

“Extended Producer Responsibility – Packaging and Packaging Waste in Slovakia”

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1. Introduction

The Act No. 223/2001 on Waste of 15 May 2001 was adopted 01 July 2001. The Act on Waste deals with waste management hierarchy and waste management plans (national, regional and municipal level follow a programme which is reviewed every 4 years), scope of national authorities and stakeholders' duties, waste transit across countries, treatment of certain waste streams and the Recycling Fund.

The Recycling Fund is a non-governmental fund, established in order to support the creation of recovery facilities for waste in Slovakia. The Fund covers only the manufacturers' and importers' financial obligation. The manufacturers and importers of certain goods have to pay to Fund but recovery of those products is not ensured. The fees collected are used to enhance waste recovery facilities, but not for recovery of the products themselves (even though there are already enough recovery facilities). The fee obligation includes 10 categories of products: batteries, oils, tires, vehicles, EEE, plastic products, glass products, paper products and composites products, metal packaging, and all packaging made of aforementioned materials. The manufacturers and importers of abovementioned goods have had to pay the fees to the Recycling Fund since 2001. Some of the initial goods included in the Recycling Fund since 2001 have been removed because of EU legislation, especially due to the implementation of EPR schemes (i.e. fees need to be paid to PROs). These include: packaging waste (removed in 2002, with the effect from 2003) and Electrical and Electronic Equipment (EEE) waste intended for households (categories of EEE no. 1 – 7, removed in 2005).

Due to the high number of revisions to the Act on Waste since its implementation in 2001, there is a call for a new Act which is clearer and not contradictory. Accordingly, the Ministry of Environment has been working on a draft version of the new Act for over 2 years. Unfortunately, no final version is ready yet - mainly due to changes in the government and a large number of comments during the consultation processes.

The Extended Producer Responsibility (EPR) scheme was first implemented for packaging waste. The European parliament and Council Directive 94/62/ES on Packaging and Packaging Waste has been implemented into the national Slovak legislation by the Act No. 529/2002 on Packaging and Packaging Waste on 19 August 2002, which came into effect 1 January 2003. The Act transfers the obligations on businesses which put packaging or packed goods on SR market (importers of packaging or packaged goods and packers and fillers). The obligations can be fulfilled individually or via authorized organizations (Producer Responsibility Organisations (PROs)). The Act complies with the European Directive's definitions and objectives, including prevention, recovery and recycling targets, collection and recovery systems, marking, concentration levels of heavy metals present in packaging, information for users, management plans, etc. A new Act No. 119/2010 on Packaging and Packaging Waste of 03 March 2010 came into effect 1 May 2010. Changes have been made to the definitions, marking, collection and recovery of packaging waste, obligations of PROs, fines, etc. The manufacturers of packaging have been added to the Act. However, only those packaging manufacturers who manufacture packaging that is going to be used by final consumers (for example shopping bags).

2. Legal aspects

Act on Packaging and Packaging Waste

The packaging waste issue is addressed in the *Act No.119/2010 on Packaging and Packaging Waste* and in its regulations that describe details to do with its implementation: *Decree of Ministry of Environment SR No. 81/2011 on beverage packaging* and *Decree of Ministry of Environment SR No. 91/2011 on implementing certain provisions of the Act on Packaging*.

The main objectives stated in the Act on Packaging are to prevent the generation of packaging waste and its harmful impacts on the environment as well as avoiding obstacles to trade and distortion of competition.

Packaging that is put on the market has to comply with the requirements pertaining to packaging's composition and properties stated in the Decree of Ministry of Environment SR No. 91/2011 (these include: a minimum amount and weight of packaging, which ensures the hygiene and safety of the goods; packaging should be manufactured in a way that reuse and recovery of packaging waste is possible and environmental impact and the use of the hazardous substances should be minimal; requirements for packaging properties that enable reuse, etc. The Act also complies with the Directive's stated concentration levels of heavy metals in packaging. It is up to the individual businesses whether their packaging is marked – however, if the packaging is marked it has to be done in accordance with legislation.

In essence, the responsibility for packaging waste is extended to the post-consumer stage of a product's life cycle. It is not the producer of the packaging that is responsible for ensuring the collection and recovery of packaging, but the *business who uses packaging to pack products or puts products into packaging (packer, filler), the business who places packaged goods on the Slovakian market (importer), and the business who places packaging on the market, except for packaging manufacturers and importers supplying packaging to aforementioned obliged parties* (e.g. shopping bags suppliers to consumers in shops).

The parties are obliged to do as follows:

- to **register** with the *National Register of Obligated Parties and Authorized Organizations* administered by the Ministry of Environment (within 30 days of business' birth) and notify the Ministry of any changes (within 30 days following any change);
- keep **records** of the amount of packaging put on the market and retain it for a period of at least 5 years;
- send these records in the form of an **annual report** to the Ministry every end of February; and
- **fulfill targets** for recovery and recycling of packaging waste (if the amount of packaging put on the market exceeds 200 kg/year).

If a seller puts packaged products on the market, where the packer/filler is not registered within the EPR scheme and/or is not paying the obligatory fees (i.e. a non-compliant enterprise), then the seller of the packaged products has to fulfill his own obligations as well as the obligations of the non-compliant company (–note that companies are only obliged to pay fees if they place more than 200 kg/year on the market).

If the obliged company packs products into packaging and puts on the market more than 10 tonnes of packaging per year it has to create and implement a prevention programme, which

should include quantitative targets for prevention, measures to attain those targets and control of performance of those targets. The prevention programme has to be submitted to the local Environmental District Office, and has to be updated if there is a change in scope of business and such change affects the contents of the programme.

The obliged company can fulfill the obligation individually (separate contracts with collection and recycling companies and recycler has to declare recovery/recycling by written confirmation to the obliged party and evidence on collection and recovery has to be done separately) or collectively via an Authorized Organizations (PRO). The former requires cooperation between the obliged company and a collection service provider that must transfer the collected and sorted packaging waste to a recycling (or recovery) facility. This operation has to be verified and approved by submitting a recycling declaration, in order to fulfill the collection and recovery/recycling quota. PRO is a legal entity established by obliged parties and registered with the Register. PRO has to ensure the collection and recovery for all packaging categories and 30% of collected packaging waste should be household packaging waste (collected from municipalities).

Act on Waste – Recycling Fund

As mentioned earlier, the Recycling Fund is a non-governmental Fund established in 2001 in order to support the creation of waste recovery facilities. Unfortunately, this obliges in certain circumstances (in specifically 10 categories mentioned in the introduction) that obliged companies pay recycling fees into the Recycling Fund as well as for the EPR scheme for the same finished product. For example, an importer/manufacturer of empty unused packaging has to pay to the Recycling Fund (because this empty unused packaging is considered a product) and businesses who uses this empty unused packaging for packing has to pay for this packaging to PRO because of EPR. Furthermore, all importers and manufacturers of these products have to be registered with the Fund and send quarterly reports, including the amount of goods put on the market, to the Fund and local Environmental District Office for all their product categories. Unfortunately, this reporting creates barriers to trade and is environmentally unfriendly as reports need to be sent in paper format. The Legislative thesis of the new Act on Waste was approved by the Ministry of Environment last year, which no longer includes the Recycling Fund. Accordingly, the Recycling Fund will be closed.

PROs cooperate with collection and recycling/recovery companies or with municipalities in order to ensure the recovery obligations for their clients (obliged parties).

The municipalities are responsible for treatment of municipal solid waste (MSW) and construction waste. They collect and store waste and are required by local regulation to treat MSW. The municipalities are obliged to organize the separate collection for paper, glass, plastics, metals and bio-waste.

The basic polluter-pays principle transfers waste responsibility onto producer of waste. Citizens pay a flat yearly fee for MSW. The fee is different for each municipality and is calculated according to the municipality's cost for waste management. There is also a PAYT scheme in Slovakia; however this depends on the municipality. If municipality decides to use

PAYT scheme the citizens have the possibility to choose the size of the bin with a fixed date of disposal or a disposal date of their choice.

Packaging Waste

The targets for recycling and recovery of packaging waste by weight for 2012 and further years comply with the Directive and are shown in table below. The recycling rate doesn't include energy recovery. Recovery rate includes recycling, energy recovery and other forms of recovery.

	Recycling (%)	Recovery (%)
Paper	60	68
Glass	60	60
Plastics	45	48
Metals	55	55
Wood	25	35
total	55	60

Obligated parties can meet the targets individually or by cooperation with PROs. Penalties for non-compliance are stated in the Act on Packaging. A fine up to 20 000 EUR can be given for not submitting the required reports to the Environmental District Office and the Ministry of Environment, etc. A fine up to 332 000 EUR can be given for not being registered with the Register, for not ensuring the collection and recovery of packaging waste, etc.

The take-back policy is a basic principle of EPR. The producer is given the responsibility of meeting the targets for recycling/recovery of packaging waste. As it was already mentioned, targets can be met by individually or by participation in PROs. The threshold for meeting the targets is 200kg of packaging material put on the market per year. However there are no thresholds for register and evidence obligations.

Economic instruments in Slovakia:

According to the EPR Guidance Manual for governments (OECD 2001), an Advance Disposal/Recycling Fee (ADF/ARF) should be a fee levied on certain products or product groups based on estimated costs of collection and treatment methods. Fees should be paid at the point of sale. It can be said that there is a type of ADR/ARF levied in Slovakia and it is a payment to the Recycling Fund. The payment is not paid at the point of sale but when the product is manufactured/imported. The payment is made for glass, paper, plastic, and composites products, as well as for oils, tires, batteries, EEE and for imported packaging made of metal, glass, paper, plastic and composites (packaging that has been used for packing). If a producer (manufacturer/importer) doesn't ensure the recovery of above mentioned product groups he has to pay into the Recycling Fund. Empty unused packaging is considered as a product, which obliges the manufacturers of the packaging to pay into the Recycling Fund. However, recovery will not be ensured for those products.

In a deposit/refund system, consumers pay a deposit when they buy a product, which is refunded when the product is returned to a retailer. Retailers only accept the return of products that they sell. The returned products are then sent from a retailer to a supplier to be reused. The deposit/refund schemes focus on beverage containers in Slovakia. The

scheme applies to reusable beverage packaging and for packaging which is not reusable but hazardous to the environment due to the quantity and properties, or its quantity and composition. See table below for the exact consumer charges.

Reusable beverage packaging	volume up to 2 000 ml	0,13 EUR
	for beer in glass bottles except those with a crown cap	0,27 EUR
	Other reusable beverage packaging	40 EUR
Non-reusable beverage packaging	PET packaging for water and soft drinks (volume over 500 ml)	0 EUR
	aluminium cans for soft drinks (volume up to 500 ml)	0 EUR

Municipalities are obliged to announce the public call for procurements related to collection, sorting and recycling. Companies can apply for these services according to conditions stated in the public call, and municipalities decide on the best offer.

Also included in the Waste Management Plan between 2011 and 2015 is to implement an awareness campaign to educate the general public, regional governments, in the waste management industry as well as manufacturers and distributors of the goods included in the EPR scheme or in the Recycling Fund. The main topics should include reducing the overconsumption, support of separation of MSW, raising awareness about the need to separate WEEE from MSW, support the collection of WEEE and used batteries and packaging waste. It should also try to positively influence the general negative attitude toward energy recovery facilities, support green procurement with a focus on the use of secondary raw materials, increase the expertise of regional governments in the field of waste treatment, educate children and raise awareness about possible health risks caused by uncontrolled incineration of municipal waste. The campaigns should be financed by the Ministry of Environment, EU funds, the Environmental and Recycling Funds, other Ministries, regional governments and private sources, mainly PROs. The responsible bodies are the Ministry of Environment, Ministry of Education, regional and local government and municipalities, non-governmental institutions, PROs and entrepreneurs in waste management depending on the campaign objectives. The obligation to inform customers about the collection is also stated in the Packaging Act. The PROs, non-governmental institutions as well as private waste collectors, sorters and recyclers organise awareness campaigns. They have organised competitions for schools (“Ecologic Olympics”, e.g. paper collection competition), educational programmes for schools (software for interactive whiteboard, optional interactive educational activities, etc.), environmental activities for the general public, etc. The Ministry of Environment organises international film festivals and TV programmes on the topic of the environment and is issuing a national periodical magazine to support environmental protection. As EPR policy strongly depends on consumer participation, environmental awareness and information dissemination are important components.

There is a lack of supporting measures for EPR. For instance, there is a tax levy on landfill, but it is not high enough to divert more waste from landfills towards recovery or recycling. There is no incineration tax, the PAYT scheme is only partially applied, no guidance on environmental, health, safety or other aspects of EPR activity. The Act on Waste obliges waste holders to recycle their waste by themselves or to offer their waste to someone for

recycling. If it is not possible or practical to recycle it they should ensure its recovery and if recovery is not possible or practical they are permitted to dispose of it (according to waste hierarchy).

BOX1: Quantitative information provided under legal aspects

Objectives:

- prevent the generation and harmfulness of packaging waste
- reduce the volume and harmful effects of packaging waste on the environment
- avoid obstacles to trade and distortion of competition

Targets:

- recycling rate by weight for packaging waste – 55 %
- recovery rate by weight for packaging waste – 60 %

100 % collection coverage of territory for MSW.

Fees (PRO NATUR-PACK, a.s.*)

	EPR schemes (EUR/ton)	Recycling Fund (EUR/ton)
glass	18,26	20 ^{1,3}
plastics	19,92	170 ¹
PET	16,60	170 ¹
paper	6,64	20 ^{1,3}
composites (based on paper)	6,64	230 ¹
metals - steel	25,56	40 ²
metals - aluminium	39,83	140 ²
wood	5,50	-
batteries	-	weight <1kg – 6 310
		weight >1kg – 270
oils	-	70
tyres	-	270
EEE	varies according to EEE categories – average is 200	varies according to EEE categories – average is 1 125
vehicles	-	66,39 / vehicle

* - <http://www.naturpack.sk/en/price-list/> Price lists of other PROs are not publicly available.

1 – packaging material and products

2 – only packaging material

3 – when more than 10 t is put on the market

Financial sanctions in case of non-compliance

Fine up to 20 000 EUR (examples)	Fine up to 332 000 EUR (examples)
Failure to work out a prevention programme or to send it to the local Environmental District Office	Places on the market or puts into circulation packaging or packaged goods that do not meet the concentration levels of heavy

	metals
Failure to mark packaging according to the Packaging	Does not meet the obligations for beverage packaging
Failure to provide PRO with complete and true information	Does not ensure the collection and recovery of packaging waste
Failure to notify the Ministry of changes	Failure to fulfill other non-compliant company's obligations in addition to its own.
Failure to submit required reports	Failure to Register
Etc.	Failure to carry out remedial measures imposed by the authorities
	Etc.

3. Governance of the system

The state administrative authorities for packaging and packaging waste are the Ministry of Environment, Slovak Environmental Inspectorate, Slovak Trade Inspectorate, Regional Environmental District Offices and Local Environmental District Offices. All these state administrative authorities can control the obliged parties, PROs, collection and recovery companies. The authorities are eligible to impose remedial measures in case of an infringement. The controlled party is responsible for the fulfillment of the remedial measures and if not they can be fined up to 332 000 EUR. The results of the controls are publicly available. The sanctions for the infringements or for non-compliance are purely financial (see BOX 1 for examples).

There is no public certification/accreditation for the PROs. According to today's legislation a PRO has to be established by obliged parties and registered. The Legislative thesis of the new Waste Act introduces the authorization of PROs. The authorization is decided by a special committee appointed by the Minister of Environment and granted for 10 years. PROs will have to meet specific conditions, which are not clearly specified yet.

The PROs are private organisations established by obliged parties and registered with The Register. PROs have to file an overall report for packaging and packaging waste, ensure the collection and recovery of packaging waste for their clients (obliged parties) and submit a yearly summary Report, including the amount of packaging their clients/members have put on the market and whether they have reached their recycling and recovery targets to the Ministry of Environment. PROs also have to submit a yearly Report on their activities, which contains information concerning collection, recovery and recycling of packaging waste, fulfillment of the targets, volume of recovered and recycled packaging waste by type of material and declaration that all compulsory contributions and taxes have been paid. Additionally, they have to submit a Yearly financial statement. The Ministry controls the use of funds collected through the EPR and fulfillment of the targets using the aforementioned documents. The state administrative authorities can also control the PROs in order to inspect the compliance with the Packaging Act.

There is still a problem of free-riders in Slovakia – up to about 30% of the industry, however the packaging volume of these companies is estimated as 0,5 % - 1 %. Unfortunately, there is no structure in place to solve it. One possible solution would be to denounce the free-riders to the authorities. This problem is addressed in the Waste Management Plan and can be solved by more frequent and stringent inspections.

When PROs cooperate with collection and recycling/recovery companies, these companies have to have the required authorizations and approvals. The volume of packaging waste taken over by a recovery company is deemed to be the volume of packaging waste recovered for the purpose of fulfilling the targets, provided the operating and technical measures adopted by this facility guarantee that the sorted amount of packaging waste enters into the recovery and recycling process without significant losses.

The Register is publicly accessible on the Internet at obaly.sazp.sk (only in Slovak). On this website, there is a list of all registered parties and PROs. All other information can only be inspected by the state administrative authorities. Obligated parties and PROs have to notify

the Ministry of any change of the details stated in the application for entry into the Register and PROs have to submit a list of all their clients with such changes on a quarterly basis. The PROs also submit a yearly summary report (mentioned above) with the list of all their clients. All those documents (also mentioned on the previous page) ensure the transparency of the system. There is a call for complex information system for waste management. The Ministry of Environment is already working on its context.

The reports are unfortunately not verified. If the authorities find any discrepancies between the real and submitted data the obliged party can be fined up to the 20 000 EUR. Some PROs offer extra services in the form of audits and controls for their clients to ensure that the obliged parties are in compliance with the Act.

Table: Reporting

Obligated party	Report	Sent TO	About	Time period	Notes
1) Obligated parties according to Packaging Act	Registration	MoE	Information about company, packaging material and fulfillment (individually or PRO)	within 30 days of business' birth	
	changes	MoE	Any changes of the details stated in the application for entry into the Register	within 30 days following any change	
	Evidence sheet	PRO	Amounts of packaging put on Slovakian market	quarterly	Payment obligation to PRO
	Yearly report	MoE	Amounts of packaging put on Slovakian market, amounts of recycled, recovered and incinerated packaging waste	yearly	PRO send a yearly report to Ministry on the behalf of their clients/members
2) Additional obligations for obligated parties that are also importers	Registration within the RF	RF	Information about company and packaging materials	within 30 days of business' birth	
	changes	RF	Any changes of the details stated in the application for entry	within 30 days following any change	
	Report about manufacture, import, export and re-export	RF and local Environmental District Office	Amounts of packaging put on Slovakian market	quarterly	
3) Importer/ manufacturer of products included in the RF	Registration within the RF	RF	Information about company and packaging materials	within 30 days of business' birth	
	changes	RF	Any changes of the details stated in the application for entry	within 30 days following any change	If importer fails to meet the packaging targets he has to pay into the RF
	Report of	RF and local	Amounts of products put on Slovakian	quarterly	Payment obligation –

	manufacture, import, export and re-export	Environmental District Office	market		either ensure 100 % recovery or payment to the RF
4) PROs	registration	MoE			
	changes	MoE	List of clients with the changes of the details stated in the application for entry into the Register	quarterly	
	Yearly summary report	MoE	Amounts of packaging put on Slovakian market, amounts of recycled, recovered and incinerated packaging waste, list of all their clients	yearly	On behalf of their clients
	Yearly activity report	MoE	information concerning collection, recovery and recycling of packaging waste, fulfillment of the targets, volume of recovered and recycled packaging waste by type of material and declaration that all compulsory contributions and taxes have been paid		
	Financial Statement	Register of Financial Statements	Economic issue	yearly	

Notes:

MoE – Ministry of Environment

RF – Recycling Fund

- 1) **packer/filler, importer and business** who places packaging on the market, except for packaging manufacturers and importers supplying packaging to aforementioned obliged parties (e.g. shopping bags suppliers to consumers in shops)
- 2) obliged parties that are **also importers**
- 3) Importer/manufacturer of products included in the Recycling Fund (**also importer/manufacturer of empty unused packaging**)
- 4) PROs

4. Environmental effectiveness/performance

As mentioned earlier, the revised Packaging Act came into effect in 2010 and is in full compliance with the Directive. The obliged parties have to be registered, submit required reports and ensure the collection and recovery of packaging waste by themselves or through PROs. PROs and obliged parties that fulfill the obligations individually send yearly reports about the fulfillment of the recycling and recovery targets to the Ministry. The compliance with the Act on Packaging by obliged parties is controlled by the Inspectorates and Environmental District Offices. Until now there is approximately 9 500 obliged parties registered, of which 3 000 ensure the collection and recovery individually. Unfortunately, there is still about 30 % free-riding.

There is duplication in application of EPR because of the Recycling Fund. Recycling Fund covers only one obligation of EPR and it is the financial one. The duplication is in payment. Manufacturers of the packaging pay to Recycling Fund when the packaging is manufactured. Obligated parties pay to PROs (or individual fulfillment) for ensuring the collection and recovery of packaging waste when they use the packaging for packing. The end consumer pays in the form of yearly flat fee for MSW. The separate collection (packaging and non-packaging waste together) is included in the flat fee for MSW. The new Waste Act – which was approved by the Ministry of Environment - has decided to close the Recycling Fund to remove this double payment.

More waste has been diverted to recovery and recycling since EPR was implemented. The recovery rate was about 40 % from 2003 to 2006. Since new PROs were established in 2006 the recovery rate increased to 67 % in 2007, and has stayed above 60 % ever since (if the market functions normally). The decreased recovery rate in 2008 and 2010 was due to the economic and waste management crisis. Slovakia has postponed its targets until 31 December 2012. If we follow the current trend, it seems feasible for us to meet the targets.

Packaging is categorized to more than one catalog numbers according to the List of waste. It can be either 15 xx xx - Packaging waste or 20 01 xx as separately collected fractions of MSW. Therefore it is difficult to identify the exact amount of packaging waste. Studies on the composition of MSW have been done on the municipal level and have been summarized in the National Waste Management Programme.

The amount of packaging waste has increased during the last years. However, that does not necessarily mean that more packaging is generated. The increase of packaging waste is most probably due to the awareness campaigns, which have increased involvement and as a result numbers of reported packaging waste. The amount of packaging put on the market declined from 2003 to 2006, however since 2007 it has increased. This change in trend is due to three new PROs has been established in 2006.

There are no official documents which summarize the impacts on the prevention of packaging waste or the use of natural resources. The Act on Eco-design (no. 529/2010) states the conditions for manufacturers of products in terms of compliance with technical requirements and environmental aspects to be taken into account during the whole life cycle of the products. The basic principle of product design is to eliminate the impacts of a

product on the environment through design changes. Some behavioural changes have been seen among manufacturers and packers. For example, packaging is being manufactured in a more environmentally friendly way (easy to recycle/recover, recycled materials are used instead of virgin ones, use of heavy metals and hazardous substances is limited, etc.). Packers have changed packaging materials (e.g. lighter material), they try to avoid over packing, etc. In the field of transport packaging a trend towards reusable packaging is emerging.

The landfill tax has been introduced in order to support the collection and recovery or recycling of packaging waste. However, the tax is not high enough to divert more waste from landfills towards recycling or recovery. The awareness campaigns are organized by public, private and non-governmental institutions in order to create awareness about sustainable waste management.

BOX2: Quantitative information that could be provided under environmental effectiveness/performance

The table below shows the amounts of packaging waste generated and treated in Slovakia from 2008 to 2011. The amount of generated packaging waste is the amount of packaging that was put on the market in each year.

Treatment	2008		2009		2010		2011	
	(t)	%	(t)	%	(t)	%	(t)	%
Generated	324 925	-	395 304	-	436 341	-	443 672	-
Recycled	155 150	47,7	236 590	59,9	199 569	45,7	276 805	62,4
Energy recovery	2 032	0,6	2 391	0,6	2 852	0,7	4 804	1,1
Other forms of recovery	7 733	2,4	10 681	2,7	4 708	1,1	6 937	1,6
Total	162 503	50,7	249 662	63,2	207 129	47,5	288 546	65,1

(Report on Packaging and Packaging Waste for 2008, 2009, 2010, 2011 Slovakia)

The amount of packaging is increasing (possible reasons mentioned on the previous page). The amount of packaging recycled varies between 50 and 60 %. Energy recovery is slightly increasing and landfill disposal is slightly decreasing.

Amount of packaging waste disposed of in landfills: no data

Amount of packaging waste reused: no data

Kilograms/capita collected: no data

Kilograms/capita recycled: no data

Amount of greenhouse gas emissions avoided (in CO2 equivalent): no data

5. Coverage and quality of waste collection and treatment

The existing infrastructure for separate collection covers 100 % of the population with certain weak points. Municipalities are responsible for organizing the separate collection of paper, plastic, glass, metals and bio-waste. As mentioned before, it is possible for municipalities to avoid the bio-waste collection if they meet certain conditions (i.e. if municipality can demonstrate that 50 % of its inhabitants compost their own waste), which is not very difficult – the collection of bio-waste is therefore not practiced in most of the country. The waste is either collected from a bin or bag, according to the colour of the bin/bag (green and white for glass, blue for paper, yellow for plastics, red for metals and brown for bio-waste). Bins are mainly located next to MSW bins and bags are collected on certain dates. A collection of large items of waste, WEEE and similar waste is organized a few times per year. The packaging and non-packaging material is collected together, it is not differentiated at the source. The collection bins belong either to municipalities or to collection companies.

There is an absence of the systematic monitoring of waste treatment. The meeting of recycling and recovery rates is evidenced by documentation regarding the material flow of the packaging waste from the place of the origin to first waste recovery facilities. The collection companies have to declare that they transfer their waste to a recovery facility. The *Decree of the Ministry of Environment SR No. 310/2013 Coll. on implementing certain provisions of the Act on Waste* states requirements and conditions for recovery facilities. For example, they have to keep track of the amount of accepted and recovered waste, amount of non-accepted waste with the explanation, etc. and report it periodically to the Ministry. Then it is upon the state administrative authorities to control it.

Approximately 30 % of packaging waste was exported in 2011 mainly for recycling (percentages are shown in the table below). These amounts are already included in the overall percentage for Slovakia. Nearly half of the recycled packaging waste is recycled abroad. Paper represents about 93% of all waste exported (to neighboring states).

Treatment of exported packaging waste	%
Recycling	29,34
Energy recovery	0,02
Other types of recovery	0,64

BOX 3: Quantitative information that could be provided under coverage and quality of waste collection and treatment

Amount of residue waste:

Residue waste/ton collected:

Percent of territory/population covered: 100 % population covered

Percent of amount collected that is exported:

6. Cost effectiveness and benefits

Waste management budget consists of public and private sources. Public sources are from the Operational Programme of the Environment (sources from EU funds and the Cohesion Fund), the Environmental Fund and local fee for MSW. Private sources are from the Recycling Fund, PROs and private sources of waste producers and waste holders.

Public sources: The main purpose of the *Operational Programme of the Environment* is environmental improvement and the responsible use of resources through the help of better environmental infrastructure. In 2011, 136 million EUR was paid from this programme to waste management activities.

The Environmental Fund is a governmental fund, whose money is used for activities to take care of the environment such as closure and reclamation of landfills, separation and recovery of bio-waste, support of separate collection in municipalities (e.g. collection points), etc. The fund's income comes from fines, fees paid for pollution and for natural resource use (polluting water and air, mineral mining etc.), voluntary contributions, etc. In 2011, the Environmental Fund supported environmental activities in waste management equal to 4mEUR. It represents 11 % of all subsidies from the fund.

The local fee for MSW is a yearly flat fee paid by citizens to municipalities. The fee is different for each municipality and is calculated according to the municipality's cost for waste management.

Private sources: *The Recycling Fund* is a non-governmental fund. Its main purpose is to support the creation of recovery facilities. The fund collects fees from manufacturers and importers of the products listed in the first chapter. In 2011, the total income of the Recycling Fund was 13,38m EUR and it supported the environmental activities by nearly 10m EUR (approximately 3m EUR was given to municipalities).

PROs support the collection, recovery and recycling of packaging waste and WEEE. The yearly average income of all PROs for packaging (fees paid by their clients) is more than 10m EUR. There is no stated structure of the use of these fees. Activities connected with treatment of the packaging waste have to be ensured and any income left is used depending on each PRO. About 1/3 of all registered obliged parties deal with the treatment individually (not included in the PROs' income mentioned above). According to some statistics, ¼ of all recovered packaging waste is recovered individually. Based on this information the sources from the obliged parties that fulfill their obligations individually can be over 3m EUR. Then total money paid for collection and recovery of packaging waste can be about 14m EUR. The Ministry would like to implement a clearer, more systematic system for the use of PROs' finances.

Waste producers and those who store waste are obliged to ensure the treatment of waste produced by their activities. Unfortunately, the statistics connected with such treatment have not yet been collected.

The external cost of waste disposal is stated in the Act no. 17/2004 on waste disposal fees. It varies from 10 to 5 EUR per ton depending on the number of separated components (mixed collection: 10 EUR/t, separate collection of 5 components: 5 EUR/ton). Municipalities are

obliged to organize separate collection for 4 components since 2011 (glass, paper, plastics and metal) and for 5 components since 2013 (bio-waste under special conditions). As a result, the external cost of waste disposal is half the price. There is a call for higher disposal fees, which has resulted in an amendment to the Waste Disposal Fee Act. The external cost of MSW disposal should be about 6 EUR/ton and disposal of hazardous waste about 33 EUR/ton according to this new draft. Disposal of packaging waste (paper, plastics, wood, composite and textile) should cost 17 EUR/ton in 2014 and will increase to 37 EUR/ton in 2016 and following years. The disposal cost of hazardous packaging waste should be 50 EUR/ton in 2014 and 70 EUR/ton in 2016 and following years.

The social benefits of EPR equate to the reduction of waste disposal and money savings. In 2011, the EPR policy reduced waste disposal by nearly 290 000 tons, making the benefit of the policy approximately 2m EUR (average disposal cost 7 EUR/ton).

The economic cost of the EPR policy is approximately 14m EUR (i.e. the fees that PROs collect and money paid by obliged parties that deal with it individually). However, this only represents a transfer between obliged parties and PROs (as well as collection and recovery companies). The true costs to society are reflected in the change in behaviour by all of economic agents such as packaging producers, packers, consumers, waste managers, etc. Packaging producers now take into consideration the whole life cycle of their products as well as the economic cost of the production (easy to recycle/recover, reusability, practicality, limited amounts of heavy metals, absence of hazardous substances, use of recycled materials, full compliance with the legislation, etc.). Packers now consider environmental liability of their packaging (i.e. they use less packaging material, which still ensures optimal safety and hygiene for their products, practicable packaging, easy to recycle/recover packaging, etc.). Consumers have become more environmentally friendly as they actively think about their need for a product and/or about their packaging needs when shopping. They try to minimize and separate their waste, and they use reusable products.

BOX 4: Quantitative information that could be provided under cost effectiveness and benefits

Cost per kilogram collected: no data (cost per kilogram generated: 14m EUR/444 000 t generated = 32 EUR/t)

Cost per kilogram recycled: 14m EUR/280 000t recycled pcg waste = 50 EUR/t (0,050 EUR/kg) - 2011

Cost per capita: 14m EUR/5,5m inhabitants = 2,6 EUR/capita

Cost per household: 14m EUR/2 100 000 households = 6,7 EUR/household

Cost recovery rate from fees (is there a share of collection, treatment and disposal that is covered from other sources such as subsidies): 1 % of recovery rate costs approximately 200 000 EUR (14m EUR/65,1% recovery rate) = 200 000 EUR/%

Overhead cost per ton collected/recycled:

Economic cost per ton ~~collected/recycled~~ recovered: 48 EUR/t (14m EUR/290 000)

Social benefit per ton ~~collected/recycled~~ recovered: 6,9 EUR/t (2m EUR/290 000)

7. Competition and market barriers

Competition is a fundamental prerequisite for efficiency and is necessary to control waste treatment costs. Lack of competition can lead to high costs. Without appropriate competition, there is the potential for a producer to be placed at an unfair advantage.

There are equal conditions for domestic packers and for importers of packed products - the Packaging Act does not differentiate between importer and local entity. The obligations to register, submit the required reports and to ensure the recycling/recovery of packaging waste (if stated thresholds are exceeded) are the same. However, the Waste Act does impose extra obligations on importers such as registration with the Recycling Fund, submitting a quarterly report on the amount of packaging imported and reporting it to two institutions as well as payment for the packaging (even if threshold is not exceeded), with no guarantee of recycling/recovery.

PROs practice fair, open and transparent operations, allowing all producers equal access to its services and usually publish fee lists where charges are clearly related to the actual cost of processing different materials.

The market to establish PROs is open. If producers are not satisfied with a certain PRO, they are free to choose another PRO or to set up their own system. To date valid government legislation does not artificially constrain the contestability of the market for PRO services by over-specifying the PRO in legislation or by giving official status to one particular PRO for example. However, in the Legislative thesis of the new Waste Act PROs would have to be authorised. The authorization should be based on the expert statement of a special committee appointed by the Minister of Environment, granted for 10 years and PROs would have to meet specific conditions (not clearly specified yet). Example conditions include: that a PRO's profit has to be allocated to for fulfillment its responsibilities; a part of the profit has to be reserved for awareness campaigns on separate collection; financial guarantee that the collection and recycling/recovery will be ensured even if the PRO ceases to exist; mandatory cooperation with municipalities or declaration of a portion of the territory coverage. There are currently 12 PROs active on the Slovak market.

8. Conclusions

The EPR scheme has fulfilled its purpose in terms of environmental effectiveness. The main goals of EPR include diversion of waste, reduction in the amount of waste sent to final disposal, new product design, meeting the targets, etc. The number of obliged parties involved in PROs is still increasing, which means more companies take responsibility for their products. The amount of packaging put on the market is increasing, however, this is not necessarily a negative factor as it reflects an increase in the number of companies. Since 2007, when five of the biggest PROs were established, the recycling and recovery rates have nearly doubled in comparison to previous – which means a large amount of packaging waste has been diverted to recycling and recovery. When the market functioned normally we reached a 65% recovery rate and a 60% recycling rate (2007-2011). There has been a change in packaging design occurs. Packaging is now manufactured to be easily recycled/recovered, recycled materials are used instead of virgin resources, contains limited amounts of heavy metals, absence of hazardous substances, is focused on reusability and practicality, etc. Packers have changed packaging materials, and they use lighter packaging, don't over pack their products (use minimum amount of packaging material that is needed to ensure the safety and hygiene of the products), most of transport packaging is reusable, etc. The behaviour of consumers has become more environmentally friendly. Consumers are thinking about the necessity of packaging when shopping, they try to minimize and separate their waste, and use reusable packaging/products.

However, there is still duplication in financial obligations (fee to the Recycling Fund and fee to PROs based on EPR). The Recycling Fund only covers the financial obligation of EPR (a type of ADF), but recycling/recovery of the products is not ensured. Recycling Fund only collects funds (financial contributions) without taking general responsibility for disposal of packaging waste. Manufacturers pay for the manufactured packaging and packers pay for the same packaging when they use it for packing.

Nonetheless, there is some economic efficiency as waste is diverted from landfills towards recycling/recovery. This could be more efficient if the disposal fee were equal or higher the cost of recycling/recovery. This is the reason EPR generated net costs instead of net benefits. The costs, which are met by PROs, play an important role concerning the control of material flows. These costs are divided amongst the participants of the PROs and are based on the kind of material and weight. License fees are related to the actual cost of processing different materials.

In terms of innovative advancement, there is a change in design towards eco-design (packaging that is easy to recycle/recover, recycled materials are used instead of raw materials, contains limited amounts of heavy metals, absence of hazardous substances, etc.) with a focus on reusability, practicality, etc.

The degree of social acceptance of EPR is quite high. EPR policy strongly depends on consumer participation and therefore environmental awareness and information dissemination are important components of EPR. Only if citizens are actively involved, separating packaging and placing it in the right container, can the system function and work effectively economically and environmentally. Some supporting mechanism should be placed in order to encourage people to separate properly. There is a PAYT scheme; however

it depends on the municipalities. Most of the population pays the same fee regardless on the amount of waste they generate.

Producers are informed about their responsibilities by awareness campaigns mainly organized by PROs, which are also organized by non-governmental institutions as well as private waste collectors, sorters and recyclers and governmental institutions.

Monitoring should be an inherent part of the EPR as it can provide a continuous feedback mechanism and information can be provided on achievements and on policy performance. Such monitoring as well as a complex online information system is missing in Slovakia. Implementing such a system would prevent errors and it would be more environmentally friendly with less use of paper.