR) scheme. An EPR scheme offers manufacturers incentives to minimize post-consumer costs through both design improvements and efficient management.[20]

The costs of a collection scheme can also be funded through a direct and transparent pre-paid recovery fee, Advanced Recycling Fee (ARF), or Advanced Disposal Fee (ADF), collected at the point of original sale, and allocated exclusively for support of a collection scheme. A deposit, refundable in whole or in part upon return to a collection point, may also be used to establish a standing fund allocated exclusively

19 In the context of the OECD Extended Producer Responsibility program, it was recognized that the producer has a significant financial and physical responsibility to reduce the overall cost of collection schemes. Fees placed on the product that are differentiated on the basis of materials, chemicals and recycling/recovery costs, favor design for the environment changes upstream. Flat product fees would most likely have an effect on producers that hold a significant market share for the product in a particular country and thus, raise their costs and impact profits.

20 There are numerous EPR schemes that may serve to guide a mobile phone initiative. See, for example, Product Stewardship Australia, by the Consumer Electronics Suppliers Association, August 2004; OECD (2001). "Extended Producer Responsibility. A Guidance Manual for Governments." Organization for Economic Co-operation and Development, Paris.

for collection costs. If money is collected, either as a pre-paid fee or as a refundable deposit, there must also be a financial mechanism established to hold and manage this money and distribute it to the used mobile phone collection and management system.

The establishment of a financial mechanism will require the establishment of rules of governance and accounts, appointment of trustees, financial audits, etc. It will also need to be transparent to all concerned persons, including governments and the public. This Guideline will not presume to direct a specific financial mechanism for support of collection systems. Nevertheless, it should be noted that any EPR system or financial mechanism should also ensure the environmentally sound management of those used mobile phones. This is also addressed in other guidelines that deal with the refurbishment of used mobile phones (project 1.1) and material recovery and recycling of end-of-life mobile phones (project 3.1).

If a direct and transparent fee is charged to the original buyer of a mobile phone, and the used phone is subsequently exported for reuse, it may be necessary that some portion of that fee will need to follow that mobile phone to an importing country to provide for its environmentally sound management at its end-of-life there.

In some developing countries and countries with economies in transition existing collection is financed on a voluntary basis. Furthermore, if funds are generated from such collection schemes, these funds are sometimes donated to local environmental projects led by NGO.

2.4 Summary on collection of used mobile phones for reuse or end-of-life mobile phones for material recovery and recycling

In this chapter all possible options for collection of used mobile phones for reuse, including repair, refurbishment or upgrading and end-of-life mobile phones for material recovery and recycling are summarised in an explanatory flow diagram. The diagram illustrates all possible options/operations carried out on used mobile phones from the "User" to beginning of the "Re-use", "Material Recovery" steps.

A wide range of collection systems may operate, as illustrated up to the point of storage, being in one country under national jurisdiction. The potential classification

of used mobile phones as wastes or non-wastes (products) and control (or not) of such used mobile phones and facilities shown in these steps would therefore depend on domestic legislation.

Following storage, the used mobile phones may enter a facility for evaluation and/or testing and labelling in the exporting or importing country. It is likely that not all countries will have such facilities. After the "evaluation and/or testing and labelling" step mobile phones that can be reused directly may go for re-use. Used mobile phones that require refurbishment or repair may go to a refurbishment or repair facility. Used mobile phones, that are not working and are not repairable should be considered as end-of-life mobile phones, and should go for material recovery and recycling.

2.5 Recommendations

2.5.1 Users of mobile phones should take efficiency into account in deciding whether to discard an old phone in favour of a new one.

2.5.2 Users should avoid depositing an end-of-life mobile phone into a municipal waste collection system, which will result in the phone being landfilled or incinerated. Telecom operators and distributors can make a proportional contribution to raise users' awareness by informing and educating customers about potential environmental impacts of equipments and to ensure that new and used mobile phones and accessories are responsibly managed throughout their life cycle.

2.5.3 As reuse or recycling value may drop quickly users should be encouraged to avoid storing, or setting aside, an unneeded mobile phone, and to promptly deliver it to a collection system. However, if a collection system is not available or collection point is not convenient, a user should hold a mobile phone in storage until the next opportunity arises to deliver it to a collection point.

2.5.4 A used mobile phone collection system should have collection points conveniently located for users so that they can bring their mobile phone to such collection points. Furthermore, the collection system should be free of charge for users.

2.5.5 Collection of used mobile phones through telecom operator's, retailers, and /or manufacturer's distribution channels should be a key element of an efficient collection system. Other collection methods could also be considered. In the case of collection by mail, postage may also be paid by the collection system, especially where a larger number of used mobile phones are being sent in a shipping box. Collection systems will operate most efficiently when integrated with existing product collection and distribution frameworks.

2.5.6 Collection points must be the initial part of a collection system that also includes appropriate facilities, where evaluation and/or testing and labelling can take place, to decide if used mobile phones, destined for reuse, are in working order and can be directly reused, require repair, refurbishment, or upgrading prior to reuse, or are to be sent to environmentally sound material recovery and recycling. In situations where collection and evaluation are two different activities, collected used mobile phones

should be sent to a central collection point where they are evaluated for recycling or potential reuse.

2.5.7 In general, the management responsibilities of the collection points should be simple and limited in scope, dealing only with collection, or may have some ability to perform preliminary evaluation to determine if the mobile phone is potentially reusable. Usually collection facilities should not be involved in further testing or processing, leaving the more difficult responsibilities for the refurbishment or other facilities such as a central collection point.

2.5.8 In addition to collection points for consumers, it is important to consider collection from the repair sector, both formal and informal, to ensure that parts and mobile phone scrap does not, end up in landfills. Such collection schemes can be undertaken by paying a price per kilo of scrap collected and is likely to fund itself in recoverable commodities.

2.5.9 Depending on the capacity available in particular countries and logistics involved in managing used phones and accessories, a separate collection of used mobile phones is recommended in order to preserve working characteristics and resale value of those collected.

2.5.10 Depending on the capacity available in particular countries and logistics involved in managing used phones and accessories, used mobile phones should be collected separately from other equipment if they are to be shipped for reuse, (including reuse after refurbishment, repair or upgrading).

2.5.11 A collection point should ensure security of the collected phones. Where the collection point conducts a preliminary evaluation of potential for reuse, appropriate packaging material should be used to separate used mobile phones from one another while in storage and during transportation, to protect them from undue wear, in order to preserve their surface appearance, operational capability and market value for possible reuse. The type of material would depend on the space availability at the point of sale.

2.5.12 A collection point should store used mobile phones in a way that is appropriate for their intended possible reuse, inside a building, to avoid physical damage to the mobile phones as a result of exposure to rain or other weather conditions.

2.5.13 Used mobile phones should be safely stored at each collection point until a sufficient amount is accumulated for transport to another collection point or to an evaluation and/or refurbishment facility. There should then be a regular pick-up and transportation system that will take all of the collected mobile phones from a collection point to another facility for evaluation and/or testing. The timing of pick-ups and transportation should be mindful of (i) the cost involved in logistics, both financially and environmentally and (ii) the potential rapid loss in value during delays. Collection of used mobile phones should, where possible, operate within existing new product delivery and collection schedules.

2.5.14 Used mobile phones, after preliminary evaluation, that are destined for reuse should be packaged in a way that protects their integrity.

2.5.15 Whenever possible used mobile phones should be collected with their batteries, chargers and accessories. However, it should be noted that in some markets, phones, batteries and other accessories may be returned separately. It should be assumed that every battery retains some degree of electrical charge. A loose battery is thus a potential fire hazard. So, at the first point of collection, any loose batteries should be identified and properly managed. If the batteries are removed, they should be packaged in a way to avoid contact with their terminals, to avoid short circuits and fires. Batteries should be sent only to facilities that are specially qualified to recycle or process batteries for material recovery and should be protected against extremes of temperature. Care should be taken to ensure that the transportation of batteries complies with all applicable regulations or courier requirements i.e. IATA regulations for the Handling of Lithium Metal and Lithium Ion batteries.

2.5.16 Whenever possible used mobile phones should be collected with their battery chargers and accessories, even if the battery chargers and accessories are not to be reused. Battery chargers are more likely to be unique to specific phones, and should not be reused with other mobile phone types due to possible damage to batteries and phones.

2.5.17 Collection systems for used mobile phones should be accountable in a way that is practical and transparent to audit. This may require keeping a written record of the actual number of used mobile phones received, currently in storage, and shipped. Information about the reuse, recycling and final disposal of used mobile phones and accessories are usually obtained directly from recycling and refurbishment companies.

2.5.18 While every effort should be made to collect used mobile phones separately to be re-used to the maximum extent practicable, if they are collected in bulk for material recovery and recycling, they could be accounted for by the total mass of each shipment.

2.5.19 The collected used mobile phones should only be sent to environmentally sound facilities, whether for intermediate accumulation, refurbishment, and repair or material recovery and recycling.

2.5.20 Governments and other stakeholders should consider actions that could be taken to promote successful collection schemes. It is important for all stakeholders to play their role in addressing used mobile phones and accessories.

2.5.21 Competent authorities should consider the need for operating conditions and requirements that are uniquely applicable to used mobile phone collection systems, balancing any risks to human health and the environment against any perceived need for oversight and accountability.

2.5.22 Consideration should be given to provide incentives to users to participate in a used mobile phone collection system.

2.5.23 A seller of new mobile phones should consider offering appropriate incentives for collection of used mobile phones. When needed, a discount on the purchase of a new phone, free air time, free SMS are some of the possible incentives to be considered.

2.5.24 Manufacturers, telecom operators, and distributors should consider the possibility of sharing the physical and/or financial obligations for the collection and management of used mobile phones, as part of Extended Producer Responsibility systems. This is

particularly necessary as soon as possible in countries where the legislation and infrastructure for collection of used mobile phones is lacking.

2.5.25 Any financial mechanism established to hold and manage money collected, either as a pre-paid fee, Advanced Recycling Fee (ARF), Advanced Disposal Fee (ADF), or as a refundable deposit, should be transparent to all concerned persons, including governments and the public.

2.5.26 If a direct and transparent fee is charged to the original buyer of a mobile phone, and the used mobile phone is exported for reuse, it may be necessary that some portion of that fee will need to follow the used mobile phone to an importing country to provide for its environmentally sound management at its end-of-life there.

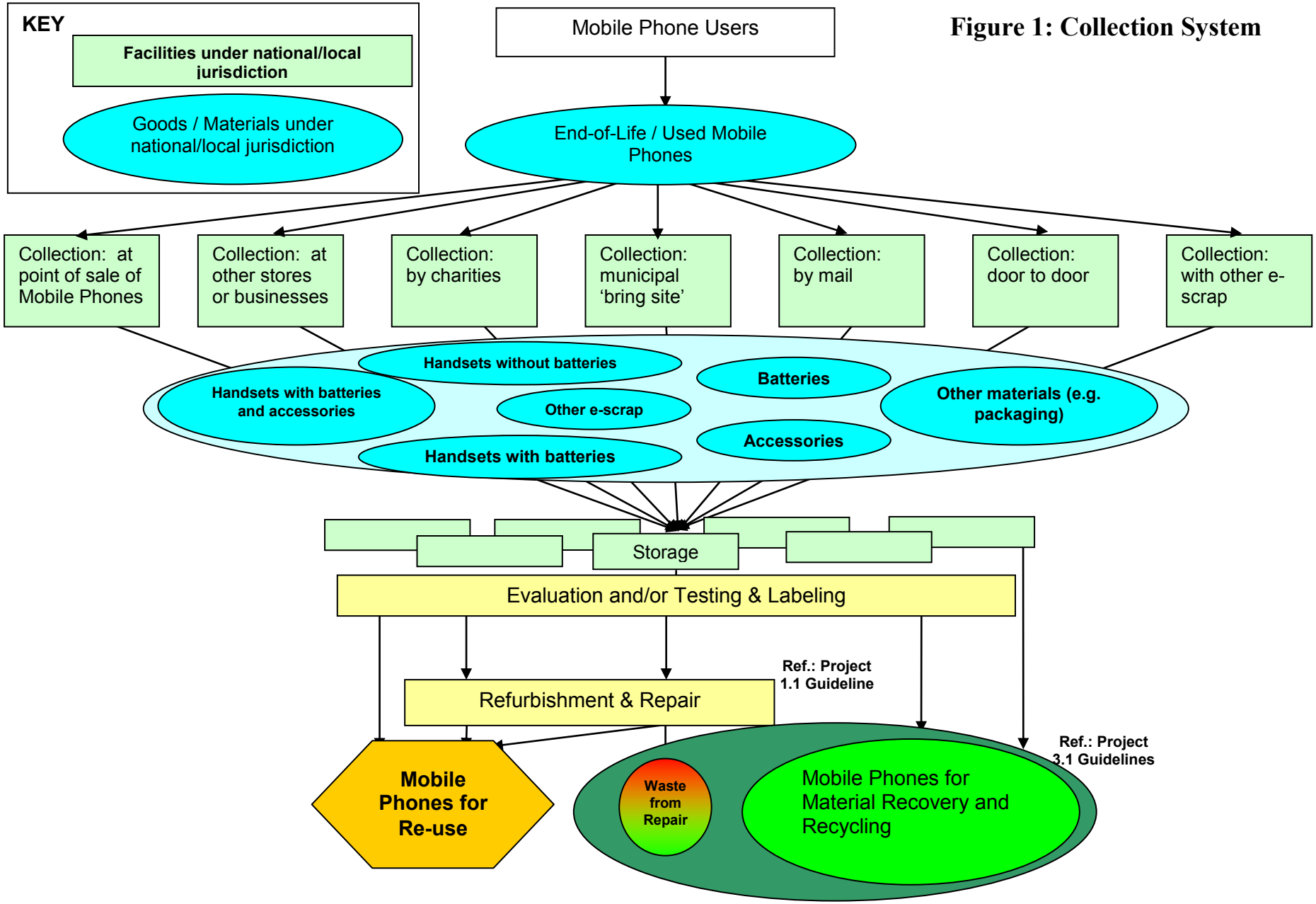

Figure 1: Collection System

Annex I

Worldwide Summary of Some Existing Recycling Systems

The following table summarises key features of recycling systems operating in 33 countries. While the majority are industry sponsored, an increasing number of independent systems are being established that also act as a source of funds for charities.

Country	Description	Handset	Battery	Further information
Australia	The Australian Mobile Telecommunications Association (AMTA) voluntarily developed the Mobile Phone Industry Recycling Program following an initial NSW trial of battery recycling in early 1999. The program is funded by a levy of approximately AU$0.40 on the sale of new mobile handsets from participating manufacturers and carriers.	Yes	Yes	http://www.mobilemuster.com.au
Austria	T-Mobile customers have been able to return their old mobiles free of charge to T-Mobile shops since 2001, and can continue to do so. Umweltdienst Burgenland GmbH, together with Burgenland's Schulungszentrum (Training Centre) will be responsible for recycling all old mobiles handed in toT-Mobile shops within the context of a civic project to integrate the long-term unemployed.	yes	yes	http://www.t-mobile.at/unternehmen/presse/pressreleases/pressreleases_2004/2004_03_04/
Canada	Call2Recycle Program linked with the RBRC(Rechargeable Battery Recycling Corporation) organisation in the USA. "Recycle, Reuse, Redial" is a Bell Mobility National program where. Canadian just have to visit any Bell World™ store in the provinces of Quebec, Ontario, Alberta and British Columbia and drop off their old cellular phone and used rechargeable batteries. Bell Mobility's Recycle, Reuse, Redial program also accepts for recycling all cellular phone accessories, batteries, as well as Personal Digital Assistants (PDAs), pagers and even cordless phones. The Bell Blue Box program (formerly known as the Mobile Take-Back program) is simple. Return your used mobile phones and in turn Bell will donate $1 to WWF-Canada for each unit collected.	 Yes Yes	Yes Yes Yes	www.call2recycle.org www.bce.ca http://www.bell.ca/support/PrsCSrvWIs_Clp_Recycle.page
Czech Republic	In the Czech Republic a mobile phone collective system is in place since 1st October 2005 (Law Nr. 352/2005 Sb.). Mobile operators like T-Mobile Czech Republic are members of the installed REMA System.	Yes		1. Members pay charges to the Collective system (REMA) according the number of mobile phones marketed. 2. REMA Collective System secures all of issues with collecting mobile phones, separating, re-using of parts, etc. 3. REMA Collective system has been arranging the charges of this service according to profits of the scheme. 4. The Ministry of the Environment supervises the system.
Belgium	The mobile operator Mobistar has launched the first Belgian Mobile Phone Recycling Scheme with Fonebak/Shields Environmental.	Yes	Yes	http://www.mobistar.be/en/corporate/press/press_releases/press_2003_07_en.html
China	A Nokia Take Back scheme is operating (see Singapore).	Yes	Yes	http://www.nokia.com/aboutnokia/env_cases/recycling_AP.html
Egypt	A Vodafone recycling systems is operating in stores in Cairo	Yes	Yes	
Finland	Nokia phones can be returned to service centres.	Yes	Yes	http://www.nokia.com/aboutnokia/environment/endoflife_practices.html
France	Fonebak launched numerous retail take back systems in France around collection points located at hypermarkets and service provider points of sale.	Yes	Yes	http://www.sfrcegetel.fr/data/file/1236041953427203ad74adb.pdf
Germany	XS Tronix launched a scheme based around	Yes	Yes	http://www.xstronix.com/english.htm

Country	Description	Handset	Battery	Further information
	collection points and envelopes Nokia is running a battery take back scheme. Electrical and Electronic Equipment Act: Producers are obliged to collect in a timely manner containers (WEEE) made available for collection from 24.3.2006. All four German operators (T-Mobile, Vodafone, O^2 and E–Plus) have take-back and recycling systems for mobile handsets since 2003. Every importer or manufacturer of batteries is responsible for the professional disposal of the batteries he brings into the German market. T-Mobile takes part in a Foundation for a Joint Battery Collection System and pays a moderate fee. A Vodafone recycling scheme is running in all stores with Vodafone points as an incentive to customers to return phones and €5 donated to regional charities for every handset returned.	 ? Yes Yes	 Yes Yes. Yes	 http://www.nokia.com/aboutnokia/env_cases/battery_takeback.html http://www.bmu.de/english/waste_management/acts_and_ordinances/drafts/doc/6554.php http://www.t-mobile.de/recycling/1,9642,13746-_,00.html http://www.grs-batterien.de/engl/index.php?site=manufacturers/intro&siteID=3 http://www.vodafone.de/unternehmen/umwelt/42108.html
Greece	A Vodafone recycling scheme is running in all stores with proceeds donated to Clean Up Greece.	Yes	Yes	http://www.vodafone.gr/live1/page.jsp?pid=0106050303&vars=0000000000
Hong Kong	The Hong Kong government proposed an industry funded recycling scheme in 2001. The scheme would be paid for out of a percentage of sales from mobile phone retailers and network operators. It has been estimated the fund would need at most $ 1 million a year. A Nokia Take Back scheme is operating (see Singapore).	Yes	Yes	http://www.info.gov.hk/wrc/newsltr/issue5/7/idx-7.htm http://www.nokia.com/aboutnokia/env_cases/recycling_AP.html
Hungary	The Hungarian Government has adopted the EU WEEE directives and the related national regulations have to be executed by the companies since January 2005. A Vodafone recycling scheme is operating in all stores, phones & accessories are taken free of charge.	Yes Yes	Yes Yes	In line with the regulations, T-Mobile Hungary Co. Ltd. has extended its collection and recycling system existing since 1997 regarding batteries also to the mobile handsets. All the fifty T-Mobile Sales and Customer Service Centers and more than 200 indirect sales partners have been involved in preparation of the collection scheme. The 100% recycling ratio is ensured through a partner, an internationally recognized waste collection and recycling company. Shops take free of charge the old mobile handsets returned to them for recycling.
India	A Nokia Take Back scheme is operating (see Singapore)	Yes	Yes	http://www.nokia.com/aboutnokia/env_cases/recycling_AP.html
Indonesia	A Nokia Take Back scheme is operating (see Singapore)	Yes	Yes	http://www.nokia.com/aboutnokia/env_cases/recycling_AP.html
Ireland	A Vodafone recycling scheme is operating in all stores and also involves some supermarkets and school projects. Proceeds from the scheme go to Conservation Volunteers Ireland Nature Fund Digifone was recently involved in the launch of the Oxfam Bring Ring appeal (see UK) in Ireland. Meteor launched an in-store recycling scheme in July 2001. Eurosource Europe has launched a web based scheme using Freepost envelopes. Fonebak launched a retail take back scheme with XXX.	Yes Yes	Yes Yes	 http://www.vodafone.ie/aboutus/csr/environment/recycling/index.jsp http://www.oxfam.org.uk/donate/recycle.html http://www.meteor.ie/about/press.html http://www.recyclingappeal.com/ireland/index.htm
Italy	A Vodafone recycling scheme is operating in all stores.	Yes	Yes	http://www.vodafone.it/vodafone/trilogy/jsp/homePage.do?tabName=HOME+VODAFONE&ty_skip_md=true
Japan	DoCoMo is operating a recycling scheme using its retail outlets act as collection points. In the fiscal year ended March 31, 2001, DoCoMo collected a total of approximately 5.6 million handsets, 4.4 million batteries, and 500,000 units of chargers and other peripherals. The recycling rate for handsets and other products collected was virtually 100%. A Vodafone recycling scheme is operating in all stores. Proceeds from recycling go to WWF.	Yes Yes	Yes Yes	http://www.nttdocomo.co.jp/corporate/eco/report/english/implemen/index_02.html

Country	Description	Handset	Battery	Further information
Malaysia	A Nokia Take Back scheme is operating (see Singapore).	Yes	Yes	http://www.nokia.com/aboutnokia/env_cases/recycling_AP.html
Malta	Vodafone Malta has a scheme operating with Fonebak. Proceeds from the scheme go to YMCA Malta.	Yes	Yes	http://www.fonebak.com/media/news.html
Netherlands	A Vodafone recycling scheme is operating in all stores.	Yes	Yes	
New Zealand	A Nokia Take Back scheme is operating (see Singapore) Telecom New Zealand run recycling scheme. A Vodafone recycling scheme is operating in all stores in New Zealand. $5 free air time is given as an incentive to return the handset and $5 donated to charity for every phone returned.	Yes Yes	Yes Yes	http://www.nokia.com/aboutnokia/env_cases/recycling_AP.html http://www.telecom.co.nz/content/0,2502,201749-1519,00.html http://www.vodafone.co.nz/aboutus/12.4.4.1_mobile_recycling.jsp?item=global&subitem=recycling
Portugal	A Vodafone recycling scheme is operating in all stores. An incentive of €20 for 3G handsets and €10 for other handsets returned is given to customers. TMN customers have been able to return their old mobile phones, batteries and accessories free of charge to TMN stores, for recycling. Since December 2003, TMN promotes the delivery of used mobile phones to its stores against a discount on the purchase of a new phone. This used mobile phones are then refurnished and reused, which extends the life time of the phones avoiding a premature generation of WEEE	Yes Yes	Yes Yes	http://www.vodafone.pt/main/A+Vodafone/PT/ResponsabilidadeSocial/Ambiente/Aspectosambientais.htm http://www.tmn.pt/empresa/politica_ambiental/reciclagem.shtml
Romania	Orange is setting up a pilot handset recycling system	Yes	Yes	
Senegal	A mobile phone take back system has been established by France Telecom, endorsed by GeSI and UNEP and is operating in Dakar. It will be extended to other main cities in Senegal.	Yes	Yes	
Slovakia	Orange	Yes	Yes	
Spain	Spain is trying to reach a target of **recycling** 100 tonnes of **mobile phones** by the end of 2002. In one initiative they have a "muncher bus" visiting every large town in Spain, asking the public to take unwanted phones to it. A Vodafone recycling scheme is operating in all stores.	Yes? Yes	Yes? Yes	http://perc.ca/PEN/2001-04/briefs.html http://www.vodafone.es/Vodafone/InformeCorporativo/InformeCorporativoSin/0,3175,20014,00.html
Sweden	In Sweden, Ericsson is part of an inter-industry system for recycling mobile telephones. (May be related to ECTEL pilot - see UK).	Yes	Yes	http://www.ericsson.com/sustainability/at_the_end.shtml
Switzerland	The Swiss Ordinance on the return, the taking-back and the disposal of electrical and electronic appliances (ORDEE) stipulates: - that retailers, manufacturers and importers to mandatory take back WEEE they sell, manufacture or import, the return of E-Waste is free of charge for private persons, industry and commerce. - Consumers must mandatory bring back WEEE. The financing system for the take back and recycling of the WEEE is based on a voluntary agreement. It works with a prepaid recycling fee (PRF). Also the recycling of "historical waste" is financed by the PRF. The collection and financing system is run by the Swiss Association of Information, Communication and Organisation Technology (SWICO) and covers a range of products	Yes	Yes	The ORDEE is available in German, French, Italian and English language: http://www.umwelt-schweiz.ch/buwal/de/fachgebiete/fg_abfall/abfallwegweiser/e-schrott/index.html http://www.swico.ch/en/adre_produkteliste.asp http://www.ericsson.com/sustainability/at_the_end.shtml

Country	Description	Handset	Battery	Further information
	including phones. Orange has an operating system operating in all stores where working phones become part of a process to refurbish phones for reuse			
Taiwan	A Nokia Take Back scheme is operating (see Singapore). Taiwan EPA signed"The Memorandum for Recycling Waste Mobile Communication Products"with 15 mobile phone service carriers and manufacturers in December 2008. The mobile phone industry agreed to collect and recycle waste mobile phones and accessories free of charge from the public at around 2000 sales outlets nationwide from January 15, 2009.	Yes Yes	Yes Yes	http://www.nokia.com/aboutnokia/env_cases/recycling_AP.html http://ivy2.epa.gov.tw/mobile/link.htm
Thailand	A Nokia Take Back scheme is operating (see Singapore).	Yes	Yes	http://www.nokia.com/aboutnokia/env_cases/recycling_AP.html
United Kingdom (UK)	The industry scheme is called MobileTake-Back - UK was re-launched in May 1999. It grew from a 1997 pilot project carried out by the European Trade Organisation for the Telecommunication and Professional Electronics Industry (ECTEL[21]) in Sweden and the UK. Recently, various charity groups have established a number of collection systems that provide a revenue source. An example is that of Oxfam with each phone worth on average £5 to the organisation. Tesco (supermarket chain) has launched a recycling scheme with XS Tronix (see Germany) Eurosource Europe has launched a web based scheme using F O2 run a collecting scheme with Fonebak by encouraging customers and employees to hand in phones for re-use or recycling, either by depositing them in boxes in our shops and offices or by freepost. Fonebak has launched a mobile phone recycling initiative in aid of Whizz-Kidz with Argos, one of the UK's leading multi-channel retailers.reepost envelopes. A scheme, 'Mobile Takeback Forum (MTF)', was set up by the phone manufacturers and the mobile operators. A Vodafone recycling scheme is operating in all stores. Proceeds go to the National Autistic Society. A scheme for corporate customers is also offered. An Orange recycling system operates in all stores. A system for corporate customers is offered Regenersis - **Frequently Asked Questions about collecting handsets (instead of making your campaign a success)** **Vodafone-reusing and Recycling Mobile phones**	Yes Yes Yes Yes Yes	Yes Yes Yes Yes ---	http://www.mobiletakeback.co.uk/ http://www.oxfam.org.uk/donate/recycle.html http://www.isistelecom.com/bringbring.shtml http://www.cellular-rec.co.uk/ http://www.leics.gov.uk/p_t/waste_management/sites.htm http://www.tesco.com/everylittlehelps/dobEnvironmentDetail.htm - r http://www.recyclingappeal.com/uk/index.htm http://www.o2.com/cr2004/report/report_environment.asp http://www.fonebak.com/media/news.html http://www.mobiletakeback.co.uk/ http://www.mtf.org.uk/ http://online.vodafone.co.uk/dispatch/Portal/appmanager/vodafone/wrp?_nfpb=true&_pageLabel=Page_BOS_MainContent&pageID=AV_0592 http://www.fonebak.com/faqs%20handsets.aspx http://www.vodafone.com/start/responsibility/environment/reuse___recycling/reusing_and_recycling.html
United States of America (USA)	The CTIA supports several programs using donated phones via its Wireless Foundation. These include: Wireless. The New Recyclable Program CALL to Protect (Domestic violence victims). ClassLink (supporting schools) Communities on Phone Patrol (citizen watch). Return Outreach Initiative (donations) PhoneRaising (fund raising). Other recycling/charity systems are run by: Collective Good	Yes	Yes	http://www.wirelessfoundation.org/index.htm http://www.donateaphone.com/ http://www.wirelessfoundation.org/12give/ http://www.recyclewirelessphones.com http://www.collectivegood.com/ http://www.verizonwireless.com/jsp/aboutus/community_service/hopeline_fact.jsp http://rbrc.org/

21 Now part of EICTA - European Information, Communications and Consumer Electronics Technology Industry Association, see http://www.eicta.org/.

Country	Description	Handset	Battery	Further information
	Verizon Wireless HopeLine. Rechargeable Battery Recycling Corporation. ReCellular Sprint Project Connect T-Mobile March of Dimes			www.wirelessrecycling.com http://www.sprint.com/community/communities_across/index.html http://www.t-mobile.com/company/recycling/default.asp http://www.marchofdimes.com/howtohelp/15648_7983.asp
	California department of Toxic Substances Control-Cell Phone recycling	Yes	No	http://www.dtsc.ca.gov/HazardousWaste/UniversalWaste/CellPhoneRecycle.cfm
	Natural resources Council of Maine-Act to Promote Recycling of Cellular Telephones	Yes	No	http://www.nrcm.org/news_detail.asp?news=1465
	Department of Environmental Conservation-Recycling Cell phones	Yes	Yes	http://www.dec.ny.gov/chemical/8818.html
	CTIA-**CALL TO PROTECT®** campaign collects wireless phones to benefit survivors of domestic violence.	--	--	http://www.wirelessfoundation.org/CallToProtect/index.cfm
	T-Mobile Handset Recycling	--	--	http://www.t-mobile.com/Company/Community.aspx?tp=Abt_Tab_HandsetRecycling
	ReCellular - Solutions for the collection, reuse and recycling of used mobile phones and personal electronics.	Yes	Yes	http://www.recellular.com/
	Stewards Recyclers (Basel Action Network Program includes mobile phone recyclers that guarantee no export of hazardous materials to developing countries)			www.e-Stewards.org

Annex II

Glossary of Terms

Note: *These terms were developed for the purpose of the overall Guidance Document and individual project guidelines, and should not be considered as being legally binding, or that these terms have been agreed to internationally.Their purpose is to assist readers to better understand this Guideline and the overall Guidance Document. The processes of dismantling, refurbishment or reconditioning and repairing may entail the removal of batteries, electronic components, printed wiring boards or other items which should be managed in an environmentally sound manner and in accordance with the Basel Convention when destined for transboundary movement.*

Basel Convention: UNEP's Convention of March 22, 1989 on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, which came into force in 1992.

Components: parts or items removed from used mobile phones which may include batteries, electronic components, circuit boards, keyboards, displays, housing or other parts or items

DfE: Design for Environment; meaning a product has been designed to reduce environmental impact throughout its whole life cycle.

Dismantling: (manual) separation of components/constituents in a way, that recycling, refurbishment or reuse is possible.

Disposal: means any operations specified in Annex IV of the Basel Convention.

EMC: Electromagnetic compatibility (EMC) means the ability of equipment to function satisfactorily in its electromagnetic environment without either introducing intolerable electromagnetic disturbances to other equipment in that environment, or being adversely affected by the emission of other electrical equipment.

EMF : Electromagnetic Fields (EMF) are a combination of both electric and magnetic fields. EMF occurs naturally (light is a natural form of EMF) as well as a result of human invention. Nearly all electrical and electronic devices emit some type of EMF. Safety standards are applicable, but these may vary from country to country.

Eco-efficiency: producing economically valuable goods and services with less energy and fewer resources while reducing the environmental impact (less waste and less pollution) of their production. In other words eco-efficiency means producing more with less. It may include, for example, producing goods through recycling when that is more efficient, and more environmentally friendly, than production of the same goods with primary resources and methods.

End-of-life mobile phone: a mobile phone that is no longer suitable for use, and which is intended for disassembly and recovery of spare parts or is destined for material recovery and recycling or final disposal. It also includes off-specification mobile phones which have been sent for material recovery and recycling or final disposal

Environmentally Sound management: taking all practicable steps to ensure that used and/or end-of-life products, or wastes are managed in a manner which will protect human health and the environment.

Evaluation: the process by which collected used mobile phones are assessed to determine whether or not they are likely to be suitable for re-use. This assessment may include:
a) A visual check
b) A 'power-on' check
c) A check that the model is included / not included on a list of handsets provided by the refurbishment company.

Hydrometallurgical processing: processing of metals in cyanide, and/or strong acids such as aqua regia, nitric acid, sulphuric acid, and hydrochloric acid.

Incineration: a thermal treatment technology by which municipal wastes, industrial wastes, sludges or residues are burned or destroyed at temperatures ranging from 1000*C to more than 1200*C (high temperature incineration used mainly to incinerate hazardous wastes) in the presence of oxygen resulting from the rapid oxidation of substances. Most of them have an air pollution control equipment to ensure the emission levels meet the requirements prescribed by the regulatory authorities.

Integrated copper smelter: a facility, or related facilities in the same country under the same ownership and control, that melts metal concentrates and complex secondary materials that contain - among others - copper and precious metals, using controlled, multi-step processes to recycle and refine copper, precious metals and multiple other metals from managed product streams.

Labelling: the process by which individual or batches of mobile phones are marked to designate their status according to the guideline developed under the project 2.1.

Landfilling: the placement of waste in, or on top of ground containments, which is then generally covered with soil. Engineered landfills are disposal sites which are selected and designed to minimize the chance of release of hazardous substances into the environment.

Leachate: contaminated water or liquids resulting from the contact of rain, surface and ground waters with waste in a landfill.

Life cycle management: holistic way to consider the environmental issues associated with a substance, product or process from resource utilization, through manufacture, transportation, distribution, use, to waste management and disposal of residues from treatment or recycling operations.

Material Recovery: means relevant operations specified in Annex IVB of the Basel Convention.

Mechanical Separation: mechanical means to separate a mobile phone into various components or materials.

Mobile phone (sometimes called a cellular phone or cell phone): portable terminal equipment used for communication and connecting to a fixed telecommunications network

via a radio interface (taken from International Telecommunication Union K.49 (00), 3.1). Modern mobile phones can receive, transmit and store: voice, data, and video.

Printed wiring board: also called a printed circuit board, consisting of integrated chips, resistors, capacitors and wires.

Pyrometallurgical processing: thermal processing of metals and ores, including roasting and smelting, remelting and refining.

RoHS: Directive of the European Parliament and the Council on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment.

RF: describes electromagnetic energy transmitted through radio and microwaves.

Recycling: means relevant operations specified in Annex IVB of the Basel Convention.

Refurbishment or Reconditioning: the process for creating a refurbished or reconditioned mobile phone.

Refurbished or reconditioned mobile phone: a mobile phone that has undergone refurbishment or reconditioning, returning it to a satisfactory working condition fully functional for its intended reuse and meeting applicable technical performance standards and regulatory requirements including the original product's rated operational characteristics. The intended reuse must include full telephony capability.

Repairing: a process of only fixing a specified fault or series of faults in a mobile phone.

Reuse: a process of using again a used mobile phone or a functional component from a used mobile phone, possibly after repair, refurbishment or upgrading.

SAR: stands for Specific Absorption Rate, which is the amount of Radio Frequency (RF) absorbed by the body. The unit of measurement is in Watts per Kilogram (W/Kg). SAR is determined, in laboratory conditions, at the highest certified power level of the mobile phone. When in use, the actual SAR can be well below this value due to automatic power control by the mobile phone. The SAR of each model of mobile phone is measured as part of the safety standard compliance process.

Segregation: sorting out mobile phones from other (electronic) wastes for possible reuse or for treatment in specific recycling processes.

Separation: removing certain components/constituents (e.g. batteries) or materials from a mobile phone by manual or mechanical means.

Transport of Dangerous Goods: UN Recommendations on the transport of dangerous goods which deals with classification, placarding, labeling, record keeping, etc. to protect public safety during transportation.

Treatment: means any activity after the end-of-life mobile phone has been handed over to a facility for disassembly, shredding, recovery, recycling or preparation for disposal.

Upgrading: the process by which used mobile phones are modified by the addition of the latest software or hardware.

Used Mobile Phone: a mobile phone, which its owner does not intend to use any longer.

WEEE Directive: Directive of the European Parliament and the Council on Waste Electrical and Electronic Equipment.

Wastes: substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law.