Ministry of the Environment
of the Czech Republic

CZECH REPUBLIC'S WASTE PREVENTION PROGRAMME

October 2014

Contents

1 INTRODUCTION

Pursuant to Directive 2008/98/EC of the European Parliament and the Council of 19 **November 2008 on Waste and repealing certain Directives (hereinafter also referred to as** Directive on waste 98/2008, or simply, Directive on waste), the Member States are required to set up their national Waste prevention programmes (hereinafter also referred to as the Programme/Programmes) by 12 December 2013. Pursuant to Act no. 185/2001 Coll. on Wastes in its valid wording currently in force (the Wastes Act), this obligation is spelled out in section 42, paragraph 2 thereof.

The European Commission emphasises the quality of preparation of these Programmes, and this is why it published, in October 2012, a Manual that sets out how the Member States are to proceed in preparing their Waste prevention programmes – *„Preparing a Waste Prevention Programme - Guidance document*" (hereinafter also referred to as „the Manual").

In the management of wastes, prevention ought to be focused on the one hand upon reducing the quantity of waste generated, and on the other hand, upon mitigating their hazardous properties that exert a negative impact on the environment and on the health of the population. In this context, the re-use of products as well as the preparation thereof are regarded as part of the prevention efforts.

The issues of preventing the generation of wastes are rather wide-ranging. Comprehensive Waste prevention programmes are concerned not merely with the waste management sector but also with the extractive industries and with manufacturing, the design and provision of services, education and awareness-raising, and public as well as private consumption. This dimension has to be born in mind when specifying the objectives and measures intended to provoke activities that would truly prevent the production of wastes, with due regard also to future developments and inspection. At the same time, they have to lend themselves to evaluation in a meaningful and demonstrably correct manner.

Preventative approaches are nothing essentially new to the sphere of waste management; they have been part of the European Communities' strategic documents since long ago, on a long-term basis. Certain EU Member States have introduced the Waste management programmes much sooner than required by the Waste Directive.

In the Czech Republic, the preventative measures as applied in waste management are acomponent part of the CR Waste management plan still in force (*cf*. Chapter 3.1). Equally existing legislation relating to waste management, including both Act no. 185/2001 Coll. On Wastes and on amendments to certain other Acts, as amended by subsequent legislation, and Act no. 477/2001 Coll., on Packaging and on amendments to certain other Acts, as amended by subsequent legislation, do incorporate a number of elements in support of prevention. In the CR, waste prevention also is part of practical activities pursued within the framework of sustainable development.

According to the Waste Directive the Waste prevention programmes may either be included in the waste management plans or, as the case may be, in other environmental programmes or policies; they can also be constituted as self-contained, stand-alone programmes. In Czech legislation, the amendment to the Wastes Act (Act no. 154/2010 Coll.) also stipulates that the waste prevention programmes shall be part of the CR Waste management plan. The new CR Waste management plan (CR WMP) is under preparation, to become effective as of 2015, and this has made it necessary to approach the formulation of a stand-alone document in order to meet, as far as possible, the deadline laid down in the Waste Directive. The outputs of the section of the CR Waste prevention programme devoted to the proposals concerning the wastes will be reflected in the new CR WMP.

The Waste prevention programme as presented is broken down into two main parts. In its analytical part it presents an outline of the strategic and legislative framework, describes the start-of-programme situation regarding the implementation of measures and steps

concerned with the issues of preventing the production of wastes, and also gives a basic situational analysis of the streams of selected wastes for which the need of a further, more detailed elaboration of how the wastes are to be prevented has been identified, to be treated in various chapters and subchapters as appropriate. Subsequently, the part devoted to the proposals specifies the objectives as well as the measures required for the implementing thereof.

The CR Waste management programme presents a more detailed analysis and overview of the following streams of wastes:

- municipal waste;
- biodegradable waste;
- food waste and foods;
- waste and end-of-life products based on product specifications (packaging, electrical wastes, batteries and storage batteries, end-of-life vehicles);
- construction wastes/building materials;
- textile waste/textiles earmarked for re-use.

Within the framework of the new Operational programme Environment 2014-2020, under Priority axis 3 „Wastes and flows of material, environmental burdens and hazards“ the INVESTMENT PRIORITY 1 of the Priority axis 3 is being prepared, called „Preservation and protection of the environment and support to an effective utilisation of resources by means of investment projects in the area of waste management, aiming to meet the environment-related requirements of the EU *acquis*, and by means of adequately dealing with investment requirements which, as ascertained by the Member States, surpass the framework of these requirements.“ This area also incorporates the Specific objective 1: „Waste prevention “. Also under the Priority axis 6 "Technical assistance", the MEnv envisages that support will be extended to analytical and methodological activities.

Further support toward implementing the measures should arrive via the national programmes of the State Environmental Fund (SEF). Support to research and development projects is expected to stem mainly from the programmes supervised by the CR Technology Agency (Czech abbreviation, TACR).

The body responsible for establishing and implementing the Waste prevention programmes on behalf of the Czech Republic is the Ministry of the Environment (MEnv). The issues of preventing the generation of wastes is of a cross-cutting nature and is of concern also to other sectors which ought to take an active part in implementing the various specific measures of the Programme, especially to the Ministry of Industry and Trade, Ministry of Agriculture, Ministry of Education, Youth and Sports, Ministry of Finance. In case of so-called „green projects“, all sectors with their subordinate organisations should be involved. Equally desirable would be the participation of the councils (boards) of local (municipal) government.

Pursuant to the waste directives, the Member States are required to take steps ensuring that the waste management plans as well as the waste prevention programmes be subjected to an evaluation at least once every six years and that they be revised as necessary. Inasmuch as the section of the Programme concerned with proposals (objectives and measures) will become part of the new CR WMP, the evaluation of the Programme should proceed within the framework of the CR WMP evaluation reports.

1.1 Procedure to be adopted in drafting the document

In October 2012 the European Commission published a manual for the Member States detailing the procedure to be adopted in drafting their waste management

programmes - *„Preparing a Waste Prevention Programme Guidance document*".

The Ministry of the Environment has commissioned the production of an Executive Summary (Abstract) of the document and the translation thereof into Czech. The Summary, the translation as well as the official English-language version of the Manual were distributed to all the major subjects to whom, it may concern (*cf*. below) for the purpose of meetings to be held concerning the drafting of the Programme. The Manual highlights, *i.a*., the need of elaborating technical analyses – inputs for subsequent discussions with the major partners.

The flows or rather, streams perceived to exist in the area of waste management, to be analysed and monitored in greater detail under the Programme, were specified in a meeting attended by the Ministry of the Environment (MEnv), Ministry of Industry and Trade (MIT), the Czech Chamber of Commerce CR (CR CCC), the CR Confederation of Industry (CR CI) and the Institute for Sustainable Urban and Municipal Development (Czech abbreviation, IURMO), held on 26. 10. 2012.

The next negotiations concerning the progress of preparing the Programme took place at the MEnv on 16. 11. 2012, attended by selected subjects at the level of concerned Ministries, professional associations, representatives of the business community, of research and of non-governmental organisations (ca. 50 participants); the Manual was introduced, the streams to be monitored were specified, and the attendees were requested to send in their respective documentation and data.

Owing to the fact that in the area of waste management so far, only a limited range of more generally formulated preventative measures was being used at a working level, and there has not been any systematic collection in the CR of documentation relative to the streams specified, a follow-up technical document was commissioned, to be elaborated by the Waste management Centre of T.G.M. Water Management Research Institute. The technical document was delivered to the MEnv in July, 2013.

Subsequently, the Ministry's own document called "Czech Republic's Waste Prevention Programme" has been elaborated, for the purpose of further consultations. The document has passed an internal round of comments and, upon approval by a meeting of the MEnv executive, also an inter-sectoral comments process.

The Draft Programme was made public at the Ministry's website on 12 December 2013.

The Cabinet took cognisance of the state of the Programme preparations on 18 December 2013.

The Draft Programme was submitted by the MEnv to the European Commission on 2 January 2014, via the Permanent Representation of the CR to the EU.

Environmental Impact Assessment of the CR Waste Prevention Programme

The CR Waste Prevention Programme meets the definition of a concept paper pursuant to Act no. 100/2001 Coll., as amended by subsequent legislation, and thus it had to pass an assessment pursuant to the stipulations of section 10, letter e) of Act no. 100/2001 Coll. as well as an evaluation as to its impact on localities of European importance and on avian sanctuaries pursuant to Act no. 114/1992 Coll. on Nature and landscape conservation, as amended by later legislation.

The Ministry of the Environment as the body responsible pursuant to section 21, letter d) of the Environmental Impact Assessment Act, has issued an affirmative statement (ref. no. 58207/ENV/14) on 28. 08. 2014 based on the draft concept paper including an evaluation thereof on the environment and on human health, with due regard to statements pertaining thereto and the public debate thereon.

ANALYTICAL SECTION

2 THE STRATEGIC AND LEGISLATIVE FRAMEWORK OF WASTE PREVENTION AT THE CR AND EU LEVELS

Ever since the **1992 Treaty on European Union** it has been necessary, for the purpose of pursuing a cautious policy based on the precautionary principle as well as the principles of prevention anchored in art. 174, paragraph 2 thereof that certain general environmental objectives be set to govern the handling of wastes within the framework of the Community. Based on these principles the Community and the Member States have to create a framework for preventing the generation of waste as well as for restricting and even fully eliminating as far as possible the sources of contamination and of annoying phenomena; this is to be done by adopting measures such that would eliminate the known hazards.

In its **Resolution dated 24 February 1997 on a Community strategy for waste management** the Council has confirmed that waste prevention should become the main priority of waste management and that the re-use and recycling of materials should be given preference wherever this constitutes the best ecological options available.

A principial move forward in the area of waste prevention was represented by the **Sixth Community Environment Action Programme**, promulgated by Decision **no. 1600/2002/EC**. Sustainable management of both sources and wastes is listed here as one of its four priority areas. Ranking among the fundamental principles of environmental policy are the precautionary principle; the polluter-should-pay principle; curbing pollution/contamination at its source; and support to sustainable development. The document calls for formulating new, or for amending existing, waste legislation including a more precise specification of the difference between wastes and non-waste materials, and for implementing appropriate measures for preventing waste generation and for managing the wastes produced, including the setting of targets.

This programme was followed up by formulating, and promulgating in 2005, the document **Communication from the Commission on the thematic strategy of waste prevention and recycling, COM (2005) 666**. The document voices criticism of the persistently high share of waste dumping (landfilling). The thematic strategy ought to impact the existing practice employed by the Member States and, alongside landfilling, should create new options of alternative handling of wastes, thus supporting the implementation of a waste management hierarchy. Therefore, it is required that the measures in support of waste prevention, recycling and re-use become harmonised so as to arrive at the maximum possible reduction of the over-all impact across the entire life span of the sources.

This strategy stipulates a co-ordinated approach to waste prevention thanks to which the waste prevention policies would become focused on mitigating their effect on the environment and a concrete country policy framework would be defined. Activities in the area of waste prevention have to operate at all levels of management. On the pan-European scale, **European legislation in the area of integrated prevention and pollution abatement (Directive 2010/75/EU - the Industrial Emissions Directive) and an integrated product policy can make significant contributions to waste prevention. Reference documents outlining the best available techniques and technologies (BREF regulations)** produced pursuant to the Integrated Pollution Prevention and Control Directive provide useful information on waste prevention. Finally, the issues of creating a framework for initiatives in the area of eco-design, within the framework of an integrated product policy, have to be addressed. The document also requires an update to the existing legislative framework dealing with waste management.

The document Europe 2020 - A strategy for smart, sustainable and inclusive growth (COM (2010) 2020), defined the main directions of development for the European Union toward a competitiveness and toward economic and social advancement. One of the pre-conditions is achieving a sustainable growth and making the economy less resource-intensive. Ranking

among the latest documents relating to the waste prevention activities is the document called Roadmap to a Resource Efficient Europe, COM (2011) 571, promulgated by the Commission in September 2011, which includes an important phased target: „Turning waste into a resource by the year 2020“. It also lists a number of measures towards implementing this objective.

The Decision of the European Parliament and the Council no. 1386/2013/EU promulgated the **Seventh Environment Action Programme** - a General Union Environment Action Programme to 2020, entitled „Living well, within the limits of our planet“. Special attention is paid to turning waste into a resource, to waste prevention, to the preparation for re-use and recycling, and to gradually phasing out inefficient methods such as landfilling.

Communication from the Commission to the European Parliament, the Council, the European Economic and Social.Committee and the Committee of the Regions - Towards a circular economy: A zero waste programme for Europe (COM(2014) 398 final). The Communication is one of the documents published that are concerned with the topic of *circular economy,* of which the implementation has become one of the European Commission's fundamental priorities. According to the European Commission, the economies of the EU Member States presently operate on a linear consumption model (acquisition of resources – production – consumption – removal, *i.e.*, "take – make – dispose of"). As a consequence, the system is being depleted by significant amounts of valuable raw materials. According to EC's projections the demand for resources will keep growing, thus exposing the environment to ever greater pressures due to exploitation of the resources. This problem can be resolved by supporting so-called circular economy. Under the conditions of circular economy, a maximum of the products that would be disposed of under the linear model are re-used (for instance, as raw materials). Therefore, the worth of the incoming raw materials is retained within the system for the maximum possible time.

As regards Czech Republic's framework strategic and concept documents dealing with the topic of waste prevention, this includes in particular the following documents:

- **The CR Waste management plan** - a fundamental document relating to waste management, outlining as its integral part the objectives and measures relating to waste prevention - see chapter 2.2 for more details.
- **The CR State Environmental Policy 2012 - 2020** (approved by Government resolution no. 6 of 9 January 2013).
- **The CR Strategic Framework for Sustainable Development** (approved by Government resolution no. 37 of 11 January 2010).
- **The CR National Reforms Programme 2013: Growth - Competitiveness - Prosperity** (approved by the Government on 17 April 2013).
- **The CR Strategy of International Competitiveness for the 2012 to 2020 period** (approved by Government resolution no. 713 of 27 September 2011).
- **The CR Secondary Materials Policy** (approved by the Government on 15 September 2014; see chapter 2.3. for more details).

2.1 Legislation at the EU and CR levels

The legislation relative to the issues of waste management is rather voluminous; therefore, only the basic regulations are treated in this chapter. A broader listing can be found in Annex no. 1 - Important legislation and legal norms pertaining to the area of waste management in CR and EU, and related regulations and norms concerned with the issues of waste prevention – and, in Annex no. 2, are listed those sections of the major regulations which deal with waste prevention in the area of waste legislation. Further, pertinent items of legislation are also mentioned in the subsequent chapters.

The preparation of new legislation in the area of waste management has been initiated by the Sixth Environment Action Programme and its follow-up document, the Thematic

Strategy of Waste Prevention and Recycling. Within the intentions of these documents, the new **Framework Directive of the European Parliament and the Council (EC) no. 98/2008 of 19 November 2008 on Waste and Repealing Certain Directives** on Wastes was formulated. Its objective is to protect the environment and human health by preventing the harmful effects of waste generation and handling; this is why it highlights the need of adhering to the waste management hierarchy where waste prevention is considered toinclude both the prevention proper of any waste generation and the preparations for a re-use of end-of-life products. It also stresses the extended responsibility shouldered by the manufacturer/producer. Pursuant to art. 29 of the Waste Directive, the Member States are required to elaborate their Waste prevention programmes with a view to interrupting the interdependency between economic growth and environmental impacts arising from waste generation. Subsequently, Annex IV to the Directive provides a listing of examples of waste prevention measures.

The issues of waste prevention are also linked to a precise definition of a by-product, as well as a definition of the conditions under which waste will become "non-waste". With regard to art. 6 of the Waste Directive no. 98/2008, special criteria were established to determine when a material exits the waste mode by a mandatory regulation; this has so far been done for the following commodities:

- **Council Regulation (EU) no. 333/2011 establishing criteria determining when certain types of scrap metal cease to be waste** under Directive 2008/98/EC of the European Parliament and the Council,
- **Commission Regulation (EU) no. 1179/2012 establishing criteria determining when glass cullet ceases to be waste** under Directive 2008/98/EC of the European Parliament and the Council,
- **Commission Regulation (EU) no. 715/2013 establishing criteria determining when copper scrap ceases to be waste** under Directive 2008/98/EC of the European Parliament and the Council.[1]
- The obligations arising from the Waste Directive **no. 98/2008** have been transposed to **Act no. 185/2001 Coll. on Wastes and on amendments to certain further Acts**, by promulgating its amended version *i.e*., Act **no. 154/2010 Coll.**
- In addition to the basic Framework Directive on Wastes, the waste prevention related issues are dealt with by a range of so-called product directives, particularly with stress laid on the re-use of products and on constraining the use of hazardous substances in the production processes. This includes the following Directives:
- **Directive 2000/53/EC of the European Parliament and of the Council on End-of-life vehicles**,
- **Directive 2012/19/EU** of the European Parliament and of the Council **on Waste electrical and electronic equipment (WEEE)** (redrafted wording),
- **Directive 2011/65/EU** of the European Parliament and of the Council **on the restriction of the use of certain hazardous substances in electrical and electronic equipment** (redrafted),
- **Directive 2006/66/EC** of the European Parliament and of the Council **on batteries and accumulators and waste batteries and accumulators** and repealing Directive 91/157/EEC.

The obligations arising therefrom have been transposed in particular, into the **Wastes Act**, or as the case may be, into its appurtenant implementing regulations, and in the special case

[1] The formulation of an analogous Regulation for paper waste is nearing completion. Further material flows under preparation include plastics and composts. Studies are also underway for stone aggregates and for waste-derived fuels. Inasmuch as the determination of special criteria for these flows is a complicated matter, it cannot be estimated to which time horizon the preparation of further regulations will be brought to completion. In cases where no special criteria will be established at the European Union level, such criteria may, in individual cases, be established by the Member States and notified by them in compliance with the Directive.

of end-of-life electrical equipment and vehicles the issues of the contents of hazardous substances therein are dealt with by **Government regulation no. 481/2012 Coll. On the Restriction of the use of certain hazardous substances in electrical and electronic equipment**, which is within the remit of the Ministry of Industry and Trade, and by **Regulation no. 341/2002 Coll. on Approval of technical fitness for, and technical conditions of, operation of road vehicles** by means of a reference to the application of the Directive in its Annex I.a, which is within the remit of the Ministry of Transport.

A specific position is held by another Directive, *viz*., **Directive 94/62/EC of the European Parliament and of the Council on Packaging and packaging waste** (in the wording of the Directives 2004/12/EC, 2005/20/EC and 2013/2/EU), since the transposition thereof has been effected by means of a special Act **no. 447/2001 Coll. on Packaging** and on amendments to certain Acts, in the wording of subsequent legislation, and by the implementing regulations thereof. The Directive sets out the measures intended to curb the over-all amount of the wastes, thereby supporting the repeated use of the packaging, recycling and other forms of re-use of packaging waste. Member States are required to introduce measures to prevent the generation of packaging waste and to provide for the roll-out of systems of re-use of this packaging while employing environment-friendly methods

In immediate connection with the waste prevention issues is the **Directive 2010/75/EU of the European Parliament and of the Council on Industrial emissions (integrated pollution prevention and control)**. In the Czech legislation, it has been integrated for the most part into the wording of **Act no. 76/2002 Coll. on Integrated pollution prevention and control, on the integrated pollution register** and on the changes to certain Acts, in the wording of subsequent legislation.

Another related regulation of importance is the **Regulation (EC) no. 1907/2006 of the European Parliament and of the Council on Registration, evaluation, authorisation and restriction of chemicals**, on the establishment of the European Chemicals Agency (the so-called REACH regulation). Within the Czech legislation, this is dealt with by **Act no. 22/1997 Coll., on the Technical requirements for products** and on amendments to and supplements of certain Acts.

On 2 July 2014 the European Commission published its **Directive of the European Parliament and of the Council amending Directives 2008/98/EC on Waste, 94/62/EC on Packaging and packaging waste, 1999/31/EC on the landfill of waste, 2000/53/EC on End-of-life vehicles, 2006/66/EC on batteries and accumulators and waste batteries and accumulators, and 2012/19/EU on Waste electrical and electronic equipment** (COM (2014) 397 final). This legislative proposal anchors the issues of waste prevention even more firmly in the EU legislative framework.

2.1.1 Value added tax issues (Directive 2006/112/EC)

For the EU Member States, the fundamental piece of legislation concerned with the area of the value added tax is Directive 2006/112/EC („the VAT Directive“). In the Czech legal system, this is dealt with by Act no. 235/2004 Coll. on Value added tax, in the wording of subsequent legislation.

The basic VAT mechanism is such that when filling in the tax return, the Payee (a juridical or natural person registered with the Tax Office of jurisdiction for the locality in question) enters, for the current taxation period (a calendar quarter or a calendar month) the sum total of the tax included in the prices paid for goods and services delivered/provided by the Payee during the period in question, and conversely, deducts from this sum total the tax included in the prices of goods and services that are provided to the Payee by other Payees during the same period (claiming this as a tax deduction).

In the case of foodstuffs nearing their end-of-warranty, Sellers may proceed so that either they sell these goods at the current price and are levied a tax corresponding, for most kinds of foodstuffs, to the rate of 15 % (so-called reduced tax rate), or, depending on the quantity of goods yet unsold and on the consumption deadline approaching, they may reduce their prices (even several times in succession) and sell the wares at a discount, with the tax to be levied calculated at the rate of 15 % again but from the reduced price. It is up to the Seller which price will be used, the price may even be substantially lower than the current going price, or the goods may even be sold at a symbolic price. Determination of the selling price is solely up to the Seller; the factors that can be taken into account when setting the price include *e.g.*, the condition of the goods at the time of the sale, its propensity to decay, the approaching date of consumption indicated by the producer, etc.

Once however the Seller when purchasing the goods has claimed a tax deduction (as included in the prices of goods received from other sellers, payees) and fails to sell the goods at either the going price or at a discount, and bestows the goods for free to another person, such as a food bank or a charity organisation, the Seller shall be liable for tax. This obligation is laid down in the VAT Directive, in its article 16, and the VAT Act in its section 13, paragraph 4, letter a) and paragraph 5. Therefore, to proceed differently would be at odds with EU legislation.

In case that the Seller, Payee, does not claim any tax deduction in respect of the prices of goods purchased from other persons, payees, and bestows the goods free of charge to other persons, including *e.g.*, food banks or charity organisations, the Seller shall not be liable for tax when thus donating the goods.

2.2 The waste management plan and waste prevention

The CR Waste management plan (hereinafter also referred to as „CR WMP“ or „the Plan“) has been elaborated pursuant to Act no. 185/2001 Coll. on Wastes and on amendments to certain other Acts, as amended by subsequent legislation (hereinafter, also „the Wastes Act“), by the Ministry of the Environment (hereinafter, also „MEnv“ or „the Ministry“) in 2003.

The mandatory part of the Plan was promulgated by Government regulation no. 197 of 4 July 2003 and amended by Government regulation no. 473/2009 Coll. and Government regulation no. 181/2013 Coll. by which the term of validity of the Plan has been extended until 31 December 2014. The Plan is subjected to regular evaluations using the form of so-called Evaluation reports on the implementation of Government regulation no. 197/2003 Coll.

By its wording, the Waste management plan of the Czech Republic (or rather, its mandatory part) is also focused, ever since the outset of its term of validity (1 July 2003), on waste prevention and minimisation. The general objectives that can be regarded as being closely related to waste prevention and minimisation, are set out in particular in its chapter 3.1.:

- Objective (a) Support of low-waste to waste-free technologies;
- Objective (b) Substitutions for materials and products that, on expiry of their service life, exert detrimental effects on human health and the environment;
- Objective (c) Replacements of hazardous materials;
- Objective (d) Minimising product volumes and weights;
- Objective (e) Support of returnable, re-usable packaging;
- Objective (f) Support of environmental control & management systems;
- Objective (g) Support of the National Cleaner Production Programme;
- Objective (i) Endeavouring to alter the behaviour of businesses as well as of the general public;
- Objective (j) Implementing the State Programme of Environmental Education and Public Awareness Raising;

- Objective (k) Support of voluntary activities.

Prevention of the generation of hazardous wastes is also paid attention, for instance, in:

- chapter 3.2, letter e - Inspection of products, equipment and installations in connection with mitigating their hazardous properties over their entire life span.
- chapter 3.2, letter f - Motivating the general public to separate collection of hazardous components of municipal waste (hereinafter also referred to as MW).

Support to sorting of the different components of municipal waste and to the take-back of selected products is dealt with in chapter 3.4, letter. l.

At the same time, the present CR WMP defines the measures which are to assist toward meeting the objectives and are directly related to them.

Present situation: **It follows from the regular annual evaluations of the CR WMP that the objectives as set out in the current CR WMP in the region of waste prevention are being met on an ongoing basis (unless they have already been met in full). A brief overview of these can be found in Annex no. 3.**

The prevention strategy will also be part of the new CR WMP currently under preparation; this is expected to become effective as of 1. 01. 2015. Owing to the fact that the requirements imposed on the Waste prevention programme arising from the Waste Directive and the Manual are rather more extensive than those reflected in the existing Plan while the deadline for announcing the prevention programmes was 12. 12. 2013, an independent, stand-alone CR Waste prevention programme is ready for launching. Owing to the requirements of the Manual in respect of drafting the programmes and owing to the requirements spelled out in Annex IV to Directive no. 98/2008 on Wastes, it is appropriate to follow up with some of the activities or to continue developing them further. This is why the proposal of preventative measures should include, for instance support to low-waste technologies and those technologies which economise on the input raw materials, support to the systems of environmental management, environmental education and awareness raising, voluntary activities, etc. The objectives and measures incorporated in the CR Waste prevention programme now being prepared will eventually become part of the new CR Waste management plan.

2.3 Raw materials and secondary materials policies

Within the process of updating the **Czech Republic raw materials policy**, this document has been broken down into two self-contained parts, I. CR Raw materials policy and II. **CR secondary materials policy** (hereinafter also referred to as „the Policy“). The principles of the European strategy of ***Raw Materials Initiative*** have been implemented in both these parts of this strategic document, in a way such that would ensure, in a responsible manner, the country’s safety and security in the area of materials and energy.

The CR secondary materials policy (hereinafter referred to as „the Policy“) has been elaborated based on Government resolution no. 172 of 9 March 2011 detailing the proposal for a procedure to be adopted for the purpose of institutionally safeguarding the secondary materials issues at the national level and the establishment of the Government Council for Czech Republic’s energy and raw materials strategy. In this Resolution, the Government has charged the Minister of Industry and Trade with submitting, for the Cabinet’s consideration, a strategic, analytical document focused on the area of utilisation of secondary materials (the CR Secondary materials policy) as a component part of Czech Republic’s raw materials policy. Owing to the need for ensuring support to technologies orientated on the extraction, processing and utilisation of secondary materials within the framework of the new MIT Operational Programme (Czech abbreviation, OP PIK) presently under preparation, the CR Secondary materials policy was submitted for consideration by the Cabinet as a stand-alone document on 16. 10. 2013. The Policy has been considered

and the main objectives thereof as stated were approved by the CR Government. The document in its entirety has secured the Government's approval on 15. 09. 2014.

The Policy's basic vision is *„**Turning waste to a resource***". This vision, as well as the entire focus of the Policy, is fully in line with the EU document „**Roadmap to a Resource Efficient Europe** where a phased target of major importance is mentioned: *„By 2020, waste is managed as a resource"*, also indicating a range of implementing measures. The CR has expressed her endorsement of these measures, and a number of them have been taken over for incorporation in the Policy in order to meet the five main objectives set forth. Implementation of the measures laid down will positively impact a number of areas, especially those of industrial production, and successively, thanks to generating new jobs, also the area of social support of employment. Adopting a responsible approach toward the utilisation of secondary materials and an effectively structured support to the secondary materials industry may benefit the entire economy, social sphere, and environment of the CR.

The CR Secondary materials policy constitutes Czech Republic's first document creating a strategic framework for an efficient use of secondary materials. Based on the analysis performed, a selection will be made for the elaboration of the CR Secondary materials policy whereby **10 commodities and sources of secondary materials will be chosen**. The selection was influenced by the importance attached to each of the various secondary materials when considered as a technological input to production, the volume generated, the need and re-use potential of the commodity in the CR, the importance of exports, etc. These commodities are as follows: **metals, paper, plastics, glass, building and demolition materials, coal combustion by-products, end-of-life vehicles (wrecked cars), waste (discarded) electrical and electronic equipment, worn tyres and rubber wastes, waste (discarded) batteries and accumulators (storage batteries)**. The CR Secondary materials policy is an open-ended document envisaging a gradual or of further secondary materials based commodities, in response to the needs of the business sector and taking into account the economic development in the CR and worldwide.

There are 5 strategic objectives and 16 measures set out in the CR Secondary materials policy. Elaboration to define specific tasks including respective responsibilities for discharging the tasks to the deadlines specified will be dealt with in the Action Plan in support of Czech Republic's enhanced self-reliance in the area of raw materials resources.

Even though the term **‚secondary material'** is frequently alluded to especially in both European level and national level strategic documents, no clear-cut definition of what a secondary material is has yet been put forward. This fact is reflected by one of the measures stated in the Policy: ***„To define the term of ‚secondary material' and to incorporate it into the CR legal system, and also to initiate this procedure at the EU level"***. Thanks to this measure, the first level of the waste management hierarchy which is **waste prevention** should be implemented. The need for defining the term of 'secondary material' also relates to the lack of statistical data on secondary materials, already dealt with in the CR by the CSO Public Notice no. 306/2010 Coll. on the Programme of statistical surveys for 2011 and also for the subsequent years. And, as of recently, also by the CSO Public Notice no. 343/2012 Coll. on the Programme of statistical surveys for 2013. An Annual report on wastes and secondary materials is a component part of that Public Notice. For the purposes of this Report, secondary materials are understood to include any materials displaying the following character: item no. 46 Odp 5 - 01 - Annual report on wastes and secondary materials of Annex no. 1 to CSO Public Notice no. 343/2012 Coll.:

- By-products;
- Treated wastes which ceased to be waste having met specific conditions and criteria provided that any such were set (non-waste);
- Materials deriving from products for which take-back is mandatory (pursuant to Act no. 185/2001 Coll. on Waste) and from further products capable of being re-used for further processing;

- Unspent input raw materials and materials passed on for a new use.

According to the Policy, the sources of secondary materials include **the by-products deriving from production/manufacturing, extracted raw materials left unprocessed, end-of-life products and re-usable wastes which after having been modified/reprocessed meet the requirements for input raw materials well-suited for downstream production or manufacturing processes.** In many cases, the modification/re-processing thereof to obtain the input raw material quality required for further production/manufacturing is more economical than the acquisition/extraction of input raw materials from primary sources. A significant benefit of the secondary materials consists in reducing the energy and material intensiveness in all branches of production. The need for such materials continues mounting, in proportion to the increasing environmental requirements being imposed on industry. Thus, secondary materials contribute to the abatement of industrial emissions and, consequently, imissions too. They contribute to cutting down the required volume of extraction of primary raw materials. Their use makes it possible to close the loop of circular flow of resources wherein the extracted primary raw material is passed along, transformed to products, re-processed to products of the same or of a different nature, passing numerous life cycles. A component part of the flow of resources also is the utilisation of the energy potential of those raw materials and products that would otherwise elude any further possibility of effective re-use of material.

The requirement of encouraging the measures laid down as well as any other economic instruments in support of an efficient utilisation of resources is stipulated in Annex IV to the Waste Directive no. 98/2008.

For all the reasons spelled out above, a proper interfacing and subsequent joint implementation of the Secondary materials policy, the CR Waste prevention programme and the new CR Waste management plan is absolutely imperative.

3 ANALYSIS OF EXISTING WASTE PREVENTION INSTRUMENTS

3.1. Support of research, experimental development and innovation in the area of waste prevention

The area of waste prevention is represented in projects pursued in support of science and research by various bodies of the state administration as well as by institutions and organisations. In order to meet the objectives and measures of the CR Waste prevention programme it is necessary to actively strive to substantially expand this range of issues to as to have them covered by the various research programmes. Currently, the mainstay of support to science and research is represented by the programmes of the CR Technology Agency and, in part, also by the CR MIT sectoral programme. The research activities pursued by CR MEYS continue to be relevant but, owing to their scope, they are of little importance as regard the needs for preventative measures (for instance, in 2012 the current 'Návrat' (Comeback) programme supported 7 projects). As regards the area of science and research, the fact that currently there is no sectoral programme in place at the MEnv puts the area at a considerable disadvantage.

3.1.1 Programmes of the Czech Republic Technology Agency

The Technology Agency (hereinafter also referred to as TACR) has begun its activity in 2010 by launching the first public competition under the Alfa programme. At the present the Agency is one of the most prominent organisations providing funding to programmes of research, experimental development and innovation, via the programmes called Alfa, Beta and Omega and via the Competence Centres. New programmes in the pipeline are the Gamma and Delta programmes. TACR offers a relatively wide scope for dealing with issues of waste prevention at various levels. Incorporation of these issues into the various programmes (not only those of TACR) is part and parcel of the measures proposed to assist the solution of problems in the areas of science and research. Descriptions of the various types of TACR programmes can be found in Annex no. 4.

3.1.2 Sectoral research at MIT

The Ministry of Industry and Trade (hereinafter also referred to as 'the MIT') provides support to applied research and experimental development projects focused on industrial products, drawing upon the Czech Republic state budget under the TIP programme.

The programme covers the period from 2009 until 2017. Applications for entering the programme during the 2010 to 2014 period for any current year are dealt with using the form of public tenders in research, development and innovation held during the previous year. It has been decided that all these projects will be terminated in 2017; for any individual project the expected project duration is up to four years (48 months), on the condition that project implementation is started during the same year for which the public tender was called.

The last public tender is expected to be called in 2013. Were this programme to be carried on in subsequent years as well, this would be very opportune in view of the close links existing between the issues of raw materials and energy savings and those of waste prevention during the course of production.

Examples of projects under the TIP programme focused on waste prevention include:

- R&D FI-IM2/011 - Research and development of new waste-free technologies in electroplating.
- FI-IM2/179 - Integrated waste take-back system and an organised secondary

materials market.

- FF-P2/021 - Comprehensive transition to environment-friendly metallurgical productions.
- The CR TRH MIT (TRH MPO CR) programme earmarked for assisting small and medium sized enterprises – potential access to subsidies towards acquiring an ISO certificate or EMAS registration.
- Further projects include, for instance:
- EA 4.2PT02/136 - Expansion of research and development capacities for research, development and innovation in the area of load-bearing composite sections (2008-2011, MPO/EA).
- ED0040/01/01 - Regional materials and technological research centre (2010-2013, MSM/ED).

3.1.3 Sectoral research at MEnv and MEYS

Sectoral research at MEnv has ended in 2012. Within the framework of this research and of that organised by the MoEYS, various projects relating to waste prevention were implemented. Out of these, the following project may serve as examples:

- Research project proposal MEnv 0002071102, Waste Management Centre (WMCe) - Research of waste management within the framework of environmental protection and sustainable development (waste prevention and minimisation and the evaluation thereof), directed by TGM Water Management Research Institute, a public research institution.
- R&D - SP/II/2f1 /30/07 - Research into an integrated system of waste management and new instruments in support of the introduction thereof under the conditions prevailing in the Czech Republic. 2007 - 2011.
- R&D- 1C/7/47/04 Elements and relationships within the system of waste management.
- R&D - SP/II/2f 1/2/07 - Identification of the preventative potential of wastes from Czech Republic's small businesses (small-sized trade operations) and the utilisation thereof. 2007 - 2010.
- R&D-1C/7/48/04 Exercising the preventative approach to waste management and raising the application worth of polymers: utilising nanotechnology in search of an effective method of recycling of PET bottles.
- R&D - 1C/4/12/04 Verification of the effectiveness of voluntary environmental protection measures for the preventative policy and for proper management of Czech Republic's small and medium sized enterprises in relation to the implementation of CR WMP objectives.
- R&D C/4/43/04 Environmental and economic effects of economic instruments applied to protect the environment.
- R&D-SL/7/102/05 Municipal wastes - a looming environmental and social problem.
- R&D-1C/7/21/04 Minimising the impact of products on the environment.
- R&D-SL/7/48/05 Handling of biodegradable wastes and enhancing their material and energy utilisation.
- R&D SP/II/2f1 /16/97 Comparing the environmental impacts of beverage packaging in the CR using the LCA method.
- R&D SP/2f2/98/07 - Research into the use of wastes as replacement for primary raw material resources.
- ME 879 - Characterisation of new materials for environment-friendly technologies.
- 2E06046 Internet portal for environmental education as an instrument of furtherance of youth creativity competitions.

Present situation: *currently, implementation potential especially through the TACR Agency, or under the sectoral research (programmes) of Ministries or other Agencies; the loss of sectoral research at MEnv is perceptibly felt.*

Priority for the Programme: *the requirement for research and development in the area of moving towards cleaner products and technologies as well as in the area of waste generating technologies is laid down in Annex IV to the Waste Directive no. 98/2008; interlinking these issues with the subject matter of the programmes run by the TACR Agency is a necessity.*

Suitability for the Programme: *high; co-operation with the TACR Agency and with other sectors and Agencies involved in science and research is indispensable.*

MEnv financial requirements to date: *funds for project implementation, of the order of CZK 10 mln/year; no accurate information is available.*

3.2 Environmental technologies, eco-innovation and life cycle assessment (LCA)

In the Czech Republic, the programme of support to environmental technologies *(Environmental Technologies Action Plan;* hereinafter also referred to as „ETAP“) has been elaborated based on the Communication from the European Commission *„Report on the implementation of the Environmental Technologies Action Plan in 2004",* of which the recommendation to the Member States has been to adopt their National ETAP implementation programmes. This programme secured approval by Government resolution no. 181 of 22 February 2006. The programme has been updated by Government resolution no. 938 of 20 July 2009.

ETAP aimed to remove the obstacles hindering the development and introduction of environmental technologies and to mobilise all concerned parties to an active engagement. It endeavours mainly to fully utilise the technological potential to alleviate the pressures being exerted upon the natural resources, to upgrade the quality of life of Europeans and to stimulate economic growth. Development of environmental technologies may contribute to the fulfilment of the principle of sustainable development and to become the main source of economic growth and social advancement, in compliance with the principles of sustainable development.

In 2013 the ETAP programme was replaced by the *„Eco- innovation Action Plan“.*

At both the European and national levels, indicators for assessing and verifying the environmental technologies will be made ready for the purposes of an unified European system of ***Environmental Technology Verification***, with due regard to the entire **life cycle of the technologies *(Life Cycle Assessment*** - hereinafter also referred to as ‘LCA’).

LCA ranks among the most objective methods of assessing the environmental impacts of specific technologies, products and services. It considers emissions to all the components of the environment during production and use of the product as well as during the disposal thereof. It also takes account of the impacts of the raw materials extraction processes, production of materials and generation of energy, as well as of the auxiliary processes.

The LCA method is applied in compliance with ISO series 14040 international standards has a fixed structure and is comprised of four main phases:

1. Definition of objectives and scope serving to define what portion of the product life cycle will be subjected to the assessment and also to define the purpose to be served by the assessment proper. It also includes a description of the criteria serving for comparison of different systems, and the time horizon chosen.
2. An inventory analysis of which a component part is the description of the material and energy flows within the product system and, primarily, the interactions thereof

with the surroundings, the raw materials consumed and the emissions to the outside of the system. It includes a description of all the major processes as well as of any secondary flows of energy and materials.

3. An impact assessment where the results are enumerated for the indicators of all the impact categories, the importance of each impact category is subjected to a cross-evaluation by normalisation and as the case may be, also by weighing. The impact assessment usually results in producing a tabular summary of all the impacts.
4. Interpretation of the life cycle includes a critical re-assessment, the determination of data sensitivity and data presentation.

Present situation: *implemented; low level of awareness; supervised by MEnv in co-operation with CENIA the Czech Environmental Information Agency (hereinafter also referred to as ‚the CENIA'); expert professionals capable of performing LCA analyses are available in the Czech Republic; the cost-intensiveness of performing the analyses may pose a problem.*

Priority for the Programme: *the requirement for the provision of information on the techniques to be employed in waste prevention work with focus on industry is stipulated in Annex IV to the Waste Directive no. 98/2008.*

Suitability for the Programme: *high.*

MEnv financial requirements to date: *none.*

3.3. National eco-labelling programme

In the Czech Republic, the official use of eco-labelling has been introduced by so-called **National programme of labelling environmentally friendly products**. The Government's consent to its implementation was given by Government resolution no. 159 of 7 April 1993. The National environmental labelling programme was promulgated on 14 April 1994. This was type I environmental labelling. To this were added type II self-declared environmental claim and type III environmental product declaration (EPD) in 2007. At the same time, it is possible in the Czech Republic to be awarded the European Union Eco-label – *The Flower.*

During the course of the last phase of preparations the concept of the Czech National programme has been modified so as to bring it as much as possible in line with foreign programmes, especially with the EU programme and the OECD countries' programmes. This harmonisation is intended also to contribute to the sales of our products in foreign countries. Simultaneously, the programme becomes an active participant in European integration in the area of environment.

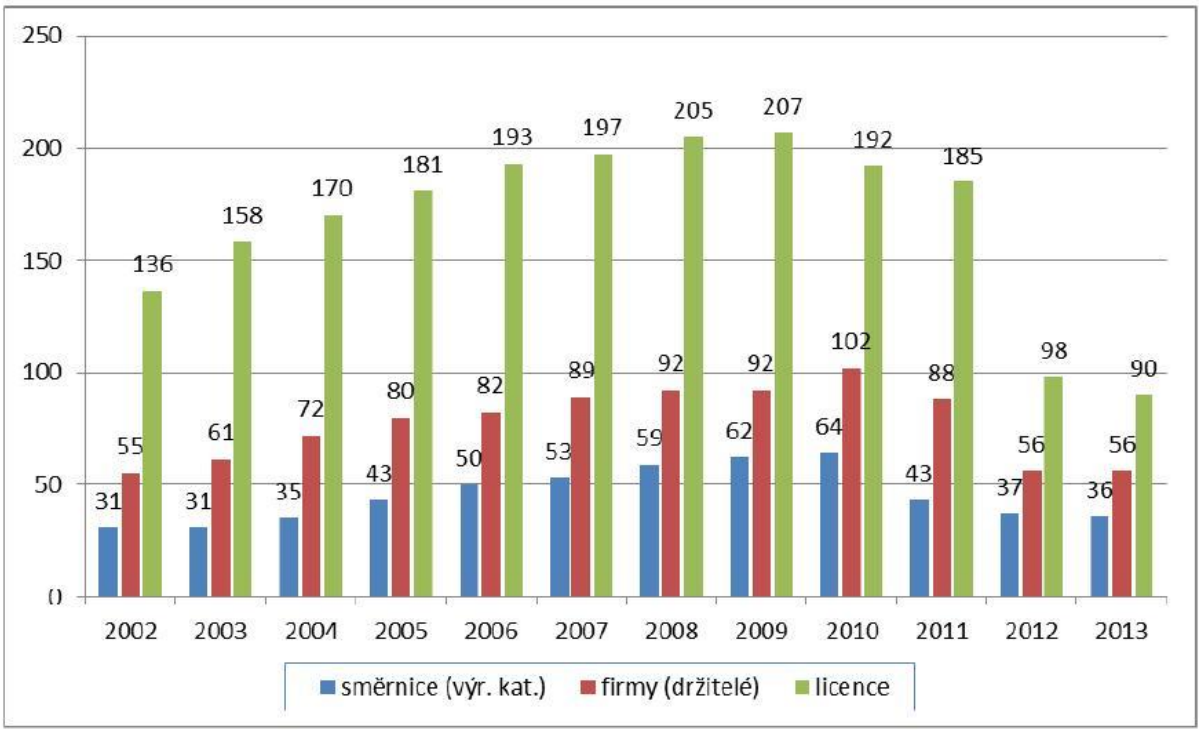
The Programme is guaranteed by the CR Ministry of the Environment. Its purpose is to publish newly approved directives and other conditions required for being awarded the protection labelling. Finally, the Minister of Environment approves and signs the directives stipulating the eco-labelling conditions, grants the right to using it to concrete products, and issues standpoints to all fundamental and determining issues of the Programme's progress. The executive body charged with awarding this label is the Agency for Environmentally Friendly Products (a part of CENIA), which also is the executive body responsible of the National programme of labelling environmentally friendly products.

In the Czech Republic the eco-label can be awarded to products or services of 36 different categories.

At the present time, a total of 56 producers have availed themselves of this opportunity; licensing agreements were concluded with them, including the right to using the eco-label on more than 400 individual products or services rendered. The EU Eco-label programme, for which 25 product categories exist, has been joined by 17 companies in the Czech

Republic, and a total of 20 licensing agreements were concluded. The reason for the dropping number of product groups has been a long-term lack of interest on the part of potential applicants; this is why no further extension of their validity has been undertaken. The reduction in the number of licenses or license holders has been due to the application of more stringent criteria for awarding the eco-label and to the obligation of documenting the compliance; this has been adopted in connection with the developments of technologies and the market. Another reason for the reduction has been the lower level of interest on the part of consumers, and/or the absence of any more substantial awareness raising campaign in support of eco-labelling (this concerns the eco-labels awarded under the EFP/S and EU schemes). Many holders have failed to have their products re-certified. More details can be taken from the diagrams nos. 1 and 3.

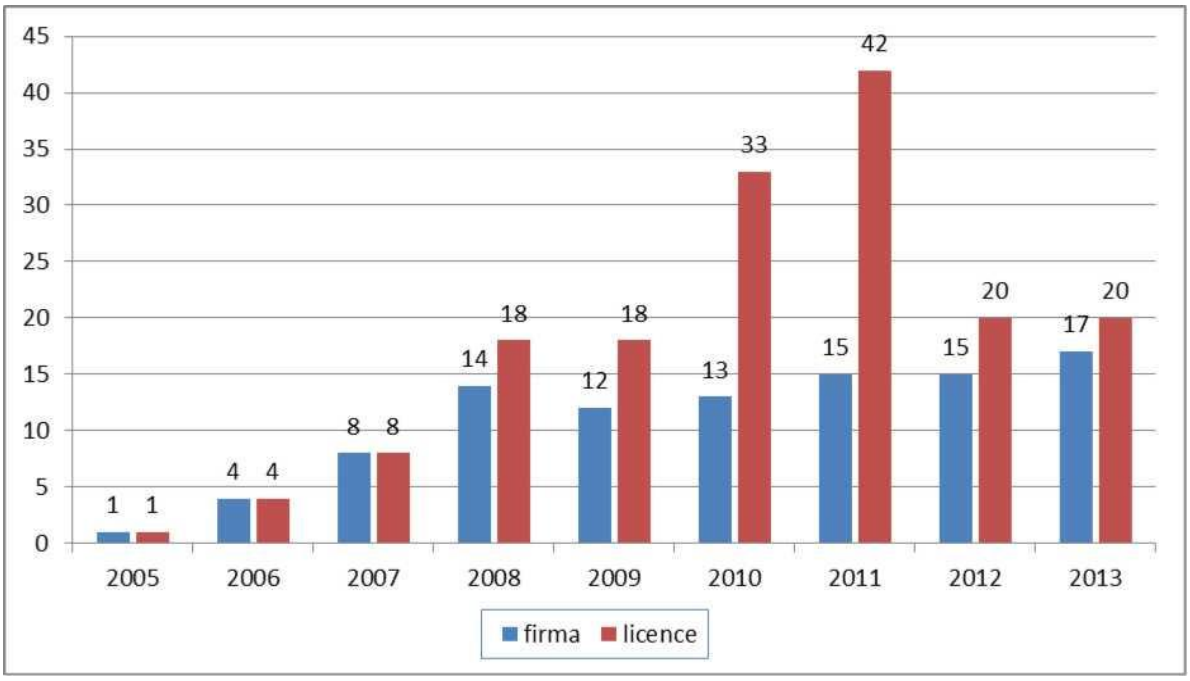
Diagram no. 1: Trends in the number of Directives, companies and licenses under the NP of labelling of environment friendly products (EFPs)



Key to the figure: **directives (prod. cat.) firms (holders) licences**

Source: CENIA

Diagram no. 2: Trends in the numbers of companies and licenses for EU eco-labelling in the Czech Republic



Source: CENIA

Present situation: *technical prerequisites in place; low public awareness; low-level promotion; stagnation of the number of licenses issued and, following the adoption of more stringent criteria in 2012, a drop in the number of licenses; implemented (as regards the staffing employed for the task of environmental labelling, this is being taken care of by a workload of 0.2 at MEnv and a workload of 1.5 in CENIA).*

Priority for the Programme: *the conditions laid down for creditable eco-labels are stipulated in Annex IV to Directive no. 98/2008.*

Suitability for the Programme: *high.*

MEnv financial requirements to date: *annual membership fee charged by the organisation Global Eco-labelling Network (ca. CZK 70 thousand); one-off consumer survey to the cost of CZK 100 thousand; expenditures vary depending on the activities executed, fluctuating within a relatively broad band (from ca. CZK 70 thousand to CZK 600 thousand); most of these expenditures are covered from fees cashed for the eco-labels awarded.*

3.4 The environmental management systems

The Environmental Management System (hereinafter also referred to as 'the EMS') is being interpreted as a systematic approach to environmental protection in all aspects of activity of an organisation, such as the management of its interaction with the environment. It is one of the subsystems of executive management which (at variance with the other subsystems orientated mainly on operating within the organisation – such as economics, quality, safety, human resources) is focused above all on managing the environmental impacts of production, products and services and on attaining and maintaining compliance with legislative norms by which these impacts are regulated.

It follows from the very principle of voluntariness that the organisation takes a voluntary

decision to introduce the EMS, without being forced to do so by the State; in fact there is no legal norm that would impose any obligation to introduce EMS. The mounting numbers of certified EMSs worldwide, which reached nearly 189,000 in 155 countries by 2008 (at an annual growth rate of 22 %), document the successful upswing of the environmental management systems and their worldwide acceptance as an objective proof of theorganisations' positive attitude towards environmental protection. The growing numbers concern not only organisations engaged in production but also those providing services and those of public administration – out of the total, a share of 34 % of the EMS certificates belonged to organisations active in services sector. To complement this information, is should be pointed out that the Czech Republic holds a rather prominent position – in the worldwide comparisons of the absolute numbers of EMS certificates issued by the end of 2008 it ranked 12th among all the EU Member States, and even ranked 2nd among countries of approximately the same populations.

Under our conditions there are two modes of operation by which the environmental management systems are designed and developed:

- **pursuant to international standards of the ISO 14000** series, represented in the Czech standardisation milieu primarily by the master standard CSN EN ISO 14001:2005 „Environmental management systems - Requirements and instructions for use" (hereinafter, for the sake of simplicity, this mode is termed „ISO"), and/or
- **pursuant to Regulation (EC) No 1221/2009 of the European Parliament and of the Council allowing voluntary participation by organisations in a Community eco-management and audit scheme** (also referred to as "EMAS").

EMAS represents a systems approach to managing the issues relating to the environment in an organisation, underlining the integration of the environmental point of view both in the over-all strategy of the organisation and in its everyday activities.

It requires that the organisation define what the important environmental aspects (and impacts) are, as well as the specific targets and measures by means of which it will be striving to meet the requirement of so-called incessant improvements. By introducing an environmental management system the organisation manifests its shared responsibility for the environmental situation and its efforts being made toward its improvement and toward sustainable development. In the same way as the ISO 14001 standard, EMAS also operates on the principle of voluntary participation where it is solely up to the organisation's decision. In the Czech Republic, the so-called EMAS Programme has been introduced, having as its component a register of the companies that have introduced the EMAS system and proceed in compliance with the aforementioned regulation.

Work on standards of the **ISO 14000 series** were commenced under the supervision of the International commission for standardisation in 1992. The first standards came into force in 1996. From these also issued the corresponding Czech standards CSN EN ISO 14001 (and other) introduced into the Czech standardisation system one year later. Following the revision of the basic standards CSN EN ISO 14001 („Environmental management system - Requirements with guidance for use") and CSN EN ISO 14004 („Environmental management system - General guidelines on principles, systems and support techniques") approved in 2004, came into force in 2005 as **CSN EN ISO 14001: 2005** and **CSN EN ISO 14004: 2005**, respectively. In addition to the above basic standards, and a number of supporting standards may be mentioned, such as **CSN EN ISO 14020: 2002** „Environmental labels and declarations - General principles", **CSN EN ISO 14031: 2000** „Environmental management - Environmental performance evaluation - Guidelines", etc.

From the point of view of the practical needs of organisations about to decide between ISO and EMAS, two differences are of primary significance: while the Regulation *i.e.*, EMAS requires that an introductory environmental evaluation (see below) and a terminal environmental declaration be worked out, with ISO the elaboration of the evaluation is only

recommended (it is not mandatory) and the environmental declaration is not mentioned at all. Hence it is less laborious, saving ca. 15 - 20 % of time. For an organisation in the not-for profit and public sectors the elaboration of an environmental declaration within the framework of EMAS may constitute an important contribution to upgrading the organisation's communication with the public. For organisations engaged in a more significant scope of exports of products or services even to countries outside the EU it will probably be more advantageous, in view of the worldwide acceptance of ISO, to prefer the ISO procedure.

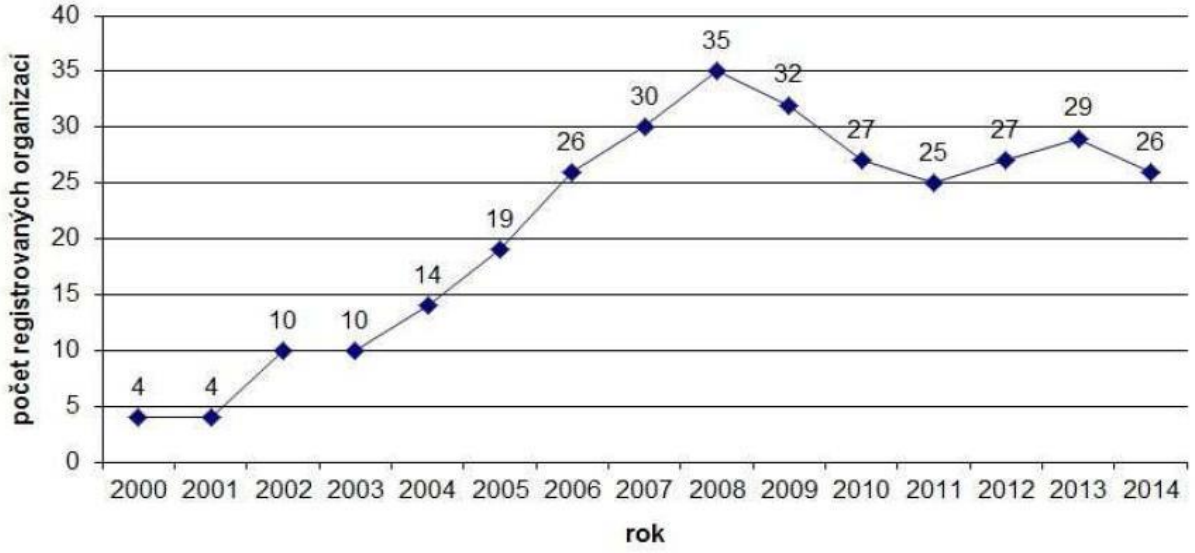
It should be stressed that in any case, it is indispensable that, regardless of which of these two approaches is adopted, to be conversant with the CSN EN ISO 14001:2005 standard. The reason is that even the Regulation *i.e.*, EMAS requires that an organisation wishing to register in the EMAS Programme introduce a management system that will be fully compliant with the requirements of the ISO 14001 standard.

Evaluation of an EMS once introduced as to its compliance with applicable standards in force may be carried out by any subject; however, for the issuance of a certificate that subject has to be accredited with the National accreditation body, that is, in the Czech Republic, by the **Czech Accreditation Institute**, a public-benefit company. Registration under the EMAS Programme requires an authentication of the environmental declaration (*i.e.*, a vindication that the EMS documents required to meet the requirements of the standard).

Presently there are 26 organisation registered under the EMAS Programme in the Czech Republic (which includes, within these organisations, a total of 52 different localities or operations) – Diagram no. 3. In the European Union there are approximately 3.5 thousand organisations registered, involving nearly 10,500 localities. Thus the Czech Republic's ranking is at Europe's average.

Since 1997 the number of companies that are EMS certified as per the standards of the 14001 series has been incessantly mounting. According to *The ISO Survey of Management System Standard Certifications* there are ca. 4,500 companies in the Czech Republic in possession of a certified environmental management system.

Diagram no. 3: Trend of the number of EMAS certified organisations in the CR



Key to the Figure: **number of registered organisations; year**

Source: CENIA, EMAS Agency

Present situation: *technical prerequisites in place; adequate promotion; implemented (as regards the staffing employed for the task of implementing the EMAS, this is being taken care of by a workload of 0.2 at MEnv and a workload of 0.25 in CENIA); EMS implementation mediated by the certification bodies.*

Priority for the Programme: *the requirements imposed on the environmental management systems are stipulated in Annex IV to the Waste Directive no. 98/2008.*

Suitability for the Programme: *high.*

MEnv financial requirements to date: *co-financing a promotional campaign; MEnv revolving fund.*

3.5. Cleaner production and sustainable consumption and production

Cleaner Production is a term denoting a preventative strategy focused on eliminating the causes which are at the root of environmental problems encountered at the level of businesses and organisations, via verification of the material and energy flows, for the purpose of finding the opportunities for a more effective utilisation of raw and other materials and of energy, for preventing the generation of waste, etc. This is why the cleaner production procedures do not deal with resolving the consequences of environmental burdens once generated (emissions, wastes, exploitation of resources, etc.) but rather, seek solutions by which these problems can be forestalled or minimised.

The Czech Republic has enlisted for the implementation of the cleaner production strategy in 1998 by signing the International declaration on cleaner production and by launching her **National cleaner production programme** (Government regulation no. 165/2000). However, cleaner production projects have been implemented in the CR ever since the early 1990s.

The objective of applying cleaner production at a company is to discover the causes underlying the negative environmental impacts of corporate activity and to minimise them while at the same time, giving adequate consideration also to the economic viewpoints. Implementation of a cleaner production project at the company will then result in obtaining the same or even higher production effect at a reduced rate of consumption of input sources and a lower production of waste, *i.e*., obtaining a higher efficiency of utilisation of resources.

Thus, cleaner production not only protects the environment, the consumers and the employees (quality of the working environment) but also enhances the effectiveness, profitability and competitiveness of the company. Any specific measures or projects proposed are always assessed from the aspect of the economic effects obtained thereby.

The chief reason for the great benefit conferred by cleaner production is the fact that cleaner production is universally applicable and represents an integrally conceived preventative strategy that addresses environmental problems not by transferring the burdens from one environmental component to other components but by seeking, first of all, to determine the cause which underlies the generation of that environmental burden and by making efforts to eliminate that cause. This is the sole method that may result in a steady abatement of the negative environmental impact. Hence, cleaner production strategy is in full compliance with the idea of sustainable development.

In the past years, several projects focused on the area of cleaner production were implemented in the Czech Republic, within the framework of which were performed so-called introductory evaluations of sustainable consumption and production in 29 companies, and several dozen consultants received training.

Also, during the 2006 - 2008 period, four new information centres for sustainable consumption and production (SC&P) were set up in five regions of the Czech Republic, plus one combined SC&P information and training centre. Building professional capacity, as well

as implementation of pilot projects, of an information transmission system and of good SC&P practice examples have also been part of the project. The topic of a project called Partnership for sustainable consumption and production was focused mainly on supporting the economic and environmental pillars; the social pillar of the SC&P enjoyed the maximum possible support. The project, based on private-public partnership, was launched in the following administrative regions of the Czech Republic: the Karlovy Vary region, the Vysočina region, Olomouc region, the region of Central Bohemia, the Ústí nad Labem region[2].

At the present time the implementation of the SC&P is supported by the EMPRESS portal[3]. EMPRESS is the contact point active in the areas of more effective utilisation of resources and of sustainable consumption and production (SC&P), providing a platform for information transfer but also for the generation and exchange of know-how including the necessary inputs for formulating a policy that would be conducive to providing an ecologically effective solution as an alternative to regulation and unnecessary losses. EMPRESS aims to support SC&P and is focused on manufacturing businesses and service providers. The major partners of EMPRESS are representatives of the professional public in the private and public sectors as well as in the academe. During the 2011 - 2012 period the expansion of the EMPRESS portal was also receiving support from two projects of the Ministry of Trade and Industry. These were the projects „Potential support to voluntary approaches on the part of the MIT as an alternative regulatory instrument" and „Creating an on-line information base in support of voluntary approaches via the internet portal EMPRESS dedicated to sustainable consumption and production".

On the whole, a total of approximately one hundred companies have entered the National cleaner production programme, and they can access the services of ca. 60 trained consultants. However, the total number of subjects, *i.e*. including the un-registered ones, that apply cleaner production, is higher.

Present situation: *previously implemented (as regards the staffing employed for the task of implementing Cleaner production, this was taken care of by a workload of 0.1 at MEnv); received technical support; the level of awareness was generally low; low-level promotion; currently receiving support via the EMPRESS portal.*

Priority for the Programme: *the requirements imposed on the support of creditable environmental management systems are stipulated in Annex IV to the Waste Directive no.98/2008.*

Suitability for the Programme: *high.*

MEnv financial requirements to date: *annual membership fee charged by the PREPARE network (CZK 180 thousand); MEnv revolving fund (2 projects - ca. CZK 4.7 mln); SEF – to the sum total of ca. CZK 7.0 mln. An ‚in kind' contribution has been negotiated for the 2012 - 2014 period, with the understanding that further sources would be sought in subsequent years to cover the fee.*

[2] The benefits derived from the project included: free-of-charge information on the opportunities for employing the SC&P instruments well-suited for the given organisation; training of staff to identify the application opportunities and to be able to apply the SC&P within their organisation; verification of the innovative potential of the organisation supported by a team of trained experts; consultation support during the course of implementing a SC&P project in the organisation; verification of the possibilities of sharing the risks faced in financing innovative SC&P projects.

[3] www.empress.cz

3.6 Voluntary agreements

Voluntary agreements have the character of agreements entered into, or of commitments pledged, by a public authority (of an administrative level to be determined) and private subjects (business companies, unions, associations) which go beyond the framework of obligations mandated by applicable legislation in force or which supplant them should a case be encountered where such legislation does not exist. They may be of variegated character and regulate a number of specific cases and environmental issues. The fundamental principle upon which the voluntary agreements rest is negotiation.

Currently there are 46 voluntary agreements in force that were concluded by the Ministry of the Environment (situation as of 2014). The parties to these agreements are primarily business entities (associations, business companies), other public administration bodies and institutions, and non-profit organisations.

Examples of agreements relating to the issues of waste prevention:

1) In the area of waste management, the first agreement, concluded before the Act on Packaging came into force, was the voluntary agreement between the Czech Industrial Association for Packaging and the Environment and the Ministry of the Environment, on the implementation in the Czech Republic of Directive 94/62/EC on Packaging and packaging waste. The agreement laid down the principles of operation of the EKO-KOM system in such a way that the business companies involved in this system were regarded as subjects that have ensured the necessary scope of take-back and re-use operations.
2) In 2010, a voluntary agreement was concluded between the Ministry of the Environment, Ministry of Industry and Trade, and the CR Economic Chamber on measures toward ensuring the implementation of the European Commission decision on granting exceptions from the European Directive on Packaging and waste packaging for crates and pallets made of plastics containing higher-than-admissible amounts of heavy metals. The holder of the commitments ensuing from this agreement is the Czech Republic Economic Chamber.
3) Agreement on co-operation with the CR Towns and Municipalities Association (a co-operation agreement concluded on 14. 07. 2011 between the MEnv and the above Association for the purposes of protecting and upgrading Czech Republic's environment and the furtherance of a modern and effective public administration).

Present situation: *implemented; documented at MEnv (as regards the staffing employed for the task of implementing the voluntary agreements, this was taken care of by a workload of 0.2 at MEnv (this includes co-ordination and methodological support); it has been demonstrated that there is greater scope available for concluding more such agreements in the area of waste prevention.*

Priority for the Programme: *the requirements imposed on how the voluntary agreements may be used are stipulated in Annex IV to the Waste Directive no. 98/2008.*

Suitability for the Programme: *low/medium.*

MEnv financial requirements to date: *no direct costs incurred so far.*

3.7. Green public procurement

The principle underlying **Green Public Procurement** (hereinafter also referred to as „GPP") consists in an integration of the environmental aspects with the requirements imposed on public tendering. In the Czech Republic, green public procurement is anchored in several

strategic materials, such as within the framework of Sustainable consumption and production programmes. And the regulation giving all the details is Government resolution no. 465/2010 on the Rules of application of environmental requirements in awarding public contracts and in purchases by governmental authorities and local governments, which is a follow-up to, and a replacement of, Government resolution no. 720/2000 on the Proposal of support to the expansion of sales and use of eco-labelled products (Table 1).

Table 1: Purchases of eco-labelled products by sector, in 2011

Purchases by sector (the sums are given in CZK, the shares of purchases made are given in per cent)			
Organization	***Purchases***		***Percentage***
	Eco-labelled	***Total***	
Ministry of the Environment	1 707 877,90	2 757 433,50	62%
Ministry of Transport	22 121 483,00	54 760 501,00	40%
Ministry of Industry and Trade	13 439 766,40	28 284 082,80	48%
Ministry of Education, Youth and Sports	4 817 571,00	5 542 171,20	87%
Ministry of Defence	94 156 779,30	407 157 133,40	23%
Ministry of Culture	10 576 356,90	36 991 394,20	29%
Ministry for Regional Development	x	x	x
Ministry of the Interior	171 218 250,00	232 035 928,00	74%
Ministry of Justice	105 047 813,50	176 781 593,70	59%
Ministry of Foreign Affairs	11 641 335,00	12 839 335,00	91%
Ministry of Agriculture	15 430 198,00	27 113 304,00	57%
Ministry of Health	12 723 297,00	17 843 656,00	71%
Ministry of Finance	20 380 242,00	35 369 912,00	58%
Ministry of Labour and Social Affairs	9 460 532,00	34 738 039,00	27%
Czech National Bank	1 221 248,00	2 169 504,00	56%
The Office of the Government	8 699 826,00	8 709 479,00	100%
The Ombudsman	1 044 757,00	1 786 426,00	58%
Sum total	**503 644 522,00**	**1 084 543 691,90**	**46%**

Source: MEnv

Implementation of the new Rules has confirmed the effectiveness of this instrument, since a heightened level of interest in acquiring the eco-label destined for environment friendly products (‚EFP') has been noted; the label may serve as evidence of having complied with the requirements.

Present situation: *implemented via the MEnv (as regards the staffing employed for the task of implementing the Green public procurement, this was taken care of by a workload of 0.4 at MEnv; prioritising the environment friendlier products is not being used to its full potential in public procurement by bodies of the state administration; this is why the Ministry of the Environment has drafted the „Rules of application of environmental requirements in awarding public contracts and in purchases by governmental authorities and local governments").*

Priority for the Programme: *the measure can be regarded as a planning measure; the requirements imposed on the support extended to the planning measures are stipulated in Annex IV to the Waste Directive no. 98/2008.*

Suitability for the Programme: *high.*

MEnv financial requirements to date: *CZK 300 thousand/year in 2010 within the framework of drafting the „Rules of application of environmental requirements in awarding public contracts and in purchases by governmental authorities and local governments"; there was no spending in the other years in connection with the green public procurement agenda.*

3.8 Environmental economics (Environmental accounting)

In connection with the approval of the Sustainable development strategy and with a view to foreign experience, the introduction of **environmental accounting** is being interlinked ever more often with the social aspects – referring to so-called sustainable development accounting, or sustainability accounting. Accounting for sustainable development represents an important instrument whereby all the three pillars of sustainable development are measured and evaluated in their interrelationships. It can be applied to assess the efficiency and effectiveness of legislative measures as well as of voluntary instruments which the corporate world as well as the public domain may put to use in compliance with furthering the concept of a sustainable development of society. In the Czech Republic, these issues are dealt with at both the macroeconomic and the microeconomic levels.

Accounting for sustainable development performance at the company, microeconomic level is an instrument that serves to assist corporate decision-making; it evaluates the economic impacts of a friendly approach to the environment while also respecting the social aspects of engagement in business activity. In addition to management, this kind of accounting also yields information to external concerned parties (such as shareholders, investors, creditors, state administration bodies, trading partners, and the general public). It furnishes information on how the environmental profile of the company and its corporate social performance are reflected in the company's economic performance and how they contribute to the success of the business. It appears to be highly expedient to interlink the system of sustainable development accounting with in-house reporting on sustainable development within the company. Information deriving from accounting for sustainable development represents an important component of communication with interested parties, not only in the area of the company's attitude toward the environment but also within the framework of annual reports or, as the case may be, of reports on the corporate sustainable development performance.

In addition to accounting for sustainable development at company level, accounting for sustainable development at a national, macroeconomic level, also exists. In this interpretation, it is understood to be a system that combines status information on the environment and on societal development with the economic performance of the country.

CENIA, an organisation engaged in the area of environmental economics and economic instruments applied to protect the environment, deals mainly with the following issues:

- Macroeconomic as well as microeconomic relationships of environmental protection;
- Application of economic instruments and the problems of environment-related funding and spending;
- The problems of the effectiveness of environmental protection and the associated costs;
- Co-operation in solving environmental problems mainly in the area of transport (such as, transport-related externalities), the energy sector and renewable sources of energy, agriculture, and wastes;
- Elaboration of analyses, expert opinions and professional texts on environmental economics and management;
- Co-operation in producing the Statistical Yearbook on Czech Republic's environment; Reporting on the status of CR environment and regionally orientated publications

describing the environmental situation;

- Administration and continuous updating of its own set of environmental and sustainability indicators at the Environmental indicators portal;
- Co-operation in drafting environmental legislation;
- Provision of information on the economic connections related to environmental protection;
- Administration of data bases providing information on environmental economics (for example, the OECD economic instruments, environmental subsidies);
- Processing of information on support extended to environmental protection.

Present situation: *implemented; low level of awareness; CENIA (as regards the staffing employed for the task of implementing Environmental economics, this was taken care of by a workload of 1.0 at CENIA - employing an environmental economics specialist).*

Priority for the Programme: *the requirements imposed on the support of creditable management systems and economic instruments are stipulated in Annex IV to the Waste Directive no. 98/2008.*

Suitability for the Programme: *medium.*

MEnv financial requirements to date: *no direct costs incurred so far.*

3.9 Local agenda 21

The international programme **Local Agenda 21 (LA21)** is anchored in the U.N.O. document entitled Agenda 21, subscribed to by 172 countries of the world including the Czech Republic at the Earth Summit held in 1992. **In the CR, LA21 is included in the State environmental policy and in the CR Sustainable development strategic framework** (Government resolution no. 37/2010).

The idea is to adopt a synoptic, strategic approach to the management of towns and communities that is conducive to a practical implementation of the sustainable development principles at the local and regional levels, within the framework of which these instruments can be implemented – in individual regions (next to instruments described above such as EMAS or Cleaner production this may also include other methods of enhancing the quality of public administration – for instance, the quality control system under ISO 9001, or the **CAF** (Common Assessment Framework) methodology, etc.

Implementation of LA21 brings about a more effective handling of public funds (thanks to coherent, conceptual development), ensures the implementation of national policy priorities and strategies at the local level, and dissemination of good practices to other municipalities. LA21 makes it possible for a municipality/town/region to develop wile maintaining an equilibrium of all its key dimensions – that is, to succeed in harmonising economic development with social requirements and vis-à-vis the environment.

Implementation of LA21 brings in all the target groups (including entrepreneurial subjects and the general public). In its advanced stages, LA21 produces a superior political consensus, a favourable business environment, social stability and also a higher success rate in spending of funds. Hence, Local Agenda 21 meets in full the objective of „Enhancing the quality and effectiveness of public administration“, identified as one of the five national development priorities within the framework of preparing the Cohesion policy.

As at 15. 09. 2014 the LA21 data base registers 158 subjects (Table 2), with a constantly growing trend in terms both of time and of quality (moving ahead from category to category). There even are certain towns that achieved success in the international competition. An accompanying phenomenon of the LA21 process is the increasing capability of municipalities to draw on funds from external sources.

Table 2: LA21 municipalities by type

Category	Number
Municipality / Town	88
Small municipality	54
Micro-region	10
Administrative district	6

Source: CENIA

A new type of subject that has emerged at the beginning of 2013 and proceeds in compliance with the LA21 criteria is the Local Action Group (LAG). The LA21 data base currently registers 10 LAGs. Presently there is one town in the CR that has advanced to the top category „A“ (Chrudim)“, and there are four other towns and one micro-region in the category “B“ (2013). Methodology for category „A“ has been worked out on an expert level, including the indicators which measure sustainability in 10 areas (as per the Aalborg commitments) so as to cover the entire agenda of the town.

At the behest of MEnv the LA21 portal/data base has been implemented and is now being operated by CENIA[4]. In the capacity of data base administrator it ensures professional checks on the information fed into the LA21 data base and, at the same time, provides implementation assistance to municipalities, and co-operates with the LA21 Working Group with respect to LA21 data base queries and on expanding the data base.

In 2012 the Concept of support to Local Agenda 21 has been adopted by the Government (Resolution no. 30 of 11. 01. 2012). For the reason of austerity measures however, the adopted Concept document does not entail any funding support toward implementation.

Since 2008 the MEnv has entered into a voluntary agreement with the National Network of Healthy Towns of the Czech Republic, thanks to which it has the advantage of potentially receiving feedbacks from the municipal level or, as the case may be, of testing the impacts of the political measures adopted.

Present situation: *implemented; low level of awareness (as regards the staffing employed for the task of LA21, this is being taken care of by a part-time workload at MEnv and a workload of 1 in CENIA).*

Priority for the Programme: *the requirements imposed on the support of creditable environmental management systems are stipulated in Annex IV to the Waste Directive no. 98/2008.*

Suitability for the Programme: *high.*

MEnv financial requirements to date: *CZK 250 thousand/year + revolving fund (ca. CZK 4 mln/year) until 2011.*

3.10 Energy labelling of electrical appliances and eco-design

Energy labelling of electrical appliances and eco-design were adopted into the Czech legal system pursuant to Act no. 299/2011 Coll. amending Act no. 406/2000 Coll. on Energy management, as amended by subsequent legislation, and Act no. 458/2000 Coll. On Conditions of business and on State administration in the energy sectors and amending certain laws (the Energy Act), as amended by subsequent legislation, and to **Regulation no. 337/2011** Coll. on Energy labelling and eco-design of energy-related products.

[4] http://ma21.cenia.cz/

The energy label represents a way to selecting a more economical electrical appliance to save energy. The energy labels provide consumers with an easy-to-survey comparison of selected models and permit them to easily reach a decision in favour of the most economical appliance on the market. During the course of 2011, new types of energy labels began appearing on some appliances sold in the outlets. These labels differ in appearance from the older labels and they also furnish different information.

Household energy consumption amounts to approximately 25 % of the over-all average energy consumption in the European Union (approx. 23 % in the Czech Republic). Moreover, electrical energy consumption continues growing steadily - on the average, by 1.9 % and by approximately 2.4% annually in the European Union and in the Czech Republic, respectively. The energy labels were first introduced in the EU in the middle 1990s. Their full-fledged introduction in the CR came as soon as the country joined the EU.

In 2010 was adopted the new Framework Directive 2010/30/EU on Energy labelling. Even though the basic arrangement of the energy label (that is, the letter sequence, the colour range and shape) has remained the same, the nature of the label as well as the information contained thereon have undergone a significant change due to the Directive.

Certain further changes relating to electrical appliances in households are connected with so called **Eco-design Directive**. Within the framework of this Directive, the requirements imposed on the minimum efficiency of the various appliances are gradually being laid down. Concrete changes are always specified on the appliance in question.

Present situation: *implemented by mediation of manufacturers and sellers/dealers; eco-design so far remains limited to a restricted group of products.*

Priority for the Programme: *the requirements imposed on the support extended to eco-design are stipulated in Annex IV to the Waste Directive no. 98/2008.*

Suitability for the Programme: *medium/high.*

MEnv financial requirements to date: *none that would fall under 'direct costs'.*

3.11 Certificate of the energy performance of buildings

The energy efficiency requirements applicable to buildings are stipulated in Act **no. 406/2000 Coll.** on Energy management, as amended by subsequent legislation, and in Public Notice **no. 78/2013 Coll.** The requirements for the energy performance certificate were modified primarily by an amendment of Act **no. 318/2012 Coll.** The certificate must not bee older than 10 years and must be submitted to the Building Office when presenting evidence of meeting the general technical requirements for the construction of a building.

The energy performance certificate of the building takes stock of all the energies required for the building to operate, *i.e*., the energy required for heating, preparation of hot water, cooling, ventilation, air conditioning and lighting. The building under scrutiny is ranked in one of seven performance classes (A to G) from "exceptionally economical *i.e.* the most energy efficient" (A) up to "exceptionally uneconomical *i.e.* the least energy efficient" (G). Buildings ranked in the classes A to C meet the energy performance requirements. Buildings with a higher energy consumption are regarded as unsatisfactory.

From the point of view of waste prevention the certificates of energy performance of buildings and structures are rather a marginal aspect. Nevertheless, they touch upon these issues in two directions:

- With less energy efficient buildings the generation of energy for such buildings also entails a higher generation of wastes. Buildings that exhibit a higher energy efficiency will logically produce less waste.

- According to the Programme formulation manual, the issues of prevention in the area of waste management could also include activities and measures conducive to an abatement of gas emissions responsible for the greenhouse effect (impact on global warming). Liberation of these gases in connection with energy generation ranks among the major problems of environmental protection and environment creation.

Present situation: *implemented.*

Priority for the Programme: *relatively weak linkage to waste prevention; Annex IV to the Waste Directive no. 98/2008 does not specify any measures.*

Suitability for the Programme: *low.*

MEnv financial requirements to date: *none.*

3.12 Environmental education and awareness raising

Environmental education and awareness raising (hereinafter also referred to as „EEAR“) constitutes an indispensable preventative instrument within the process of long-life learning. Its contributions rest mainly with the acquisition of environment-related knowledge including the latest information deriving from research and science, new legislative norms, methods of public relations work and work with specific target groups, application of knowledge and implementation of experience in the professional, vocational and private arenas.

The chief task of environmental education is to systematically influence mainly the young generation (including pre-school children) for the purpose of accepting the values and behaviour indispensable to environmental protection and care. The tasks of environmental awareness raising are seen in particular at the information level, focused on adult population and on the general public.

The subject matter of the EEAR is not only to engender positive attitudes toward the environment and to encourage respect to life in all its forms as well as to knowledge and care of the environment that surrounds the human populace, but also to mediate an understanding of the interconnecting links by which the social, economic and cultural areas are tied together and to create an insight into the laws and regularities brought into existence by these mutual linkages. The objective of EEAR is to objectively inform on the status and on the development of the environment and to pass down the knowledge and skills producing powerful motivation toward changes conducive to a healthy and well-functioning environment.

The beneficial impacts of EEAR will manifest themselves only after a longer time period will have elapsed. Its effectiveness however consists in the lower costs incurred in the future for the elimination of the damage caused to the environment and to human health. For public relations work to be successful it has to be performed conscientiously and systematically, with a creative attitude and patience. There are three basic directions of action, and these are interlinked with one another:

- dissemination of information and provision of education through schools at all levels as well as through bodies of public administration, EEAR centres and environmental consultancy points, in the form of educational programmes, lectures, training sessions, popular educational and specialist literature, mass media and multi-media, printed as well as electronic information sources, and expert answers to queries;
- creating a positive emotional relation to the surrounding world by participation in joint events or by one’s own interest activity;
- mediation of skills that are beneficial for a sustainable way of life, including environment-friendly behaviour at the home, at one’s domicile and at work, environment-friendly tourism and practical activity orientated on environmental

protection, under professional supervision at the early stages and eventually by active participation in the implementation of specific projects, etc.

Long-term, systematic functioning of environmental education is the result of joint efforts on the part of the state institutions, of professional organisations and on non-governmental not-for-profit organisations (NNOs). Support to the system of environmental education is provided chiefly in the form of the requisite legislative norms and differentiated funding sources, through development of methodologies and topics, and through communication with the public or via operational networks of training centres.

Numerous tasks of the Plan of Action of the State Programme for EEAR[5] are executed by external organisations, such as through the programme of the National EEAR Network in which ca. 100 organisations engaged in the provision of EEAR-related services are enlisted on the nationwide scale. Within the framework of the programme, the actions and events organised include in particular, workshops for the professional public (teaching staff and public administration), events for the general public (awareness raising events, festivals, Earth Days, etc.), and environmental education programmes for primary and secondary schools.

All 14 administrative regions have their regional EEAR concept documents in place, and all regions contribute financially to the implementation thereof.

Organisations operating under the various government departments implement environmental education within the framework of their introductory educational courses. For these purposes there also is an Environmental 'minimum' course which is offered by the Public Administration Institute. Some of the departments (MoRD, MIT, MoLSA, MoH, MAg, MEnv) implement their EEAR activities so that these are channelled directly to the general public and support the publication of booklets, popularisation materials addressing environmental and sustainability issues.

There are more than 140 subjects[6] in the CR which provide environmental consulting. However, there are substantial differences among these as regards the level of services provided, inasmuch as practically no rules have existed so far that would define how an eco-consultancy should look like, what it should offer to citizens, and to what quality. The implementation plan of the Environmental consulting development programme for the 2010 - 2013 period has not been complied with in a consistent manner, and this is why also the necessary measures were not undertaken to have the eco-consultancies certified, a step that would mediate the information for the public as to which of these eco-consultancies meet the required quality standards and, thus, are adequately equipped for providing quality services.

In order to raise the quality of service, the eco-consultancies began congregating in networks, and today one of the largest networks of this type in the Czech Republic is the Network of eco-consultancies of the Czech Republic called STEP (which at the same time, is member of the European Association of environmental consultants - *Eco Counselling Europe).* This network associates 28 eco-consultancies which register a total of ca. 12,000 queries annually.

A range of concrete items of information relating to waste prevention can be accessed via the website of CENIA - Czech Republic's Environmental Information Agency, particularly via its central helpdesk (EnviHELP) at the internet address https://helpdesk.cenia.cz/hdPublic/helpdesk/.

Present situation: *implemented; MEnv (Public environmental awareness and education - PEAE) and environmental consulting - workload of 1.5).*

Priority for the Programme: *the requirements imposed on the launching of campaigns*

[5] http://www.mzp.cz/cz/evvo
[6] http://www.ekoporadny.cz/

in support to raising the level of awareness of the general public or of various consumer groups are stipulated in Annex IV to the Waste Directive no. 98/2008.

Suitability for the Programme: *high.*

MEnv financial requirements to date: *the level of spending from the budget line „environmental education" during the 2007-2011 period was CZK 7.0 mln/year on average (implementation of the tasks entrusted to the State PEAE programme, the Eco-consultancy development programme, the National PEAE network, etc.); due to austerity measures adopted in 2012, this funding was reduced to CZK 3 mln (CZK 2 mln to support the member organisations of the National PEAE network, plus CZK 1 mln to support other areas of PEAE); within the MEnv programme of subsidies for non-profit organisations, support is traditionally extended also to PEAE activities - allocations under this programme of subsidies are gradually being returned to the pre-2011 situation, with support always extended also to sub-projects connected with waste prevention.*

3.13 Activities of charities and voluntary organisations

3.13.1 Charity organisations

Charity organisations have a broad scope of activity in the CR and some of these activities also touch upon the area of waste prevention or, as the case may be, of the potentiality for extending the service life of some products. The best known registered charity organisations of the CR are listed below; their scope of action also includes material collections or the reception of material donations to assist people in need:

- Red Cross,
- Charita Česká republika (Czech Republic Charity),
- Diacony Broumov,
- People in Need,
- ADRA,
- Endangered Children's Fund.

The various organisations differ in their focus; hence, it is those which truly engage in activities relating to waste prevention that are described in greater detail below. It ought to be pointed out however that for instance, donations of clothing are not organised by these organisations alone but also, frequently, by municipalities and town halls as well as by larger undertakings or firms. Subsequently, most of these items collected are handed over to one or other of the charity organisations. A description of the activities of selected charity organisations can be found in Annex no. 5.

There are not accurate data presently available on how much clothing, footwear, and daily consumption items are collected and distributed each year – these being items and objects of the greatest variety. Estimates can be based on the data by one of the CR Charity humanitarian centres (Diocese Charity, Pilsen) for 2012:

- the clientele: 279 persons,
- items distributed: 1963 pcs of clothing, 217 pcs of kitchenware, 198 pcs of furniture, 468 pcs of other objects (travel bags, sleeping bags, blankets, towels, etc.).

Taking all charity centres into account (including the smaller ones not listed here), the estimate is that these charity services are drawn on by thousands of people in the CR (according to an expert estimate, 7/10 thousand). It can be assumed that more than 20 thousand pcs of clothing are some thousands of kitchenware, furniture and other items of daily consumption are distributed.

Present situation: *implemented; volunteers, or employment of persons enjoying a degree of protection due to disabilities.*

Priority for the Programme: *the requirements imposed on the support extended to the re-use of products or their components are stipulated in Annex IV to the Waste Directive no. 98/2008.*

Suitability for the Programme: *high.*

MEnv financial requirements to date: *only the funding earmarked for Deacony Broumov (i.e., by its donors and sponsors).*

3.13.2 Food banks

Food banks represent a well-functioning measure toward reducing the wastage coming from foodstuffs and toward an improved utilisation of foods which otherwise would be wasted. On the central level the various food banks are part of the Czech Food Bank Federation (CFBF). The CFBF itself is a member organisation of the European Food Bank Federation. The food banks collect foods free of charge, and they store and allocate them to humanitarian or charity organisations which in turn extend food help to people in need. Currently there are six food banks in the Czech Republic (established as civic associations), in the following locations:

- Prague,
- Ostrava,
- Pilsen,
- Liberec,
- the Ústí nad Labem region (with an office in Litoměřice),
- in the Vysočina region.

The food banks are sourced by donors, of which the major ones are:

- farm producers,
- food manufacturers,
- food chains, retailers,
- European Food Aid Programme for providing assistance to the poorest EU citizens (PEAD),
- food collections.

The products are transported to warehouses where they are sorted and stored to the most stringent hygienic requirements for food safety. All these operations are carried out by employees or by volunteers. The requisite equipment as well as the overhead costs are funded by subsidies from local or regional government bodies, by corporate donations, contributions of service clubs or citizens and also by participant contributions of the non-profit distributor organisations.

The food banks allocate the products solely among the local non-profit organisations and social institutions engaged in the tasks of attending on persons in difficult situations so that they can again find their niche in society. Food aid is provided in a number of ways - meals in eating-houses, packaged meals, social outlets.[7]

Present situation: *implemented; low level of awareness; voluntary implementation; the food banks face a number of problems in their practical operations; co-operation with food chains (supermarkets, hypermarkets) is beneficial but currently is also subject to serious constraints; levying the VAT in the case of donated food is also perceived as a problem. Equally, the level of awareness of the very existence and activity of this institution is very poor. Therefore, future awareness raising measures will have to be focused on all levels (the political domain, the business area, the citizen, etc.).*

Priority for the Programme: *the trend of a perceived interest in food waste ranks among the chief topics of the European Union in the area of waste prevention and raw material*

[7] http://www.potravinovabanka.cz/

savings.

Suitability for the Programme: *high.*

MEnv financial requirements to date: *none.*

3.14 Co-operation of MEnv with non-governmental, non-profit organisations

This co-operation aims to establish a form of mutual communication and co-operation between the MEnv and the non-governmental, not-for-profit organisations (NNOs) while at the same time channelling and utilising the activities of the non-profit sector so as to benefit the environment.

To the MEnv, co-operation with the NNOs contributes the following:

- an enhanced level of information and a more effective method of education and awareness raising of the general public in the area of environmental issues,
- involvement of the public in efforts to resolve the environmental issues,
- utilisation of voluntary labour contributed by citizens (both members and non-members of non-profit organisations) benefiting to environment,
- taking care of problematic spots in the area of environmental protection where the State lacks financial or other resources.

Forms of co-operation:

- Support to small-sized subsidy projects submitted by the NNOs - these are non-investment projects concerned with all aspects of the environment. These projects always run for a period of one calendar year, the maximum subsidy is CZK 300 thousand per project. Subsidies are provided based on a detailed evaluation of the projects submitted in tender proceedings.
- Involvement of the general public in matters concerned with environmental protection (for instance, in rounds of comments on legislative norms dealing with environmental issues).
- Regular meetings of the sectoral platform of environment-related NNOs with the Minister of the Environment and the top executives of the MEnv.
- Co-operation in the setting of the Government Council for non-governmental, non-profit organisations (monitoring and commenting on the policies and legislation relating to the NNOs, co-operation between the MEnv and other sectors that also extend subsidies to NNOs).

The outputs from and the beneficial impacts of the projects by non-governmental, non-profit organisations thus supported are processed on an annual basis to a public data base that can be accessed at www.projektymzp.cz.

Examples of subsidised NNO projects relating to the issues of improved waste management (incl. 2014):

- Publication of practical brochures dealing with issues of sustainable consumption, in the edition series Good Advice (project no. 26/2010); *EkoCentrum Brno.*
- The electronic journal WASTE FORUM, critically reviewed; *Czech Environmental Management Centre – CEMC.*
- 'Prevent and recycle' (in Czech); *ARNIKA - the Toxic Substances and Wastes programme.*
- ‚Waste or raw material?' (in Czech); *ARNIKA - the Toxic Substances and Wastes programme.*
- 'Waste did not fall from heaven' (in Czech); *Ekodomov Publishers.*
- 'Be smart about illegal dumpsites' (in Czech); *Krasec civic assn.*

- ‘Implementation and media coverage of model examples of good practice in progressive waste management in municipalities and minor towns’ (in Czech); *DUHA (Rainbow) Movement, Olomouc.*
- ‘With citizens of Brno for the sake of the environment‘ (in Czech); *EkoCentrum Brno.*
- ‘How can every single one of us improve the environment in our region?‘ (in Czech); *Czech Union for Nature Conservation, Local branch, RADNICE.*
- ‘Strengthening environmental information in selected towns of the CR’ (in Czech); *Young conservatives, civic assn.*
- ‘Jeseníky region free from waste‘ (in Czech); *Brontosaurus Movement, Jeseníky Mts.*
- ‘Utilisation of environment-friendly technologies in EEAR’ (in Czech); *Junák - CR Boy Scouts & Girl Guides Association, Brno-City region.*
- ‘Opportunities for raising the share of organic mass in eco-farmed soil: making use of composts from municipal composting – benefits and risks’; ‚Biochar – the term, its importance and practical utilisation‘ (in Czech]; *Bioinstitut, a public-benefit company.*
- ‘Do your shopping locally and do your composting at home – mitigating the impacts of food wastage in towns and cities‘ (in Czech); *DUHA (Rainbow) Movement - Friends of the Earth Czech Republic.*
- ‘Promotion of separate collection of biodegradable waste and bio-waste composting‘ (in Czech); *CZ Biom - Czech Biomass Association.*
- ‘Community-supported farming - the road to sustainable food consumption‘ (in Czech); *Czech Union for Nature Conservation, Local branch, Veronica.*
- ‘Hazardous substances have no place in the health sector. Environmental education of health workers - a project to benefit environment-friendly health services‘ (in Czech); *ARNIKA - the Toxic Substances and Wastes programme.*
- ‘Extracting aluminium from our households‘ (in Czech); *Czech Union for Nature Conservation, Local branch, Ekocentrum Říčany.*
- ‘Oil from household use - a resource for re-use‘ (in Czech); *SEVER (NORTH) Environmental Education Centre, Horní Maršov, a public-benefit company.*
- ‘Promotion of separate collection of biodegradable waste and bio-waste composting‘ (in Czech); *CZ Biom - Czech Biomass Association.*
- ‘National conference on waste prevention‘, *Czech Environmental Management Center – CEMC.*
- ‘Involving socially excluded localities in environmental improvement activities’ (in Czech), *Ester Civic Association.*
- ‘Liquidation of an illegal dumpsite in Bufo locality at Žatec’ (in Czech), *Ecology Centre, Žatec.*
- ‘Liquidation of illegal dumpsites in Zbiroh and its vicinity’ (in Czech), *Pro lepší Zbiroh (For a better Zbiroh), civic assn.*
- ‘Wastes? NO! Thank you’ (in Czech), *Host. pro NelhoStejnost, civic assn.*

Present situation: *implemented thanks to mediation by MEnv (co-ordination and administration of support, effectiveness evaluations, checks on the status of implementation of projects, communicating with NNOs, participation in the Government Council for the NNOs – a workload of 2.0).*

Priority for the Programme: *Annex IV to Directive no. 98/2008 does not impose any requirements on the support extended to non-governmental, non-profit organisations; i spite of this, the activity may be regarded as relatively well-suited for the Prevention programmes.*

Suitability for the Programme: *medium.*

MEnv financial requirements to-date*[*)]: *MEnv subsidies from the state budget to small-sized one-year non-investment NNO projects (2014 - CZK13 mln, 2013 - CZK 9 mln, 2012 - CZK 10 mln, 2011 - CZK 19.9 mln, 2010 - CZK 27 mln, 2009 - CZK 30 mln).*

*N.B.: *) The NNO projects receiving MEnv support are not exclusively focused on the waste issues. This is the sum total of subsidies to the NNOs.*

3.15 Further waste prevention related activities

Bazaars

The tradition of bazaars operated through conventional, permanent sales outlets is deep-rooted in the Czech Republic. A similar tradition is enjoyed by so-called flea markets. They offer a highly variegated range of products for sale, purchase or swaps – furniture, domestic appliances, automobiles, electrical and electronic equipment and many others.

Second hand shops selling clothing

Second-hand shops are bazaars specialising in second-hand clothing. This mode of sales of clothing has developed in the CR in the early 1990s. These are shops and outlets which offer mainly worn clothes and imported footwear.

Children's bazaars

In recent years we have also been able to meet with specialised bazaars with children's clothing and outfits (for toddlers, infants, etc.). Owing to the short term of use of clothing by children (who are bound to grow out of it soon), this mode of selling and swapping clothes is very convenient because it extends the life of these products. Organised, pre-planned sales and swaps (bazaars) of children's clothing and outfit items are nowadays being held in some maternity and children's centres.

There also exists a range of opportunities for the re-use of second-hand products through internet offers – various electronic bazaars.

Present situation: *implemented via private subjects, sometimes with support from the town hall; relevant data are not available.*

Priority for the Programme: *this is a measure well favoured in practice and truly taken advantage of.*

Suitability for the Programme: *medium.*

MEnv financial requirements to date: *none.*

3.16 Assessment of the instruments used and measures implemented

- **In the CR there is a relative abundance of „control and regulatory" instruments available to business companies (Cleaner Production, EMAS, SC&P and other). However, they suffer from the weaknesses of not always being applied on a sufficiently continuous basis and, in certain cases, of being accorded only a low level of promotion. From the perspective of the Waste Directive (or the Annex IV thereof) these measures should however constitute an important element of the Programme. This is why it is necessary to bring their actual implementation into a sharper focus and to regularly evaluate the results obtained.**

- **As regards the issues of waste prevention, it is of importance that they be properly interlinked with the CR Secondary materials policy and the CR Raw materials policy.**

- **For a further successful furtherance of waste prevention in the Czech Republic it is essential that an adequate support be ensured for target-orientated projects in the areas of science and research, environmental technologies, eco-innovation and environmental education.**

- **Ranking among the measures recommended by the EU and already addressed by a number of the EU Member States in their campaigns is eco-labelling. A relatively stable background has been established here, and thus it is appropriate to focus on supporting the use of these products and appliances.**

- **A practical implementation of eco-design so far has been successful at the level of electrical appliances. In the years to come, the eco-design principle should be extended to other sectors of manufacturing, *e.g.* using the form of extending support to suitable projects and research activities.**
- **Activities of potential importance could include those in the area of the textile and food waste streams and their development. Especially the area of food waste is a priority to the European Union.**

4 ANALYSIS OF SELECTED WASTE STREAMS

The CR Waste management programme presents a more detailed analysis and overview of the following waste streams:

- municipal waste;
- biodegradable waste;
- food waste and foods;
- waste and end-of-life products based on product specifications (packaging, electrical wastes, batteries and storage batteries, end-of-life vehicles);
- construction wastes/building materials;
- textile waste/textiles earmarked for re-use.

4.1 The total production of wastes in the CR

Table 3 renders the total waste production figures in the CR during the 2002 - 2012 period. During the 2002 - 2011 period the total production of wastes dropped from 38.0 mln tonnes to 30.0 mln tonnes (*i.e*., ca. 20%).

In the ‚hazardous' category the production of wastes dropped by 0.8 mln tonnes (*i.e*., ca. 30 %) during the same period. The production of other wastes constituting the greatest share of total production decreased by 7.2 mln tonnes (*i.e*., ca. 20%). The reduction of waste production per head of population was even slightly higher, owing to the increase in population. The reduction percentage was by 780 kg/person (*i.e*., 22 %), by 81 kg/person (*i.e*., 34 %) and by 861 kg/person (*i.e.*, 23 %) for the categories of other waste, hazardous waste and total waste, respectively. Another fact of importance is that a significant decrease was noted in the total production of wastes (or the production per head of population) in the CR during the 2002 - 2004 period in relation to the GDP.

It can be stated that for the 2002 - 2012 period under consideration over which the CR WMP was monitored and evaluated the development on the whole has been positive as regards the management of wastes.

Table 3: Over-all production of wastes in the CR during the 2002 - 2012 period

		Total										
	Unit	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Production total	**1,000 t/ year**	37 969	36087	38 705	29 802	28 066	30 403	30 781	32 267	31 811	30 672	30 023
Total production per GDP unit	**t/ 1000 PPS**	0,79	0,68	0,52	0,16	0,15	0,15	0,15	0,16	0,155	0,14	0,14
Percentage of total production	**%**	100	100	100	100	100	100	100	100	100	100	100
Production per head of population	**kg/ person/ year**	3 718	3 552	3 787	2 907	2 728	2 945	2 951	3 076	3 025	2 922	2 857
	Unit	**Hazardous**										
Production total	**1,000 t/ year**	2 425	1 775	1 693	1 626	1 455	1 643	2 038	2 161	1 784	1 841	1 637
Total production per GDP unit	**t/ 1000 PPS**	0,016	0,011	0,01	0,009	0,008	0,008	0,01	0,01	0,009	0,009	0,008
Percentage of total production	**%**	6,4	4,9	4,4	5,5	5,2	5,4	6,6	6,7	5,6	6	5,5
Production per head of population	**kg/ person/ year**	237	174	166	159	141	159	195	206	170	175	156
	Unit	**Other**										
Production total	**1,000 t/ year**	35 544	34 313	37 057	28 176	26 611	28 760	28 743	30 106	30 027	28 831	28 386
Total production per GDP unit	**t/ 1000 PPS**	0,238	0,227	0,227	0,159	0,138	0,14	0,14	0,15	0,142	0,136	0,133
Percentage of total production	**%**	93,6	95,1	95,6	94,5	94,8	94,6	93,4	93,3	94,4	94	94,6
Production per head of population	**kg/ person/ year**	3 481	3 379	3 626	2 749	2 587	2 786	2 756	2 870	2 855	2 747	2 701

Source: T. G. M. Water Management Research Institute – WMCe, CENIA

N.B.: The GDP is expressed in terms of purchasing power parity. The figures of Production per GDP from 2005 onwards are expressed in tonnes/1000 PPS/year, and the figures for the foregoing years were converted to the same units. The PPS is an artificial unit allowing to mutually equalise the differences in purchasing power among the national currency units of the EU Member States after enlargement to EU-25 as of 01. 05. 2004. The sum total of the GDP figures for all the 25 countries converted using the respective exchange rates to EUR (formerly, ECU) equals the same amount expressed in PPS. After completing this calculation i.e., after finish counting the total recorded quantity of wastes in 2008 would amount to 35,968 mln tonnes.

Data on the wastes for the respective time series were collected and evaluated pursuant to the legislation in force on wastes and in line with the indicators of the CR waste management system. As the years progressed there had been methodological adaptations to the book-keeping and reporting of data relating to waste production and waste management; for instance, in 2004 this was a substantial change to the Waste Catalogue and the coding of waste management, also in 2004 a minor modification to the Waste Catalogue, in 2005 there had been changes to the evidence of electrical wastes and introduction of new waste management codes, in 2008 another expansion of the list of waste management codes.

In view of an amendment to the Wastes Act no. 297/2009 Coll. there has been a change to the reporting limits, which is why a so-called 'finish counting of production' was introduced in 2009. It can be stated however that in spite of the fact that the production of wastes grew higher from 2009 onwards due to an administrative increase of the production figures and due to a change to the methodology of keeping tab of the wastes and of waste-related data reporting, the time series make it possible to follow a downward trend in the CR production of wastes from 2002 until this day. Were the finish counting procedure applied backwards for the entire time series, this trend would become slightly more pronounced. In connection with the transposition of the Waste Directive 98/2008/EC it may be assumed that since 2010 there has been yet another effect at play causing a reduction of waste

generation due to the exclusion from the waste records of so-called by-products and products which previously had been regarded as wastes and classified as wastes in the records.

4.2 Municipal waste and its components

Municipal waste was defined as one of the possible waste streams to be considered for waste prevention measures. The production trends of this kind of waste and of the management thereof, as well as of its composition, are described further on The primary endeavour should be to fundamentally divert from the still dominant landfilling which is the least suitable way of disposal of this waste.

Act no. 185/2001 Coll. on Wastes defines municipal waste as any kind of waste origination from activities of natural persons on municipal territory. Subsequently, the definition refers to the Waste Catalogue where however the Schedule 20 waste is defined much more broadly, encompassing municipal wastes (household waste and similar wastes from small trades, industry and offices) including the components which are subject to separate collection. It is precisely the differences in defining the municipal wastes and the scope of Schedule 20 waste in the Waste Catalogue which may bring about discrepancies in records on the wastes and in subsequent statistical evaluations of municipal waste management.

The new Waste Act under preparation ought to clearly define what municipal waste is. This definition should specify the origin of municipal and similar wastes and should define municipal waste in a way that is commensurate with routine practice. In reality, municipal waste, including the sorted components collected separately, embraces wastes origination from both natural and juridical persons. A clear definition could be conducive to bringing the records and statistical evaluations to a common denominator so as to correspond with the actual state of the municipal waste management systems in operation.

4.2.1 Production of municipal waste

As regards the production of the total amount of Schedule 20 wastes – municipal wastes, these figures have experienced, according to data from the Waste Management Information System (WMIS), an increase as against the trend of the total production of wastes. There has been an over-all increase in the share of municipal waste out of the total production of waste, from 12.5 % in 2002 to 17.3 % in 2012. During the 2010 - 2012 period, the CR, with a production of ca. 500 kg of municipal waste per head of population per year, has approached the average municipal waste production of the EU Member States.

The rate of utilisation of materials rose from 11.9 % in 2002 to 30.4 % in 2012. While the ambitious target of material utilisation of all MW to the rate of 50 % as set forth in the WMP was not reached, it still has been a positive trend bearing in mind that this encompasses all municipal wastes including mixed municipal waste.

Equally, it should be pointed out that the increase in production of municipal waste experienced since 2009 was due in particular to a change in the method of calculation, where waste coming from municipalities which are not subject to the reporting obligation has also been included. In the foregoing period, these wastes became apparent only when being disposed of (liquidated or re-used), owing to which the amounts of waste based on waste management records showed figures substantially higher than those based on reported waste production figures.

Table 4: Share of utilisation of municipal waste out of the total production of municipal waste in the CR during the 2002 - 2012 period

	Unit	Municipal wastes										
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total production of municipal waste	**1000 tonnes/ year**	4615	4603	4652	4439	3979	3846	3812	5324	5362	5388	5193
Percentage of total production of waste	**%**	12,15	12,7	12	14,9	14,2	12,7	12,4	16,5	16,9	17,6	17,3
Production per head of population	**kg/person/ year**	452	451	455	433	387	373	366	507	510	513	494
Total production of mixed municipal waste	**1000 tonnes/year**	3018	2880	2851	2744	2758	2545	2506	3284	3143	3068	2933
Percentage of MMW **out of the total production of waste**	**%**	7,9	8	7,3	9,2	9,8	8,4	8,1	10,2	9,9	10	9,77
Production of MMW **per head of population**	**kg/person/ year**	296	282	279	268	268	247	240	313	299	292	279
Percentage of re-used municipal waste (R1-R12, N1, N2, N8, N10, N11, N12, N13, N15)	**% of total production of the given Schedule wastes**	13,9	15,7	20,5	24,9	29,6	30,7	33,4	28,7	33,2	41,7	42,1
Percentage of re-used material deriving from municipal waste (R2-R12, N1, N2, N8, N10, N11, N12, N13, N15)	**% of total production of the given Schedule wastes**	11,9	10,9	11,8	15,5	20	21	23,9	22,7	24,3	30,8	30,4
Percentage of municipal waste used for energy generation (R1)	**% of total production of the given Schedule wastes**	2	4,8	8,7	9,4	9,5	9,8	9,6	6	8,9	10,8	11,8

Source: T. G. M. Water Management Research Institute – WMCe, CENIA

The trends and management of municipal wastes classified by Schedule sub-groups and the streams of important groups of wastes arranged by their respective Catalogue numbers are described below.

4.2.2 Composition of municipal waste deriving from households

Based on the terminal report of the research project SP/2f1/132/08 „Research into the properties of municipal wastes and optimisation of their utilisation“ by Charles University in Prague, Faculty of Natural Sciences, and based on an analysis of mixed municipal wastes from households as performed by EKO-KOM, a.s., an authorised packaging company, within the framework of its research activity, the dominant components of mixed municipal waste are bio-wastes (food waste, plant waste, etc.), waste paper and waste plastics (*cf*. Table 5).

Table 5: Composition indicators of mixed municipal waste - (residual waste, i.e., waste minus its sorted re-usable components)

Group of substances	Average percentage of the various groups of substances in MMW (wt.%)		
	Urban type housing developments	Mixed housing	Rural housing
Paper & cardboard	16,26	18,65	6,42
Plastics	14,20	14,68	8,09
Glass	6,85	6,99	3,13
Metals	2,30	2,44	2,65
Bio-wastes	20,97	24,80	12,61
Textiles	6,34	4,57	2,46
Mineral wastes	2,81	0,82	7,24
Hazardous waste	0,96	0,36	0,16
Combustible waste	14,17	14,20	9,99
Electrical equipment	0,73	0,53	0,36
Residual waste 20/40	6,65	5,37	5,08
Residual waste 8/40	3,89	3,69	8,27
The < 8 mm fraction	3,88	2,90	33,53
Total	100,0	100,0	100,0

Source: R&D SP/2f1/132/08 (project period 2008-2009)

The quantities of various re-usable material components of municipal waste are indicated in Table 6. The data issue from information on the composition of mixed and sorted municipal waste.

Table 6: Incidence of MW components containing re-usable materials (including packaging) in kg/head of population/year

	Year kg/person/ year				
Commodity	**2005**	**2006**	**2007**	**2008**	**2009**
Paper/cardboard	40,8	35,5	39,9	39,7	41,9
Plastics	28,8	30,9	30,9	31,6	32,1
Glassmaking	15,0	16,8	17,0	17,1	17,6
Beverage crate	2,6	2,8	2,9	1,9	3,0
Metals	12,2	11,2	11,3	12,0	9,2

Source: SLEEKO (supporting data for CR WMP)

The network for collection of re-usable components of municipal wastes is being expanded within the framework of co-operation of the administrative regions with EKO-KOM, a.s., an authorised packaging company focused on the implementation of joint projects of intensifying separate collection and re-use of municipal wastes including their packaging component.

In 2013 the EKO-KOM system had 6057 municipalities participating, embracing 99 % of the CR population. Expansion of this system contributes to increasing the rate of sorting

and to raising the quality of the individual sorted components destined for further processing. The preventative activities in this area are aimed at reducing consumption, mitigating wastage and raising the rate of utilisation of the products.

In conclusion it can be summed up that municipal wastes are comprised of a whole range ofmiscellaneous substances and materials (wastes), and therefore the specific preventative measures are mostly directed upon dealing with the individual kinds of wastes contained in the MW. The rate of reduction of the quantity of wastes dumped/landfilled is influenced above all by the landfilling legislation which is gradually becoming more stringent, and the increasing percentage of waste channelled for re-use. In the CR, no untreated wastes may be dumped/landfilled, except for inert waste and those kinds of waste which do not lend themselves technically to any modification or in which no amount of processing could bring about any reduction in volume or any mitigation or elimination of hazardous properties. Landfilling is regulated by Decree no. 294/2005 Coll. on the Conditions of depositing waste in landfills and its use on the surface of the ground and amendments to Decree no. 383/2001 Coll., on Details of waste management. On the other hand, numerous components of municipal waste can be diverted from its general flow and the sorted wastes can be re-used as materials (including the production of compost) and as energy. And the preventative measures will be conducive to producing considerably less municipal waste.

The selected flows described below also represent an important part of municipal waste. These are dealt with in the subchapters 4.2 Biodegradable waste and biodegradable municipal waste, 4.3. Food waste, 4.4. Packaging waste and 4.9 Textile waste. These precisely are those municipal waste components for which the preventative measures may become of essential importance.

4.2.3 Expected future trends in the forthcoming years

Municipal waste is a highly heterogeneous material. No general applicable measure for dealing with municipal waste can be determined, and this is why its individual components have to be addressed. It is important to raise awareness of the complexity of managing municipal wastes – this makes the information and promotion strategy of importance for MW. Legislative measures limiting the landfilling of MW have to be thoroughly thought out.

Owing to the fact that it is the municipality which is the originator of MW, the issues of MW are also of much concern to towns and municipalities; therefore, it is desirable that these subjects become involved in the preventative measures, both from the aspect of provision of information and from the aspect of regulatory measures. It may generally be stated that all preventative measures focused on the rank-and-file citizen should be reflected in the future in the production of municipal waste.

4.3 Biodegradable waste and biodegradable municipal waste

Any waste that is degradable by an aerobic or an anaerobic process is biodegradable waste (pursuant to Regulation no. 294/2005 Coll.). Those types of biodegradable waste classified as Schedule 20 waste as per the Waste Catalogue as well as a part of biodegradable waste classified as belonging to the Subgroup 15 01 of Schedule 15 waste as per the Waste Catalogue are regarded to be biodegradable municipal waste (“BDMW”).

The production total of biodegradable municipal wastes in 2010 is the sum of the production of certain types of waste either fully consisting of, or containing a share of biodegradable waste as defined by the computational methodology adopted for the purposes of Council

Directive 1999/31/EC on the Landfill of waste.

Pursuant to Council Directive 1999/31/EC, the amount of municipal wastes originating from municipalities and containing a biodegradable component was 3,137 thousand tonnes in the year 2010 under scrutiny, and the amount of biodegradable waste therein was 1,395 thousand tonnes. Some 63 % of the total amount of BDMW-containing wastes is produced by municipalities and by subjects that are part of the municipal system, while the remaining 37 % comes from the other originators of municipal wastes active on the municipal territories.

The highest percentage of BDW-containing wastes is constituted by mixed municipal waste and by bulky waste, followed by separately collected biodegradable waste and separately collected waste paper. The amounts of other types of waste are negligible.

The tapes of BDMW of greatest importance in terms of weight, which can be regarded as problematic, are mixed municipal waste and bulky waste of which the share disposed of by dumping on landfills is around 99 % by weight of all the landfilled municipal wastes that containBDW.

4.3.1 Biodegradable municipal waste

According to the CR WMP the percentage of BDMW deposited in landfills should be decreased to 75 % by 2010 as against the base year 1995. The amount generated in 1995 was 1,530,000 tonnes, 148 kg BDMW per head of population, and thus in 2010 the amount directed to landfills should be 112 kg BDMW per head. From 2008 onwards the amounts of landfilled BDMW kept decreasing. The situation has improved thanks to capacity building of BDMW treating installations. The next year to be evaluated will be 2013, at which time the reduction of the share of landfilled BDMW should be 50 % on the base year 1995.

When adjudging the trends and the degree of compliance with the mandatory requirements, the 1995 legislative situation was taken into account, at which time the over-all amount of BDMW was determined, as per a breakdown to sub-groups and types of waste, as the sum total of the amounts of BDMW from citizens and small traders involved in the municipal system. It has been ascertained on the basis of the data generated from the Waste management information system that the amount of BDMW deposited on landfills in 2010 in the CR was 999,047.33 tonnes, which at an average population of 10,517,247 corresponds to 64.18 % of BDMW in 1995. The over-all production of the BDW in municipal waste in the year 2010 under scrutiny is shown in Table 7.

In the CR in 2010, the quantity of waste deposited in landfills was a mere 94.99 kg BDMW/head of population/year (95 kg), which was 16 kg less per head of population than stipulated by the requirement of the Directive, and 148,452.,7 tonnes less than stated as the EU target figure. In 2010 the CR has complied with the objective set out in the Directive on the landfill of waste for diverting from landfilling of the BDMW[8].

Regardless of this revised calculation, the Czech Republic has boosted significantly its construction of composting and biogas generating stations where BDW is processed. This trend has been supported, to an important degree, by the support extended under the Operational programme Environment.

[8] This calculation has been accepted by the European Commission. Communication from the Wastes Division of the Ministry of the Environment on meeting the target laid down for the year 2010 in Council Directive 1999/31/EC on the Landfill of waste. http://www.mzp.cz/cz/smernice_skladky_odpadu_2010.

Table 7: Production of BDMW in the CR deriving from municipalities (for the year 2010 under scrutiny as per Council Directive 1999/31/EC on the Landfill of waste)

Waste cat. no.	Catalogue designation of waste	Total MW from municipalities contg. BDW (tonnes /year)	Coeff. of BDW content*	Total BDW in MW from municipalities (total BDMW from municip.) (tonnes /year)
20 01 01**	Paper and cardboard	274 138,07	1	**274 138,07**
20 01 08	Biodegradable waste from kitchens and catering	2 775,47	1	**2 775,47**
20 01 10	Clothing	387,68	0,75	**290,76**
20 01 11	Textile materials	2507,66	0,75	**1 880,75**
20 01 38	Wood not listed under Code 20 01 37	21 702,99	1	**21 702,99**
20 02 01	Biodegradable waste	149 075, 94	1	**9 075,94**
20 03 01	Mixed municipal waste	2 243 310,00	0,48	**1 076 788,80**
20 03 02	Marketplace waste	2 689,15	0,75	**2016,86**
20 03 07	Bulky waste	382 945,42	0,3	**883,63**
20 03 03	Street sweepings	57 326,11	0,1	**5732,61**
Total		**3 136 858,47**		**1 395 285, 88**

Source: WMIS data base, converted

*N.B.:**

**) The coefficients of BDW content for the Catalogue Schedule 20 types of municipal waste under scrutiny, established using the method applied in the evaluation of the CR WMP for the year 2000 (2001) in the area of reducing the volumes of BDMW deposited on landfills.*

***) The production figures included paper and cardboard packaging, Code 15 01 01, from the municipal system.*

4.3.2 Expected future trends in the forthcoming years

Owing to the dropping percentage of landfilled wastes of this kind planned for future years, the preventative measures should also be of assistance toward attaining this objective. The waste prevention programme can have its share in the process of pushing down the production of BDW and BDMW (for instance, the food wastes, municipal and household composting facilities, etc.).

4.4 Food waste

Since recently the problems of food waste have become an issue of acute interest at the level of the entire European Union, this commodity is paid more substantial attention. It can realistically be expected that very soon, the food wastes will become part of voluntary waste prevention programmes. The existing CR WMP has not yet dealt specifically with this issue.

Food wastes can be broken down into wastes originating from the production and processing of raw materials, from the production proper of food, from food packaging and transport, and from households, catering facilities (restaurants, hotels, canteens and eating- houses, cafeterias of business companies) as well as during the course of sales of foods.

The universal objective of the food industry is to forestall any generation of waste during all the phases of the food chain, so as not to endanger the safety of the foods which is the fundamental requirement stipulated by European food legislation. Food producers strive incessantly to utilise the entire 100 per cent of the farming resources and to find use for all their by-products, not only in the form of foods but also as feed and fodder, fertilisers, cosmetics, lubricants, medications, bio-plastics and bio-fuels. Thanks to these steps

the effectiveness of resources is mounting, the impacts of agriculture on the environment are mitigated ad a higher value added is generated from any given unit of farm products (raw materials). The measures currently undertaken in this area are outlined in a 2012 analysis of the Czech Republic Food Chamber entitled 'Activities of the food industry in the area of waste management and packaging of foods and beverages'.

Another type of food waste is the wastes leaving ordinary households. There is a direct relationship here between the quantities of goods purchased, the actual consumption and the subsequent wastage. Yet another source of waste from foods is constituted by public catering facilities including hotels, restaurants, cafeterias and dining halls at company premises, canteens, etc.

4.4.1 A review of the CR food consumption

The balance sheet of Czech Republic's food consumption is based on the 2013 statistics of the Czech Statistical Office. The period from 2003 until 2012 was put to scrutiny (Table 8)[9].

Table 8: Review of Czech Republic's food consumption during the 2003 - 2012 period

Food type	Consumption/year/head of population [kg]									
	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Bakery products (flour)	110,9	110,2	106,3	106,6	114,9	105,2	113,0	108,7	118,7	113,3
Meat	84,7	80,5	81,4	80,6	81,5	80,4	78,8	79,1	78,6	77,4
Fish	5,3	5,5	5,8	5,6	5,8	5,9	6,2	5,6	5,4	5,7
Milk and dairy products	223,4	230,0	238,3	239,4	244,6	242,7	249,7	244,0	-	-
Cheeses, total	11,3	12,0	12,5	13,4	13,7	12,9	13,3	13,2	13,0	13,4
Curd cheese	3,4	3,6	3,2	3,3	3,4	3,4	3,4	3,4	3,4	3,4
Other dairy products	29,4	29,8	30,0	31,7	32,3	32,2	32,7	32,5	32,5	33,2
Eggs	14,8	13,7	13,7	13,6	14,0	15,0	13,2	13,5	14,1	13,6
Butter	4,5	4,6	4,8	4,4	4,2	4,7	5,0	4,9	5,0	5,2
Pork lard incl. bacon	4,7	4,7	4,9	4,7	4,7	4,7	4,5	4,7	4,8	4,7
Other animal fats	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
Vegetable edible fats and oils	15,7	16,0	16,1	16,5	16,3	16,0	15,9	16,3	16,3	16,4
Fruits	76,2	83,8	80,5	88,1	85,4	89,1	90,4	84,0	79,4	74,6
Vegetables, fresh	80,0	79,8	77,8	81,4	82,7	82,8	81,2	79,7	85,4	77,8
Leguminous plants	2,1	2,1	2,2	2,1	2,1	2,4	2,4	2,5	2,3	2,6
Potatoes	73,6	73,0	72,5	70,0	69,5	71,4	64,9	67,3	70,0	68,6
Sugar	43,0	42,6	40,5	39,0	37,2	32,5	36,7	36,0	38,6	34,5
Cocoa products	5,2	5,1	5,4	5,7	5,7	6,3	6,5	6,6	6,8	7,1
Non-chocolate sweets,sweetmeals	2,3	2,3	2,4	2,5	2,5	2,4	2,2	2,5	2,4	2,7
Confectionery products	5,8	6,1	6,4	7,3	6,6	6,7	6,7	6,8	6,8	6,9
Other foods	9,8	10,1	9,8	10,0	10,0	10,3	10,8	10,4	10,6	9,9
Food consumption	**806,2**	**815,6**	**814,6**	**826,0**	**837,2**	**827,1**	**837,5**	**821,8**		

Source: CSO data (published on: 5. 12. 2013)

N.B.: No data is available for the group „Milk and dairy products" for the years 2011 and 2012, therefore no total consumption is given either.

[9] For the food consumption statistics there is no mandatory classification in existence - neither in the CR nor internationally (EUROSTAT).

The over-all annual food consumption per head of population during the period under scrutiny varied around the value of 803 kg of foodstuffs. During this period the food consumption also was subject to various changes. According to the CSO, there has been a decrease in 2012 in the consumption primarily of bread, beef, fruits, vegetables, potatoes, sugar and soft beverages. Conversely, the consumption of paste wares, fish, cheeses and chocolate grew higher. Food consumption is highly price-dependent. However, even tourism plays are role, as does the number of foreigners in the country's population, health education, massive promotion and availability of the different kinds of food on the market. Priority impacts however are those of climatic conditions, geographic position and the necessity of importing some kinds of food such as rice, seafood/fishery products, southern fruits, etc.

4.4.2 Existing preventative measures adopted by the producers

Producers have ISO 14001 standards in place and have elaborated their guidelines for waste management which set out the principles of behaviour for their staff, the priorities in re-using the wastes, the sorting of the wastes, etc. As a rule they also have contracts concluded with external companies to check on the generation of the wastes. Most producers also have standards in place for each product laying down the limits for the consumption of raw materials and packaging per unit of production. Production is subject to monitoring and evaluation, and suitable measures are adopted where necessary with a view to cutting the costs and the generation of waste.

Environment-conscious utilisation of energy and of new technologies, or the application of innovation measures beneficial not to the consumers alone but also to the environment, have nowadays become the backbone of success in business. The new ISO 14045 standard motivates the firms to seek such instruments that would satisfy their clients while reducing the environmental loading.

Producers also are saving water. Recuperation is noticeable especially in the soft beverages industry; the process water consumption per unit of water produced is being reduced, thus bringing about a reduction in the amounts of wastewater.

In the area of processing fruits and vegetables (in canning factories), an important role is played by the right choice of raw materials and the right adjustment of product recipes. In this sector, producers will as a rule order raw material for processing already pre-processed andcleaned in advance so that they require only a minimum post-treatment yielding a minimum of waste. The recipes of this type of products specify concrete values of loss due to processing for each raw material employed; these must not be overstepped and are monitored on a daily basis. Should it happen that these limits are exceeded, the setting of the processes and working procedures is inspected and rectification measures are determined to avoid losses.

4.4.3 Existing preventative measures – the food banks

The food banks face a number of problems in their practical operations. Co-operation with food chains (supermarkets, hypermarkets) is beneficial but currently is also subject toserious constraints due to the problems of taxation of donated foods. Levying the VAT in the case of donated food is also perceived as a problem: here the trader or producer has claimed tax deduction in relation to acquiring the goods or the inputs for his production of the goods. In such a case the trader or the producer a VAT payee, is obligated to have VAT levied when the goods are donated. The VAT area is highly harmonised within the EU, so the opportunities for not having the tax levied are limited. Therefore it is necessary to follow the EU developments relative to the VAT claims and levies and, as the case may be, respond to any changes which however have to comply with the EU *acquis*.

In the matter of the Food bank, low awareness still persists regarding the very existence of this institution and regarding its activity. Therefore, future awareness raising measures will have to be focused on all levels (the political domain, the business area, the citizen, etc.).

In spite of the aforementioned facts it is true that for instance, the Food Bank in Ostrava has been able to re-distribute nearly 70 tonnes of foods of total worth of CZK 3.7 mln in 2012. However, as of 2013 the Programme of food supplies from the State Agricultural Intervention Fund which amounted for more than 50 % of all this food has been terminated. This will significantly reduce the effectiveness of the Food banks in the forthcoming years. Therefore, further activities have to be sought.

4.4.4 Existing trends at the EU level

Up to 50% of all edible and wholesome foods is wasted, *i.e*., dumped in European households, supermarkets and restaurants each year. Thus, the European Parliament requires that measures toward reducing the food wastage to one half of its present value by the year 2025 be adopted without delay and that the availability of food to EU citizens in need be improved. According to the European Commission, unless a change is effected the amounts of foods wasted/dumped will grow from today‘s 89 million tonnes annually to 126 million tonnes by 2020. When converted to wastage per capita this will at the present time amount to 176 kg wasted foods per year.

Inasmuch as the foods are being wasted at all stages – by producers, processors, sellers, restaurants, households – the EP call for adoption of a co-ordinated strategy that would embrace pan-European as well as national measures toward improving the effectiveness of the food supply chain in its the various branches and toward addressing the problem of food wastage without delay. In case that no steps are adopted, food wastage will increase, according to a study published by the EC, 40 % by the year 2020.[10]

The greatest problem faced in the future will be that of meeting the growing demand for foods which will overstep the supply. Food wastage is an ethical issue as well as an economic and social problem having paramount consequences to the environment. This is why the EU expects a unified strategy to be developed that will orientate all its 27 member States onto the road toward systematically resolving this problem.

According to the resolution, a marked reduction of food wastage by 2025 would be assisted by campaigns launched at the European and national levels toward raising the public awareness of how the wastage of food could be prevented. The Member States should introduce educational programmes at schools informing the pupils and students on how foods are to be stored and cooked and how the food waste is to be disposed of. Member States should share/exchange well-proven procedures for this purpose. In order to raise awareness of sustainable food management, the EP members have proposed that the year 2014 be designated the "European Year against Food Waste".
Breakdown of the flow of food waste according to an EC estimate:

- households - 42 % (of which 60% is preventable),
- producers/manufacturers - 39 %,
- sellers/vendors - 5 %,
- public catering sector - 14 %.

Presently there are two up-do-date documents available at the EU level addressing waste prevention – *Guidelines on the preparation of food waste prevention programmes* (EC) and *Prevention of food waste in restaurants, hotels, canteens* (Norden). An important message for the originators of preventative measures in the food sector is that the guidelines recommend to focus attention rather on positive stimulation than on negative penalties. These were the conclusions that arose from a survey conducted among the operators

[10] http://ec.europa.eu/environment/eussd/pdf/bio_foodwaste_report.pdf.

questioned. The guides assume that the funding would be directed to supporting cleaner production at the food producers and processors, to educational/enlightenment campaigns, to training of interested vendors, to the catering sector as well as to inspectors, to the support of voluntary agreements and charity organisations engaged in distributing surplus food to people in need, to related research activities, an improved functioning of statistics and methodologies, or to the system of development of the infrastructure of food banks. The guideline regards it as important to achieve harmony between the safety of feeding, the hygienic aspect of the foods proper and the effort at generating a minimum of food waste.

4.4.5 The existing trend in the CR

In the Czech Republic there is not, except for the project R&D/ SP/2f1 /132/08 mentioned earlier in chapter 2.2, any up-to-date professional study available that would monitor the food waste stream to any degree of accuracy and that would be able to precisely describe the quantitative and qualitative aspects thereof. All that is available at the present time are professional estimates or studies by Czech environmental organisations. The Duha (Rainbow) Movement having conducted a survey in the town of Dvůr Králové nad Labem has arrived at an estimate that wasted food constitutes 20 - 30% of the volume of refuse containers.

The amounts of foods wasted in household can only be estimated based on a professional assessment. If out of an annual consumption of 830 kg of foods per capita 10 % of these foods were to end up as waste, the nationwide annual production (based on the 2012 population of 10,505,445 according to CSO) of food waste from households would amount to approximately 870 thousand tonnes of food, *i.e*. approximately 83 kg of food waste per head of population per year. To this figure must be added the waste from food production, distribution, sales and from public catering; according to the CR Food Chamber this is 3 % of the total food consumption – converting to approximately 262 thousand tonnes of additional food waste per year. On the whole the total annual production of food waste in the Czech Republic could exceed the value of 1.1 mln tonnes of foods which converts to approximately 107 kg of food waste per head.

4.4.6 Expected future trends in the forthcoming years

The food waste generation trends can only be estimated for orientation, inasmuch as no exact or verified data exist which could be used as a basis. If however the average annual consumption of food by an average citizen during the course of the last nine years has varied around 830 kg per capita, it can be assumed that in the nearest future the situation will remain analogical. Thus the production of food waste will either be the same or will experience a moderate increase. All that would hold true on the assumption that the food waste does not become part of the preventative measures. In the opposite case it could be assumed that there will be a gradual decrease [of the amounts of food waste]. This is why the food waste prevention activity is of considerable importance. The chief problem faced in the area of food waste in the Czech Republic is the total absence of any analytic and methodological instruments. Without them the current situation does not lend itself easily to any exact assessment, and no further however qualified or quantified progress can be expected. This has to be addressed at the first stage of the Programme.

Important activities and measures in the area of food waste concern the producers of foods (in the area of food waste handling and in the area of packaging foods and beverages). Here the preventative activities are underway. Another currently adopted measure are the already functioning Food banks. The measures and activities have to be focused more onto the area of food waste from households, the sales area and the farm sector. Therefore, the main objective of the preventative measures aimed at food waste should be the households and, subsequently, public catering, retail sales and farming, and it would also be expedient

to strengthen the measures adopted by the food industry. In addition of informational support there is a lot of room here for voluntary agreements, enhancement of the effectiveness of work of non-governmental organisations, and the drafting of legislative measures will have to be considered. During the course of 2014, negotiations have been ongoing at the MAg for the purpose of mapping and improving the situation in the area of food waste prevention.

4.5 Packaging waste

Packaging waste (Schedule 15 01 waste as per the Waste Catalogue) is generated in the course of using and transporting packaged goods. Depending on the place of origin we distinguish sales packaging (formerly, consumer packaging), transport/haulage and group packaging, and industrial packaging. Used packaging from the sales of the goods become packaging waste which turns up, in its greatest part, in municipal waste on in the waste disposed of by small manufacturers and traders. The other types of packaging are not destined for the routine consumer; they are used primarily in the distribution and transportation of packaged products. Such wastes are generated *e.g.*, within the trading and selling network. Industrial packaging is a special group of packaging yielding waste right within the industrial production undertakings which becomes part of the waste management system of the undertaking in question.

From the aspect of consumption, packaging can be broken down into one-off packaging (one-way, non-returnable packages) and multiple-use packaging (multi-way, returnable packages). The multiple-use packages are the dominant group on the market, amounting to 68 - 70 % of all packaging. The production of packaging waste is shown in Table 9.

Table 9: Summary data on the production of packaging waste in the CR during the 2003 - 2012 period (as recorded pursuant to the Waste Act)

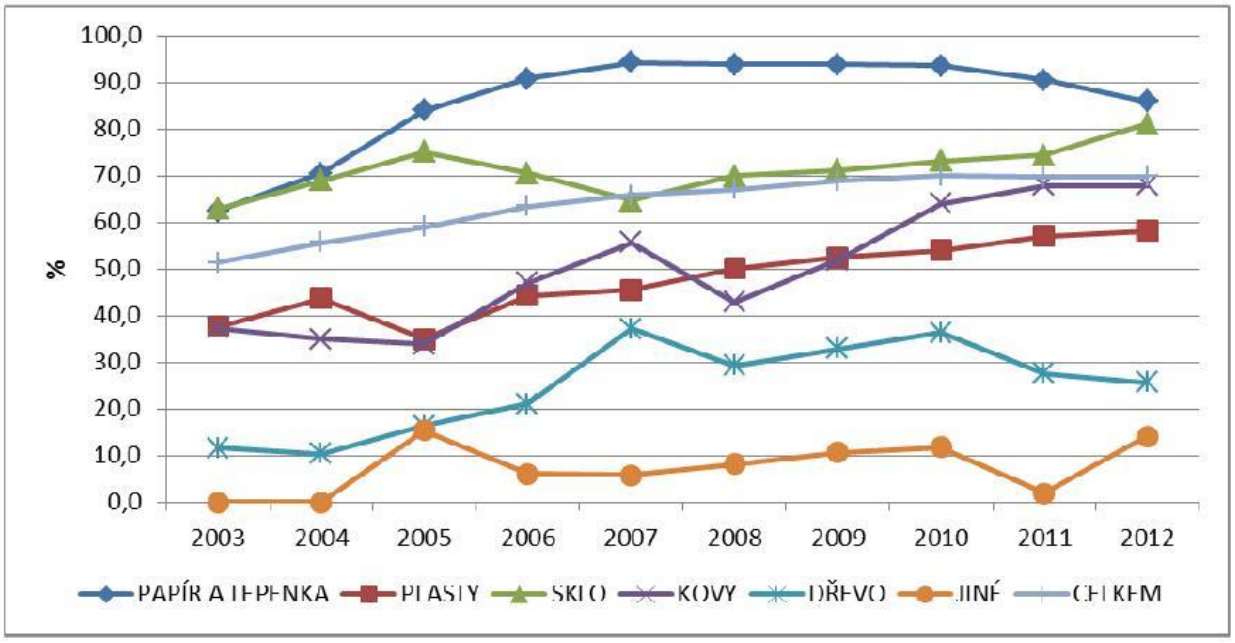
Year	Packaging waste produced (tonnes)
2003	720 158
2004	775 981
2005	847 445
2006	898 668
2007	962 682
2008	967 626
2009	894 353
2010	922 726
2011	945 316
2012	962 346

Source: MEnv

4.5.1 Handling of packaging waste

In 2012 the production of packaging waste rose to a total of 962,000 tonnes. The percentage of packaging waste recycling attained is shown in Diagram no. 4.

Diagram no. 4: Rate of re-use of materials (recycling) of packaging waste during the 2003 - 2012 period



Key to the figure: **PAPER & CARDBOARD—PLASTICS—GLASS—METALS—WOOD—OTHER—TOTAL**

Source: MEnv

For the food industry the priority is to optimise the use of packaging. For instance, the weight of a plastic bottle filled with water, of 1.5 litre capacity, was reduced by 40 % between 1990 and 2011, on the average actual weight of 25 g, while the average thickness of the foil used for coffee and chocolate package dropped 30 % over the last 20 years. The packaging for tins having 33 cl in volume was reduced by 55 %, while the weight of glass bottles manufactured by a light-weight technology dropped by as much as 60 %.

The percentage breakdown of packaging depending on their mode of use, *i.e.*, single-use or multiple-use packaging or returnable packaging placed on the market and put into circulation during 2013, hints at the fact that the producers, importers and distributors prefer packaging that can be used over and again. According to the data by EKO-KOM, an authorised packaging company, in 2013 out of the total amount of packaging placed on the market or put into circulation, 32 % was one-off packaging and 68 % was multiple-use packaging (in 2011 the respective figures were 28% and 72 %). The dominant share of multiple-use packaging is constituted of industrial packaging, *i.e*. that which is not destined for sale to the final consumer but only to so-called other final users.

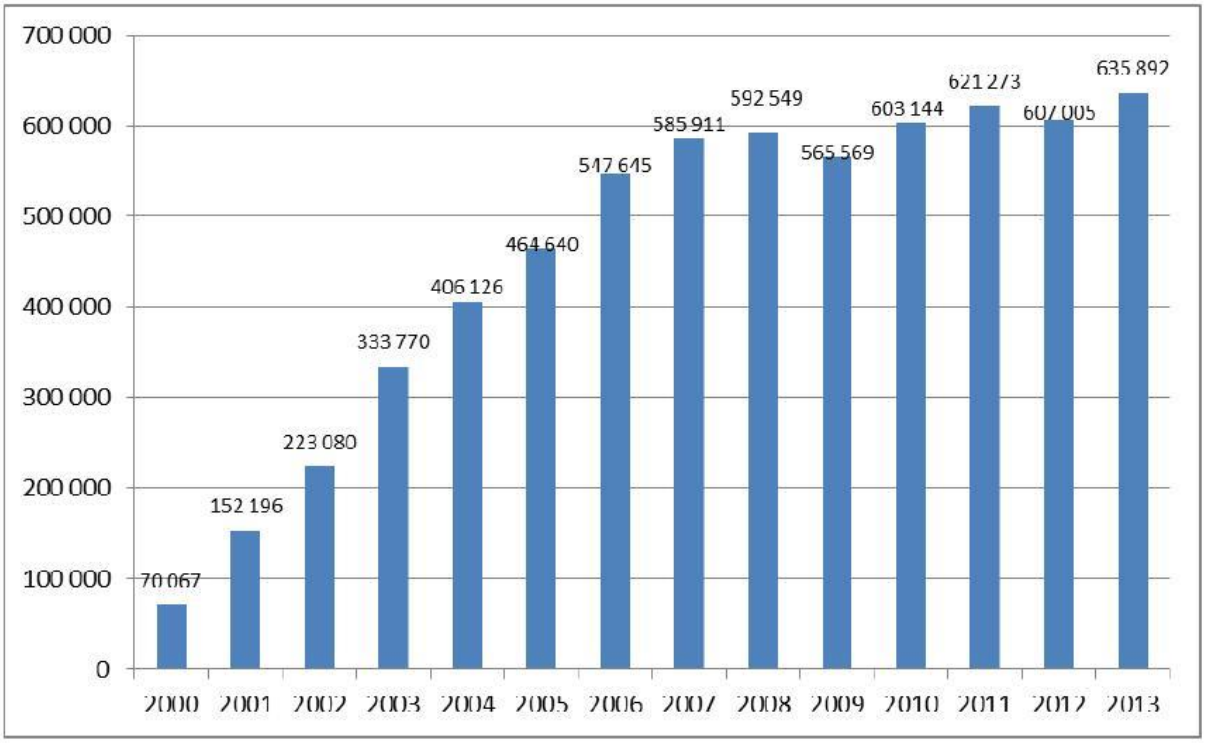
4.5.2 Results obtained by authorised packager EKO-KOM

Clients involved in the EKO-KOM system are responsible for 81% of packaging introduced on the market. As at 31. 12. 2013 the sorting system operated by EKO-KOM, a.s. had 10,472,000 individual participants, representing 99 % of Czech Republic's population living in 6,057 municipalities that are part of the municipal waste sorting system. Thus the EKO-KOM system ranks among the most successful in Europe in terms of population coverage. In 2013 the overwhelming majority of Czech Republic's population had an opportunity to sort municipal waste, and indeed the system of sorted/separate collection was used on a regular basis by more than two thirds of the population. Most inhabitants have refuse bins or other containers etc. available for sorting the waste they produce.

In 2013, EKO-KOM, a.s. has taken care of the utilisation and recycling of 635,892 tonnes

of waste deriving from single-use packaging (see Diagram no. 5).

Diagram no. 5: Amounts of waste during the 2000 - 2013 period from one-off packaging disposed of under the system of the authorised packager EKO-KOM, a.s. [in tonnes]



Source: EKO-KOM a.s

The traditional commodities that are subject to separate collection include paper, plastics and mixed glass waste. Since 2004, municipalities also promote separate collection of beverage crates, either independently using special collection bins or jointly with other types of waste, especially plastics. In 2013 the rare of recycling of beverage crates reached 21 %. The total recycling rate of packaging waste under the EKO-KOM system attained 72 % in 2013.

Sociological surveys indicate that approximately 70 % of CR population is involved in systematic sorting of waste. The rate of involvement of citizens in the municipal waste sorting systems is reflected in the recovery yield of sorted waste per capita, *cf*. Table 10.

Table 10: Amounts of waste during the 2000 - 2013 period from one-off packaging disposed of under the system of the authorised packager EKO-KOM, a.s. [in tonnes]

Year	2006	2007	2008	2009	2010	2011	2012	2013
Yield of sorted waste in kg/capita/year (paper, plastics, glass, crates for beverages)	27,9	31,8	35,9	35,8	36,6	38,9	39,1	39,7

Source: EKO-KOM a.s.

4.5.3 Expected future trends in the forthcoming years

From the trends experienced so far it can be judged that there is room for a further improvement of packaging waste prevention in the area of voluntary agreements with producers and chain stores. With producers there has been a certain tendency to prefer larger-sized single-use packaging instead of multiple-use packaging. Reserves can be seen in altering the behaviour of consumers, for instance, effecting a transition of consumers from packaged beverages to water distributed via the water mains.

4.6 Electrical and electronic equipment (EEE)

In this area in the CR, the date of 13 August 2005 marked a milestone for waste management: Directive 2002/96/EC of the European Parliament and the Council became transported into [Czech] law by an amendment to Act no. 185/2001 Coll. on Waste, under the number 7/2005 Coll.

Hence, since August 2005 in the Czech Republic, the mandatory take-back applies to electrical equipment supporting a function that depends on the supply of electric current or on an electromagnetic field, but also on equipment serving for the generation, transmission and measurement of electric current or electromagnetic fields destined for operation at voltages not exceeding 1000 V in the case of alternating current and 1,500 V in the case of direct current. Electrical equipment is classified in 10 groups specified in Annex 7 to Act no. 185/2001 Coll. on Wastes. The Wastes Act also sets out the exceptions *i.e*., the cases to which this part of the Act does not apply.

Pursuant to Annex 7 of Act no. 185/2001 Coll. on Waste the electrical equipment is broken down into the following product groups:

1. Large-sized domestic appliances (such as refrigerators, cooking stoves/ranges, washing machines etc.),
2. Small-sized domestic appliances (such as vacuum cleaners, alarm clocks, toothbrushes, etc.),
3. Information technology devices and telecommunications equipment (such as PC monitors, mobile phones, etc.),
4. Consumer electronics and solar panels (such as television sets, DVD players, cameras etc.),
5. Lighting equipment (fluorescent lamps and luminaires),
6. Electrical and electronic tools and instruments (such as hand-held tools, garden machinery),
7. Toys, leisure equipment and sports equipment,
8. Medical instruments (with the exception of all implants and infected products),
9. Monitoring and inspection instruments,
10. Automatic product dispensers.

Schedule 4 electrical equipment was expanded to include solar panels as of 24 June 2013. In view of the extraordinary upswing of the installations of photovoltaic power stations in the CR during the 2008 - 2010 period, this waste stream has been identified as one of the priority areas to be addressed in the medium-term to long-term horizon.

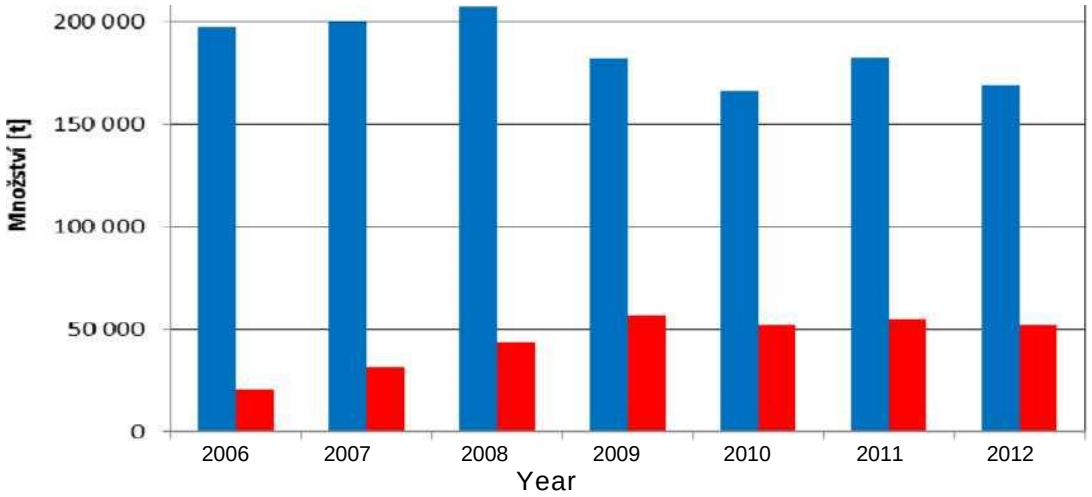
Starting from 2018 the scope of the new Directive 2012/19/EU of the European Parliament

and the Council will expand further, in particular to include equipment which due to its nature does not fit into the 10 groups hitherto established. The future categorisation is based on six groups of which the first three are orientated on waste electric equipment streams of greatest environmental impact, groups 4 and 5 are concerned with small-sized and large-sized equipment respectively, and the last group is orientated on the stream representing the group that exhibits the greatest 'wear and tear' thus posing a danger when disposed of as part of municipal waste (small-sized devices of computer and information technologies).

Electrical equipment and the waste thereof have to be broken down into electrical equipment for which take-back is mandatory and electrical equipment that has to be treated and disposed of as waste.

The waste treatment and disposal mode is employed with electrical equipment falling under the exceptions stipulated in the Wastes Act and also with electrical equipment which, even if falling under the obligation of take-back, are incomplete, *i.e*., some essential technological components thereof are missing, such as the compressor in case of refrigerators.

Diagram no. 6: Amounts of electrical equipment placed on the market, in tonnes, and the outcome of the take-back of electrical equipment and of separate collection of electrical waste in the CR – a comparison for the 2006 to 2012 period



Key to the figure: **Amount (tonnes)** **EEE placed on the market (blue)** **EEE take-back (red)**

Source: CENIA

4.6.1 Amounts of products placed on the market

The greatest quantity of products was introduced on the market in 2008 (207 thousand tonnes) - see Diagram no. 6. In 2012 this was reduced to a mere 169 thousand tonnes. The greatest percentage by weight on the market is represented by large-sized home appliances (39 %) and by the equipment of telecommunications and information technologies (26 %). As regards solar panels, the determination of the numbers on the market issues from an estimate based on the licences issued by the Energy Regulation Authority. It should be noted that the current number of licensed operators of solar power stations is around 22 thousand subjects, and the estimated number of panels connected to the CR power grid is approximately 19 million pieces.

4.6.2 Organisational safeguards of the take-back system

Chapter 8 of Act no. 185/2001 Coll. on Wastes stipulates an enhanced responsibility on the part of the producers of electrical equipment relative to the handling of these products. The MEnv has ca. 4,180 obliged subjects on file, registered with the List

of producers/manufacturers. These producers/manufacturers may discharge their obligations in three different ways: individually, solidarily or collectively. At the present time, most of the producers comply with their obligations by mans of twelve collective systems which take care of the take-back of electrical equipment and of separate collection of electrical waste on their behalf (Table 11).

The obligation of providing the funds for handling so-called historical electrical equipment (originating from households) has to be discharged by the producers/manufacturers solely via the collective system registered with the MEnv.

Table 11: Overview of collective systems registered with the MEnv

Collective system	Takes care of take-back for EEE groups	Authorisation for historical EEE
Asekol s.r.o.	1, 2, 3, 4a, 5, **6**, 7, **8**, 9, 10	3, 4a, 7
Asekol Solar s.r.o.	4a, 4b	-
Bren, s.r.o.	2, 6	-
Ecopartner s.r.o.	4b	-
Ekolamp s.r.o.	5	5
Elektrowin a.s.	1, 2, 3, 4a, 4b, 5, 6, 7, 8, 9, 10	1, 2, 6
FitCraft Recyklace s.r.o.	4b	-
MINTES Solutions s.r.o.	4b	-
OFO - Recycling, s.r.o.	1, 2, 3, 4a, 4b, 6, 7, 8, 9, 10	-
PV Recovery, s.r.o.	4b	-
Recycling Systems, s.r.o.	4b	-
REMA PV systém, a.s.	4a, 4b	-
REMA systém, a.s.	1, 2, 3, 4a, 5**,** 6, 7, 8**,** 9, 10	3**,** 8
REsolar.s.r.o.	4b	-
Retela, s.r.o.	1, 2, 3, 4a, 4b, 5, 6**,** 7**,** 8**,** 9, 10	3, 9

Source: MEnv (status as of 16.09.2014)

*N.B.: 4a) Consumer appliances/equipment, 4b) Solar panels, * tied up with Regulation no 158/2010 Coll.*

4.6.3 Preventative measures applicable to EEE

In the area of prevention, the instrument applied is one that imposes constraints on the use of hazardous substances in products (Act no. 185/2001 Coll., and as of January 2013, a implementing regulation appurtenant to Act no. 22/1997 Coll.) as well as eco-design regulations (Act no. 406/2000 Coll. and Decree 337/2011 Coll.; however, these regulations have so far narrowed down the eco-design issues primarily to the energy consumption of electrical appliances). Since 2012, at variance with the foregoing situation, these issues are taken care of by the MEnv.

The substances contained in electrical equipment waste that exert major negative effects on the environment include in particular the heavy metals (lead, mercury, cadmium, hexavalent chromium), polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs), on which legislative limits were imposed by implementation of Directive 2002/95/EC of the European Parliament and the Council into Act no. 185/2001 Coll.

On Wastes in 2005; also, regulated substances, pursuant to Regulation (EC) no. 1005/2009 of the European Parliament and the Council, and where appropriate, also asbestos and polychlorinated biphenyls (PCBs) and, as the case may be, other operational media (oils, paints, dyes, etc.).

Another preventative measure applied is the re-use of products capable of further operation. However, there have not been any adequate developments in this area presently.

Directive 2012/19/EU

In order to maximise the preparations for re-use, Member State shall promote that, prior to any further transfer, collection schemes or facilities provide, where appropriate, for the separation at the collection points of WEEE that is to be prepared for re-use from other separately collected WEEE, in particular by granting access for personnel from re-use centres.

Directive 2008/98/EC

Article 11 - Re-use and recycling

1. Member States shall take measures, as appropriate, to promote the re-use of products and preparing for re-use activities, **notably by encouraging the establishment and support of re-use and repair networks**, the use of economic instruments, procurement criteria, quantitative objectives or other measures.

Annex IV, item 16: The promotion of the re-use and/or repair of appropriate discarded products or of their components, notably through the use of educational, economic, logistic or other measures such as **support to or establishment of accredited repair and reuse-centres and networks** especially in densely populated regions.

4.6.4 Results of take-back and separate collection mediated by producers' systems

A collection network incorporating a take-back scheme for electrical equipment and separate collection of electrical waste has been built and expanded in the CR ever since the very year 2005. For the future however, it will be necessary that this network be expanded in such a way as to make it possible for the final users to return electrical equipment waste not only to the municipal collection yards that constitute the backbone of the take-back systems but also to offices, sales outlets and other places accessible to the public.

The over-all trends in the take-back of electrical equipment and separate collection of electrical waste as provided for by the producers/manufacturers during the period from 2006 until 2010 are captured in Table 12 and Diagram no. 7; they document that the CR has succeeded in attaining an average annual rate of collection of electrical equipment from households of 4.2 kg per head of population until 31. 12. 2008 thus complying with her commitment, i.e., its obligation as imposed by the EU Directive. In the next year the substantial growth of the amount of electrical equipment returned based on the take-back scheme continued (5.5 kg per head and year), followed only as late as in 2010 by the first slow-down of the take-back rate, to a value of 5 kg per head per year, caused by an economic recession but also by exhaustion of the backlog of decommissioned electrical appliances accumulated in the foregoing years. The level of take-back and of separate collection via the individual, solidary and collective producers' systems in the CR has reached 31.8 % in 2012.

Next to the take-back streams of electrical equipment as recorded in the individual, solidary and collective producers' systems, further batches of legally processed electrical waste have to be reckoned with in the CR. These are electrical equipment items which are handed over directly to a processing facility. The figures showing the collection totals of waste electrical equipment in the CR can be increased by this amount.

Another source of waste electrical equipment streams that are not taken stock of is that of wastes produced by illegal dismantling of entire electrical equipment units. At the same time, this activity also entails damage to the environment. The reason is that outlets where secondary materials are re-purchased accept for instance, stand-alone compressors and copper distribution piping from refrigerators, so that only the refrigerator casings no longer containing the complete machinery arrive at the collection yards. In manipulations of this kind, leakages from the cooling circuits occur which directly pollute the atmosphere. Operations of such illegal „dismantling" of electrical equipment frequently take place even at the very collection yards, and the components thus extracted are sold to the secondary materials re-purchasing outlets.

Ranking among yet other electrical waste streams not accounted for are small-sized devices that end up in mixed municipal waste, on illegal waste dump sites or in bulk waste. However, the exports of entire WEEEs to third countries, under the pretext of re-use, have also to be regarded as problematic. This problem should be forestalled by the new amendment to the Wastes Act no. 184/2014 Coll. which, in compliance with Directive 2012/19/EU on Waste electrical and electronic equipment, lays down the minimal requirements applicable to the transportation of electrical equipment where it is up to the holder of any such used electrical equipment to present a proof that the used electrical equipment being transported is not classified as waste. With these types of electrical equipment, a functionality test is to be performed. Further, the electrical equipment being transported must be protected by an adequate packaging to prevent damage to the product during transport.

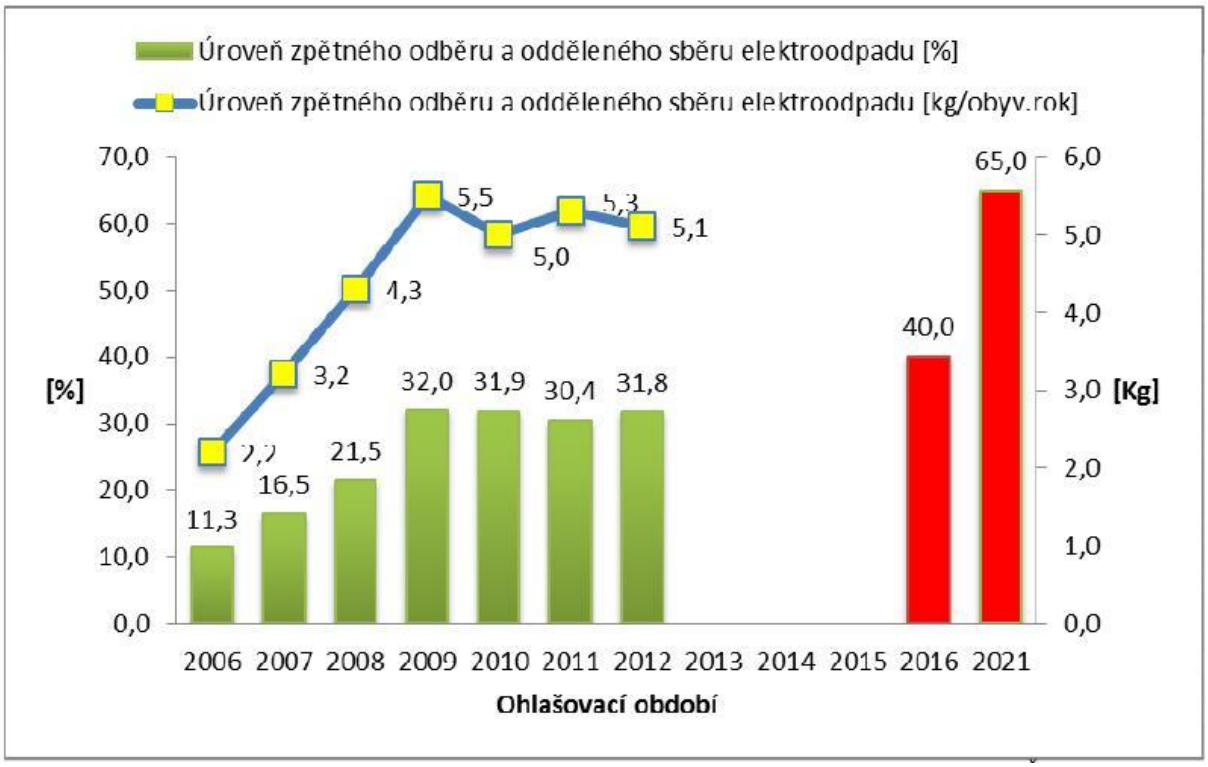
Table 12: Trends in the take-back of EEE and separate collection of WEEE by years

Year	Placed on the market [tonnes]	Take-back [tonnes]	Separate collection [tonnes]	Total collected [tonnes]	Level of take-back and separate collection of electrical waste [kg/cap/year]	Level of collection [%]
2006	196 967	21 138	1 032	22 170	2,2	11,3
2007	199 857	31 581	1 348	32 929	3,2	16,5
2008	207 207	43 858	676	44 534	4,3	21,5
2009	181 844	56 643	1 563	58 206	5,5	32,0
2010	166 063	52 119	870	52 989	5,0	31,9
2011	182 324	54 818	620	55 438	5,3	30,4
2012	168 840	51 972	1 713	53 685	5,1	31,8

Source: WMIS, CENIA

N.B.: Data on the years 2007 to 2013 have been re-calculated using the method applied as per Commission Decision 2005/369/EC „How to report on Waste Electrical and Electronic Equipment (WEEE) according to Commission Decision 2005/369/EC", of 07.05.2012.

Diagram no. 7: WEEE take-back and separate collection trends in the CR and the targets set by EU Directive for the years 2016 and 2021



Key to the figure:

(green) Levels of take-back and separate collection of electrical waste [%]
(blue) Levels of take-back and separate collection of electrical waste [kg/capita.year]
Reporting period

Source: MEnv, CENIA

4.6.5 Processing waste electrical equipment

It is the aim of the processing technology to separate a substance from electrical waste and to transform or transfer it to a form such that will enable its re-use. The processing procedures issue from the properties of the specific waste at hand. Processes allowing the recovery of metals are dominant.

The basic processes involved are dismantling and separation; by these steps are dismantled the components well-suited for re-use, any hazardous components, other separable components destined for recycling (metals, plastics) and parts destined for further dismantling such as printed circuit boards, monitors, batteries, cables, motors and transformers.

Also the size and shape of the components recovered are adapted by cutting and shearing, crushing and grinding, separation and sorting prior to further use or disposal. Procedures are also employed whereby the composition of the waste is modified (homogenising) to minimise losses during re-use.

Chemical procedures are also employed to obtain specific substances, *i.e.*, leaching followed by other procedures which are specific depending on the properties of the material at hand.

The components obtained by these various pre-processing techniques may be further used as materials or for energy generation in pyrometallurgical, hydrometallurgical or combination processes.

Finally at the last stage, those parts of waste electrical equipment that do not lend themselves to any use are disposed of (dumped on landfills).

Waste electrical equipment is currently processed to yield base as well as noble metals and alloys (copper, iron, aluminium, zinc, tin, antimony, chromium, nickel, cobalt, cadmium, tungsten, molybdenum, palladium, rhodium, gold, silver, platinum), certain semiconductors (germanium, silicon, arsenic, gallium), plastics and glass. To fill the quota required by law, it is especially the structural parts of electrical equipment that are recycled. To enhance recycling efficiency, processes have to be sought to increase the yields of metal, plastics and glass from the waste; new products to be made of plastics will have to be developed.

From the point of view of the treatment of electrical waste in the CR and in the EU, the main quantitative indicators are the rate of utilisation and the rate of re-use of this waste (Table 13). It can be stated that at present, a high rate of over-all as well as of material utilisation is being attained in the CR for all those groups of electrical equipment which are of any importance in terms of weight.

Table 13: Rates of utilisation, recycling and re-use of different EEE groups in 2012

EEE group		Utilisation	Material utilisation and re-use
Number	**Designation**		
1.	**Large-sized home appliances**	89,2 %	86,6 **%**
2.	**Small-sized home appliances**	93,2 %	93,2 %
3.	**IT equipment & telecom**	84,5 %	95,7 %
4.	**Consumer devices**	91,0 %	88,5 %
5.	**Lighting equipment**	93,8 %	93,3 %
5eu	**Other Group 5**	89,5 %	87,7 %
5a)	**Fluorescent lamps and metal halide**	95,3 %	95,3 %
6.	**Tools**	91,2 %	84,5 %
7.	**Toys and sports equipment**	92,4 %	98,7 %
8.	**Medical instrumentation**	94,0 %	94,0 %
9.	**Monitoring and inspection instruments**	97,9 %	98,0 %
10.	**Automatic product dispensers**	83,0 %	98,3 %

Source: WMIS, CENIA

*N.B.: *) Produced as per Decree no. 352/2005 Coll.*

4.6.6 The processing capacities available

In the Czech Republic there are ca. 80 companies today active in the area of processing waste electrical equipment. These firms are followed by further companies engaged in the downstream processing of the dismantled parts or crushed fractions. However, only about one half of them co-operates with the collective systems. The others obtain electric equipment waste either directly from companies that are producers of the wastes or from citizens through their municipalities.

4.6.7 Expected future trends in the forthcoming years

For this commodity there is a rather broad range of opportunities on offer in the area of waste prevention. These are part of the objectives and measures proposed.

In recent years there has been a moderate degree of success in motivating citizens toward collecting electrical equipment taken out of operation. However, the effectiveness of this system is rather markedly influenced by the outlets that re-purchase secondary materials where unprofessionally dismantled electrical appliances tend to disappear. Thus there is a slowdown in the growth of the rate of take-back of electrical appliances and the environment is threatened by possible leakages of hazardous substances to the various environmental components.

Even in the past, existing legislation only allowed decommissioned electrical equipment and electrical waste to be handed over to the take-back points, to separate collection points (*i.e*., the points set up by the manufacturer, the collective system) or to the processor of electrical equipment waste. For reasons of ambiguity and interpretation difficulties of this provision it used to be frequently circumvented in practice. By amending the Wastes Act no. 184/2014 this provision was so modified as to make it quite clear that no other persons than those listed above are authorised to the take-back of returned electrical equipment and electrical waste.

Without a legal norm unambiguously defining the facilities authorised to receive electrical equipment from citizens and electrical waste the CR would not be able in the future to meet the objectives stipulated by the EU, regardless of whether this should concern the attainment of the required percentage of collection of waste electrical equipment (diagram no. 9) or the rate of utilisation of electrical waste.

The collective systems mostly tend to be perceived in a positive fashion by the population. There is great interest in their activities which however have so far been channelled mostly to the area of take-back and dissemination of information on the ways in which outdated electrical equipment, appliances or batteries can be disposed of. For this commodity there is a rather broad range of opportunities on offer in the area of waste prevention. These are part of the objective and measures proposed.

It has to be stated however that there has not yet been a sufficiency of processing capacities for a further development of the product take-back system, or in other words, no network of facilities for the preparations preceding re-use has yet been built. One of the possibilities of prevention in the area of EEE is to set up a network of service centres. This approach however, used widely in some EU Member States, is in need of appropriate legislative support.

4.7 Batteries and accumulators

During the years 2009 - 2010 (amendment to Waste Act no. 297/2009 Coll., Decree on batteries and accumulators) there occurred a change to the legislation and a re-allocation of waste batteries and accumulations (*i.e*., storage batteries) to three groups: portable batteries and accumulators, industrial batteries and accumulators (lead and nickel-cadmium) and automotive batteries. Directive 2006/66/EC of the European Parliament and the Council currently in force, on batteries and accumulators and waste batteries and accumulators, prohibits in one of its articles the marketing of batteries and accumulators with excessive contents of mercury and cadmium. These restrictions have been transposed into the Czech legislation as section 31a of Act no. 185/2001 Coll. on Wastes. The Directive was revised in the respect in 2013 and certain exceptions were cancelled – for instance, for cordless power tools and for button cells.

Chapter 3 of the Wastes Act charges the producers of batteries and accumulators placing their batteries and accumulators on the CR market the obligation of take-back and separate

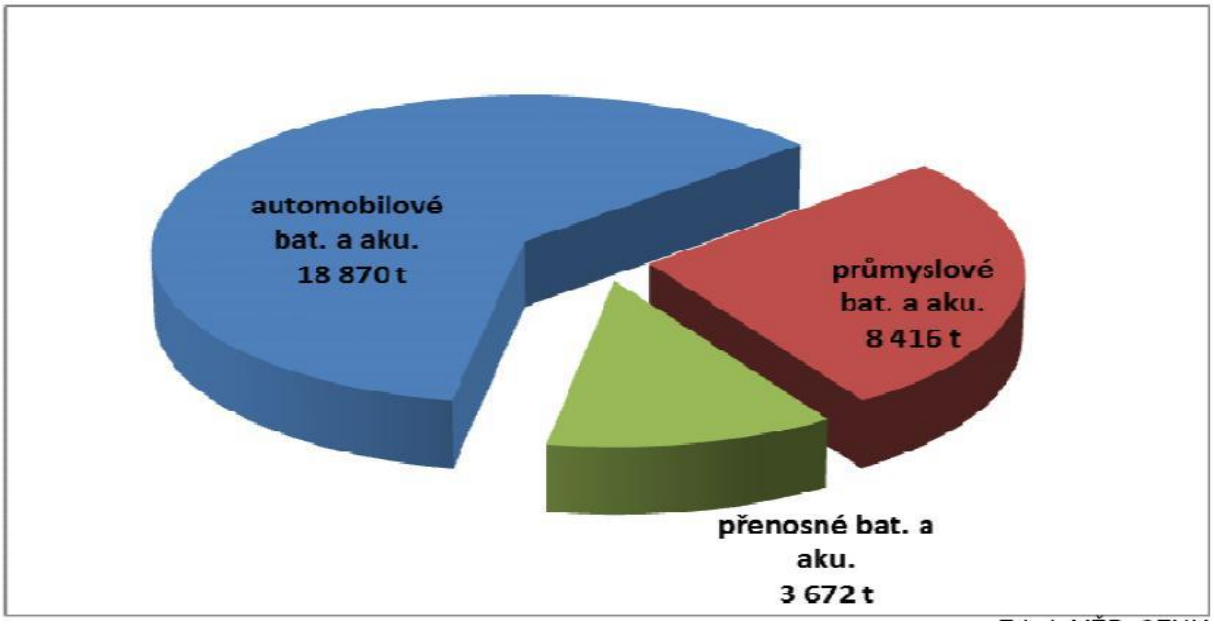
collection of these products. For the take-back of portable batteries and accumulators in 2013 there existed two collective systems in the CR: that of ECOBAT, s.r.o. and that of REMA Battery, s.r.o., which brought together a total of 1,132 producers, and there was one individual producer (GOLDTIME, a.s.). On the official list of producers kept by the MEnv were registered 51 producers of industrial batteries and accumulators, and 94 producers of automotive accumulators. Out of all these, 20 producers organise the take-back of car batteries by the solidary method within the framework of the solidary systems of GREEN Solution, s.r.o. (18 producers) and BUSCH CZ, s.r.o. (2 producers). The other producers have organised their take-back and separate collection operations using the individual method.

In 2013 there were ca. 18.2 thousand take-back points for portable batteries and accumulators in operation. For automotive and industrial batteries and accumulators there was a total of 215 take-back points in place under the solidary system of GREEN Solution, s.r.o. Automotive and industrial batteries and accumulators can also be passed on to third persons under the waste management scheme.

The take-back points can be fond on the Ministry of the Environment website. http://www.mzp.cz/cz/baterie_akumulatory.

The numbers of batteries and accumulators placed on the market in 2012 are shown in Diagram no. 8

Diagram no. 8: Quantities of batteries and accumulators placed on the CR market in 2013, by type



Key to the figure: **automotive batteries and accu.**
portable batteries and accu.

Source: MEnv, CENIA

The total numbers of batteries and accumulators placed on the CR market in 2012 and 2013 were 31,640 tonnes and 30,958 tonnes, respectively. An over-all evaluation of the take-back of batteries and accumulators in 2013, performed pursuant to Annex no. 3 to Decree no. 170/2010 Coll., is presented in Table 14.

Table 14: Take-back of batteries and accumulators in 2013, in tonnes

Group	Quantity of products falling under the take-back scheme (tonnes)	Quantity of products actually taken back (tonnes)	Number of producers
Portable batteries and accumulators	3 672	1 114	1 133
Industrial batteries and accumulators	8 416	1 569	47 *
Car batteries	18 870	20 101	76 *

Source: CENIA, MEnv

*N.B.: *The solidary system of GREEN Solution, s.r.o. furnished no information on the number of producers where the data would distinguish between those of industrial and those of car batteries and accumulators. The list of producers on behalf of which the report has been sent it only mentions the total membership (18 producers), indicating that the annual report does not require any breakdown by groups.*

As to the ranking by electrochemical type the lead batteries and accumulators constitute the most important group in terms of weight.

On the whole it can be stated that as far as quantitative targets are concerned, essential attention is paid to the efficiencies of the recycling processes. Published on 11 June 2012 was Commission Regulation (EU) no. 493/2012 laying down, pursuant to Directive 2006/66/EC of the European Parliament and of the Council, detailed rules regarding the calculation of recycling efficiencies of the recycling processes of waste batteries and accumulators. This methodology is mandatory as of the year 2014 (with an annual report to be submitted in 2015).

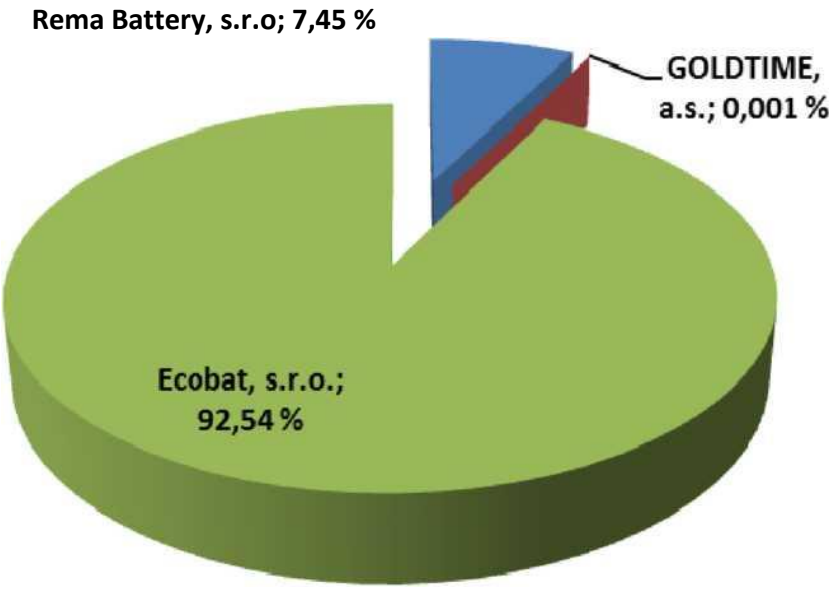
Presently it transpires from the annual reports that the efficiencies of material utilisation for lead batteries and accumulators, for NiCd and for other batteries and accumulators are 66.5 %, 79.1 - 81.1 % and 56.61 %, respectively, thus meeting the requirements stipulated in the Directive.

4.7.1 Portable batteries and accumulators

A portable battery or accumulator is any battery, button cell, charging set or accumulator that is all-sealed and that a person could carry by hand, and that is neither an industrial battery or accumulator nor an automotive battery or accumulator. In 2013, a total of 3,672 tonnes of portable batteries and accumulators were placed on the market and 1,114 tonnes were collected.

The target values for the take-back of portable batteries and accumulators are set out by Directive 2006/66/EC on Batteries and accumulators and waste batteries and accumulators. The target for 2012 was 25 % (this has been met), but for 2016 the target is as high as 45 % already. These percentages are related to the average amounts of the aforementioned portable batteries and accumulators placed on the market during the foregoing three calendar years. In 2013 it has been possible to organise take-back at an over-all level of 31.0 % (as against 29 % in 2012).

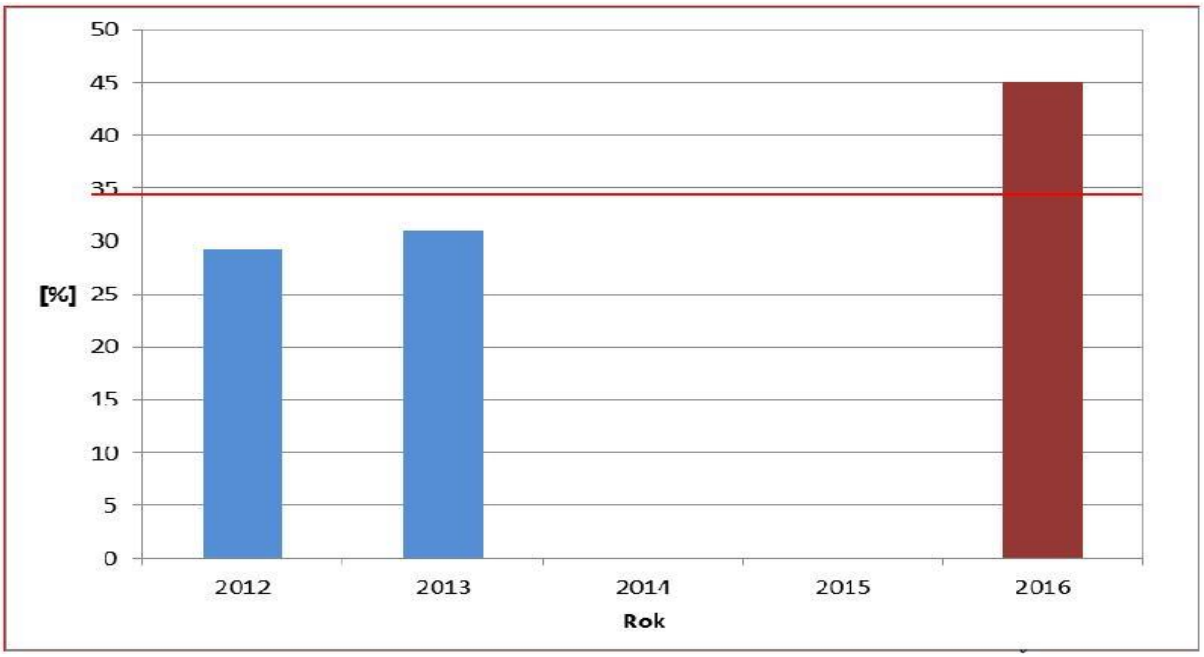
Diagram no. 9: Percentages of collection of portable batteries and accumulators mediated by different systems in 2013



Source: MEnv, CENIA

The levels of take-back of portable batteries and accumulators are shown in Diagram no. 10.

Diagram no. 10: Take-back trend of portable batteries and accumulators during the 2012 - 2013 period and the target set for 2016



Source: MEnv, CENIA

N.B.: Source: Annual reports by producers, Annex no. 3 to Regulation no. 170/2010 Coll.; report on waste batteries and accumulators pursuant to the requirements of art. 10 and 12 of Directive 2006/66/EC of the European Parliament and of the Council on Batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC.

4.7.2 Industrial batteries and accumulators

An industrial battery or accumulator is a battery or accumulator designed for exclusively industrial or professional uses or used in any type of electric vehicle. According to the producers' annual reports, a total of 8,416 tonnes of industrial batteries and accumulators were placed on the market and 1,569 tonnes were collected in 2013.

4.7.3 Automotive batteries

Lead batteries are subject to the take-back obligation pursuant to Act no. 185/2001 Coll. On Wastes in its valid wording. Most of the lead accumulators, owing to their high re-purchase price, are not just handed over at take-over or selected collection points but are re-purchased by waste collection and purchase facilities. An overwhelming majority of decommissioned lead accumulators arrive at the processing works, *i.e*., Kovohutě Příbram nástupnická Metals Production Corp. where the materials thereof are recovered. The required rate of material utilisation of lead accumulators of 65 % was attained as early as in 2005. According to the producers' annual reports, a total of 18,870 tonnes of automotive batteries and accumulators were placed on the market and 20,101 tonnes were collected in 2013.

4.7.4 Expected future trends in the forthcoming years

As regards the preventative measures aimed at batteries and accumulators, these ensue in particular from the mandatory limitations imposed on the use of hazardous substances in battery production, *i.e*., substitutions of production by suitable battery types, by weight reduction and by service life extension of batteries and accumulators. In the case of portable batteries and accumulators, one of the opportunities for boosting the level of interest on the part of consumers is the use of re-chargeable accumulators that can be re-charged and used over and again, at the expense of one-off batteries.

4.8 End-of-life vehicles

Directive 2000/53/EC of the European Parliament and of the Council on End-of-life vehicles has been implemented in the CR legislation by an amendment to Act no. 185/2001 Coll. On Wastes, under the designation 188/2004 Coll. A wrecked car is defined as any complete or incomplete motor vehicle designed for road conveyance of persons, animals or goods (hereinafter referred to as a "vehicle") and has become waste within the meaning of section 3. Further, specific wrecked cars are distinguished as including those wrecks that come from motor vehicles, complete or incomplete, designated as category M1 or N1 vehicles pursuant to Annex A to Act no. 56/2001 Coll. or three-wheeled motor vehicles excluding motor tricycles (so-called "selected vehicles") that became waste pursuant to the stipulations of section 3.

The Directive has set challenging targets for the rate of utilisation out of the total weight of waste cars collected. The targets required are listed in Table 15.

Table 15: Targets for utilisation, re-use and material utilisation out of the total weight of selected automobile wrecks, in %

	Targets until 2014		Targets from 2015 onwards	
	Utilisation and re-use	**Material utilisation and re-use**	**Utilisation and re-use**	**Material utilisation and re-use**
Vehicles produced after 1. 01. 1980	85 %	80 %	95 %	85 %
Vehicles produced before 1. 01. 1980	75 %	70 %	95 %	85 %

The issue of prevention of waste production is addressed in article 4 of the Directive. Member States shall ensure that the materials and components of vehicles placed on the market after 1 July 2003 do not contain lead, mercury, cadmium or hexavalent chromium other than in cases listed in Annex II. Transposition of the changes in this Annex shall be dealt with by the Ministry of Transport, by incorporating into the Annex to Regulation no. 341/2002 Coll. a mandatory reference to the application of the Directive.

The material composition derives from the fact that both the original vehicle (automobile) and the wreck thereof constitutes a structural entity composed of parts and structural subassemblies manufactured from a broad range of various materials – metals, plastics, glass, rubber, etc. The material structure of decommissioned vehicles (wrecked cars) has been mapped fairly reliably, including the changes thereto during the course of time where mainly the dependency of the material structure on the age of the vehicles taken out of operation is manifested.

Wrecked cars yield ca. 80 thousand tonnes of iron scrap annually, representing an important quantity of secondary materials. However, a wrecked car also incorporates a range of hazardous substances and components which if handled unprofessionally may jeopardise the environment and human health. This concerns for example, working and other fluids (fuel, engine oil, transmission oil, coolants, brake fluids, fluids used in air conditioning systems, acid from batteries), flame retarders for plastics and textiles, and other substances.

The production of wrecked cars – depends on several decisive factors:

- the number of automobiles operated (registered) in the CR;
- their age structure;
- in part, their structure by brand and type;
- the extent of putting the automobiles out of operation (de-registration) at the end of their service lives.

Existing registry systems for end-of-life vehicles:

- Central register of vehicles of the CR (CRV) - an overview of motor vehicles in operation and changes thereto.
- The Car Wrecks module of the Waste management information system (CW WMIS) - an overview of car wreck hand-over certificates pursuant to Annex no. 3 to Regulation no. 352/2008 Coll.
- statistics of the Automotive Manufacturers' Association (AMA), of the Automobile Importers' Association (AIA), etc.

These systems are not fully compatible and are operated for a specific purpose. As a result, the data held in the various systems exhibit certain discrepancies. For example, the difference in the number of category M1/N1 vehicles de-registered from the CRV and recorded in the CW WMIS during the 2009 - 2012 period can be seen in Table 15. This deviation was due to illegal handling of wrecked automobiles made possible by the wording of section 13 of Act no. 56/2001 Coll., on the Conditions for the operation of vehicles on the road network. Thanks to this section the vehicle owners were able to take their

vehicles out of operation based on a signed affidavit testifying to a different use ofthe vehicle. This deficiency has been rectified by an amendment to Act no. 185/2001 Coll. (by Act no. 169/2013 Coll.).

Table 16: Comparison of the numbers of selected vehicles deregistered from the CRV and the certificates on hand-over of wrecked automobiles issues (Annex no. 3 of Regulation no. 352/2008 Coll.) under the CW WMIS system

Year	CRV [pcs]	CW WMIS [pcs]	Difference [pcs]
2009	249 151	155 419	93 732
2010	176 674	145 445	31 229
2011	159 957	132 450	27 507
2012	153 470	125 548	27 922
2013	139 023	121 838	17 185

Source: AIA, CENIA

N.B.: The number of vehicles deregistered from the CRV does not include second-hand vehicles exported.

The structure of vehicles being struck off the register is illustrated in Diagram no. 11. The numbers of selected vehicles include passenger cars and light utility vehicles. The numbers of lorries include lorries and buses, while the 'other' category renders the sum total of motorcycles, non-classable vehicles and other vehicles based on their designations as per the statistics of the Automotive Importers' Association.

Diagram no. 11: Numbers of vehicles struck off the Central Register of Vehicles (CRV)

Key to the figure:

Numbers of vehicles de-registered from the CRV
Yellow: other
Red: lorries
Blue: selected types (M1 + N1)
Year

Source: AIA, WMCe

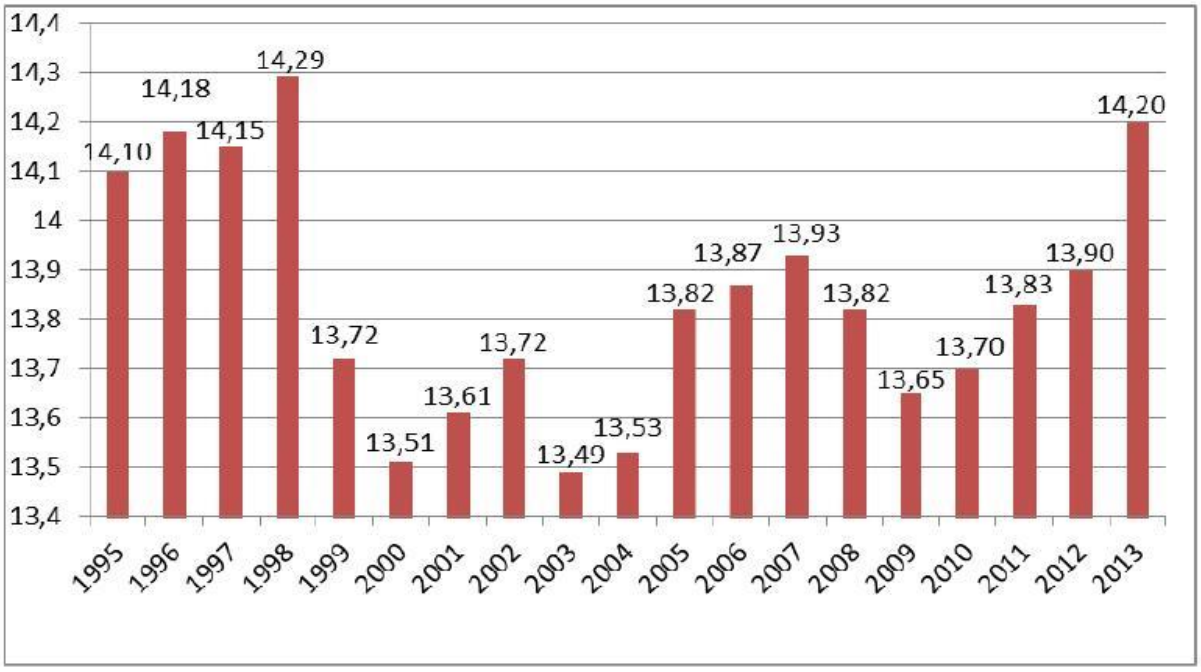
As of the date of entry into force of Directive 2000/53/EC of the European Parliament and of the Council the vehicle manufacturers are required to reduce, in co-operation with producers of materials and accessories, the scope of use of hazardous substances, the contents of which are to be pushed down as much as possible starting with the design of the vehicles, especially to make it impossible for them to leak or escape into the environment, to facilitate recycling and to avoid having to dispose of hazardous waste. Also, it is the manufacturers' duty to make use of recycled materials in the manufacture of their vehicles and to apply standards for marking of all components parts and materials.

In the Czech Republic however, the vehicles arriving at the reprocessing facilities still are of higher-than-average age thus making it difficult to meet the targets set forth by the European Commission.

Of decisive influence on reducing the age [of vehicles] are the permanent efforts at taking older automobiles out of operation. Since 1995 the average age of passenger cars has been subject to no significant change. The average age of passenger cars was reduced more significantly during the years 1999 and 2000 (with the transition to obligatory contract insurance of the vehicles) and also in the years 2003 and 2004. Then the age of the fleet of vehicles was moderately increased each year. A moderate decrease in the average age of passenger cars could only be demonstrated as late as in 2008 and 2009 (campaign of the Insurers' Bureau, charges levied at first registration, and re-registration of older vehicles). In 2014 the average age of passenger cars rose again to 14.2 years (based on Automotive Manufacturers' Association data).

In order to bring about a reduction of the average age of automobiles, the Government has adopted on 9 November 2011 its Resolution no. 819, by which the levy of a Charge in support of the collection, treatment, utilisation and disposal of selected car wrecks has been so extended as to apply also to the first registration of second-hand vehicles meeting the emission standard EURO 3. The said Resolution was adopted in response to outputs provided by the 'Task group on the renewal of the fleet of vehicles'. Legislation will be appropriately modified by the legal norm now being drafted (Act on End-of-life vehicles). The trend followed by the average age of passenger cars from 1995 until 2013 is illustrated in Diagram no. 12.

Diagram no. 12: Average age of passenger cars (cat. M1) in the CR



Source: AMA

4.8.1 Handling of selected end-of-life vehicles (wrecked cars)

According to the records of CW WMIS the number of vehicles collected in 2012 was 125,548 pcs totalling 114,800 tonnes in weight, of which 86.3 % were re-used and utilised, while 80.3 % were re-used and recycled; these values were arrived at by CENIA using a method of mathematical statistics. The data are reported to the EU.

Pursuant to Act no. 185/2001 Coll. on Wastes the operator of a facility collecting wrecked cars stands under the obligation of taking in, free of charge, selected car wrecks originating from vehicles, as long as these contain components of substance and do not contain wastes having their origin outside the selected vehicle. For citizens and producers of car wrecks it is mandatory to hand over the wrecked car to these subjects. In return they will be issued, free of charge, with a 'Certificate of wrecked car hand-over'. Summary data for the 2009 - 2913 period are given in Table 17.

Table 17: Handling of selected end-of-life vehicles (wrecked cars)

Year	The number of wrecked automobiles as per CW WMIS	Re-use and utilisation	Re-use and recycling
2009	155 419	86,3 %	80,3 %
2010	145 445	86,3 %	80,3 %
2011	132 450	86,3 %	80,3 %
2012	125 548	86,3 %	80,3 %
2013	121 838	86,3 %	80,3 %

Source: MEnv, CENIA

4.8.2 The collection and processing facilities network

As at the end of 2013, the network of authorised collection and re-processing facilities was comprised of 534 businesses (Table 18), of which ca. 498 actually do actively pursue this line of business.

Table 18: Processors of wrecked cars as per CW WMIS

	Number of facilities
Facilities historically in possession of Regional Authority's permission	627
Facilities in possession of a valid Regional Authority's permission	534

Source: MEnv, CENIA

The structure of the network of authorised firms in the CR is shown in Table 19.

Table 19: Numbers of facilities authorise to handle wrecked cars, by region, in 2013

Administrative region	Number of facilities certified to handle wrecked automobiles
Capital City of Prague	5
Central Bohemian region	65
South Bohemian region	62
Plzeň region	48
Karlovy Vary region	14
Ústí n. Labem region	40
Liberec region	32
Hradec Králové region	39
Pardubice region	42
Vysočina region,	31
South Moravian region	51
Olomouc region	47
Zlín region	26
Moravian-Silesian region	32

Source: CENIA

4.8.3 Processing technology

Treatment of wrecked automobiles can be broken down into two basic processing systems – dismantling operations and mechanised operations. It all begins with dismantling and removal of hazardous components (working media, parts etc.). Tradeable material commodities are dismantled manually, in stepwise fashion. Dismantling is also used in part to recover components well-suited for re-use. Mechanised technology makes use of mechanical shearing and cutting and of crushing in shredders or so-called grinding mills. These are high-capacity units capable of dealing with practically the entire car wrecks. In practice however, this is preceded by pre-dismantling of heavy parts – engines, transmissions, axles, discs, large plastic parts and, sometimes, also of components of electrical equipment.

4.8.4 Expected future trends in the forthcoming years

The percentage of vehicles older than 10 years keeps increasing all the time. As the purchasing power of the population is dwindling there will be in the future also an insufficient renewal of the fleet of vehicles and thus the number of car wrecks will be decreasing. Decommissioning of outdated vehicles where they are taken out of operation and formally de-registered by being struck off the CRV will be held over for as long as possible.

The downward trend in the numbers of vehicles being de-registered from the CRV is illustrated in Table 15. Paradoxically it can be said that thanks to this trend there is less waste generated from wrecked cars and, therefore, the economic situation on the market exerts a preventative effect pushing down the amount of waste produced.

Should the economic situation improve substantially the purchases of new vehicles would grow higher thus inducing a subsequent increase in the number of wrecked cars taken out of operation (*i.e.*, increasing the amount of waste). This would mean a reduction of the average age of the fleet of passenger cars and, simultaneously, could also bring about a delay in the reduction of the average age of population per passenger car.

Until now the wrecked cars were mostly perceived as waste of a type that would lend itself easily to dismantling and subsequent utilisation. Measures aiming at the prevention of waste production have not yet been implemented to any appreciable degree. There is room here in particular for concluding voluntary agreements with manufacturers for the purpose of maximising the effectiveness of dismantling of the various components which could then (for instance, within the framework of a by-product or a waste vs. non-waste situation) be offered for further use or utilisation (*e.g.*, in the form of raw material). There is however a preventative measure that will persist in the future, that of reducing the incidence of hazardous substances in the manufacture of automobiles. This issue is within the province of competency of the Ministry of Transport.

4.9 Construction and demolition wastes

4.9.1 The existing trend in the EU

Owing to the fact that the construction and demolition wastes (CDWs) are produced in large quantities they were earmarked by the European Commission as one of the priority waste streams, also with regard to the high potential of re-use and recycling of the materials involved. Proper handling of construction and demolition wastes should be conducive to an effective and efficient utilisation of natural resources and to mitigating the impact thereof on the environment.

The Framework Directive on Waste requires that the Member States adopt all necessary measures toward attaining the minimum target of 70 % by weight of CDWs by 2020, toward preparations for re-use, recycling and further utilisation, including backfills using CDWs that do not exhibit any hazardous properties and can be used as substitutes for other materials.

Ranking among the latest environmental approaches employed in the building industry and the construction of buildings are the Energy Performance of Buildings Directive (EBPD) and the Energy Performance Certificates. These regulations also exert an indirect effect on the prevention of waste production – they require higher-quality construction without any potential further reconstructions, yielding less waste and generating less emissions from heating. The obligations imposed in this respect are also implemented by the Czech Republic.

According to the study *Assessment of initiatives to prevent waste from building and construction sectors* (Norden, 2011), the chief instruments in the area of construction and demolition waste are as follows:

- fostering the re-use of building materials;
- information and awareness raising campaigns for all areas involved (producer, designer, builder, citizen);
- producing a self-contained guidance document aimed at the prevention of construction and demolition wastes;
- voluntary agreements (especially with the producers of construction materials and components);
- identifying hazardous substances contained in the building materials;
- instruments for the registration and presentation of safe building materials.

The European Commission has launched drafting an evaluation document specifying the criteria that determine the conditions under which certain types of construction and demolition wastes cease to be waste within the meaning of the Waste Directive 2008/98/EC, in particular of art. 6 (2) thereof.

4.9.2 The existing trend in the CR

Construction and demolition wastes rank among the most important waste streams in terms of the volumes of production and, at the same time, belong to wastes which most frequently find new use. According to the CR WMP evaluation reports, the targets of utilising 50 % by weight of the CDWs produced by 31. 12. 2005 and 75 % by weight of the CDWs produced by 31. 12. 2012 are being met. As early as in 2005, the rate of utilisation of the CDWs was 85.1 % out of the total production. In 2012, the amount of CDWs produced was 13. 9 mln tonnes, at an utilisation rate of 95.1 %.

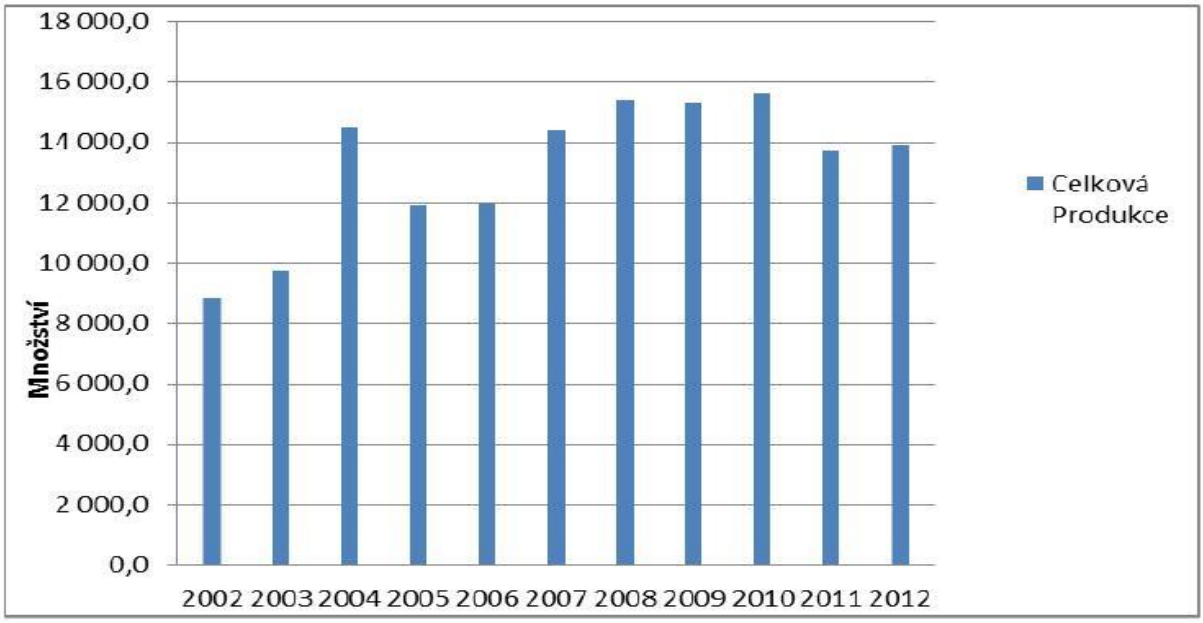
Table 20: Trend in the production of construction and demolition wastes during the 2002 - 2012 period (in tonnes)

Period	Production total [thousand tonnes]	Percentage of total production of waste [%]	Percentage of waste utilisation [%]
2002	8 802,5	23,2	55,9
2003	9 748,5	26,9	76,9
2004	14 489,8	37,4	77,9
2005	11 893,1	39,9	85,1
2006	11 983,8	42,7	108,9
2007	14 441,4	47,5	93,8
2008	15 421,3	50,1	100,9
2009	15 279,7	47,4	93,8
2010	15 643,1	49,2	84,8
2011	13 701,5	44,7	92,3
2012	13 888,0	46,3	95,1

Source: MEnv, WMIS

N.B.: Higher utilisation related to production was due to the fact that these figures also take account of the utilisation of backlog wastes in storage of and wastes from producers not required to report their waste production and handling pursuant to the Waste Act.

Diagram no. 13: Trend in the production of construction and demolition wastes during the 2002 - 2012 period (in tonnes)



Key to the figure: **Amount**
(blue) Production total

Source: WMIS - TGM WMCe, CENIA

In 2011 under the research programme 'Research of waste management within the framework of environmental protection and sustainable development (prevention and minimisation of waste production and the evaluation thereof) - Monitoring the streams of re-usable wastes and proposal for an evaluation of products', an „Outline of mineral extraction practices" was elaborated (a study devoted to reducing the volumes of extraction of raw materials thanks to a replacement thereof by the CDWs).

In 2008 the Ministry of the Environment published the „Waste Division's methodological guideline for the management of construction and demolition wastes and for the handling thereof". This document, in its chapter *2.3 Prevention of the production and handling of construction and demolition wastes*, recommends that when a structure is being demolished the construction components thereof be re-used for their original purposes, but the issues of prevention of construction and demolition wastes are not addressed to any greater detail in the document.

A programme that can be regarded as a model project connected with waste prevention in the building industry (although the project has a much wider thrust, implementing waste prevention in the form of reduced energy intensiveness) is the "Green Light for Savings" programme, a campaign focused on promoting measures conducive to energy savings within the segment of family homes, apartment houses and public buildings. In the first place these measures incorporate heat insulation of the outer shells of buildings (peripheral walls, door and window sealing, roofs and floors). Another area of support is the replacement of inefficient, environment-unfriendly heat sources by low-emission sources making use of renewable sources of energy and the construction of buildings requiring very low energy inputs.

The main objectives of the programme are a reduction of greenhouse gas emissions and abatement of noxious air pollutants, as much as a mitigation of waste production. Prevention of waste production can be perceived here for instance in the reduction of waste generated in the energy sector or in the lowering of emissions of greenhouse gases. According to the manual these also constitute a target group upon which the precautionary measures are directed.

The programme is co-financed from the funds accumulated in emission trading credicts (so-called AAUs, Assigned Amount Units) under the Kyoto Protocol mechanism.

Similar programmes are also implemented abroad. To name some programmes of this kind: for example, the programmes of *Building Research Establishment Environmental Assessment Method* (BREEAM) or *Leadership in Energy and Environmental Design* (LEED), which are focused on so-called sustainable development in the construction industry. The programme relates to various phases and various building activities while the prevention of waste production is rather only an aspect of minor significance here.

4.9.3 Expected future trends in the forthcoming years

There are two preventative activities in the area concerned with construction and demolition wastes – reducing the production of construction waste and reducing the amounts of hazardous substances (or enhancing the environment-friendly nature) thereof. In general the environmental policies worldwide are currently concerned with reducing the amounts of construction waste produced and with utilising this waste, rather than with the issues of environment-friendly construction materials or technologies. This approach however is justified inasmuch as the EU member States have concentrated on meeting the mandatory requirements from the point of view of attaining a high rate (70 %) of material recycling from the construction waste produced. In order to meet the requirements of the second objective it is necessary in particular to ensure the involvement on the part of the producers of building materials as well as of investors and designers.

Environmental marking – Type III eco-labelling (***Environmental Product Declaration*** - EPD) has recently begun to be implemented in the construction industry; some major (mostly, supranational) construction companies already require these declarations from their suppliers of building materials and components. This approach also bolsters competitiveness. Serving as an example of how the hazardous properties of construction materials were mitigated in the past can be the prohibition of the use of asbestos or the prohibition of the use of PCBs in the production of synthetic paints. Reducing the volumes of construction and demolition waste can be achieved by promoting situations where the construction waste ceases being waste. It remains unclear at the present time how the criteria laid down by the European Union will eventually look like in their final form. Reduction of the contents of hazardous substances, or the replacement thereof, in the construction materials should be fostered by promotional and information strategies (support to research, voluntary agreements, dissemination of information).

4.10 Textile waste

4.10.1 Existing trends

No accurate data on the volume of textile goods sold in the Czech Republic are available. The Czech Statistical Office only monitors the production of certain selected products in its annual accounts (in the case of clothing, expressed in pcs or in CZK).

In the publications issued for the Nordic countries entitled *„Prevention of Textile Waste Material flows of textiles in three Nordic countries and suggestions on policy instruments“* (Norden) it is assumed that the average citizen will purchase approximately 16 kg of textile clothing per year. Were this figure taken as a basis for the CR as well, the amount of textile clothing sold in the CR would be around 160 thousand tonnes (based on the country's population of 10 million). Subsequently, clothing becomes part of municipal waste – whether in the form of sorted collection or as mixed municipal waste.

Centres active in the area of collection of worn clothing and its subsequent re-use have begun emerging in recent years (Diakonie Broumov, the ‚Charita', pilot projects pursued by towns and municipalities).

The calculations of textile waste production (deriving from clothing) did not embrace Schedule 04 wastes. These are the wastes originating in the textile industry, unlike worn clothing and wear. The codes of Schedule 200110 waste - clothes and 200111 waste - textile materials (both deriving from sorted collections) were evaluated. The production of these goods is illustrated in Table 21 and Diagram no. 14.

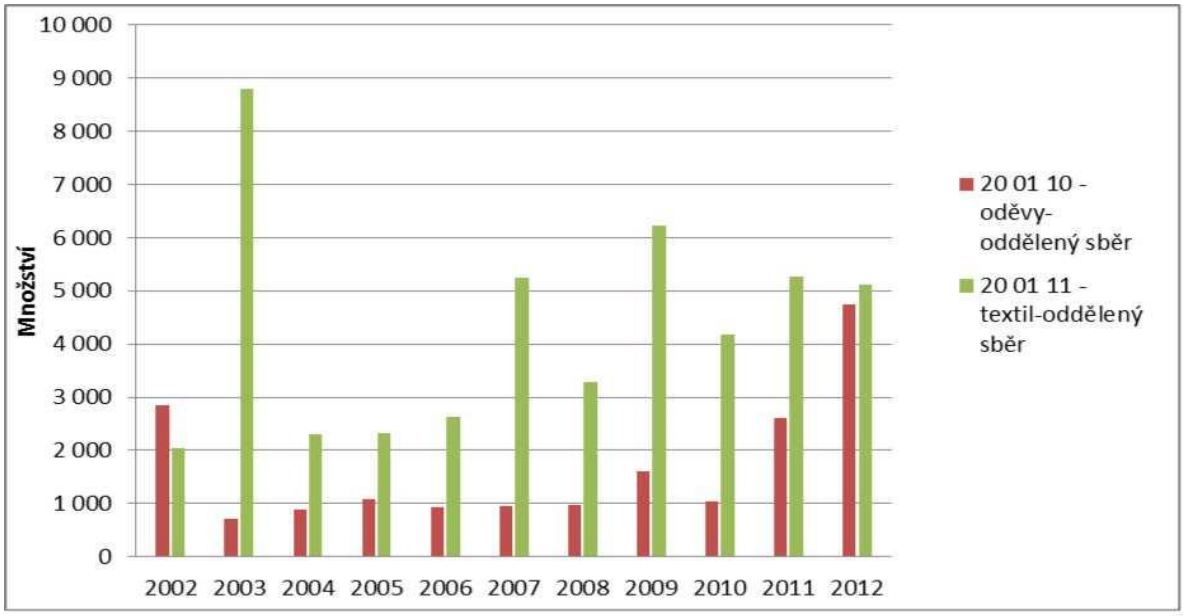
Table 21: Production of clothing and textile wastes during the 2002 - 2012 period (in tonnes)

Year	Production **20 01 10** ***clothing, separate collection***	Production **20 01 11** ***textiles, separate collection***
2002	2 851	2 046
2003	704	8 803
2004	893	2 304
2005	1 077	2 328
2006	926	2 636
2007	948	5 248
2008	980	3 277
2009	1 615	6 222
2010	1 033	4 171
2011	2 613	5 266
2012	4 749	5 121

Source: WMIS - TGM WMCe, CENIA

N.B.: Production - calculated using the mandatory method of mathematical representation based on a system of indicators for any given year (2002 - 2008 from the WMIS archive data base, starting with 2009 from the WMIS PD).

Diagram no. 14: Production of clothing and textile wastes during the 2002 – 2012 period (in tonnes)



Zdroj: ISOH – VUV TGM, v.v.i., Cenia

Key to the figure: **Amount**
Red: 20 01 10 - clothing, separate collection,
Green: 20 01 11 - textiles, separate collection

Source: WMIS - TGM WMCe, Cenia

Distinct fluctuations appear in the production of separate collection of waste clothing (20 01 10) and textile waste (20 01 11). In any case the production of these two groups of waste is minimal considering the estimated amounts of clothing sold each year (160 thousand tonnes). Therefore, it can be assumed that most worn clothes thus become part of mixed municipal waste, ending up mostly by being dumped in landfills. The underlying cause is also the limited network of collection points for second-hand textiles and clothing, as well as a low degree of awareness of these issues on the part of the public.

Presently there are practically no measures in existence on the national scale. Diakonie Broumov presently operates 50 worn clothes containers (of which 200 were acquired within the framework of a project under the Operational programme Environment), and ca. 30 collection points are made accessible for the Diacony by the waste centres/collection yards. For instance there are more than 50 containers on the territory of the capital city of Prague. In the case of the collection organised by Diakonie Broumov this is a measure to prevent waste product because the items collected worn clothes and textile apparel (ca. 7 - 8 thousand tonnes annually) rather than waste. These items are re-used to ca. 95% and only 5% is disposed of as waste.

4.10.2 Expected future trends in the forthcoming years

For reasons of insufficient information it will be necessary to elaborate a methodology for the evaluations of the production of textiles and clothing, the streams of worn and second-hand clothing, and the waste deriving from textiles, for the purpose of ascertaining the present-day situation as well as for acquiring primary data and monitoring the effectiveness of the preventative measures during forthcoming years. Existing gaps have to be filled by expanding the system of collection of worn clothing. In this case as well, a role could be played by voluntary agreements, in particular at the local level.

4.11 Conclusions drawn from the analysis of waste streams

- **Municipal waste is a highly heterogeneous material. No generally applicable measures for municipal waste can be promulgated; the various problematic components thereof (wastes) have to be paid attention individually, together with raising the level of awareness of the complexity of managing municipal waste – an information and promotional strategy is important for the MW.**
- **Analyses of municipal waste from households indicate high percentages of so-called bio-wastes (up to 25 wt.% in the case of mixed housing districts), paper/cardboard and plastics. There is room here for home or municipal composting.**
- **The CR waste prevention programme can have its share in the process of pushing down the production of BDW and BDMW (for instance, the food wastes, municipal and household composting facilities, etc.).**
- **Owing to the fact that the issues of municipal waste are of great concern also to the tows and municipalities, it is desirable that these subjects become involved in the preventative measures employed.**
- **All preventative measures focused on the rank-and-file citizen should be reflected in the future in the production of municipal waste.**
- **The system of collection of sorted waste is in place in the CR.**

- **Producers/manufacturers make an extensive use of consumer-type, one-off packaging instead of packaging that can be used repeatedly.**
- **It will be necessary to elaborate a methodology for the evaluations of the production of textiles and clothing, the streams of worn and second-hand clothing, and the waste deriving from textiles, for the purpose of ascertaining the present-day situation as well as for acquiring primary data and monitoring the effectiveness of the preventative measures during forthcoming years. However, all this is of concern also to a whole range of other material/waste streams.**
- **Food waste is one of the waste prevention priorities at the EU level. The chief problem faced in the area of food waste in the Czech Republic is the total absence of any analytic and methodological instruments. Without them the current situation does not lend itself easily to any exact assessment, and no further however qualified or quantified progress can be expected. This has to be addressed at the first stage of the Programme.**
- **Important activities and measures currently in place in the area of food waste concern the producers of foods (*cf*. the activities of the food industry in the area of food waste handling and in the area of packaging foods and beverages – the CR Food Chamber). Here the preventative activities are underway. Another currently adopted measure are the already functioning Food banks. The measures and activities have to be focused more onto the area of food waste from households, the vendors and the farm sector. We also believe that further strengthening of the measures adopted in the food industry would be advisable.**
- **Therefore, the preventative measures as applied to food waste should mainly be targeted upon households, followed by public catering and the food industry.**
- **The issues of hazardous wastes are adequately addressed within the strategy of CR's waste management, the target (in the area of prevention, particularly, a „20 % reduction of the specific production of hazardous waste by 2010") is being met. A further reduction in the contents of hazardous wastes could however be assisted by the preventative measures – through promoting more environment friendly products (especially those free from any hazardous substance) and by activities focused on the replacement of hazardous substances or components by less hazardous or entirely innocuous ones. Here the applicable regulatory instrument could be new or amended legislation providing for reductions of the contents of HSs in materials and products.**
- **The European Union pays considerable attention to electrical waste. The requirements imposed on the use of hazardous substances are becoming more stringent (for example, the prohibition of trading in batteries containing more than 0.002 % cadmium as of 26 September 2009 on Czech Republic's territory); electrical appliances placed on the market must also be provided with energy performance labelling. However, the EU will continue applying even more rigid rules in the future.**
- **In recent years there has been a moderate degree of success in motivating citizens toward collecting electrical equipment taken out of operation. However, the effectiveness of this system is rather markedly influenced by the outlets that re-purchase secondary materials where unprofessionally dismantled electrical appliances tend to disappear. Thus there is a slowdown in the growth of the rate of take-back of electrical appliances and the environment is threatened by possible leakages of hazardous substances to the various**

[environmental] components.

- **One of the possibilities of prevention in the area of EEE is to set up a network of service centres. This approach however, used widely in some EU Member States (e.g., United Kingdom), is in need of appropriate legislative support.**
- **The collective systems are perceived in a highly positive fashion by the population. There is great interest in their activities which however have so far been channelled mostly to the area of take-back and dissemination of information on the ways in which outdated electrical equipment, appliances or batteries can be disposed of. For this commodity there is a rather broad range of opportunities on offer in the area of waste prevention. These are part of the objectives and measures proposed.**
- **As regards the production of batteries, one of the possible routes is the promotion and prioritising of rechargeable batteries (for instance, as part of information campaigns launched).**
- **Wrecked automobiles incorporate a whole range of parts and materials. As regards this commodity, the basis of the preventative measures applied should be focused on efforts at ensuring the simplest possible dismantling of the various components, aiming at a subsequent re-use of these components (materials) and also at a maximum possible degree of replacement of hazardous substances and materials in the automotive industry – dealing with the eco-design issues. Voluntary agreements and commitments on the part of car manufacturers appear to be one suitable approach.**
- **In view of matters relating to balance calculations it would be advisable to unify the systems of record-keeping pertaining to end-of-life automobiles taken out of operation.**
- **The Czech Republic has met its commitments in the area of material utilisation of construction and demolition wastes. The methods of prevention which come into consideration (re-use of the building materials, rather than of wastes) are stipulated in section 2, paragraph j) of the Wastes Act.**
- **Requirements were introduced, and have begun to be implemented, relative to the energy performance of buildings and to certification. This approach however is only a marginal matter from the point of view of waste prevention.**
- **There are two basic directions of prevention relative to construction and demolition wastes – reducing the volume of waste and reducing the concentration of hazardous substances in construction materials (eventually turned to waste). Support to the re-use of certain (complete and original) construction components from demolitions appears to be a suitable approach.**
- **Reducing the volumes of construction and demolition waste can be achieved by promoting situations where the construction waste ceases being waste. This however involves the risk of how the criteria laid down by the European Union will eventually look like in their final form and whether this approach would not lend itself to misuse.**
- **Reduction of the contents of hazardous substances, or the replacement thereof, in the construction materials should be fostered by promotional and information strategies (support to research, voluntary agreements, dissemination of information).**

4.12 Development trends in the production of waste

Most of the strategic considerations hitherto put forward counted on that the volumes of municipal waste in the CR will gradually grow higher until 2024, by as much as several per cent. This however is at odds with the objective and the fundamentals of the Programme submitted. According to a new forecast, commissioned by the MEnv and contributed to by the Programme, the converse should be true: stagnation or even a moderate decrease could be expected to occur instead.

At the present time, there are no requisite data available for determining the production balance curve of a number of types of waste covering the previous years; this is especially true of the components of mixed MW (food waste, biological wastes, waste textiles, minor items of electrical waste, etc.). It can be assumed in connection with economic development that the production of these wastes might become stabilised in the near future whereupon a moderate reduction of the production of MMW will be experienced. This production trend already takes account of the Programme, too.

In view of the present activity in the building trade we can expect an increase of the amounts of construction and demolition wastes (including soil extracted from the contaminated sites). A professional estimate combined with a review of the past production of CDWs we can expect a 10 % growth here until 2020. In the area of CDW the Programme should be able, during the 2014 - 2019 period, to adequately prepare the ground for a realistic reduction of these types of waste in the future (during the 2020 - 2025 period).

In the area of industrial waste, an important role in the production of waste will be played by secondary materials. These include, *i.a.*, also by-products and situations where waste is turned to non-waste. Exact definitions and procedures applicable to selected streams are currently being prepared by the European Union, in a step-by-step fashion. Hence it can be expected that the more important part of wastes from industrial productions will be transferred to the system of secondary materials; this should also manifest itself in the production of industrial waste. In the outlook therefore, a stagnation or as the case may be, a mild reduction of the volumes of industrial wastes produced. This trend however will probably be of a more long-term nature, inasmuch as the pertinent regulations so far are being drafted at a rather „moderate“ pace.

Provided that the Programme will become effective thanks to the individual measures contained therein, it can be assumed that for the waste streams impacted by these measures a true stabilisation of production could be effected which could prospectively be sustained until 2019. It has to be realised that the Programme will be devoted to new waste flows or to those streams which so far have not been monitored and evaluated independently. This is why the early years of the Programme’s implementation will have to be devoted to preparations of analytical materials, methodologies and studies serving for a subsequent evaluation and projection of transparent, full-fledged results.

As regards the forecasts proper of the production of wastes in the Czech Republic, this should become available under the CR Waste management plan now under preparation, effective during the 2015 - 2024 period.

PROPOSALS SECTION

5. OBJECTIVES

According to the EC manual, the essence of the Waste prevention programmes should be the stabilisation of the production of wastes and the subsequent reduction of the volumes of wastes. It would be worthwhile however to ponder this requirement.

It would probably be unrealistic to expect a Member State to be able to introduce preventative measures for all kinds of wastes therein, at all levels. Then of course it is apparent that it will be rather difficult to achieve a true reduction of the level of production of all kinds of waste. Although it is true that some waste prevention measures can be applied universally to the entire life cycle of a product. Therefore, stabilisation of production followed by reductions of the volumes produced should be focused on selected streams and commodities corresponding to the measures proposed in this document (for example, food waste, textile waste, material suitable for composting, etc.).

Since the analytical and methodological coverage of these issues has not yet been sufficient, it will be necessary at the first stage also to prepare materials of this kind. Further activities can then be better focused and evaluated, too. There is a lot of room for an information strategy. The area of voluntary agreements and, last but not least, also the supplementary legislative measures are important. Support to investments can be expected to be provided especially within the framework of the new Operational programme for the 2014 - 2020 period. This new programme should promote in particular the phased targets nos. 1 and 4 of the submitted CR Waste prevention programme.

The measures put in place will be subject to ongoing evaluations. On approval of the new Waste management plan they will become part of the WMP evaluation reports.

5.1 The principal objective

Through a co-ordinated and harmonised approach, create conditions conducive to a lower consumption of primary resources and a gradual reduction of the volumes of waste produced.

5.2 Phased targets (sub-objectives)

Target horizons

Short-term target: 2014 - 2016

Medium-term target: 2017 - 2018

Long-term target 2019 and onwards

1. Throughout the entire period of implementation of the CR Waste prevention programme, ensure a comprehensive information support focused on issues of concern including the introduction of the waste prevention topics into school curricula, research programmes, and educational as well as awareness-raising activities relative to the protection and formation of environment.
   Target: short-term to medium-term and henceforward on an ongoing basis (continuous operation of the system, an update in 2019).
2. Ensure an effective involvement of the state administration at all its levels in the issues of waste prevention, aiming to gradually reduce the volume of waste produced through the operation of the state administration bodies.
   Target: short-term to medium-term.
3. Create conditions and set up stimulating elements for reducing the use of raw materials and energy resources in the production sectors while boosting the use of secondary

materials in connection with further strategic documents, in particular the CR Raw materials policy and the CR Secondary materials policy, in linkage to the CR Waste management plan.

Target: long-term (2019 and henceforward on an ongoing basis).

4. Foster using all means available the introduction of low-waste and innovative technologies that will conserve input raw and other materials, and support the production and industrial spheres in an effort at optimising the production control processes from the aspect of meeting the Programme objectives.

   Target: medium-term to long-term and henceforward on an ongoing basis.

5. Support, promote and disseminate adequate information at all levels on voluntary instruments available (voluntary agreements, environmental management systems, environmental labelling systems, cleaner production systems aiming to widen their scope).

   Target: short-term and henceforward on an ongoing basis.

6. In connection with the Programme objectives, with the goals of other environmental programmes and policies and with the requirements spelled out by the European Union bodies, provide a suitable legislative environment conducive to the implementation of the Programme.

   Target: for unlimited time (on an ongoing basis).

7. Pay maximum attention to food waste and create conditions conducive to a gradual reduction of the volume thereof at all levels of the food cycle (covering the various stages of the production of foodstuffs including the placing of food production on the market and the consumption thereof).

   Target: medium-term and henceforward on an ongoing basis.

8. Create conditions for stabilising the production of the various components of municipal waste and for subsequent reductions at all levels of public administration and at the level of the citizen.

   Target: medium-term (stabilisation of growth, 2017) and henceforward on an ongoing basis (reducing the volumes produced).

9. In co-ordination with other strategic documents, create conditions for stabilising the production of hazardous wastes, construction and demolition wastes, textile wastes and wastes originating from product-related guidelines, with an outlook of a real cutback of the production thereof in subsequent years.

   Target: medium-term (stabilisation of growth, 2017) and henceforward on an ongoing basis (reducing the volumes produced).

10. Promote the utilisation of service and charity centres and organisations for the purpose of extending the service life and the re-use potential of products and materials.

    Target: medium-term and henceforward on an ongoing basis.

11. Enhance the active role of research, experimental development work and innovation in the area of support to the CR Waste prevention programme.

    Target: long-term and henceforward on an ongoing basis.

12. Raise the effectiveness of implementation of waste prevention topics in the activities of collective systems and product take-back systems

    Target: short-term to medium-term and henceforward on an ongoing basis.

13. Ensure implementation of the requisite analytical supporting documents and evaluation instruments for the purpose of evaluating the effectiveness of the CR Waste prevention programmes and for assessing the progress attained in relation to the phased preventative measures and targets.

    Target: short-term.

5 MEASURES

The proposed measures to be implemented under the CR Waste prevention programme issue from the draft measures as outlined in Annex IV to Directive no. 98/2008 on Wastes, from an analysis of the measures already in existence, and from an analysis of the waste streams. At the same time, they take account of strategic documents such as the Secondary materials policy or the draft CR Waste management plan. The measures are formulated in a way such as to also be in compliance with the new Operational Programme Environment for the 2014 – 2020 period. Equally, they take into account the development trends inthe area of waste management at the European Union level and the preventative measures implemented abroad.

These measures, in addition of outlining the type of strategies and objectives they strive to implement, and grouped in blocks for reasons of greater transparency; within these blocks they are arranged to reflect specific deliverables.

BLOCK 1: INFORMATION SUPPORT, EDUCATION AND AWARENESS RAISING

Measure no. 1

Organise, and support throughout the period of implementation of the CR Waste prevention programme, a continuous operation of a freely accessible information base on waste prevention issues at all levels. Produce, and disseminate on an unrestricted basis, a Manual for citizens on how to prevent the production of waste (with focus on municipal waste and its various components).

- Strategy: informational, promotional.
- Time span: 2014 and onwards (the information base),

  2014 – 2016 (the Manual - update for 2 years).
- Deliverable(s): Building an internet platform – the number of visitors recorded; the number of updates undertaken. Questionnaire survey, statistical surveys, the Manual. A study into the effect of an information base on raising the awareness of the essentials of waste prevention.
- Implements the following target(s): 1, 4, 5, 7, 8, 9, 10, 12

N.B.: Preparation of a comprehensive internet platform that will support and collect all information relative to Czech Republic's Waste prevention programme, in the form of a website. Easily accessible to both professional and general public; definitions of the basic terms and rules applicable to waste prevention. Posting of information for citizens on specific undertakings and institutions which participate, through voluntary agreements and active co-operation, in the elaboration and implementation of the Programme (chain stores, firms introducing low-waste technologies, etc.). Information for citizens on how they themselves can contribute to prevention in their everyday lives (purpose-orientate information on how to cut down on the production of wastes in households, shopping, at the office, when travelling, etc.); the choices offered and the range of environment -friendly products available. Information for town hall officials and other municipal representatives on how to introduce waste prevention measures within their respective provinces of competence. Information for relevant production areas on the low-waste technologies available in the given branch of production, using the form of a public-domain internet data base. Easy updating and supplementing new information and materials. Design of a web application (data base) listing low-waste technologies available in the CR and abroad. Possibility of information exchange/sharing by business companies in possession of technologies already in place and with other undertakings; access to contact information; presentation of technologies operated abroad.

Measure no. 2

Provide for the technical support to the dissemination of information and to awareness raising programmes for the purpose of gradually increasing the volumes of collection of products well-suited for re-use, such as clothes, textiles, footwear, toys, books, magazines, furniture, carpets, tools and other re-usable products. Promote in the public the activities of non-profit organisations involved in the take-back of products well-suite for re-use as well as of similar subjects and provide for the establishment of an interactive, public-access network (map) of these organisations and centres.

- Strategy: informational, promotional.
- Time span: 2014 - 2016 (designing the interactive map), 2014 and onwards (information, awareness raising, promotion).
- Deliverable(s): an interactive map within the framework of an IS; statistical surveys; information and awareness-raising materials; questionnaire surveys (the numbers of voluntary agreements concluded and implemented, the number of take-back points where used textiles, footwear and other products can be collected, the number of organisations involved).
- Implements the following target(s): 1, 2, 5, 8, 9, 10.

Measure no. 3

Provide for the technical support to the dissemination of information and to awareness raising programmes for the purpose of gradually increasing the rates of take-back of electrical and electronic equipment and of mitigating the production of waste from such products:

- provide for the elaboration of an analysis and promote/support the establishment of an information network of service centres for the repair and re-use of EEE for its original purposes, including the drafting of rules that would be applicable to the operation of the service centres and the system of certification thereof;
- provide for drawing up and disseminating a Manual for citizens pointing to opportunities for optimisation of purchasing and use of EEE from the aspect of potential waste generation.

- Strategy: informational, regulatory.
- Time span: 2014 - 2016 (analysis), 2016 - 2017 and onwards (implementation of the information network).
- Deliverable(s): statistical surveys, studies - analyses; the Manual; setting up the information network; peer reviews; legislative measures.
- Implements the following target(s): 1, 3.6, 10, 12.

Measure no. 4

Provide for the technical support to the dissemination of information and to awareness raising programmes focused on cutting down the amounts of food waste produced:

- provide for drawing up and disseminating a Manual for citizens pointing to opportunities for optimisation of purchases of food and of their subsequent storage from the aspect of potential waste generation.
- provide for drawing up a Manual for the owners and operators of restaurants, hotels and other catering facilities, with a focus on the prevention of food waste production.

- Strategy: informational, promotional.
- Time span: 2015 - 2016 and onwards (implementation).
- Deliverable(s): Questionnaire surveys; statistical surveys, information and awareness-raising materials.
- Implements the following target(s): 1, 7.

Measure no. 5

Provide for an informational and educational support to the waste prevention issues at all levels of state administration, focused in particular on local government units of towns and municipalities, with a view to stabilising and, gradually, cutting down the production of municipal waste.

- Strategy: informational, promotional.
- Time span: 2015 and henceforward on an ongoing basis.
- Deliverable(s): Questionnaire surveys; statistical surveys, information and awareness-raising materials; the number of training sessions and workshops held.
- Implements the following target(s): 1, 2, 8.

Measure no. 6

Provide for drawing up a Guide on the prevention of construction waste for the producers of construction materials, designers, investors, building contractors and citizens, and publish lists of construction materials containing hazardous substances and substances exerting negative effects on human health and on the well-being of eco-systems.

- Strategy: informational, promotional.
- Time span: 2014 -2015 and onwards (implementation).
- Deliverable(s): information and awareness-raising materials; questionnaire surveys; statistical surveys, a public-domain data base; an impact study.
- Implements the following target(s): 1, 2, 9.

Measure no. 7

Within the framework of the Environmental education and awareness programme, provide for drawing up a study material devoted to the topic of waste prevention and for the practical incorporation thereof in school curricula, aiming to raising the awareness of the problems involved.

Strategy: informational, promotional.

- Time span: 2015 - 2016 (the study and promotional material), 2017 - 2018 (incorporation in the school curricula).
- Deliverable(s): a study material; a report on incorporation into the school curricula; the reaction on the part of the teaching staff – a form of questionnaire survey.
- Implements the following target(s): 1.

Measure no. 8

Within the framework of the collective systems and the take-back systems, provide for an expansion of activities on the part of all the subjects concerned, addressing the issues of waste prevention, in particular through information campaigns focused on raising the level of awareness of the population.

- Strategy: informational, promotional.
- Time span: 2014 - 2016 and henceforward on an ongoing basis (in co-operation of MEnv and the collective systems, presenting proposals for new activities and their implementation in the activity of the co-ordination groups).
- Deliverable(s): implementation of activities; summarising the results in a terminal report on the collective system.
- Implements the following target(s): 1, 12.

Measure no. 9

Implement a targeted support to and promotion of creditable environmental labelling systems and products mitigating the environmental impacts, aiming at gradually increasing the number of directives and licenses of the National programme of labelling environmentally friendly products.

- Strategy: promotional, informational, regulatory.
- Time span: 2014 and henceforward on an ongoing basis.
- Deliverable(s): the number of certificates acquired for environmental labelling of environment-friendly products or as the case may be, and environmentally friendly services (EFP, EFS) at the producers; the number of certificates awarded for „Flower" type EU eco-labelling; the number Self-declared environmental claims registered as per the CSN ISO 14021 standard; the number Product compliance statements asper the CSN ISO 14025 standard; the number of new technical guidelines applicable to environment-friendly products or as the case may be, environmentally friendly services (EFP, EFS).
- Implements the following target(s): 1, 2, 5, 8, 9.

BLOCK 2: REGULATION AND PLANNING

Measure no. 10

Elaborate a expert analysis outlining the possibilities of laying down new legislative requirements and setting new objectives in the area of waste prevention in the Czech Republic, with a view to recent developments in the area of EU legislation, including the definition of legislative requirements to be imposed on the operation of facilities for the re-use of end-of-life products, and optimisation of existing legislative requirements applicable to catering facilities and the use of foodstuffs for the purpose of cutting down the amounts of waste food produced.

While the CR Waste prevention programme is implemented, systematically implement, and check on the compliance with, the waste prevention requirements ensuing from product-specific guidelines and from the Framework Directive on Waste as well as from relevant national legal norms.

- Strategy: regulatory.

- Time span: 2014 -2015 (analysis), 2015 - 2019 and henceforward on an ongoing basis (implementation, inspection).
- Deliverable(s): an expert analysis; proposals of new legislative requirements and objectives; a report on the implementation and inspection of the requirements.
- Implements the following target(s): 2, 6, 7, 13.

Measure no. 11

Provide for the elaboration of an analysis into the prevention of food waste production, including catering facilities, and an analysis of the potential for cutting down the weight of food packaging, from the aspect of possible legislative changes.

- Strategy: regulatory.
- Time span: 2016 - 2017.
- Deliverable(s): a study.
- Implements the following target(s): 2, 6, 7, 13.

Measure no. 12

Foster, by technical means and by awareness raising campaigns, composting of biodegradable waste at homes and municipalities. Support home, municipal and communal composting and the implementation thereof (in co-operation with municipalities), or as the case may be, reflect this in regional waste management plans.

- Strategy: regulatory, promotional.
- Time span: 2015 - 2016 and onwards (implementation).
- Deliverable(s): the number of home and municipal composters introduced.
- Implements the following target(s): 2, 6, 8, 13.

Measure no. 13

Provide for the elaboration of an expert study into the possibilities of using financial incentives for business companies that make use of secondary materials in their production processes and innovate their technologies with the intention of enhancing the utilisation of secondary materials in production. Draft an inter-sectoral plan of enhanced utilisation of secondary materials in production.

- Strategy: regulatory.
- Time span: 2014 - 2016 and onwards (implementation).
- Deliverable(s): an expert study; an inter-sectoral plan; peer reviews.
- Implements the following target(s): 2, 3, 4, 6, 13.

BLOCK 3: METHODOLOGY SUPPORT AND VOLUNTARY INSTRUMENTS

Measure no. 14

Elaborate a methodology for performing comprehensive evaluations of the CR Waste prevention plan for the purpose of monitoring and assessing the advances attained.

- Strategy: regulatory, informational.
- Time span: 2014 - 2016 and onwards (implementation).
- Deliverable(s): a methodology.
- Implements the following target(s): 2, 13.

Measure no. 15

Elaborate a methodology for performing qualified and quantified evaluations of the food waste streams and produce an expert study of the streams of these types of waste for the purposes of ascertaining the current situation, acquiring primary data and monitoring the effectiveness of the preventative measures in future years.

- Strategy: regulatory, informational.
- Time span: 2014 - 2016 and onwards (implementation).
- Deliverable(s): a methodology, studies
- Implements the following target(s): 2, 7, 13.

Measure no. 16

Draw up a methodology guidance document for establishing the balances of compostable materials within the framework of municipal composting for the purpose of assessing the effectiveness of measures aimed at cutting down the production of BDW.

- Strategy: regulatory, informational.
- Time span: 2014 - 2016 and onwards (implementation).
- Deliverable(s): a methodology guidance document; peer reviews.
- Implements the following target(s): 2, 8, 13.

Measure no. 17

Elaborate a methodology for performing qualified and quantified evaluations of the production of textiles and clothing and of the streams of second-hand and re-used clothes and of textile waste for the purposes of ascertaining the current situation, acquiring primary data and monitoring the effectiveness of the preventative measures in future years.

- Strategy: regulatory, informational.
- Time span: 2014 - 2016 and onwards (implementation).
- Deliverable(s): a methodology.
- Implements the following target(s): 2, 8. 13.

Measure no. 18

Elaborate an expert analysis of the current incidence of hazardous substances and materials in the construction industry and trade, with a view to reducing the contents of hazardous substances in construction and demolition wastes and to proposing adequate substitute therefor, to no detriment of the properties of the structural materials and elements used in construction.

- Strategy: regulatory, informational.
- Time span: 2014 - 2016 and onwards (implementation).
- Deliverable(s): an analysis; peer reviews of the analysis; statement/comments by thecontracting authority; comments by professional public.
- Implements the following target(s): 2, 9,11, 13.

Measure no. 19

Elaborate an expert study into the possibilities of using various material and structural assemblies from demolished buildings and structures for the original purpose or for other purposes while retaining the functionality of the material.

- Strategy: regulatory, informational.
- Time span: 2014 - 2016 and onwards (implementation).
- Deliverable(s): a study; peer reviews of the study; statement/comments by the contracting authority; comments by professional public.
- Implements the following target(s): 2, 9, 11, 13.

Measure no. 20

Create suitable conditions, or as the case may be, implement voluntary agreements, in areas of concern to the CR Waste prevention programme.

- Strategy: promotional, informational, regulatory.
- Time span: 2014 and henceforward on an ongoing basis.
- Deliverable(s): the numbers of voluntary agreements concluded and implemented; the number of subjects involved; a qualitative assessment of the voluntary agreements in the form of a study.
- Implements the following target(s): 1, 2, 3, 5, 7, 8, 9, 10.

Measure no. 21

Promote, and provide for ongoing implementation of, creditable systems of environmental management for business companies. Ensure an adequate information support to the various management systems throughout the term of the CR Waste prevention programme.

- Strategy: promotional, informational, regulatory.
- Time span: 2014 and henceforward on an ongoing basis.
- Deliverable(s): the number of management systems promoted and implemented; the economic worth of the projects produced; the number of subjects involved in these systems.
- Implements the following target(s): 1, 2, 5, 4.

Measure no. 22

Make efforts to ensure that environmental aspects focused on waste prevention are duly taken into consideration when allocating public procurement projects funded from public budgets, for example:

– take into account the requirements imposed on environmental management systems, eco-labelling of products and services, prioritising re-usable packaging, etc.;

– take into account and accord priority to proposals documenting the use of building materials that comply with environmental requirements focused on waste prevention (environmental management systems, voluntary agreements, eco-labelling);

– take into account and accord priority to proposals by business companies able to document the use in their activities of secondary materials immediately related to the public procurement case in question.

- Strategy: promotional, regulatory.
- Time span: 2014 and henceforward on an ongoing basis.
- Deliverable(s): public tenders involving waste prevention measures; analyses of public tenders from the aspects of the environment with focus on waste prevention and on programmes of support for the state administration, for local/regional government and for quasi-governmental and partly state-owned business companies; a survey of environmental aspects taken into consideration when allocating the tender projects.
- Implements the following target(s): 1, 2, 3, 4, 5, 9.

BLOCK 4: RESEARCH, EXPERIMENTAL DEVELOPMENT AND INNOVATION

Measure no. 23

Fostering the programmes of research, experimental development and innovation in the area of utilisation of secondary materials in the production processes, introducing low-waste technologies and technologies that save input raw materials as well as those involved in waste prevention including eco-design and lifr-cycle assessments.

- Strategy: regulatory, informational.
- Time span: 2014 - 2015 (to ensure a penetrative grasp of the issues faced), 2014 and henceforward on an ongoing basis (the support of research activities).

- Deliverable(s): the number of projects supported; the amount of funding of the projects being implemented; a quantitative and qualitative assessment of the benefits deriving from the implemented projects.
- Implements the following target(s): 1, 3, 4, 11.

Measure no. 24

Make efforts to ensure that the issues of food waste prevention become anchored and implemented in sectoral research projects and research programmes. Support to the programmes of research, experimental development and innovation in the area of food waste prevention

- Strategy: regulatory, informational.
- Time span: 2014 and henceforward on an ongoing basis.
- Deliverable(s): the number of sectoral and other research programmes devoted to the topic of food waste; the number of projects supported; the amount of funding of the projects being implemented; a quantitative and qualitative assessment of the benefits deriving from the implemented projects.
- Implements the following target(s): 1, 4, 7, 11.

Measure no. 25

Fostering the programmes of research, experimental development and innovation in the area of waste prevention aiming at extending the life cycle of products, reducing the amount of hazardous substances contained therein in relation to product-specific guidelines; packaging, EEE, batteries and accumulators, automobiles, and cutting down the consumption of materials in production.

- Strategy: regulatory, informational.
- Time span: 2014 and henceforward on an ongoing basis.
- Deliverable(s): the number of sectoral and other research programmes devoted to the topic of wastes; the number of projects supported; the amount of funding ofthe projects being implemented; a quantitative and qualitative assessment of the benefits deriving from the implemented projects.
- Implements the following target(s): 1, 4, 8, 9, 11.

Measure no. 26

Fostering the programmes of research, experimental development and innovation in the areas of sustainable building construction and reconstruction and of reducing the contents of hazardous substances in building and structural materials as well as in the area of prevention of construction and demolition wastes.

- Strategy: regulatory, informational.
- Time span: 2014 and henceforward on an ongoing basis.
- Deliverable(s): the number of projects supported; the amount of funding of the projects being implemented; a quantitative and qualitative assessment of the benefits deriving from the implemented projects.
- Implements the following target(s): 1, 4, 9, 11.

7. INDICATORS

Directive no. 98/2008/EC on Waste stipulates in its art. 29 (3) that the Member States shall determine their own qualitative and quantitative criteria (indicators) for the purpose of monitoring and assessing the advances attained thanks to the implementation of the measures adopted.

While the waste prevention indicators are required, any generally acknowledged pattern are still lacking both at the EU level and in a broader international context. Logically, the chief quantitative indicator for the Programme should be the specific production of waste. However, the production of waste may also be significantly influenced by changes to waste-related legislation and by macroeconomic indicators. During the first stage, stabilisation of production followed by a downward trend should be at the core of the preventative measures. A drop in production however does not yet mean that the preventative measures are effective and that it was precisely these measures to which the decrease was due. For example, at has been made clear in recent years that it had been the economic recession that induced the citizens to cutting down on the production of some of the components of municipal waste. Hence, the decrease of production thus obtained was not caused by any well-functioning prevention.

For this reason the production indicator has to be regarded only as guidance. The information value and effectiveness of the Programme has to be evaluated by a more extensive analysis taking into account all the external effects and factors. The reason is that the amount of waste of which the production was prevented cannot be determined unambiguously. Equally, the supplementary indicators which we propose to be evaluated bymeans of the indicator of quantity/number of cases implemented need not reflect the qualitative benefit exactly. Therefore, in line with Phased target 13, it is necessary to ensure implementation of the requisite analytical supporting documents and evaluation instruments for the purpose of evaluating the effectiveness of the CR Waste prevention programme and for assessing the progress attained in relation to the phased preventative measures and targets. Such a document was to be drawn up during the 2014 - 2015 period.

7.1. Main indicators

Table 22: Main indicators

Designation	Purpose	Indicator units	Data source:
Production of MMW	Monitoring the production of MMW on CR territory	tonnes /year kg/capita/year	WMIS, report on waste production and management, waste producers' reports.
Production from separate collections of various types of municipal waste (4-component collection) originating from municipalities	Monitoring the production of various components of municipal waste from separate collections (glass, paper, plastics, metals) originating from municipalities	tonnes /year	WMIS, report on waste production and management, waste producers' reports.
Production of BDW and BDMW	Monitoring the production in the CR of BDW and BDMW	tonnes /year	WMIS, report on waste production and management, waste producers' reports.

Designation	Purpose	Indicator units	Data source:
Amount of compostable materials (composting in households)	Support to BDW production cutbacks	tonnes /year	New methodology formulated within the framework of the measures
Amount of compostable materials (municipal composting)	Support to BDW production cutbacks	tonnes /year	New methodology formulated within the framework of the measures
Amount of returned textiles, footwear and selected re-usable products	Monitoring the effectiveness of the measure aiming at raising the amounts of returned and re-used products	tonnes /year	New methodology formulated within the framework of the measures
Amount of foodstuffs handed over for re-use	Monitoring the effectiveness of the measure for raising the utilisation of secondary materials	tonnes /year	New methodology formulated within the framework of the measures
Amount of secondary materials used in production	Monitoring the effectiveness of the measure for raising the utilisation of secondary materials	tonnes /year	CSO
Total production of wastes for the country's materials input	Monitoring the over-all effectiveness of the preventative measures	Numerical proportion	CSO (DMI - domestic (used) direct material input)

7.2 Supplementary indicators

- The number of analytical supporting documents, evaluation instruments and plans available that are closely related to the Programme (indicator expression: the numbers and designations, a more detailed characterisation).
- Visitor count at the Programme's website (indicator expression: the count).
- Number of updates to the Programme's website (indicator expression: the count/number).
- The numbers of informative and educational methods, publications and materials addressing the waste prevention issues (indicator expression: the numbers; more detailed characterisations of the materials, methods and supporting documents involved).
- The number of licenses issued under the National programme of labelling environmentally friendly products (indicator expression: the number; characterisation of the various licenses in greater detail).
- The number of guideline drawn up under the National programme of labelling environmentally friendly products (indicator expression: the number; characterisation of the various licenses in greater detail).
- The number of projects implemented under the Research, experimental development and innovation programme with focus on low-waste technologies, raw materials savings at input, savings of energy and waste prevention (indicator expression:

the number; a more detailed characterisation of the programmes and projects involved).

- The number of seminars, workshops, training courses and educational programmes addressing the issues of waste prevention (indicator expression: the number; a more detailed characterisation).
- The number of service centres and networks supporting the extension of service lives and the re-use of products and components (indicator expression: number; a more detailed characterisation).
- The number of products passed through the service centres and subsequently re-used (indicator expression: number/year, a more detailed characterisation of the products involved).
- The number of non-government, non-profit organisations active in the re-use of products and engaged in activities relating to waste prevention (indicator expression: number, a more detailed characterisation).
- The number of new legislative instruments introduced (indicator expression: number; a more detailed characterisation).
- The number of research programmes incorporating issues of raw material and energy savings at inputs and of waste prevention (indicator expression: number, a more detailed characterisation).
- The number of voluntary agreements concluded in relation to waste prevention (indicator expression: number; more details on the agreements and the implementation thereof to-date).
- The number of orders/commissions from the public budget taking account of the environmental aspects, with focus on waste prevention (indicator expression: number; a more detailed characterisation of the aspects involved).
- The number of environmental management systems for business undertakings (indicator expression: number; a more detailed characterisation of the various management systems involved)

8 CONCLUSION

The document hereunder (Czech Republic's Waste Prevention Programme) presents an analysis incorporating an evaluation of present-day activities and measures addressing waste prevention in the Czech Republic, and an analysis of the waste streams to be subjected to further elaboration. Subsequently, the proposed objectives and measures of the CR Waste Prevention Programme react to the analysis performed.

When drawing up the Programme, the following documents are also taken into account: Annex IV to the Waste Directive no. 98/2008, strategic documents relative to the issues of prevention in waste management, the trends perceived to exist in the area of waste management both at the national level and at the EU level, and preventative measures implemented abroad. Generally, the objectives and measures are focused on preventing the production of waste, with stress laid on prevention relative to certain selected waste streams.

The Programme incorporates 1 Main Objective, 13 Phased Targets and 26 draft Measures by which these various goals should be met.

The measures are concerned with all the three recommended strategies (regulatory, promotional and information strategy); they relate to municipal waste and its various components, with a special focus on food waste, textile waste and compostable materials. At the EU level, food waste ranks among the major priorities currently under consideration. Further, the draft includes construction and demolition waste as well as waste EEE and wrecked automobiles. Also, the measures are focused on input raw materials in industry and on the production of industrial waste, on public administration, towns and municipalities, environmental labelling, environmental management systems, eco-design, LCT and legislative support. Understandably, the measures also include an extensive information support (strategy), education, training and awareness raising (including the involvement of the issues in school curricula). Some of the measures also include requirements to be imposed on hazardous waste, or as the case may by, hazardous components contained in products.

During the first years of Programme implementation it will be necessary to draw up and verify a range of analytical and methodological documents and studies. This is a necessary step, in view of the future evaluation of the Programme's effectiveness and the monitoring of the flows of materials and wastes which have not yet been paid adequate attention. The knowledge we presently have on these commodities is insufficient and cannot be employed as a basis for setting up and evaluating any balances. Evaluation of data relative to waste prevention to clearly demonstrate the success or failure of the various measures may therefore prove to be difficult. The evaluation ought to be aimed at summing up all the wastes that have not been produced. There are numerous external effects and factors by which the waste management is influenced. These influences may render it difficult to come up with a clear-cut balance, and the final data obtained need not fully correspond with reality. Therefore, the first step to be taken at the very outset of implementation of the Programme is to establish a self-contained analytical instrument – a methodology (which is part of the measures proposed) that will act as guidance in evaluating the Programme and in assessing the degree of success (or failure) in advancing ahead. The preventative measures cannot be assessed strictly on the basis ofthe classical indicators alone (*e.g.*, on the basis only of the amounts of waste generated, inasmuch as this tends to be influenced by a number of factors).

The chief benefits of the Programme can be expected in the following areas:

- providing for the acquisition of available information on waste prevention at various levels;
- enhancing the awareness of these issues, heightening the sense of one's own responsibility and a real enforcement of the measures vis-à-vis the citizen, the institutions and the business circles concerned;
- raising the competitiveness of the subjects involved;
- furthering the advancement of science and research in the area of prevention and establishing a springboard for raising the competitiveness of the Czech Republic;
- optimising the existing legislative measures and implementing new ones to foster waste prevention.

ANNEXES

Annex no. 1	Selected legislation and norms pertaining to CR and EU waste management and related regulations and norms pertaining to the issues of waste prevention
Annex no. 2	Segments of essential legislation relating to waste prevention in the area of waste legislation
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ANNEX 1

Selected legislation and norms pertaining to CR and EU waste management and related regulations and norms pertaining to the issues of waste prevention[11]

1. CR Acts of law and implementing regulations

Act no. 185/2001 Coll. on waste and amending certain other acts

Act no. 477/2001 Coll. on packaging and amending certain related acts (the Packaging Act)

Act no. 350/2011 Coll. on chemical substances and chemical preparations and amending and supplementing some other laws (the Chemicals Act)

Act no. 76/2002 Coll. on integrated prevention and reduction of pollution, on the integrated pollution register and amending certain acts, as amended (the Integrated Prevention Act)

Act no. 25/2008 Coll. on the integrated pollution register and the integrated system of compliance with reporting duty in the area of environment, and on amendments to other acts

Act no. 56/2001 Coll. on the conditions for the operation of vehicles on the road network and on an amendment to Act no. 168/1999 Coll. on liability insurance for damage caused by the operation of vehicles and on amendments to certain related acts (the Motor third-party liability insurance act), as amended by Act no. 307/1999 Coll.

Act no. 406/2000 Coll. on energy management (in the complete wording of the amended Act no. 177/2006 Coll.) and its Code of Practice no. 148/2007 Coll.

Act no. 22/1997 Coll. on technical requirements for products, and on amendment to and supplementation of some Acts

Act no. 157/2009 Coll. on mining waste management and amending certain acts

Act no. 299/2011 Coll. amending Act no. 406/2000 Coll. on energy management, as amended by subsequent legislation, and Act no. 458/2000 Coll. on business conditions and state administration in the energy sectors and on amendments to certain acts (the Energy Management Act), as amended by subsequent legislation

Act no. 235/2004 Coll. on the value-added tax, as amended bu subsequent legislation

Act no. 357/1992 Coll. on inheritance tax, gift tax and real estate transfer tax, as subsequently amended

Government regulation no. 197/ 2003 Coll. on the waste management plan of the Czech Republic

Government regulation no. 481/2012 Coll. on the restriction of the use of certain hazardous substances in electrical and electronic equipment

Regulation no. 341/2002 Coll. on approval of technical fitness for, and technical conditions of, operation of road vehicles

Regulation no. 78/2013 Coll. on the energy performance of buildings

Regulation no. 381/2001 Coll. establishing the Waste Catalogue, List of hazardous waste and lists of wastes and countries for the purpose of waste exportation, importation and transit, and the procedure for granting permission for exportation, importation and transit of waste (the Waste Catalogue)

Regulation no. 382/2001 Coll. on the conditions of use of treated sludge on farmland

Regulation no. 383/2001 Coll. on the details of waste management

Regulation no. 352/2005 Coll. on the particulars of handling electrical and electronic equipment and electrical and electronic waste and on the detailed conditions of financing the handling thereof (the Decree on handling electrical and electronic equipment and waste)

Regulation no. 341/2008 Coll. on the particulars of handling biodegradable waste and on the

[11] The legislative items shown are as amended by subsequent legislation - in their valid wording.

amendment to Regulation no. 294/2005 Coll. on the conditions of depositing waste in landfills and its use on the surface of the ground and amendments to Regulation no. 383/2001 Coll. on the particulars of waste management (the Decree on the particulars of handling biodegradable waste)

Regulation no. 352/2008 Coll. on the particulars of handling wrecked car waste and selected wrecked car waste, on the method of record keeping thereon and on the wastes produced in the wrecked car collection and treatment facilities and on the information system for monitoring the streams of selected wrecked cars (on the Particulars of handling wrecked cars)

Regulation no. 116/2002 Coll. on the method of labelling returnable deposit packaging

Regulation no. 641/2004 Coll. on the scope and method of keeping records of packaging and on reporting the data thereof

Regulation no. 237/2002 Coll. on the particulars of take-back of certain products

Regulation no. 376/2001 Coll. on the evaluation of hazardous properties of waste

Regulation no. 402/2011 Coll. on the evaluation of hazardous properties of chemical substances and formulations and on the packaging and labelling of hazardous chemical formulations

Regulation no. 162/2012 Coll. on naming a hazardous substance in the designation of a hazardous formulation

Regulation no. 163/2012 Coll. on the principles of good laboratory practice

Regulation no. 428/2009 Coll. on implementing certain provisions of the Mining waste management act

Regulation no. 429/2009 Coll. establishing the elements of the mining waste management plan, including the assessment of the properties thereof, and certain further particulars on the implementation of the Mining waste management act

Regulation no. 554/2002 Coll. laying down the form of application for the issuance an integrated permit and the extent and manner of filling in the application, as amended by subsequent legislation

Regulation no. 337/2011 Coll. on energy labelling and eco-design of energy-related products

2. Standards

CSN EN ISO 14001	*Environmental management systems - Specification with guidance for use*
CSN EN ISO 14004	*Environmental management systems - General guidelines on principles, systems, and supporting techniques*
CSN EN ISO 14006	*Environmental management systems - Guidelines for incorporating eco-design*
CSN ISO 14015	*Environmental management - Environmental assessment of sites and organisations (EASO)*
CSN EN ISO 14040	*Environmental management - Life cycle assessment - Principles and framework*
CSN EN ISO 14044	*Environmental management - Life cycle assessment - Requirements and guidelines*
CSN ISO/TR 14047	*Environmental management - Life cycle assessment - Illustrative examples on how to apply ISO 14042*
CSN ISO 14050	*Environmental management - Vocabulary*
CSN EN ISO 14051	*Environmental management - Material flow cost accounting - General framework*
CSN ISO 14063	*Environmental management - Environmental communication - Guidelines and examples*
CSN 01 0962	*Environmental management - Integration of environmental aspects into product design and development*
CSN EN ISO 14020	*Environmental labels and declarations -- General principles*
CSN EN ISO 14031	*Environmental management - Environmental performance evaluation -- Guidelines*
CSN EN 13965-1	*Characterisation of waste - Terminology - Part 1: Material related terms and definitions*
CSN EN 13965-2	*Characterisation of waste - Terminology - Part 2: Waste management related terms and definitions*
CSN 42 0030	*Steel and cast iron scrap*
CSN 42 1331	*Scrap of non-ferrous metals and alloys*
CSN EN 12861	*Copper and copper alloys - Scrap*
CSN EN 14057	*Lead and lead alloys - Scrap - Terms and definitions*
CSN EN 12258-3	*Aluminium and aluminium alloys - Terms and definitions - Part 3: Scrap*
CSN EN 12258-4	*Aluminium and aluminium alloys - Terms and definitions - Part 4: Residues of the aluminium industry*
CSN EN 13920-1	*Aluminium and aluminium alloys - Scrap - Part 1: General requirements, sampling and tests*
CSN EN 13920-2	*Aluminium and aluminium alloys - Scrap - Part 2: Unalloyed aluminium scrap*
CSN EN 13920-3	*Aluminium and aluminium alloys - Scrap - Part 3: Wire and cable scrap*
CSN EN 13920-4	*Aluminium and aluminium alloys - Scrap - Part 4: Scrap consisting of one single wrought alloy*
CSN EN 13920-5	*Aluminium and aluminium alloys - Scrap - Part 5: Scrap consisting of two or more wrought alloys of the same series*
CSN EN 13920-6	*Aluminium and aluminium alloys - Scrap - Part 6: Scrap consisting of two*

	or more wrought alloys
CSN EN 13920-7	*Aluminium and aluminium alloys - Scrap - Part 7: Scrap consisting of castings*
CSN EN 13920-8	*Aluminium and aluminium alloys - Scrap - Part 8: Scrap consisting of non-ferrous materials from shredding processes destined to aluminium separation processes*
CSN EN 13920-9	*Aluminium and aluminium alloys - Scrap - Part 9: Scrap from aluminium separation processes of non-ferrous shredded materials*
CSN EN 13920-10	*Aluminium and aluminium alloys - Scrap - Part 10: Scrap consisting of used aluminium beverage cans*
CSN EN 13920-11	*Aluminium and aluminium alloys - Scrap - Part 11: Scrap consisting of aluminium-copper radiators*
CSN EN 13920-12	*Aluminium and aluminium alloys - Scrap - Part 12: Turnings consisting of one single alloy*
CSN EN 13920-13	*Aluminium and aluminium alloys - Scrap - Part 13: Mixed turnings consisting of two or more alloys*
CSN EN 13920-14	*Aluminium and aluminium alloys - Scrap - Part 14: Scrap from post-consumer aluminium packagings*
CSN EN 13920-15	*Aluminium and aluminium alloys - Scrap - Part 15: De-coated aluminium scrap from post-consumer aluminium packagings*
CSN EN 13920-16	*Aluminium and aluminium alloys - Scrap - Part 16: Scrap consisting of skimmings, drosses, spills and metallics*
CSN EN 14290	*Zinc and zinc alloys - Secondary raw materials*
CSN 64 0003	*Plastics - Terms relating to the valorisation of plastic waste*
CSN EN 14995	*Plastics - Evaluation of compostability - Test scheme and specifications*
CSN P CEN/TS 14243	*Material utilisation of end-of-life tyres - Specification of categories by dimensions and impurities and methods of determining their dimensions and impurities*
CSN EN 12940	*Waste from footwear production - Classification and handling of wastes*
CSN EN 643	*Paper and cardboard - European list of standardised types of paper and cardboard waste*
CSN EN 1744-7	*Tests for the chemical properties of aggregates - Part 7: Determination of calcination loss of aggregates from municipal waste incinerator ash (MIBA aggregates)*
CSN 46 5735	*Industrial composts*
CSN EN 12832	*Characterisation of sludges - Utilisation and disposal of sludges - Vocabulary*
CSN 75 8084	*Guidelines for maintaining and expanding the methods of sludge utilisation and disposal*
CSN 75 8085	*Guidelines for sludge utilisation in soil recultivation*
CSN P CEN/TS 16177	*Sludges, treated biodegradable waste and soils - Leaching for the determination of leachable ammonium ions, nitrates and nitrites*
CSN P CEN/TS 16188	*Sludges, treated biodegradable waste and soils - Determination of elements in the leachate by chloronitric acid (aqua regia) and nitric acid - Method of flame atomic absorption spectrometry (FAAS)*
CSN P CEN/TS 16182	*Sludges, treated biodegradable waste and soils - Determination of nonyl phenols (NPs) and nonyl phenol diethoxylates using gas chromatography combined with mass selective detection (GC-MS)*

CSN P CEN/TS 16189	*Sludges, treated biodegradable waste and soils - Determination of linear alkyl benzene sulphonates (LAS) using high-performance liquid chromatography combined with fluorescence detection (FLD) or mass selective detection (MS)*
CSN P CEN/TS 16183	*Sludges, treated biodegradable waste and soils - Determination of selected phthalates using capillary gas chromatography combined with mass spectrometric detection (GC-MS)*
CSN P CEN/TS 16178	*Sludges, treated biodegradable waste and soils - Determination of pharmaceutical products*
CSN P CEN/TS 16190	*Sludges, treated biodegradable waste and soils - Determination of dioxins and furans, and of polychlorinated biphenyls similar to dioxins using gas chromatography combined with high-resolution mass spectroscopy (HR GC-MS)*
CSN EN 12740	*Biotechnologies - Laboratories for research, development and analysis - Guidance for handling, disposal and testing of waste*
CSN 77 0000	*Packaging - Basic terms*
CSN 77 0020	*Protective packaging - General specifications*
CSN EN 14182	*Packaging - Terminology - Basic terms and definitions*
CSN EN ISO 11683	*Packaging - Tactile warnings of danger - Requirements*
CSN 77 0052-2	*Packaging - Packaging waste - Part 2: Identification labelling of packaging for subsequent utilisation of packaging waste*
CSN 77 0053	*Packaging - Packaging waste - Instructions and information on handling used packaging*
CSN 77 0054	*Packaging - Requirements for primary packaging intended as returnable*
CSN EN 13193	*Packaging - Packaging and the environment - Terminology*
CSN EN 13427	*Packaging - Requirements for the use of European Standards in the field of packaging and packaging waste*
CSN CR 13686	*Packaging - Optimisation of energy recovery from packaging waste*
CSN CR 13695-1	*Packaging - Requirements for measurement and verification of four heavy metals and other hazardous substances contained in packaging and the release thereof to the environment - Part 1: Requirements for the measurement and verification of four heavy metals contained in packaging*
CSN 77 0150-2	*Packaging - Requirements for measurement and verification of four heavy metals and other hazardous substances contained in packaging and the release thereof to the environment - Part 2: Requirements for the measurement and verification of hazardous substances contained in packaging and the release thereof to the environment*
CSN EN 13432	*Packaging - Requirements for packaging recoverable through composting and biodegradation - Test scheme and evaluation criteria for the final acceptance of packaging*
CSN EN 13431	*Packaging - Requirements for packaging recoverable in the form of energy recovery, including specification of minimum calorific value*
CSN EN 14045	*Packaging - Evaluation of the disintegration of packaging materials in practically orientated tests under defined composting conditions*
CSN EN 14046	*Packaging - Evaluation of ultimate aerobic biodegradability of packaging materials under controlled composting conditions - Method by analysis of released carbon dioxide*

CSN EN 14806	*Packaging - Preliminary evaluation of the disintegration of packaging materials under simulated composting conditions in a laboratory scale test*
CSN EN 13429	*Packaging - Re-use*
CSN EN 13439	*Packaging - Rate of energy recovery - Definition and method of calculation*
CSN 49 0006	*Wooden packages. Vocabulary.*
CSN 72 2071	*Fly ash for building industry purposes – Common provisions, requirements and test methods*
CSN 72 2080	*Fly ash and ash from fluidised bed combustion for building industry purposes - Common provisions, requirements and test methods*
CSN EN 62430	*Environmentally conscious design for electric and electronic products*
CSN EN 62321	*Electro-technology products - Determination of the levels of six restricted-use substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers)*
CSN EN 61429	*Marking of secondary cells and batteries with the international recycling symbol ISO 7000-1135*
CSN EN 61960	*Secondary cells and batteries containing alkaline or other non-acid electrolytes - Secondary lithium cells and batteries for portable applications*
CSN EN 62554	*Sample preparation for measurement of mercury in fluorescent lamps*
CSN EN 50419	*Marking of electrical and electronic equipment in accordance with Article 11(2) of Directive 2002/96/EC (WEEE)*
CSN EN 60480	*Guidelines for the checking and treatment of sulfur hexafluoride (SF_6) taken from electrical equipment and specification for its re-use*
CSN EN 50581	*Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances*

3. EU legislation and documents

Consolidated version of the Treaty on European Union and the Treaty on the Functioning of the European Union 2012/C 326/01

Council resolution of 24 February 1997 on a Community strategy for waste management

Decision no. 1600/2002/EC of the European Parliament and of the Council of 22 July 2002 laying down the Sixth Community Environment Action Programme

Decision no. 1386/2013/EU of the European Parliament and of the Council of 20 November 2013 laying down the Seventh Environment Action Programme - a General Union Environment Action Programme to 2020, entitled „Living well, within the limits of our planet"

Communication from the Commission of 27 May 2003 on a Thematic strategy on the prevention and recycling of waste COM (2005) 666

Decision no. 1141/2001/EC of the European Parliament and of the Council of 27 June 2001 on a Community Framework for co-operation to promote sustainable urban development

Communication from the Commission: Europe 2020 - A Strategy for smart, sustainable and inclusive growth, COM (2010) 2020 final

Communication from the Commission: Towards a circular economy: A zero waste programme for Europe, COM (2014) 398 final

Directive no. 98/2008 of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives

Council Regulation (EU) no. 333/2011 establishing criteria determining when certain types of scrap metal cease to be waste under Directive 2008/98/EC of the European Parliament and of the Council

Commission Regulation (EU) no. 1179/2012 of 10 December 2012 establishing criteria determining when glass cullet ceases to be waste under Directive 2008/98/EC of the European Parliament and of the Council

Commission Regulation (EU) no. 715/2013 of 25 July 2013 establishing criteria determining when copper scrap ceases to be waste under Directive 2008/98/EC of the European Parliament and of the Council

Council Directive 1999/31/EC on the landfill of waste

Directive no. 94/62/ES of the European Parliament and of the Council on packaging and packaging waste

Directive 2000/53/EC of the European Parliament and of the Council on End-of-life vehicles

Directive 2012/19/EU of the European Parliament and of the Council on waste electrical and electronic equipment (WEEE) (redrafted wording)

Directive 2011/65/EU of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment (redrafted)

Directive 2006/66/EC of the European Parliament and of the Council on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC

Commission Regulation (EU) 1103/2010 establishing, pursuant to Directive 2006/66/EC of the European Parliament and of the Council, rules as regards capacity labelling of portable secondary (rechargeable) and automotive batteries and accumulators

Directive of the Council on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture (86/278/EEC)

Directive no. 2006/21/EC of the European Parliament and of the Council on the management of waste from extractive industries and amending Directive 2004/35/EC

Regulation (EC) no. 850/2004 of the European Parliament and of the Council on persistent organic pollutants and amending Directive 79/117/EEC

Commission Decision introducing rules and calculation methods for compliance with the targets laid down in art. 11 (2) of Directive 2008/98/EC (2011/753/EU) of the European Parliament and of the Council

Commission Decision replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste, and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste (2000/532/EC)

Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control) (redrafted wording)

Regulation (EC) no. 1907/2006 of the European Parliament and of the Council on Registration, evaluation, authorisation and restriction of chemicals, on the establishment of the European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Decision (EEC) no. 793/93, Commission Decision (EC) no. 1488/94, Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC

Directive no. 2009/125/EC of the European Parliament and of the Council establishing a framework for the setting of eco-design requirements for energy-using products (redrafted)

Regulation no. 66/2010/EC of the European Parliament and of the Council of 25 November 2009 on the EU eco-label

Regulation (EC) No 1221/2009 of the European parliament and of the Council allowing voluntary participation by organisations in a Community eco-management and audit scheme

Directive no. 2005/64/ES of the European parliament and of the Council on the type approval of motor vehicles with regard to their reusability, recyclability and recoverability and amending Council Directive 70/156/EEC

Council Directive on the prevention and reduction of environmental pollution by asbestos (87/217/EEC)

Directive no. 2011/92/EU of the European parliament and of the Council on the assessment of the effects of certain public and private projects on the environment (codification)

Directive no. 2010/30/EU of the European parliament and of the Council of 19 May 2010 on the indication by labelling and standard product information of the consumption on energy and other resources by energy-related products

ANNEX 2

Segments of essential legislation relating to waste prevention in the area of waste legislation

The Waste Directive (98/2008/EC)

Preamble

Recital 7: In its Resolution of 24 February 1997 on a Community strategy for waste management, the Council confirmed that waste prevention should be the first priority of waste management, and that re-use and material recycling should be preferred to energy recovery from waste, where and insofar as they are the best ecological options.

Recital 8: It is therefore necessary to revise Directive 2006/12/EC in order to clarify key concepts such as the definitions of waste, recovery and disposal, to strengthen the measures that must be taken in regard to waste prevention, to introduce an approach that takes into account the whole life-cycle of products and materials and not only the waste phase, and to focus on reducing the environmental impacts of waste generation and waste management, thereby strengthening the economic value of waste. Furthermore, the recovery of waste and the use of recovered materials should be encouraged in order to conserve natural resources.

Recital 27: The introduction of extended producer responsibility in this Directive is one of the means to support the design and production of goods which take into full account and facilitate the efficient use of resources during their whole life-cycle including their repair, re-use, disassembly and recycling without compromising the free circulation of goods on the internal market.

Recital 28: This Directive should help move the EU closer to a 'recycling society', seeking to avoid waste generation and to use waste as a resource.

Recital 40: In order to improve the way in which waste prevention actions are taken forward in the Member States and to facilitate the circulation of best practice in this area, it is necessary to strengthen the provisions relating to waste prevention and to introduce a requirement for the Member States to develop waste prevention programmes concentrating on the key environmental impacts and taking into account the whole life-cycle of products and materials. Such measures should pursue the objective of breaking the link between economic growth and the environmental impacts associated with the generation of waste. Stakeholders, as well as the general public, should have the opportunity to participate in the drawing up of the programmes, and should have access to them once drawn up, in line with Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment. Waste prevention and decoupling objectives should be developed covering, as appropriate, the reduction of the adverse impacts of waste and of the amounts of waste generated.

Recital 42: Economic instruments can play a crucial role in the achievement of waste prevention and management objectives. Waste often has value as a resource, and the further application of economic instruments may maximise environmental benefits. The use of such instruments at the appropriate level should therefore be encouraged while stressing that individual Member States can decide on their use.

Article 3 - Definitions

12. prevention means measures taken before a substance, material or product has become waste, that reduce:

a) the quantity of waste, including through the re-use of products or the extension of the life span of products;

b) the adverse impacts of the generated waste on the environment and human health;

c) the content of harmful substances in materials and products.

Article 4 - Waste hierarchy

1. The following waste hierarchy shall apply as a priority order in waste prevention and management legislation and policy:

a) prevention;

b) preparing for re-use;

c) recycling;

d) other recovery, e.g. energy recovery; and

e) disposal.

2. When applying the waste hierarchy referred to in paragraph 1, Member States shall take measures to encourage the options that deliver the best over-all environmental outcome. This may require specific waste streams departing from the hierarchy where this is justified by life-cycle thinking on the overall impacts of the generation and management of such waste.

Article 5 - By-products

1. A substance or object, resulting from a production process, the primary aim of which is not the production of that item, may be regarded as not being waste referred to in point (1) of Article 3 but as being a by-product only if the following conditions are met:

a) further use of the substance or object is certain;

b) the substance or object can be used directly without any further processing other than normal industrial practice;

c) the substance or object is produced as an integral part of a production process; and

d) further use is lawful, i.e. the substance or object fulfils all relevant product, environmental and health protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts.

2. On the basis of the conditions laid down in paragraph 1, measures may be adopted to determine the criteria to be met for specific substances or objects to be regarded as a by-product and not as waste referred to in point (1) of Article 3. Those measures, designed to amend non-essential elements of this Directive by supplementing it, shall be adopted in accordance with the regulatory procedure with scrutiny referred to in Article 39(2).

Article 6 - End-of-waste status

1. Certain specified waste shall cease to be waste within the meaning of point (1) of Article 3 when it has undergone a recovery, including recycling, operation and complies with specific criteria to be developed in accordance with the following conditions:

a) the substance or object is commonly used for specific purposes;

b) a market or demand exists for such a substance or object;

c) the substance or object fulfils the technical requirements for the specific purposes and meets the existing legislation and standards applicable to products; and

d) the use of the substance or object will not lead to overall adverse environmental or human health impacts.

Article 8 - Extended producer responsibility

1. In order to strengthen the re-use and the prevention, recycling and other recovery of waste, Member States may take legislative or non-legislative measures to ensure that any natural or legal person who professionally develops, manufactures, processes, treats, sells or imports products (producer of the product) has extended producer responsibility.

Such measures may include an acceptance of returned products and of the waste that remains after those products have been used, as well as the subsequent management of the waste and financial responsibility for such activities. These measures may include the obligation to provide publicly available information as to the extent to which the product is re-usable and recyclable.

2. Member States may take appropriate measures to encourage the design of products in order to reduce their environmental impacts and the generation of waste in the course of the production and subsequent use of products, and in order to ensure that the recovery and disposal of products that have become waste take place in accordance with Articles 4 and 13.

Such measures may encourage, *inter alia*, the development, production and marketing of products that are suitable for multiple use, that are technically durable and that are, after having become waste, suitable for proper and safe recovery and environmentally compatible disposal.

Article 9 - Prevention of waste

Following the consultation of stakeholders, the Commission shall submit to the European Parliament and the Council the following reports accompanied, if appropriate, by proposals for measures required in support of the prevention activities and the implementation of the waste prevention programmes referred to in Article 29 covering:

a) by the end of 2011, an interim report on the evolution of waste generation and the scope of waste prevention, including the formulation of a product eco-design policy addressing both the generation of waste and the presence of hazardous substances in waste, with a view to promoting technologies focusing on durable, re-usable and recyclable products;

b) by the end of 2011, the formulation of an action plan for further support measures at European level seeking, in particular, to change current consumption patterns; by the end of 2014, the setting of waste prevention and decoupling objectives for 2020, based on best available practices including, if necessary, a revision of the indicators referred to in Article 29(4).

Article 11 - Re-use and recycling

1. Member States shall take measures, as appropriate, to promote the re-use of products and preparing for re-use activities, notably by encouraging the establishment and support of re-use and repair networks, the use of economic instruments, procurement criteria, quantitative objectives or other measures.

Member States shall take measures to promote high quality recycling and, to this end, shall set up separate collections of waste where technically, environmentally and economically practicable and appropriate to meet the necessary quality standards for the relevant recycling sectors. Subject to Article 10(2), by 2015 separate collection shall be set up for at least the following: paper, metal, plastic and glass.

2. In order to comply with the objectives of this Directive, and move towards a European recycling society with a high level of resource efficiency, Member States shall take the necessary measures designed to achieve the following targets:

a) by 2020, the preparing for re-use and the recycling of waste materials such as at least paper, metal, plastic and glass from households and possibly from other origins as far as these waste streams are similar to waste from households, shall be increased to a minimum of overall 50 % by weight;

b) by 2020, the preparing for re-use, recycling and other material recovery, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste excluding naturally occurring material defined in category 17 05 04 in the list of waste shall be increased to a minimum of 70 % by weight.

Article 29 - Waste prevention programmes

1. Member States shall establish, in accordance with Articles 1 and 4, waste prevention programmes not later than 12 December 2013.

   Such programmes shall be integrated either into the waste management plans provided for in Article 28 or into other environmental policy programmes, as appropriate, or shall function as separate programmes. If any such programme is integrated into the waste management plan or into other programmes, the waste prevention measures shall be clearly identified.

2. The programmes provided for in paragraph 1 shall set out the waste prevention objectives. Member States shall describe the existing prevention measures and evaluate the usefulness of the examples of measures indicated in Annex IV or other appropriate measures.

   The aim of such objectives and measures shall be to break the link between economic growth and the environmental impacts associated with the generation of waste.

3. Member States shall determine appropriate specific qualitative or quantitative benchmarks for waste prevention measures adopted in order to monitor and assess the progress of the measures and may determine specific qualitative or quantitative targets and indicators, other than those referred to in paragraph 4, for the same purpose.

4. Indicators for waste prevention measures may be adopted in accordance with the regulatory procedure referred to in Article 39(3).

5. The Commission shall create a system for sharing information on best practice regarding waste prevention and shall develop guidelines in order to assist the Member States in the preparation of the Programmes.

Article 30 - Evaluation and review of plans and programmes

1. Member States shall ensure that the waste management plans and waste prevention programmes are evaluated at least every sixth year and revised as appropriate and, where relevant, in accordance with Articles 9 and 11.

2. The European Environment Agency is invited to include in its annual report a review

of progress in the completion and implementation of waste prevention programmes.

Article 31 - Public participation

1. General public have the opportunity to participate in the elaboration of the waste management plans and waste prevention programmes, and have access to them once elaborated, in accordance with Directive 2003/35/EC or, if relevant, Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment. They shall place the plans and programmes on a publicly available website.

ANNEX IV TO THE WASTE DIRECTIVE - EXAMPLES OF WASTE PREVENTION MEASURES REFERRED TO IN ARTICLE 29

Measures that can affect the framework conditions related to the generation of waste

1. The use of planning measures, or other economic instruments promoting the efficient use of resources.
2. The promotion of research and development into the area of achieving cleaner and less wasteful products and technologies and the dissemination and use of the results of such research and development.
3. The development of effective and meaningful indicators of the environmental pressures associated with the generation of waste aimed at contributing to the prevention of waste generation at all levels, from product comparisons at Community level through action by local authorities to national measures.

Measures that can affect the design and production and distribution phase

4. The promotion of eco-design (the systematic integration of environmental aspects into product design with the aim to improve the environmental performance of the product throughout its whole life cycle).
5. The provision of information on waste prevention techniques with a view to facilitating the implementation of best available techniques by industry.
6. Organise training of competent authorities as regards the insertion of waste prevention requirements in permits under this Directive and Directive 96/61/EC.
7. The inclusion of measures to prevent waste production at installations not falling under Directive 96/61/EC. Where appropriate, such measures could include waste prevention assessments or plans.
8. The use of awareness campaigns or the provision of financial, decision making or other support to businesses. Such measures are likely to be particularly effective where they are aimed at, and adapted to, small and medium sized enterprises and work through established business networks.
9. The use of voluntary agreements, consumer/producer panels or sectoral negotiations in order that the relevant businesses or industrial sectors set their own waste prevention plans or objectives or correct wasteful products or packaging.
10. The promotion of creditable environmental management systems, including EMAS and ISO 14001.

Measures that can affect the consumption and use phase

11. Economic instruments such as incentives for clean purchases or the institution of an obligatory payment by consumers for a given article or element of packaging that would otherwise be provided free of charge.
12. The use of awareness campaigns and information provision directed at the general public or a specific set of consumers.
13. The promotion of creditable eco-labels.
14. Agreements with industry, such as the use of product panels such as those being carried out within the framework of Integrated Product Policies or with retailers on the availability of waste prevention information and products with a lower environmental impact.
15. In the context of public and corporate procurement, the integration of environmental and waste prevention criteria into calls for tenders and contracts, in line with the Handbook on environmental public procurement published by the Commission on 29 October 2004.

16. The promotion of the re-use and/or repair of appropriate discarded products or of their components, notably through the use of educational, economic, logistic or other measures such as support to or establishment of accredited repair and re-use centres and networks especially in densely populated regions.

Directive on waste electrical and electronic equipment (2012/19/EU)

Note: former Art. 11 - new Art. 15; Art. 7 (recast in its complete wording) has now been substituted by WEEE collection for the purpose of preparations for re-use; otherwise obviously, they are included in the over-all target set out in the new Art. 11, but in this case it already is waste.

Article 4 - Product design

Member States shall, without prejudice to the requirements of Union legislation on the proper functioning of the internal market and on product design, including Directive 2009/125/EC, encourage cooperation between producers and recyclers and measures to promote the design and production of EEE, notably in view of facilitating re-use, dismantling and recovery of WEEE, its components and materials. In this context, Member States shall take appropriate measures so that the ecodesign requirements facilitating re-use and treatment of WEEE established in the framework of Directive 2009/125/EC are applied and producers do not prevent, through specific design features or manufacturing processes, WEEE from being re-used, unless such specific design features or manufacturing processes present overriding advantages, for example, with regard to the protection of the environment and/or safety requirements.

Article 6 - Disposal and transport of collected WEEE

1. Member States shall prohibit the disposal of separately collected WEEE which has not yet undergone the treatment specified in Article 8.
2. Member States shall ensure that the collection and transport of separately collected WEEE is carried out in a way which allows optimal conditions for preparing for re-use, recycling and the confinement of hazardous substances.

   In order to maximise the preparations for re-use, Member State shall promote that, prior to any further transfer, collection schemes or facilities provide, where appropriate, for the separation at the collection points of WEEE that is to be prepared for re-use from other separately collected WEEE, in particular by granting access for personnel from re-use centres.

Article 15

1. In order to facilitate the preparation for re-use and the correct and environmentally sound treatment of WEEE, including maintenance, upgrade, refurbishment and recycling, Member States shall take the necessary measures to ensure that producers provide information free of charge about preparation for re-use and treatment in respect of each type of new EEE placed for the first time on the Union market within one year after the equipment is placed on the market. This information shall identify, as far as it is needed by centres which prepare for re-use and treatment and recycling facilities in order to comply with the provisions of this Directive, the different EEE components and materials, as well as the location of dangerous substances and mixtures in EEE. It shall be made available to centres which prepare for re-use and treatment and recycling facilities by producers of EEE in the form of manuals or by means of electronic media (e.g. CD-ROM, online services).

Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (2011/65/EU)

Article 4 - Prevention

1. Member States shall ensure that EEE placed on the market, including cables and spare parts for its repair, its reuse, updating of its functionalities or upgrading of its capacity, does not contain the substances listed in Annex II.
2. For the purposes of this Directive, no more than the maximum concentration value by weight in homogeneous materials as specified in Annex II shall be tolerated. The Commission shall adopt, by means of delegated acts in accordance with Article 20 and subject to the conditions laid down in Articles 21 and 22, detailed rules for complying with these maximum

concentration values taking into account, inter alia, surface coatings.

3. Paragraph 1 shall apply to medical devices and monitoring and control instruments which are placed on the market from 22 July 2014, to in vitro diagnostic medical devices which are placed on the market from 22 July 2016 and to industrial monitoring and control instruments which are placed on the market from 22 July 2017.
4. Paragraph 1 shall not apply to cables or spare parts for the repair, the reuse, the updating of functionalities or upgrading of capacity of the following:
    a. EEE placed on the market before 1 July 2006;
    b. medical devices placed on the market before 22 July 2014;
    c. in vitro diagnostic medical devices placed on the market before 22 July 2016;
    d. monitoring and control instruments placed on the market before 22 July 2014;
    e. industrial monitoring and control instruments placed on the market before 22 July 2017;
    f. EEE which benefited from an exemption and which was placed on the market before that exemption expired as far as that specific exemption is concerned.
5. Paragraph 1 shall not apply to reused spare parts, recovered from EEE placed on the market before 1 July 2006 and used in equipment placed on the market before 1 July 2016, provided that reuse takes place in auditable closed-loop business-to-business return systems, and that the reuse of parts is notified to the consumer.

Directive on batteries and accumulators and waste batteries and accumulators (2006/66/EC)

Article 4 - Prohibitions

1. Without prejudice to Directive 2000/53/EC, Member States shall prohibit the placing on the market of:
    a. all batteries or accumulators, whether or not incorporated into appliances, that contain more than 0,0005 % of mercury by weight; and
    b. portable batteries or accumulators, including those incorporated into appliances, that contain more than 0,002 % of cadmium by weight.
2. The prohibition set out in paragraph 1(a) shall not apply to button cells with a mercury content of no more than 2 % by weight.
3. The prohibition set out in paragraph 1(b) shall not apply to portable batteries and accumulators intended for use in:
    a. emergency and alarm systems, including emergency lighting;
    b. medical equipment; or
    c. cordless power tools.

Article 5 - Increased environmental performance

Member States which have manufacturers established on their territory shall promote research and encourage improvements in the overall environmental performance of batteries and accumulators throughout their entire life cycle as well as the development and marketing of batteries and accumulators which contain smaller quantities of dangerous substances or which contain less polluting substances, in particular as substitutes for mercury, cadmium and lead.

Directive on end-of-life vehicles (2000/53/EC)

Article 4 - Prevention [of waste]

1. In order to promote the prevention of waste Member States shall encourage, in particular:
    a. vehicle manufacturers, in liaison with material and equipment manufacturers, to limit the use of hazardous substances in vehicles and to reduce them as far as possible from the conception of the vehicle onwards, so as in particular to prevent their release into the environment, make recycling easier, and avoid the need to dispose

of hazardous waste;

b. the design and production of new vehicles which take into full account and facilitate the dismantling, reuse and recovery, in particular the recycling, of end-of life vehicles, their components and materials;

c. vehicle manufacturers, in liaison with material and equipment manufacturers, to integrate an increasing quantity of recycled material in vehicles and other products, in order to develop the markets for recycled materials.

2.

a. Member States shall ensure that the materials and components of vehicles placed on the market after 1 July 2003 do not contain lead, mercury, cadmium or hexavalent chromium other than in cases listed in Annex II under the conditions specified therein;

b. in accordance with the procedure laid down in Article 11 the Commission shall on a regular basis, according to technical and scientific progress, amend Annex II, in order to:

   i. as necessary, establish maximum concentration values up to which the existence of the substances referred to in subparagraph (a) in specific materials and components of vehicles shall be tolerated;

   ii. exempt certain materials and components of vehicles from the provisions of subparagraph (a) if the use of these substances is unavoidable;

   iii. delete materials and components of vehicles from Annex II if the use of these substances is avoidable;

   iv. under points (i) and (ii) designate those materials and components of vehicles that can be stripped before further treatment; they shall be labelled or made identifiable by other appropriate means;

c. the Commission shall amend Annex II for the first time not later than 21 October 2001. In any case none of the exemptions listed therein shall be deleted from the Annex before 1 January 2003.

Directive on packaging and packaging waste (94/62/EC as amended by Directives 2004/12/EC, 2005/20/EC and 2013/2/EU)

Article 4 - Prevention

1. Member States shall ensure that, in addition to the measures to prevent the formation of packaging waste taken in accordance with Article 9, other preventive measures are implemented.

   Such other measures may consist of national programmes, projects to introduce producer responsibility to minimise the environmental impact of packaging or similar actions adopted, if appropriate in consultation with economic operators, and designed to bring together and take advantage of the many initiatives taken within Member States as regards prevention. They shall comply with the objectives of this Directive as defined in Article 1(1).

2. The Commission shall help to promote prevention by encouraging the development of suitable European standards, in accordance with Article 10. The standards shall aim to minimise the environmental impact of packaging in accordance with Articles 9 and 10.

3. The Commission shall, as appropriate, present proposals for measures to strengthen and complement the enforcement of the essential requirements and to ensure that new packaging is put on the market only if the producer has taken all necessary measures to minimise its environmental impact without compromising the essential functions of the packaging.

Article 5

Member States may, in compliance with the Treaty, encourage systems for the re-use of packaging which can be re-used in an environmentally sound manner.

Article 9 - Basic requirements

1. Member States shall ensure that three years from the date of the entry into force of this Directive, packaging may be placed on the market only if it complies with all essential

requirements defined by this Directive including Annex II.

2. Member States shall, from the date set out in Article 22 (1), presume compliance with all essential requirements set out in this Directive including Annex II in the case of packaging which complies:
    a. with the relevant harmonized standards, the reference numbers of which have been published in the Official Journal of the European Communities. Member States shall publish the reference numbers of national standards transposing these harmonized standards; with the relevant harmonized standards, the reference numbers of which have been published in the Official Journal of the European Communities.
    b. with the relevant national standards referred to in paragraph 3 in so far as, in the areas covered by such standards, no harmonized standards exist.
3. Member States shall communicate to the Commission the text of their national standards, as referred to in paragraph 2 (b), which they deem to comply with the requirements referred to in this Article. The Commission shall forward such texts forthwith to the other Member States.

   Member States shall publish the references of these standards. The Commission shall ensure that they are published in the Official Journal of the European Communities.
4. Where a Member State or the Commission considers that the standards referred to in paragraph 2 do not entirely meet the essential requirements referred to in paragraph 1, the Commission or the Member State concerned shall bring the matter before the Committee set up by Directive 83/189/EEC giving the reasons therefor. The Committee shall deliver an opinion without delay.

   In the light of the Committee's opinion, the Commission shall inform Member States whether or not it is necessary to withdraw those standards from the publications referred to in paragraphs 2 and 3.

The Waste Act no. 185/2001 Coll.

Section 1 - Scope of the Act

In accordance with the law of the European Community, this Act regulates

a) The rules applicable to the prevention of wastage and to the handling of wastes while observing the rules of environmental protection as well as the protection of human health and of sustainable development, 1a); also, in curbing the negative impacts of utilisation of natural resources and in improving the effectiveness of their utilisation,

Section 3 - Definition of waste

(1) Waste shall be any movable thing that a person discards or intends to discard or is obliged to discard.

(2) Discarding waste occurs whenever a person transfers a movable thing for recovery or disposal pursuant to this Act or if such thing is transferred to a person authorised to collect or purchase waste under this Act irrespective of whether the transfer is for or without consideration. Waste discarding also occurs if a movable thing is disposed of by the holder himself/herself.

(3) Unless the owner demonstrates otherwise during proceedings to settle queries in accordance with Section 8, the presumption shall be that there was an intention to discard a movable thing whose original purpose of use has ended or ceased.

(4) A person shall discard a movable thing if such thing is not used for its original purpose and endangers the environment or has been removed from use pursuant to a special legal regulation.

(5) A movable thing originating from production of which the primary objective has not been the production or provision of that thing shall become a by-product rather than waste provided that

a) it is produced as an integral part of the production process;

b) its further use is ensured;

c) its further use is possible without any further processing by a method different from common production practice; and

d) its further use complies with special legal regulations and shall not be harmful to the environment or to human health.

(6) Certain types of waste cease being waste if after the waste has been subject to any method of utilisation they meet the following conditions:

a) the thing is routinely used for specific purposes;

b) there is a market or demand for that thing;

c) the thing meets the technical requirements for specific purposes laid down by special legislation or by standards applicable to products;

d) its further use complies with special legal regulations and shall not be harmful to the environment or to human health; and

e) the thing meets other criteria if any such have been laid down for a certain type of waste by a directly applicable European Union regulation.

(7) For any specific uses of by-products pursuant to paragraph 5 and of products made of waste pursuant to paragraph 6 the waste utilisation criteria if laid down shall be met.

(8) When in doubt as to whether a movable thing is to be regarded as waste, the Regional Authority shall decide in response to an application by the owner of such movable thing or by virtue of its official authority

(9) The Ministry of the Environment in co-operation with the Ministry of Industry and Trade may promulgate a regulation laying down the criteria specifying the conditions under which a movable thing may be regarded as a by-product rather than waste and under which that waste ceases being waste.

Section 9a - Waste management hierarchy

(1) Waste management shall adhere to a waste management hierarchy as follows:

a) prevention of waste generation;

b) preparing for re-use;

c) waste recycling;

d) other recovery, e.g. energy recovery; and

e) disposal of the waste.

(2) The waste management hierarchy may be diverged from where a life-cycle assessment of the over-all impacts ranging from waste production to the handling thereof furnishes evidence that this is appropriate.

Section 10 - Prevention of waste production

(1) Everyone shall, in connection with his/her activities or within the scope of his/her competence, endeavour to prevent the production of waste, to reduce the amount of waste and its hazardous properties; where the production of waste cannot be avoided, it must be recovered or disposed of in a manner which does not endanger human health and the environment and which is in compliance with this Act and with special legal regulations.

(2) A legal entity and a natural person authorised to conduct business producing products is obliged to produce these products in a manner that reduces the generation of unrecoverable waste from these products, particularly of hazardous waste.

(3) A legal entity and a natural person authorised to conduct business and engaged in placing products on the market, are obliged to provide information on the manner of recovery or disposal of the unused product parts in the documentation accompanying the product, on the product packaging in the user guide or by some other suitable form of information.

Section 31a

(1) It is prohibited to place on the market or to bring into circulation

a) all batteries or accumulators that contain more than 0.0005% of mercury by weight, whether or not these are incorporated into electrical appliances or other products, with the exception of button cells where the mercury content does not exceed 2% by weight, and

b) portable batteries or accumulators that contain more than 0.002% of cadmium by weight, including batteries and accumulators incorporated into electrical appliances or other products.

(2) The prohibition set out in paragraph 1 (b) shall not apply to portable batteries and accumulators intended for use in

a) emergency and alarm systems, including emergency lighting,

b) medical equipment, or

c) cordless power tools.

(3) Producers of electrical appliances or other products that require the incorporation of batteries or accumulators shall be obliged to ensure that these products have been designed to facilitate the easy and safe removal of spent or waste batteries or accumulators. Producers shall be obliged to attach a user guide to electrical appliances or other products in which batteries or accumulators are incorporated, explaining how to remove the batteries or accumulators safely, including information on the type of batteries or accumulators incorporated. Producers, distributors and final vendors shall be obliged to ensure that this user guide is provided together with the product.

(4) The obligations set forth in paragraph 3 shall not apply to producers of electrical appliances or other products who must, for safety, performance, medical or data integrity reasons, ensure continuity of power supply, requiring a permanent connection between the electrical appliance or other product and the battery or accumulator.

Section 37j

Placing electrical equipment on the market

(1) A producer of electrical equipment shall ensure that the electrical equipment is designed and produced in a way that makes its disassembly and recovery easier, and in particular the re-use of this electrical equipment and the material recovery of electrical waste, its components and materials in accordance with legal regulations for the protection of the environment and legal regulations for the protection of public health. 31o)

Section 37l

Treatment of electrical waste

(1) A producer of electrical equipment shall create a system for the processing of electrical waste using the best available techniques 31s), its treatment, use and material recovery.

(2) A producer of electrical equipment shall provide processors of electrical waste with all the necessary information for the treatment thereof, primarily information on any hazardous substances contained therein, the options for reuse of the electrical equipment and the material recovery of electrical waste, or the method for its disposal. The producer of electrical equipment shall provide this information for each type of electrical equipment within one year of the date the product is placed on the market. He shall provide this information in the instructions for use, or in electronic form, or by remote communication.

Section 37m

Recovery of electrical waste

(2) As a priority, electrical equipment that is taken back or separately collected should be re-used as a whole unit before being handed over to a processor. Only electrical equipment and its components that comply with the requirements of the relevant legal regulations may be re-used.

Act no. 477/2001 Coll. on Packaging

Section 3 - Prevention

(1) A person who places packaging on the market shall ensure that the packaging volume and weight be limited to the minimum possible amount while respecting the requirements placed on a packaged product and while maintaining the product's acceptability for the consumer or another end user, in order to reduce the amount of packaging waste which is to be disposed of.

(2) If the packaging for a specific product has been produced in accordance with the harmonised Czech technical standards 7a), the requirements pursuant to paragraph 1 above are deemed to have been met.

Section 4 - Conditions for placing packaging on the market

(1) The person who places packaging, a packaged product or packaging material on the market shall be obliged to ensure that

a) the concentration levels of substances specified in the List of Classified Hazardous Chemical Substances 8) as constituents of the packaging material shall comply with the limits for these substances stipulated by special legal regulations, 9) with respect to the presence of these substances in emissions, ash or leachate in cases where packaging waste is incinerated or landfilled;

b) the sum of concentration levels of lead, cadmium, mercury and hexavalent chromium present in packaging or packaging material shall not exceed the limit of 100 micrograms/g (hereinafter referred to as the “limit value”);

c) packaging or packaging material, after being used for the purpose for which it is designed and after the removal of the product or all its residues in a usual manner, shall be reusable, or that the packaging waste from the package or the packaging material shall be recoverable under usual conditions by at least one of the following methods:

1. a process where packaging waste, packaging material or their residues and other substances, if appropriate, are reprocessed into a product or raw material (hereinafter referred to as “recycling”),

2. direct incineration, with or without other waste, where energy is generated through combustion and the heat generated is used (hereinafter referred to as “energy recovery”),

3. aerobic or anaerobic treatment, under controlled conditions and using micro-organisms, of the biodegradable parts of packaging waste, which produces stabilised organic residues or methane (hereinafter referred to as “organic recycling”); landfill shall not be considered a form of organic recycling.

(2) The provisions of paragraph (1) (c) above shall not affect the provisions applicable to waste management pursuant to a special legal regulation.

(3) If the packaging for a specific product has been produced in accordance with the harmonised Czech technical standards 7a), the requirements pursuant to paragraph 1 above are deemed to have been met.

(4) The limit value pursuant to paragraph 1(b) above shall not apply to packaging and packing materials produced exclusively from lead crystal glass.

(5) The limit values pursuant to paragraph 1 (b) above may be exceeded for glass packaging and packaging materials provided

a) no lead, cadmium, mercury or hexavalent chromium have been intentionally introduced into the packaging or the packaging material during the production process; for the purposes of this Act and in accordance with European Communities legislation 9b) intentionally introduced means the process of deliberately introducing certain substances to create the packaging or packaging material to ensure the presence of this substance in the packaging or packaging material produced, thereby giving the packaging certain specific characteristics, appearance or quality; the recovery of recycled materials to produce packaging or packaging materials shall not be seen to comprise intentional introduction in cases where a certain proportion of the recycled materials may contain certain regulated quantities of heavy metals,

b) the value limits are only exceeded as a result of the addition of recycled materials, and

c) producers of packaging or packaging material take measurements of the concentrations of heavy metals present in production samples that are representative of normal and regular production activity once a month. These samples shall be taken from each individual melting aggregate. Excessive levels of heavy metal concentrations shall be recorded and notified in the manner specified in Annex no. 5 to this Act.

(6) The limit values pursuant to paragraph 1 (b) above may be exceeded for plastic crates and plastic pallets provided

a) no lead, cadmium, mercury or hexavalent chromium have been intentionally introduced into the packaging or the packaging material during the production process or during distribution;

b) the value limits are only exceeded as a result of the addition of recycled materials;

c) the crates or pallets are produced through a recycling process using only recycling material produced from the recycling of other plastic crates or pallets, with the use of other material outside the recycling cycle restricted to the minimum permissible limit and in any case not exceeding 20 % of the weight of the material used for the production of such crates or pallets, and

d) the material from which the crates or pallets are produced is visibly identified on such crates or pallets, in accordance with European Communities legislation.

Section 5

(1) A person who places packaging on the market shall be obliged

a) to provide to the inspection authorities upon request all the technical documentation needed to prove that the requirements specified in Sections 3 and 4 have been met, where the information set forth in paragraph 2 (b) shall replace the documentation proving compliance with the obligations set forth in Section 4 for the purpose of this inspection,

b) to demonstrate to its customers that the packaging complies with the requirements laid down in Sections 3 and 4.

(2) A person who places packaging on the market shall be obliged

a) to provide to the inspection authorities upon request all the technical documentation needed to prove compliance with the requirements specified in Section 4,

b) to demonstrate to its customers that the packaging complies with the requirements laid down in Section 4.

Section 7 - Reusable packaging

(1) A person who places on the market or into circulation products the packaging of which is reusable shall adopt organizational, technical, or financial measures complying with the criteria stipulated in Annex 2 to this Act and which enable the reuse of the packaging.

(2) The formalities of these measures and the method and procedure applied to there-use of packaging are laid down in the relevant harmonised Czech technical standard 7a).

Section 8 - Returnable packaging

A person who places on the market or into circulation packaged products the packaging of which is returnable shall ensure the reuse of the packaging pursuant to item B.1or B.2 of Annex no. 2 to this Act, or packaging waste recovery pursuant to Section 12.

Section 9 - Returnable deposit packaging

(1) If the measure pursuant to Section 8 includes payment of a special financial deposit (hereinafter referred to as “deposit”) which is directly related to a returnable packaging used when selling a product and the refund of which on return of this packaging is guaranteed to the buyer on purchase of the product, this packaging shall be considered a returnable deposit packaging pursuant to this Act.

(2) Persons shall adhere to the deposit amount applicable to returnable deposit packaging specified in an implementing legal regulation.

(3) A person who places on the market products in returnable deposit packaging shall mark the packaging as returnable deposit packaging in the manner specified in an implementing legal regulation.

(4) A person who places on the market or into circulation products in returnable deposit packaging shall repurchase the returnable deposit packaging without any quantity limitation and without making the refund conditional on the purchase of goods.

(5) A person who places on the market or into circulation products in returnable deposit packaging by selling them to the consumer in an outlet shall ensure that the returnable deposit packaging is repurchased in this outlet at any time during its working hours.

(6) A person who places on the market or into circulation products in returnable deposit packaging in a manner other than by selling them to the consumer shall inform the persons who shall place products in this packaging on the market or into circulation by selling them to the consumer of any changes being prepared in the type of returnable deposit packaging or of the termination of refunds for the returnable deposit packaging at least 6 months prior to enforcing this change or terminating refunds; the refund of returnable deposit packaging may not be suspended during this period.

(7) Should a person who placed on the market or into circulation returnable deposit packaging announce that he is ceasing to use the hitherto returnable deposit packaging, he/she shall collect this returnable deposit packaging under the conditions valid for this hitherto returnable deposit packaging for a minimum period of 1 year as of the last placing of this packaging on the market or into circulation.

(8) The provisions of special legal regulations shall not be affected by the provisions of paragraphs 3 to 7.

(9) An implementing legal regulation shall stipulate the amount of the deposit for selected types

of returnable deposit packaging or for returnable deposit packaging intended for selected types of products.

(10) A person who puts into circulation beverages in packaging which is not returnable deposit packaging shall offer identical beverages also in returnable deposit packaging, provided these beverages are placed on the market in such packaging. This obligation shall not apply to persons placing these beverages into circulation on retail premises of an area smaller than 200 m^2.

Government regulation no. 481/2012 Coll. on the restriction of the use of certain hazardous substances in electrical and electronic equipment

Section 4 - Restrictions on the use of certain hazardous substances

(1) Electrical and electronic equipment placed on the market must not contain hazardous substances specified in Annex 1 to this Regulation, unless stated otherwise below. The prohibition of the content of hazardous substances in electrical and electronic equipment pursuant to Annex no. 1 to this Regulation shall also apply to the content of such substances in cables and spare parts intended for repair or re-use, functional upgrading or capacity increase.

ANNEX 3

A brief summary of existing waste prevention measures as laid down in the current CR Waste Management Plan

Existing preventative measures as applied in waste management are part of chapter 3.1 of the CR Waste management plan still in force. Waste prevention measures, reduction of the amount of waste and mitigation of the hazardous properties thereof. The chapter is comprised of 12 self-contained measures (denoted a - l). The Waste management plan (hereinafter referred to as "the WMP") is subjected to regular evaluations using the form of so-called Evaluation reports on the implementation of Government regulation no. 197/2003 Coll.

a) Initiate and encourage by all available means, changes to the production processes toward low-waste and waste-free technologies and toward a higher utilisation of waste where produced.

Evaluation instruments: science and research projects, the degree of support extended to programmes (SEF, OPE), operating conditions laid down as mandatory in integrated BAT based permits.

Progress-of-implementation status based on the evaluation reports: implementation in progress without reservations.

b) Elaborate analysis into the possibilities of replacement of materials and products such that, on expiry of their life span, might negatively impact human health or the environment when re-used or disposed of.

Evaluation instruments: science and research projects, National Cleaner Production programme.

Progress-of-implementation status based on the evaluation reports: implementation in progress, with some reservations (no specific tasks were formulated or assigned on time for the elaboration of the analysis).

c) Replace hazardous substances and components used are raw materials by less hazardous materials wherever this is technically possible.

Evaluation instruments: legislative amendments, science and research projects.

Progress-of-implementation status based on the evaluation reports: implementation in progress without reservations.

d) Minimise the volume and weight of products while preserving their functionality;

Evaluation instruments: National Cleaner Production programme, National programme of labelling environmentally friendly products, science and research projects.

Progress-of-implementation status based on the evaluation reports: implementation in progress without reservations.

e) Create conditions encouraging the use of returnable, multiple-use packaging.

Evaluation instruments: establishing a balance of packaging placed on the market by the clients of an authorised packaging company, science and research projects, LCA analysis, legislative amendments.

Progress-of-implementation status based on the evaluation reports: implementation in progress without reservations.

f) Encourage by all available means the introduction of environmental management systems, in particular the system of the International Organisation for Standardisation, the National programme of introducing corporate management and audit systems with focus on the aspects of environmental protection.

Evaluation instruments: the numbers of certified companies (ISO 14001, EMAS, the ‚CERTIFICATION' programme, the ‚TRH MPO' programme of the MIT, etc.), the funding available for certification, support to the SEF.

Progress-of-implementation status based on the evaluation reports: implementation in progress without reservations.

g) Within the sectoral framework, implement the National Cleaner Production programme and the Czech Republic State Environmental Fund programmes to spread and foster preventative procedures conducive to curbing the amounts of waste produced and to mitigate the hazardous properties thereof.

Evaluation instruments: the activity of the National Cleaner Production Centre, implementation of the Partnership for Sustainable Consumption and Production (SC&P) project, science and research projects, support to the SEF and OPE.

Progress-of-implementation status based on the evaluation reports: implementation in progress, with reservations (as to the future existence of the Cleaner Production Centre).

h) Make efforts at all levels of public administration to induce effective changes to waste management conducive to an enhanced quality of management and responsibility in decision-making.

Evaluation instruments: science and research projects, operation of the 'Infoodpady' *i.e.*, 'WasteInfo' information portal, an accredited training course, drawing up of methodology documents, methodological guidance.

Progress-of-implementation status based on the evaluation reports: implementation in progress without reservations.

i) Make efforts to modify the behaviour of both the business community and citizens toward according priority to products which are beneficial as regards their impact on human health and environment.

Evaluation instruments: National programme of labelling environmentally friendly products (EFP, EFS, EU eco-labels, SDEC, EPD). Support to the EEAR State Programme.

Progress-of-implementation status based on the evaluation reports: implementation in progress without reservations.

j) Implement the environmental education and awareness programme for the area of waste management including an improved public access to waste management related information.

Evaluation instruments: supporting the EEAR State Programme, publishing a Statistical Yearbook of CR waste management, publishing a report on the CR environment, support to the SEF, support to science and research projects.

Progress-of-implementation status based on evaluation reports: implementation in progress without reservations.

k) Support all forms of voluntary activities in both production and the non-producing areas.

Evaluation instruments: support to the SEF, support to the certification of business companies, support to science and research.

Progress-of-implementation status based on evaluation reports: implementation in progress without reservations.

l) Draw up Czech Republic's implementation programmes for specific groups of waste based on analyses produced pursuant to this Plan.

Evaluation instruments: the CR WMP implementation programmes.

Progress-of-implementation status based on evaluation reports: completed in 2005.

ANNEX 4:

Description of the various programmes run by the CR Technology Agency

Programme Alpha

The ALPHA programme is focused on the promotion of applied research and experimental development, in particular in the areas of progressive technologies, materials and systems, of energy sources, and of environmental protection and formation, and also in the area of sustainable development of transport. The knowledge acquired, as applied in the form of innovative solutions, will bring about a strengthening of the performance of business subjects and a growth of competitiveness of Czech Republic's economy and society. Thus it will upgrade the quality of life of the population and the quality of environment over-all.

The ALPHA programme is broken down into 3 sub-programmes:

- Progressive technologies, materials and systems
- Energy sources and environmental protection and formation
- Sustainable development in the area of transport.

The programme is designed to run for a period of six years (2011 - 2016) during which a total of CZK 7.5 bln was to be disbursed. The first public tender was called on 24 March 2010, the second public tender in succession was called on 20 July 2011. The third and last public tender under the Alpha Programme was called on 6 July 2012. The recipients of project support can be independent business subjects (both juridical and natural persons) as well as research organisations; the ALPHA programme will extend particular support to their joint projects.

Programme Beta

The programme of public procurement in the areas of research, experimental development and innovation, geared to cater to the needs of state administration, called „BETA" (hereinafter referred to only as „the BETA programme"), was approved by a Government resolution no. 54 of 19 January 2011. On 10 February 2011 the TACR Agency launched the first round of selection under the BETA programme and called upon the state administration bodies taking part in the BETA programme to identify their research needs for 2011.

The term research needs is used to designate concrete topics and problems that any given state administration body wishes to address by calling a public tender in the area of research.

For the years 2011 and 2012, TACR has chosen 101 topics relative to which they called public tenders or have preparations underway for a contract award procedure. Owing to the great number of public tenders called, the challenging nature of the contract award procedures and the administrative duties connected with these procedures, TACR proposed that both the selection of topics (research needs) and the public procurement procedure proper be simplified. These and other modification suggestions were contained in the proposal for an amendment of the BETA programme submitted for the Czech Republic Cabinet's approval early in 2013.

Programme Omega

The programme is focused on encouraging applied research and experimental development projects expected to yield outputs with a high potential for implementation in a number of areas of the life of Czech Republic's society. The range of topics addressed by the programme is in line with thepriorities set by the CR National research, development and innovation policy for the 2009 - 2015 period. The knowledge acquired will contribute to pinpointing those factors and processes that are determining and influencing the functioning and advancement of Czech society in the context of ongoing European integration and worldwide globalisation.

The main objectives of the programme are strengthening of research activities in the area of applied social sciences and implementation of these activities to enhancing the competitiveness and the quality of lives of the citizens of the Czech Republic, and a well-balanced socio-economic development of society. This programme also admits the promotion of experimental development

projects. Under the OMEGA programme, projects may be submitted by research organisations as well as by business companies, juridical persons only, meeting the definition of an applicant pursuant to Act no. 130/2002 Coll. and the Community Framework for State Aid for Research and Development and Innovation (2006/C 323/01).

Programme Gamma

The programme is focused on promoting the verification of the results of applied research and experimental development (hereinafter referred to only as "R&D") from the point of view of their practical use and the preparation thereof for a subsequent commercial application. The main objective of the programme is to support and to substantially upgrade the effectiveness of transformation of R&D results achieved in research organisations and/or in co-operation between research organisations and business companies to the form of practical applications suitable for commercial use, thus assisting their introduction into practice.

The programme is subdivided into two sub/programmes having different modes of implementation and different recipients/beneficiaries.

- Sub-programme 1 is focused on promoting the verification of the practical usability of R&D results originating in research organisations and having a high potential for implementation in new or perfected products, manufacturing processes or services with a high value added and a high probability of strengthening competitiveness. Sub-programme 1 is also orientated on a systemic support to that phase of R&D which begins by obtaining a practically usable R&D result and ending by having verified its potential for commercial use in the form of a model, functional sample or prototype. Only research organisations may be the recipients.
- Sub-programme 2 is focused on promoting projects of applied research and in particular of experimental development demonstrably leading to a commercialisation of the results obtained which however will no longer be the subject of support. This amounts to supporting those projects which incorporate the finishing stages of producing a functional prototype, verification of its properties, verification of a test series, and assessment of all technological, economic, social, health-related and other impacts of the innovated product or service. Only business companies may be the recipients. Research organisations may participate as further project participants.

Programme Delta

The objective of the DELTA programme is to amplify the number of concrete results of applied research and experimental development in areas where an agreement has been reached with a foreign partner, that will successfully be introduced into practice thus bolstering Czech Republic's competitiveness through supporting bilateral or, as the case may be, multi-lateral co-operation of top-level Czech and foreign participants. The projects selected have to respond to present-day or future needs of the given country, defined in the Czech Republic by the National priorities of targeted research, experimental development and innovation.

The DELTA programme has been designed to run for a period of 6 years (2014 - 2019). Public tenders will be called four times a year at the most, relative to projects to be implemented in co-operation with one or more partner agencies at the same time. In compliance with Czech Republic Government resolution no. 668 of 28 August 2013 the DELTA programme will be funded from Czech Republic's state budget, to a level depending on the resources available therein.

Competence Centres

The programme is focused on the promotion and activities of research, development and innovation centres active in progressive disciplines having a high application and innovation potential and good prospects for substantially bolstering Czech Republic's competitiveness.

Therefore, in linkage to the main objective of the programme, which is raising the competitiveness of the CR, the programme stimulates the establishment and activities of such research, development and innovation centres that will be innovative, competitive, sustainable in the long term, will possess

market potential, and will concentrate research and application capacities from the public and private sectors.

Changes to the programme of the Competence Centres reflect the knowledge acquired in the first round of public procurement and, as of recently, integrate the National priorities of targeted research, development and innovation as approved by Government resolution no. 552 of 19 July 2012.

Within the framework of the TACR projects, they are concerned with waste prevention, such as:

- Analysis of material streams of waste electrical and electronic equipment and of the possibilities for increasing the rates of recycling, utilisation and re-use thereof.
- Research into, and monitoring of, hazardous components contained in municipal waste.
- Promotion of material utilisation of the biological component of municipal waste, as a substitute for non-renewable resources, and of soil quality improvement.
- Bio-degradable plastics in the processes of waste management.
- Environmentally friendly nanotechnologies and biotechnologies as applied to water and soil decontamination treatment.
- Evaluation of the effectiveness of public environmental awareness and education instruments (PEAE).
- Effective implementation in practice of voluntary instruments of environmental policy.
- Establishment and verification of quantitative methods of economic assessment of the impacts of environmental protection policies on business companies and households.

ANNEX 5

Description of the activities pursued by selected charity organisations

Red Cross

Czech Red Cross (hereinafter also referred to as CRC) co-operates in the social arena with companies engaged in the collection and ecological processing of second-hand textiles, footwear or toys. The CRC has entered into a partnership with E+B textil, s.r.o.; their co-operation so far is concentrated in Prague and in Brno (currently operating more than 120 collection containers); the collection containers bear the CRC logo and the Textileco Collecting & Recycling logo. Co-operation is planned to expand to further regions. In cases where no collection container is available in a given region, the clothing may be handed, as a rule, in at the CRC clothing collection centre.

The textiles collected not only assist people in need through the services of the CRC (primarily, the clothes are distributed to social institutions operated by CRC or to clothing centres) but also help developing countries.

Another group of textile waste serves for recycling in various forms – the manufacture of carpets, insulation, cleaning/wiping cloths, comminution of damaged textiles followed by the production of new fibre, etc. A part of the goods – ca. 5-8% out of the total amount collected – can be channelled to second-hand store chains. This commercial segment is destined not only for covering the costs incurred in connection with the business plan of E+B textil, s.r.o.. but also to assist the needy – thanks to funding of selected CRC projects in the social area. Textiles entirely unfit for use are disposed of in an environmentally friendly manner.

Charita Česká republika (Czech Republic Charity)

Czech Republic Charity is the largest non-governmental provider of social and health services in the Czech Republic, with a history spanning more than a hundred years. It is part of the Roman-Catholic Church. The main activity of CR Charity is assisting the needy on Czech territory. It is also engaged in the areas of education and of assistance to foreigners in distress.

Its activities relative to the collection of second-hand clothing and its subsequent distribution to the needy is rather just an ancillary activity. The Charity operates several humanitarian warehouses on CR territory where clothing is stored and so-called 'social wardrobes' are housed. Here the clothing is accepted for humanitarian purposes and also is handed out. Dispensation is only possible based on a recommendation by the Social Affairs Division of the town hall.

Diackonie Broumov

Diakonie Broumov is a charity organisation operating a unique system of collection of second-hand clothing in the Czech Republic. Described in a simplified fashion, the entire system consists in that worn clothes are handed in (into metal containers provided with the recipient's labels), together with footwear or utensils at a collection point from where they are taken to the train station, re-loaded to freight cars and dispatched to the town of Broumov. On arrival in Broumov, all this is stored away in warehouses and gradually handed over for processing. Some 50 persons take part in these activities, most of them belonging to the socially weak classes. Thus, these people are given an opportunity to work in a partially protected ambiance. Many of them are preparing to enter the open labour market or to re-join the society. The work programmes make a significant contribution to the social services provided.

Presently there are practically no measures in existence on the national scale. At the moment, Diakonie Broumov operates 480 yellow-painted containers for worn clothing. There are 31 Diacony collection points at waste centres/collection yards. For example, there are more than 50 additional containers located at various points in Prague; most of these containers were purchased by the District Town Halls of Prague districts.

The mainstay of activity making it possible to carry out the organisation's mission is the work with donated textiles and other things. Thanks to the understanding and assistance of tens of thousands of donors, Diakonie Broumov collects this second-hand clothing, interior decoration materials and other textiles, utensils and other needed things either in its own centres or with assistance hundreds of volunteers who collect the donations from individual donors.

The following can be handed in for these collection: summer and winter clothing (ladies' and men's wear, children's clothing), bedclothes, bedsheets, towels, dishcloths, curtains, fabrics (1m^2 minimum; cuttings and clippings are not accepted), home utensils (tableware and dishware, gasses – all this undamaged), feathers/down, quilts, pillows, blankets and footwear (undamaged, pairs bound together or tied with rubber straps to avoid getting lost).

The activities of Diacony Broumov are a classical example of extending the life span of products and of waste prevention. In addition an environmental impact they also greatly impact the socio-economic situation of society.

ANNEX 6

Current activities of the major collective systems engaged in the take-back of electrical equipment and batteries

ASEKOL

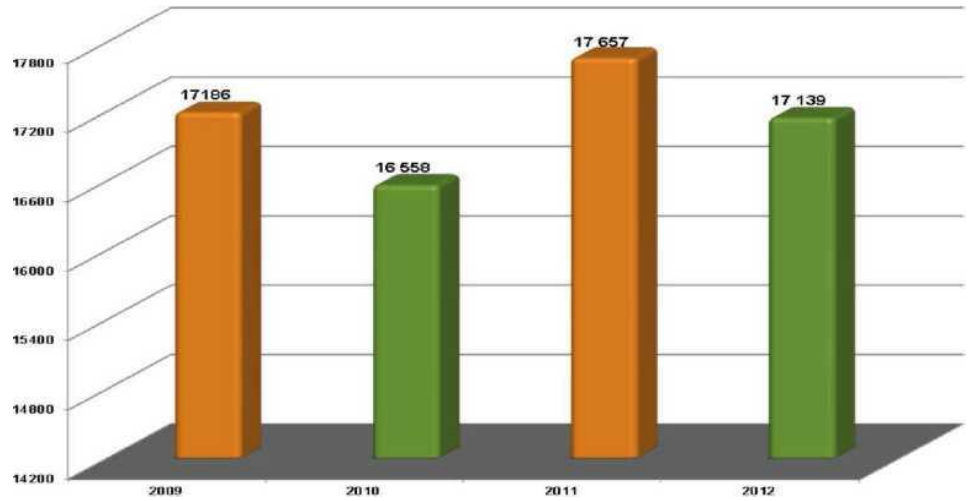
ASEKOL, s.r.o. is a business company that organises, on behalf of manufacturers and importers of electrical and electronic equipment, a nation-wide system of take-back of these types of equipment, *i.e.*, collection, transport and recycling of electrical and electronic equipment including the funding of the entire system. ASEKOL operates a so-called collective system of take-back of electrical and electronic equipment; manufacturers or importers of electrical and electronic equipment may avail themselves of its services.

ASEKOL was founded in July, 2005 by forefront representatives of the consumer electronics as well as office, telecommunications and computer technology markets.

In 2012, a network of more than 14.5 thousand collections points managed to collect 17,139 tonnes of end-of-life electrical and electronic equipment no longer in operation.

Diagram no. 1. Results of collection of electrical and electronic equipment under the ASEKOL scheme during the 2009 - 2012 period

Results of collection of electrical and electronic equipment in 2009-2012 (in tonnes)



Source: Asekol

Table no. 1. Environmental benefits of the collection and recycling of television sets, monitors and sundry electrical items in 2012 in the CR

	TV sets, monitors	Minor electrical items	Total
Amounts collected in 2012, in kg	12 974 114	4165 198	17 139 312
Electric power savings (MWh)	96 737	101 006	197 743
Crude oil saving (litres)	1 873 706	7 175 803	9 049 509
Savings of primary raw materials (tonnes)	6 361	1 874	8 235
Quantity of water saved (m^3)	499 982	385 697	885 679
Reduction in the production of hazardous waste (tonnes)	94 672	79 972	174 644
Reduction of CO_2 production (tonnes CO_2 equiv.)	25 903	18 577	44 480

Source: Asekol

Examples of activities pursued under the 'Asekol' scheme:

Collecting yard of the year

The activity was aimed at finding the best collecting yard that should have the best possible accessibility, should be tidy, with obliging staff, favourable working hours and a broad range of commodities collected. Participation was by means of a search engine at the website www.sberne-dvory.cz where a collecting yard could be found and evaluated in each of six categories by awarding it the number of stars that it deserved in the contest participants' opinion.

A campaign by ASEKOL, s.r.o. - "Take a fancy to your red container"

The intention of the campaign was to draw attention to the existence of red-coloured containers destined from electrical waste. Whoever brought the greatest quantity of old electrical equipment (mobile phones, chargers, cameras, players, etc.) could win a brand-new mobile phone. On an interactive map you could find the red container located nearest to you so that the participants would learn everything about recycling outdated electrical appliances.

Other events:

- *'Šrotonátor' i.e., a scrapping gadget (focused on pupils at schools).*
- *'Nakrmte Šrotozemšťana 2008', i.e., 'Feed the Scrapman 2008' (this project was aimed at information citizens, in a traditional entertainment manner, of the need to sort outdated electrical equipment).*
- *'Zahoď mobil', i.e. 'Throw away your mobile phone' (aiming to gain access to, and to collect for the scheme, any old, no longer used mobile phones stored away at homes).*

Evaluation of the activities:

Focused on recycling of electrical and electronic equipment – waste management.

EKOLAMP

The 'EKOLAMP' collective system brings together manufacturers and importers of lighting equipment; on their behalf it discharges the take-back and recycling obligations in the area of lighting equipment, lighting fixtures and luminaires, as stipulated by the Waste Act. For this purpose, EKOLAMP, s.r.o. operates a collection, cartage and processing scheme on the territory of the Czech Republic aimed at lighting equipment. The collection scheme is funded from recycling fees paid by the manufacturers and importers, in proportion to their market shares, into the EKOLAMP collective system.

The lighting equipment is collected via a continuously expanding network of collection points. These points are equipped by EKOLAMP with special collection bins (metal containers or cardboard boxes). When filled up they are hauled to a so-called consolidation points (of which now there are 12 at various points all over the CR) whence the lighting equipment are transferred in greater quantities to an environment friendly processing facility.

EKOLAMP's activity is orientated on recycling Schedule 5 waste lighting equipment which comprises, according to legislation in force, the following items:

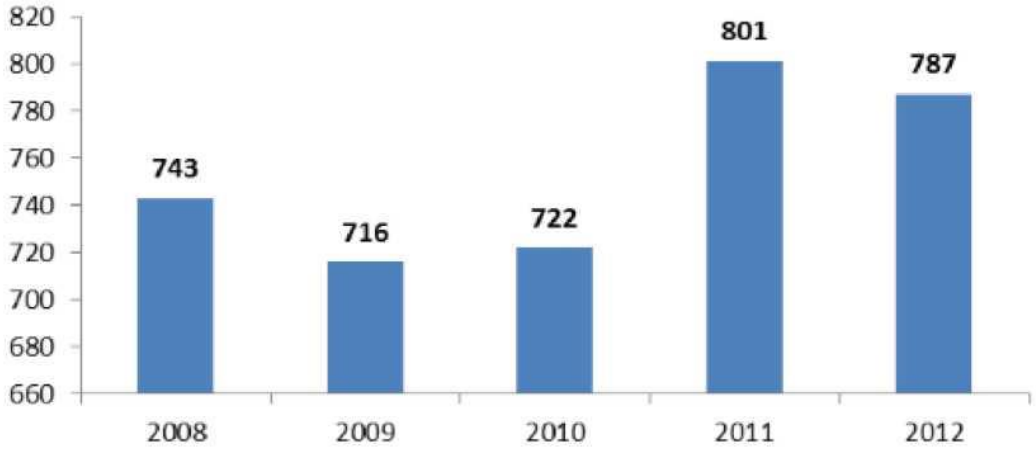
- lighting fixtures for fluorescent lamps except for home lighting fixtures;
- linear fluorescent lamps;
- compact fluorescent lamps;
- high-pressure discharge lighting systems including high-pressure sodium, halide and mixed metal halide lamps;
- low-pressure sodium discharge tubes;
- other lighting systems or fixtures designed for illumination or lighting control, except for directly heated filament incandescent lamps.

EKOLAMP under the take-back scheme pursuant to the Waste Act does not collect ordinary, reflector and halogen lamps/bulbs and luminaires designed for home use. The lighting equipment used is collected via a network of collecting points, individual cartage schemes and consolidation points. Installations and cartage of used lighting equipment throughout the Czech Republic are provided free of charge, and bonuses can be gained depending on the quantity handed in.

The amount of lighting equipment collected so far under the collective system was 5,163 tonnes (diagram no. 2). This amounts to approximately 3 million compact and linear fluorescence lamps, gas discharge lamps and LEDs. Out of these, thousands of tonnes of glass, plastics and noble metals have been recovered. EKOLAMP has also collected and handed over for recycling 1,492 tonnes

of industrial lighting equipment. Also, more than 161 kilograms of toxic mercury, which is not harmful as long as contained within the lighting sources and is necessary for the lighting effect, has found its way back to industrial re-use or safe disposal. Mercury precisely is the material that has to be re-processed in an environmentally friendly manner. A total of 3,693 collecting points were installed over a period of eight years. Business companies and municipalities were responsible for the greatest share of these facilities.

Diagram no. 2: Balance of energy-saving lighting equipment collected during the 2008 - 2012 period (tonnes/year)



Source: Ekolamp

Examples of activities pursued under the 'Ekolamp' scheme:

Activities of the 'Ecolamp' collection scheme are orientated predominantly in the provision of information disseminated on flyers/prospectuses.

- *Information flyer - Ekolamp - Let's think ecologically.*
- *Information flyer - Ekolamp - Turn in your fluorescent lamp, they contain mercury.*
- *Ekolamp for children - An entertaining maze.*

Evaluation of the activities:

The activities are concerned expressly with the take-back and controlled hand-over of lighting equipment. Ekolamp uses mainly the life cycle methodology in its campaigns. Its activities do not address the issues of waste prevention.

ELEKTROWIN

ELEKTROWIN, a.s. was founded on 25 May 2005 to operate a collective system focused on the manufacturers of large-sized and small-sized home appliances. It became registered with the Companies Register on 15 July 2005, whereupon on 5 December, the ruling on the registration of the ELEKTROWIN collective system became final and the system was registered with the MEnv under the registration number KH 001/05-ECZ. The line of business is operating and managing a collective system which discharges, on the manufacturers´ behalf, their obligations as laid down in Act no. 185/2001 Coll. on Waste, as amended, for separate collection, take-back, re-processing, utilisation and disposal of electrical and electronic equipment and of waste electrical and electronic equipment.

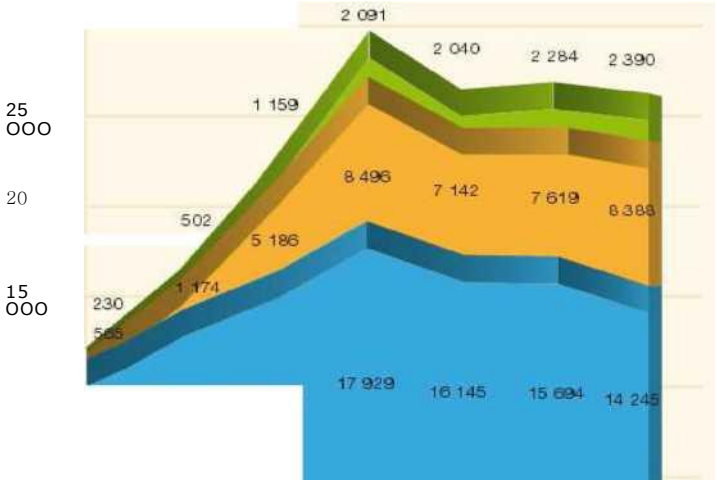
For increasing the take-back and the degree of completeness of appliances, it proved useful in the past years to position the WINTAINERs in the municipal waste centres/collecting yards. Especially in the larger municipalities this has led to a substantial increase of the quantity of waste collected. Generally the collection via WINTAINERs has been higher than average and the total share of appliances collected in the WINTAINERs has approached 50 %. By the end of 2012 our company has deployed 465 of them. This has significantly contributed to attaining a record, 78% degree

of completeness of refrigerators. There has also been a marked increase in the number of stationary containers destined for small-sized appliances, from 150 in 2011 to 287 in 2012. A 'roaming' container - a variation to mobile cartage - has embarked on a total of 33 trips to 27 municipal clusters last year, including two trips of one-month duration to various districts of the capital city of Prague. The container was stationed in a total of 483 municipalities having a potential of 532,071 inhabitants, and has hauled away a total of 182 tonnes of EEE. A highly positive aspect has been the high degree of completeness of the appliances compared to the collection provided for under the mobile cartage schemes.

An increase in the amount of large-sized appliances collected in 2012 was 10.09 on the 2011 figure.

In refrigeration there has been a decrease of 10.17 % while the amount of small-sized appliances has increased 4.64 %. The over-all decrease of the amounts collected was 2.29 % (diagram no. 3).

Diagram no. 3. Take-back trends experienced at Elektrowin, s.r.o.



Source: Elektrowin

Once again, the greatest share of take-back in 2012 was due to the municipal take-back points, in all collection categories (refrigeration, large-sized appliances and small-sized appliances). The year-on -year increase on the part of vendors has risen 1.3 %. The latest vendors registered with the ELEKTROWIN scheme have brought the total share to more than 80 % of all vendors of electrical and electronic equipment in the CR.

Examples of activities under the 'ELEKTROWIN' scheme:

'Recyklohraní aneb Ukliďme si svět' (The Recycling Watch Game or Let's tidy up our world)

The project ‚Ukliďme si svět' *i.e.*, ‚Let's tidy up our world' underwent the greatest change in 2012 when for the school year 2012/2013 it was combined with the school recycling programme 'Recyklohraní' *i.e.*, ‚The Recycling Watch Game' implemented jointly with other collective systems ASEKOL, EKOLAMP and ECOBAT and with the authorised packager EKOKOM. Combining these has created a base including more than 3,000 schools registered. The decision to combine the two projects and to re-introduce them in the next school year under the combined designation „The Recycling Watch Game or Let's tidy up our world!" issued mainly from the response of the schools, inasmuch as both these projects rest on similar principles and their synergy will boost the effectiveness of the funds spent. In the 5th year of the *Let's tidy up our world* project, 741 registered schools delivered 327 tonnes of end-of-life electrical and electronic equipment taken out of operation. The ELEKTROWIN team paid a visit to 50 more schools with their programme combining entertainment and education, entitled *The Recycling Watch*. On the whole, nearly 8,000 participants from 100 schools brought in some 3,000 minor electrical items on the day the event was held.

The Iron Week

On 17-19 September 2012, the 'Iron Week' event was a follow-up to a successful project implemented in 2011, entitled 'Let us not be buried under'. In places with a high concentration of people (on the squares náměstí Míru in Prague and Horní náměstí in Olomouc), ELEKTROWIN was pointing out, in an entertaining manner, the necessity and advantages of recycling end-of-life electrical and electronic equipment. Right on site it was possible to hand in electrical equipment no longer needed; moreover, on Wednesday these items were taken over from the visitors by the finalists

of the Miss Fire-fighter contest who have thus become a link connecting the Iron Week with the Recycle with Firemen project.

Other awareness raising projects

ELEKTROWIN has carried on with the 'Entrance ticket in exchange for an appliance' project. In 2012, co-operation was agreed with 11 major zoos in the country where the take-back of nearly 3,000 pcs of appliances took place. As a new activity, ELEKTROWIN with their stall took part in the Rag Day celebrations in Prague, Brno and Hradec Králové. There was a WINTAINER on site, serving not only as a place of deposit for the appliances brought in but aso for presentation of the take-back operation.

Evaluation of the activities:

The activity under this scheme has been rather intense and the events tend to attract a considerable crowd. The focus of these activities is mostly recycling and take-back, rather than prevention. In view of the interconnection with other collective systems the effectiveness of these events could be increased in the future. There definitely is room for information campaigns here focused on waste prevention.

REMA SYSTEM

REMA Systém, a.s. was established for the purpose of meeting the obligations arising from the Waste Act. The system was founded on 14 February 2005. The establishment of REMA Systém, a.s. was initiated by Czech Republic's importers and manufacturers of information technologies and telecommunications. The main mission of the company is to provide for an effective recycling of electrical and electronic waste (OEEE). To this end, REMA Systém, a.s. takes care of organising the collection, sorting, loading and recycling all over the Czech Republic.

Within the framework if its activity REMA System is focused on comprehensive solutions for all groups of electrical and electronic equipment.

REMA System is the holder of ISO 9001:2008 and ISO 14001:2004 certificates. The company also holds a certificate for its Environmental Product Declarations, EPD, in a project aiming to ascertain the environmental impacts as well as the economic, energy and material intensiveness of operating a so-called collective system of take-back of end-of-life electrical and electronic equipment.

Example of the activities pursued by 'REMA System':

'Be lazy'

Nearly 100 tonnes of electric waste was withdrawn from Czech households during the course of a single year of duration of the 'Be lazy' project. In making use of this free-of-charge service of collecting electrical appliances taken out of operation, the most active part of the population were the citizens of Prague who had thus disposed of one third of the total volume collected. Most frequently, people are getting rid in the manner of freezers and refrigerators constituting 28 % of all the appliances taken away. The same share also belongs to television sets weeded out. The take-back service from households under the 'Be lazy' project is operational all over the territory of the Czech Republic. Second to Prague, the most active administrative regions are Central Bohemia with a share of nearly 17 % and South Moravia with 9 % of the total volume collected. Thanks to this service for which people do not pay, they can have all their outdated electrical appliances taken away. The service is resorted to most for the removal of large-sized household appliances, i.e., mainly, freezers, refrigerators, television sets, washing machines, dishwashers and cooking stoves. Such appliances account for 79 % of all the equipment carted away. To the contrary, with small-sized household appliances there is the greatest risk that they would end up in mixed waste.

Evaluation of the activities:

In analogy to the activities of the collective systems described above, the activities of the REMA System are focused on take-back and recycling.

RETELA

RETELA, s.r.o. operates a collective system; it was founded on 11. 05. 2005 as a 100% subsidiary of Czech-Moravian Electrotechnical Association, which in turn is a member of the CR Confederation of Industry and Transport and, simultaneously, of the European association ORGALIME that brings together the associations of mechanical and electrical engineering from the EU Member States. RETELA, s.r.o. was established for the purpose of operating the RETELA collective system upon which, pursuant to section 37h, paragraph 1), letter c) of Act no. 185/2001 Coll., the manufacturers

of electrical and electronic equipment may transfer their obligations arising from that Act.

Examples of the activities of RETELA:

The School project

A project of **free-of-charge installation at schools of plastic boxes** to be used for small-sized home appliances. The purport of the scheme is to facilitate the hand-over of used small-sized appliances (ca. 30x30x20cm) thus preventing their being thrown away in places where the do not belong (to garbage bins for municipal waste or, in a worse case still, just out-of-doors).

The take-back points are located mainly in the waste centres/collecting yards and at the vendors of electrical and electronic equipment. Practice has shown however, that in addition to handing over large-sized appliances, such as refrigerators and television sets, citizens use these facilities also to get rid of outdated small-sized appliances. These latter appliances however, owing to a lack of awareness and poor availability of places where they could be handed over free-of-charge, still tend to be thrown by the consumers in to the garbage cans, understandably entailing unfortunate consequences for the environment. Therefore, our system cal also be joined by schools which thus may become take-back points for electrical and electronic equipment and be awarded a certificate for 'promotion of environment friendly behaviour'.

Evaluation of the activities:

An informational, stimulating project focused on collection and subsequent recycling of smaller-sized waste electrical and electronic equipment. Does not involve any elements of prevention.

ECOBAT

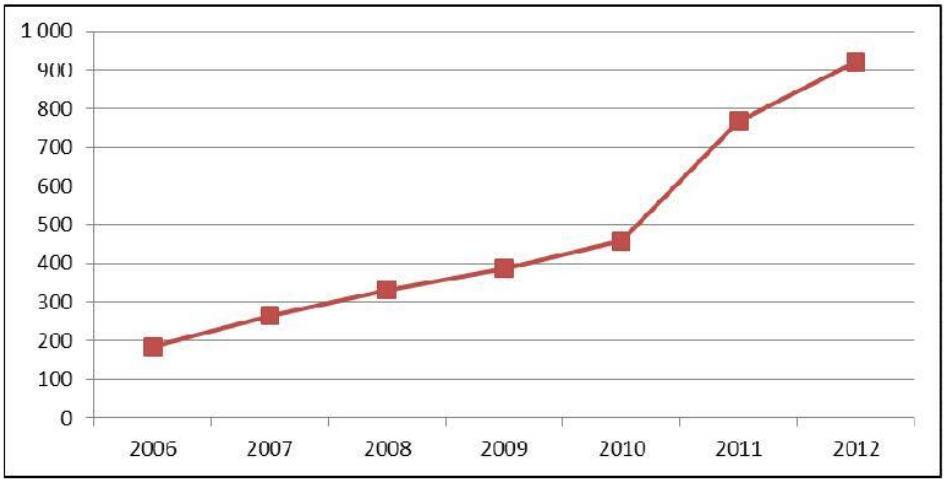
ECOBAT, s.r.o. occupies the greatest share of the take-back market and its collective system keeps tab of the collection and re-processing of portable batteries and accumulators. ECOBAT is a not-for-profit organisation which since 2002 has been taking care of the take-back and recycling of portable batteries in the Czech Republic. In 2012 the company took back a total of 921 tonnes of batteries (amounting to a 20% increase on the year 2011); ths represented nearly 16 million pcs of portable batteries. Currently, ECOBAT operates more than 16,800 take-back points.

Table no. 2. Comparison of the take-back of batteries in 2011 and 2012

2011	Amount collected in 2011 (tonnes)	768
	Amount per capita (kg)	*0,07*
2012	Amount collected in 2012 (tonnes)	921
	Amount per capita (kg)	*0,09*

Source: results attained under the Ecobat collective scheme

Diagram no. 4: Trends in the collection of batteries in 2006 – 2012 (tonnes)



Source: ECOBAT, s.r.o.

Activities pursued under the ECOBAT scheme:

The ECOBAT collective system, in co-operation with the ASEKOL and EKOLAMP collective systems and the authorised packager EKO-KOM, has prepared a long-term school recycling project called 'RECYKLOHRANÍ' *i.e*., The Recycling Watch Game, with the intention of promoting environmental education at Czech Republic's primary and secondary schools. The description of the project can be found in the foregoing chapters.

Evaluation of the activities:

A motivating project focused on collection and subsequent recycling of dead batteries. Does not involve any elements of prevention. In the batteries area there is room for activities focused on waste prevention, to say the least for the purpose of giving preference to re-chargeable batteries over one-off batteries.

REMA Battery

REMA Battery, s.r.o. is a not-for-profit business company established for the purpose of taking over the obligations of battery and accumulator manufacturers and importers arising from the Waste Act. REMA Battery received its authorisation to operating a collective system of take-back of batteries and accumulators pursuant to a Ministry of the Environment ruling of 15. 12. 2009. In 2011 the market share of the manufacturers who joined the scheme of REMA Battery amounted to approximately 9 % in the group of portable batteries and accumulators. The company provides for the collection of portable batteries and accumulators mainly based on a deployment of collecting boxes.

ANNEX 7

List of abbreviations

ADRA	Adventist Development and Relief Agency
AIA	Automobile Importers' Association
AMA	Automobile manufacturers' association
AOS	authorised packaging company
a.s.	joint stock company, shareholding company
BREF	Best Available Techniques Reference Documents
BDW	biodegradable waste
BDMW	biodegradable municipal waste
CAF	Common Assessment Framework
CENIA	Czech Environmental Information Agency
CRV	Central register of vehicles of the CR
CFBF	Czech Food Bank Federation
ČSÚ/CSO	Czech Statistical Office
CR	Czech Republic
CR WMP	Czech Republic's Waste management plant
CW WMIS	Car wrecks module of the Waste information system
EEE	electrical and electronic equipment
EMS	Environmental Management System
EMAS	Eco Management and Audit Scheme
Enviro	environment
EPD	Environmental Product Declaration
EPBD	Energy Performance of Buildings
EC	European Community
EFS	environment friendly service
EFP	environment friendly product
ETAP	Environmental Technologies Action Plan
EU	European Union
EEAR	environmental education and awareness raising
GPP	Green Public Procurement
GDP	gross domestic product
IPPC	Integrated Pollution Prevention and Control
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
LCT	Life Cycle Thinking
MW	municipal waste
MA21	Local agenda 21
MAg	Ministry of Agriculture
MEnv	Ministry of the Environment
MoRD	Ministry for Regional Development
MIT	Ministry of Industry and Trade
MLW	Ministry of Labour and Social Affairs
MMW	mixed municipal waste
MoEYS	Ministry of Education, Youth and Sports
MoH	Ministry of Health
NNO	non-governmental non-profit organisation
PBB	polybrominated biphenyls
PBDE	polybrominated diphenyl ethers
PCB	polychlorinated biphenyls
PEAE	Public environmental awareness and education
PK	Food Industry Chamber
R&D	Research and Development
REACH	Registration, Evaluation, Authorization Chemicals
SC&P	sustainable consumption and production
SDEC,	self-declared environmental claim

SDO	construction and demolition wastes
SEF	State Environmental Fund
SMO	Towns and Municipalities Association
STEP	Ecological Consultancies Network
SVDS	Secondary materials buyers'and processors' association
TACR	Czech Republic Technology Agency
TGM VUV	T.G. Masaryk Water Management Research Institute, a public research institution
v.v.i.	public research institution
WM	waste management
WMIS	Waste management information system
WMCe	Waste Management Centre

ANNEX 8

List of Tables

ANNEX 9

List of Diagrams

ANNEX 10

List of information sources and basic references

- Waste Directive no. 98/2008/EC
- Act no. 185/2001 Coll. on Wastes, as amended by subsequent legislation
- Act no. 447/2001 Coll. on Packaging, as amended by subsequent legislation
- Draft CR Waste management plan 2015-2024, MEnv, Prague 2014.
- CR Secondary materials policy, MIT, Prague 2014.
- Processing of technical documentation for Czech Republic's Waste prevention programme, T. G. M. Water Management Research Institute, Prague 2013.
- Information on the implementation of voluntary and other preventative instruments, MEnv, Prague 2011.
- Report on the implementation of voluntary instruments in 2011, MEnv, Prague.
- CENIA, Czech Environmental Information Agency, www.cenia.cz, 2013
- *Preparing a Waste Prevention Programme,* Guidance document, European Commission, Brussels, October 2012.
- *Guidelines on the preparation of food waste prevention programmes,* European Commission, Brussels, August 2011.
- *Prevention of food waste in restaurants, hotels, canteens,* Norden, Copenhagen, August 2012.
- *Assessment of initiatives to prevent waste from building and construction sectors* Norden, Copenhagen, 2011.
- *Prevention of Textile Waste Material flows of textiles in three Nordic countries and suggestions on policy instruments,* Norden, Copenhagen, October 2012.
- *Communication from the Commission to the European Parliament and to the Council - The raw materials initiative - Meeting our critical needs for growth and jobs in Europe (COM(2008) 0699),* European Commission, Brussels 3008.
- *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Roadmap to a resource efficient Europe (COM(2011) 571 final),* European Commission, Brussels 2011.
- *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Towards a circular economy: A zero waste programme for Europe (COM(2014) 398 final),* European Commission, Brussels 2014.
- *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - On resource efficiency opportunities in the building sector (COM(2014) 445 final),* European Commission, Brussels 2014.

A range of supporting documentation was used in drafting the document, and consultations were held with a number of institutions, such as: T. G. M. Water Management Research Institute, CENIA, the CR Ministry of Industry and Trade, Ministry of Finance, Czech Statistical Office, Czech Chamber of Commerce CR, CR Confederation of Industry, CR Towns and Municipalities Association, Czech Association for Waste Management, CR Food Industry Chamber, Duha Movement (Friends of the Earth of the Czech Republic), Arnika Association, Charita CR, Food banks, Diakonie Broumov.