ANNEX

Liste der durchgeführten Projektaktivitäten zum Endbericht Projekt COMPASK für den Zeitraum 18. Juli 2002 – 31. Dezember 2004

Liste der durchgeführten Aktivitäten zum Endbericht zum Projekt COMPASK

Projektdauer: 18. Juli 2002 - 31. Dezember 2004 – 31. März 2005

In der nachfolgenden Tabelle sind die wichtigsten Treffen/Workshops/Projektpräsentationen stichwortartig aufgeführt:
In der nachfolgenden Tabelle sind die wichtigsten Treffen/Workshops/Exkursionen stichwortartig aufgeführt:

Datum	**Aktivität / Thema / Ergebnisse**
Anrechenbare Projektvorbereitung 18. Juli 2002 – 1. Januar 2003	
19.07.2002	Präsentation der Projektidee „Dezentrale Kompostierung in Österreich und der Slowakei“ vor der INTERREG IIIA - Stelle Wien (MA 27): Klärung antragstechnischer Fragen zwecks Einreichung Mitte Oktober 2002
31.07.2002	Vorbereitungstreffen mit potentiellen Partnern in der Slowakei: Gemeinde Sväty Jur (Herr A. Achberger, Bürgermeister; Dr. S. Antalova, slowakische Konsulentin): Zusage seitens der slowakischen Partner Projektskizze
02.08.2002	Projektvorbereitungstreffen mit AWV Schwechat: potentielle Partnerschaft, hängt allerdings von der Obmannschaft ab; Zusage der österreichischen Konsulentin J. Leutgöb; Konzepterstellung, erste Kostenkalkulationen
05.08.2002	Telefonische Besprechung mit NÖ-Landesregierung Abteilung RU3: Zusage über Projektpartnerschaft; Emailkorrespondenz diesbzgl.; Kostenkalkulation
06.08.2002	Projektvorbereitungstreffen mit potentiellen Partnern in der Slowakei: Gemeinde Sväty Jur - Herr A. Achberger, Bürgermeister, slowakischer Universität Akademia Istropolitana Nova (AINOVA) in Sväty Jur: Zusage seitens der AINOVA; Planung der Kooperation Zusage (per Email) über Projektpartnerschaft seitens der „umweltberatung“ Wien – Kompetenzzentrum „Grünraum und Garten“
07.08.2002	Telefonische Besprechung mit MA 48: Zusage über Projektpartnerschaft; Emailkorrespondenz diesbzgl.; Kostenkalkulation
29.08.2002	Projektvorbereitungstreffen mit Gemeindeverband für Abfallbehandlung – Bezirk Bruck / Leitha (GABL) aufgrund der Absage vom AWV Schwechat: Zusage über Projektpartnerschaft Kostenkalkulation

Datum	Aktivität / Thema / Ergebnisse
09.09.2002	Projektvorbereitungstreffen mit der INTERREG IIIA – Stelle NÖ (RU2) und mit dem zukünftigen Partner NÖ-RU3 (St. Pölten): Planung der Projektkooperation
07.10.2002	Telefonische Besprechung mit dem Geschäftsführer des GABL (Bruck / Leitha): Konkretisierung der Leistungen und der Kosten-/Eigenleistungbeteiligung
10.10.2002	Einreichung des Projektes COMPASK unter INTERREG IIIA – Österreich – Slowakei in Wien (MA 27)
Okt. – Nov. 2002	*Unterstützung der Einreichung (PHARE CBC) des slowakischen Antrags zum Projekt im November 2002*
19.11.2002	Telefonische Besprechung über die Form der Beteiligung der österreichischen Konsulentin J. Leutgöb nach Stellungwechsel zur „umweltberatung“ Wien – Kompetenzzentrum „Abfallwirtschaft“ mit dem Technischen Sekretariat für Interreg IIIa in Wien
22.11.2002	Erstes Projekttreffen – Slowakei: Vorbereitung des slowakischen (PHARE) Antrags: Konkretisierung der Workpackages und der Arbeitsteilung der slowakischen Partner; erste Konkretisierung des Werkvertrags für die slowakische Konsulentin Dr. S. Antalova
26.11.2002	Projekttreffen mit dem Partner NÖ-RU3 (in ÖGUT): detaillierte Planung der ersten Schritte der Projektarbeit
28.11.2002	Detailbesprechung des Fördervertrages mit MA 27 (und Bestätigung über die Förderungszusage)
29.11.2002	Projekttreffen mit dem Partner die „umweltberatung“ Wien und mit der österreichischen Konsulentin J. Leutgöb (in ÖGUT): detaillierte Planung der ersten Schritte der Projektarbeit
16.12.2002	Projektgespräch ÖGUT – MA 27 – BMLFUW (in MA 27): Festlegung der Förderungsmodalitäten; Detailplanung des Fördervertrags
Projektbeginn 1. Januar 2003 **Projektaktivitäten im Zeitraum der 1. Teilrechnung:** **1. Januar 2003 – 31. Oktober 2003**	
14.01.2003	Telefonische Besprechung mit MA 27 über eventuelle Umwidmung von Projektmitteln nach bereits erfolgter Ablehnung des slowak. PHARE-Antrags
17.01.2003	Project Opening Workshop (in ÖGUT) - Teilnehmer: Österreich: ÖGUT, MA48, die “umweltberatung” Wien, GABL (Bruck / Leitha), österr. Konsulentin J. Leutgöb (NÖ-RU3 wegen Erkrankung nicht vertreten) Slowakei: AINOVA, slowakische Konsulentin Dr. S. Antalova, Abfallbeauftragte der Pilotgemeinde Sväty Jur: Berichte über den Ist-Zustand der Bioabfallsituation in Österreich, Wien, Niederösterreich, Slowakei und Sväty Jur Umplanung der Projektaktivitäten, nachdem der PHARE-Antrag abgelehnt ist.
Datum	**Aktivität / Thema / Ergebnisse**
29.01.2003	Projekttreffen der österreichischen Partner (in MA 48) – Teilnehmer: MA 48, die „umweltberatung“ Wien, österr. Konsulentin J. Leutgöb, ÖGUT, RUSZ: Planung der Projektaktivitäten in den (Wiener) Schulen;

	Planung möglicher Schulkooperation AT-SK
06.02.2003	Projekttreffen in Bratislava – Teilnehmer sl. Konsulentin Dr. S. Antalova, ÖGUT: Review des ersten Drafts des Werkverträge für die Slowakei (AINOVA und Konsulentin Dr. S. Antalova); Planung der Meinungsforschung in Sväty Jur; Planung des Know-How-Transfer-Besuchs in NÖ
10.03.2003	Projekttreffen des österreichischen Projektteams (in St. Pölten) – Teilnehmer: ÖGUT, NÖ-RU3, die "umweltberatung" Wien, GABL (Bruck / Leitha), österr. Konsulentin J. Leutgöb (MA 48 wegen Erkrankung nicht vertreten) Planung der konkreten Anknüpfung NÖ-Wien; Planung des Besuchs in NÖ (Bruck / Leitha) Planung Besuch in Sv. Jur Besprechung der online-Stellung des Projektes (auf www.biowaste.at) Rolle und Beteiligung der NÖ-RU§ bis Ende 2003
26.04.2003	Stadtfest Sväty Jur: auf eigene Initiative der lokalen NGOs und AINOVA-Studenten wurde die Eigenkompostierung vorgestellt. Das österreichische Konsortium hat sich mit Text- und Bildervorlagen für die Erstellung vor Ort der Poster und mit Konsulentenbetreuung zur Öffentlichkeitsarbeit beteiligt. *(ohne Protokoll, da Aktivität ausserhalb des Projektes; Fotodokumentation vorhanden)*
27.03.2003	Projekttreffen (in Bratislava) – Teilnehmer: slowakische Konsulentin Dr. S. Antalova, AINOVA-Student A. Berziansky, ÖGUT, österr. Konsulentin J. Leutgöb: Vorstellung des AINOVA-Studenten, der die Meinungsforschungarbeit in Sväty Jur durchführen wird; Besprechung der Meinungsforschungsarbeit Planung der Öffentlichkeitsarbeit zur Vorstellung der Eigenkompostierung beim Gemeindefest in Sväty Jur Ende Arpil 2003 Festlegung der slowakischen Teilnehmer beim Besuch von Bruck / Leitha im Mai 2003
29.04.2003	Vorbereitungsrundfahrt (Trautmannsdorf – Deutsch Haslau – Bruck/Leitha) zu den Objekten in Bezirk Bruck / Leitha für den Besuch im Mai 2003 – Teilnehmer: C.Mynha (GABL), österr. Konsulentin J. Leutgöb, ÖGUT
Datum	**Aktivität / Thema / Ergebnisse**
01.05.2003 - laufend	Online-Stellung und laufende Aktualisierung des Projektes COMPASK (www.biowaste.at und http://www.oegut.at/themen/moe/compask.html resp. http://www.oegut.at/themen/moe/compask_e.html)
06.05.2003	Know-How-Erfahrungsbesuch im Bezirk Bruck / Leitha (Schwechat, Mannersdorf, Trautmannsdorf, Deutsch Haslau, Bruck / Leitha) – Teilnehmerlisten lt. Protokoll (alle österreichischen und alle slowakischen Projektpartner, Vertreter von Öffentlichkeitseinrichtungen in der Pilotgemeinde)
03.07.2003	Fertigstellung der Meinungsuntersuchung zur Gartenkompostierung in der Pilotgemeinde Sväty Jur vom AINOVA-Studenten A. Breziansky
09.07.2003	Besichtigung der Pilotgemeinde Sväty Jur – Teilnehmerlisten lt. Protokoll (alle österreichischen und alle slowakischen Projektpartner, Vertreter von

	Öffentlichkeitseinrichtungen in der Pilotgemeinde): Siedlungsstruktur der Pilotgemeinde – Anpassung der Öffentlichkeitsarbeit an den lokalen Bedingungen Besichtigung der (jetzigen) Möglichkeiten zur Bioabfallbehandlung in der Pilotgemeinde und im Bezirk Pezinok (zu dem die Pilotgemeinde gehört)
31.07.2003	Fertigstellung der ersten vier Workpackages des Implementation Plan von der slow. Konsulentin Dr. Sona Antalova lt. Projektplan: Ist-Zustand Abfallwirtschaft in der Pilotgemeinde Sväty Jur und im Bezirk Pezinok (slowakische Rahmenbedingungen und monetäre Bewertung inkludiert)
Juli – 08.08.2003	*Unterstützung der erneuten Einreichung (PHARE CBC) des slowakischen Antrags zum Projekt am 11.08.2003*
08.08.2003	Besprechung mit AINOVA-Projektmanager T. Mtibelashvili (Bahnhof Bratislava Petrzalka) bzgl. der PHARE-Einreichungsformulars, Übergabe an Originalunterlagen für die Einreichung am, 11.08.2003 *(ohne Protokoll, da Besprechungsgegenstand das PHARE-Formular selbst; Treffen per Email mit AINOVA und MA 27 dokumentiert)*
02.10.2003	Treffen österr. Projektpartner (Konsulentin J. Leutgöb, G. Bayer, A. Kisliakova, M. Pendl, S. Spiegler, C. Mynha) in der ÖGUT zur Planung der Projektaktivitäten in den ersten 6 Monaten im Jahr 2004 und konkret der zu beginnenden Schulaktivitäten („Kleine Sperlgasse“ 1020 Wien, SPZ Steinbrechergasse, 1220 Wien); Besprechung der ersten vier Workpackages des Implementation Plan
Aug.–Dez. 2003	Vorbereitung der 1. Teilrechnungsstellung, begleitender Zwischenbericht
laufend seit Oktober 2003	Regelung der Stundensatzberechnung für MA 48 (Herrn DI W. Rogalski) gemeinsam mit MA 48 (Herrn DI W. Rogalski), MA 2 (Herr Bauer), MA 27 (Frau Mag. U. Neuhauser)

Datum	Aktivität / Thema / Ergebnisse
Projektaktivitäten im Zeitraum der 2. Teilrechnung: 1. November 2003 – 31. Oktober 2004	
25.11.2003	Projektpräsentation bei der vom österreichischen EU Umweltbüro organisierten Veranstaltung „Erweiterte Umwelt – Zusammenarbeit Österreich – Slowakei“ österreichischer Umweltminister J. Pröll, slowakischer Umweltminister László Miklós, slowakischer Botschafter in Wien L'ubor Bystrický 300 Teilnehmer; s. „Der Standard“, 27.11.2003, Seite 6
01.12.2003	Beginn des Schulprojektes: „promotion day“ für die Gartenkompostierung in der Schule SPZ Steinbrechergasse, 1220 Wien (je 4 Stunden pro Klasse 2A und 2B)
04.12.2003	Projekttreffen Dr. S. Antalova, DI A. Kisliakova, DI G. Bayer, J. Leutgöb: Besprechung der revidierten Version der ersten vier Workpackages des Implementation Plan; Konkretisierung der Inhalte für den zweiten Teil Präsentation beim slowakischen Umweltministerium
28.01.2004	Projektpräsentation beim EU-Bioabfallseminar in Zilina (Slowakei): Teilnahmeländer: Österreich, Italien, Slowakei Referenten: europäische Bioabfallexperten (DI Florian Amlinger, Dr. Enzo Favoino), slowakische Gemeindevertreter, Bioabfallbereichsleiterin beim slowakischen Umweltministerium (DI Marta Fratricova), DI Albena Kisliakova
25.03.2004	Projektpräsentation beim Klimabündnis – Arbeitstreffen Niederösterreich und Slowakei, St. Pölten Referenten: österreichische Bioabfallexperten (DI Florian Amlinger, Johanna Leutgöb), „Friends of the Earth“ (Dr. Branislav Monok), slowakische Bioabfallexpertin (Dr. Sona Antalova), DI Albena Kisliakova
laufend seit 01.12.2003	Schulsubprojekt „Bioabfallgartenkompostierung im schulischen Bereich“
laufend seit Oktober 2003	Regelung der Stundensatzberechnung für MA 48 (DI W. Rogalski) gemeinsam mit MA 48 (DI W. Rogalski), MA 2 (Herr Bauer), MA 27 (Mag. U. Neuhauser)
laufend seit Dezember 2003	Regelung des Vertragformulars über die Ko-Finanzierung durch das BMLFUW gemeinsam mit Mag. Moser und Herrn Mag. Michler (beide BMLFUW), Mag. Neuhauser (MA 27)
April 2004	Übersetzung der Schulunterlagen und der Einführungsmaterialien für Bioabfallgartenkompostierung, ausgearbeitet von Sibylle Spiegler und Manfred Pendl, ins Slowakische (durch DI M. Graner, MA 48)
April 2004	Planung der Arbeit der Steering Group in Sväty Jur (Leutgöb, Spiegler, Pendl, Kisliakova)
April 2004	*Unterstützung der Einreichung des PHARE COMPASK Antrags am durch AINOVA zum 3. Mal (Einreichung am 30.04.2004)*
Datum	**Aktivität / Thema / Ergebnisse**
30.04.2004	Erste Sitzung der Steering Group on Garden Composting in Sväty Jur: Ziele, Rahmen und Massnahmen (Gesamtausblick) Teilnehmer:

	SK: Temo Mtibelashvili (AINOVA), Andrej Breziansky (Sväty Jur NGO „Atelier“), Eva Mrafkova (Lehrerin an der Schule in Sväty Jur), Vierka Pavelekova (Lehrerin an der Schule in Pezinok), Lea Mrafkova (Bürgerin von Sväty Jur) AT: Johanna Leutgöb (österr. Konsulentin), Albena Kisliakova (ÖGUT)
18.05.2004	Zweite Sitzung der Steering Group on Garden Composting in Sväty Jur: Ziele, Rahmen und Massnahmen (Gesamtausblick) Teilnehmer: SK: Temo Mtibelashvili (AINOVA), Andrej Breziansky (Sväty Jur NGO „Atelier“), Eva Mrafkova (Lehrerin an der Schule in Sväty Jur), Vierka Pavelekova (Lehrerin an der Schule in Pezinok), Lea Mrafkova (Bürgerin von Sväty Jur) AT: Kisliakova (ÖGUT), Leutgöb (AT Konsulentin)
22.06.2004	Dritte Sitzung der Steering Group on Garden Composting in Sväty Jur und Erste Sitzung der Steering Group mit der Gemeindeleitung von Sväty Jur: Konkretisierung der Ziele, Planung der gemeinsamen Aktivitäten und des Schulaustauschbesuchs in Wien im Herbst Teilnehmer: SK: Temo Mtibelashvili (AINOVA), Zanechalova (Abfallbeauftragte Sväty Jur), Mr. Sadlon (Umweltbeauftragter Sväty Jur), Breziansky (Sväty Jur NGO „Atelier“), Eva Mrafkova (Lehrerin an der Schule in Sväty Jur), Lea Mrafkova (Bürgerin von Sväty Jur) AT: Albena Kisliakova (OeGUT)
Juli – September 2004	Publikation im *Waste World Magazine*, Issue September / October 2004: zusammenfassender Artikel über das Projekt
13.09.2004	Vierte Sitzung (erste eigenständige Sitzung) der Steering Group on Garden Composting: zweite Sitzung mit der Gemeindeleitung von Sväty Jur: Besprechung des Standes der Müllanalysen/-gebühren; Vorschlag für Lösungsfindung bei der neugestellten Situation (s. Protokoll) Teilnehmer: SK: Temo Mtibelashvili (AINOVA), Zanechalova (Abfallbeauftragte Sväty Jur), Mr. Sadlon (Umweltbeauftragter Sväty Jur), Eva Mrafkova (Lehrerin an der Schule in Sväty Jur), Lea Mrafkova (Bürgerin von Sväty Jur), Vierka Pavelekova (Lehrerin an der Schule in Pezinok)

Datum	Aktivität / Thema / Ergebnisse
20.09.2004	Fünfte Sitzung der Steering Group: dritte Situzng mit der Gemeindeleitung von Sväty Jur: Vorstellung des Implementation Plans von Sona Antalova, fachliche Diskussion über die einzuführenden Müllgebühren, Finalisierung der Lösungsfindung bei der neugestellten Situation, endgültige Konkretisierung der gemeinsamen Aktivitäten Teilnehmer: SK: Temo Mtibelashvili (AINOVA), Sona Antalova (SK Konsulentin), Zanechalova (Abfallbeauftragte Sväty Jur), Mr. Sadlon (Umweltbeauftragter Sväty Jur), Eva Mrafkova (Lehrerin an der Schule in Sväty Jur), Andrej Breziansky (Sväty Jur NGO „Atelier“) AT: Kisliakova (ÖGUT)
15.10.2004	Schulaustauschbesuch von 25 Kindern der Schule in Sväty Jur in Wien (Schule Molitorg. 11) und des Abfallsammelzentrums in Hainburg
18.10.2004	Presseaussendung (NÖ – ÖGUT) österreichweit anläßlich der initiierten Schulkooperation
Projektaktivitäten im Zeitraum der 3. Teilrechnung: 1. November 2004 – 31. Dezember 2004 – 31. März 2005	
12.11.2004	Initiierung des Projektes in den beiden Kindergärten in Sväty Jur SK: Temo Mtibelashvili (AINOVA), Andrej Breziansky (Sväty Jur NGO „Atelier“), two kindergartens of Sväty Jur AT: Kisliakova (ÖGUT), Leutgöb (AT Konsulentin)
29.11.2004	Projekttag im SPZ „Steinbrechergasse“ Teilnehmer: Manfred Pendl, „die umweltberatung“ Wien
Oktober 2003 – April 2004	Regelung der Stundensatzberechnung für MA 48 (Herrn DI W. Rogalski) gemeinsam mit MA 48 (Herrn DI W. Rogalski), MA 2 (Herr Bauer), MA 27 (Frau Mag. U. Neuhauser)
laufend seit März 2004	Regelung des Fördervertragformulars MA 27 – MA 48 – ÖGUT gemeinsam mit MA 48 (DI W. Rogalski), MA 27 (Mag. U. Neuhauser)
laufend seit Dezember 2003	Regelung des Vertragformulars über die Ko-Finanzierung durch das BMLFUW gemeinsam mit Mag. Moser und Mag. Michler (beide BMLFUW) und Mag. Neuhauser (MA 27)
Feb.- März 2005	Presseaussendung (MA 48 – ÖGUT) österreichweit anläßlich der initiierten Schulkooperation
Jan.-März 2005	Vorbereitung der 3. Rechnungslegung; Endbericht

Zu allen Treffen, Workshops, Exkursionen und relevante Telefonaten wurden **Protokolle** angefertigt, die auf Anfrage gerne übermittelt werden. Eine online Projektdokumentation ist seit Mai 2003 unter http://www.oegut.at/themen/moe/compask.html (Deutsch) und http://www.oegut.at/themen/moe/compask_e.html (English) verfügbar und laufend erweitert.

ANNEX

Questionnaire for the Opinion Poll on Garden Biowaste Composting in Sväty Jur, June 2003

Author: Andrey Breziansky, AINOVA, Sväty Jur

Academia Istropolitana Nova, Pálffyho kaštieľ, Prostredná 13, Svätý Jur

Questionnaire

Dear master /lady,

I have the honour to adress and request you to cooperation by developing of my final school research: „The opportunity for decentralised composting of biowaste in Svaty Jur"

I declare that datas acquired from this questionnaire will be used only for scientific purposes and they will be contributed to elaboration of my final research on AINnova. The questionnaire is anonymous and I please you to censcientious raise. Your answer mark by cross or write verbal.

Premediate thanks for your attention. **Andrej Brezianský**

What type of house do you live in ?

Family house – individual □

- common court □

Flat building

Do you have garden close to your house/ flat

No □

Yes - to 50 m^2 □

- above 50 m^2 □

Did you meet the term „composting" and do you know what does it mean to compost biowaste?

Yes, I know very well what does it mean. □

I know what does it mean but only quarry. □

I don`t know what I can imagine under this term □

Do you have compost site and are you composing garden or kitchen waste ?

Yes,
but I`m composting only garden waste □

Yes,
I`m compostig both types of biowaste □

No,
I have not compost site □

↓

Why do you do no composting?

↓ I think it`s redundant and useless work □

I don`t have time to apply □

↓ I don`t have conditions, I`m living in a flat □

Biowaste create cca. 40% of household waste. Part of my work is also suggestion to MsÚ Svätý Jur (municipal office). If the city will pay less for landfilling of biowaste, there is possibility to privilege less or no biowaste producers . Present conditions are not satisfying. Annualy tax for waste handling is 400,-SK per head, doesn`t matter how much of waste is produced .

If you are living in a flat- building. Will yoube ready to take out kitchen biowaste to a common compost site and time to take care – the same way like for taking care of staircase cleaning?

↓ Yes □

No □

↓ ↓

Will you welcomea per bin charge Instead of per head charge?

Yes □
No □

Will you to start composting If the waste tax were 100,-SK less

Yes □
No □

Will you start composting, if You pay per bin and not per capita?

Yes □
No □

Will you start composting, if the Municipal office provides you with a compost site construction also with „manual“?

Yes □
No □

PERSONAL DATA:

Sex: male □
female □

Age : 18-30 years □
31-45 years □
46-60 years □
60 and more years □

How many members has your household ?_____

Date:_____

ANNEX

Implementation Plan on Introducing the Garden Biowaste Composting in Sväty Jur, July 2004

Author: Dr. Sona Antalova, Slovak Expert, Bratislava

RNDr. Soňa Antalová, PhD.

Implementation plan

Decentralised composting in Svätý Jur, Slovakia

2003

Content

Contracting parties

Contractor: Österreichishce Gesellschat fur Umvelt und Technik (ÖGUT),
Hollandstrase 10/46,
1020 Vienna
Austria

Supplier: RNDr. Soňa Antalová, CSc. – ASECO
Environmental consultant

Levočská 11
851 01 Bratislava
Slovakia

Project code: **COMPASKK**

I. Introduction

In the frame of INTEREG III project “Decentralised Composting as an approach toward a sustainable bio waste management in Austria and Slovakia” has been started by Austrian experts. The management of this project is provided by OGUT in Vienna.

Slovakia was not granted PHARE CBC project for the year 2003 to ensure the sufficient co-operation for which Slovak partners applied. Under these conditions a new approach was accepted according to which the Austrian side will prepare the implementation plan for the pilot project ensuring the transfer of know-how from Austria to Slovakia. The place for pilot project execution has been carefully chosen taking into consideration location, size, population and types of residences. The town Svätý Jur was indicated as the most suitable place to be involved in this project.

The town of Svätý Jur is located on the boundary-line of the Malé Karpaty Mountains and Podunajská nížina (lowland), in the vicinity of Bratislava (13km). It is one of the oldest villages where vineyards have formed its background (setting) since the period of Roman Empire. The town has 4 651 inhabitants (47% of men, 53% of women) mostly living in individual houses.

The economic activities of Svätý Jur are focused on growing of vineyards and production of vine. In spite of the quite large area of agricultural land, the growing of corn and other cereals is supposed to be only a complementary activity. (For more information see Annex 1)

The municipality Sväty Jur represented by the mayor Mr. Alexander Achberger has expressed the will to support the pilot project and co-operate with Austrian experts directly and also through the co-operation with Academia Istropolitana NOVA Svätý Jur.

II. METHODOLOGY

At the first place the current status of waste management in Slovakia and relevant institutional set-up need to be understood and analysis of waste management at relevant levels executed in order to identify the basis for improvement. Also the options to achieve improvement should be considered, especially regarding the biodegradable waste management. Attention will be particularly focused on biodegradable waste in household waste, although it is not fully in compliance with EU definition of biodegradable waste (see Annex 2).

According to the Slovak legal instruments the municipality is responsible for household waste handling ensuring separate collection system and disposal. Each municipality has the right to decide what kind of separate collection system will be implemented and what method for waste handling and disposal will be applied. Of course household waste must be treated and disposed of according to the obligations stipulated in Waste Act and its daughter regulations and approved Waste Management Programme. Each municipality issues so called "Generally binding regulation for municipal waste handling" where all conditions and obligations are described in more details (see Annex 3). Citizens of the municipality shall act according to this regulation.

In the frame of Waste Management Programme of the Slovak Republic, as well as the Waste Management Programme of relevant district (Pezinok) and Waste Management Programme of municipality Svätý Jur the goals for the year 2005 were established and published in these documents and all waste producers are obliged to consider and apply practical measures to reach them. Such goals were also established for reduction of biodegradable waste in municipal waste going to landfills according to the new waste management legislation in Slovakia transposing the EU Landfill Directive.

According to this explanation the following data and information have to be collected:

- Data on municipal waste generation
- Data on household waste generation
- Data on biodegradable waste content in household waste
- The current status of biodegradable waste going to landfills
- The current status of municipal waste handling
- The current status of household waste handling
- The economy of municipal waste management
- Existing plan for municipal waste management
- Characteristics of municipality, population, residential area, public activities

Collected data have to be processed and evaluated according to the following objectives:

- To describe the existing situation regarding the municipal and household waste generation and handling

- To estimate how much biodegradable waste can be generated in households
- To estimate how much biodegradable waste could be treated by composting
- To assess the existing measures to reach goals from WMPs regarding biodegradable waste going to landfills
- To assess the possibility of municipality to implement more economically effective measures in municipal waste management
- To find the way to encourage public awareness, to increase environmental education and knowledge regarding biodegradable waste recovery

According to the evaluated situation in the Slovak Republic and know-how from Austria it is expected to prepare implementation plan to introduce and maintain decentralised composting in municipality Svätý Jur where implementation plan shall deal with following level of implementation:

- Planning and administration
- Regulation/infrastructure
- Monitoring and inspection
- Information and reporting

For each level of implementation plan recommendations will be prepared and presented.

III. CURRENT STATUS OF WASTE MANAGEMENT

III.1. Waste management legislation in Slovakia

Current legislation regulated waste management in Slovakia is represented by following legal instruments:

- Order of Government of the SR No. 22/2003 Col. on binding limits for waste packaging recovery and recycling referring to the total weight of packaging waste

- Order of MoE SR No.25/2003 Col. on details of end of-life vehicles processing
- Order of MoE SR No. 5/2003 Col. on Execution of some Provisions of Act on Packaging
- Act of the National Council of SR No. 529/2002 Col. on Packaging and Amendment of Some Acts
- Act of the National Council of SR No. 223/2001 Col. on Waste and on a Change of and Amendment to Some Acts as ammended;
- Order of MoE SR No. 283/2001 on the Execution of Some Provisions of the Waste Act
- Order of MoE SR No. 284/2001 on Waste Catalogue;
- Order of MoE SR No. 234/2001 on Waste Classification according to Green, Amber and Red Lists of Wastes and on Standard Documents for Waste Transport;
- Order of MoE SR No. 273/2001 on Authorisation, Providing the Expertise in Waste Management, the Appointment of Persons Authorised to Issue the Expertise and Examinations of Professional Skills of those Persons;
- Act of National Council of SR No 327/1996 Col. on Charges for Waste Disposal;
- Guideline of MoE SR No. 8/1996-2.3., on the List of Sludge Deposits with Respect to Charges Stipulated by the Act of National Council of SR No 327/1996 Col. on Charges for Waste Disposal;
- Communication of Ministry of Foreign Affairs No. 60/1995 Col. on Acceding of Slovak Republic in Basle Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.
- Act of the National Council of SR No. 529/2002 Col. on Packaging and Amendment of Some Acts

At the local level the municipality of Svätý Jur has issued the generally binding regulation. (translated in English it is attached as the Annex.)

III.2. The Slovak Republic

Municipal Waste Generation and Handling

“Municipal waste shall mean household waste generated in a municipality by activities of individuals and waste of similar nature generated by activities of legal entities or individuals – entrepreneurs, as well as waste generated by the activities of the municipality while cleaning public roads and areas administered by the same and by the maintenance of public vegetation including parks and cemeteries” (Act no 223/2001).

According to new Waste Act, municipal sludge has been considered to be a fraction of the MSW and it is estimated to be 22% of MSW.
For this project the most important part of MSW is household waste, which contains the certain amount of biodegradable waste.

According to Statistical Office of the Slovak Republic (SOSR) all municipalities generated 1,706 million tons (sludge re-calculated as dry matter) in 2000, what was 315,9 kg/capita/year. According to the same source 8,9 kg of waste/capita/year were separately collected.

According to data of District Authorities – Regional information system about waste (RISO),which is maintained by Slovak Environmental Agency (SEA) the amount of municipal waste was 1,8 million tons and 19,4 kg of waste/person/year were separately collected.
It was agreed between SOSR and RISO that in the case of municipal waste data from SOSR will be considered as more precise.

Household waste composition is given in table bellow:

Table 1: Composition of household waste in 2000

part of waste	Percentage [%]
bio-waste	38
residue	30
paper	13
glass	8
plastics	7
hazardous components	1
metal	3

(Source: WMP SR until 2005)

Table 2 and figure 1 show that the major proportion of municipal waste (61,87%) was disposed at landfills, 12,21% by incineration and 2,12% by material recovery. Having compared the year 1999, the amount of landfilled waste decreased and material recovery slightly increased.

Table 2: Municipal Waste Handling in 2000 (in tons)

Waste	Volume		thereof							
			recovery			**disposal**				other method of handling
			material-recovery secondary raw material	Compos-ting	Energy	landfill		incinerator		
						at site of municipality	out of site	with energy use	with-out energy use	
Municipal waste total	1 706 721		36 196	84 795	826	297 109	758 815	203 464	4 970	320 542
thereof:	(t)	%								
Household waste	**889 130**	**52**	**28 786**	**1 963**	**329**	**181 670**	**556 590**	**117 017**	**1 947**	**825**
Like household waste	**203 860**	**12**	**2 337**	**158**	**50**	**36 527**	**84 166**	**80 089**	**156**	**373**

Selected waste containing hazardous matters	532		415	-	0	5	82	0	1	27
Waste from septic tanks and cesspools	367 231	22	1 968	48 446	-	-	-	-	-	316 816
Bulky household waste	63 442	4	1 466	949	61	21 043	37 772	1 014	553	581
Bulky waste	77 584	4	778	297	239	28 878	44 284	2 690	276	139
Street litter	41 813	2	346	72	7	17 972	22 503	257	262	390
Green waste	63 126	4	97	32 907	139	11 012	13 415	2 394	1 772	1 387

(Source: Statistical Office SR)

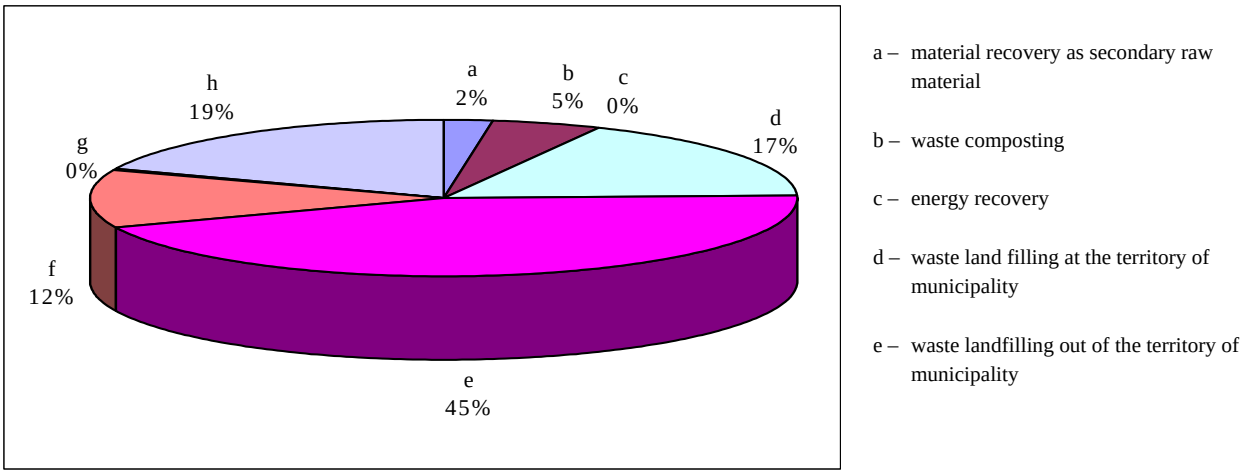


Figure 1: Methods of Municipal Waste Handling in Slovakia, 2000

The following table shows the handling with municipal waste in year 2000 and plan for 2005 according to Waste Management Plan of the Slovak Republic until 2005.

Table 3: Handling with municipal waste

	Year 2000		Goal for year 2005	
Recycling	**7 %**	**approx. 130 000 tons**	**13 %**	**approx. 250 000 tons**

Incineration	**12 %**	**approx. 200 000 tons**	**14 %**	**approx. 270 000 tons**
Landfilling	**62 %**	**approx. 1100 000tons**	**52 %**	**980 000 tons**

The prevailing option of MSW handling is disposal at landfills. There are only two MSW incinerators in Slovakia (Bratislava, Košice). The incinerator in Bratislava was reconstructed in 2002 and is fully in compliance with the requirements of EU and Slovak legislation. Its capacity is about 140 000 t/year. The incinerator located in Eastern part of Slovakia in Košice will have to be reconstructed or closed down after 2006, when transition period for achievement of compliance with legal requirements is over.

Biodegradable waste in household waste

In 1995 the proportion of the biodegradable waste in MSW was approx. 830.000 tons (biodegradable waste from household waste and other parts of biodegradable waste from MSW).

Next table shows the status of MSW and biodegradable waste in 1995, which is the year for calculation the basis to establish the goal of reduction of biodegradable waste disposed at landfills.

Table 4: Municipal solid waste generated in 1995, amount of biodegradable waste in MSW generated in 1995 and percentage of MSW disposed at landfills in 1995

Amount of MSW (kt)	MSW disposed at landfills (kt)	Amount of biodegradable waste (kt)	Percentage of MSW disposed at landfills
1 700	**1 352**	**830**	**80 %**

Source: Statistical Office of the Slovak Republic

In 2000 the proportion of biodegradable waste in the household waste was about 50% including waste paper and e.g. textile, i.e. the actual amount was approx. 550 000 t (calculated as 50% biodegradable portion of the sum of household waste amount (889 130 t, Table 2) and of similar to household waste amount (203 860 t, Table 2); the 50% portion of biodegradable waste is calculated as the sum of 38% biowaste and 13% waste paper, Table 1). Approx. 440 000 t of the biodegradable waste amount were disposed at landfills (80% - 1995 ratio, Table 4 - of 550 000 t). This means a mass reduction of the landfilled biodegradable waste in the municipal waste of 46% in 2000 compared to the total amount of biodegradable waste generated in 1995 (830 000 t, Table 4).

The goal that should be achieved in 2009 (according to Decree No. 283/2001 Col.) has already been met. Today the attention is focused on changes of the ratio of the material

recovery of the bio-waste (from municipal waste) to the incineration in favour of the material recovery.

The portion of biodegradable component (without paper) in both the household waste and the waste similar to household waste, is 38% that is approx. 420 000 tons. The percentage of paper in the same wastes is 13 % and the portion is 130 000 tons.

Estimated amount of biodegradable waste in household waste and its percentage in 2000 and for 2005 is presented in the following table:

Table 5: The ratio of material recovery to disposal of biodegradable waste in household waste

Bio-degradable waste in MSW	Material recovery		Disposal by incineration	
	Quantity	%	Quantity	%
Year 2000 (500 000 tons)	approx. 70kt	13	approx. 80kt	15
Year 2005 (600 000 tons)	approx. 180kt	30	approx. 100kt	17

Source: WMP of SR until 2005

Taking into consideration that average content of biodegradable waste in household waste is 38 % (without waste paper) the total amount of biodegradable waste in Slovakia could be cca 337 869 tons. Most of it is disposed of at landfills, only 12% is incinerated in municipal waste incinerators.

According to Statistical Office of the Slovak Republic the amount of household waste generated by capita is 164,69 kg and 38% representing biodegradable waste is 62,6 kg per capita.

Measures to reduce the volume of landfilled biodegradable waste (WMP of the SR until 2005)

In spite of the fact that the Slovak Republic has already met the goal of 25% reduction of biodegradable waste from the municipal waste currently landfilled from the total amount of biodegradable waste from municipal waste generated in 1995, there is need to continue in this trend and to focus attention on the qualitative improvement.

According to the principle of hierarchy of waste management, the material recovery should be privileged and therefore the ratio of material and energy recovery shall be changed.

Such a change can be done by proposed measures like following:

- To increase the separation of biodegradable waste through the either introduction or extension of the separation of the waste in households and municipalities

- To support the separate collection of biodegradable waste by an economic instrument (general sector of Recycling Fund and others)
- To investigate new economic instruments supporting both the collection and processing the waste by composting
- To handicap the waste disposal at landfills
- To build sufficient composting capacities
- To operate composting plants that produce the compost compliant with technical standards to be competitive
- To introduce the separate collection of the waste also in Bratislava and Košice and in such a way to reduce the portion of incineration of biodegradable waste
- To introduce an unified system of monitoring of the municipal waste composition in municipalities
- To introduce an unified methodological procedure (instructions) for the registration of the amounts of biodegradable waste disposed at landfills
- To use a unified explanation of the term ”biodegradable waste” and give instruction for calculation of its content in municipal waste.

III.3. District Pezinok

Municipal and household waste generation and handling

In the year 2000 the district Pezinok generated about 36 000 tons municipal waste. The methods of MSW handling and the amount of MSW handled by these methods are given in the following table.

Table 6: Municipal waste handling in 2000

	Amount [t]	**Percentage [%]**
Physic-chemical treatment	--	--
Biodegradable treatment	1 396,0850	3,86
Incineration	8,7000	0,02
Landfilling	16 156,4030	44,6
Other	18 262,6500	50,5
Reuse	341,5500	0,94
Storage	--	--
Not identified	--	--
Total	**36 156,3800**	**100**

Source: WMP of District Pezinok

Municipal waste generation was from 5 765 tons to 36 165 tons from year 1996 to 2000 as it is shown in the following table.

Table 7: Municipal waste generation and disposal in 1996 - 2000

		1996 [t]/ [%]	1997 [t]/ [%]	1998 [t]/ [%]	1999 [t]/ [%]	2000, [t]/ [%]
Municipal waste		**5 765,0175**	**18 647,84**	**8 924,149**	**24 083,706**	**36 165,388**
from this	incinerated	925,150	2,600	15,600	22,600	8,700
	[%]	16	0,013	24,1	9,38	0,02
	landfilled	2 771,755	6 426,940	6 074,424	14 190,041	16 156,403
	[%]	48	34,4	68	58,9	44,6

From data shown in the above table it is clear that household is disposed mostly at landfills, because there is no incinerators for MSW in district. About 36 000 tons of MSW has been generated in district Pezinok. From this only 16 156 tons was disposed of at landfills what represents part about 6 000 tons of biodegradable waste.

Household waste generation in district Pezinok is about 300 kg/cap./year and it represents 114 kg biodegradable waste per capita and year.

Measures to reduce biodegradable waste going to landfills

Waste Management Programme has defined the following measures to decrease biodegradable waste disposal at landfill.

- to increase separate collection of biodegradable waste in household in co-operation with public and all municipalities in district Pezinok to develop sufficient composting capacity
- to collect biodegradable waste separately and ensure its composting
- to construct facilities for biodegradable waste recovery
- to support separation activity by the economic instruments
- to introduce the unit system of analysis for household waste composition

III.4. Municipality Svätý Jur

Municipal and household waste generation in Svätý Jur

A few kinds of waste are generated in area of Svätý Jur by the institutions, companies, facilities and agricultural co-operative as well as by municipality. The most of them is represented by municipal waste. The following figure shows situation of municipal, household and biodegradable waste generation in the period of years1996 – 2002.

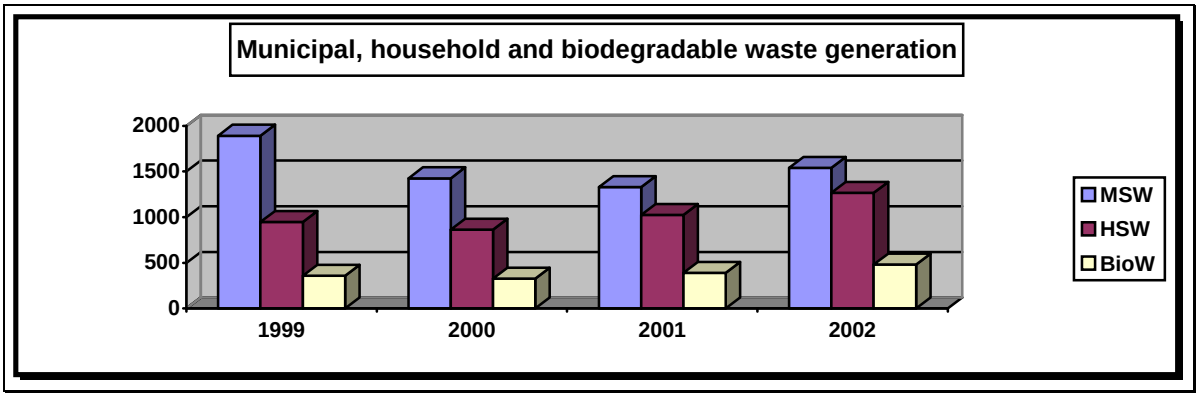


Table 8: Municipal, household and biodegradable waste generation calculated per capita in the period of years 1999 – 2002

Kind of waste	Total (tons)				Amount per capita (kg/cap.)			
	1999	2000	2001	2002	1999	2000	2001	2002
Municipal waste	1891,6	1 425,7	1 329,45	1 538,9	406,71	306,5	285,84	344,50
Household waste	947,8	862,3	1 024,75	1 264,8	203,78	185,4	220,30	283,14
Biodegradable waste	360,2	327,7	389,4	480,6	77,45	70,46	77,27	103,33

Source: Town council Svätý Jur

The classification of municipal waste changed for the year 2002 because of the introduction of new waste catalogue transposing the EU catalogue. Because of this it would not be correct to include the figure for 2002 into calculation of average value.

The average waste generation per capita in the town Svätý Jur is as bellow:

In the following table the amount of municipal and household waste disposed of at landfill in the period of years 1996 – 2002 is shown.

Table 9: Municipal and household waste disposed of at landfill

	1996	1997	1998	1999	2000	2001	2002
Municipal waste	1 150,6	1 317,8	1 459,7	1 851,3	1323,5	1329,3	1510,1*
Household waste	920,2	1 080,9	916,9	947,8	862,3	1024,6	1 264,8*
Biodegradable waste	349,6	410,7	348,4	360,2	327,7	389,4	480,6*

* after new waste catalogue enters into force household waste is not specified as before

In 2002 the content of biodegradable waste in household waste was cca 481 tons what represents 107,6 kg per capita per year and all that waste has been disposed at landfill.

The average value of biodegradable waste generation calculated for the period 1996 – 2001 is 364,33 t what represents 78,33 kg/cap.

In Waste Management Programme of town Svätý Jur until 2005 the goal for biodegradable waste in municipal waste is to reach the following targets:

Table 10: The goals for biodegradable waste treatment in 2005

	Material recovery	Energy recovery	Incineration	Landfilling	Other
Biodegradable waste	**40%**	**0**	**15%**	**30%**	**15%**

To reach 40% portion of material recovery means to separate and processed by composting about 150 - 170 t of biodegradable waste in Svätý Jur or nearly 32 - 37 kg per capita and year.

How the town wants to reach 15 % of biodegradable waste incineration and what means other option is not clear. This plan and goals seem to be unrealistic.

Measures to reduce biodegradable waste going to landfills

Waste Management Programme until 2005 issued by municipality of Svätý Jur has defined the following measures to decrease biodegradable waste disposal at landfill:

- to introduce separate collection of biodegradable waste from households in co-operation with public
- to collect biodegradable waste separately and ensure its composting
- to support these activities by economic instrument

Municipal waste disposal and treatment at the municipality Svätý Jur

July of 31 1996 the only landfill located in Svatý Jur was closed down due to improper technical conditions of operation. Municipal waste from Svätý Jur had to be transported and disposed of at landfill in Pezinok - Pezinské tehelne, a.s. owned and operated by brick kiln.

Municipality of Svätý Jur cannot construct and operate any landfill on the own area because of the hydro-geological conditions in this location.

Until the year 1994, Peat plant (Rašelinové závody) hired dunghill with the intention to clean up the soil contaminated by oil substances. Currently, producers of biodegradable waste that operate in the town can provide composting, particularly agriculture co-operative.

There is a problem of the illegal dumps of waste in 6 places and municipality has to clean them up using the finances from its budget.

There is no facility for municipal waste disposal at the territory of town Svätý Jur. Municipal waste is disposed of at landfill in Pezinok what means transport of waste in distance of 9 km.

According to Generally Binding Regulation of the municipality Svätý Jur from 2001, municipality is responsible for handling of municipal waste and for minor/light construction waste generated in the area of municipality. Moreover, municipality is responsible for handling with bulky waste and separately collected household waste with hazardous characteristics at least twice a year. In order to meet this legal requirement the municipality has contracted the private company PETMAS-Onyx Ltd. that provides whole district of Pezinok with such services.

Separate collection of household waste and plan for 2005

Municipality of Svätý Jur has already introduced separate collection of glass, paper and metal scrap with assumption that separate collection of plastics will be provided in 2003. Separately sorted household waste is not included in the total amount of waste generated in the city.

Table 11: Amount of collected fraction of municipal waste in kg/capita/year

Fraction of household waste	Pezinok district (1999)	Svätý Jur (2000)	Svätý Jur (2001)	Svätý Jur (2002)	Targets for 2005
paper	60,7	3,2	4,1	4,2	10
glass	16	2,3	2,8	2,2	13
scrap+metal	70	17,3	3,6	0,8	6
bio-waste	34,9				3
plastics				1,0	6
hazardous					0,2
batteries					0,5
textile					1,3
TOTAL	**180,6 kg**	**22,8**	**10,5 kg**	8,2	**40**

Source: Kusnierova 2002, Municipality of Svätý Jur (PETMAS-Onyx Ltd.), WMP of Pezinok district

As it is shown in the above table no biodegradable waste (except of waste paper and cardboard) is separately collected in Svätý Jur and the target for separate collection does not correspond with target for material recovery of biodegradable waste.

Summary

Figures for municipal waste, household waste and biodegradable waste generation per capita got from reporting system in the year 2000 covering the Slovak Republic, district Pezinok and municipality Svätý Jur are as follows:

Table 12: Generation of municipal, household and biodegradable waste in 2000 in tons

	Municipal waste	Municipal waste per capita	Household waste and similar waste	Household waste and similar waste per capita	Biodegradable waste from Household waste and similar waste	Biodegradable waste from Household waste and similar waste per capita
The Slovak Republic	1 706 721	**0,32**	1 092 990	**0,20**	415 336	**0,08**
District Pezinok	36 165	**0,67**	16 156	**0,30**	6 139	**0,11**
municipality Svätý Jur	1 329	**0,29**	1 025	**0,22**	390	**0,08**

As it is shown in the table the amount of municipal waste generated by capita varies from data valid for the whole Slovakia, district Pezinok and Municipality Svätý Jur. The reason could be that sludge from septic is part of municipal waste and connection to the general sewage system differs from place to place.

The better compliance has been found for household waste generation, although the amount per capita in district Pezinok is nearly about 30% higher. Household waste generation in municipality Svätý Jur corresponds to the average household waste generation in Slovakia.

It is well known that waste statistics and reporting process in Slovakia is very often matter of discussion and need to be improved.

III.5. Cost for municipal waste handling in Svätý Jur

According to the Generally binding regulation issued by municipality Svätý Jur each citizen is obliged to pay fee for municipal waste handling to the municipality.

The fee was established to be: for the year 2002..... 340,00 SKK/cap.

for the year 2003..... 400,00 SKK/cap.

If all citizens paid in 2002 the sum of collected money could be about 1 580 000 SKK what represents about 65% of total cost needed for MSW handling in the town. This fee is not sufficient to cover all costs needed to ensure municipal waste collection, transport and disposal and municipality has to support waste management from municipal budget.

Citizens of Svätý Jur do not pay fee according to the waste amount generated but the unit fee per capita. The cost for household waste handling is expressed in the following table. According the information got from the major of town and submitted documents we can assume that fees collected from citizens can cover collection and transport of municipal waste and cost for landfilling is covered from municipal budget.

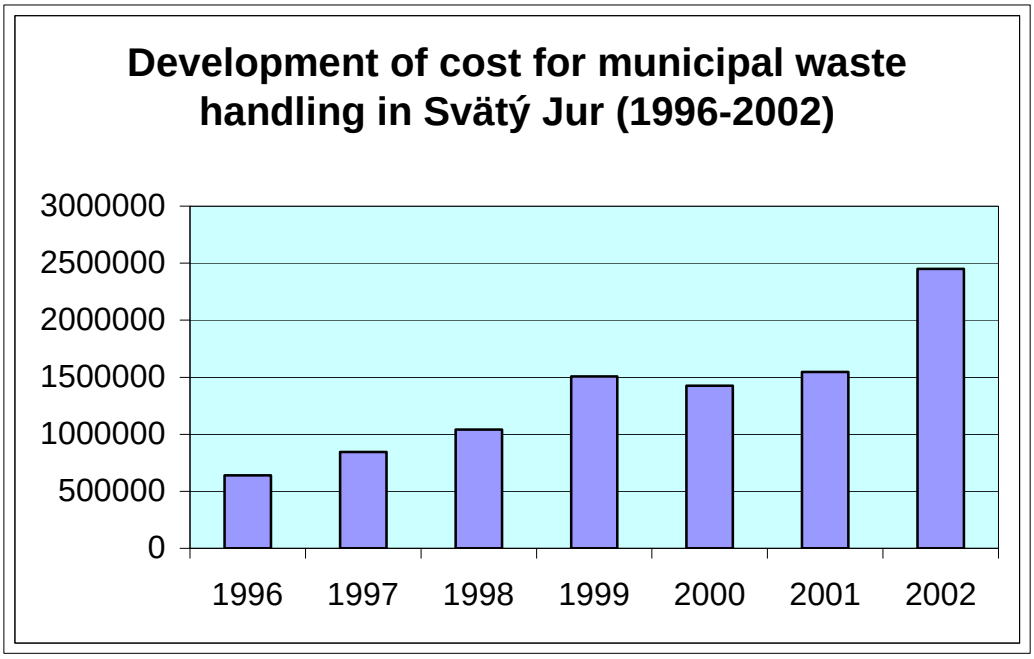
Table 13: The cost for collection/transport a and disposal at landfills for the citizens in year 2002

	Number of transports per year	Total cost for collection/transport per year	Cost for landfilling
240 l container owned by municipality	34	877,80 SKK	757,00 SKK/t
1100 l container owned by company	104	9 006,00 SKK	757,00 SKK/t
	52	6 402,20 SKK	757,00 SKK/t
	24	5 100,40 SKK	757,00 SKK/t
	13	3 667,40 SKK	757,00 SKK/t
1100 l container owned by municipality	104	10 327,30 SKK	757,00 SKK/t
	52	7 723,50 SKK	757,00 SKK/t
	24	6 421,60 SKK	757,00 SKK/t
	13	4 988,60 SKK	757,00 SKK/t

In the following table there is total cost for municipal waste handling in the period of years 1996 - 2002.

Table 14: Total cost for municipal waste handling in the period of years 1996 - 2002

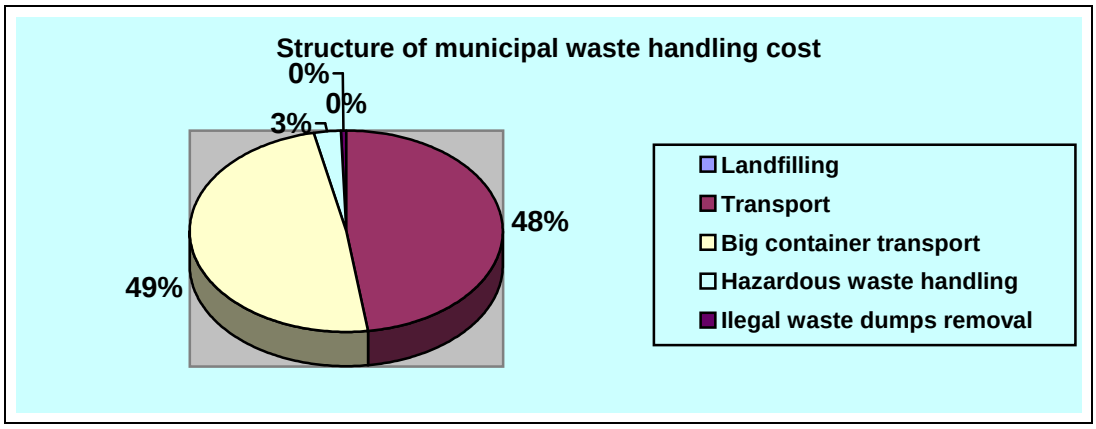
Year	Cost (SKK)	Cost per 1t of MSW (SKK/t)
1996	640 239	544,00
1997	845 780	630,10
1998	1 041 548	713,50
1999	1 507 192	796,80
2000	1 424 339	999,05
2001	1 547 708	1 124,60
2002	2 347 200	1 525,30



According to the information got from the town office the cost for municipal waste handling is formed as it is shown in the following table.

Table 15: Structure of cost for the year 2002:

Activity	**Cost (SKK)**
Landfilling	1 120 200
Collection and transport of municipal waste	1 151 200
Transport of big volume containers	64 800
Hazardous waste handling	11 000
Total	2 347 200
Removal of illegal dumps of MW	*102 000*
Sum	2 449 200



III.6. Conclusions

The current status of municipal waste management in town Svätý Jur can be characterised as follows:

- municipal waste generation in town was according to old waste catalogue (year 2000) about **290 kg/capita**, according to new waste catalogue (year 2002) about **320 kg/capita**
- household waste generation in town was according to old waste catalogue (year 2000) about **220 kg/capita,** according to new waste catalogue (year 2002) about **270 kg/capita**
- biodegradable waste generation (without waste paper and cardboard) in town was according to old waste catalogue (year 2000) about **80 kg/capita**, according to new waste catalogue (year 2002) about **103 kg**/capita

Note: Comparison with other countries would not be correct because of different waste definition, but such comparison exists in EU and biodegradable waste generation varies from 160 (Italy) to 360 kg/capita (Norway).

If we include paper and cardboard into biodegradable waste the generation of biodegradable waste in Slovakia would be about 140 kg/capita (according to new waste catalogue transposing EU waste catalogue) what is lower figure then the lowest generation in EU countries.

The reason could be also different methods of biodegradable waste calculation using the results of analysis of household waste composition. Analysis of household waste content has not been provided directly in Svätý Jur and for biodegradable waste content the figures published in Waste Management Programme for the Slovak Republic until 2005 has been used.

Also in EU countries the various methods for calculation or finding out of biodegradable waste content are being applied.

- All municipal waste except separately collected parts (paper, glass, metal) is disposed of at landfill
- Rate of separate collection for paper is very low 3 – 4 kg/cap/year
- Biodegradable waste (without paper and cardboard) is not collected separately
- Composting (centralised or decentralised) has not been introduced as a method to reduce biodegradable waste disposed of at landfill in Svätý Jur
- In Waste Management Plan until 2005 the town Svätý Jur declares to introduce measures for reduction of biodegradable waste going to landfill as follows:
  - to introduce separate collection of biodegradable waste from households in co-operation with public
  - to collect biodegradable waste separately and ensure its composting
  - to support these activities by economic instrument
- In planning there is contradiction between the goals established in the obligatory part of Waste Management Programme of town Svätý Jur and targets for separate collection system
- To achieve targets for biodegradable waste - 40% material recovery, 15% incineration, 30% landfilling and 15% other treatment seems to be unrealistic
- About 192 tons of biodegradable waste should be separately collected and composted in 2005
- Each citizen should collect about 40 kg of biodegradable waste (without paper) per year.

Note: The average collection rate for biodegradable waste collection in Slovakia in 2001 was 1,4 kg/cap. in Svätý Jur 0 kg/cap.

Note: 70% of biodegradable waste should be diverted from landfills what represents the amount of about 340 tons, which should be composted, incinerated and treated in other way. According to Statistical Office of the Slovak Republic only 10% of MSW was composted in 2001.

The current status of financing and cost to ensure municipal waste management in town Svätý Jur could be characterised as follows:

- Citizens are obliged to pay fee to municipality and municipality is obliged to ensure municipal waste handling - collection and disposal
- Citizens pay the unit fee per capita not depending on the amount of waste they generate
- The fee for citizens was 340 SKK in 2002 and the year 2003 it was 400 SKK per capita

- The fee structure and the way to establish this fee are not clear.
- Collected money can not cover all expenses connected with municipal waste handling
- Roughly citizens pay for household waste collection and transport and municipality pays for household waste disposal at landfill
- In principles citizens and other individual and legal entities generating municipal waste pay for number of containers to be empted according to approved schedule, they do not pay for amount/weight of municipal waste they actually generate.
- Price for collection, transport and disposal is established and agreed with contractor (waste operator) not per ton, but for container according to the volume of container and frequency of emptying and transport.
- There is no motivation for citizens to reduce waste generation because they would pay the same price for municipal waste handling
- It should be the interest of municipality to introduce the better system of waste management financing to motivate citizens and pay for real amount of waste generated in municipality (The incentive could be the implementation of economic instrument disadvantaging landfilling of waste introduced by the amendment of waste legislation in 2003)

IV Recommendations to introduce decentralised composting

At the first place the municipality as a municipal waste generator and holder which is responsible for municipal waste handling should develop and introduce such municipal waste management which would be in compliance with the basic principle of waste management strategy – **waste management hierarchy.**

This principle is focused on waste prevention and waste recovery, especially material recovery. Decentralised composting prevents household waste generation taking into account a waste definition. Centralised composting can be included in material recovery methods. Both options leads to reducing of biodegradable waste disposal at landfills in the case of waste management in Sv. Jur.(No other options exists here.)

The benefit for municipality would be not only the environmental but also the economic one, if municipality pays for waste transport and disposal according to real amount of household waste to be handled.

To reach these benefits the municipality should deal with three kinds of issues:

a) public awareness

b) realistic planning of biodegradable waste management

c) financing of household waste handling

d) supporting centralised and decentralised composting

Public awareness

The information campaign should be plan and launch as soon as possible. The topics to inform and educate the citizens should be focused on:

- environmental benefit of decentralised composting
- composting in garden (equipment and procedure)
- usage of compost
- possibility of price reduction for household waste
- environmental education – sustainable development

The information campaign should be addressed to the following groups of receptors:

- representatives of municipal and state administration relevant to waste management, especially planning
- citizens living in family houses
- citizens living in blocks of flats but having hobby of gardening
- schools and other educational institutions
- public institutions having parks or green area
- companies, services generating biodegradable waste suitable for composting

Methods to prepare and launch the information campaign should consist from:

- information leaflets explaining in simple and interesting way the main idea are spread among the citizens
- the articles describing this activity in the local newspaper
- promotion of activity at local feasts and events
- information brochures sent to local municipal groups, NGOs, schools and chosen institutions

Except of information campaign some citizens, those who are known as active in public life could be trained on the matter of waste management and rights and opportunities for citizens to influence services in municipal waste management, including the planning, financing and cost regulation at municipality.

Note: Know-how from Austria should be fully transfer, helping with information material preparation, methods of information dissemination and public relationship, training courses and so on.

Planning of biodegradable waste management in Sv. Jur

As an essential base for planning the analysis of current status must be done. To do it in appropriate way the basic question about the amount of biodegradable waste generation in the town should be answered. The calculation used in this document has been based on general information about the composition of household waste published in WMP SR until 2005 and needn't reflect the present time and local conditions. To avoid these uncertaintities the analysis of household waste composition should be executed with the aim to discover the potential for separate collection not only of biodegradable waste but other valuable parts of households waste, as well.

Also reporting of other biodegradable waste generated by some institutions should be checked and studied.

After the analysis of current status the realistic goals for biodegradable waste managements should be defined (different from existing now) and optimal measures to reach these goals should be chosen and planned.

Note: Know-how from Austria should be fully transfer, particularly helping with recommendation of suitable measures to reach the goals for biodegradable waste reduction and composting, also the help with household waste analysis (how, where and when to provide it) would be essential.

Financing of waste management in Sv. Jur

The way how financing and cost for municipal waste handling is ensured now in Sv. Jur does not allow to think about the lower fee for citizens who would compost all biodegradable waste, which they generate in their households. It means that economic incentive is lacking. In general the citizens pay not for amount of waste they generate but for volume of waste bins or containers to be emptied, doesn't matter if it is completely full or not. If citizen reduces the amount of household waste by decentralised composting in the highest possible level no change of his fee to municipality is expected.
Citizen is not motivated also because 50% of total cost is paid by municipality. But municipality should be motivated to pay less for household waste disposal at landfill. Moreover the financing and cost structure might be more transparent.

To implement the economic incentive would mean to change the whole system of financing at municipal level and also fees for real waste generation.

Note: Know-how from Austria should be fully transferred, helping the municipality with options for financing systems and measures to implement them. The example from Austrian municipalities would be useful.

Supporting centralised and decentralised composting

Municipality together with other public institutions and other public groups should play the vital role increasing the public awareness in the way described in upper chapter.

Regarding centralised composting it is up to the municipality to plan and ensure development of composting facility. Such plan exists and the local agriculture cooperative is suitable place to provide composting. More space for municipal activity is open in the field of suitable biodegradable waste collection, for example from vineyards, parks, green public area, cemetery, etc. Also prohibition to put such waste to bins and containers for mixed/rest waste directed to landfills could be implemented in practice (this should be a part of the general binding regulation).
On the other side the product of material recovery of biodegradable waste – compost should have the market or use. Municipality can help to create conditions for compost market/usage.

The encouragement of decentralised composting should be also part of municipal plan and except of raising public awareness (which should as well be a part of the municipal waste plan) mentioned above some material help could bring the positive response. Municipality could launch a pilot project as a demonstration for public and of course for the reason of results assessment.

Note: Know-how from Austria could help to make a good plan and pilot project could be provided under the co-operation with Austrian experts having experience in this field. Especially evaluation of results could be beneficial to introduce a new system.

V Benefits identification

There are general and specific benefits expected in this project.

Benefits for municipality in general:

- improvement of environmental behaviour/education
- ability to reach the goal for reduction of biodegradable waste disposal at landfill
- efficient low cost measure in waste management without expensive technical equipment
- possibility to save finance from municipal budget

Specific benefits for municipality:

- opportunities to improve biodegradable waste management with the help of experienced partner, waste prevention and waste recovery
- challenge for better planning using supervising of experienced partner
- possibility to save finance of citizens
- New relationships, exchange of ideas and information
- Leading the way

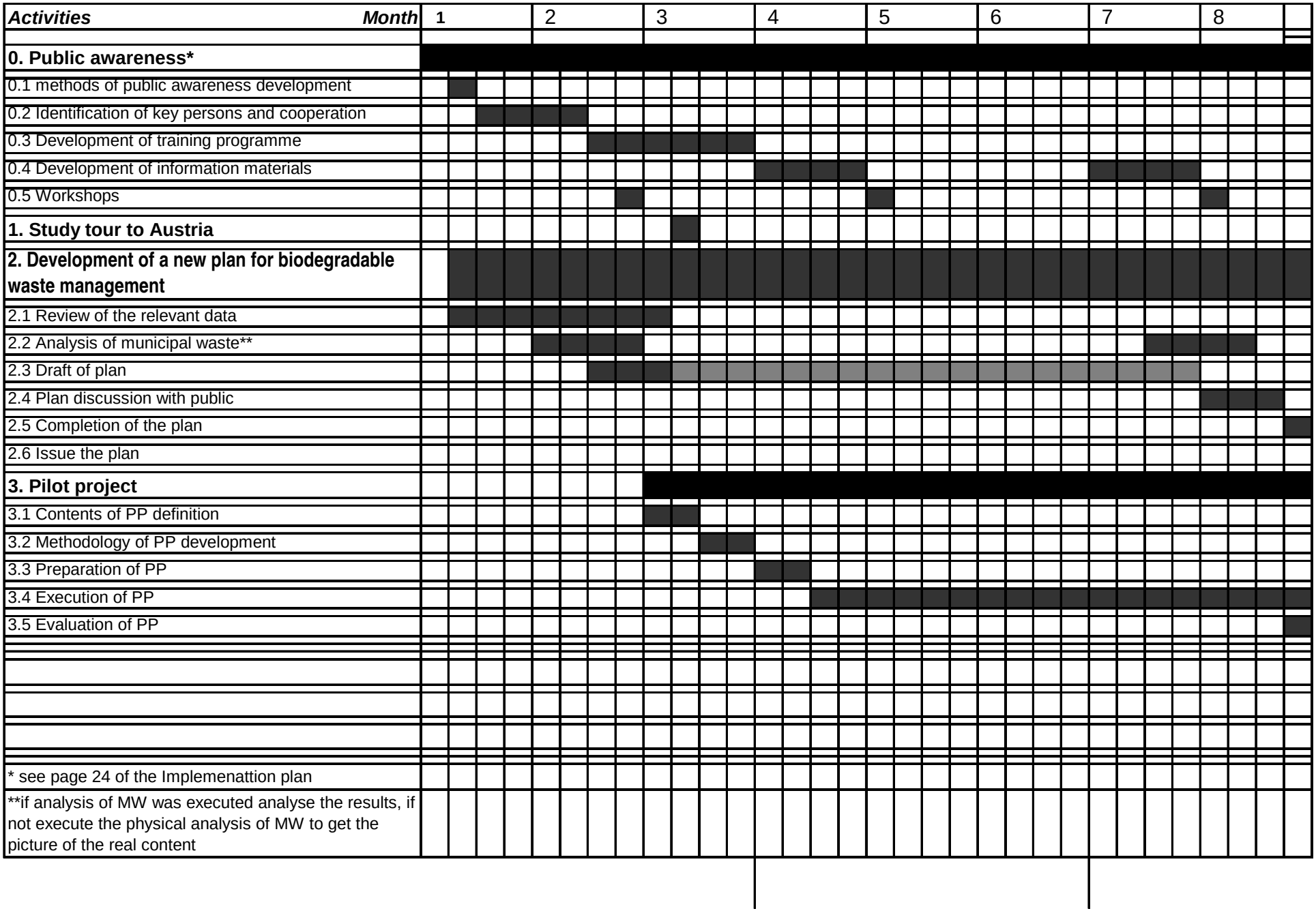
VI Conclusions

After the analysis of current status of municipal and biodegradable waste management in the town Sv. Jur the following milestones of implementation plan can be proposed and be used as a preliminary basis for discussion with municipality:

Note: If cooperation with Sv. Jur fails this plan could be used with small amendments for another suitable municipality.

Activity	Objective	Task for municipality	Austrian expert input	Note
Analysis of municipal waste content focused particularly on biodegradable part of mixed waste	To get clear picture of current status and discover the potential	To ensure cooperation with municipal waste operator	Development of the appropriate methodology for analysis	Financing of analysis execution have to be discussed
Development of a new plan for biodegradable waste management	To avoid the unrealistic planning To create a new basis for	Cooperation with Austrian experts	The basic outline of plan Recommendations to develop a new goals and measures regarding	The Slovak planner might be involved.

	cost calculation		biodegradable waste management	
Public awareness activities preparation and execution	To increase the environmental understandings of waste management topics To create conditions for successful implementation of decentralised composting	Cooperation with Austrian experts	Advise of Austrian expert Help preparing information materials Methodology of dissemination of information	Solution regarding financing of information campaign should be found
Pilot project for decentralised composting prepared	To demonstrate the activity with all benefits it brings. To get results of waste prevention and reduction of biodegradable waste disposal at landfills.	To ensure cooperation with participants of pilot project/citizens Cooperation with Austrian experts	Methodology of Pilot project Supervision of Pilot project	Financing of Pilot project has to be solved out. Slovak coordinator of Pilot Project is needed.
Evaluation of Pilot project	To check the goals and measure in proposed plan To identify the gaps and problems to reach the goals of plan	Cooperation with Austrian experts	Report of result of Pilot project with conclusions and recommendations for improvement.	Report should be carefully discussed with municipality representatives
Development of integrated strategy for biodegradable waste management in municipality	To combined in suitable way the options of centralised and decentralised composting to reach efficient biodegradable waste management	Cooperation with Austrian experts	Know-how from Austrian municipalities, examples of integrated plans adjusted for Slovak conditions	Slovak planner should be involved.


Activities
Month
1
2
3
4
5
6
7
8
0. Public awareness*
0.1 methods of public awareness development
0.2 Identification of key persons and cooperation
0.3 Development of training programme
0.4 Development of information materials
0.5 Workshops
1. Study tour to Austria
2. Development of a new plan for biodegradable waste management
2.1 Review of the relevant data
2.2 Analysis of municipal waste**
2.3 Draft of plan
2.4 Plan discussion with public
2.5 Completion of the plan
2.6 Issue the plan
3. Pilot project
3.1 Contents of PP definition
3.2 Methodology of PP development
3.3 Preparation of PP
3.4 Execution of PP
3.5 Evaluation of PP
* see page 24 of the Implemenattion plan
**if analysis of MW was executed analyse the results, if not execute the physical analysis of MW to get the picture of the real content

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Generally binding regulation of town Svätý Jur (2001)

Due to many changes at legal and administrative level some parts od the current status description is out of date. In the following text the summary of amendments is presented as well as new obligations for the municipality regarding the separate collection of municipal waste fractions.

Legal instruments as amended are as follows:

- Act No. 529/2002 Col. on Packaging and Amendment of Some Acts amended by Act No.245/2003 Col. and Act No.525/2003 Col.
- Act No. 223/2001 Col. on Waste and on a Change of and Amendment to Some Acts; as amended Act. No. 553/2001 Col., Act No. 96/2002 Col., Act No. 393/2002 Col., Act No. 529/2002 Col., Act No. 188/2003 Col., 245/2003 Col., 525/2003 Col., Act No. 24/2004 Col.
- Act No. 17/2004 Col. on Charges for Waste Disposal at Landfills
- Order of Government of the SR No. 22/2003 Col. on binding limits for waste packaging recovery and recycling referring to the total weight of packaging waste
- Order of MoE SR No.153/2004 Col. on binding limits and time-schedule for reuse of parts of end-of-life vehicles, waste from end-of-life-vehicles recovery and recycling
- Order of MoE SR No. 5/2003 Col. on Execution of some Provisions of Act on Packaging amended by Order No. 577/2003 Col.
- Order of MoE SR No. 283/2001 on the Execution of Some Provisions of the Waste Act as amended by Order of MoE No. 509/2002 Col., Order No. 128/2004 Col.
- Order of MoE SR No. 284/2001 on Waste Catalogue as amended by Order of MoE SR No.409/2002 Col. and Order No. 129/2004 Col.
- Order of MoE SR No. 234/2001 on Waste Classification according to Green, Amber and Red Lists of Wastes and on Standard Documents for Waste Transport as amended by Order of MoE SR No.410/2002 Col. and Order No. 227/2003 Col.
- Order of MoE SR No.127/2004 Col. on tariffs for Recycling fund fees calculation and list of products, materials and equipment for which fees to Recycling fund shall be paid and details on the application for finance from Recycling fund
- Order of MoE SR No. 126/2004 Col. on Authorisation, Providing the Expertise in Waste Management, the Appointment of Persons Authorised to Issue the Expertise and Examinations of Professional Skills of those Persons;
- Order of MoE SR No. 273/2001 on Authorisation, Providing the Expertise in Waste Management, the Appointment of Persons Authorised to Issue the Expertise and Examinations of Professional Skills of those Persons as amended by Order of MoE SR No.399/2002 Col.;
- Order of MoE SR No.732/2002 Col. on the list of deposited packaging which are not reusable and fees for their deposits and fees for reusable packaging
- Order of MoE SR No.227/2003 Col.
- Order of MoE SR No.135/2004 Col. on decontamination of equipment with PCB content

- Communication of Ministry of Foreign Affairs No. 60/1995 Col. on Acceding of Slovak Republic in Basle Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal.
- Communication of MoE of SR No. 75/2002 Col. on issuing notification No. 1/2002 on establishment of unit analytical methods of waste analysis

Obligation for the municipalities

Article 39 paragraph 3 of Waste act No. 223/2001 Col. as amended, describes the obligations of municipality regarding separate collection of waste generated at municipal level as follows: Municipality is obliged to fulfil the following tasks:

a) to ensure or enable collection and transport of the municipal waste generated on its own territory for the purpose of waste recovery or disposal in compliance with this act, including ensuring the collection bins/containers relevant to collection system in municipality and places where the citizens can deliver parts of municipal waste in the frame of separate collection
b) to ensure according to the need, but at least twice year collection and transport of bulky waste for the purpose of its recovery or disposal, separately collected wastes containing the dangerous substances from households and small construction waste.

Article 39 paragraph 3 of Waste act No. 223/2001 Col. as amended, stipulates: Municipality shall adjust the details on municipal waste and small construction waste handling in generally binding regulation, where in particular the details on ways of municipal waste collection and transport, separate collection of parts of municipal waste, handling with small construction waste as well as places dedicated for collection or disposal of these waste are defined.

Act on waste No 223/2001 Col. as amended by act No. 24/2004 Col. stipulates in Article 39 paragraph 14, the obligation for municipalities to ensure separate collection of five waste types as follows:

- paper
- plastic
- metal
- glass
- biodegradable waste

This obligation will enter into force in 2010 so as the municipalities could find the best way to prepare the collection systems for the successful implementation.

Article 18, paragraph 3, letter n, of Act on waste stipulates the prohibition to dispose of biodegradable waste from gardens and parks (green waste) if it is part of municipal waste. It means that municipality has to ensure green waste recovery instead of disposal and this obligation is valid from 1 of May 2004.

VI ANNEXES

ANNEX 1 : Description of the municipality Svätý Jur

According to administration set up in Slovakia the municipality Svätý Jur belongs to district Pezinok and region Bratislava. The whole area represents 4 132 ha and from this 3 966,6 ha is area without any constructions.

The municipality of Svätý Jur is located on the boundary- line of mountains called Malé Karpaty (Small Carpathian) and lowland Podunajská nížina, close to the capital of Slovakia Bratislava (13km). It is one of the old villages where vineyards have formed its history since the period of Roman Empire. Moreover, Svätý Jur is attractive for the visitor thanks to its National natural reservation Šúr, which is on the international list of Ramsar´s reservations because of protected wetland area as well as untouched nature in mountains on the other side of the town. Svätý Jur, its nature and historical set-up seem to be very suitable and well-situated area for each type of recreation as well as for tourism.

The municipality has according to WMP until 2005 4 467 inhabitants (2 115 of men, 2 352 of women) mostly living in individual houses. Economically active citizens form 52% of all citizens.

Table 16: Characteristics of residential area in Svätý Jur

	Individual houses	Multifamily houses	Total
Number of houses	1 312	478	
Number of	3 364	1 287	4 651
Number of households	1 153	430	1 583

Source: Municipality of Svätý Jur (31/12/2001)

Multifamily dwelling are centrally heated by the gas burning. Approximately about 95% of individual houses are burn gas, too. The rest of them use the solid fuel and electricity.

Economic activities of Svätý Jur are focused mostly on production of vine. In spite of quite large area of agricultural land, the growing of corn and other cereals is supposed to be only complementary activity. Majority of citizen is employed in Bratislava and Pezinok due to lack of work opportunities.

ANNEX 2: Some information and data extracted from:

Prepared by: Matt Crowe, Kirsty Nolan, Caitríona Collins, Gerry Carty, Brian Donlon, Merete Kristoffersen, European Topic Centre on Waste, January 2002
Project Manager:
Dimitrios Tsotsos
European Environment Agency
Topic report 15/2001

Waste definitions and measuring progress towards the targets

Definition

Municipal waste is defined by Article 2 (b) of the landfill directive as follows:
'Municipal waste' means waste from households, as well as other waste, which because of its nature and composition is similar to waste from households.

Biodegradable waste is defined by Article 2 (m) of the landfill directive as follows:
'Biodegradable waste' means any waste that is capable of undergoing anaerobic or aerobic decomposition, such as food and garden waste, and paper and paperboard.

There is no specific definition provided for biodegradable municipal waste, the subject of the targets set by Article 5 of the Directive. However, combining the above definitions provides the following definition:
'Biodegradable municipal waste' means biodegradable waste from households, as well as other biodegradable waste, which because of its nature and composition is similar to biodegradable waste from households.

In the EEA Report 'Household and Municipal Waste: Comparability of Data in EEA member countries' (EEA, 2000), the following conclusions were made in relation to the comparability of data on household and municipal waste in Europe:

'Total household waste cannot be compared between all member countries. This is simply due to the fact that some countries do not provide sufficient information on all waste categories produced by households'.

'Total municipal waste cannot be compared between all member countries due to differences in the kind of waste collected by different municipalities. Data and information on municipal waste must therefore be expected to be incomparable by nature'.

The report goes on to remark, in relation to municipal waste, that 'there has been a general convergence between the various definitions in relation to the **type** of waste that is considered under the heading municipal — waste type is generally understood to mean household-type waste, meaning that industrial-type wastes are not included. Perhaps, in the long term, and in light of the introduction of private collection schemes in many countries, the definition that is provided in the landfill directive is the most practical from the point of view of comparing one country to another as it simply defines municipal waste as household-type waste from any source and is silent on the question of collection'.
There is clearly a problem in comparing historical data on municipal waste raisings in different countries. This problem also applies to comparing historical data on biodegradable municipal waste raisings.
Therefore, to attempt to improve the comparability of data collected, the following operational definition was used in this study, which follows the approach adopted in the municipal and household waste survey conducted by ETC/W in 1998:

Biodegradable municipal waste = bagged biodegradable municipal waste + separately collected biodegradable municipal waste + bulky biodegradable municipal waste.

Where:
Bagged biodegradable municipal waste is the biodegradable fraction of mixed waste collected door to door on a regular basis (every day, every week, every two weeks etc.) from households and other sources such as commerce and trade activities, office buildings, institutions (schools, government buildings etc.) and small businesses.

The biodegradable fraction of mixed waste is the food, garden, paper and paperboard, textiles, wood and other miscellaneous biodegradable content of the waste collected.

Separately collected biodegradable municipal waste is food, garden, paper and paperboard, textiles, wood and other miscellaneous biodegradable wastes separately collected from households and other sources such as commerce and trade activities, office buildings, institutions (schools, government buildings etc.) and small businesses. Separately collected waste also includes those fractions mentioned above which are delivered to civic waste facilities, bring banks, recycling centres etc.

Bulky biodegradable municipal waste is the biodegradable fraction of bulky waste collected from households and other sources such as commerce and trade activities, office buildings, institutions (schools, government buildings etc.) and small businesses. This includes bulky biodegradable waste delivered to civic waste facilities, bring banks, recycling centres etc.

The biodegradable fraction of bulky waste is made up of materials such as wooden furniture etc. Bulky garden waste is reported under the heading ‘separately collected food and garden waste’.

Establishing a baseline for the targets

The baseline against which the targets are to be measured is 1995 or the latest year before1995 for which standardised Eurostat data is available. There is an immediate problem in setting a baseline for individual countries because countries did not report biodegradable municipal waste quantities for 1995 or earlier years. In addition, as stated above, data on municipal waste must, by its nature, be expected to be incomparable. However, Eurostat has conducted a preliminary evaluation of its standardised data on household and municipal waste and has developed a set of statistics for EEA member countries. The preliminary data is presented in Table 1, along with supporting footnotes and remarks.

Eurostat baseline data for BMW landfilled — Table 1

Country	Year	Managed MW [1]	Managed BMW [2]	Separately collected and recovered BMW [3]	MW incinerated	BMW landfilled [4]
		Ktonnes	Ktonnes	Ktonnes	Ktonnes	Ktonnes
Austria [5]	1995	2644	1745	791	431	523
Belgium	1995	5014	4312	425 [6]	1490	2397
Denmark	1995	2591 [7]	2560	641	1466	453
Finland	1994	2100 [7]	1890	0	50	1840
France	1995	34700	27760	220	10352	17188
Germany	1993	40017	28700		8552	20148
Greece	1990	3000	2688	0	0	2688
Ireland	1995	1550	1073	60	0	1013
Italy [8]	1996	24524 [7]	21655		1572	20083
Luxembourg	1995	278	160	0	126	34
Netherlands	1994	8161 [7]	7280	2523	2192	2565
Portugal	1995	3884	3301		6	3295
Spain	1995	14914	11633	2117	693	8823
United Kingdom	1995	29000 [9]	21460		2200	19260
Sweden	1994	3200	2656	400	1300	956

1) Municipal waste managed: MW generated (=collected) + import — export.
2) Biodegradable municipal waste is calculated from ‘Municipal waste managed’ minus the ‘non-biodegradable’ fraction. These waste-fractions are calculated with the help of the given composition of municipal waste. The non-biodegradable fractions concerned here are glass, plastic and metal. (In some cases, plastics may be considered to be biodegradable). Figures on the composition of municipal waste are not always from the same year as the waste-figures, or on household waste instead of municipal waste. For municipal waste incinerated no estimations are made for the biodegradable and non-biodegradable fraction. This could be done with the figures on the composition of municipal waste.
3) Food and garden waste, paper, textile, wood, oil and fat.
4) Calculated as follows: managed BMW — separately collected and recovered BMW — incinerated MW.
5) Household waste.
6) Different years (1995 or <) because of separate data provision of the different regions (Flanders, Walloon, Brussels).
7) Sum of treatment and disposal of municipal waste.
8) Latest year before 1995 is 1985.
9) Municipal waste generated.

The ETC/W, as a result of the surveys conducted for this project, has also developed baseline data for each country where sufficient data was provided. Where data has not been reported for 1995, the data for the year closest to 1995 has been chosen. This data is presented in Table 2.

Table 2 ETC/W baseline data for BMW landfilled

Country/region	Year	MW produced	BMW produced	BMW landfilled
		Ktonnes	Ktonnes	Ktonnes
Austria	1995	2644	1495	302
Belgium (Flanders)	1995	2890	1671	623
Denmark	1995	2787	1813	205
Finland	1994	2100	1664	1 085
France	1995	36200	15746	5 988
Germany	1993	43486	12000 [3]	N/A
Germany (Baden-Württemberg)	1995	18300	5859	2 502
Greece	1997	3900	2613	2 324
Iceland	1995	N/A	N/A	N/A
Ireland	1995	1503	990	903
Italy	1996	25960	9170	6 821
Luxembourg	1995	N/A	N/A	N/A
Netherlands [3]	1995	7105	4830	1 365
Norway	1995	2722	1572	1 069
Portugal	1995	3340	N/A	N/A
Spain [2]	1996	17175	12196	N/A
Spain (Catalonia)	1995	2834	1985	1 481
Sweden	1998	4000	N/A	N/A
United Kingdom [4]	1996/97	25980	16366	14 675

1) Biodegradable waste from households.
2) Plan Nacional De Residuos Urbanos (2000–06).
3) Figures relate to waste from households only.
4) England and Wales only.
N/A: Information not available

Measuring progress towards the targets

An agreed approach is required for measuring progress towards the targets set by the landfill directive for biodegradable municipal waste. This requires agreement on the following items:
• the definition of biodegradable municipal waste — a common understanding of the term is required;
• a set of baseline figures against which progress will be measured; and
• a standard approach for tracking changes in biodegradable municipal waste produced.

Definition

The operational definition provided in Sub-Section 2.1 above is recommended for the purpose of gathering data on biodegradable municipal waste. There is, however, a requirement for more detailed descriptions of the actual waste types to be considered as well as guidelines on how to establish the composition of the bagged (mixed) waste component. However, the approach recommended is considered to be reasonably pragmatic and workable.

Baseline data for 1995
The data set out in Table 3 below is presented as a proposed operational baseline for biodegradable municipal waste production in 1995, subject to the agreement of each EEA member country and Eurostat. These are based on the operational definition set out above and have been calculated from the data supplied to ETC/W by each member country. Where a member country supplied insufficient data, the Eurostat estimate (see Table 1 above) was used.

Proposed Baseline data for BMW produced and landfilled in 1995 (1) Table 3

Country/region	Year	MW produced	BMW produced	BMW landfilled
		Ktonnes	Ktonnes	Ktonnes
Austria	1995	2 644	1 495	302
Belgium [b]	1995	5 014	4 312	2 397
Belgium (Flanders)	1995	2 890	1 671	623
Denmark	1995	2 787	1 813	205
Finland	1994	2 100	1 664	1 085
France	1995	36 200	15 746	5 988
Germany [b]	1993	40 017	28 700	20 148
Germany (Baden Württemberg)	1995	18 300	5 859	2 502
Greece [b]	1990	3 000	2 688	2 688
Iceland	1995	N/A	N/A	N/A
Ireland	1995	1 503	990	903
Italy	1996	25 960	9 170	6 821
Luxembourg [b]	1995	278	160	34
Netherlands [a]	1995	7105	4830	1 365
Norway	1995	2 722	1 572	1 069
Portugal [b]	1995	3 884	3 301	3 295
Spain [b]	1995	14 914	11 633	8 823
Spain (Catalonia)	1995	2 834	1 985	1 481
Sweden [b]	1994	3 200	2 656	956
United Kingdom [a]	1996/97	25 980	16 366	14 675

1) Source: Eurostat.
2) Figures relate to waste from households only.
3) England and Wales only.
N/A: Information not available
1) Source: Eurostat.
2) Figures relate to waste from households only.
3) England and Wales only.

Overview

Table 4 provides an overview of BMW production in the various countries and regions that supplied information. Total tonnage produced in 1995 (the baseline year for the landfill directive) and per capita production is provided. As can be seen, per capita production ranges from 0.16 tonnes per person for Italy up to 0.36 tonnes per person for Norway. Per capita production of BMW is a key indicator for tracking progress towards the achievement of the landfill directive targets, both at national and European level. Average production per capita for these countries is 0.30 - 0.06 tonnes per annum. While there is a relatively wide range between the highest and lowest values, the overall variation is 20 % of the average, which suggests, overall, that variations between different countries may not be so high. This is probably because biodegradable municipal waste is, generally, waste produced from the daily or routine activities of households and businesses which may not vary that significantly from one country to another. However, in order for per capita production figures to be a truly reliable comparative indicator, each country should use the same definition for both municipal waste and biodegradable municipal waste, which is currently clearly not the case.

Summary of BMW production in countries and regions surveyed — Table 4

Country/region	BMW produced in 1995 (tonnes)	BMW production/capita (tonnes/person)
Austria	1 495 000	0.19
Belgium (Flanders)	1 671 108	0.28 [1]
Denmark	1 813 283	0.35
Finland (1994)	1 664 000	0.33
France	15 746 000	0.27
Germany (1993)	28 700 000	0.35
Greece (1997)	2 613 000	0.25
Ireland	990 242	0.27
Iceland	N/A	N/A
Italy (1996)	9 170 530	0.16
Luxembourg	N/A	N/A
Netherlands [2]	4 830 000	0.31
Norway	1 571 607	0.36
Portugal	N/A	N/A
Spain [2] (1996)	12 196 099	0.31
Spain (Catalonia)	1 984 912	0.32
Sweden	N/A	N/A
United Kingdom [3] (1996/97)	16 366 000	0.31

1) Population of Flanders at 1 January 1999 = 5 926 838.
2) Plan Nacional De Residuos Urbanos (2000–2006).
3) Figure relates to waste from households only.
4) England and Wales only.
N/A: Information not available

Management of BMW in countries and regions surveyed — Tabl

	BMW management routes (% of total BMW produced)							
	Landfill	Incineration with energy recovery	Incineration without energy recovery	Central composting	Recycling	Anaerobic digestion	Mechanical-biological pre-treatment	Unspecified
Austria (1996)	20.4	13.3	0	22.9	29.7	0	6.0	7.7
Belgium (Flanders) (1998)	16.7	22.1	0	34.3	22.8	0	0	4.1 [1]
Denmark (1998)	5.3	54.3	0	29.6	10.4	0.4	0	0
Finland [2] (1997)	64.9	5.8	0	5.2	22.0	1.4	0	0.6
France [3] (1998)	40.3	28.6	7.1	8.9	3.5	0.3	0	11.2
Germany	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Germany (Baden-Württemberg) (1998)	30.2	12.3	0	17.9	37.1	0	0	2.6 [4]
Greece	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Iceland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ireland (1998)	90.3	0	0	0.5	9.3	0	0	0
Italy (1997)	68.4	5.7 [5]	0	11.4	8.1	0	0	6.4
Luxembourg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Netherlands (1998)	13.1	36.5	0	33.3	19.0	0	0	0
Norway (1997)	59.0	17.0	0	5.0	20.0	0	0	0
Portugal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Spain	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Spain (Catalonia) (1998)	73.4	20.7	0	1.3 [6]	4.6	0	0	0
Sweden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
United Kingdom [7] (1998/99)	86.2	5.7	0	3.0	5.1	0	0	0

1) This figure refers to the percentage of BMW which is managed through re-use.
2) 0.58 % refers to 10,320 tonnes of Packaging and Wood waste separately collected in 1997, for which storage is the only known management route.
3) Waste management routes for France only account for 88.8 % of the total BMW produced. The remaining 11.2 % is accounted for by separately collected garden waste, the management route of which is unspecified or unknown.
4) This figure may include a fraction managed by anaerobic digestion.
5) This figure refers to incineration with/without energy recovery.
6) This figure is accounted for by 0.43 % central composting and 0.79 % mass composting.
7) England and Wales only.
N/A: Information not available

The three principal routes for diverting BMW away from landfill are incineration with energy recovery, central composting and recycling. Countries and regions with low landfill rates for BMW tend to employ a mixture of incineration and central composting, along with recycling,

mainly of paper.

Future projections and implications

Strategic planning for the landfill directive requires an appreciation of the possible implications of growth in BMW production during the lifetime of the Directive. Several scenarios have been considered for each country, as set out above, with the results presented in the BMW Management Status Sheets, which can be downloaded from www.eea.eu.int. As with all projections into the future, the results must be treated with a degree of caution; however, they give an indication of the types of challenges various Member States might face in the coming years.

As an example, Table 6 presents an overview of projected quantities for each country for the year 2016, based on the assumption that BMW quantities will grow in line with projected growth in private consumption. As can be seen, the key impact will be a significant increase for all countries in the quantity of BMW requiring diversion away from landfill, because the landfill directive imposes an absolute restriction on the quantity of BMW that can be landfilled. For instance, countries that currently landfill relatively modest quantities of BMW, such as Denmark and the Netherlands, may have to plan for a significant increase in the quantities of BMW requiring treatment by alternative routes to landfill, particularly if it is planned to maintain low landfilling rates. Figure 4 illustrates this point by providing a comparison between quantities currently diverted away from landfill (where available) and quantities that will require diversion away from landfill in the event that future growth in BMW is in line with growth in private consumption.

Implications of growth in BMW up to 2016 — Table 6

Country/region	BMW baseline — 1995	Projected quantity produced in 2016	Maximum quantity to landfill in 2016 [1]	Quantity to be diverted from landfill in 2016 [2]
	(Million tonnes)			
Austria	1.495	2.17	0.523	1.647
Belgium (Flanders)	1.671	2.39	0.585	1.805
Denmark	1.813	2.79	0.635	2.155
Finland	1.664	2.72	0.582	2.138
France	15.746	24.36	5.511	18.849
Germany	28.7	44.381	10.045	34.336
Germany (Baden Württemberg)	5.859	9.060	2.05	7.01
Greece	2.688	4.756	0.941	3.815
Iceland	N/A	N/A	N/A	N/A
Ireland	0.990	1.87	0.346	1.524
Italy	9.170	12.984	3.209	9.775
Luxembourg	0.16	N/A	0.056	N/A
Netherlands	4.830	7.699	1.691	6.008
Norway	1.572	1.712	0.5502	1.162
Portugal	3.301	6.160	1.155	5.005
Spain	11.633	20.293	4.071	16.222
Spain (Catalonia)	1.985	3.46	0.695	2.765
Sweden	2.656	3.948	0.9296	3.0184
United Kingdom	19.66	33.60	6.881	26.719

1) 35 % of the Baseline.
2) Projected quantity produced — maximum quantity permitted to landfill.
N/A has been inserted where no figure for private consumption was available

Clearly, any increases in BMW production during the lifetime of the Directive will have profound effects on the requirement for treatment routes other than landfill. A fundamental part of each countries strategy should be a comprehensive analysis of future trends in BMW production between now and 2016 (or 2020 in the case of countries seeking the four year extension) so that adequate capacity can be planned well in advance of requirements.

National strategies will also need to be sufficiently flexible to respond to changes such as economic and demographic changes that may have an effect on the quantities of BMW produced. This will require, among other things, the development of implementation plans and on-going review of such plans.

Strategies and instruments for diverting BMW away from landfill

Introduction

The typical flow of biodegradable municipal waste is illustrated schematically in Figure 5. It can be broken down into four specific phases:

Phase 1 — production
Phase 2 — presentation (4), collection, transfer and movement
Phase 3 — treatment
Phase 4 — end-use/final destination (beneficial use or disposal)

When considering the various strategies and instruments available to assist in the diversion of biodegradable municipal waste (BMW) away from landfill, each phase requires analysis because interventions across the board from production to final destination will probably be required in order to achieve the required landfill diversion rates. It is also useful to consider at what point in the waste chain a particular instrument or strategy fits so that each part of the waste chain is considered and addressed when preparing a strategy for diversion of waste away from landfill.

Phase 1 is the production of biodegradable municipal waste. In many ways, this is the most difficult phase to tackle as it requires the implementation of successful waste prevention and waste minimisation measures. However, it also requires the development of a comprehensive understanding of the composition of the waste stream so that, for instance, it is known what proportion of the waste stream consists of food waste, paper, cardboard, newspaper etc. and how seasonal and other factors effect composition. Strategies and instruments relevant to Phase 1 therefore include waste prevention initiatives such as public education programmes, school campaigns, consumer awareness programmes, waste reduction initiatives and re-use programmes, and waste management initiatives such as waste composition surveying.

Phase 2 involves the presentation, collection and transfer/movement of waste. Many countries have laws in place which enable municipal authorities to specify how waste can be presented for collection, for instance, the size and type of receptacle to be used. Restrictions can also be placed on the types of waste acceptable for collection. There is considerable scope, therefore, for controlling what enters the waste chain by controlling how waste is presented for collection. Phase 2 is of central importance in relation to the diversion of waste away from landfill because the manner in which waste is collected has a profound effect on the treatment options available.

Phase 3 consists of the various treatment options available for managing the biodegradable fraction of municipal waste. As stated above, the manner in which this waste fraction is collected determines, to a large extent, the options which are available to deal with this waste stream. Key strategies and instruments relevant to Phase 3 include those that are designed specifically to divert waste away from landfill, such as bans or restrictions on the type of waste that can be landfilled and waste taxes such as landfill taxes.

Phase 4 is the final destination or end use of the material. Key instruments here relate to ensuring that markets and outlets are available for materials diverted from landfill to various recovery routes.

Table 7 provides an overview of the strategies and instruments reported by the countries examined to assist in diverting BMW away from landfill. These instruments include separate collection, incinerating a significant proportion of the biodegradable municipal waste

(4) Presentation means, in this context, preparation for collection and is the step in the waste chain between
generation and collection of waste with specific requirements, e.g. use of specific types of containers, presorting
of wastes.

fraction, banning or restricting the landfilling of BMW, fiscal instruments and home composting. It is evident that countries that are presently diverting significant quantities of BMW away from landfill, are not reliant on just one instrument but have adopted a range of instruments in order to maximise landfill diversion rates.

In developing a strategy, it is important to examine each link in the waste chain and to consider at what point particular strategies and instruments might apply. In addition, it is important to examine the flow of biodegradable waste through the waste chain and to consider how the application of a specific instrument may influence decisions or options in subsequent phases.

Table 8 lists typical strategies and instruments and links them to the particular phases in the waste chain (see Figure 5). As can be seen in a number of the cases, some of the instruments have a role to play in each of the phases e.g., public education, fiscal measures and producer responsibility initiatives and obligations, whereas others are only applicable to a particular phase, for example, waste prevention and minimisation.

Table 8 Strategies and instruments appropriate to different phases

Instrument/phase	Phase1 Production	Phase 2 Presentation, collection, transfer & treatment	Phase 3 Treatment	Phase 4 Final destination (disposal or beneficial use)
Waste prevention and Minimisation	√			
'Greener' shopping	√			
Home composting	√			
Public education	√	√	√	√
Fiscal measures	√	√	√	√
Producer responsibility initiatives and obligations	√	√	√	√
Use of presentation by-laws		√		√
Requirement for separate collection		√	√	√
Significant quantities incinerated			√	
Ban on landfilling of BMW		√	√	√
Ban on landfilling of specific BMW fractions		√	√	√
Waste taxes		√	√	√
Identification and development of end markets		√	√	√

Strategies and instruments appropriate to each phase are discussed in the following subsections. A number of case studies are also presented in this section for countries and regions that have succeeded in diverting large quantities of BMW away from landfill.

Phase 1 — production

Phase 1 of the waste chain relates to the production of biodegradable municipal waste. As the quantity produced increases, the management responses required become more critical. Thus, in the long term, one of the most important instruments that can be used to reduce the quantity of BMW which is consigned to landfill is preventing or minimising the generation of this waste in the first instance. BMW waste prevention and minimisation initiatives apply mainly to the paper and cardboard fraction with home composting the main route through which food and garden waste can be prevented from entering the municipal waste stream. Waste prevention and minimisation sits at the top of the EU waste hierarchy as being the most desirable option for dealing with waste. A number of different methods can be employed to encourage the general public and commercial enterprises to reduce the amount of waste that they produce. Such measures include:

• consumer awareness: encouraging individuals to become 'greener' shoppers, e.g. only buy what you need, buy loose products if possible, choose products which have minimal packaging, buy concentrated products as they use less packaging, choose products in reusable or returnable packaging and products that come in recycled or recyclable materials;

• public education: Public education is a very important measure to be employed to encourage the general public to reduce the quantity of waste that they produce.

• Separation at source: Encouraging householders to separate their waste into the various

different fractions, e.g. paper and paperboard, food and garden waste, textiles and wood;
• home composting: Encouraging householders to home compost the relevant biodegradable fractions of their municipal waste;
• fiscal instruments: The use of fiscal measures to encourage householders to reduce the quantity of waste that they produce has proven to be very beneficial. These have included charges for waste collection and treatment based on the quantity of waste put out for collection;
• producer responsibility initiatives and obligations: These are initiatives or obligations undertaken by those involved in the manufacture, distribution and sale of products. These can be effective tools for making producers take greater responsibility for goods at the end of their lives. These initiatives can include reductions in the quantity of packaging required, reductions in the polluting potential of the packaging i.e., reductions in the heavy metal content of the packaging or increasing the quantity of recycled material used in the products. Producer responsibility programmes can be either voluntary agreements between public authorities and bodies representing waste producers such as trade associations or mandatory measures imposing obligations on specific producers.

Most countries appear to prefer the use of voluntary agreements. In England and Wales, for instance, the Government has been working with the Newspaper Publishers Association to increase the recycled content of newsprint which in 1999 was approximately 54 %. The newspaper publishers have agreed to commit themselves to the following targets: 60 % recycled content by the end of 2001, 65 % recycled content by the end of 2003 and 70 % recycled content by the end of 2006. These targets will be subject to review in 2001 and 2003 (DETR, 2000). Many of the agreements reached in Member States to facilitate progress towards the targets set by the Packaging Directive are voluntary agreements, backed up with the promise of mandatory measures being introduced in the absence of progress.

While more difficult to tackle than other phases in the waste chain, national strategies should address waste prevention and minimisation as a key area for action and countries should put in place measures to encourage prevention and minimisation as an integral part of the strategy.

Phase 2 — presentation, collection and transfer/movement

Overview

Phase 2 relates to the presentation, collection and transfer/movement of waste and is, perhaps, the key phase in relation to the management of BMW. Effectively, there are two options: the BMW which is produced can either be managed on site (at or near the place of origin) or off site (away from the place of origin). On-site management relates mainly to either home composting or communal composting.

The manner in which waste is presented for collection for subsequent treatment off-site has a major influence on the options available for managing the waste stream. BMW can either be presented as part of the bagged waste fraction (i.e., mixed waste) or as separate fractions (e.g., paper and paperboard, food waste, garden waste and wood waste).

As mentioned in Section 3 and illustrated below in Table 9, there is considerable variation between countries in relation to the relative quantity of BMW that is separately collected, ranging from nearly 70 % in Flanders to 5 % in Catalonia. Countries that landfill less than 20 % of their BMW separately collect in excess of 40 % of BMW produced. It should be noted that this table presents data for the most recent year for which reliable information is available.

There is, therefore, considerable evidence that widespread separate collection systems are an essential infrastructural requirement for large scale diversion of BMW away from landfill. Of course, the one exception to this would be the diversion of BMW collected as bagged waste away from landfill to incineration with energy recovery; however, such a simplistic solution would probably be in breach of Article 5 of the landfill directive which states that the strategy (to reduce biodegradable waste going to landfill) should include measures to achieve the targets by means of in particular, recycling, composting, biogas production or materials/ energy recovery.

The widespread use of separate collection systems is therefore the first step towards the development of a mix of diversion routes such as composting, recycling, biogas production and materials/energy recovery.

Collection of BMW in separate fractions

The main fractions of BMW which can be separately collected are paper and paperboard, food waste, garden waste, textiles and wood. Table 10 lists the different fractions of BMW which are separately collected, and/or delivered to civic waste facilities, by the various countries and regions examined.

How are these fractions separately collected?

In general, there are three methods used to separately collect biodegradable municipal waste:
• direct from households (kerbside collection);
• use of collection receptacles in close proximity to households (bring banks); and
• delivery direct to civic waste facilities (recycling centres).

Direct from households

In general, there are four different collection receptacles used for the collection of the biodegradable fraction of municipal waste from households; biobins, paper bags, plastic bags (some of these may be biodegradable) and to a limited extent biodegradable bags. Biobins are generally made from plastic and are usually stored along with the collection receptacle used for storing the mixed waste fraction. The size of these bins range in general from 40 litres to 120 litres. Paper bags are often used for the storage of biodegradable municipal waste because the paper bag does not have to be removed prior to composting, as it will degrade during the composting process. This is usually facilitated by passing the bags through a shredder prior to the composting process. In some countries plastic bags of different colours are used for the collection of the different fractions of waste with the bags then being sorted optically in central plants. The disadvantage of the use of plastic bags for the collection of BMW is that the bag has to be removed prior to the composting process. The use of biodegradable bags for the collection of BMW is gaining popularity as, like with paper bags, they can be placed directly into the composting process. An additional advantage is that they are more durable than paper bags, which tend to disintegrate when they get wet. However, biodegradable bags tend to be more expensive than plastic or paper bags.
The frequency of collection varies between municipalities but is generally weekly or alternative weeks. During the summer, the food and garden waste fraction may need to be collected at greater frequencies in order to prevent nuisances such as, for example, odours etc. from occurring.
A key advantage of collection direct from households is that high participation rates are generally achieved.

Use of collection receptacles in close proximity to households
These usually consist of large containers which are located in close proximity to households in strategically located positions such as beside supermarkets, where householders can bring their separated waste fractions for collection. There is usually a colour-coded container designated to each waste fraction. Paper and paperboard, food waste, garden waste and textiles can all be collected in this way (5). In relation to food waste, householders are usually provided with either plastic or paper bags in which they place their food waste, which they then deliver to these collection points. The frequency at which these containers are emptied varies between municipalities and depends upon the fraction of waste that they contain, for example, greater frequencies for food waste. In some countries and regions, e.g. Catalonia, the food waste containers are emptied either on a daily basis or every second day. This frequency may be increased during the summer months to minimise potential nuisances. The receptacles are cleaned at least once in every two week period. This type of collection method is particularly suitable for areas with high residential densities with limited space available for larger containers.
Delivery direct to civic waste facilities (recycling centres)
A civic waste facility, also known as a recycling centre, is a facility at which waste may be directly deposited. In addition to accepting wastes like bottles, cans, batteries and electrical goods, these facilities may also accept paper and paperboard, food and garden waste, textiles and bulky household waste. These facilities are generally more suited for the collection of biodegradable municipal waste from less populated areas, e.g. rural locations, where it may not be economical to collect these fractions directly from the households.

Strategies and instruments in place to encourage source separation and separate collection

A number of different measures can be employed to encourage and increase the rate of separate collection. The following include the main measures that are usually employed:
• legal obligations requiring separate collection;
• the use of presentation by-laws;
• fiscal instruments; and
• sustained public education campaigns.
A combination of these measures is likely to be required if high separate collection rates are to be achieved.

Legal obligations requiring separate collection

A number of countries have introduced legal requirements for the separate collection of the biodegradable fraction of municipal waste. Depending on the country concerned, this obligation may extend to certain specific fractions like food waste and paper and paperboard. For example, in Austria, since 1995, there has been a legal obligation on municipalities to separately collect and treat organic waste from households. Similarly in Catalonia, since July 1999 municipalities with more than 5 000 inhabitants must carry out separate collection of the organic fraction of municipal solid waste. In Denmark, municipalities are legally obliged to collect 40–55 % of newspapers and magazines for recycling. The Danish municipalities are (5) Some countries do not allow the collection of food waste in this way for public health reasons. Clearly, hygiene and public health concerns must rank highly when planning this type of collection activity. also required to establish collection systems for food waste from canteens and restaurants that generate more than 100 kg of food waste per week. Since January 1994, all municipalities in the Netherlands have been required to separately collect food and garden waste from households. Dutch municipalities are also required to collect paper and paperboard and textiles separately.
Generally, these obligations are placed on municipalities by central government, with municipalities responsible for implementation. As with all such obligations, their relative success depends to a large extent on sufficient funding as well as the cultural conditions that prevail in a particular country in relation to how different levels of government cooperate with one another.

The use of presentation by-laws
An additional measure which is complementary to the one specified above is the use of bylaws or other legislative means which require householders or other waste producers, such as commercial enterprises and state institutions, to separate specific fractions of their waste and to present them for collection in the manner specified. This usually relates to the type of collection container to be used and the frequencies and dates at which these containers should be put out for collection. In Ireland, for instance, there is a provision under the Waste Management Act of 1996, the primary piece of national legislation in relation to waste, which provides municipalities with the power to pass by-laws specifically in relation to the manner in which waste is to be presented for collection.

Fiscal instruments
These generally include measures relating to the cost of collection and treatment of waste from households and other premises. The net effect of these instruments is to give the waste producer a financial incentive to either put out less waste for collection or to present waste in a manner which makes it more amenable to recovery. In a number of countries, the cost is based on the quantity or weight of waste put out for collection. Thus for those households that recycle a large proportion of their household waste, considerable reductions in costs can be achieved. In addition, where home and/or communal composting is carried out, similar cost savings can be achieved. In some cases, municipalities reduce their collection fees for those households where home composting is carried out e.g., Austria, some municipalities in Denmark, Sweden and Italy. In Flanders, collection costs are higher for unsorted wastes compared to sorted wastes.

Sustained public education campaigns

Public education campaigns are a vital part of the implementation of waste management strategies and plans. These campaigns are aimed at encouraging waste producers to, in the first instance, reduce the quantity of waste which they produce, and secondly to encourage source separation and recovery of waste.
Householders can be encouraged by informing them of the importance of their active participation in source separation schemes and the provision of advice. This can be achieved through the use of newsletters, visiting households and telephone helplines. It is essential that throughout these schemes householders are provided with positive feedback. Many schemes that had high levels of participation in the initial phase and where rates subsequently dropped, the fall-off in participation was primarily due to the lack of follow-up by the relevant municipalities.

Additional considerations

Prior to the commencement of any source separation scheme it is vital that markets and end uses for the products have been identified. This will help identify issues like relevant quality standards that are required to be achieved for certain products and thereby highlight considerations such as the level of contaminants that are acceptable/unacceptable.

Collection of BMW a bagged waste

BMW can also be collected as part of the bagged waste fraction. However, collecting BMW by this method restricts the routes by which it can subsequently be managed. Generally, mixed municipal waste is either landfilled or incinerated, although some countries have experience

in manual and mechanical separation of materials from the mixed waste stream. Due to the problems of contamination, source separation must be considered to be a better management option than attempting to separate out materials from the mixed waste stream.

Phase 3 — treatment

As illustrated in Figure 5, the treatment options available to treat BMW depend to a large extent on the way in which the waste is collected. The main options available are summarised in Table 11. The most widely used option for diverting bagged waste away from landfill is incineration. Other options include manual or mechanical sorting of the mixed waste stream to recover materials or reduce the organic content, or central composting for mass reduction only. Generally, attempting to recover materials from the mixed waste stream has not met with success due to contamination problems.

Table 11 Options available for diverting BMW away from landfill

Waste stream	Incineration	Gasification	Pyrolysis	Central composting for mass reduction	Composting	Anaerobic digestion	Recycling	Re-use	Manual or mechanical sorting
Wet mixed (bagged waste)	√			√		√			√
Refuse Derived Fuel (RDF)	√	√	√						
Food and garden					√	√			
Food					√	√		√	
Garden					√	√			
Paper	√	√	√		√	√	√		
Textiles	√	√	√				√	√	
Wood	√	√	√				√	√	

The options are considerably broader for separately collected fractions, ranging from relatively simple composting technologies to relatively complex thermal treatment options

such as gasification and pyrolysis.
A key issue to address when deciding on the optimum approach to managing BMW and its component waste streams is the availability of markets and outlets for materials recovered from the waste stream. Prior to investing resources in the construction of facilities for recovery of BMW such as composting plants, anaerobic digestion plants or gasification plants, it is vital that end markets and outlets for the products produced have been identified. Market analysis will also help highlight issues such as relevant quality standards that are required to be achieved for certain products.
Key instruments to encourage the diversion of BMW away from landfill include the introduction of bans and restrictions on the landfilling of BMW or specific fractions of BMW, and the use of waste taxes, in particular landfill taxes and taxes that provide a financial incentive to divert waste away from landfill and/or incineration. Practical examples of the use and application of these instruments are presented in the case studies (see Sub-Section 4.6).

Phase 4 — final destination, end uses and markets

The final link in the chain is the final destination or end-use of the material, which will, to a large extent, be determined by the way in which the material is collected. Bagged waste will, in most cases, either be landfilled or incinerated, with or without energy recovery. Allowing BMW to be collected as bagged waste limits the options available for it further down the waste chain. However, even in countries with very high separate collection rates, there remains a significant quantity of waste that is, and in all likelihood will, continue to be collected as bagged waste, and management options are required to deal with this. Each country will have to decide, based on its own criteria, what it considers to be the best environmental, economic and political solution to managing this part of the waste stream. Ideally, national strategies should be geared towards reducing the quantities of BMW collected as part of the bagged waste stream, so that it can maximise the potential for recovery of the materials contained within the stream.
Wastes that are separated at source and collected separately have the potential to be recovered and put to beneficial use. However, if inadequate attention is paid to the quality of the recovered materials and to the development and maintenance of reliable markets and outlets for materials recovered from BMW, countries risk the creation of a separate waste management problem. It is therefore vital to address the question of markets and outlets for materials recovered from the BMW waste stream, and to ensure that structures are put in place that guarantee the reliability of these markets and outlets.

Conclusions

It is clear for the three case studies presented that a suite of strategies and instruments were successfully used to achieve the twin objectives of better BMW management, i.e.
1. High rates of diversion of BMW away from landfill
2. High rates of recovery, in particular, material recovery, of BMW diverted away from landfill.
Countries that have made significant strides towards achieving these objectives have certain things in common. In particular, there is significant state intervention in all cases to encourage, on the one hand, high levels of separate collection and, on the other hand, high levels of diversion away from landfill, and in some cases, diversion away from incineration as well. This intervention mainly consists of legal requirements for separate collection of specific waste streams and taxes and restrictions on the landfilling and incineration of specific waste streams.
The net effect of encouraging separate collection and restricting disposal outlets is that:
• the quantity of material available for recovery is maximised, and
• the available routes for disposal of materials are curtailed.
This is clearly illustrated by the case studies presented above. In all three cases, the countries and regions involved have high levels of separate collection leading to relatively large quantities of waste destined for recovery. Recovery routes vary from one country to another with an interesting contrast to be seen between Denmark, with its high dependence on incineration with energy recovery and Flanders, where incineration of municipal waste is essentially being phased out. To a large extent, local conditions and markets will determine the most appropriate mix of options for a particular country and region. For instance, incineration of municipal waste is an important element of general energy policy in

Denmark, where many district heating schemes are in existence, and thermal treatment is therefore likely to continue as a key component of the BMW management strategy.
The risks involved in pursuing a strategy of large-scale separate collection and tight restrictions on disposal are also worth considering. First of all, if adequate and reliable outlets are not available for the materials being separately collected, countries and regions investing heavily in separate collection risk the creation of a separate waste management problem. This means that the question of adequate and reliable outlets for compost and paper, in particular, needs to be fully addressed, preferably before large-scale separate collection systems are put in place. At the very least, integrated plans are required at both local and national level to ensure that there is linkage between collection of waste materials from households and business premises, the processing and quality of these materials and the subsequent use of end-products such as compost or recycled fibre.
The other risk attached to the strategy is an increase in illegal dumping of waste by waste producers and waste handlers looking for ways to avoid paying higher costs associated with such a strategy. However, the possibility of illegal activity should not be allowed to impair the implementation of measures to meet the targets set by the landfill directive. It could also be argued that one of the best defences against illegal dumping is the provision of an adequate network of facilities in advance of imposing legal restrictions on disposal. This means, for instance, that where countries are planning to introduce bans or restrictions on the landfilling or incineration of specific parts of the BMW waste stream, sufficient time should be allowed and resources invested to ensure that alternative arrangements are in place for the waste to be diverted away from disposal.

Key issues and proposed indicators

The key issues identified in relation to meeting the targets set out by the landfill directive are discussed below, along with conclusions where they arise. A set of indicators has also been developed which are presented below (Table 12).

Identification of key issues

Key issues identified at the start of this project were:

• available options for diversion of biodegradable waste away from landfill;
• available options for separate collection of biodegradable waste;
• appraisal of treatment options used to date, including composting, anaerobic digestion, and incineration;
• impact of diversion of biodegradable waste away from landfills;
• environmental consequences of choosing particular diversion options such as composting, anaerobic digestion and incineration;
• quality and market issues for products such as compost from biodegradable waste;
• standards for products produced from the recovered waste;
• fiscal instruments including landfill and other taxes; and
• definition of indicators for biodegradable waste suitable for national and EEA indicator based reporting.

In preparing this project, some key issues of particular importance have been identified which require consideration when planning for compliance with the targets set by the landfill directive for diversion of BMW away from landfill. These are:

The need for good quality and consistent information
A standard approach to tracking progress towards the landfill directive targets is needed. A standard approach to tracking BMW flow in individual countries would also be a useful tool to measure progress towards the achievement of the targets.
However, based on the information supplied by EEA member countries during the course of this project, there are considerable gaps in information at national level. Many countries had difficulty describing the flow of BMW in their jurisdictions. Reliable waste flow information is an essential building block of any national strategy and ongoing efforts are therefore required to establish

harmonised systems of data collection and reporting. It is rather alarming that the relatively simple formats for reporting summary information on BMW production and management provided such difficulty for so many countries, mainly due to an absence of basic information at national level.
A problem also exists in relation to the definition of biodegradable municipal waste that results from the well-documented difficulties that exist in relation to the definition of municipal waste. It is worth repeating the earlier conclusion, in relation to this matter, that the definition provided in the landfill directive was the most practical from the point of view of comparing one country to another since it is simply defines municipal waste as household type waste from any source.
The operational definition provided in sub-section 2.1 of this report is recommended for the purpose of gathering data on biodegradable municipal waste, and it follows on from the approach to investigate the comparability of household and municipal waste. There is, however, a requirement for more detailed descriptions of the actual waste types to be considered as well as guidelines on how to establish the composition of the bagged (mixed) waste component.

Integrated approach to developing national strategies

The experience of countries and regions that have succeeded in diverting large quantities of BMW away from landfill strongly suggests that an integrated package of options is needed at national level to achieve high diversion rates. Countries with high rates of diversion of BMW away from landfill employ a combination of separate collection, thermal treatment, centralised composting and material recycling. Thermal treatment, mainly incineration, is generally used for the treatment of bagged waste while composting, re-use and recycling are employed for separately collected wastes such as paper and cardboard, garden wastes, textiles, wood and, to a lesser extent, food wastes. Technologies such as anaerobic digestion, gasification and pyrolysis are in use to a lesser extent, although as the technologies develop their use could become more widespread.
Therefore countries should identify a range of options for managing BMW away from landfill. These options should be linked clearly to available markets and outlets for materials diverted away from landfill. This will require the development of plans for the management of both the mixed waste stream and specific materials separated from the waste stream, in particular food waste, garden waste and paper/cardboard waste. Countries that currently collect the bulk of BMW as part of the mixed waste stream clearly need to plan for both radical reductions in the quantity of mixed waste collected and radical increases in the separate collection of specific materials.

Collection systems

All countries and regions surveyed employ a mix of traditional ‘bagged waste’ collection and separate collection. Generally, traditional ‘bagged waste’ is either landfilled or incinerated, although some non-thermal treatment also occurs, such as central composting for mass reduction only. The key to achieving both high landfill diversion rates and high re-use, recycling and composting rates (i.e. recovery other than energy recovery) appears to be the provision of widespread separate collection facilities, together with the availability of adequate capacity and markets for the materials thus collected.
Source separation and separate collection should therefore be considered for inclusion in national strategies for meeting the targets set by the landfill directive.
This suggestion comes with a note of caution. Each country will need to work out a realistic and achievable target for source separation and separate collection so that it is reasonably confident that the quality of the recovered materials are sufficiently high and that viable markets and outlets exist.

Treatment options

At present, there appears to be a relatively small number of proven treatment options available for BMW diverted away from landfill. The three principal alternatives in use at present are **incineration with energy recovery**, mainly of bagged waste, **central composting**, mainly of garden wastes (and, to a lesser extent, food wastes) and **material recycling**, mainly for paper and cardboard wastes. Some other routes are in use such as anaerobic digestion and

use of food waste as animal fodder, but generally, for relatively small quantities of waste. More recent or emerging technologies such as gasification and thermolysis may also play a role in national strategies for the management of BMW.

Availability of markets and other outlets for compost and other end products
As stated earlier in this report, if adequate and reliable outlets are not available for materials being separately collected, countries and regions investing heavily in separate collection risk the creation of a separate waste management problem. National planners should be fully aware of the importance of establishing and maintaining adequate markets and outlets when drawing up national strategies and plans for the diversion of BMW away from landfill.

Bans and restrictions on landfilling/disposal taxes
A key instrument available to individual countries is to impose bans or restrictions on the landfilling of specific waste streams or to tax disposal in order to make recovery a more economically viable option. Perhaps the optimum approach is to have a combination of progressive restrictions on acceptance of specific waste streams at landfill together with a taxation system that increases the cost of landfilling to a point where it is no longer a financially attractive option. However, whatever approach a country chooses to take, it is essential that alternative routes be identified in advance for waste diverted away from landfill.

Monitoring national strategies for BMW
The landfill directive sets out clear targets and a clear timeframe for reducing the absolute quantity of BMW being consigned to landfill. By basing the target on 1995 production data, a clear roadmap is available for each country, provided that reliable data or, at least, agreed data, is available for BMW production in 1995, in accordance with the requirements of the Directive. This roadmap is illustrated for each country in the BMW management sheets, which can be downloaded from www.eea.eu.int. The net impact of future growth in BMW production, were this to happen, is that larger quantities of BMW will require treatment by routes other than landfill. It is therefore essential that, as part of its national strategy, **each country sets up a monitoring and management system that will allow it to track BMW production and management on a continuous basis**. Such a system would make the link between production of BMW, its subsequent management and the final destination or use of materials, such as compost, produced through its management. Monitoring should be conducted on a continuous basis so that instruments and strategies in use to divert BMW away from landfill are regularly audited and checked for their relative effectiveness and remedial action taken where necessary.

Proposed indicators

The following is a list of indicators that are considered useful in tracking progress towards the targets and objectives set by the landfill directive (priority indicators are highlighted in bold). An overview of these priority indicators is presented in Table 12 for countries where data was available.

- **Directive target**
- **Quantity of BMW landfilled as a percentage of BMW produced in 1995**
- **Production of BMW**
- Quantity of BMW produced per annum
- The ratio of BMW to MW
- **Per capita production of BMW (tonnes/annum)**
- **Collection of BMW**
- **% of BMW separately collected**
- **% of BMW collected as bagged waste**
- **Treatment of BMW**
- **% of BMW produced that is landfilled (each year)**
- **% of BMW produced that is subjected to thermal treatment (each year)**
- % of BMW incinerated with energy recovery
- % of BMW incinerated without energy recovery
- % of BMW subjected to other thermal treatments
- **% of BMW produced that is recovered by means other than incineration with energy recovery**

% of BMW composted

% of BMW anaerobically digested
% of BMW recycled
% of BMW re-used

Use of products produced from BMW

% of compost produced that was put to beneficial use

Proposal of priority indicators for tracking BMW management

Country or region	Production indicator	Landfill directive target indicator [1]		Collection indicators		Treatment indicators [2]			Year [3]
	BMW production/capita [4] (tonnes/person/annum)	1995	Latest year	% of BMW collected as bagged waste	% of BMW collected in separate fractions	% of BMW being consigned to landfill	% of BMW being consigned to Incineration	% of BMW being consigned to other recovery processes	
Austria	0.19	20.2	21.5	43.0	57.0	20.4	13.3	58.5	1996
Denmark	0.35	11.3	5.8	58.0	42.0	5.3	54.3	40.5	1998
Belgium (Flanders)	0.28	37.3	3.9	32.2	68.8	16.7	22.1	57.1	1998
Finland	0.33 (1994)	65.2	64.9	70.0	29.3	64.9	5.8	28.6	1997
France	0.27	38.0	42.8	81.8	18.2	40.3	35.7	12.7	1998
Germany	0.35 (1993)	70.2 [5]	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Baden-Württemberg	0.57	42.7	29.1	62.0	38.0	30.2	12.3	55.0	1998
Greece	0.25 (1997)	100	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Iceland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ireland	0.27	91.2	106.0	90.0	10.0	90.3	0	9.8	1998
Italy	0.16 (1996)	74.4	71.8	85.7	14.3	68.4	5.7	19.5	1997
Luxembourg	N/A	21.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Netherlands [6]	0.31	28.3	14.5	47.7	52.3	13.1	36.5	52.3	1998
Norway	0.36	68.0	58.2	68.7	31.3	59.0	17.0	25.0	1997
Portugal	N/A	100	N/A	N/A	N/A	N/A	N/A	N/A	N/A
UK (England and Wales)	0.32	89.5	93	72.1	27.9	86.2	5.7	8.1	1998/ 99
Spain	0.31 (1996)	75.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Catalonia	0.32	74.6	77.4	95.0	5.0	73.4	20.7	5.9	1998
Sweden	N/A	36.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

1) Quantity of BMW landfilled is stated year as a percentage of BMW produced in 1995.
2) Treatment may not, in all cases, add up to 100 %, due to imbalance between reported production and reported treatment.
3) Relevant year for landfill directive Target Indicator (latest year), collection indicators and treatment indicators.
4) Refers to data for 1995 unless otherwise stated.
5) This figure is derived from the Eurostat baseline for production and landfilling of BMW.
6) Refers to waste from households only.

N/A:No information available

ANNEX 3

The Town Svätý Jur

Generally binding regulation
No. 2/2001

on rules of collection, transportation/shipment, reuse and disposal of municipal waste in the territory of the town Svätý Jur.

The town council of Svätý Jur adopted a generally binding regulation (GBR) according to provision of § 6 Act no. 369 / 1990 on municipal set-up as amended and with the connection with § 4 par. 3 letter f) and g) of cited act and in compliance with § 39 par. 4 Act No. 223 / 2001 on waste and about changes and amendment of some other acts on 13 December 2001.

Article 1.
The purpose and object

1. The purpose of this GBR is to settle a system of collection and shipment of municipal waste and its components, light construction waste and bulky waste and handling with waste in the territory of town Svätý Jur.
2. This GBR introduces the rights and obligations for legal entities, individuals – entrepreneurs, individuals and town authority handling with waste, which could have direct impact on health of citizens.

Part I. Introductory provisions
Article 2.

Basic definitions

1. Waste shall mean a movable thing specified in Annex 1 to this GBR, which the holder discards, or is obliged to discard pursuant to the Act or special regulations.
2. Waste generator shall mean anyone whose activity generates waste or anyone who carries out-processing, mixing or other operation with waste resulting in a change of the nature or composition of the waste.
3. Waste holder shall mean a waste generator or an individual or a legal entity having the waste in possession.
4. Waste handling shall mean waste collection, waste shipment, waste recovery and waste disposal including care for the place of disposal.
5. Waste disposal shall mean such handling of waste, which does not lead to a damage of the environment or to threat of human health, and is listed in Annex 2 this GBR.
6. Waste collection shall mean waste accumulation, sorting or mixing for the purpose of its shipment.

7. Waste accumulation shall mean temporary storage of waste ensuring its further handling.
8. Waste sorting shall mean separation of waste by types or separation of waste components that may be classified as separate waste type after separation.
9. Hazardous waste shall mean waste having one or several hazardous characteristics listed in Annex 3 this GBR.
10. Municipal waste shall mean household waste generated in a municipality by activities of individuals and waste of a similar nature generated by activities of a legal entities or an individuals – entrepreneurs, as well as waste generated by the activities of the municipality while cleaning public roads and areas administered by the same, and by the maintenance of public vegetation including parks and cemeteries.
11. Bulky waste is municipal waste and light construction waste that cannot be located into the standard bins due their large size or their amount.
12. Light construction waste is waste from common maintenance and reconstruction activities realized by individual (not entrepreneurs). This means such maintenance works where an announcement to construction authority is sufficient or permission from state body is not required.

Part II. General provisions

Article 3.

General obligation of institutions of self-government

All authorities of self-government participating on implementation of the Waste Act within their competence are obliged to respect the provisions of this Act, principles of protection and creation of environment, especially:

a, the principle of minimizing the generation of waste, everywhere it is possible,
b, the principle of waste recovery, anytime it is possible.

Article 4.

General obligations of waste generator

1. All generators of municipal waste and light construction waste (citizens, legal entities and an individuals – entrepreneurs as well as bodies owning in the cadastre a real estate) are obliged to become participants of town system of municipal waste management.
2. Everyone is obliged to handle or treat waste in compliance with the GBR and the Waste Act, anyone to whom obligations result from a decision issued under this GBR is obliged to handle or treat waste in compliance with that decision. While handling or otherwise treating waste everyone is obliged to protect human health and the environment.
3. Gathering of municipal waste is conducted by owners, landlords and users of objects, blocks of flats and houses where waste is generated
4. The legal entities and individuals, which have not been participants of the system of municipal waste management and light construction waste collection are obliged to announce themselves at municipal authority in Svätý Jur within one month from the day of this GBR enters into force.
5. New waste generators (official approval of houses, flats...) are obliged to announce themselves at municipal authority in Svätý Jur within one month from the effective day, when they become waste generators, so that they are provided with necessary collecting bins, ensured by municipal authority through a contract partner who conducts collection of waste in the territory of town.
6. If a proprietor, landlord or tenant of a real estate finds out that on the territory of his real estate waste has been put, then he is obliged to announce it immediately to municipal authority, in the territorial district of the real estate. Further this waste is handled according to § 18 of Waste Act.
7. If there is no other issued regulation the cost of activities leading to waste disposal and costs of waste disposal is paid by waste holder, for whom the waste disposal including the collection and processing of waste is being carried out, if such a waste holder is unknown, the last known waste holder bears these costs.

Article 5.

Obligations of the town.

1. The municipal authority is obliged to provide a legal entities and an individuals with information concerning:
    - Handling with waste on the town territory in general,
    - Collection of municipal waste – schedule of transport, which is sent in writing to each household,
    - Complains and solutions of complains related to waste handling in the territory of town,
    - Sanction for breaching this GBR and Waste Act.
2. The municipal authority is obliged to elaborate a plan of waste management pursuant to valid legal regulations.

3. To require from legal entities or an individuals – entrepreneurs generating annually more then 50 kg of hazardous waste or 1 ton of other waste elaborated own Waste Management Plan.
4. The town is obliged to ensure collection and shipment of light construction waste, bulky waste and separated waste from households with hazardous compounds content at least twice a year.

Article 6.

General rules for waste handling.

1. Municipal authority provides collection of municipal waste and its shipment to landfill for municipal waste in compliance with this GBR and valid acts.
2. Collection, shipment and disposal of municipal waste and separately collected components of municipal waste in the town territory can be conducted only by an entity who has made a legal contract with the town or conducts this activities with approval of the town.
3. The municipal waste shall be gathered into waste collecting bins only, which are a property of the town, or a legal entity or an individual – entrepreneur, who has a legal contract with the city.
4. If employees of an organization, which conducts the shipment of municipal waste find out, that the bins of a legal entities or an individuals – entrepreneurs contain wastes which are not classify as municipal waste, such a bin will not be empted. After notifying the bin owner is obliged to remove the content of bin on his own costs in compliance with Waste Act.
5. After putting waste into bins, the waste generators are obliged to close these bins and avoid pollution of their surroundings.
6. Users are obliged to keep the place around the bins in order and clean. In the determinate place of bins it is prohibited to change grouping of bins or to remove them.
7. Stealing or damaging a bin must be reported by users to company, that provides the waste collection or to municipal authority.
8. It is prohibited to:
   a, put hot ash or slag into bins and to water it, to stock waste outside of bins or to use waste bins for other purposes,
   b, gather and stock municipal waste on public places, side ways, parking lots and green areas,
   c, place a collection bins on roads and public areas on the day of state holiday, important anniversary or important community evens,
   d, create illegal landfills, which means to stock waste on other places than it is defined in this GBR,
   e, pick out municipal waste from bins on purpose of its next usage,
   f, release and throw waste into water flows.

Part III. Handling with municipal waste

Article 7.

Gathering, shipment and disposal of municipal waste and its components except waste with hazardous compounds content.

1. The system of collection of individual components of municipal waste is conducted as follows :

a, for separate collection of glass there are plastic bins with volume of approx. 1,5 m^3 distributed through the town,

b, Separate collection of paper is realized by 110 l tin containers distributed in individual households or as bound paper in packets, boxes, bags located next to these containers.

c, Collection of rest municipal waste (the residual waste after selecting all separated components of this waste and hazardous waste) is being conducted as follows:

- into 240 l plastic bins for family houses
- into 1100 l containers for block of flats houses
- Into 240 l plastic bins or 1100 l containers according to amount of produced waste for legal entities or an individuals – entrepreneurs.

2. Shipment of municipal waste according to par. 1 is realized by a company on the base of an agreement according to contracted shipment schedule.
3. Number of collection bins for waste generators of municipal waste is organized as follows :

a, for waste generators from family houses (the term of export 1 x 2 a week):

- 1 – 4 persons .....1 x 240 l plastic bin
- 5 – 8 persons .....2 x 240 l plastic bin
- 9 – 12 persons .....3 x 240 l plastic bin

b, for waste generators from block of flats houses (the term of export 2 x a week) :

- 73 persons .....1 x 1100 l of container

c, for legal entities and individuals – entrepreneurs are obliged sets of 240 l bin and 1100 l containers according to kind and amount of produced waste.

4. Individuals – entrepreneurs and legal entities are allowed to arrange individual conditions, like volume, type of containers and schedule of shipment, with an organization mandated to provide collection in the town by individual agreement. This kind of collection is considered to be mass collection. The price will be a subject of contract between waste generator and organization mandated with collection.

Article 8.

Gathering, shipment and disposal of hazardous components of municipal waste.

1. The collection of these wastes is realized by delivery system to determined collection place.
2. The unused medicines gathering after expiration date is being conducting by Pharmacy u Juraja in the street Hergottova 2.
3. Used tyres, batteries, accumulators, bulls, waste electric and electronic equipment, used oils, wastes from chimneys, residues of paint and its packaging are collected on determined place defined by municipal authority. Municipal authority shall provide the collection and shipment at least twice a year.

Article 9.

Gathering, shipment and disposal of light construction waste.

1. Collection of light construction waste, miscellaneous of metals and waste from wood, except of the waste that is subject of separation pursuant to this GBR is conducted by Collection point for secondary raw materials, in the street Na Pažiti.

2. This Collection point has situated for this purpose according to par. 1 of this article in its area at least two pieces of high volume containers. Light construction waste is taken over by responsible person only from citizens of Svätý Jur in max. amount 0,5 m^3 free of charge.
3. Waste generator on his own costs handles light construction waste in amount more than 0,5 m3 waste.
4. To drive – in into the construction of scrap yard is allowed only for motor vehicles carrying wastes with valid permission of municipal authority and only in operation time of the scrap yard.
5. The scrap yard must not receive municipal waste and light construction waste from legal entities or individuals, which is produced during their entrepreneurial activity.

Part IV. The cost of waste management

Article 10.

The fees.

1. On purpose to cover costs of town on collection, shipment and disposal of municipal waste and light construction waste pursuant this GBR town establishes this fees.
2. The value and structure of fees is determined by amendment no.7 to GBR no.2 / 1995 about local fees.

Part V. Closing provisions

Article 11.

Penalty and sanctions.

1. In pursuant with Act 223 / 2001 about waste, 372 / 1990 about offences, 544 / 1990 about local fees and 369 / 1990 about a municipal set-up and later regulations can municipal authority give a penalty up to 5 000,- Sk to individuals, who:
   a, dispose of waste or recover waste in contradiction to the Act and this GBR,
   b, put waste on other place, than the town determines it,
   c, do not announce that waste has been put on his real estate in contradiction to the Act,

d, do not provide official body by required data and information that a waste holder or handler are obliged to.

2. In pursuant with Act 369 / 1990 on municipal set-up as amended a major of town can give a penalty up to 100 000,- Sk to a legal entity – entrepreneur for breaching this GBR.

Article 12.

Closing and cancellation statements

1. The inspection and checking if this GBR is implemented is provided by:
   a, employees of municipal authority

b, deputies of town self-government

2. In controversial questions and details to this GBR implementation the major shall decide.
3. This generally binding regulation is effective from 1.1.2002.

Signed by major Alexander Achberger

17 December 2001

The Town Svätý Jur

Generally binding regulation
No. 2/2001

on rules of collection, transportation/shipment, reuse and disposal of municipal waste in the territory of the town Svätý Jur.

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Article 1.
The purpose and object

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4. This GBR introduces the rights and obligations for legal entities, individuals – entrepreneurs, individuals and town authority handling with waste, which could have direct impact on health of citizens.

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15. Waste holder shall mean a waste generator or an individual or a legal entity having the waste in possession.
16. Waste handling shall mean waste collection, waste shipment, waste recovery and waste disposal including care for the place of disposal.

17. Waste disposal shall mean such handling of waste, which does not lead to a damage of the environment or to threat of human health, and is listed in Annex 2 this GBR.
18. Waste collection shall mean waste accumulation, sorting or mixing for the purpose of its shipment.
19. Waste accumulation shall mean temporary storage of waste ensuring its further handling.
20. Waste sorting shall mean separation of waste by types or separation of waste components that may be classified as separate waste type after separation.
21. Hazardous waste shall mean waste having one or several hazardous characteristics listed in Annex 3 this GBR.
22. Municipal waste shall mean household waste generated in a municipality by activities of individuals and waste of a similar nature generated by activities of a legal entities or an individuals – entrepreneurs, as well as waste generated by the activities of the municipality while cleaning public roads and areas administered by the same, and by the maintenance of public vegetation including parks and cemeteries.
23. Bulky waste is municipal waste and light construction waste that cannot be located into the standard bins due their large size or their amount.
24. Light construction waste is waste from common maintenance and reconstruction activities realized by individual (not entrepreneurs). This means such maintenance works where an announcement to construction authority is sufficient or permission from state body is not required.

III.7. Part II. General provisions

Article 3.

General obligation of institutions of self-government

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a, the principle of minimizing the generation of waste, everywhere it is possible,
b, the principle of waste recovery, anytime it is possible.

Article 4.

General obligations of waste generator

8. All generators of municipal waste and light construction waste (citizens, legal entities and an individuals – entrepreneurs as well as bodies owning in the cadastre a real estate) are obliged to become participants of town system of municipal waste management.

9. Everyone is obliged to handle or treat waste in compliance with the GBR and the Waste Act, anyone to whom obligations result from a decision issued under this GBR is obliged to handle or treat waste in compliance with that decision. While handling or otherwise treating waste everyone is obliged to protect human health and the environment.

10. Gathering of municipal waste is conducted by owners, landlords and users of objects, blocks of flats and houses where waste is generated

11. The legal entities and individuals, which have not been participants of the system of municipal waste management and light construction waste collection are obliged to announce themselves at municipal authority in Svätý Jur within one month from the day of this GBR enters into force.

12. New waste generators (official approval of houses, flats...) are obliged to announce themselves at municipal authority in Svätý Jur within one month from the effective day, when they become waste generators, so that they are provided with necessary collecting bins, ensured by municipal authority through a contract partner who conducts collection of waste in the territory of town.

13. If a proprietor, landlord or tenant of a real estate finds out that on the territory of his real estate waste has been put, then he is obliged to announce it immediately to municipal authority, in the territorial district of the real estate. Further this waste is handled according to § 18 of Waste Act.

14. If there is no other issued regulation the cost of activities leading to waste disposal and costs of waste disposal is paid by waste holder, for whom the waste disposal including the collection and processing of waste is being carried out, if such a waste holder is unknown, the last known waste holder bears these costs.

Article 5.

Obligations of the town.

5. The municipal authority is obliged to provide a legal entities and an individuals with information concerning:
   - handling with waste on the town territory in general,
   - Collection of municipal waste – schedule of transport, which is sent in writing to each household,
   - Complains and solutions of complains related to waste handling in the territory of town,
   - Sanction for breaching this GBR and Waste Act.
6. The municipal authority is obliged to elaborate a plan of waste management pursuant to valid legal regulations.
7. To require from legal entities or an individuals – entrepreneurs generating annually more then 50 kg of hazardous waste or 1 tonne of other waste elaborated own Waste Management Plan.
8. The town is obliged to ensure collection and shipment of light construction waste, bulky waste and separated waste from households with hazardous compounds content at least twice a year.

Article 6.
General rules for waste handling .

9. Municipal authority provides collection of municipal waste and its shipment to landfill for municipal waste in compliance with this GBR and valid acts.
10. Collection, shipment and disposal of municipal waste and separately collected components of municipal waste in the town territory can be conducted only by an entity who has made a legal contract with the town or conducts this activities with approval of the town.
11. The municipal waste shall be gathered into waste collecting bins only, which are a property of the town, or a legal entity or an individual – entrepreneur, who has a legal contract with the city.
12. If employees of an organization, which conducts the shipment of municipal waste find out, that the bins of a legal entities or an individuals – entrepreneurs contain wastes which are not classify as municipal waste, such a bin will not be empted. After notifying the bin owner is obliged to remove the content of bin on his own costs in compliance with Waste Act.

13. After putting waste into bins, the waste generators are obliged to close these bins and avoid pollution of their surroundings.
14. Users are obliged to keep the place around the bins in order and clean. In the determinate place of bins it is prohibited to change grouping of bins or to remove them.
15. Stealing or damaging a bin must be reported by users to company, that provides the waste collection or to municipal authority.
16. It is prohibited to :
    a, put hot ash or slag into bins and to water it, to stock waste outside of bins or to use waste bins for other purposes,
    b, gather and stock municipal waste on public places, side ways, parking lots and green areas,
    c, place a collection bins on roads and public areas on the day of state holiday, important anniversary or important community evens,
    d, create illegal landfills, which means to stock waste on other places than it is defined in this GBR,
    e, pick out municipal waste from bins on purpose of its next usage,
    f, release and throw waste into water flows.

Part III. Handling with municipal waste

Article 7.

Gathering, shipment and disposal of municipal waste and its components except waste with hazardous compounds content.

5. The system of collection of individual components of municipal waste is conducted as follows :
    a, for separate collection of glass there are plastic bins with volume of approx. 1,5 m^3 distributed through the town,
    b, Separate collection of paper is realized by 110 l tin containers distributed in individual households or as bound paper in packets, boxes, bags located next to these containers.
    c, Collection of rest municipal waste (the residual waste after selecting all separated components of this waste and hazardous waste) is being conducted as follows:
        - into 240 l plastic bins for family houses
        - into 1100 l containers for block of flats houses
        - Into 240 l plastic bins or 1100 l containers according to amount of produced waste for legal entities or an individuals – entrepreneurs.

6. Shipment of municipal waste according to par. 1 is realized by a company on the base of an agreement according to contracted shipment schedule.

7. Number of collection bins for waste generators of municipal waste is organized as follows :

a, for waste generators from family houses (the term of export 1 x 2 a week):
- 1 – 4 persons .....1 x 240 l plastic bin
- 5 – 8 persons .....2 x 240 l plastic bin
- 9 – 12 persons .....3 x 240 l plastic bin

b, for waste generators from block of flats houses (the term of export 2 x a week) :
- 73 persons .....1 x 1100 l of container

c, for a legal entities and an individuals – entrepreneurs are obliged sets of 240 l bin and 1100 l containers according to kind and amount of produced waste.

8. Individuals – entrepreneurs and legal entities are allowed to arrange individual conditions, like volume, type of containers and schedule of shipment, with an organization mandated to provide collection in the town by individual agreement. This kind of collection is considered to be mass collection. The price will be a subject of contract between waste generator and organization mandated with collection.

Article 8.

Gathering, shipment and disposal of hazardous components of municipal waste.

4. The collection of these wastes is realized by delivery system to determined collection place.
5. The unused medicines gathering after expiration date is being conducting by Pharmacy u Juraja in the street Hergottova 2.
6. Used tyres, batteries, accumulators, bulls, waste electric and electronic equipment, used oils, wastes from chimneys, residues of paint and its packaging are collected on determined place defined by municipal authority. Municipal authority shall provide the collection and shipment at least twice a year.

Article 9.

Gathering, shipment and disposal of light construction waste.

6. Collection of light construction waste, miscellaneous of metals and waste from wood, except of the waste that is subject of separation pursuant to this GBR is conducted by Collection point for secondary raw materials, in the street Na Pažiti.
7. This Collection point has situated for this purpose according to par. 1 of this article in its area at least two pieces of high volume containers. Light construction waste

is taken over by responsible person only from citizens of Svätý Jur in max. amount 0,5 m^3 free of charge.

8. Light construction waste in amount more than 0,5 m^3 waste is handled by waste generator on his own costs.
9. To drive – in into the construction of scrap yard is allowed only for motor vehicles carrying wastes with valid permission of municipal authority and only in operation time of the scrap yard.
10. The scrap yard must not receive municipal waste and light construction waste from legal entities or an individuals, which is produced during their entrepreneurial activity.

Part IV. The cost of waste management

Article 10.

The fees.

3. On purpose to cover costs of town on collection, shipment and disposal of municipal waste and light construction waste pursuant this GBR town establishes this fees.
4. The value and structure of fees is determined by amendment no.7 to GBR no.2 / 1995 about local fees.

Part V. Closing provisions

Article 11.

Penalty and sanctions.

3. In pursuant with Act 223 / 2001 about waste, 372 / 1990 about affence, 544 / 1990 about local fees and 369 / 1990 about a municipal set-up and later regulations can municipal authority give a penalty up to 5 000,- Sk to individuals, who:

a, dispose of waste or recover waste in contradiction to the Act and this GBR,
b, put waste on other place, than the town determines it,
c, do not announce that waste has been put on his real estate in contradiction to the Act,
d, do not provide official body by required data and information that a waste holder or handler are obliged to.

4. In pursuant with Act 369 / 1990 on municipal set-up as amended a major of town can give a penalty up to 100 000,- Sk to a legal entity – entrepreneur for breaching this GBR.

Article 12.
Closing and cancellation statements

4. The inspection and checking if this GBR is implemented is provided by:
   a, employees of municipal authority
   b, deputies of town self-government
5. In controversial questions and details to this GBR implementation the major shall decide.
6. This generally binding regulation is effective from 1.1.2002.

Signed by major Alexander Achberger

17 December 2001

ANNEX

School training course (German), December 2003

Authors: Sibylle Spiegler, Manfred Pendl,
“die umweltberatung” Wien

EINFÜHRUNG DER SAMMLUNG VON BIOGENEM ABFALL IN SCHULKLASSEN SOWIE EIGENKOMPOSTIERUNG IM EIGENEN SCHULGARTEN

PRAXISANLEITUNG

IM RAHMEN DES INTERREG III a finanzierten Projektes COMPASK

EINLEITUNG

Dieser Bericht, mitsamt den verwendeten Informationsmaterialien zeigt einen möglichen Weg des Vorgehens bei der Einführung eines Kompostierungsprojektes in Klassen/Schulen. Die Unterlagen werden zum Teil in Original zur Verfügung gestellt und dokumentiert. Neben der Evaluation, die gemeinsam mit den LehrerInnen und SchülerInnen nach dem Projekttag erfolgte, flossen auch sehr viele persönliche Empfindungen und Beobachtungen in den Bericht ein.
Diese Erkenntnisse mögen die Umsetzung der Projekte an den Partnerschulen in der Slowakei erleichtern.

Viel Glück, und gutes Gelingen bei der Umsaetzung ähnlicher Projekte in der Slowakei!

Das Team von “die umweltberatung“

ERSTINFORMATION für die SCHULE/DIREKTION

Dies ist die Erstinformation für EntscheidungsträgerInnen und AkteurInnen in der Schule. Hier erfahren Sie wer das Projekt ins Leben gerufen hat, was die Absicht ist und welchen Service teilnehmende Schulen erhalten.

„**COMPASK**“ (COMP**osting** A**ustria** – S**lova**K**ia**) - ORIGINALTEXT

In diesem von der EU gefördertem Projekt geht es um die dezentrale Kompostierung. Partnerländer sind Österreich und Slowakei, d.h. es handelt sich um ein grenzüberschreitendes Projekt, das über den „Interreg III a“- Finanzierungstopf teilfinanziert wird.
Aufgrund der zukünftigen EU-Mitgliedschaft der Slowakei werden in Zukunft auch die strengeren europäischen abfallwirtschaftlichen Richtlinien für die Slowakei rechtlich bindend sein.
Methoden und Erfahrungen der EU im Umgang mit der Kompostierung werden gesammelt und reflektiert. Im neuen Partnerland Slowakei soll dann gleich mit der effektivsten und bewährtesten Methode der Kompostierung begonnen werden. So werden die Erfahrungen Österreichs zu diesem Thema bestmöglichst angewandt.

Im Konkreten unterstützt Österreich die Slowakei bei der Einführung der getrennten Bioabfallsammlung mit einem besonderen Schwerpunkt auf dezentrale Kompostierung, da sich diese als wirtschaftlich und ökologisch effektivste Form der Kompostierung gezeigt hat.

Teilprojekt „COMPASK“ in Schulen

Wiener Schulen werden, im Rahmen dieses Projektes ihre biogenen Abfälle kompostieren. Mit einen „Projekttag“ zum Thema Kompostieren an den Schulen wird das Thema Kompostieren theoretisch eingeführt und anschließend praktisch, für Kinder erfahrbar, vermittelt. Alle LehrerInnen, die mit ihren Klassen teilnehmen, erhalten einen genauen Projektablaufplan. Dieser Ablaufplan wird zusammen mit den Unterrichtsunterlagen für die slowakischen Schulen in ihre Landessprache übersetzt. Somit können die slowakischen Schulen einfach und praxisorientiert das Projekt an ihren Schulen starten und umsetzen. Im Zuge des Projektlaufs können Slowakische LehrerInnen und EntscheidungsträgerInnen die Wiener Schulen besuchen, um sich von der Bioabfallsammlung und -verwertung in der Schule ein Bild zu machen und Erfahrungen auszutauschen. Die Teilnehmerschulen beider Länder können so die Erfahrung des Kompostierens z.B. als Projektunterricht oder Aktivunterricht im Fach Biologie integrieren. SchülerInnen können hautnah den einzigartigen Umwandlungsprozess von biogenem Abfall in fruchtbare Erde erleben.
Sie lernen Lebenskreisläufe zu verstehen und spielerisch Abfall zu vermeiden.

Teilnehmerschulen bietet “**die umweltberatung**“ folgende Unterstützung an:

- In Wien: Projektorganisation und praktische Betreuung durch “die umweltberatung“ Kompetenz-Zentrum Grünraum und Garten. In der Slowakei steht ein kompetenter Ansprechpartner zur Verfügung.

- Eine ausführliche Projektbeschreibung, wie das Projekt an der Schule organisiert wird und wie es an speziell Ihrer Schule funktioniert.

- Unterrichtsvorbereitungen für Kompost und Bodenleben.
- Erfahrungsaustausch mit Schulen, die bereits erfolgreich kompostieren.
- Es entstehen keine Kosten, die erforderliche Materialien werden bereit gestellt.
- Benötigt wird ein halbschattiger Platz im Garten, um den Kompost aufzustellen.

Mülltrennung und Kompostierung an Schulen – Erstinformationen für LehrerInnen

Konzept, geeignet für Altersstufe von 10 bis 14 Jahre

I. Vorstellen des Projektkonzepts im Lehrerkollegium, nach Absprache mit der Schulleitung und dem/der ProjektlehrerIn

(ProjektlehrerIn = der/die AnsprechlehrerIn welche(r) für dieses Projekt gewonnen worden ist und den Kompost betreut)

!!!!!!!! Dieses Projekt ist auch nur für einzelne Klassen möglich und/oder nur als Kompostsammelprojekt umsetzbar!

Mülltrennung heißt: - In den Klassenzimmern werden Eimer für Bioabfall (und bei Mülltrennung für alles auch Gefäße für Restmüll und Papier) aufgestellt. Diese Gefäße werden beschriftet, nach dem Farbleitsystem der Tonnen der Gemeinde/Stadt (z.B. für Wien: Kompost grün, und Papier rot) mit Buchfolie überklebt, damit man sie abwischen kann!

Alle Kübel (je nach Schule und Projektumfang) oder nur der Kompost wird von Klassenordner mindestens 2 x wöchentlich geleert

Nur bei Gesamtmülltrennung: in den Gängen wird Glas, Plastik und Metall gesammelt. Diese Gefäße leert der Hauswart!

II. Nach der Zustimmung werden die Klassenvorstände/bzw. ProjektlehrerInnen aufgefordert folgende Dinge zu initiieren:

1. Alle SchülerInnen werden vom Projekt informiert

Auch der Hauswart und alle Beteiligten (Putzfrauen) werden informiert

2. LehrerInnen können Unterricht und begleitende Aktionen planen und bei dem/der ProjektlehrerIn anmelden

3. Die KlassenvorstandslehrerInnen:

a) betrauen den/die SchülerIn mit wöchentlichem Klassendienst (Tafeldienst, Klasse abschließen, ect.)

mit der zusätzlichen Aufgabe, 2 x wöchentlich die Abfalleimer zu leeren - Komposteimer, Papier und Restmüll

b) Der/die LehrerIn wählt eine Vorgangsweise, um sicher zu stellen, dass der Kompostkübel geleert wird.

Bei Projekten, an denen die ganze Schule teilnimmt, wird ein/e SchülerIn, dem dieses Thema ein Anliegen ist, aus der Klasse

Zum/zur MüllministerIn gewählt. Diese/r vertritt die Klasse bei den 2-3 jährlichen stattfindenden Müllkonferenzen der Schule.

Der/Die ProjektleherIn beruft diese zur Reflektion über das Funktionieren des Projektes ein.

c) Der/die KlassenvorstandlehrerIn stellt an den Wochenenden und bei Ferienbeginn sicher, dass die Kompostkübel ausgeleert, ausgewaschen und ausgetrocknet (einfach umkippen) sind!

Achtung! Es entsteht sonst eine Geruchsbelästigung in den Räumen!

	4.	Der/die DirektorIn
		a) informiert die entsprechende Stelle, dass der Grasschnitt und Heckenhäcksel nicht abtransportiert werden
		b) veranlasst, dass evtl. die Schulküche Ihren rohen biogenen Abfall auch in die Komposttonne leert
		c) fördert und unterstützt das Projekt in Form z.B. einer Kompostparty am Schulfest
	5.	“die Umweltberatung“
		a) stellt Sammeltonne für biogenen Abfall bereit
		b) stellt Boxen + Urgesteinsmehl zur Geruchsbindung zur Verfügung
		c) erstellt und übergibt Unterrichtsunterlagen an interessierte LehrerInnen
		d) betreut den Ablauf
	6.	Der/Die KompostprojektlehrerIn
		(ProjektlehrerIn = der/die AnsprechlehrerIn welche(r) für dieses Projekt gewonnen worden ist und den Kompost betreut)
		a) Ist für das monatliche Mischen von biogenen Abfall und Schnittmaterial verantwortlich. In der Tonne sollten vor dem Befüllen
		jeweils 10 cm trockenes Schnittmaterial am Boden sein, dies verhindert stark Geruchsbildung.
		Diese Person ist auch für die Projektbetreuung AnsprechpartnerIn und umgekehrt.
		b) Ist Ansprechperson für LehrerInnen in der Schule, die zum Thema den Unterricht gestalten wollen oder teilnehmen wollen
		c) Beruft die Müllkonferenz mit den „MüllministerInnen“ (siehe Punkt 3 b) ein!
		d) Organisiert das Sieben und Ausbringen des fertigen Komposts!
	7.	Praktische Anmerkungen:
		a) Als Kompostgefäß in der Klasse eignet sich am besten ein Schwingkübel mit 5 - max. 10 Liter
		b) Das Säubern der Kübel wird durch das Einlegen von einem Blatt Papier wesentlich erleichtert
		c) Die SchülerInnen, die einen Kübel zerstören, ersetzen ihn, oder die Schule legt eine andere Regel fest.
		d) Es ist notwendig, aus dem biogenen Abfall Plastik ect. herauszusortieren. Dazu eignet sich ein Greifstock oder eine Zange.
		e) Die anfallende Schnittmenge an Schulen ist entscheidend, ob das gesamte Material in der Schule selbst kompostiert wird.

Zeitplanung u. Projektphasen

Vorprojektphase 2004

Termin	Tätigkeitsbeschreibung	Ziel	Anmerkung
Mai	**Schulen bzw. DirektorInnen kontaktieren, LehrerInnen für die Teilnahme am Projekt gewinnen**	Genaue übergeordnete Projektinformation kommunizieren - Warum geht es? Warum? Wie? 2 Pilotpartner für das Schuljahr 2004/05 finden.	Projektinformationen zu COMPASK übergeben. Falls vorhanden auch Informationen zum Thema Kompostieren. Einfachheit des Projekts betonen! Termin für Vorstellung in Lehrerkollegium vereinbaren:
Juni	Einzelgespräche mit interessierten LehrerInnen	Fixe Zusage und Ansprechpartner für Projektstart im September	**Die Zusage der Schulen muss vor den Ferien erfolgen!**
Ende/Juni	Übergabe der Projekt- und Unterrichtsunterlagen	COMPASK Veranstaltung mit Schule, Bürgermeister und Presse.	
Hauptprojektphase			
Anfang September/ Schulbeginn	ProjektlehrerInnen finden und betreuen	Genauen Beginn und Ablauf des Projektes besprechen. Nächste Schritte festlegen - z.B. Vorstellen des Projektes im Leherkollegium.	Achtung! Am Schulbeginn haben LehrerInnen meist wenig Zeit. Deshalb 1 kurze, sehr informative Gespräche führen! 1 Termin vereinbaren.
Mitte September	Vorstellen des Projekts bei Lehrerkonferenz	Möglichst viele Lehrer zur Teilnahme gewinnen	

Termin	Tätigkeitsbeschreibung	Ziel	Anmerkung
Ende September	Organisationsgespräche mit interessierten den LehrerInnen	Festlegen von Organisation und Ablauf an der Schule: Größe des Projektes, Mülltrennung allgemein oder nur Kompostierung, Planung des Projektunterrichts, Auswahl des Kompostplatzes.	Je früher dies klar ist desto besser!
Anfang Oktober	Besuch einer Wiener Schule	Erfahrungsaustausch! Organisation/Termin festlegen.	
Oktober/November	Projekttag Mülltrennung /COMPASK	Allgemeine Einführung in die Kreisläufe und in die Mülltrennung. Dann Einführung ins Thema Kompostieren. Anschließend werden Bodenlebewesen im Freien gesucht. Diese werden dann im Klassenzimmer gemeinsam bestimmt!	Praktischer Teil im Freien mit "Begreifen" der Bodenlebewesen ist sehr wichtig und begeistert die Kinder!
Oktober/November	Aufstellen der Gefäße und des Kompostbehälters am Anschluss an den Projekttag	Beginn für Kompostmaterial sammeln!	Einfache Plastikkippeimer 5l (Badezimmer-kippeimer). Diese groß und deutlich beschriften! Große, einfache Holzkompostbehälter im Freien aufstellen! Evtl. Drahtgeflecht am Boden auslegen, um Ratten fernzuhalten!
Dezember/Jänner 2005	intensives Projekt-Coaching	Betreuung der Klassen beim Kompostmaterial sammeln. Feedbackrunden mit den ProjektlehrerInnen.	Individuelle Feinabstimmung auf ProjekteilnehmerInnen. Gute Betreuung für die ProjektlehrerInnen sicherstellen. Beginn und Fortlauf durch Besuche und Nachfragen sicherstellen!

Termin	Tätigkeitsbeschreibung	Ziel	Anmerkung
Februar	Klärung der Verwendung des an der Schule anfallenden Schnittmaterial aus dem Schulgarten.	DirektorIn klär ob und in welchem Umfang Schnittmaterial an der Schule anfällt und ob dieses mit in das Kompostprojekt einfließen kann.	Äste und grobes Material sollen zerkleinert werden!
März	Besuch des Projekt-Coaches in der Schule.	Feedbackrunde für Schule. Wie groß ist der Kompost schon? Gibt es Probleme? Wie geht's weiter? Dokumentation + Zwischenbericht für die Homepage von COMPASK.	Immer alles fotografieren!
April	Kompost mischen nicht vergessen!	Gute Durchlüftung und Durchmischung des Materials sicherstellen!	
Mai	Kompost, falls nötig, befeuchten oder abdecken	Kompost soll nicht zu nass und nicht zu trocken sein!	Praktische Tipps, damit der Kompost gut reift!
Juni	Eltern einbinden, Projekt an der Schule feiern	Im Rahmen eines Schulfestes stellen die Kinder das COMPASK- Projekt vor. Infoblatt und evtl. Kompostsackerl + an Eltern verteilen.	
Ende Juni	Verteilen des fertigen Kompostes	Kinder bringen fertigen Kompost im Schulgarten oder bei den Zimmerpflanzen aus. Oder Sie pflanzen Kürbis auf dem Kompost. Unmittelbares Erleben des gesamten Umwandlungsprozesses. Erfahren der Sinnhaftigkeit des Sammeln der biognen Abfälle.	

Nachprojektphase 2005

Termin	Tätigkeitsbeschreibung	Ziel	Anmerkung

Folgejahre	Kontrolle der Kompostreife und Methodiken	Qualitätsverbesserung	

Der Projekttag soll die Kinder in der Schule gezielt auf ihre spätere Aufgabe, nämlich das Sammeln von kompostierbarem Biomüll und dem Betreuen des Komposthaufens vorbereiten. Der Ablauf des Projekttages wurde wie unten angeführt geplant und durchgeführt.

UNTERRICHTSVORBEREITUNG FÜR DEN PROJEKTTAG

Ablauf des Projekttages zum Thema
„Mülltrennung und Eigenkompostierung“
in Schulen
01.12.2003

PROJEKTSCHULE:
SPZ – Steinbrechergasse
Steinbrechergasse 6
1220 Wien
Anfahrt: Erzherzog-Karl-Straße Straßenbahn 25 (Hst: Gumplowicz Straße)
Zwei Klassen 2a, 2b, 10-12 Jahre; 24 Schüler pro Klasse

Hauptansprechpartnerin:
Frau Fellinger
Tel. 2036392-1 oder DW 312 Direktion

Projektbeteiligte:
Heimo Bacher, MA 48; Abfallberatung; heimo.bacher@gmx.at;
Journaldienst MA 48: 58817 96/073
COMPASK Team: “die umweltberatung“; Manfred Pendl
“die umweltberatung“, Sibylle Spiegler; ÖGUT-VertreterIn

KLASSE 2A: (8:00 bis 10:50 Uhr)

Teil 1 (Zeit: 8:00 bis 09:30): Mülltrennung

1. Einführung Video „Nachhaltigkeit“
Zeitaufwand: ca.10 Minuten; Abfallberater der Stadt Wien

2. Vortrag/Diskussion: „Warum Müll vermeiden?“ Leitung:
Abfallberater der Stadt Wien

BEDARF:

- Technische Ausstattung: Videorecorder und TV (wenn möglich), Overhead-Projektor
- Mülltrennvideo

PAUSE 10 min

Teil 2 (9:30 bis 10:50): Kompostierung

3. Unterrichtseinheit zum Thema Kompostierung und Bodenleben. Zeitaufwand: 30 Minuten, Durchführung: “die umweltberatung“ Wien

4. Aktivunterricht:

- Im Schulgarten wird nach Anleitung nach Kleinstlebewesen gesucht, sofern das Wetter es zulässt. Diese werden dann gemeinsam bestimmt, Auszeichnung der Gruppe, die die meisten Tiere gefunden hat; Zeitaufwand: ca. 50 Minuten. Bei Schlechtwetter verschieben oder mit Kompost in Kübeln arbeiten.

BEDARF:

Technische Ausstattung: Overhead-Projektor
Unreifer Kompost mit möglichst vielen Bodentieren
Mikroskope und Lupen
Spaten und Rechen
Bestimmungsblätter und Blätter zum vervollständigen
Sammelschalen
Geschenk für das Gewinnerteam (die Gewinnerteams)

KLASSE 2B: (11:00 bis 13:50 Uhr)
Ablauf wie oben

Alternativ wurde auch noch ein Mülltrennspiel vorbereitet, da es schwer abzuschätzen war, wie lange die geplanten Aktionen dauern würden.

Mülltrennspiel

- Aufstellen von Abfallgefäßen beschriftet mit Restmüll, Kompost, Metall ect.
- Die Klasse wird in Kleingruppen geteilt die je 3 Müllstücke erhalten.
- Diese Gegenstände müssen Sie zuordnen und eine Geschichte dazu erzählen
- wie man diese Müllstücke vermeiden hätte können (Alternativprodukte).
- Die Klasse bewertet durch Abstimmung, mittels Aufstehen vom Sitzplatz,

die Richtigkeit der Zuordnung der Müllgegenstände.
Zeitaufwand: ca. 50 Minuten
Durchgeführt von Abfallberater der Stadt.

BEDARF:

- „Anschauungsmüll“ für Trennspiel – Mini-Mülltonnen um eine farbliche Zuordnung zu schaffen, ev. auch Säcke oder größere Tonnen wo der Müll symbolisch entsorgt wird

Für die Lehrer wurden folgende Informationen zusammengestellt:

INFORMATIONEN ZUM FACHGERECHTEN KOMPOSTIEREN

Die Natur kennt keine Abfälle! In der Natur werden abgestorbene Pflanzenteile von Bakterien, Pilzen, Mikroorganismen und Kleinlebewesen abgebaut und zu Humus

umgewandelt. Der Humus dient wiederum Pflanzen als Nahrung. So schließt sich der Kreis. Auch **Bioabfälle** aus Küche und Garten sind Teil des natürlichen Kreislauf.

Bioabfälle selbst im Garten kompostieren, veredelt die organischen Abfälle zu wertvollem Humus und stellt so einen wesentlichen Beitrag zur Abfallvermeidung dar. Grünreste aus der Küche und andere biogene Abfälle eignen sich hervorragend dazu verwertet zu werden. Neue Erde entsteht in einem gut angelegten Komposthaufen, wenn man einige Dinge beachtet:

1. Komposthaufen an einem schattigen Platz anlegen, weil er unter Sonneneinstrahlung zu stark austrocknet.
2. Die Grundfläche soll 1 x 1 m pro Komposthaufen betragen. 2 Häufen sind sinnvoll.
3. Handelsüblichen Kompostbehälter verwenden oder selber basteln.

4. Bodenkontakt ist für die "Kompostierlebewesen" unbedingt notwendig.
5. Gegen überschüssiges Wasser die unterste Schicht mit grobem Material (z.B. Astschnitt) aufschichten.
6. Auf eine gute Durchmischung von gröberem und feinerem Material achten.
7. Bei Geruchsbelästigung Urgesteinmehl einstreuen.
7. Ab einer Höhe von ca. 1-1,5 m wird der Haufen für eine mehrmonatige Ruhepause mit Erde abgedeckt.
8. Danach das Material grob durchsieben und als Bodenverbesserer oder Dünger wieder in den Garten einbringen. 1Schafel pro qm reicht. Oder für Zimmerpflanzen zum düngen verwenden.

Was gehört auf den Kompost?

JA:

- Obst- und Gemüseabfälle
- Schalen von Bananen- und Zitrusfrüchten (vorzugsweise Bio, damit sowenig wie möglich Spritzmittelreste in den Kompost kommen)
- Verdorbene Lebensmittel ohne Verpackung (vorwiegend pflanzlicher Herkunft, in Haushaltsmengen)
- Kaffee- und Teesud samt Filter und Papierbeutel
- Eierschalen(zerkleinert), Federn, Haare
- Verschmutzte Küchenrollen

JA:

- Schnittblumen, Topfpflanzen (ohne Topf)
- Kleintiermist von Pflanzenfressern
- Gartenabfälle wie Laub, Rasen, Baumschnitt (zerkleinert)

NEIN:

- Plastiksackerl (Restmüll)
- nicht kompostierbare Katzenstreu (Restmüll)
- Hygieneartikel, Windeln (Restmüll)

"die umweltberatung" Kompetenzzentrum Grünraum und Garten, Tel. 01 / 255 83 92, Fax DW 22 A-1220 Wien, Rennbahnweg 25

- Staubsaugerbeutel, Kehricht (Restmüll)
- Speiseöl und -fett
- Flüssigkeiten
- Asche von Stein-, Braun-, Grillkohle und Koks (Restmüll)
- Verpackungen aus Verbund- und Kunststoff
- Reste von Fleisch und Wurstwaren
- Fleischprodukte(Rattengefahr)
- Holzasche ist zu kalkreich und gehört in den Restmüll, ebenso die Asche der Steinkohle

Sammeltipps für die Küche: Gefäß mit Deckel oder Säckchen aus Papier oder Maisstärke verwenden. In den Behälter Papier einlegen – dies erleichtert die Reinigung. Den Behälter regelmäßig entleeren und säubern – und verschlossen halten. Speisereste in Zeitungspapier einwickeln – so wird das Auftreten von Maden verhindert

Vorteile von eigenem Kompost:

Kompost als idealer Dünger: Kompost wird im Hausgarten, im Garten- und Landschaftsbau, bei der Grünraumpflege und in der Landwirtschaft eingesetzt. Auch Blumenkistchen und Topfpflanzen haben Mischungen mit Kompost gern.

Natürliche Düngewirkung: Die Pflanzen nehmen nur das auf, was sie wirklich brauchen.

Schädlingsabwehr und Bodenbelebung: Kompost wirkt sich positiv auf die Pflanzengesundheit aus. Die Pflanzen sind widerstandsfähiger gegenüber Krankheiten und Schädlingen.

Bodenverbesserung: Kompost hält hervorragend Wasser und sorgt für einen ausgeglichenen Luftaustausch.

Schutz der Moore: Kompost hat noch einen weiteren positiven Effekt: Im Garten kann er vielfach Torf ersetzen, bei dessen Abbau Moorgebiete unwiederbringlich zerstört werden.

Kompost entwickelt je nach Reifegrad eine unterschiedliche Düngewirkung.
Dementsprechend variieren auch die Einsatzmöglichkeiten:
Junger Kompost –sogenannter FRISCHKOMPOST – ist bereits nach zwei bis sechs Monaten verwendbar. Er ist nährstoffreich und für stark zehrende Pflanzen (wie Tomaten, Kürbis oder Kartoffel) geeignet. Kompost, der sechs bis zwölf Monate gereift ist – so genannter REIFKOMPOST – HAT BODENVERBESSERNDE Wirkung und ist universell einsetzbar. Zur Reifebestimmung kann z.B. mit der Kapuzinerkresse eine Keimprobe gemacht werden!

Problembehandlungen:

Erscheinung	Mögliche Ursache	Abhilfe
1. **Die Verrottung kommt nicht in Gang, unangenehme Gerüche beim Aufgraben treten aber nicht auf.**	a) Das Material ist sehr trocken, weiß verpilzt.	Tritt die Trockenheit nur stellenweise auf, braucht der Haufen nur umgesetzt werden. Ansonsten Kompost beim Umsetzen anfeuchten.
	b) Das Material ist zu stickstoffarm; es wurde zuviel Sägemehl, Strauchschnitt oder Laub kompostiert.	Stickstoffzugabe durch Mischen mit Rasenschnitt, Brennnesseln oder Hornspänen.
2. **Beim Aufgraben treten unangenehme Gerüche auf, der Kompost wird nach dem Aufsetzen nicht warm**.	Das Material ist unzureichend mit Luft versorgt. Es enthält wenig Strukturmaterial und/oder ist zu nass.	Den Kompost locker auf eine Reisigschicht umsetzen. Dabei Strukturmaterial (Heckenschnitt, Stroh u.a.) zumischen. Danach mit Erde abdecken.
Überprüfen der Temperatur durch Handprobe: 40º C fühlen sich heiß an. Oder Einsatz eines Stechthermometers.		
3**. Der Komposthaufen lockt unerwünschte Tiere an.**	Freiliegende Küchenabfälle, insbesondere gekochte Speisereste, Fleischreste, locken Ratten und Vögel an.	Die gesamten Abfälle werden in die Mitte des Haufens eingebaut und mit verrottetem Material oder Erde abgedeckt.
	Übrigens: auch erwünschte Tiere (Spitzmäuse, Igel) nutzen den Kompost manchmal als Unterschlupf.	
4**. Der fertige Kompost enthält unerwünschte Wildkrautsamen, Wurzelunkräuter.**	Der Kompost wurde nicht ausreichend warm.	Siehe Nr. 2
		Wildkräuter nur in die Mitte des Komposts geben.
- Wildkräuter		Der Komposthaufen ist zu klein und kann deshalb nicht die Wärme halten: höher aufsetzen.
5. **Aus dem Kompost wachsen Pilze hervor, der Kompost ist weiß verpilzt.**		Falls keine anderen Probleme auftreten, sind keine Maßnahmen notwendig. Die Pilze erfüllen eine wesentliche Funktion bei den Um- und Abbauprozessen.

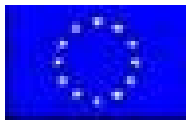
Tipps für Internetseiten:
www.kompostberatung.ch – Sehr schöne Spiele auch ohne Deutschkenntnisse zu spielen!
www.compost.css.cornell.edu/Composting_Homepage.html

ANHANG:

UNTERRICHTSFOLIEN (nur auf Anfrage erhältlich)

ANNEX

Press releases, publications, feedback


Bioabfälle – Schulen in Österreich und Slowakei kompostieren gemeinsam

Die Wiener Umweltstadträtin Mag. Ulli Sima präsentiert

das EU-INTERREG IIIA-Projekt
„Dezentrale Kompostierung (Gartenkompostierung) als Ansatz für eine nachhaltige Behandlung von Bioabfällen in Österreich und in der Slowakei“ (COMPASK)

Im Dezember 2004 wurde das 2-jährige EU-Pilotprojekt COMPASK (COMPosting Austria – SlovaKia) abgeschlossen, in dem Österreich und die Slowakei gemeinsam die Gartenkompostierung von Bioabfällen fördern. Ziel des Projektes ist, der Bevölkerung die Vorteile der Gartenkompostierung besser bekannt zu machen und durch Pilotprojekte diese Vorteile zu demonstrieren.

Umgesetzt wurden die Pilotprojekte in Wien und in der 15 km nördlich von Bratislava gelegenen Stadt Sväty Jur. Durch die Pilotprojekte konnte gezeigt werden, dass durch die Gartenkompostierung die Abfallmengen verringert und dadurch Energie, Rohstoffe und Entsorgungskosten eingespart werden.

In zwei Schulen in Wien und in einer Schule in Sväty Jur wurde die Gartenkompostierung eingeführt und seither können die Kinder „live“ beobachten, wie das Laub des Schulgartens und der Apfelputzen zu fruchtbarer Komposterde wird.

Seinen Erfolg verdankt das Projekt der fachlichen Zusammenarbeit der MA 48 der Stadt Wien, der „umweltberatung“ Wien sowie der Abt. RU3 des Landes Niederösterreich.

Das Konzept für die Schulprojekte wurde von der "umweltberatung" Wien erarbeitet, die MA 48 und das Land Niederösterreich stellten dabei ihr Know-how zur Verfügung und haben die Arbeiten fachlich betreut. Gemeinsam mit den slowakischen Partnern wurden Unterrichtsunterlagen in deutscher und in slowakischer Sprache erstellt. In Wien beteiligen sich an dem Projekt die Volksschulen "Kleine Sperlgasse" im 2. Bezirk und "SPZ Steinbrechergasse" im 22. Bezirk. Wichtig war dabei, dass alle Akteure, d.h. die SchuldirektorInnen, LehrerInnen, SchülerInnen, Schulwarte und Eltern in das Projekt eingebunden sind.

Schulen haben ein besonders großes Multiplikatorpotential und dadurch beste Voraussetzungen, das Umweltbewußtsein zu fördern. Im Rahmen des Schulprojektes wird den Kindern vermittelt, dass Bioabfälle über den Kreislauf der Natur als Kompost wieder dem Boden zurückgegeben werden können. **„In den Wiener Schulen hat das Thema nachhaltige Abfallwirtschaft und Umweltschutz bereits eine lange Tradition. Durch die Kooperation mit der slowakischen Partnerschule konnte dieses Know-how nicht nur unseren Nachbarn weitergegeben werden, sondern es wurden auch in Wien Erfahrungen gesammelt, wie wir das Bewusstsein für eine umweltfreundliche Abfallwirtschaft weiter stärken können“, unterstreicht die Wiener Umweltstadträtin Mag. Ulli Sima.**

Im Rahmen des Projektes lernen die Kinder, wie Bioabfälle richtig getrennt und gesammelt werden und wie sie im Schulgarten kompostiert werden. Parallel dazu wird im Unterricht die Wissensgrundlage durch Abfalltrenn- und Kompostspiele übermittelt. So können die Kinder den Prozess von natürlichen Stoffkreisläufen beobachten und aktiv daran teilnehmen.

„Das Schulprojekt veranschaulicht, wie Kinder umweltbewusstes Handeln spielerisch und praxisnah erlernen können und oft wird dieses Umweltbewusstsein von den Kindern an die Eltern weitergegeben“, betont die Wiener Umweltstadträtin Mag. Ulli Sima.

Eines der wichtigsten Events im Schulprojekt war das Austauschtreffen der Kinder der Wiener und Slowakischen Partnerschulen im Oktober 2004. Die slowakischen Kinder, die als erste Fremdsprache Deutsch lernen und seit September in ihrer Schule die Abfälle trennen, widmen sich im heurigen Schuljahres besonders der Bioabfallkompostierung im Garten. Nach gemeinsamen Kompost- und Abfalltrennspielen wurde auch ein Abfallsammelzentrum in Hainburg (Niederösterreich) besucht. Hier gab es für die kleinen Gäste einen Biosnack und ein Säckchen fertigen Kompost – als Biodünger für Zimmerpflanzen und Garten - zum Andenken

„**Durch diese Aktivitäten wird den Kindern vermittelt, dass unsere Umwelt keine Landesgrenzen kennt, und wir gemeinsam an der Lösungen der Umweltprobleme arbeiten müssen“, meint die Wiener Umweltstadträtin Mag. Ulli Sima.**

Bioabfallwirtschaft in der Erweiterten EU

Durch den EU-Beitritt muss nun auch die Slowakei die Deponierichtlinie (99/31/EG) erfüllen. Diese schreibt eine deutliche Reduktion des Bioabfallanteils im zu deponierenden Restmüll vor. In der Slowakei erreichen die Bioabfälle bis zu 40% des nationalen Abfallaufkommens. Durch diese EU-Umweltrichtlinie ist die Kompostierung von Bioabfall nicht nur ökologisch sinnvoll, sondern gewinnt auch als kostengünstige Alternative zur Müllverbrennung oder Deponierung zunehmende an Bedeutung. Deshalb zeigen immer mehr Kommunen in den neuen EU-Ländern Interesse an einer Förderung der Gartenkompostierung auf ihrem Gemeindegebiet.

Auch das Slowakische Umweltministerium hat sich am Projekt COMPASK beteiligt und das internationale Fachmagazin „Waste Management World Magazine“ beurteilt in einem ausführlichen Artikel das Pilotprojekt äußerst positiv.

Österreich nimmt seit Jahrzehnten europaweit eine Vorreiterrolle auf dem Gebiet der Umwelttechnologie ein und gilt insbesondere in den neuen EU-Ländern als „Umwelt-Musterland“. Die geographische Nähe und die historisch gewachsenen Verbindungen begünstigen die Rolle Österreichs als Brücke zwischen West-, Mittel- und Osteuropa auf dem Umweltsektor.

Detaillierte Informationen zum Projekt finden Sie auf der **COMPASK-Projekthomepage** unter:

http://www.oegut.at/themen/moe/compask.html (Deutsch),
http://www.oegut.at/themen/moe/compask_e.html (Englisch)

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Sowie Österreichische und Slowakische Experten und Studenten, Schulen und Kindergärten

by Albena Kisliakova

Towards composting

Slovakia moves to more sustainable biowaste management

Biowaste represents 38% of Slovakia's MSW, and it is either landfilled or incinerated. Now, in order to comply with the EU Landfill Directive, new EU Member Slovakia is introducing a programme of garden composting.

> **'Biowaste currently represents 38% of MSW in Slovakia'**

The EU Landfill Directive requires Member States to reduce the amount of biowaste that can be landfilled by 25% by 2006 compared with the amount in 1995, by 50% before 2009, and by 65% before 2016. Biowaste currently represents the largest fraction (38%) of municipal solid waste (MSW) in Slovakia, and is either incinerated or landfilled. By 2005, biowaste is expected to have increased to 44% of annual MSW arisings. In response, Slovakia is aiming to compost a minimum of 35% of the biowaste from the MSW by 2005 and to reduce the biodegradable fraction in landfilled waste by 30% compared with 2000.

However, even a small municipal plant composting, say, 1400 tonnes of biowaste per year requires an investment of at least €100,000 and is too expensive for a Slovak municipality of around 5000 citizens. However, garden composting of biowaste offers a realistic and cost-effective option for meeting the targets set by the Landfill Directive and the national biowaste management strategy. This article describes a pilot project on biowaste garden composting underway in the Slovak municipality of Sväty Jur, 13 km north-west of the capital Bratislava. It is part of the COMPASK (COMPosting Austria – SlovaKia) project, which aims to encourage decentralized biowaste composting in Lower Austria and Slovakia.

Project elements

The COMPASK project began in January 2003 and is due to end in December 2004. It involves:

- reviewing the current state of biowaste management in the pilot region (Vienna, Lower Austria, District Pezinok, Slovakia)
- carrying out a survey of public opinion on biowaste garden composting in the pilot municipality (Sväty Jur in Slovakia)
- transferring knowledge from Austria to Sväty Jur through seminars and visits to biowaste treatment facilities in Lower Austria
- initiating school composting projects in Vienna and Sväty Jur

- training a local steering group in Sväty Jur about ways of encouraging garden composting
- preparing an action plan for the introduction of garden biowaste composting on a municipal level.

Project results as of June 2004

Data analysis and review of biowaste management

The residents of Sväty Jur pay for the volume of their waste containers regardless of how full they are. The current annual fee of €9.9/person brings in €39,000/year. This represents around 67% of the total annual costs needed for MSW management, and mainly covers waste collection and transportation. The rest (€19,000/year) is provided by the municipality and covers the landfilling costs. Thus, there is currently no financial incentive for people to separate and compost biowaste in their gardens. The municipality is currently preparing scenarios for new waste fee models in order to encourage resource saving and waste prevention, which will include separate biowaste collection and (garden) composting.

Opinion poll on biowaste garden composting

The survey on biowaste on garden composting was carried out in June 2003. It found that 24% of the inhabitants of Sväty Jur cannot compost their biowaste because they live in apartment blocks and having no garden nearby. However, 62% said they would be willing to take their kitchen waste to a public garden composting unit. Two thirds of citizens already compost their garden biowaste and one third compost both kitchen and garden biowaste. Seventy percent of residents would welcome biowaste garden composting as a general treatment option, provided there is a corresponding reduction in waste fees. Some 62% said they would start biowaste garden composting if the municipality provided composting boxes and instructions.

There is currently no financial incentive for people to separate and compost biowaste in their gardens

Knowledge transfer

Two exchange visits have been performed between Slovakia and Lower Austria, and a PR event undertaken at the municipal feast in Sväty Jur. The focus was on facilities and

plants for waste and biowaste treatment, including:

- agricultural composting and garden biowaste composting in the Bruck an der Leitha district of Lower Austria
- a district centre for waste collection and material recovery in Lower Austria
- a landfill and a biowaste/soil purification plant in the Pezinok district of Slovakia.

FACING PAGE A wooden, nail-free box is all that is needed for garden biowaste composting. A discarded container for potato storage is used here to provide an environmentally friendly material for the internal insulation
ABOVE LEFT and RIGHT The youngest prove it best – compost is not a 'dirty' but a most natural material

Initiation of school sub-projects

The concept of garden composting was introduced to two Viennese schools during visits between December 2003 and June 2004. The location of the schools – in the centre and a suburb of the city – allowed for replication in the project areas of Greater Vienna and Greater Bratislava.

Everyone from the school principal to the teachers,

students, parents and caretakers was involved in the awareness-building process. Teaching materials were prepared that explained the biological processes involved and integrated waste management issues into general education. They have now been translated into Slovak and given to the school in Sväty Jur, which plans to use them in lessons from September 2004. The school already has a composting box and is equipped for full waste separation.

70% of residents would welcome biowaste garden composting

Training the local steering group

This key element relies on a 'support to self-help' approach. The aims of the voluntary steering group on biowaste garden composting in Sväty Jur were to:

- provide the municipality with a trained group of professionals who could give support if it considers biowaste garden composting to be a key waste management option for Sväty Jur
- raise long-term public awareness of biowaste garden composting.

The steering group received advice on the PR aspects of waste management in municipalities and prepared a brochure on garden composting for distribution in Sväty Jur. The steering group is working with the municipality on the development and implementation of a new waste fee system.

Preparing an action plan

In addition to the region-wide implementation concept written by a Slovak expert, the steering group has drafted an action plan for specific action in Sväty Jur. The key measures envisaged in both the implementation concept and action plan include:

- changing the waste fee system in favour of waste separation and prevention
- supporting garden composting by selling compost boxes
- targeting residents with information on composting
- planning co-operative ventures with the Austrian partner schools
- co-ordinating actions with the local non-governmental organization involved in the project
- presenting information campaigns via local newspapers, cable TV and 'street radio'
- involving the staff of public gardens and cleaning staff at schools and in other public buildings in the project.

Prospects

The COMPASK project aims to transfer best practice from Austria to Slovakia in the field of sustainable biowaste

management such that the pilot municipality of Sväty Jur can continue the initiative by themselves.

A co-ordination meeting between the steering group, the municipality, the Slovak consultant and the project team will take place towards the end of the project. This will concentrate on planning further independent work, with the information campaign in the municipality being its first issue. The last planned event is an exchange between the Viennese schools and the school in Sväty Jur in October 2004.

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Further reading

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Nachbarschaftshilfe für die Umwelt

Erfolgreiche Kooperation Österreich – Slowakei

Wien – Auch in Zeiten, in denen Wirtschaftlichkeitsdenken alles zu dominieren scheint, hat Umweltpolitik eine Chance – zumal, wenn die grenzüberschreitend und nachhaltig angelegt ist. Das war der Tenor eines vom österreichischen EU-Umweltbüro veranstalteten Diskussionsabends zum Thema „Erweiterte Umwelt" am Dienstagabend im Wiener Palais Lobkowitz. Konkret ging es um die Zusammenarbeit zwischen Österreich und der Slowakei.

Der slowakische Umweltminister László Miklós räumte ein mitunter schwieriges Spannungsfeld zwischen Ökologie und Ökonomie ein, unterstrich aber die Entschlossenheit seiner Regierung, die EU-Umweltstandards Schritt für Schritt zu erfüllen. Als eine der schwierigsten Aufgabe nannte Miklós die Abwasserklärung. In Gemeinden mit weniger als 10.000 Einwohnern werde man erst 2015 westliche Standards erreicht haben. Der gesamte Investitionsbedarf allein bei der Abwasserklärung beträgt 1,2 Milliarden Euro.

Miklós würdigte das österreichische Engagement bei bilateralen Projekten, das auch zur Stärkung des Umweltbewusstseins in der Slowakei beitrage. Zugleich regte der Minister eine gemeinsame, auf Umweltthemen spezialisierte Schule in Grenznähe an.

Allein im Bereich erneuerbare Energie als Alternative zur Atomkraft gebe es seit 1993 30 von Österreich unterstützte Projekte mit einem Volumen von 63 Millionen Euro, berichtete Miklós' österreichischer Amtskollege Josef Pröll. Alois Geisslhofer von der Energieverwertungsagentur (EVA) verwies auf das von Österreich eingerichtete Beratungszentrum für Kraft-Wärme-Kupplung in Bratislava. Derzeit sei ein Projekt mit einer Kapazität eines Drittels des tschechischen AKW Temelín in Vorbereitung. Die Umwelttechnologin Albena Kisliakova von der Österreichischen Gesellschaft für Umwelt und Technik schilderte ein erfolgreiches Pilotprojekt zur Gartenkompostierung in Bratislava.

Ein Hinweis, der die allgemein bekundete Übereinstimmung störte, kam aus dem Publikum: Slowakische Umweltaktivisten, die jüngst an einer Demonstration gegen ein österreichisches Straßenprojekt teilnehmen wollten, seien an der Grenze abgewiesen und mit einjährigem Einreiseverbot belegt worden. (jk)

25.10.2004

Kompost-Know-how goes Slovakia


Kein Abfall, sondern zukünftiger Dünger

Die Kompostierung organischer Abfälle gilt als ideal im Sinne einer gelungenen Kreislaufwirtschaft. Geschieht die Verwertung nicht auf einer zentralen Kompostanlage, sondern im eigenen Garten, ist das auch ökonomisch vorteilhaft: kostenintensive Transport- und Sammellogistik entfallen ebenso, wie Investitionen in Kompostieranlagen. Seit etwa zwei Jahren arbeitet das EU-Pilotprojekt COMPASK (COMPosting Austria - SlovaKia) an der Stärkung eines dezentralen Biomüll-Konzeptes in der westslowakischen Gemeinde Sväty Jur .

Anleihen nimmt man dabei von erfolgreichen Umsetzungen aus Wien und Niederösterreich. Gemeinsam soll durch das Interreg IIIA-Projekt eine Integration von Umweltschutz und Kosteneffizienz erreicht werden, berichtete die Österreichische Gesellschaft für Umwelt und Technik (ÖGUT) gegenüber den APA-OnlineJournalen.

Vor allem die neuen EU-Länder sehen sich aufgrund von Verordnungen und Richtlinien dazu angehalten, ihre bisherigen Entsorgungsstrategien zu ändern. Laut Deponierichtlinie von 1999 ist eine deutliche Reduktion von biogenen Abfällen in Deponien vorgeschrieben. Lokale Kompostierung im eigenen Garten könnte dazu einen kräftigen Beitrag leisten.

Ein Ländervergleich von Wirtschaftskammer (WKÖ) und ÖGUT weist Österreich mit einem jährlichen kommunalen Abfallaufkommen von 510 Kilogramm pro Einwohner aus. Der slowakische Pro-Kopf-Müllberg ist im Vergleich dazu mit etwa 323 Kilogramm wesentlich kleiner, wobei jedoch nur 7,8 Kilogramm dieser Menge gesammelt und wiederverwertet werden (Zahlen 1998). Zum Großteil, nämlich zu 64 Prozent, landet der slowakische Kommunalmüll dieser Aufstellung zufolge auf Deponien - die ökologisch ungünstigste Variante der Verwertung. 10 Prozent werden verbrannt und nur 8,3 Prozent finden ihren Weg zum Recycling.

Gartenkompost Neuland auf slowakischer Seite

In Niederösterreich kompostieren nach Informationen der ÖGUT etwa 56 Prozent der Haushalte ihre Bioabfälle dezentral in eigenen Grünanlagen (Zahlen 1998). Dieser Anteil soll jedoch in etlichen Bezirken über 80 Prozent liegen. Was aber in Österreichischen Haushalten bereits gang und gäbe ist, stellt für manche neue EU-Staaten mitunter noch unbekanntes Terrain dar. Und da für diese alternative Verwertungsmethode auf slowakischer Seite zu wenig ökonomische Anreize bestehen, gibt es auch nur eine langsame und bedingte Akzeptanz, erklärte Albena Kisliakova vom Projektpartner ÖGUT im Gespräch mit den APA-OnlineJournalen.

Prinzipiell sei es derzeit auf grund der schlechten wirtschaftlichen Situation schwierig, Menschen für ein Projekt auf Freiwilligen-Basis zu animieren. Als Hindernis sieht die Expertin auch Müllgebühren-Modelle, die keinen Anlass zur Abfallvermeidung oder Selbstkompostierung bieten. In der Projektgemeinde Sväty Jur etwa, werde die Müllabfuhrgebühr nicht nach Gewicht, sondern pro Kopf berechnet, egal wie voll der Container sei.

Leicht resigniert gibt sich Kisliakova auch, wenn sie an die finanzkräftigen Müllverarbeitungsfirmen denkt, die ihrem kleinen Projekt gegenüberstehen: "Im nahe gelegenen Bratislava wurde kürzlich eine Müllverbrennungsanlage umfassend erweitert und die Investoren wollen natürlich, dass sich ihre Ausgaben rentieren."

Hier zeigt sich, wie sehr das Projekt vor allem Akzeptanzarbeit nötig hat. Denn während sich ein kleiner Kreis Interessierter bei laufenden COMPASK-Exkursionen und Veranstaltungen schon konkretes Know-how aus Kommunen in Österreich - zum Beispiel Bruck an der Leitha - abschaut, steht man auf breiterer Ebene noch davor, ein öffentliches Bewusstsein für die Müllproblematik zu schaffen. Dabei sei die dezentrale Kompostierung ideal, um mit wenig Aufwand die Umwelt zu schützen und noch dazu Geld zu sparen, meint Kisliakova.

Vorteile der lokalen Kompostierung

Unter den verschiedenen Optionen zur Bioabfallbewirtschaftung beurteilen die Umwelt-Experten der ÖGUT die Gartenkompostierung am positivsten. Man schätzt das System als ökonomisch äußerst rentabel ein, entfallen doch logistische Sammel- und Transportaufwände so wie der Bau technisch aufwändiger Kompostieranlagen. Wie viel die Kommunen bei einer regen Heimkompostierung durch ihre Bürger tatsächlich sparen können, sei von Fall zu Fall verschieden, meinte Kisliakova. Fest stehe jedoch, dass es dabei um beträchtliche Summen gehe.

Abgesehen vom Kosten-Aspekt ist die Heim-Verwertung auch ökologisch vorteilhaft, wie eine Aufstellung auf der Homepage der ÖGUT zeigt. Anders als bei der Verbrennung, können die Nährstoffe ohne zusätzlichen Energieeinsatz wieder vollständig recyclet und später als Dünger verwendet werden. Als besonders umweltschädlich gelte es, Biomüll ungetrennt mit dem allgemeinen Abfall auf einer Deponie abzulagern. Diese Methode gefährde das Grundwasser (Sickergefahr) und erzeuge bedenkliche Treibhausgasemissionen. Bei der Ablagerung von organischen Abfällen auf Deponien entstehen durch mikrobielle Umsetzungen vor allem Methan und Kohlendioxid, heißt es dazu beim Umweltbundesamt .

Hoffen auf eine bewußtere Generation - Zukunftsträger Kinder

Auch wenn sich auf slowakischer Seite derzeit noch keine Biomüll-Euphorie abzeichnet, gibt man sich bei der Projektleitung hoffnungsvoll, was die Zukunft betrifft. Vor allem auf die Bewusstseinsbildung bei Kindern wird groß gesetzt. Aktionen in Schulen und Kindergärten sollen langfristig zu einer breiten Akzeptanz führen, so Kisliakova.

In Sväty Jur haben sich vor allem Umweltbeauftragte, Lehrer, Studenten und lokale NGOs gefunden, die sich für eine dezentrale Kompostierung stark machen. Nicht zuletzt gehört auch die die Gemeinde selbst zu den Unterstützern. Derzeit arbeitet man daran, das genaue Abfallaufkommen des Ortes pro Kopf zu erheben. Damit sollen dann die privaten Entsorgerfirmen, die derzeit nach einem Pauschalschlüssel abrechnen, besser kontrolliert werden können. Wenn es nach den Wünschen und Vorstellugen von Umweltexpertin Kisliakova geht, soll man am Ende der Bemühungen zu gerechtfertigten Müllgebühren finden, die sich auf die tatsächlich produzierte Abfallmenge beziehen. Weiters, so die Hoffnung, sollen Gebührenmodelle, die einen Anreiz zum Vermeiden, Trennen und Selbst-Kompostieren bieten, auch irgendwann einmal Eingang in das Gesetz finden.

Von Edith Lackner/APA

Von: Despo Fatta [dfatta@ucy.ac.cy]
Gesendet: Samstag, 02. Oktober 2004 12:26
An: Albena Kisliakova
Cc: aravella@cytanet.com.cy
Betreff: Composting in Schools and Communities

Kennzeichnung: Zur Nachverfolgung
Kennzeichnungsstatus: Rot

Dear Ms Kisliakova

Recently I read an article of yours concerning an Interreg project that you have together with Slovakia on composting.
I found your work and initiative an excellent idea in order to develop something similar in Cyprus.
Cyprus is very well behind composting. In general terms Cyprus has only recently established its Strategy for waste management. But as you know as a new EU member has to catch up time.

Therefore since it is my belief that working with and educating the children is of upmost importance I would like to have your opinion on the following: Can we do something similar in the framework of a LIFE Environment project? The consortium may include your organization, the University of Cyprus, schools and communities, private firms, etc.

The deadline as you may know is the October the 29th.
(http://www.europa.eu.int/comm/environment/life/funding/index.htm)
If there is an interest from your side please contact me as soon as possible.
I attach my CV in order to get a picture of my activities.

Best wishes,
Despina

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Von: Linet Atieno [Linet.atieno@itdg.or.ke]
Gesendet: Freitag, 01. Oktober 2004 15:44
An: Albena Kisliakova
Betreff: RE: Article in the Waste Management Digest

Kennzeichnung: Zur Nachverfolgung
Kennzeichnungsstatus: Rot

Dear Ms Kisliakova,
I am sorry that you have not received any former communication from us. I really thought that you received my previous e- mail.

I have had a chance to read your article in the *Waste Management World* (September - October issue) and I felt that your article was very handy especially for a city like ours (NAIROBI) that is Looking for options to manage our waste.

The waste situation in Kenya is very grim and our local authorities are not doing much to make the situation better. As a result we are looking for options that can be applied by our communities.

ITDG - EA is working on a newsletter called 'Waste Digest' that is produced quarterly. We feel that this is a small step forward towards having a clean environment.

My organization and I were requesting your permission to publish your article in our next issue so that our readers can get to have options in solid waste management.

Your consent will be greatly appreciated.

Regards,

Otieno Linet
Communications Assistant

Wir waren in Oesterreich

Am 15. Oktober waren wir in Oesterreich. Wir besuchten die Hauptstadt Wien und in Wien traffen wir mit dem Direktor und Lehrer aus Grundschule. Es war eine Volkschule. Die Schule ist modem aber ganz klein. Sie hat 200 Kinder. Wir gingen in die 3. Klasse. Hier waren nette Kinder und sie zeigten uns wie sammeln und reparieren alle Abfalle. Dann gingen wir nach Pizzeria. Hier bekamen wir sehr grosse Pizza mit Cola. Dann gingen wir nach Hainburg. Hier ist grosse Sam.mlungzenterum. Hier haben Abffal gesammelt und repariert. Wir abschieden uns ver und fuhren wir nach Hause. Dieser Ausflug war sehr prima und er hat uns sehr gefallen.

Ľudovít Ríška 9.A

Wir waren in Österreich

Eines Tages gingen wir Österreich besuchen. Das war die Exkursion nach Wien und Hainburg. Das Wetter war nicht sehr schön, aber der Ausflug warprima.
Morgen um 7,15Uhr warteten wir den Bus. Nach Wien kamen wir einbissschen splät. In der Volkschule griissten sie uns sehr nett. Das war die Schule fiir Kind von 1. bis 4. Jahrgang. In der Schule war es gut ekológisch organisiert. Wir besuchten die 3. Klasse. Dort waren die Schüler aus verschiedenen Staaten. Die kleine Kinder sangen uns englisches Lied. Nach halb Stunde gingen wir das Video sehen. Wir haben auch den Kompost von der Schule sahen. Gegen der Schule war das weibliche Kloster, wohin Kinder Abfall tragen. Wir gingen ins Restaurant, haben Pizza- mit Schinke oder Klässe gegessen. Dann stiegen wir in den Bus nach Hainburg ein. Zentralle Kompostierung zu sehen. Herr Bürgermeister hat uns um Kompostierung erzlählt. Wir bekamen kleine Geschenke, wir sind nach Hause zuriick gefahren.

Dusan Reichhardt
IX. B

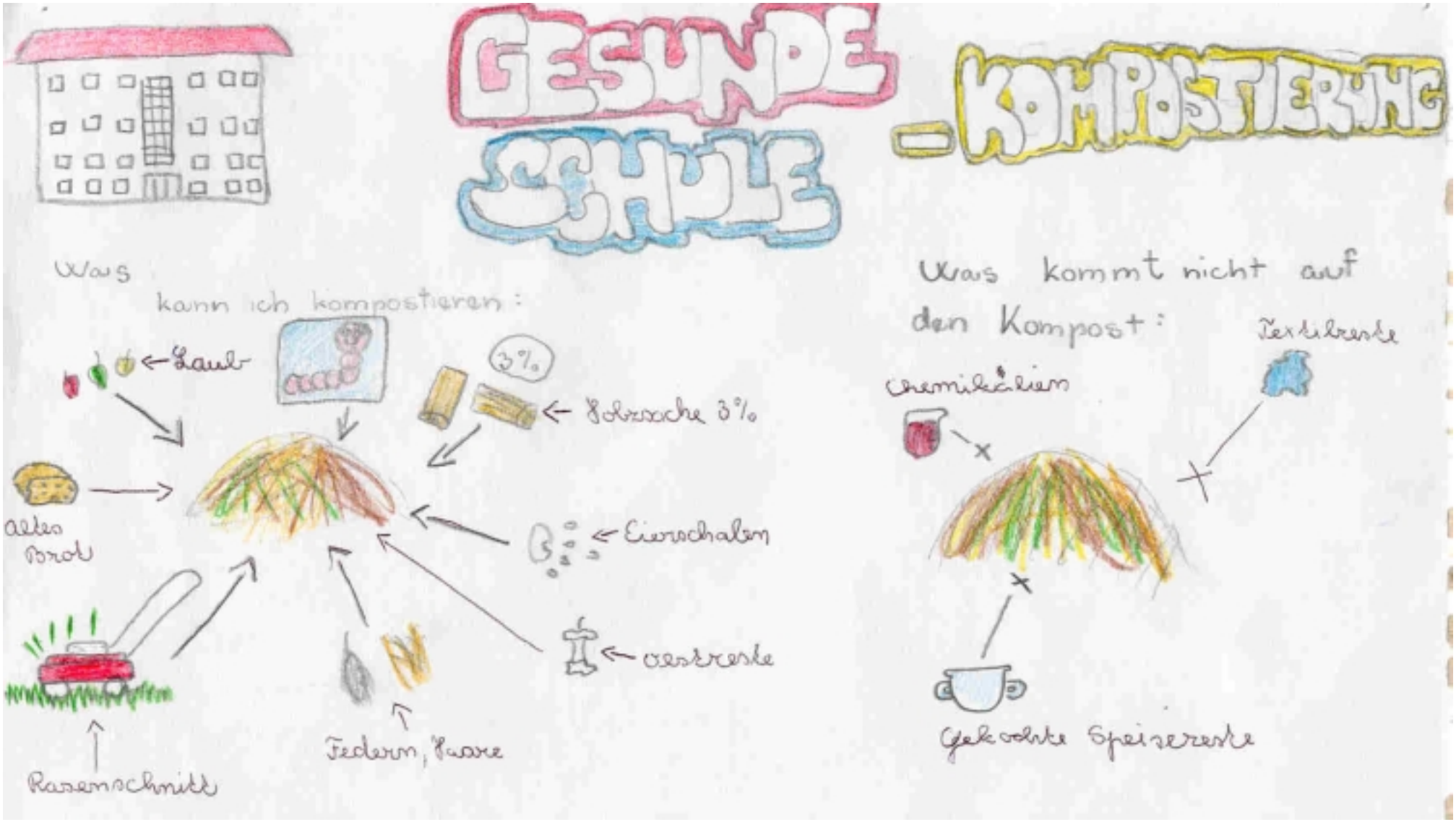
Návšteva v Rakúsku

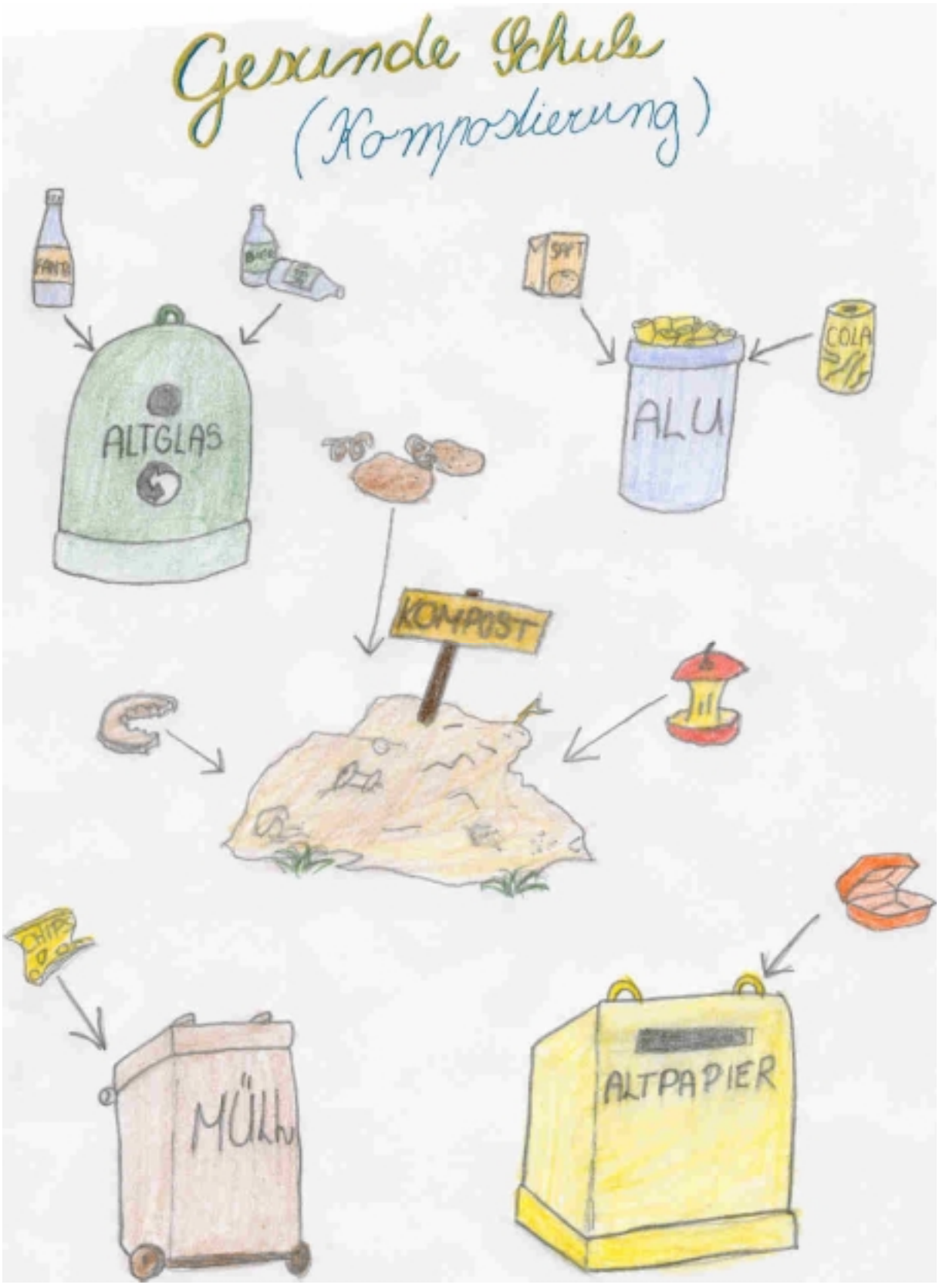
Mnohí ešte dospávali svoje sladké sny, ked' skupinka žiakov už stála pred školou a čakala na autobus. Po krátkej chvíli sa pred našimi očami objavil luxusný autobus. Všetci sme si sadli a vtom zavrčal motor. Začala sa cesta do Rakúska. Po prekročení hraníc sme obdivovali nádhemú krajinu a vo Viedni sme pomaly ani nedýchali pri pohľade na more obchodov. Konečne sme dorazili.

Náš autobus zastal pred l'udovou školou. Už nás netrpezlivo čakali naši rakúski sprievodcovia, ktorí boli veľmi milí. V ľudovej škole nás privítala 3.trieda krásnou piesňou. Po piesni pani uciteľka slovami začala žiakov vyzývať, aby nám ukázali ich triedený odpad. Na stôl položili viaceré koše s odpadkami a.každý mal vrchnák inej farby. Vyvolávala žiakov a tí postupne vhadzovali odpadky do košov. To ešte zďaleka nebolo všetko! Deti sa začali odrazu hmýriť po celej triede. Vytvorili 4 skupinky. V každej sa hrali hry, pri ktorých sa učili triediť odpad. Postupne nám poukazovali celú školu a vedľajšiu budovu, kde odnasali už vytriedený odpad. Samozrejme každý chcel mať na nás pamiatku a aj mi na nich. A tak začalo

veľké fotografovanie pred školou so všetkými deťmi, sprievodcami a učiteľmi. Z ničoho nič sa tam objavil pán riaditeľ ľudovej školy. Pozval nás na obed do blízkej pizzerie. Po vynikajúcom obede sme sa rozlúčili s učiteľmi a opustili sme Viedeň. Samozrejme nie naprázdno. Dostali sme kopec darčekov: letáky, osemsmerovky, plagáty, záložky, náučné čítanie a šiltovky. Mysleli sme si, ze ideme domov, keď vtom zastal autobus. Ocitli sme sa v Heinburgu a spoznali sme nové tváre. Medzi nimi aj primátora mesta, ktorý nás srdečne privítal. Ukázal nám budovy a obrovské kontajnery, v každom niečo iné. Pán primátor sa snažil exkurziu urýchliť, lebo mu bolo ľúto, že musíme moknúť na daždi. Rozdal nám ďalšie darčeky v tvare malých smetiačikov a v nich čokoládové prekvapenia. V Heinburgu nás opustili už aj naši sprievodcovia a aj pán primátor. Vydali sme sa na cestu na naše Slovensko. Pri škole sme sa rozlúčili a tým sa skončil náš nádhemý výlet, ktorý nám splnil naše očakávania.

Ria Achbergerová
9.A


GESUNDE SCHULE
KOMPOSTIERUNG
Was kann ich kompostieren:
Laub
3%
Holzreste 3%
altes Brot
Eierschalen
Gemüsereste
Federn, Haare
Rasenschnitt
Was kommt nicht auf den Kompost:
Chemikalien
Textilreste
Gekochte Speisereste


Gesunde Schule
(Kompostierung)
ALTGLAS
ALU
COLA
KOMPOST
CHIPS
MÜLL
ALTPAPIER