

Καλωσόρισμα



sustainable



innovative



municipal

UPPER AUSTRIA

1. INTRODUCTION

AUSTRIA

- + 8,5 mio. inhabitants
- + A = 84.000 km²
- + 9 provinces

UPPER AUSTRIA

- + 1,4 mio. inhabitants
(17% of Austria)
- + 444 municipalities,
15 districts, 3 statutory cities
- + A = 12.000 km²
- + capital: Linz (190.000 inh.)



Linz



COMPANY „LAVU“

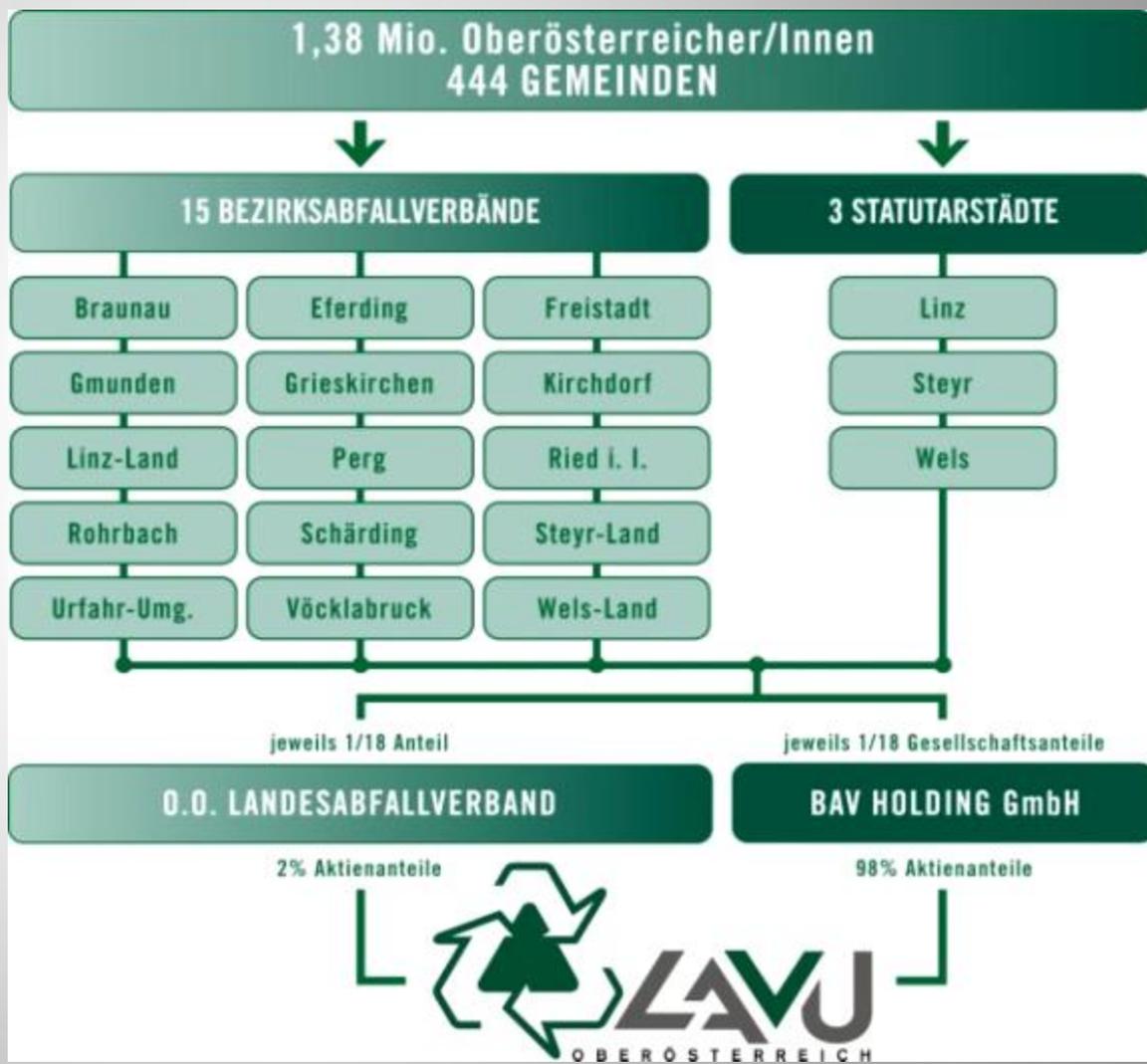
1. INTRODUCTION

+ organisation

joint stock company
public shareholders
competitive standing

+ shareholders:

444 municipalities organized in 18 waste district associations (WDA) in Upper Austria



2. GENERAL FACTS

COLLECTION QUANTITY

MUNICIPAL WASTE in AUSTRIA 2010 [kg/cap.]

Δ 07

Provinces	B	K	LA	UA	S	ST	T	V	W	Ö	[%]
TOTAL	321	373	522	449	475	408	522	306	531	466	4,0
residual & bulky waste	130	208	187	151	208	168	178	100	321	201	0,6
DISPOSAL RATE [%]	40,6	55,7	35,7	33,7	43,7	41,1	34,2	32,7	60,7	43,2	
recycleables	146	136	175	199	179	185	223	170	143	174	3,8
biogenic waste	44	29	160	99	89	56	120	36	68	90	8,4
RECYCLING RATE [%]	59,4	44,3	64,3	66,3	56,3	58,9	65,8	67,3	39,6	56,7	

2. GENERAL FACTS

+ PICK-UP SYSTEM (in Upper Austria: 1/3)

collection directly from the household

- residual waste: usually
- biogenic waste: usually
- mixed plastic packaging („yellow bag“)
- mixed paper & card-board: partially

+ BRING SYSTEM (in Upper Austria: 2/3)

a. without controlled acquisition:

- glass
- mixed paper & card-board
- mixed plastic packaging („yellow container“)
- metal packaging
- textiles & shoes

b. with controlled acquisition :

- * **municipal recycling centers (RC):** all kind of (separated) waste (in Upper Austria: 40%)
- * **retail shops:** specific fractions e.g. batteries, WEEE, mineral oil...
- * **other collection points:** e.g. for yard waste

COLLECTION SYSTEMS



2. GENERAL FACTS

BIOWASTE

+ LEGAL BASIS: BIOWASTE ORDINANCE (Austria-wide, 1995)

- regulates the separated collection of biowaste
- just 3 sections, no specific penalties



+ BIOWASTE MANAGEMENT IN UPPER AUSTRIA

a. Collection (private households, 2012): 110 kg/cap.

+ pick-up system/"bio-bin":

mainly for "kitchen-waste, 47 kg/cap.

in 87% of the municipalities, for 330.000 households (60%)

+ bring-system (RCC, other collection places):

mainly for "yard waste" (grass & shrubbery); 63 kg/cap.

b. treatment:

* **composting: 162 (rural) composting plants**

83 % of the "bio-bin"-quantity; 95% of the "yard-waste"

* **fermentation/biogas: 28 plants**

17 % of the "bio-bin"-quantity

* **biomass combustion:**

the wooden material (shrubbery) of the "garden waste"



3. RECYCLING CENTER (RC) in UPPER AUSTRIA

+ Where do we collect: attractive infrastructure

RC St. Georgen/A (VB)



RC Grieskirchen (GR)



3. RC-SYSTEM in UPPER AUSTRIA

+ Where do we collect: 183 RCC in Upper Austria

RE-DISTRIBUTION
„hardware“

RC Gallneukirchen (UU)



RC Kronstorf (LL)



3. RC-SYSTEM in UPPER AUSTRIA

+ Where do we collect: attractive infrastructure

RE-DISTRIBUTION
„hardware“

RC GREIN (PE)



RC 4 SONNEN (BR)



3. RC-SYSTEM in UPPER AUSTRIA

+ Where do we collect: attractive infrastructure

RE-DISTRIBUTION
„hardware“



3. RC-SYSTEM in UPPER AUSTRIA

+ Where do we collect: attractive infrastructure

RE-DISTRIBUTION
„hardware“

RC BRAUNAU (BR)



7.500 m² 25.000 EW



RC RIED (RI)

7.500 m² 30.000 EW

RC GOSAU (GM)



3.000 m² 1.950 EW

RC GRÜNAU (GM)



1.500 m² 2.100 EW

3. RC-SYSTEM in UPPER AUSTRIA

RE-DISTRIBUTION „software“

+ **WHAT** do we collect: **80** different waste materials **2013: 271.800 to (192 kg/cap.)**

- **COLLECTION for REUSE: 9**

2013: 4.160 to (3 kg/cap.) 2 %



- **COLLECTION for RECYCLING: 52**

2013: 215.100 to (152 kg/cap.) 79%

- Packaging materials: 15

2013: 36.300 to (26 kg/cap.) 13%



- Recycleables: 24

2013: 162.700 to (1115 kg/cap.) 60%



- WEEE, batteries, end of life vehicles: 13

2013: 16.100 to (11 kg/cap.) 6%



- **COLLECTION for RECOVERY: 3**

2013: 290 to (0,2 kg/cap.) 0,1%



- **COLLECTION for DISPOSAL: 14**

2013: 52.150 to (37 kg/cap.) 19%



3. RC-SYSTEM in UPPER AUSTRIA

+ **WHAT** do we collect: 80 different waste materials

COLLECTION for RECYCLING: 52

Packaging materials: 15

2011: 215.100 to (152 kg/cap.) 79%

2011 36.300 to (26 kg/cap.) 13%

**RE-DISTRIBUTION
„software“**



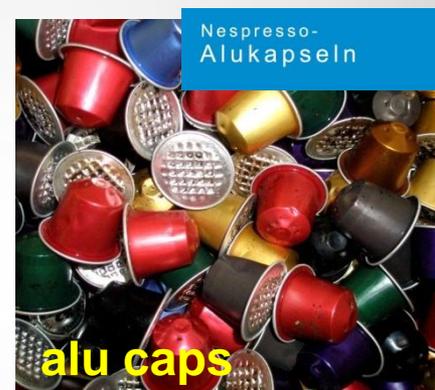
3. RC-SYSTEM in UPPER AUSTRIA

+ **WHAT** do we collect: 80 different waste materials

COLLECTION for RECYCLING: 52

Recycleables/specialities

**RE-DISTRIBUTION
„software“**



3. RC-SYSTEM in UPPER AUSTRIA

**RE-DISTRIBUTION
„software“**

+ **WHAT** do we collect: **80** different waste materials

COLLECTION for **REUSE/REVITAL CONCEPT**: **6**

- since 2009 in 81 RCC: **Collection for Reuse**

- 6 Revital-fractions (houshold-goods, small/large-furniture, small/large EEE-appliances, monitors)

- **cooperation with 3 socio-economic enterprises**

- **Retailing in 15 Revital-shops** : Altmünster, Braunau, Eferding, Freistadt, Grieskirchen, Kirchdorf, Leonding, Linz, Mattighofen, Ried, Rohrbach, Schärding, Schwertberg, Steyr, Vöcklabruck



- more info: www.revitalistgenial.at

3. RC-SYSTEM in UPPER AUSTRIA

+ **WHAT** do we collect: 80 different waste materials

COLLECTION for RECYCLING: Cooking oil

Collection with multi-path buckets

- **3 ltr. bucket:** for private households used by 350.000 households (70 %)
- **24 ltr. bucket:** for restaurants used by 4.000 restaurants (50 %)

**RE-DISTRIBUTION
RE-PRODUCTION**



JA	NEIN
<ul style="list-style-type: none"> - gebrauchte Filter- und Braffettöle - Öle von eingetragten Speisen (Thunfisch, Sardinen, usw.) - Butterschmalz und Schweineschmalz - verdorbenes und abgelaufenes Speiseöl & -fette 	<ul style="list-style-type: none"> - Mineral-, Motor- und Schmieröle - andere Flüssigkeiten und Chemikalien - Mayonaisen, Saucen und Dressings - Speisereste

- Öl und Fett nicht über 80°C einfüllen.
- Die Öl-Alt im Metallweggefäß.
- **3 Liter Haushalte-Öl:** Kostenfrei
- **24 Liter Gastge-Öl:** Entlastung kostenfrei - anschließend Austausch kostenfrei!
- Nur vollgefüllte Öle im ASZ abgeben. Deckel immer fest verschließen (aufdrücken bis er einrastet).



RE-DISTRIBUTION RE-PRODUCTION

3. RC-SYSTEM in UPPER AUSTRIA

+ **WHAT** do we collect: 80 different waste materials

COLLECTION for RECYCLING: Cooking oil

Thermic energy providing

- wood chip-production by (non contaminated) waste wood crushing (200 t/a)
- wood chips heating plant (350 kW; 750.000 kWh)



Biodiesel energy production & use



3. RC-SYSTEM in UPPER AUSTRIA

+ **WHAT** do we collect: 80 different waste materials
WEEE, batteries

RE-DISTRIBUTION
„software“

2013: 14.400 to (10 kg/cap.)

COOLING APPLIANCES

+ collection quantity 1989-2013: 28.200 to (710.000 pcs.)

2013: 2.070 to [1,5 kg/cap.] **16,0 %** of all WEEE

+ logistic: collective transport/180 WCC – WLC

+ recovery: AVE/Timelkam; UFH-Re/Kematen/Y.

dismounting (2-step dismounting, FCKW-separation, shreddering)

Elektroaltgeräte

Kühlgeräte



JA

- Kühl- und Gefrierschränke
- Kühltruhen, -vitriolen
- Klimageräte
- Eismaschine
- Weinkühlschrank
- Kühlbox (elektrisch)

NEIN

- Gewerbliche Großanlagen mit Kältekreislauf für Kühlung oder Klimatisierung (Installation durch Professionisten als fixer Bestandteil eines Gebäudes)
- Wärmepumpen
- fix eingebaute Klimaanlagen
- Sonstige Haushaltsgröße

↳ zu KLIMA- und ECK-ERHAUBERATE
↳ zu ELEKTRO-GROßGERÄTE



3. RCC-SYSTEM in UPPER AUSTRIA

+ **WHAT** do we collect: 80 different waste materials
WEEE, BATTERIES

RE-DISTRIBUTION
„software“

Elektroaltgeräte

Bildschirm- geräte



JA

- Bildröhrengeräte
- Fernsehgeräte
- EDV-Monitore
- Flachbildschirme
- Notebook

NEIN

- Automatische Ausgabegeräte
 - medizinische Geräte
 - Spielautomat (Spielhalle)
- zu Elektro-Gesamtkategorie

DISPLAY SCREEN EQUIPMENT

+ collection quantity 1993-2013: 27.850 to (1.380.000 pcs.)

+ 2013: 2.900 to [2,0 kg/cap.] **22 % of all WEEE** 2/3 TV-sets, 1/3 monitors

+ logistic: collective transport/180RCC – WLC

+ recovery: AVE/Timelkam, Basar/Steyr; dismantling (CRT-separation, haz. parts)



3. RC-SYSTEM in UPPER AUSTRIA

RE-DISTRIBUTION
„software“

+ **WHAT** do we collect: 80 different waste materials
WEEE, batteries

SMALL ELECTRICAL APPLIANCES 34 % of all WEEE

+ collection quantity 1993-2013: 32.000 to; 2013: 4.430 to [3,1 kg/cap.]

40 % IT-equipment, 30% household appliances, 20 % consumer equipment, 5 % electric tools

+ **logistic: collective transport/180 RCC – WLC**

+ **recovery: LAVU/WLC Wels, dismantling** (hazardous parts, recycleable parts)



3. RCC-SYSTEM in UPPER AUSTRIA

RE-DISTRIBUTION
„software“

+ **WHAT** do we collect: 80 different waste materials
WEEE, batteries

PORTABLE BATTERIES

+ collection quantity 1989-2013: 4.170 to; 2013: 290 to [0,21 kg/cap.]

+ logistic: collective transport/181 RCC – WLC

+ recovery: Saubermacher, Trofaiach; sorting,
thermic-metalurgic recovery, recycling of metals



3. RC-SYSTEM in UPPER AUSTRIA

+ **WHAT** do we collect: 80 different waste materials
WEEE, batteries

VEHICLE BATTERIES

- + collection quantity 1989-2013: 22.900 to (1.990.000 pcs.); 2013: 930 to [0,7 kg/cap.]
- + logistic: collective transport/180 WCC – WLC
- + recovery: BMG, Arnoldstein 100 % Recycling

RE-DISTRIBUTION
„software“

Batterien

Fahrzeugbatterien



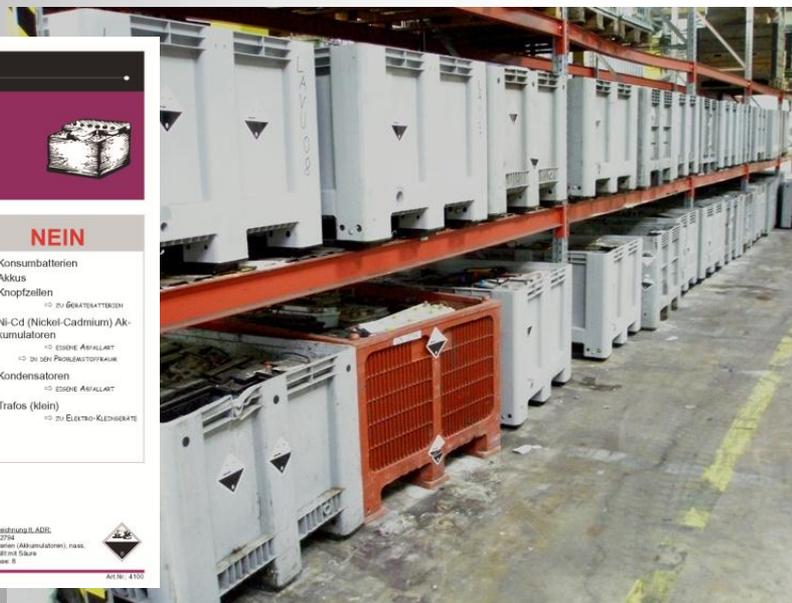
JA	NEIN
<ul style="list-style-type: none"> - Bleiakkumulatoren, -batterien mit Säureinhalt - Starterbatterien von Autos, Mopeds, Traktoren, LKW etc. 	<ul style="list-style-type: none"> - Konsumbatterien - Akkus - Knopfzellen <small>↳ zu GEMÄSSTREIBEN</small> - Ni-Cd (Nickel-Cadmium) Akkumulatoren <small>↳ ZU EISNE ABFALLEN</small> - Kondensatoren <small>↳ ZU SEH PROBLEMTOPFKABE</small> - Trafos (klein) <small>↳ ZU ELEKTRO-KLEINMISCH</small>

Erkennungsmerkmal:
"Nassbatterie"
Besonderheit: Bleikontakte lassen sich leicht öffnen

Sammelhinweis:
Batterien dürfen keinesfalls die obere Karte der Wärme Übertragen! Der Transporteur darf die Wärme (gem. ADR) sonst nicht aufladen!

Bestimmung LAADR: UN 2794 Batterien (Akkumulatoren), Nass, gefüllt mit Säure Klasse 9

ADZ - Handbuch, Revision 3, 01.01.2010



3. RC-SYSTEM in UPPER AUSTRIA

RE-DISTRIBUTION „software“

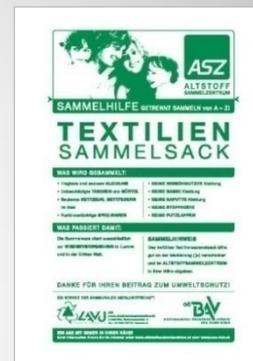
+ With who do we collect: motivated & professional staff



3. RC-SYSTEM in UPPER AUSTRIA

RE-DISTRIBUTION „software“

+ with what do we collect: practical collection-aid



professional info-service



3. RC-SYSTEM in UPPER AUSTRIA

RCC – WLC = Waste Logistic Centre

+ where does the waste go: specific logistic & data management



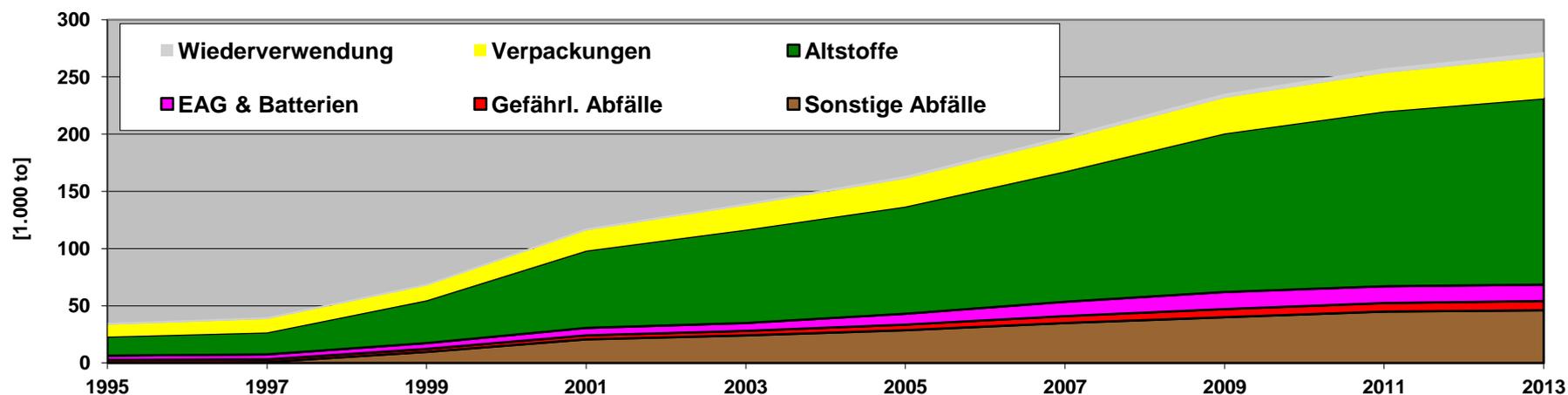
3. RC-SYSTEM in UPPER AUSTRIA

figures & facts

+ how much do we collect

RCC collection quantity 1995 - 2013 [1.000 to/a]

	1995	1997	1999	2001	2003	2005	2007	2009	2011	2013	kg/cap	Δ 13/11
Reuse	1,8	1,6	1,5	1,8	1,9	2,5	3,1	3,8	4,2	4,2	3,0	1,7
Packaging mat	10,3	11,7	12,9	17,6	21,1	24,3	27,8	31,0	33,6	36,3	25,6	8,1
Recycleables	16,7	19,2	37,4	67,5	81,6	93,7	114,0	138,6	152,8	162,7	114,8	6,5
WEEE & battery	3,7	4,3	5,1	6,5	6,8	9,5	12,5	14,9	14,7	14,4	10,2	-1,8
Hazardous waste	2,4	2,3	2,6	3,4	3,9	4,9	6,0	7,1	7,4	8,0	5,7	8,6
Other waste	0,3	0,9	9,7	20,7	24,2	28,7	35,0	40,0	45,0	46,1	32,5	2,5
TOTAL	35,1	40,0	69,2	117,6	139,5	163,5	198,4	235,4	257,6	271,7	191,8	5,5



3. RC-SYSTEM in UPPER AUSTRIA

figures & facts

+ how much does it cost

RCC – COSTS							
OÖ 2013			181 RCC	Σ [T€]	[T€/RCC]	[€/to]	[€/cap.]
TAX WRITE OFF (building....)				4.093	23	15	2,9
PROPERTY RENT (land)				2.044	11	8	1,4
TOTAL calcul. COSTS				6.137	34	23	4,3
PERSONAL COSTS	554.912 h/a	24,0 €/h		13.335	74	49	9,4
RUNNING COSTS				646	4	2	0,5
DISPOSAL COSTS/RECYCLING REVENUE			272 Tto	-4.665	-26	-17	-3,3
DISPOSAL	52.153 to	288 to/RCC	19 %	8.145	45	30	5,8
RECCLING	219.615 to	1.213 to/RCC	81 %	-12.810	-71	-47	-9,1
TOTAL direct COSTS				9.315	51	34	6,6
RCC-COSTS				15.452	85	57	11
Gesamtkosten RESTABFALL						250	

- recycling brings money! disposal costs money!
„don´t waste money – but make money with waste“

Σας ευχαριστώ για την προσοχή σας

CONTACT:

DI. Christian Ehrenguber
O.Ö. LAVU AG
Maderspergerstr. 16
A-4600 WELS



I: www.lavu.at
www.altstoffsammelzentrum.at
E: vorstand@lavu.at
T: +43/7242-77977-70
M: +43/650-77977-70