

Current legislation projects touching biological waste treatment in the EU



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European Legislation and Policy on Biowaste

- EU Landfill Directive; (EC) Nr. 1999/31
- EU Waste Framework Directive; (EC) Nr. 2008/98
 - ✓ Recycling Targets- Biowaste
 - ✓ Waste Hierarchy & Life Cycle Thinking (!)
 - ✓ End of Waste for Compost & Digestate
- Communication on the Management of Bio-Waste in the EU
COM(2011) 571 final
- EU Climate Change Programme
- Fertiliser Regulation (EC) Nr. 2003/2003
- Animal By-Products Regulation (EC) Nr. 1069/2009
- REACH - EU Chemicals Regulation (EC) Nr. 1907/2006
- IPPC / Industrial Emission Directive; 2(EC) Nr. 2010/75
- Renewable Energy Directive (EC) Nr. 28/2009
- Roadmap to a Resource Efficient Europe COM(2011) 571 final
- EU Soil Protection Strategy COM(2006) 231 final

EU-Landfill Directive 1999/31/EC

Reduction of **biodegradable** waste from landfill



in % of biodegradable waste 1995

25% → 2006/10

50% → 2009/13

65% → 2016/20



separated at the source

liquid

dry/solid

mixed waste



For the **Landfill Directive diversion targets** (Art. 5) an **impact assessment** on the need of the revision of these targets will be started soon (2012).

?? > 65% ?? ... ?? **Complete Ban from 2020/25 ??**

INCINERATION ???

The Waste Framework Directive

➤ Recycling Targets ...

✓ 50% Recycling until 2020 at least for

- Paper, Metals, Plastic and Glass *from households or similar sources*

✓ Accounting method

Draft COM Decision of "Establishing rules and calculation methods for verifying compliance with Recycling targets set in Art. 11 (2) of the WFD"

- 20 01 08 ... Biodegradable kitchen and canteen waste
- 20 02 01 ... Biodegradable garden and park waste

*Generating Compost & Digestate ending up in Recovery method
R 10 Land treatment resulting in benefit to agriculture or ecological improvement*

- Home Composting

- ➔ NO ENERGY RECOVERY !!
➔ NO SLUDGES !!



The Waste Framework Directive

➤ Article 22 on Biowaste

- ✓ Member States shall take measures, as appropriate, and in accordance with articles 3a and 10, to encourage:
 - a) the separate collection of bio-waste with a view to the composting and digestion of biowaste
 - b) the treatment of bio-waste in a way that fulfils a high level of environmental protection;
 - c) the use of environmentally safe materials produced from bio-waste.
- ✓ The Commission will carry out an assessment on the management of bio-waste with a view to submit a proposal if appropriate. The assessment shall examine the opportunity of setting minimum requirements for bio-waste management and quality criteria for compost from bio-waste, in order to guarantee a high level of protection for human health and the environment."

Waste Hierarchy vs. Impact Assessment & LCT/LCA

PREVENTION

The 5-Step Waste Hierarchy

PREPARING FOR RE-USE

RECYCLING

ENERGY RECOVERY

DISPOSAL

➤ **Study I: ASSESSMENT OF THE OPTIONS TO IMPROVE THE MANAGEMENT OF BIOWASTE IN THE EUROPEAN UNION [2009/2010]**

✓ **PROBLEM:**

"the baseline scenario is developed on the assumption that all Member States are coping with the targets from the Landfill Directive"

✓ **SCENARIOS:**

2 targets for separate collection → 60% + prevention + food waste
→ optimised combination of in-vessel composting & AD

2a targets for separate collection → 60% + prevention
+ all food waste → AD

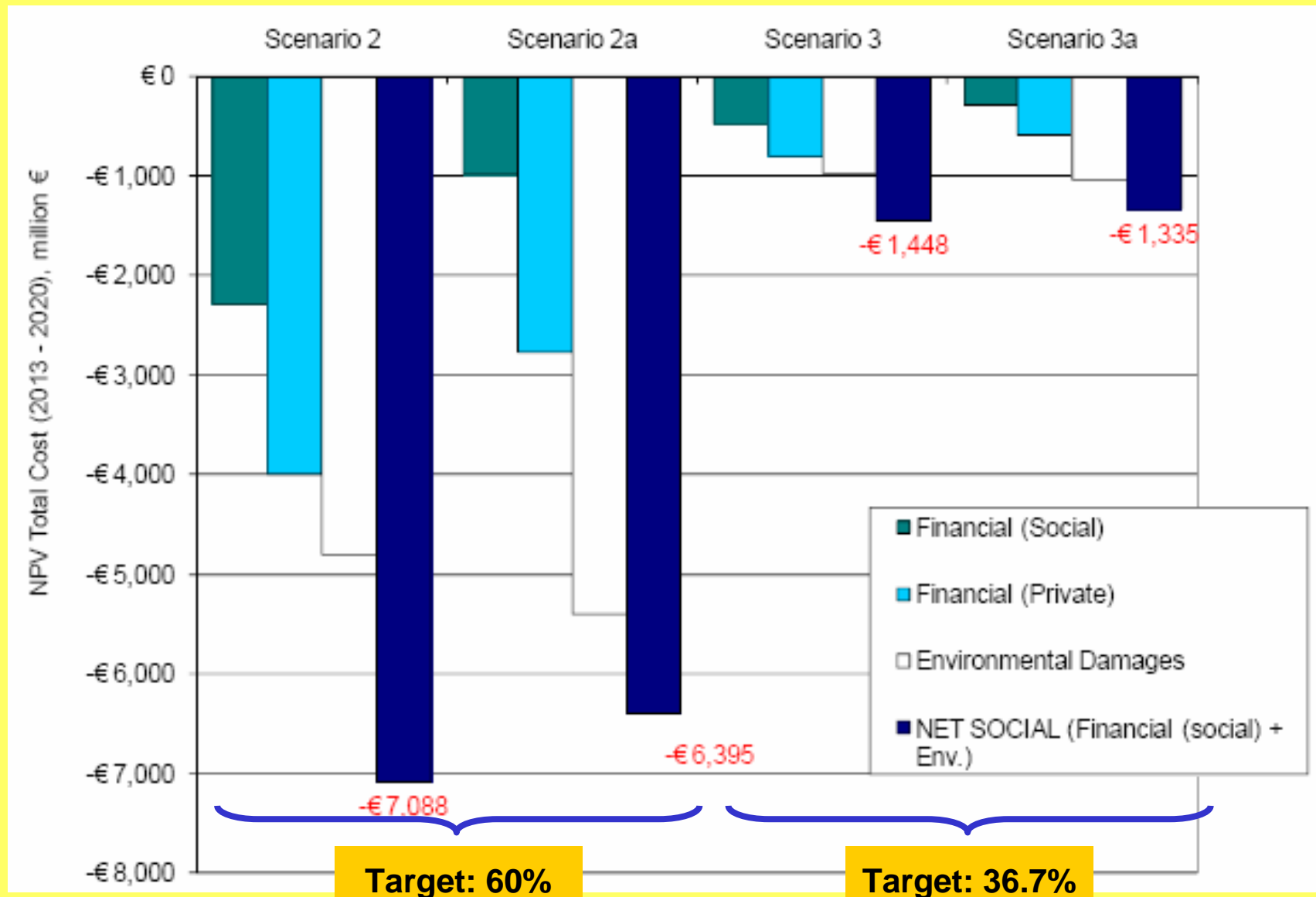
3/3a targets for separate collection → 36.7% ... NO prevention

✓ **RESULT:**

- Significant financial and environmental benefits in ALL scenarios

Impact Assessment Studies

Study I: Financial & Environmental Costs - Total Cost/Benefit



Impact Assessment Studies

Study I: Reductions of GHG emissions in 2020 compared to the baseline (Mt CO₂-eq)

60% recycling + prevention	40 Mt
<i>Of which: waste prevention</i>	<i>80%</i>
36.7% Recycling ... No Prevention	Ca. 2 Mt

➤ CONCLUSION COMMISSION:

"... make best use of the existing regulatory framework Member States may choose the best options for their respective circumstances."

NO additional regulation or targets for Biowaste

Assessment of implementation of existing regulations 2014

Impact Assessment Studies

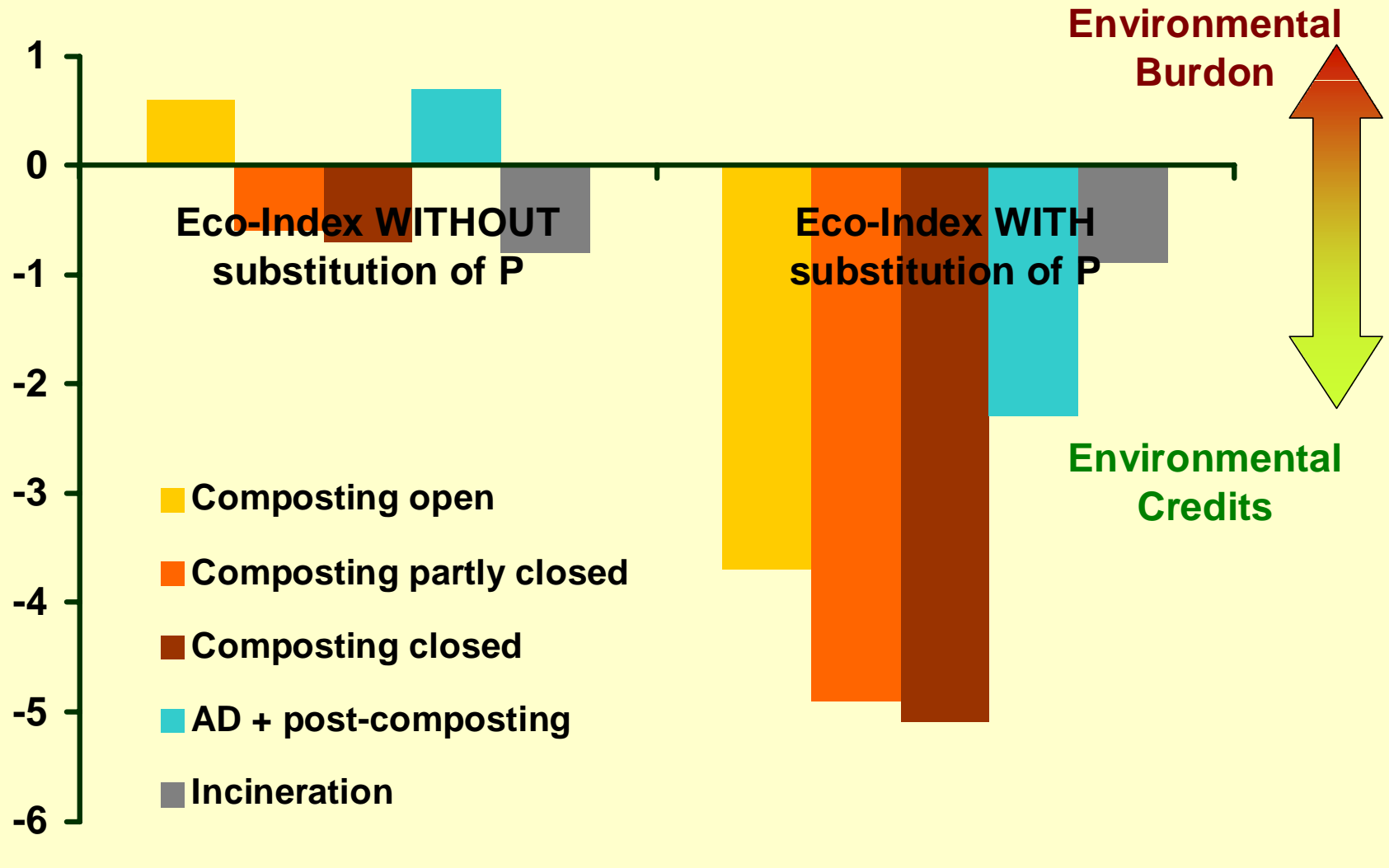
➤ Study II: ASSESSMENT OF FEASIBILITY OF SETTING BIO-WASTE RECYCLING TARGETS IN EU, INCLUDING SUBSIDIARITY ASPECTS [2011]

✓ RESULT.

- NO fundamental revision of previous results: both targets bring net benefits
- Net benefits of bio-waste recycling exceed the costs

Scenario	Target	Removed Biowaste from MSW	NET Benefit 2013 - 2020	GHG Reduction
I	60% food waste 90% garden waste	88 Mt +27 Mt capacity	3,000 M€	6 Mt CO ₂
II	36.5%	21 Mt +5 Mt capacity	668 M€	1.5 Mt CO ₂

Environmental Index of Treatment Options for Organic Waste



bifa – Eco-Efficient Recycling of Biowaste and Green Waste in Bavaria, 2010

END of WASTE criteria for COMPOST & DIGESTATE

JRC Scientific and Technical Reports



END OF WASTE CRITERIA

Draft Final Report



Final Report: October 2008

Technical report for

End-of-waste criteria on

Biodegradable waste subject to
biological treatment

Second Working Document

11 October 2011

IPTS
Seville, Spain



➤ 2 Consultation Meetings

- ✓ February 2011
- ✓ 24/25 October 2011
- ✓ Draft Reports

➤ Consultation

- ✓ → ca. End of November

➤ Final Report to DG ENV

- ✓ 31 December 2011

➤ EoW Regulation

- ✓ End of 2012

No separate regulation for
DIGESTATE!

END of WASTE proposal for COMPOST

➤ The key elements

- ✓ Positive List of feedstocks
- ✓ Limit Values
- ✓ Product property to be declared & labelled
- ✓ Standard external control and Quality Assurance scheme



EoW Criteria: Compost & Digestate

Parameter		Value compost	Value digestate
Minimum organic matter content		15 % d.m.	15 % d.m.
Minimum stability		Oxytop / Self Heating	1500 mg/l org. acids
Pathogens		Salmonella sp. and E.Coli	Salmonella sp. and E.Coli
Viable weeds and plant propagules		2 per liter	2 per liter
Impurities: plastic, glass & metals (no proposal for stones)		0.5 % d.m	0.5 % d.m.
Heavy metals	[mg/kg d.m.]	ECN-QAS	
Zn		600 ^{B)}	600
Cu		200 ^{B)}	300
Ni		40	50
Cd		1.3	1.5
Pb		130	120
Hg		0,45	1
Cr		60	100
No proposal for organic compounds		-	-

B) Cu & Zn can be also seen as trace-nutrients. Concentrations of **Cu > 110** and **Zn > 400** must be declared



Fertiliser Regulation (EC) Nr. 2003/2003

- ✓ Inclusion of Organic Fertilisers
- ✓ Results of CONSULTATION/IMPACT ASSESSMENT
→ December
- ✓ 4 working groups within TAC: January 2012
 - ✓ Overall structure; Nutrient content, Contaminants/Risks; Labelling/Control
- ✓ Proposal new regulation until the end of 2012
- ✓ Reference: End-of-Waste standards & QAS for market control



ABPR - the 2 Documents

➤ Animal By-Products Regulation

(EC) Nr. 1069/2009

...it shall apply from 4 March 2011

➤ Implementation rules Regulation

(EC) Nr. 142/2011

...published OJ L54 26 Feb 2011

➤ **Composting and AD: Cat. 2 / Cat. 3 Material only !**



➤ Catering Waste

➔ National rules

➤ **Article 15 (2) (a) (ii)**

➤ *Pending the adoption of common (EU) rules ...*

- Member States may adopt or maintain national rules for:
the transformation of animal by-products referred to in
Article 10(p) [=catering waste]

including:

- manure;
- digestive tract content separated from the digestive tract;
- milk; milk-based products; milk-derived products; colostrum;
colostrum products;
- eggs; egg products;
- former foodstuff which has undergone processing.

Time -Temperature Regime

➤ Other Cat. 3 Material

➔ 70 °C ➔ 1 hr ➔ particle size: 12 mm

➤ does not reflect the reality of hygienisation processes. A more flexible system is necessary.....

... therefore ...



Time - Temperature Regime ... flexible ... well experienced and investigated !

Composting system	°C	Time	Further conditions
<u>OPEN</u> windrows	> 55 °C 65 °C	10 days 3 days	<ul style="list-style-type: none"> ➤ At least 3 to 5 times of physical agitation (turning) ➤ > 40 to 55% moisture ➤ Min 6 - 8 weeks composting
<u>CLOSED</u> Systems	60 °C	3 days	
ANAEROBIC Digestion <u>thermophile</u>	> 55 °C	24 h 20 days	<ul style="list-style-type: none"> ➤ Followed by composting (?) ➤ see above
ANAEROBIC Digestion <u>mesophile</u>	< 40 °	28 days	<ul style="list-style-type: none"> ➤ Pasteurisation unit OR ➤ Followed by composting ➤ see above

REACH - EU Chemicals Regulation (EC) Nr. 1907/2006

➤ EXCLUDED from REACH

- ✓ COMPOST and DIGESTATES as WASTES
- ✓ COMPOST as a PRODUCT according to article 5.

BUT DIGESTATE is NOT EXCLUDED

➤ Commission's current INTERPRETATION:

- ✓ Material coming partly or fully from living organisms which are **unprocessed** (NOT chemically modified) is **exempted** from REACH.

Problem for AD

- ✓ food residues often have undergone chemical modification during food processing (e.g. strawberry and strawberry marmalade).



IPPC / IED - Inclusion of Biological Treatment?

- Best Available Technique Reference Document [BREF] for the whole waste management sector starts January 2012.
- "Mini-BREF" for biological treatment
- New concept:
 - ✓ Instead of BAT document: description of typical (suitable) technologies acknowledged in biowaste management in MSs (technology, management, operation, emission control & costs)

ECN ... **DANGER**: expensive and disproportionate **Over-Regulation** Quality management / assurance is much more effective, covers all scales of facilities than high level of technology ... we need flexible, locally adapted solutions.

Renewable Energy DIR. (EC) Nr. 28/2009

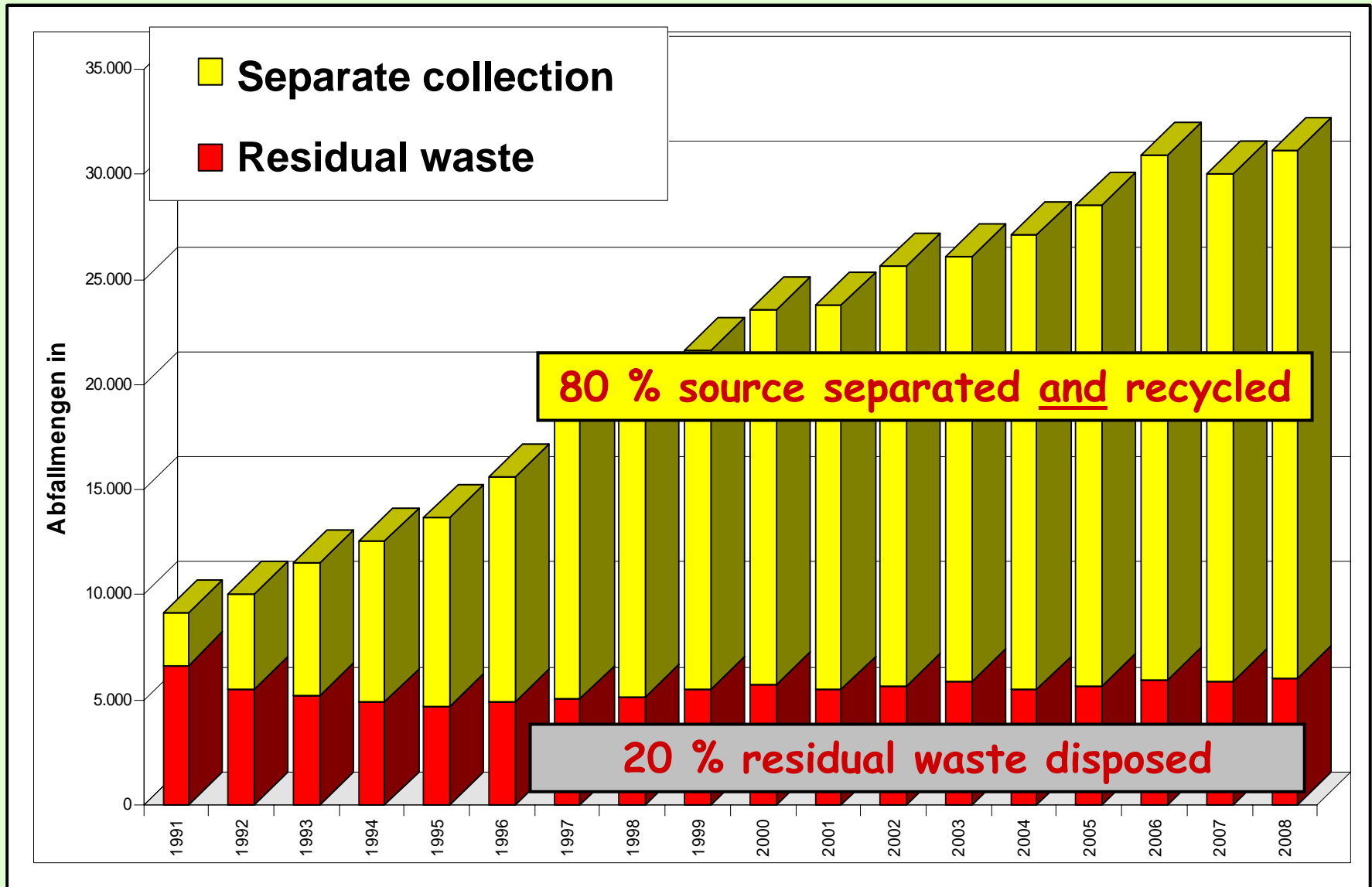
- Target → 2020: 20% renewable recourses; 10% traffic sector
- Framework for
 - ✓ Make use of manure and agricultural residues: decentralised, regional investments → new agricultural income → rural development
- Sustainability criteria for biofuels and bioliquids
 - ✓ CO₂ savings: > 35%
 - ✓ Respecting biodiversity and soil/landscape conservation
- Definition of **BIOMASS**
 - ✓ 'biomass' means the biodegradable fraction of products, waste and residues from biological origin from agriculture (including vegetal and animal substances), forestry and related industries including fisheries and aquaculture, as well as the biodegradable fraction of industrial and municipal waste;
 - ✓ Energy Efficiency Coefficient is missing

Roadmap for Resource Efficiency in Europe

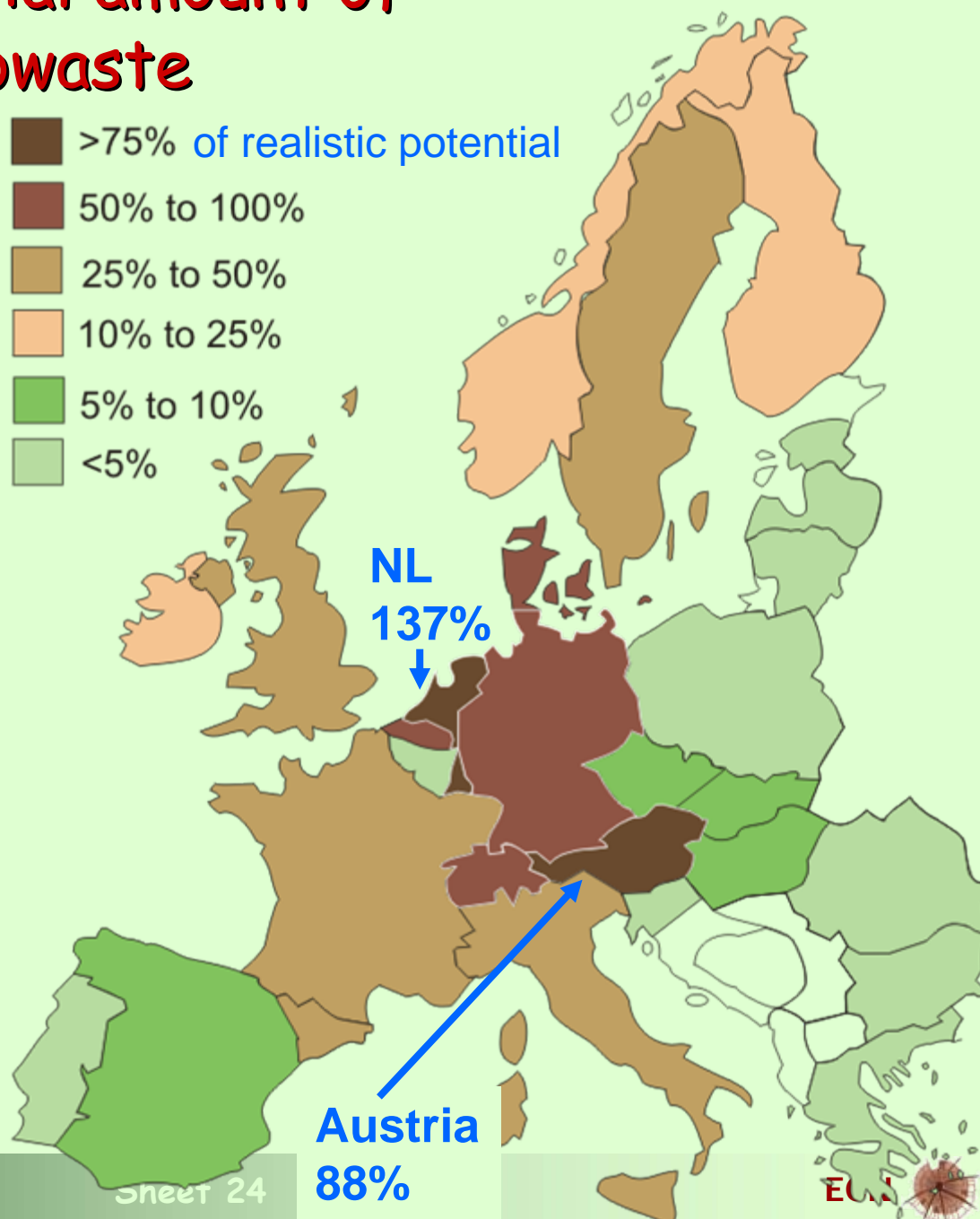
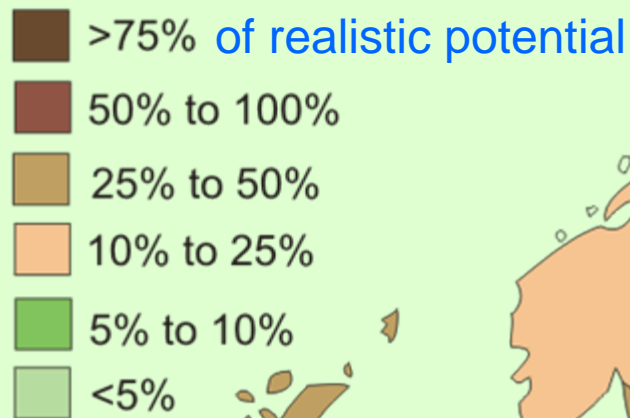
- Important initiative: it includes the change of the waste status into a qualification as resource.
 - revision of the Waste framework Directive → 2014
 - biowaste recycling = resource management.
- → use of phosphorous sources
 - reduce erosion
 - increase organic matter in soil. + biodiversity.
- full implementation of the EU waste acquis → minimum targets
- Stimulate demand for recycled materials → economic incentives (2012);
- Minimum recycled material rates (2012);
- Public / EU funding → support recycling plants rather than incinerators (2014);
- Review existing prevention, re-use, recycling and landfill diversion targets
 - ✓ → economy based on recycling → residual waste close to zero
 - 2014



Waste Treatment in a District in Upper Austria



Collected and potential amount of source separated biowaste and green waste in EU27



➤ Theoretical potential
124 mio t

➤ Realistic potential
80 mio t = 150 kg
per inhabitant * year

➤ Recycling in 2008
32%

➤ 3500 Composting Plants

➤ 5100 Biogas Plants



The Key = BIODIVERSITY !



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arge
kompost
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Paljon kiitoksia !

Fotos: Bioforschung Austria, Hildebrandt, Hedlund, Amlinger

