UNITED NATIONS

UNEP

BC

UNEP/CHW.14/5/Add.1

Distr.: General
20 June 2019

Original: English

BASEL CONVENTION

Conference of the Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal
Fourteenth meeting
Geneva, 29 April–10 May 2019
Item 4 (a) (iii) of the provisional agenda*

Matters related to the implementation of the Convention: strategic issues: development of guidelines for environmentally sound management

Development of guidelines for environmentally sound management

Addendum

Practical manuals on extended producer responsibility and financing systems for environmentally sound management

Note by the Secretariat

At its fourteenth meeting, the Conference of the Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, in decision BC-14/3 on developing guidelines for environmentally sound management, adopted practical manuals on extended producer responsibility and financing systems for environmentally sound management. The practical manuals referred to above were prepared by the expert working group on environmentally sound management, taking into account comments received from Parties and others. The text of the final version of the practical manuals, as adopted, is set out in the annex to the present note. The present note, including its annex, has not been formally edited.

* UNEP/CHW.14/1.

Annex I

Practical manual on Extended Producer Responsibility

I. Introduction

1. This manual provides stakeholders with general guidance on the implementation of extended producer responsibility (EPR). It includes a list of terminology used in the manual; general considerations; goals and objectives; criteria for possible products; key elements to be considered; a strategy to formulate policy; as well as challenges in the implementation of EPR. Additionally, practical examples are available online.

2. This manual is aimed at all groups of stakeholders, especially governmental authorities working on national policies and regulations on EPR.

3. One of several needs in creating ESM instruments is sufficient financing. Investments in infrastructure and costs relating to the operation and maintenance of facilities require a sustainable flow of financing (see practical manual on financing systems for environmentally sound management[1]). One of the possible instruments governments may wish to implement in this context is EPR. In principle, it means that the producers of a product are held responsible for the collection and disposal of that product once it has become waste. Generally, producers include these costs in the pricing of their products.

4. EPR instruments aim at making producers responsible for the environmental impacts of their products throughout the products' life-cycle, from design to the waste phase. EPR policy seeks to shift the burden of managing certain wastes from municipalities and taxpayers to producers, in line with the polluter pays principle. This policy first appeared in the early 1980s in a few member States of the European Union, in particular for packaging waste. Currently, EU Directives oblige member States to implement EPR for packaging, electric and electronic equipment, vehicles and batteries. Many OECD countries have implemented EPR for one or more products; examples are presented at the end of this manual.

5. There are four broad categories of EPR instruments:[2]

(a) Various forms of product take-back requirements, assigning responsibility to producers to take care of the management of their products once they have become waste. This type of requirement can be achieved by establishing respective collection and recycling targets for waste streams;

(b) Economic and market-based instruments provide a financial incentive to implement EPR policy. They come in several forms, including Deposit-refund; Advanced Disposal Fees (ADF); Material taxes; and Upstream combination tax/subsidy (UCTS);

(c) Regulations and performance standards such as minimum recycled content. When used in combination with a tax, such standards can strengthen incentives for the redesign of products, as well as sustaining a market for recycled materials;

(d) Accompanying information-based instruments aimed at indirectly supporting EPR programmes by raising public awareness.

6. The different categories can also be used in combinations.

7. There is no "one-size-fits-all" solution. The EPR instrument(s) that is / are the most appropriate to a specific region/country, taking into consideration market conditions, should be selected.

8. There is a multitude of examples of implementation of EPR instruments around the world covering different types of products. The Organisation for Economic Cooperation and Development (OECD) estimates that small consumer electronic equipment accounts for more than one-third of EPR systems, followed by packaging and tyres (17% each), vehicles, lead-acid batteries and a range of

[1] Available in annex II to the present document.

[2] For more details see Extended Producer Responsibility - updated guidance for efficient waste management, OECD, 2016, available at: https://read.oecd-ilibrary.org/environment/extended-producer-responsibility_9789264256385-en#page1.

other products.[3] Legislation has been a major driver, and most EPR systems are mandatory rather than voluntary.

9. EPR should result in internalising environmental externalities and provide an incentive for producers to take into account environmental considerations throughout a product's life, from the design to the waste phase. As such, EPR is considered a major instrument in support of the implementation of the waste management hierarchy, and therefore promotes prevention, minimization, reuse, recycling and other recovery including energy recovery, the reduction of final disposal of waste and the transition to a circular economy.

10. With regards to incentives, it is essential that EPR programmes clearly define the roles and responsibilities of each party in the EPR system. This includes producers placing products on the market, retailers, private or public waste operators, local authorities and consumers.

11. This manual refers principally to product take-back systems.

II. Terminology[4]

Extended producer responsibility (EPR): Environmental policy approach in which a producer's responsibility for a product is extended to the waste stage of that product's life-cycle. In practice, EPR involves producers taking responsibility for the management of products after becoming waste, including: collection; pre-treatment, e.g. sorting, dismantling or de-pollution; (preparation for) reuse; recovery (including recycling and energy recovery) or final disposal. EPR systems can allow producers to exercise their responsibility either by providing the financial resources required and/or by taking over the operational aspects of the process from municipalities. They assume the responsibility voluntarily or mandatorily; EPR systems can be implemented individually or collectively.

EPR system:[5] Any system set up to implement EPR. It can be an individual system (or individual compliance system) where a producer organises its own system, a collective system (collective compliance system) where several producers decide to collaborate and thus fulfil their responsibility in a collective way through a specific organisation (a Producer Responsibility Organisation, see below) or a system organised by government authorities.[6]

Fee: Price paid by a producer to the Producer Responsibility Organisation to deal with its responsibility (see below).

Individual Producer Responsibility (IPR): Each individual producer is responsible for the collection and disposal of waste originating from his own products.

Orphan products: Products that are on the market and for which a producer can no longer be identified.

Producer: The entity whose brand name appears on the product itself or the importer. In the case of packaging, the filler of the packaging is considered the producer.

Producer Responsibility Organisation (PRO): Collective entity set up by producers or through legislation, which becomes responsible for meeting the waste collection and disposal obligations of the individual producers.

Stakeholders: All actors involved in the life-cycle of a product including: producers, retailers, consumers, local authorities, public and private waste management operators.

III. General considerations

12. EPR means producers assume at least the financial responsibility of the management of their products after becoming waste.[7] In general, they also assume the responsibility to organize such management by contracting with private or public waste management operators.

[3] Ibid.

[4] For further terminology, see the Practical Manual on terminology, appendix I of document UNEP/CHW.13/4/Add.1/Rev.1, available at: http://basel.int/Implementation/CountryLedInitiative/EnvironmentallySoundManagement/ESMToolkit/Overview/tabid/5839/Default.aspx.

[5] The term "EPR scheme" is considered synonymous with the term "EPR system".

[6] See Extended Producer Responsibility - updated guidance for efficient waste management, OECD, 2016.

[7] Additionally, producers may be held responsible for the financing in solidarity of orphan products generated annually in a country, based on objective criteria, such as market share.

13. Over four hundred EPR systems are operating around the world, and there has been sufficient experience as to what the minimum requirements are for a successful EPR system. EPR systems may be either voluntary or mandatory.[8] Either way, EPR systems need to have clear and transparent rules for the roles and responsibilities of all stakeholders, and an adequate level of competition to avoid the creation of monopolies. The EPR system should ensure equal treatment and non-discrimination between: the producers of products put on the market, the Producer Responsibility Organizations implementing EPR on these producers' behalf and between private or public waste management operators. The EPR system should ensure an adequate geographical coverage both in the country and in the cities, and tendering requirements should allow all types of enterprises (including micro, small- and medium-sized) to participate in the separate collection, recovery and final disposal of the products after becoming waste. The EPR system should ensure the best waste management practices according to the waste management hierarchy, taking into account life-cycle thinking, and may set targets for preparation for reuse, recycling, energy recovery and final disposal (e.g., landfill), including requirements for removal of hazardous components and parts. The economic, social and environmental achievements of the EPR system should be measured and independently reviewed and published.

14. Although EPR focuses on the responsibility of the producers for products that are placed on the market, many other actors play a role in achieving the objectives of the system. These include: consumers (individuals or companies, as the users of a product, and as the actors who are responsible for discarding products through the right channel – e.g. by separate collection); local authorities (responsible for municipal waste management, and more generally for the environmental quality of their territory); national enforcement authorities (responsible for the enforcement of the respective provisions); waste management companies (as waste management operators investing in infrastructure, research, development and innovation in order to improve waste management practices); socio economic actors; retailers, etc. The responsibilities and roles of each actor in the EPR system should be clearly defined throughout the whole product life-cycle.

15. Various forms of product take-back requirements are the most commonly used EPR systems (72% globally), sometimes in combination with advance disposal fees (ADFs). These systems are used for a wide range of products. ADFs are the next most frequently used instrument (16%), and they have also been applied to many different products. Deposit/refund instruments (11%) are concentrated in the used beverage container and lead-acid battery markets, sometimes in combination with take-back requirements.

16. The unique characteristics and properties of a product, product category or waste stream should be factored into policy design. Given the diversity of products and their different characteristics, one type of programme or measure is not applicable to all products, product categories or waste streams. And not all products are able to become the object of an EPR instrument; life span, number of producers, homogeneity, size, value, hazardous properties and other factors may influence their suitability.

17. The key challenge in implementing any EPR instrument is to ensure that it is economically, socially and environmentally sustainable and achieves what it is set up to do. EPR should avoid intervening in the recycling of waste where the market is likely to be functioning well. Poor environmental or occupational performance can be addressed independently, without disturbing market relationships. EPR systems provide more opportunities for stakeholders, including informal recyclers, when they address market failures, including: hazardous waste streams, low-value materials, products that are difficult to dismantle after becoming waste or recycling in areas where there are few subsequent purchasers of materials within a reasonable distance.[9]

18. The global context has evolved significantly since the development of the first EPR systems. New economic powers have emerged in the global economy, product value chains have become more complex and extended across national boundaries, technological changes are altering patterns of communication and consumption, not least due to the internet, and markets for some materials and waste streams have been highly volatile. In such a context, EPR systems will have to continue to evolve if they are to become more effective waste management policy tools and to support the transition to more resource efficient economies.

19. One of the elements which requires more attention is the use of EPR systems in improving the prevention of waste: both the waste arising from the products during their use and the products once they become waste. This can be done by encouraging, at least, but preferably regulating, the

[8] See Extended Producer Responsibility - updated guidance for efficient waste management, OECD, 2016.

[9] Ibid.

sustainable design of these products, taking into account hazardous material content, energy and material efficiency, as well as consumer needs and behaviours.

IV. Goals and objectives of EPR

20. One of the most important steps in designing an effective EPR system is the establishment of clear policy goals and programme objectives. Objectives may include, but are not limited to:

(a) Increasing waste prevention, the reuse of products and recycling of waste;

(b) Closure of material use loops to promote sustainable development;

(c) Ensuring the removal of hazardous components before recovery and final disposal;

(d) Reducing final disposal;

(e) Internalizing costs of waste management (and other externalities) into the price of a product and thus reducing the costs of waste management borne by municipalities and/or taxpayers;

(f) Developing cleaner production and products, which include incentives for more environmentally compatible products; to prevent the presence of hazardous materials and components in new products as much as technically feasible; developing new de-pollution and recycling techniques and capacity; or improving materials management;

(g) Formalizing the informal sector, so as to ensure environmentally sound management (ESM).

21. In 2014, the European Union (EU) validated some of these objectives, indicating the goal of EPR systems as follows: to extend the producer's physical and financial responsibility for a product to the post-consumer stage of a product's life-cycle, in order to internalise the waste management costs according to high environmental standards and provide an incentive for producers to take environmental considerations into account along the products' life from the design to the waste phase. As such, EPR aims at supporting the waste management hierarchy and therefore at increasing, in priority, prevention, preparation for reuse and recycling.[10]

V. Criteria for possible products subject to EPR

22. Generally speaking, products and product groups that represent particular challenges as related to their waste management (such as pressure on the environment, added volumes of waste from the product or product group, low potential for recovery and recycling, etc.) are the clearest candidates for EPR. Criteria to choose possible candidates for EPR systems include:

(a) *Political issues.* Establishing the waste management hierarchy: for example, improving waste prevention, minimization and reuse; improving product design for recycling (eco-design); improving recovery and/or recycling rates; and increasing waste management in an environmentally sound manner;

(b) *Financial issues.* Products' residual value and environmental impacts at the waste stage: products with a high residual or positive value at the waste stage are generally voluntarily collected or taken back by the producer, while products with low residual value and high environmental impacts[11] might be considered candidates for stronger governmental intervention;

(c) *The product.* Number of producers; size and scope of the product distribution network - which reflects the size of the waste collection network which is required; the composition of the product, including the presence of hazardous substances as well as the presence of valuable substances – which reflects the interests of the waste management market and the need for governmental intervention; homogeneity within a product category; as well as the durability of the product;

(d) *The waste.* Environmental impact of the waste generated, including hazardousness of the waste and the amount of waste generated; existence of waste management markets, including secondary material markets (mandating 'minimum recycled content' should increase these markets).

[10] See Development of Guidance on Extended Producer Responsibility (EPR), European Commission – DG Environment, 2014, available at: http://ec.europa.eu/environment/waste/pdf/target_review/Guidance%20on%20EPR%20-%20Final%20Report.pdf.

[11] Considering impacts of all products together, not of individual products (i.e. the impact of a single plastic bag might be negligible, but the total impact is huge).

23. When a list of products or product groups is established, an assessment should be made for which of those products the introduction of EPR would be feasible from a practical point of view and would provide advantages over the current approaches or other instruments for management of these products when they become waste.

24. Experiences in different countries with EPR systems show that only a limited number of products are subject to EPR systems. These include, but are not limited to:

(a) Agricultural film;

(b) Batteries;

(c) Cooking and Frying Oils;

(d) Electrical and Electronic Equipment (EEE);

(e) Furniture;

(f) Graphic paper;

(g) Magazines and newspapers;

(h) Mercury Auto Switches;

(i) Mercury Thermostats;

(j) Mineral Oils;

(k) Packaging;

(l) Paints;

(m) Pharmaceuticals;

(n) Textiles;

(o) Tyres;

(p) Vehicles.

VI. Key elements to be considered for EPR

25. Key elements to be considered for EPR include:

A. Definition of the product

26. The product concerned should be clearly defined. Categories and subcategories of products might be defined, considering sizes (e.g. different categories of tyres according to their size), materials (in case of packaging, glass, paper, plastic, etc.), type of consumer (community or commercial/industrial, for example, in the case of packaging, packaging of pesticides should be excluded or dealt with separately), among others.

27. To identify categories and subcategories of products, a positive or negative list might be used; a positive list includes all products for which EPR applies while a negative list establishes a general definition and indicates those categories for which EPR does not apply. For example, in the case of electrical and electronic equipment, the first Directive on EPR for WEEE in the EU indicates a general list and examples,[12] while the reviewed Directive indicates a general list and exceptions.[13]

B. Definition and registration of producers

28. A level playing field should be assured; the same requirements and obligations should apply to all producers, irrespective of the selling technique used, including internet sales.

29. Equal treatment and non-discrimination among producers should be guaranteed, also with regard to small- and medium-sized enterprises.

[12] Directive 2002/96/EC, article 2 and Annex 1 and 2.

[13] Directive 2012/19/EU, article 2 and Annex 1, 2, 3 and 4.

30. All producers should be identified, e.g. through a public registration system, so as to stop free-riders and assist enforcement and transparency.[14]

31. All producers should take care of their responsibilities, including compliance with collection and recovery targets, either individually as Individual Producer Responsibility (IPR) or collectively as Collective Producer Responsibility (CPR), the latter by participating in a Producer Responsibility Organisation (PRO).

C. Mandatory or voluntary EPR systems

32. There is a choice to be made whether an EPR system should be mandatory or voluntary.

33. In the case of mandatory systems, it is important to consider the participation of producers and waste management companies in the design of the EPR system, including the definition of the targets. Their participation should consider the difference in responsibilities and interests of producers and waste management companies. Compliance with mandatory systems needs to be enforced and requires reporting on the technical and financial aspects of the operations. Performance should be regularly audited.

34. Voluntary systems are most commonly found in markets for durable commercial products and/or where products after becoming waste have value. Market forces will lead firms to take back products when it is profitable to do so. Voluntary systems may also be pursued by a producer seeking to prevent acquisition, refurbishment and resale of its own products by third parties. Voluntary systems should be encouraged to be as transparent as possible and periodically to undergo independent evaluations of their operations.

D. Individual or collective EPR systems

35. EPR systems can be individual or collective. In individual systems, a producer is responsible for the collection and disposal of the products put on the market by it after they have become waste, in some cases requiring 100% of collection and recovery;[15] in collective systems there is no direct relationship between a producer and the collection and disposal of the products after they have become waste. In some cases, there is only one collective system for the whole country/territory, imposed legally or developed voluntarily, considering efficiency in waste management.

36. Today there are generally two broad management models within collective systems:

(a) Single PRO, owned by the obligated producers: competition is organised by the PRO (through public calls for tenders) at the operational level (for waste collection and disposal);

(b) Several competing PROs, privately owned (by the obligated producers or other entities[16]), among which the obligated producers are free to choose in order to fulfil their obligations; competition exists also at the PRO level. In case of several competing PROs it is important to ensure all participate according to their shares of the market in general obligations, as related to communication, education, research, development and innovation, among others.

37. The legal status of PROs varies widely. PROs can be non-profit organizations (typically), government-owned (rarely), quasi-governmental non-profit organisations (occasionally) and for-profit firms (occasionally).

E. Responsibilities

38. Responsibilities should be defined to achieve the goals and objectives of EPR. These responsibilities can be assumed primarily by producers or shared among different stakeholders. In the latter case, different stakeholders have different responsibilities, for example, the producer being responsible for financing and reporting, consumers for discarding the product at established collection points, the retailer or municipality for making available collection points and the authorised waste management companies for the collection and treatment of the waste.

[14] Some countries may require such producers to be domestically established. Other countries may require the appointment of an authorised representative when producers are not established but place products on the market (e.g. Article 17 of Directive 2012/19/EU on waste electrical and electronic equipment).

[15] Example: Regulation on E-waste in France, procédure d'approbation et portant cahier des charges des systèmes individuels de la filière des déchets d'équipements électriques et électroniques ménagers en application des articles R. 543-191 et R. 543-192 du code de l'environnement (JO RF n° 0291 du 17 décembre 2014) . https://www.legifrance.gouv.fr/affichCodeArticle.do?cidTexte=LEGITEXT000006074220&idArticle=LEGIARTI000025117316&dateTexte=&categorieLien=cid.

[16] As a PRO represents the interests of producers, in some countries the composition of their board is limited to producers.

1. Producers' responsibilities

39. The producers' responsibility within an EPR system is always financial and may also be operational. There are several combinations of financial and operational responsibilities:

(a) 'Simple' financial responsibility: producers have no other obligation but to finance the existing waste management channels, individually or through a PRO, eventually including management of fees to be collected from consumers;

(b) Financial responsibility through contracts with municipalities: producers establish contracts with municipalities to manage waste (e.g. packaging). The producers' motivation to improve waste management depends on the type of contract and on the dialogue with municipalities;

(c) Financial responsibility and partial operational responsibility: some activities are kept under the responsibility of municipalities (e.g. collection, whether implemented directly by public waste collection operators or contracted to private companies), backed financially by producers, whereas some other activities (e.g. sorting, recovered materials reselling) are under the responsibility of producers;

(d) Financial responsibility and full operational responsibility: The producers subcontract activities to professional waste collection and disposal operators, or even own part of the collection and disposal infrastructure.

40. Producers are responsible for establishing an IPR or for participating in a PRO to comply with their obligations. In case they establish an IPR, they have to inform the competent authorities about the number of products (and categories and subcategories, where appropriate) put on the market. In case they participate in a PRO, they have to inform their PRO that reports to the authorities on behalf of its members.

2. IPR responsibilities

41. In case a producer has established an IPR, the concerned producer should:

(e) Contract operators for waste management;

(f) Fulfil other obligations, as related to communication, education, research, development and innovation, among others;

(g) Gather and report data to the authorities on collection and disposal, including compliance with targets and other obligations.

3. PRO responsibilities

42. In case producers have established a PRO, the PRO should:

(a) Contract waste management operators. They also might sign agreements with municipalities on responsibilities that will be assumed by those municipalities;

(b) Contracting should be by transparent tendering, to prevent distortion of competition. Tendering should encourage the development of rival waste management companies. A separate tendering process for collection and disposal can be desirable. Contracting might be organized per area, contracting the collection and disposal for a period of time. Alternatively, tendering might result in general contracts, after which each of the contracted companies can participate in specific tenders for the collection and disposal of each lot of waste accumulated at a collection point;

(c) Establish the fee for the implementation of EPR for each product, and each category and subcategory, where appropriate. They also should collect the fees from the participating producers, pay the waste management operators and manage the financial documentation;

(d) Fulfil other obligations, as related to communication, education, research, development and innovation, among others;

(e) Gather and report data to the authorities on producers participating in their organization, on collection and disposal, including compliance with targets and other obligations. Additionally, information on financial aspects (e.g. producer financing and fees, expenditure on waste management, revenues from resale, expenditure on information and awareness-raising campaigns, administration) including costs of municipalities in case they have an operational role.

43. In case there is more than one PRO per product accredited for, the government should ensure there is a proper clearing system developed to ensure all producers and PROs for the same product execute their share of the obligations and pay their share of the costs in relation to their market share. If not, perverse effects are likely to happen in the way that producers leave active systems (which

incur more costs due to activity level) for cheap systems which do not undertake the necessary efforts. Producers will leave those systems and either set-up a new one or move to the next one. Instead of chasing and running behind, government should anticipate this and should install a clearing system (inter banking financial clearing) so that costs are redistributed amongst systems and producers. This will be necessary particularly in case of compensation between producers/systems that overshoot the target and others who do not reach the target.

4. Government/national authorities' responsibilities

44. The design and governance of an EPR system is crucial to its performance. The issues range from target setting to monitoring and enforcement.

45. A clear and stable framework is necessary in order to ensure fair competition, with sufficient monitoring and equal rules for all, supported by enforcement measures (including sanctions). The parameters of such a framework may include the following:

(a) Establish national legislation, defining regulations and operational requirements (including requirements for transparency, accountability and competition rules), monitoring and enforcing the proper implementation of the EPR system by all stakeholders;

(b) Establish an exchange of information and cooperation of authorities involved, considering registration of producers, including the ministries of environment and finance, as well as customs. Especially in the case of importing countries, there in an important role for customs to control free-riding;

(c) Organise a formal and regular dialogue between the involved stakeholders;

(d) Establish a consistent and credible means for enforcing compliance of producers, IPR, PROs, waste operators, and all other stakeholders involved; producers' registration; accreditation of systems; education; delivery of information, among others. As government capacities are often limited, third party audits should be considered. There should be rules on how to accredit third party auditors;

(e) Establish penalties in cases of non-compliance. Sanctions should be proportioned in case of targets not being met and/or requirements not being respected or implemented. Sanctions might be related to avoided collection and recovery costs.[17]

46. There should be no state subsidy or grant by states or PROs that prevents stakeholders from dealing with third parties.

5. Other stakeholders' responsibilities

47. Waste management operators: Accomplish the management of the waste established in their contracts with the IPRs or PROs.

48. Local authorities/municipalities:

(a) Sign agreements with IPRs or PROs that establish their role and responsibilities in the implementation of EPR in their municipality;

(b) Allow IPRs or PROs to install facilities for the collection of products that have become waste;

(c) Promote public awareness-raising.

49. Retailers:

(a) Retailers might be obliged to collect products that have become waste of those products they sell. This obligation should be limited according to the size of the retailer;

(b) Participate in public awareness-raising.

50. Consumers/citizens: Participate in the established collection systems and use the provided infrastructure for separate collection to the fullest extent possible.

6. Waste pickers and the informal sector

[17] In the case of Korea, the recycling charges are differentiated according to the unmet portion, and the charges range from 115% to 130% of the recycling fees. In case of default, 5% of additional charges are imposed. http://www.oecd.org/environment/waste/OECD_EPR_case_study_Korea_revised_140522.pdf.

51. Separation at source is a basic element for EPR systems. Waste pickers can strengthen, or introduce, separate collection of products when they become waste. Where waste pickers are present, they should actively be provided with the opportunity to be included in the EPR collection systems in accordance with the rules governing each country; contributing their labour to improve the management of waste while including them socially.

52. When including waste pickers, it is necessary to ensure ESM, worker health and safety and to prevent child labour. The inclusion of waste pickers in cooperatives, associations and companies, and their training, should encourage their formalization.

53. Waste pickers should not be involved in hazardous waste management, as it will make it difficult to ensure ESM and worker health and safety. However, for some hazardous waste EPR systems, waste pickers may be involved in separate collection, but exposure to hazardous substances should be prevented.

54. Although the potentially positive contribution of the informal sector for collection and sorting activities is recognized, there are serious concerns about informal dismantling and recycling operations, which make it difficult to ensure ESM, worker health and safety and which can generate negative economic impacts.

F. Leakage

55. Leakage is considered to happen when EPR systems cannot capture all the wastes they were established to manage. It could reach significant levels for some wastes, including improper collection and treatment and illegal exports or transboundary movements. Data reporting by producers and waste managers is important to assess the extent of leakage.

56. To combat improper collection, treatment and illegal exports, relevant authorities should conduct inspections on a regular basis.

G. Targets

57. Targets should be measurable and achievable. The establishment of targets should consider technical feasibility and economic viability, including national treatment capacities and the availability of export opportunities, and the overall environmental, human health and social impacts. Targets should consider gradual growth, considering timeframes for new enterprises to be set up. The establishment of EPR will be an important input to boost new projects, as targets do assure a demand for waste management capacity.

58. Targets should be established in weight, so as to facilitate compliance control. Therefore, information should be available to relate each product, category or subcategory to its weight.

59. Targets should be periodically reviewed and adjusted, taking account of changes in market conditions and technology.[18, 19]

60. Targets should be in line with the waste management hierarchy. For example, in the case of lubricant oils, as recycling is on a higher level than energy recovery, a specific target on recycling might be established together with a general target on recovery.

61. Targets should consider geographic and demographic realities. Collection all over the country should be assured, and no parts of the country or population should be excluded. Nevertheless, different recovery targets might be set, e.g. according to distances between the generation and recovery of waste.

H. Design for environment

62. Obligations might be established for producers related to the design of their product, *inter alia*, prohibiting or minimizing hazardous materials and components and promoting waste prevention and recovery. Better internalisation of waste management costs and stricter enforcement would also strengthen incentives for improving the eco-design of products and packaging.

63. Producers' fees could be more closely linked to the actual waste management costs related to their products, for instance through the use of variable (e.g. weight-based) rather than fixed (e.g. unit-based) fees, and/or modulated fees that differ according to specific design features that make products

[18] Korea establishes long term recycling target rates, with growing annual target rates: http://www.oecd.org/environment/waste/OECD_EPR_case_study_Korea_revised_140522.pdf.

[19] Directive 2012/19/EU establishes for WEEE a collection rate of 45% from 2016, evolving gradually to 65% from 2019.

more easily recyclable. However, the effect of the latter depends of the margins in the price of the products.

64. Harmonizing requirements for eco-design will be an important incentive in the case of globally-traded products.

I. Costs and financing

65. Every IPR and PRO should cover their portion of the net costs related to waste management, which depending on the EPR system may include:

(a) Costs for establishing a separate waste collection system;[20]

(b) Net costs for waste management, including transport, recovery and final disposal;

(c) Administrative costs, i.e. costs linked to the running of PROs;

(d) Costs for public communication and awareness-raising (on waste prevention, litter reduction, separate collection, etc.) as long as producers have a say in their design and implementation;

(e) Costs for the appropriate monitoring of the system (including auditing and measures against free-riders).

66. Every PRO should assess financial parameters to calculate the cost share of each of the producers. The challenge is to provide a fair allocation of the costs and avoid underfinancing of the waste management activities. In case of establishing the cost share as the current put on the market share there is no risk of underfinancing as waste of producers who have left the market will be financed by the current producers. Furthermore, all participants currently on the market contribute so there is no competitive advantage for new entrants; and it is easier to determine the share of costs as only recent data is needed. A disadvantage is that current producers' obligations can be different from their historic market share if their products have a long life-span.

J. Fees

67. Fees are usually needed to cover the costs of EPR under collective producer responsibility systems. Fees should be established by PROs and should cover the net cost of the management of products when they become waste, including not only net costs for waste management, but also for information provision to consumers, data gathering and reporting, among others. Fees should be adaptable to market circumstances over the time.

68. A fee should be established per product, this way the fee can be linked directly to the cost of collection and disposal of the product when it becomes waste, which simplifies communication to the market and households. Fees might differentiate between more and less recyclable products. The definition of categories and subcategories per product should be used to allow for cost differentiation, for example in the case of packaging, different categories and subcategories might be considered by material and size.

69. Fees should be transparent, and might be visible or non-visible on the product. The fee is an important tool to create public awareness, as they relate to the cost of collection and disposal of the product when it becomes waste. Customers could use it as a way to choose sustainable products.

70. Fees should be maintained at the same level during the marketing of the product, and it should be assured that there can be no negotiation of these fees. Competition should be based on the product market, as well as on the collection and disposal markets, and not on the fee.

71. Such fees should be the same all over the country. This means the PRO has to identify the costs of collection, disposal and other obligations for its products, to be able to calculate the fee for each product. The fee in an isolated place should be the same as the fee in urban areas.

K. Information

72. Consumers should be given the necessary information about the available collection systems, including collection points, e.g. by labelling or online.

73. Data should be available on products placed on the market and, once these products become waste, their collection and disposal should be assured, including compliance with targets.

[20] Including cost for municipality compensation, if applicable (collection, storage).

74. In addition, multi-stakeholder platforms should be encouraged to ensure dialogue among stakeholders, with the involvement of representatives of PROs, producers, retailers, public authorities (national and regional/local), waste management operators, consumers (citizens and industrial consumers), environmental NGOs and policy makers.

L. Transparency

75. Transparency is required on performance and on EPR system costs. Concerns exist about collusion among producers and about the potential abuse of vertical agreements between PROs and companies involved in downstream operations. An important means for minimizing anti-competitive behaviour is to consult competition authorities when EPR systems are being established.

76. As waste management industries have grown and become more concentrated, the potential financial gains for producers, as well as the additional costs to society that result from collusion among producers and other forms of anti-competitive behaviour, have become more significant. Since 2001, some competition authorities and courts have reviewed alleged anti-competitive behaviour within EPR systems.

77. Services such as waste collection, pre-treatment, as well as recovery and final disposal, should be procured by transparent, non-discriminatory and competitive tenders.

78. Information on the environmental and technical performance of EPR systems (e.g. achievements in relation to collection and disposal targets) as well as on financial aspects (e.g. producer fees, expenditure on waste management, revenues from resale, expenditure on information and awareness-raising campaigns, administration) of the systems should be provided and made publicly available, especially since cost effectiveness is part of performance measurement. In case municipalities also have an operational role, their costs should be published to ensure transparency. This would provide a more comprehensive picture of the EPR systems' performance. In other words, there is a need to provide a comprehensive overview of the total costs of waste management. More specifically, the types of services consumers pay for should be indicated and clarified (i.e. what the EPR systems do and do not cover). Legislation should require all EPR systems (IPR and PRO) to publish:

(a) The amount of products placed on the market by their members;

(b) The amount of waste collected and disposed of (prepared for reuse, recycled, recovered, including recovered for energy, and finally disposed of), so that the final destination of all collected waste is identified;

(c) Additionally, PROs should be obliged to publish their fees.

M. Monitoring and surveillance

79. Public authorities and the obligated industry should share responsibility for the monitoring and surveillance of EPR systems, and should ensure that adequate means for enforcement are in place.

80. Monitoring and surveillance should be initially ensured by public authorities, with powerful means of investigation and enforcement, through the following actions:

(a) Provide a formal authorisation (or recognition) procedure for PROs;

(b) Provide monitoring procedures and audits for PROs, including self-control procedures;

(c) Set up a system of compliance promotion and enforcement that effectively discourages free-riders;

(d) Develop the indicators and reporting obligations to allow monitoring;

(e) Ensure the quality and comparability of statistics reported;

(f) Define and enforce monitoring procedures on quality of recycling for exported materials.

N. Enforcement

81. Enforcement should ensure:

(a) A public register of producers is available and maintained in order to identify all producers including internet sellers and free-riders. All producers should be identified and required to take up their responsibility individually or through a PRO;

(b) There is no collusion between producers and that PROs are open to small and medium sized as well as large scale producers;

(c) Compliance with targets and other EPR system requirements;

(d) Transparency in terms of contributions paid by the producers, including the impact on sale prices;

(e) Sound financial management of the EPR system, including calculation of the entire costs per type of product and the use of the funds collected;

(f) Quality of data and reporting;

(g) All waste management operators contracted by the EPR systems are compliant with applicable legislation;

(h) Legality of transboundary movements of waste.

VII. Strategy to formulate an EPR policy

82. A strategy for governments to introduce EPR could be to:

(a) *Identify products suitable for EPR*. Stakeholders should study experiences of EPR in other countries, among others in countries in their region and/or with similar levels of development. It is important to know the actual situation as well as the experiences gained during implementation;

(b) *Identify objectives to implement EPR for specific products.* Examples of objectives are listed in section IV on "Goals and objectives of EPR";

(c) *Review of products subject to EPR*. A review of the management of the corresponding waste in the country should clarify which waste is being prepared for reuse or recycled, and for which wastes there are possibilities to improve recovery and to decrease final disposal, in national facilities as well as through export;

(d) *Market review*. An important element to consider is the actual markets for products, including the producers' market (national production as well as import) and the recovery market (national facilities, including informal systems, as well as export). Coordination with producers and waste management facilities should be established. The knowledge of waste pickers and second-hand shops should be considered; in some countries, they are the only stakeholders with practical experience on how to maximize recycling under local market conditions and the incentive to adapt quickly to new value chains and market opportunities;

(e) *Selection of potential products to be subjected to EPR*. Based on the information gathered, a few products should be selected, which most likely will result in encouraging experiences in implementing EPR. A basic issue in prioritizing the products for which to introduce EPR is the willingness of producers and waste management facilities to support the initiative. It is important to be able to present positive results with the first EPR systems that are implemented;

(f) *Basic studies*. Studies should be conducted to analyse the consumer market and the waste management market. It is important to consider the situation in the whole country. After this, an impact study should be developed, considering two or more possible targets and results in the short and medium term, considering social impacts (basically new jobs), economic impacts (costs for compliance with targets), as well as environmental impacts (which should include more than just recovery of waste, for example emission of greenhouse gases, use of fossil fuels or other factors related to life-cycle impact). Relevant stakeholders should participate in the studies and other stakeholders should be engaged;

(g) *Pilot projects*. Based on the studies, pilot projects might be implemented, with voluntary commitments of (part of) the principal producers and waste management companies, for example, only in a part of the country. These pilot projects should generate important information and experiences that will be very useful in developing regulations;

(h) *Regulations*. In parallel to the pilot projects, the development of regulations might be commenced. At this time, it is important to invite politicians, industry associations, representatives of communities, as well as other concerned stakeholders, to be sure of broad support;

(i) *Communication.* To enhance acceptability and effectiveness, a consultation with stakeholders should be conducted to discuss goals, objectives, costs and benefits. Additionally, a communication strategy should be devised to inform all the actors in the product chain, including consumers, about the EPR system and to enlist their support and cooperation.

VIII. Challenges in the implementation of EPR

83. Some of the challenges when implementing EPR include:

(a) That governments and other stakeholders may need to get used to their new roles as introducing EPR requires that governments and stakeholders interact in a way that is different from the implementation of other types of waste management legislation. For example, EPR does not imply that governments have to do less, their role is a different one and they have to do things differently;

(b) Making sure that free-riders don't get away easily may be a challenge, in particular in cases where the producers are not well known to the authorities. Parallel imports, e.g. of second hand products and internet sales and purchase of products abroad, are well known cases where it is difficult to get the importers involved in EPR systems;

(c) Informing consumers and creating public awareness of EPR systems, especially on where products that have become waste are collected. Changing consumer behaviour is very important because separate collection of waste is the first step in the waste management process;

(d) Ensuring transparency and control of the EPR system is a challenge for authorities and producers that are responsible for oversight and control;

(e) When establishing an EPR system, it is important to make sure that no cases of "orphan waste" will arise or that such cases will be taken care of. The system should cover all types of products existing on the market prior to the start of the system or establish protocols to cover these products in another way;

(f) When establishing an EPR system with one target for different categories of products, care should be taken to ensure full coverage of the system. For example, if there are two categories, one with a high weight and/or low cost for its management, and another with a low weight and/or high cost, there will be a preference for the EPR system to comply with the target by collection and recovery of the first category, potentially leaving the second for responsible (local) authorities;

(g) The identification of products and categories of products should be clear;

(h) Resistance from certain waste management operators due to reduced access to waste. Establishing EPR systems may mean a change from the existing status quo, as producers are obligated to take care of their products after becoming waste, contracting only certain waste management companies, thereby guaranteeing ESM;

(i) Resistance from producers to participate. It should be made clear to producers that the management of their products after they become waste has to be improved. EPR is one of the instruments to achieve this improvement. EPR may be considered as preferable over taxes or other legal instruments.

IX. Practical examples

84. Practical examples are available on the Basel Convention website.[21]

[21] http://basel.int/Implementation/CountryLedInitiative/EnvironmentallySoundManagement/ESMToolkit/Overview/tabid/5839/Default.aspx.

Annex II

Practical manual on financing systems for environmentally sound management[1]

I. Introduction

1. This manual provides stakeholders with practical information on financing systems for the environmentally sound management (ESM) of waste.

2. This manual is aimed at key stakeholder groups involved in the ESM of waste, including government officials, municipalities, the private sector and the public. It provides an overview of the costs associated with ESM and examines the various financing methods and mechanisms available, including the pros and cons associated with each financial mechanism. This manual also recognizes that different contexts and priorities exist across the political spectrum and that these may impact the type of financing mechanism that might be appropriate for a particular situation.

3. The principles and models presented in this manual address the financial management of all types of waste streams, although the costs may vary considerably depending on the type of waste being managed.

II. Terminology[2]

Taxes: money raised by public authorities, at a national or regional level, to cover some or all of the costs of collection, transport, recovery (including recycling) and final disposal of waste.

Fees: money raised by private entities to cover some or all of the costs of collection, transport, recovery (including recycling) and final disposal of waste.

III. Principles

4. Different environmental policy principles play a role in sustainable financing, see the Practical Manual on General Policies and Legislation.[3]

5. The selection as to which principles authorities wish to apply may lead to a preference for one or another type of financing. For example, if a system does not allow for the collection of fees, this might not be an option. The pursuit of financing through the application of fees to utility bills or other taxes might instead be considered.

IV. Benefits and costs related to the ESM of waste

6. The costs related to ESM of waste may be associated with initial or ongoing capital investments and operation/maintenance costs, for example:

(a) Acquisition, operation, repair, maintenance and replacement of waste collection containers;

(b) Acquisition, operation, repair, maintenance and replacement of waste collection vehicles;

(c) Investments in planning and construction of new waste disposal facilities;

(d) Improvement or upgrading of existing waste disposal facilities;

(e) Operation of waste disposal facilities (including depreciation of their value);

[1] For more information, the Global Waste Management Outlook contains a chapter on Waste Management Financing (see http://web.unep.org/ourplanet/september-2015/unep-publications/global-waste-management-outlook).

[2] For further terminology, see the Practical Manual on terminology, appendix I of document UNEP/CHW.13/4/Add.1/Rev.1, available at: http://basel.int/Implementation/CountryLedInitiative/EnvironmentallySoundManagement/ESMToolkit/Overview/tabid/5839/Default.aspx.

[3] Appendix II of document UNEP/CHW.13/4/Add.1/Rev.1, Section II, available at: http://basel.int/Implementation/CountryLedInitiative/EnvironmentallySoundManagement/ESMToolkit/Overview/tabid/5839/Default.aspx.

(f) Financial guarantees related to permits or registrations;

(g) Costs related to depollution;

(h) Costs related to disposal of hazardous fractions from depollution activities and POPs destruction;

(i) Costs related to proof of legal compliance, quality and service levels (e.g. waste classification; control by and reporting to authorities / compliance schemes), implementation of standards and related audit costs;

(j) Wages for personnel engaged in waste management;

(k) Training of employees including health and safety training and the provision of personal protective equipment;

(l) Public relations, education, information and awareness-raising;

(m) Additional costs which may be unexpected or unforeseen, such as for clean-up of litter; remediation of contaminated sites caused by illegal waste dumping or incineration;

(n) Costs associated with technology transfer.

7. The amount of these costs is determined by:

(a) Market prices for equipment, construction, maintenance, etc.;

(b) Wage levels (including additional costs such as insurance premiums or pensions);

(c) Legal and technical requirements (standards), third-party certification with respect to ESM (including emissions reduction), safety, insurance, etc.;

(d) Levies paid (for example, landfill, sales or other taxes).

8. Revenues from the sale of marketable outputs/products from the waste management process (e.g. paper, glass, metals, compost, re-usable goods, etc.) may reduce or offset overall costs, while some of these outputs may lead to losses. All of the marketable products and outputs should be considered together in terms of calculating revenues or losses. It should also be noted that revenues or losses are subject to fluctuations in the market and access to these markets.

9. Collection systems and equipment that achieve a high level of performance with respect to ESM are usually more expensive than those performing at or applying lower standards. This is because the former may internalize some of the externalized costs (such as pollution, social and healthcare costs, etc.). This internalization of costs might be avoided in some countries and regions because it is associated with an increase in costs for companies and citizens and therefore may not be politically opportune. However, the internalization of costs leads to significant macroeconomic benefits as the efficient allocation of financial resources is improved. It also increases the burden of responsibility borne by waste generators or in the case of EPR systems by the producers of the products to support waste prevention and environmentally sound waste management.

10. The UNEP Global Waste Management Outlook[4] provides the reader with more information and background on the costs and benefits of waste management in chapter 5, and more specifically, in subsection 5.2 thereof.

V. Sources of financing

11. To cover the costs of waste management, and in particular to ensure ESM, financing is needed. The five commonly applied sources of financing for waste management operations are described below:

(a) Payments of taxes to government, set fees or “pay-as-you-throw” fees (PAYT) by waste generators;

(b) Fees paid by producers of products in the context of EPR;

(c) Revenues from sales of marketable wastes and products;

(d) Government funding, subsidies or other forms of financial support from general taxes;

(e) Loans from financial institutions.

[4] http://www.unep.org/ourplanet/september-2015/unep-publications/global-waste-management-outlook.

A. Waste generators

12. The traditional way to ensure sustainable financing for waste management is for waste generators to be obliged to pay for waste management services. This is in line with the polluter pays principle. Possible mechanisms include:

(a) Taxes collected by local authorities to cover the costs of collection of waste from households and businesses such as cafes, restaurants, shops, offices etc.;

(b) Operators of waste disposal facilities require waste generators to pay fees when they deliver waste to the facility. For example, fees by size of vehicle and type of waste entering facilities.

13. When implementing tax systems, authorities may use different modalities. The tax could take the form of a dedicated waste tax whereby the taxpayer would know that it is raised for the specific purpose of covering the costs of waste management and it would be ensured that the revenues from the tax are dedicated to this specific activity. It may also be combined with other taxes such as taxes on utilities, such as electricity and/or water supply, which are related to their consumption and sometimes the size of the household or enterprise.

14. Alternatively, authorities could apply a flat rate tax system that would be the same for each household, or they may apply differentiated approaches. One way of differentiating would be to set up systems that require waste generators to pay more if they produce more waste. These systems are generally referred to as "pay-as-you-throw"' (PAYT) or unit based pricing.

15. In the vast majority of areas where PAYT schemes are introduced, the overall cost of the service is funded through a combination of flat rate fees or taxes and a variable element. The flat rate fee is deemed important to give some certainty as to the level of revenue generated, which is a requirement to ensure costs are fully recovered. The variable element is used to stimulate waste prevention and the separate collection of recyclables. Generally, PAYT schemes should seek to charge the highest variable fee for residual waste and a lower (or in certain cases, zero) fee for recyclables. It may be linked to:

(a) The choice of container size (volume-based schemes);

(b) The number of sacks set out for collection (sack-based schemes);

(c) The frequency with which a container is set out for collection (frequency-based schemes);

(d) The weight of material collected in a given container (weight-based schemes).

B. Producers

16. Authorities may introduce EPR systems for appropriate products whereby the producer of the product is made responsible for the financing of waste management when these products become waste. The concept of EPR includes a wide range of instruments, from financial contributions to eco-design measures or the provision of separate collection and recycling schemes for certain products.

17. One aspect of EPR could be that producers are required to pay fees to support the costs of organising the management of specific waste streams to meet national targets. Typically, producers would seek to pass these costs onto the users of their products, i.e. the consumer. In this case, the costs of waste management would be paid when the product is purchased (known as an 'advanced disposal fee'), rather than at the time it is disposed of. More information about EPR can be found in the practical manual on EPR.[5]

C. Markets

18. Managing waste may have a cost, but some of the waste may generate revenues. Examples may include equipment or parts of equipment that are still useable and can be sold or tyres that are suitable for direct reuse or re-treading. In other cases, materials that are collected separately for recycling can be sold as commodities and generate revenue. In the case where waste is incinerated for energy recovery, this may generate revenues from the incineration gate fee and from the sale of energy. These revenues can be used to cover (part of) the costs of collection and management of the residual wastes.

[5] Available in annex I to the present document.

D. Governments

19. If financing originating from other sources is insufficient to cover the costs of ESM, financing may be provided from the budget of the government that is fed by general tax revenues. Mechanisms that authorities could apply to cover part of the cost of waste management may include:

(a) Subsidies for, and direct investments in, waste management activities;

(b) Tax advantages for activities governments would like to promote, such as preferential tax levels and possibilities to use reduced depreciation times for investment;

(c) Guarantees allowing access to loans with preferential interest rates.

20. Some governments use specific environmental funds for this purpose and the funds may be established with revenues from taxes and/or financial penalties in cases of non-compliance with environmental legislation.

21. Generally, financing mechanisms would include a mixture of approaches, especially for the management of hazardous waste where the costs are generally higher. There are advantages and disadvantages for each type of financing. Governments may wish to consider policy principles to determine which types of financing they could apply. In any case, the promotion of ESM should be part of the overall approach.

E. Strengths and weaknesses

22. There are situations in which certain financing mechanisms can be used more effectively than others. When considering the introduction or modification of such mechanisms, the strengths and weaknesses of each possible instrument in a given situation should be assessed. Some considerations for this assessment are presented below.

1. Pay-as-you-throw (PAYT) schemes

23. PAYT schemes often stimulate consumers to consider the possibilities for waste prevention and minimization, and also stimulate separate collection of wastes. These systems will work best where the infrastructure for recycling is both comprehensive and convenient for the user. It may be the case that, if recycling targets are set at an appropriately ambitious level, there will be a natural evolution of the country towards the implementation of PAYT schemes. In countries with insufficient recycling infrastructure and weak enforcement structures, the introduction of PAYT may lead to increased fly-tipping or illegal dumping.

2. Cherry picking of ‘valuable’ wastes

24. Regarding potential revenues of marketable wastes and products, it should be kept in mind that if certain types of waste or parts of waste have a value, operators may be inclined to concentrate on collecting these wastes and obtaining the revenues, whilst not collecting the fractions that would only generate costs. This cherry-picking would leave the management of the residual waste to be managed by public authorities.

25. It should also be kept in mind that wastes generators, inter alia households and industries, own the waste substances or objects that they will dispose of, or intend to dispose of, or are required to dispose of by the provisions of national law, and may sell any marketable wastes and products to the informal sector as well as to registered or permitted private waste management companies which is beneficial in a recycling sense.

3. Subsidies

26. Subsidies from state or municipal budgets may have the risk that they will not lead to self-sustainable waste management. “Sustainable” in this case means adequately funded initial investments and operation and maintenance of the necessary equipment and facilities in the long term. In most cases, budgetary and political restrictions limit such financing as other subjects may gain more attention and priority than waste management. When a government or municipality decides to stop subsidies for waste management, there is a risk that the operations may discontinue. Therefore, the reduction or withdrawal of financial support by a state or municipality requires the introduction of payments of fees/taxes by waste generators.

27. Certain waste management practices may need support from a national or local authority in order to become sustainable. For example, closures of illegal landfills initially may have to be imposed while the government co-funds the development of a hazardous waste incineration plant, which over time can evolve into a private sector operation. Similar situations could be foreseen in

introducing innovative recycling solutions that may need public-private partnerships in order to become economically viable and self-sustaining.

28. The management of hazardous waste is more complicated and thus more expensive than the management of municipal waste. Investments in, and the development of, hazardous waste management may therefore require governments to introduce stronger measures such as taxes, fees and subsidies.

VI. General considerations

29. In many countries, the financial means to develop environmentally sound waste management practices may be insufficient or altogether absent. On the one hand, the environmental need is well known and technical solutions for ESM are available on the market, but on the other hand the necessary financing is not available and therefore the overall economic demand is low. To overcome this situation, the different waste management principles, the use and benefits of financial instruments, as well as the political context, have to be understood. The aim should be to increase the willingness of:

(a) Waste producers (consumers, enterprises, etc.) to pay for environmentally sound waste management;

(b) Political decision makers to establish technical and possibly legislative requirements which necessitate investments in ESM and direct the necessary financing into these activities.

A. Financial instruments

30. The existence of sufficient and sustainable financing systems allows the development and use of financial instruments to generate additional benefits like strategies that are higher up in the waste management hierarchy (e.g. more prevention and recycling, less landfilling, energy recovery for residual non-recyclable waste, etc.). This can, for example, be a landfill tax or improved access to financing for waste management schemes, support offered through government-backed loans, low-interest loans, or subsidies in the initial phase of the establishment of an ESM waste management scheme. Other instruments may include penalties for those in non-compliance or deposit systems.

31. The UNEP Global Waste Management Outlook provides more detailed information on different financing models in sections 5.4-5.9.[6]

B. Policy-making and the political situation

32. As discussed earlier, policy-related and political decisions mainly determine which principles are applied; the extent to which standards in relation to ESM and the waste management hierarchy are regulated and enforced; and which financial sources are used. But decision-makers also depend on the willingness of consumers (i.e. the voting public) and enterprises to pay for higher waste management standards in (fixed) investments and (variable) running costs of managing their wastes. Therefore, the availability of financial resources depends upon environmental awareness, the level of incomes, systems for enforcement, etc. But constitutional or other legal limitations may prevent the necessary policy and political decisions.

33. By contrast, a transfer of (part of) the costs to society is tolerated, although the overall social balance of costs and burdens is worse because false price signals undermine optimized, efficient behavior. Only a combination of internalized costs ("true prices") and reliance on the polluter pays principle, implementing the cradle-to-cradle and life-cycle approaches, leads to environmentally and socially responsible sound management. This in turn leads to reduced consumption of resources and fewer environmentally harmful emissions.

C. Challenges when implementing financing systems

34. The financing of ESM will remain a challenge due to the following factors:

(a) Opposition to the polluter pays and other principles;

(b) That manufacturers use materials that are prohibited from recycling in their products that are also costly and difficult to identify, separate and finally dispose of in an environmentally sound manner;

[6] http://www.unep.org/ourplanet/september-2015/unep-publications/global-waste-management-outlook.

(c) Private versus public sector: division of tasks and roles in relation to financing (e.g. collection of e-waste under an EPR system, whereby the municipalities often have a role in collection and expect refunds from producers: discussions on how to agree on this refunding of optimized costs may complicate the financing);

(d) The role of the informal sector in generating revenues from valuable waste fractions is beneficial in a recycling sense, but sometimes counter-productive with regard to the financing of residual waste management;

(e) The increases in costs associated with financing as a result of lack of good governance or the impact of corruption and fraudulent activities both in the public and private sectors.