



# Global WtERT Congress 2023

November 6th - 8th, 2023

“Global cooperation to promote Waste-to-Energy technologies for a circular economy society”

Reassessment of Waste Incineration Plants in Public Communication in the EU

Werner Bauer  
Vice President GWC



# Global WtERT Congress 2023

November 6th - 8th, 2023



“The Global WtERT Council and the WtERT-China hosted at Zhejiang University will host the Global WtERT Congress to bring scientists and scholar from academia, engineers from industry, and policy makers from around the world to advance the Waste-to-Energy technologies in order to **slash methane emissions in waste sector to curb climate change.**”





# WASTE MANAGEMENT'S RESPONSE TO CLIMATE CHANGE

**WtERT**  
CROWD SOURCING CAMPAIGN

**MATERIAL AND ENERGY RECOVERY**

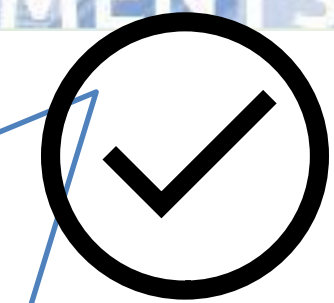
**STOP LAND FILLING**

**CLOSE DUMPS**

**REDUCE REUSE RECYCLE**

**TAX INSTRUMENTS**

**ENERGY FROM WASTE**



July 1<sup>th</sup> of 2005  
where the German landfill ban  
became effective



# MATERIAL AND ENERGY RECOVERY

**STOP  
LAND  
FILLING**

**CLOSE DUMPS**

**REDUCE  
REUSE  
RECYCLE**

**TAX  
INSTRUMENTS**

**ENERGY  
FROM  
WASTE**



July 1<sup>st</sup> of 2005  
where the German landfill ban  
became effective



# MATERIAL AND ENERGY RECOVERY

**STOP  
LAND  
FILLING**

**REDUCE  
REUSE  
RECYCLE**

**TAX  
INSTRUMENTS**

**ENERGY  
FROM  
WASTE**



July 1<sup>st</sup> of 2005  
where the German landfill ban  
became effective



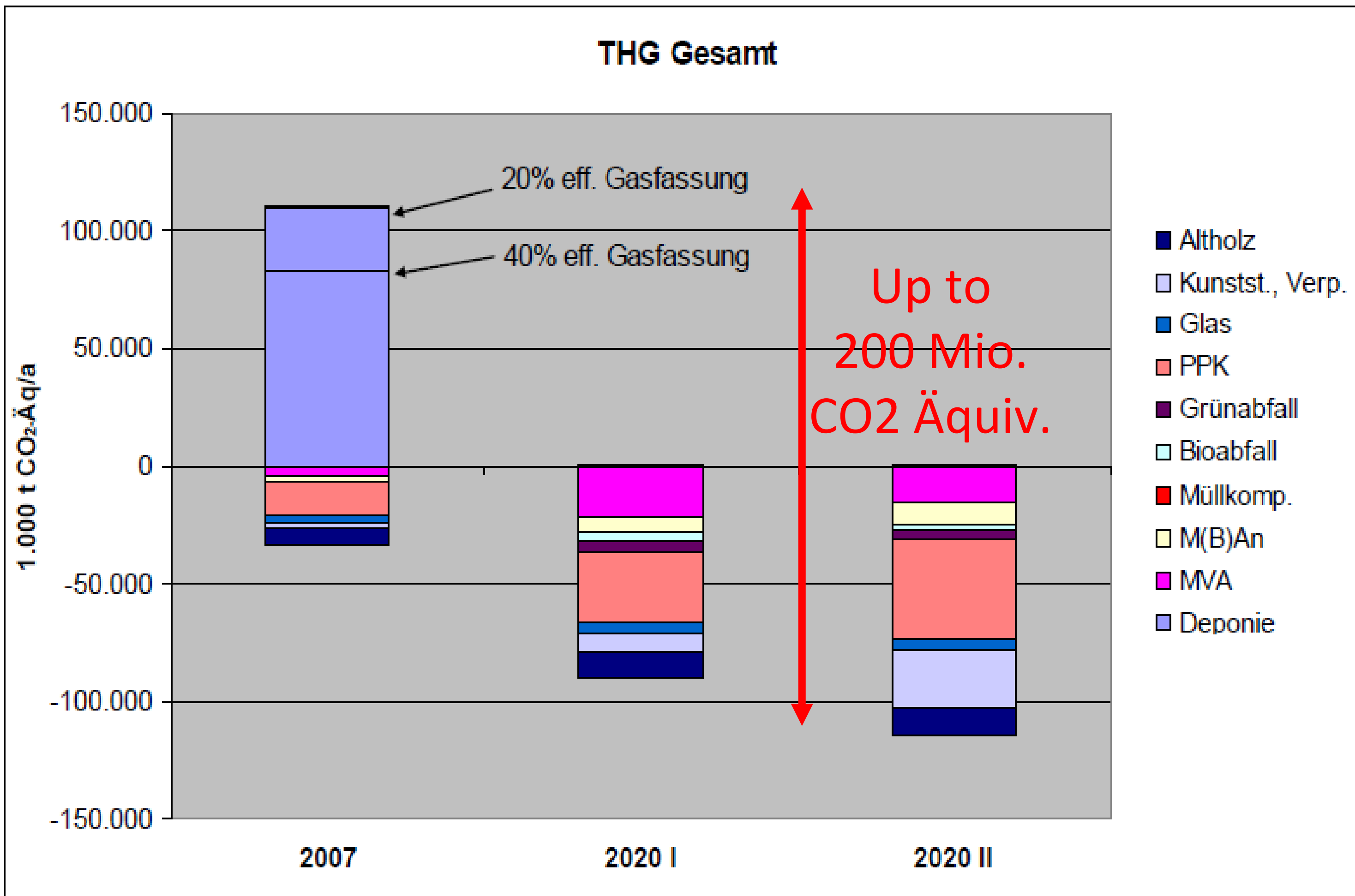


## **Priority measures Germany:**

**The press release No. 01/2010 of the Federal Environment Agency (UBA) on the presentation of the joint study by BMU, UBA and the Federal Association of the German Waste Management Industry (BDE) sums up the findings on the contribution of the German waste management sector to climate protection as follows:**

**"The original burden on the climate from waste management activities in Germany in 1990 was around 38 million tons of CO<sub>2</sub> equivalents. By 2006, this had changed into a relief of about 18 million tons. Thus, by phasing out landfilling of untreated municipal waste, emissions of climate-damaging gases by the waste management sector have been reduced by a total of around 56 million tons."**

# ... **Europe** starts to become aware, that a sustainable waste management has some good answers to Climate Change



The joint study\*) published six months later by the Öko-Institute and the IFEU Institute on behalf of the UBA and the BDE comes to the following conclusions:

"In the EU 27 the situation is different, as EU-wide about 40% of waste is still landfilled. The landfills cause considerable methane emissions -50 million and 80 million t CO<sub>2</sub>-eq per year. Therefore, there is still considerable climate protection potential to be realized in the EU, in the order of 140 million to about 200 million t CO<sub>2</sub>-eq per year, through the high-quality material and energy use of waste instead of landfilling it."

Overall results of the greenhouse gas balance for EU 27

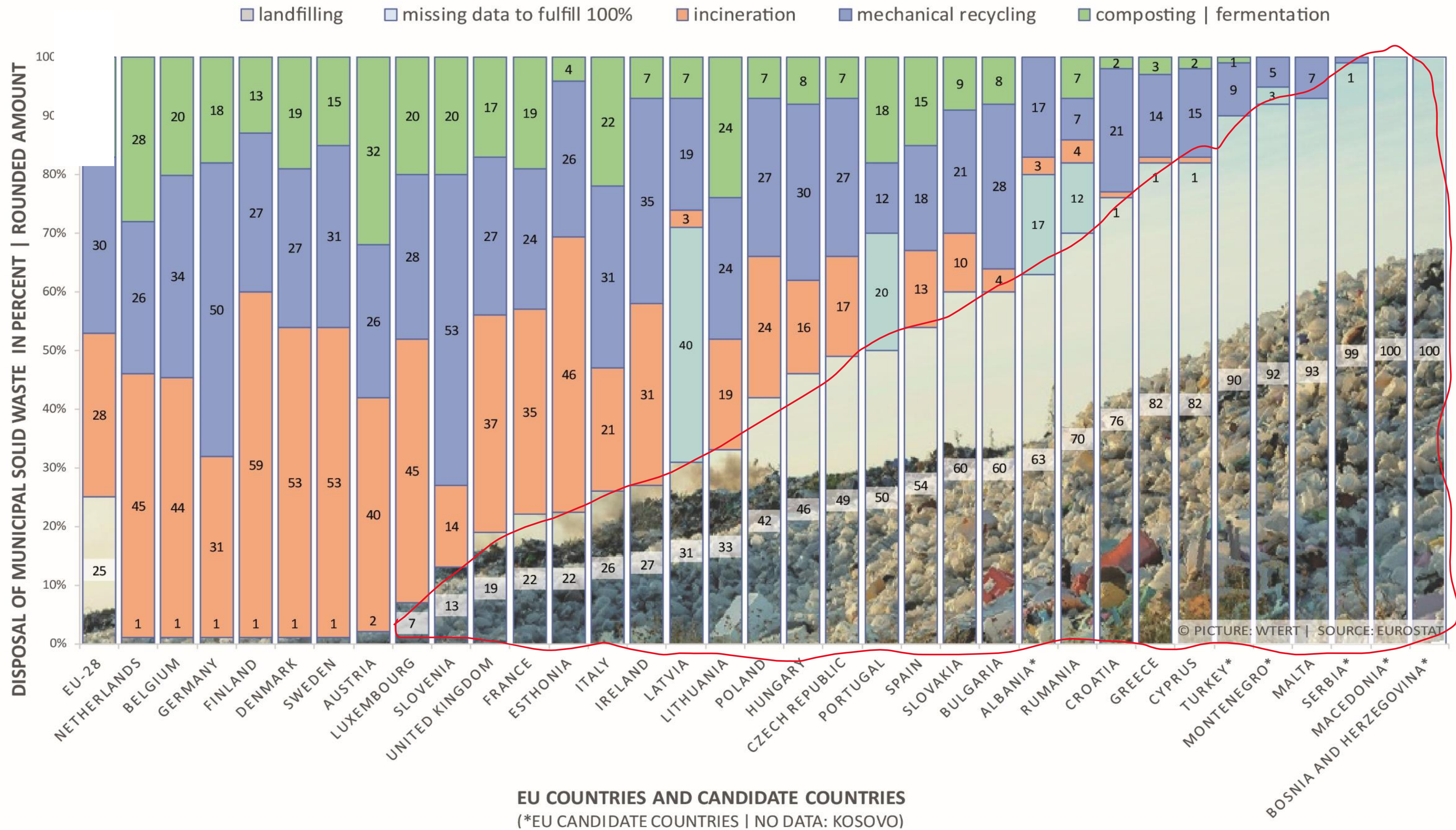
UBA President Jochen Flasbarth also<sup>12</sup> addressed the "disappointing results of the climate conference in Copenhagen" when presenting the study in January 2010. Since the other climate conferences as well as multi- and binational talks on closing landfills probably also brought few results, international waste policy concentrated on the further development of the circular economy.

One can see this from the European Commission's 2020 Circular Economy Action Plan<sup>15</sup>.

It is considered the EU's central strategy for the further development of the European circular economy and is a central pillar of the EU Green Deal. It aims to expand the circular economy by decoupling economic growth from resource consumption through an ambitious product policy and many approaches to waste prevention.



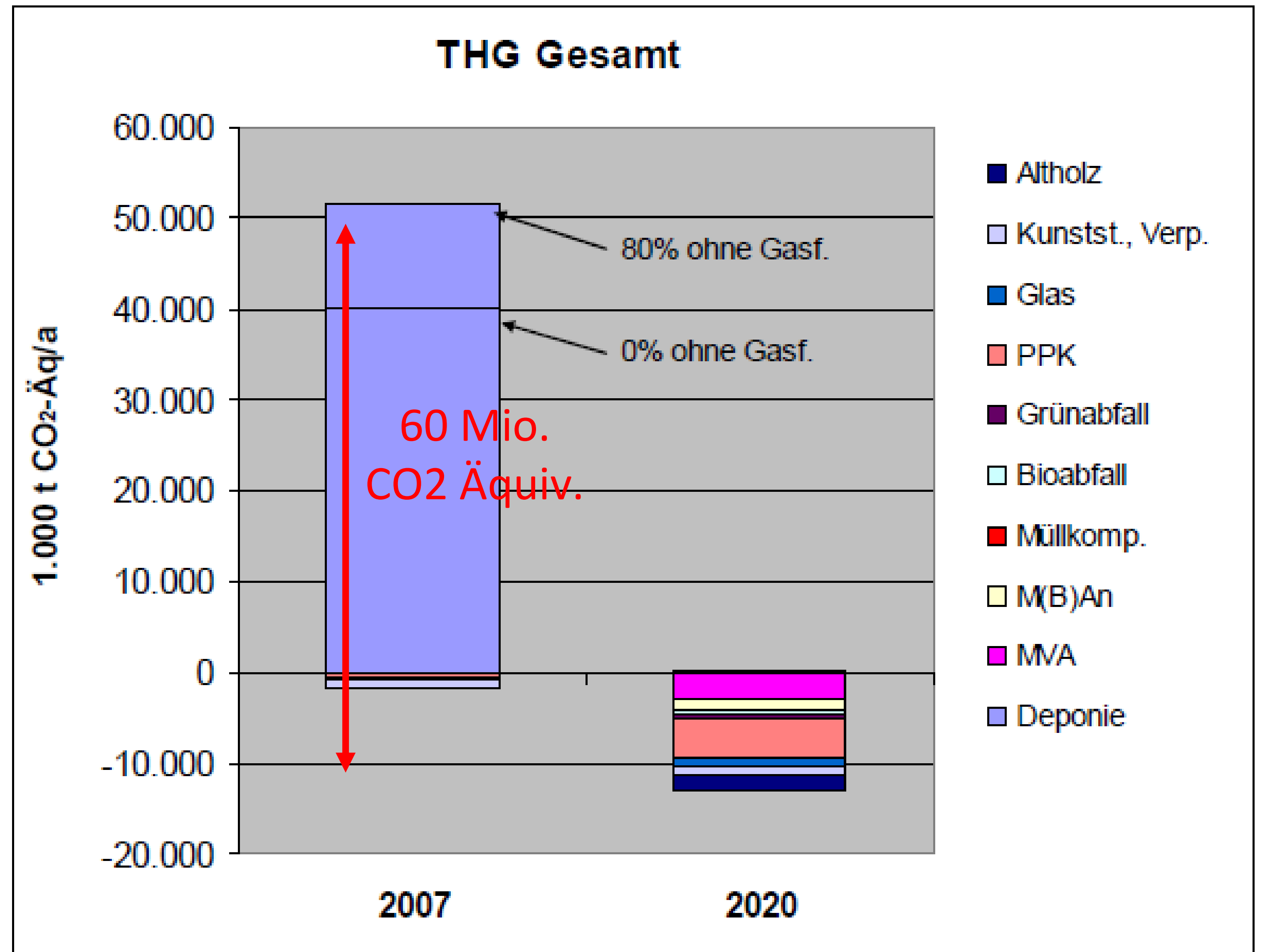
# MUNICIPAL SOLID WASTE OF THE EU AND CANDIDATE COUNTRIES IN 2017



EU COUNTRIES AND CANDIDATE COUNTRIES  
 (\*EU CANDIDATE COUNTRIES | NO DATA: KOSOVO)

Source:  
 TEXTE | 06/2010  
 UMWELTFORSCHUNGSPLAN DES  
 BUNDESMINISTERIUMS FÜR UMWELT,  
 NATURSCHUTZ UND REAKTORSICHERHEIT  
 Förderkennzeichen 3708 31 302  
 UBA-FB 001347

**Klimaschutzpotenziale der  
 Abfallwirtschaft**



Overall results of the greenhouse gas balance for Mexico

# MATERIAL AND ENERGY RECOVERY

The Idea of Zero Waste comes up

REDUCE  
REUSE  
RECYCLE

TAX  
INSTRUMENTS

ENERGY  
FROM  
WASTE





# WASTE MANAGEMENT'S RESPONSE TO CLIMATE CHANGE

**WtERT**  
CROWD SOURCING CAMPAIGN

*forgot*

... Europe ~~starts to become aware~~, that a sustainable waste management has some good answers to Climate Change...

**Green Deal**

... but starts with ideas to change products in the long term and foster recycling

In the report, the Intergovernmental Panel on Climate Change (IPCC) calls for "political determination and consistent implementation with clear targets and priorities ..." and identifies the right time for adaptation as "**now**" rather than someday!

„The transition to the circular economy will be systemic, deep, and transformative, in the EU and beyond. It will be disruptive at times, so it must be fair. It will require an alignment and cooperation of all stakeholders at all levels - EU, national, regional, and local, and international.

Therefore, the Commission invites EU institutions and bodies to endorse this Action Plan and actively contribute to its implementation and encourages Member States to adopt or update their national circular economy strategies, plans and measures in the light of its ambition.

Furthermore, the Commission will recommend including the circular economy among the topics for discussion on the future of Europe and a regular theme of citizens' dialogues.”

The goal of closing landfills by reducing the masses, which from a scientific point of view is a priority, has unfortunately been lost from political focus.

Source: Concept paper  
Circular Economy in the Baltic States  
Environmental Protection Export Initiative of the Federal Ministry for the  
Environment, Nature Conservation, Nuclear Safety and Consumer Protection,  
August 2022

Chapter 2-12: Dipl.-Ing. (TU) Werner P. Bauer  
WtERT Germany GmbH

# This derivation justifies the necessity of the **Reassessment of Waste Incineration Plants** in Public Communication in the EU

But why is this so important?

Because what we communicate in Europe has a global impact. If the EU devalues waste incineration via the taxonomy, this is grist to the mill of global landfill proponents (see examples from USA, Brazil, etc.).

According to a study by the World Bank<sup>\*)</sup>, 2.01 billion tons of waste were generated worldwide in 2016. Of this,

- 36.7% was deposited in wild dumps,
- 33% in landfills of varying quality.

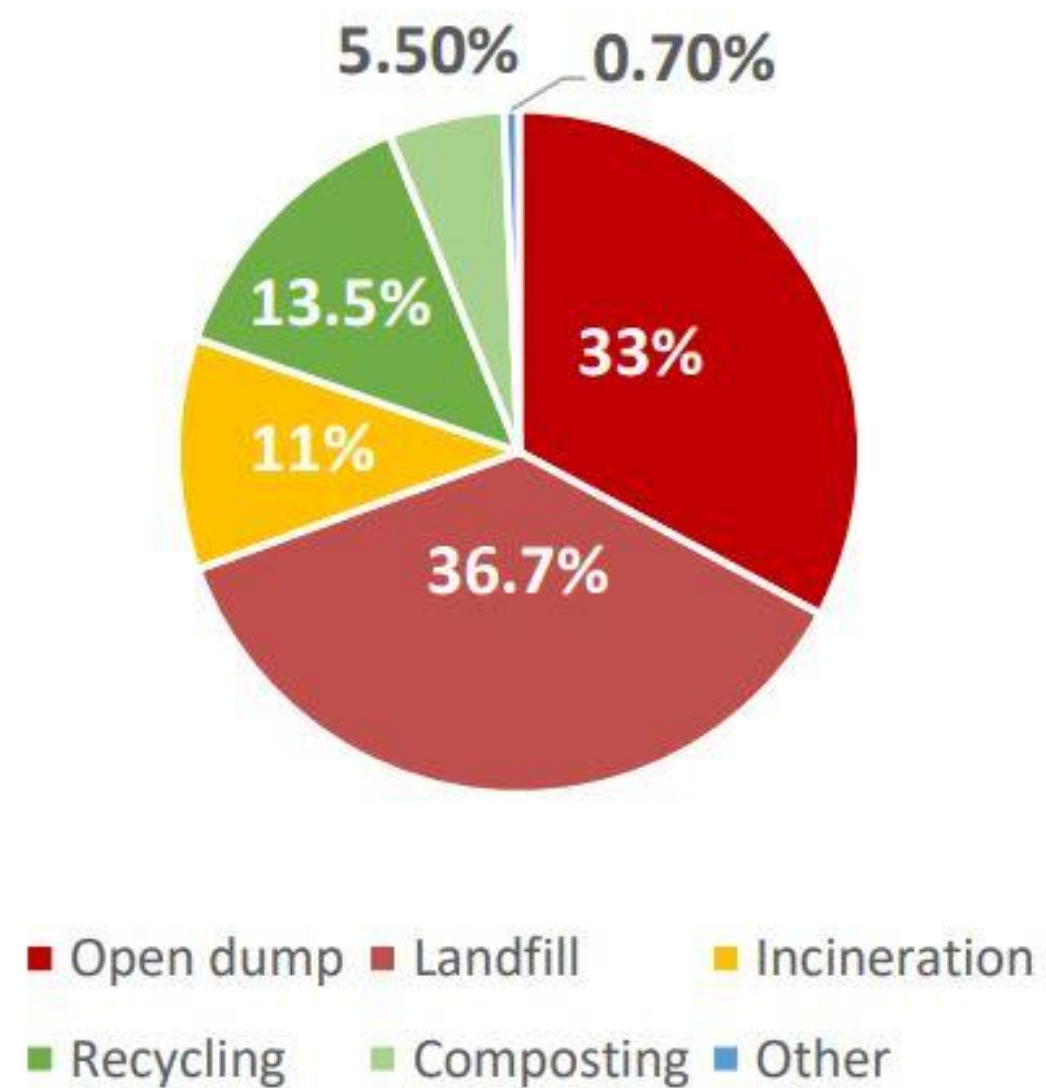
Missed opportunities and resources - simply thrown away. Roughly estimated, this corresponds to well over one (1) billion tons of avoidable greenhouse gases CO<sub>2</sub>-eq per year. Since, according to the research of the World Bank, the amount of waste will increase by 70% between 2016 and 2050, every effort is needed to ensure that worldwide climate-damaging emissions do not increase even further.

<sup>\*)</sup> Weltbank Report 2018; What a Waste,

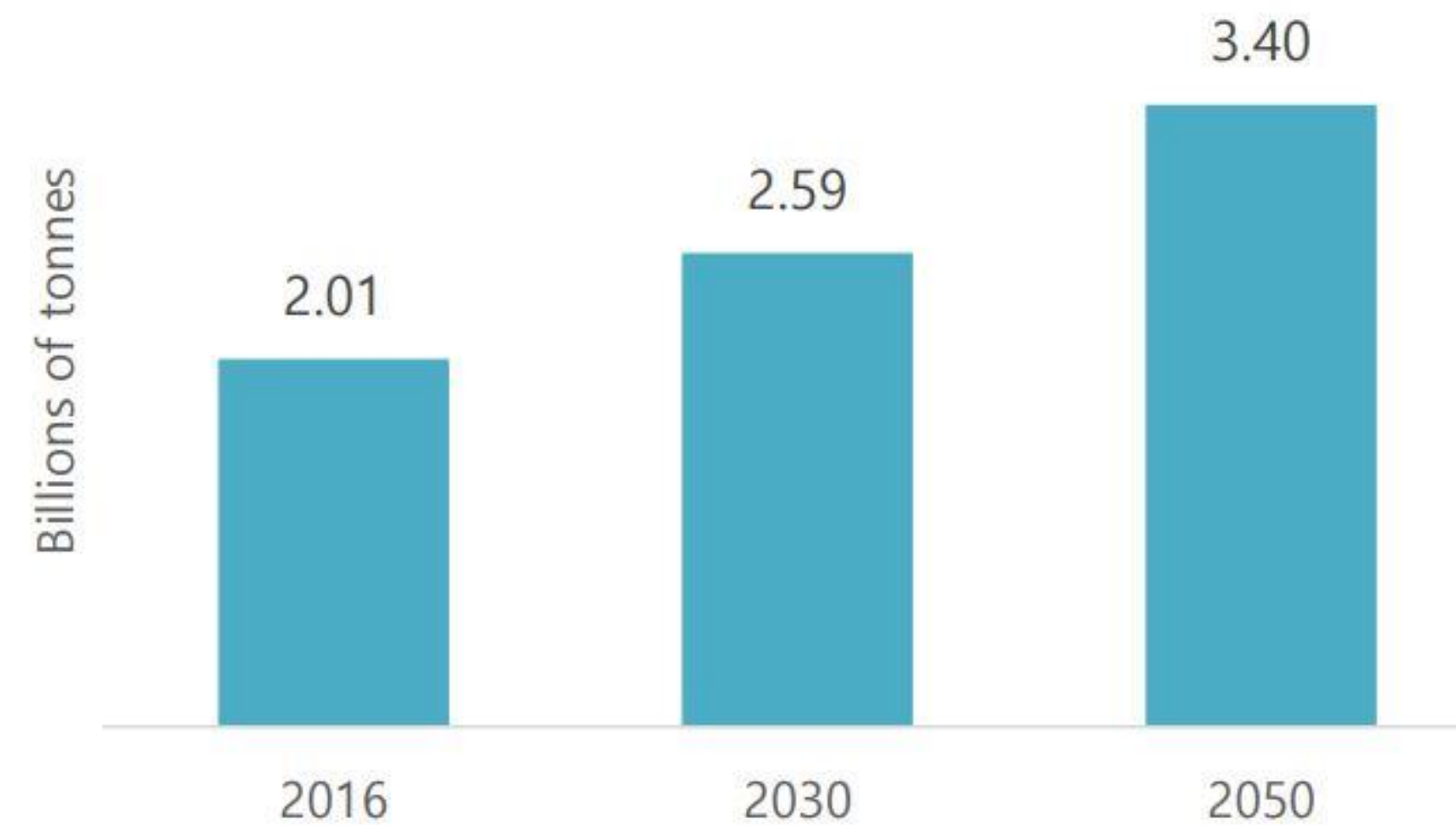
# This derivation justifies the necessity of the **Reassessment of Waste Incineration Plants** in Public Communication in the EU

But why is this so important?

### Waste treatment and disposal worldwide



### Projected waste generation: + 70% by 2050



Source: World Bank "What a waste" 2018

# This derivation justifies the necessity of the **Reassessment of Waste Incineration Plants** in Public Communication in the EU

But why is this so important?

In view of the resources and countless new jobs, this issue also points to a growing (see 70% above) economic factor.

Interested partners can let us know by mid-August to what extent they are interested in this issue. After the summer break, an invitation to a joint Zoom call will be sent to discuss all ideas and the next steps for proceeding.

In view of this gigantic task, EVERY discussion, and EVERY cooperation between the protagonists of **material and thermal recycling** makes sense and serves **climate protection**. For this reason alone, it is our task to contribute to the clarification and to question existing narratives. Even plastic waste is better off in a thermal recycling than in a landfill or in the ocean.

Turnover of Waste Management in Germany  
is about 70 Billion Euro



# This derivation justifies the necessity of the **Reassessment of Waste Incineration Plants** in Public Communication in the EU

What is to do?

We must communicate about this wherever we can:

- to the experts and ngOs in the Waste Management Community,
- to the experts and ngOs in the Energy (Heating and Power Supply) market
- to the experts and ngOs in the Climate Change Community

AND we must bundle the information in the WTERT web, open for everybody:

- to clarify the communication to essentials of SWM
- To explain interconnections
  - between landfill and GHG
  - waste management und heat supply, ...
- to demonstrate the credibility of research technologies and management.



# Welcome to The Global Waste-to-Energy Research and Technology Council

A top-tier research organization, founded by the Earth Engineering Center, Columbia

University in New York, USA






















*and its Decision Support System*

The Global WtERT Council was founded in 2002 as a non-profit organization at the Earth Engineering Center (EEC) of Columbia University in New York

WtERT is concerning the objective of **advancing sustainable waste management** worldwide.

Its Decision Support System [www.wtert.net](http://www.wtert.net) is the place where the WtERT community brings all the key information about **sustainable waste management** together.

# WtERT aims to merge the key information of sustainable waste management with Case Studies ...

<p><b>Best Practice</b></p>  <p>ANGed - Agence Nationale de Gestion des Déchets</p> <p><b>Transfer Center of Kram, Tunisia</b></p> <p>Transfer stations are of particular importance for the development towards sustainable waste management, as they are a...</p>	<p><b>Case Study</b></p>  <p>PadMad Kenya (Seren Associates Ltd)</p> <p><b>Padmad, Initiative on reusable sanitary pad in Kenya</b></p> <p>PadMad, co-founded by Madhvi Dalal, is a social enterprise that has worked in Kenya and Somaliland on addressing period poverty. PadMad introduced biodegradable, reusable...</p>	<p><b>Case Study</b></p>  <p><b>Composting of MSW in Salaj, Romania</b></p> <p>The plant in Salaj, Romania uses the GORE® Cover Process Technology in order to compost the organic fraction from MSW whilst reducing odors and emissions. 6 GORE® Cover system...</p>	<p><b>Case Study</b></p>  <p>VIVO Kommunalunternehmen für Abfall-Vermeidung, Information und Verwertung im Oberland</p> <p><b>The Waste Reloading Station of the District Miesbach, Germany</b></p> <p>Up to 22,000 tonnes of waste by weight are pressed and reloaded...</p>	<p><b>Case Study</b></p>  <p>Entsorgungstechnik BAVARIA GmbH</p> <p><b>RFD from Industrial- and Household Waste in Allgaeu, Germany</b></p> <p>The Leutkircher Wertstoffhof GmbH &amp; Co. KG operates a sorting station for industrial- and household waste next to the collection point for recyclable...</p>	<p><b>INNOVATION</b></p>  <p>University Stuttgart - ISWA</p> <p><b>Ensuring clarity about the amount of biowaste helps to reduce it</b></p> <p>Research project carried out by ISWA, University Stuttgart</p>	<p><b>Best Practice</b></p>  <p>AVA Abfallverwertung Augsburg GmbH</p> <p><b>AVA (Waste Treatment Augsburg), Germany - Energetic and Material Recycling Under One Roof Leads to Considerable Synergies</b></p> <p>The waste management companies...</p>
<p><b>Case Study</b></p>  <p>W. L. Gore &amp; Associates GmbH</p> <p><b>Composting of Sewage Sludge in Kirchbichl, Austria</b></p> <p>The ARAB Kirchbichl plant in Tyrol, Austria uses the GORE® Cover Process Technology in order to compost sewage sludge whilst reducing odors and emissions. 6...</p>	<p><b>Case Study</b></p>  <p>STADLER Anlagenbau GmbH</p> <p><b>Mechanical-biological treatment plant (MBT) in Granada, Spain</b></p> <p>The plant Ecocentral Granada was a renovation and an expansion of the old sorting and composting plant Loma de Manzanares. It is a hybrid...</p>	<p><b>Case Study</b></p>  <p>Coliba Ghana Ltd.</p> <p><b>The Dansoman-Glefe community plastic buyback center in Ghana</b></p> <p>The Dansoman-Glefe community plastic buyback center initiated by Coliba Ghana offers the avenue for community members to bring their...</p>	<p><b>Case Study</b></p>  <p>Markt Markt Schwaben</p> <p><b>Traffic routing at the recycling center Markt Schwaben, Germany</b></p> <p>Visitor traffic and recycling yard logistics are completely separated here.</p>	<p><b>Case Study</b></p>  <p>Abfallwirtschaftsbetrieb Böblingen</p> <p><b>El Guettar, Tunisia: Project Partnership of the Waste Management Company Böblingen, Germany</b></p> <p>The project "Municipal Knowledge Transfer Maghreb-Germany" between the waste management company of...</p>	<p><b>Best Practice</b></p>  <p>AWB Abfallwirtschaftsbetrieb des Landkreises Neu-Ulm</p> <p><b>The disposal and recycling center EWW of the District Neu-Ulm – Perfect Combination of Material and Energy Recycling, Germany...</b></p>	<p><b>Case Study</b></p>  <p>Kolics Company Ltd. (KoliKo Wear)</p> <p><b>Kolics Converts Waste Textiles into Shoes and Bags, Ghana</b></p> <p>Kolics Company Ltd. (KoliKo wear) is a social enterprise that seeks to support skilled and opportunity seeking youth to produce innovative products which are environmentally friendly.</p>
<p><b>Best Practice</b></p>  <p><b>Pollution Prevention in a Tunisian Hotel</b></p> <p>Hotel Caravane Serail is a 50-employee, 399-bed hotel located at an oasis at the gate to the Sahara Desert. The area in which the hotel is located is faced by a major problem of water...</p>	<p><b>Case Study</b></p>  <p>WEEE Centre</p> <p><b>The WEEE Centre in Nairobi, Kenya and 15 Other Countries in Africa</b></p> <p>The WEEE Centre, Nairobi Kenya offers recycling services for ICT waste to the general public, business,</p>	<p><b>Best Practice</b></p>  <p>ZMS Zweckverband Müllverwertung Schwandorf</p> <p><b>Conversion of a lignite-fired power plant into a waste-to-energy plant using the example of the ZMS Schwandorf, Germany...</b></p>	<p><b>Best Practice</b></p>  <p>AWG Abfallwirtschaft Landkreis Calw GmbH</p> <p><b>Composting of Organic Waste at the Simmozheim Waste Disposal Plant, Germany</b></p> <p>With the introduction of the GORE® Cover technology in 2014, the composting plant could be</p>	<p><b>Case Study</b></p>  <p><b>Silla 2 Waste-to-Energy Plant, Milano, Italy</b></p> <p>The Silla 2 waste-to-energy plant is located in the north-west area of Milan near the Figino district. The plant is able to treat over 500,000 tons of waste...</p>	<p><b>Best Practice</b></p>  <p>Technische Betriebsdienste Reutlingen</p> <p><b>Anti-Littering-Campaign in Reutlingen, Germany</b></p> <p>In Reutlingen, 300 citizens have been showing their full commitment to their city for 15 years: They own a sponsorship for a "piece of</p>	<p><b>Best Practice</b></p>  <p>BSA GmbH</p> <p><b>Business with Construction Waste in Gmund, Germany</b></p> <p>BSA GmbH in D-83703 Gmund, a specialist waste management company according to the German §52 KrW-/AbfG, takes construction waste and processes it into</p>

# ... and also with Recommendations

Support for Decisions  
**WtERT**  
Material AND Energy Recovery

COUNTRIES Materials Technologies Strategies Network News & Events

Search

- Close Dumps
- Final Sinks
- Marine Litter
- Methods Analyses Data**
- No Littering - Clean Cities
- Policy - Tax Instruments
- Producer Responsibility
- Resource Management
- Reuse Reduce
- Sustainability Climate

Log-in

Methods Analyses Data  
Are your recycling quotas for municipal solid waste still accepted by the EU? >>>

Dr.-Ing. Bertram Zwisele  
ARGUS - Statistics and Information Systems  
in Environment and Health GmbH



Support for Decisions  
**WtERT**  
Material AND Energy Recovery

COUNTRIES Materials Technologies Strategies Network News & Events

Search

- Collection
- Composting
- Energy Recovery**
- Landfilling
- Logistics
- Material Recovery
- Pollution Control

Log-in

In landfills the gas is in most cases a mixture with air – but you really won't smell it... >>>

Prof. Dr.-Ing. Gerhard Rettenberger  
Ingenieurgruppe RUK GmbH

Support for Decisions  
**WtERT**  
Material AND Energy Recovery

COUNTRIES Materials Technologies Strategies Network News & Events

Search

- Collection
- Composting
- Energy Recovery**
- Landfilling
- Logistics
- Material Recovery
- Pollution Control

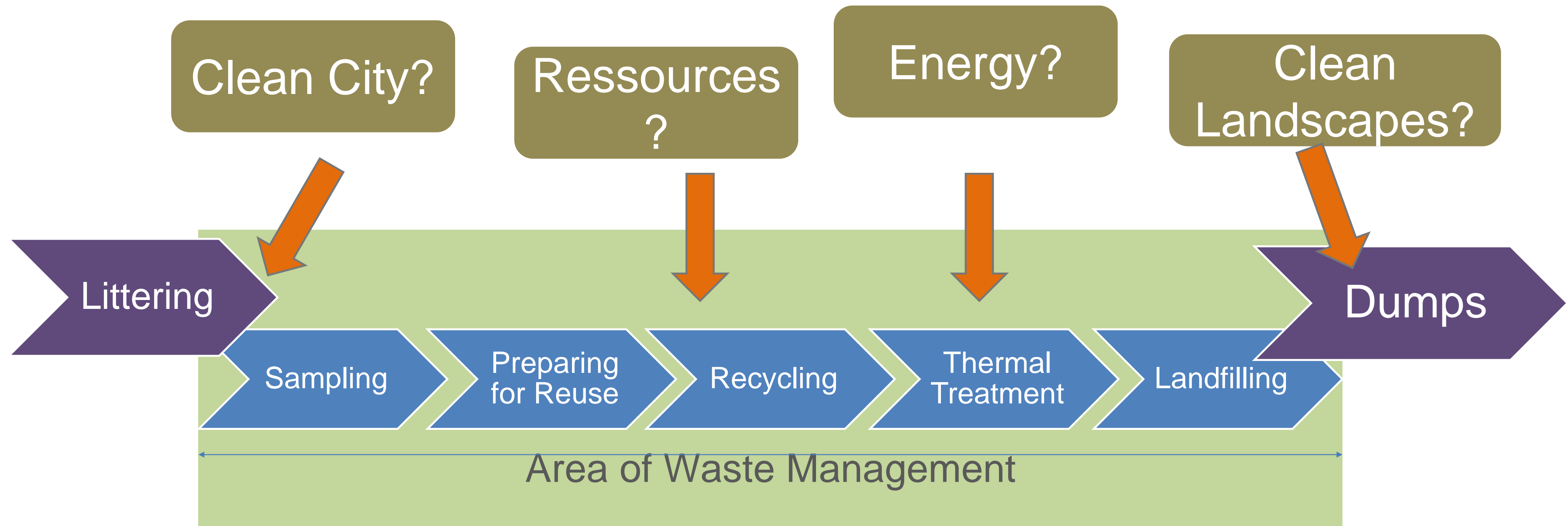
Log-in

Composting  
Encapsulation with semipermeable membrane cover >>>

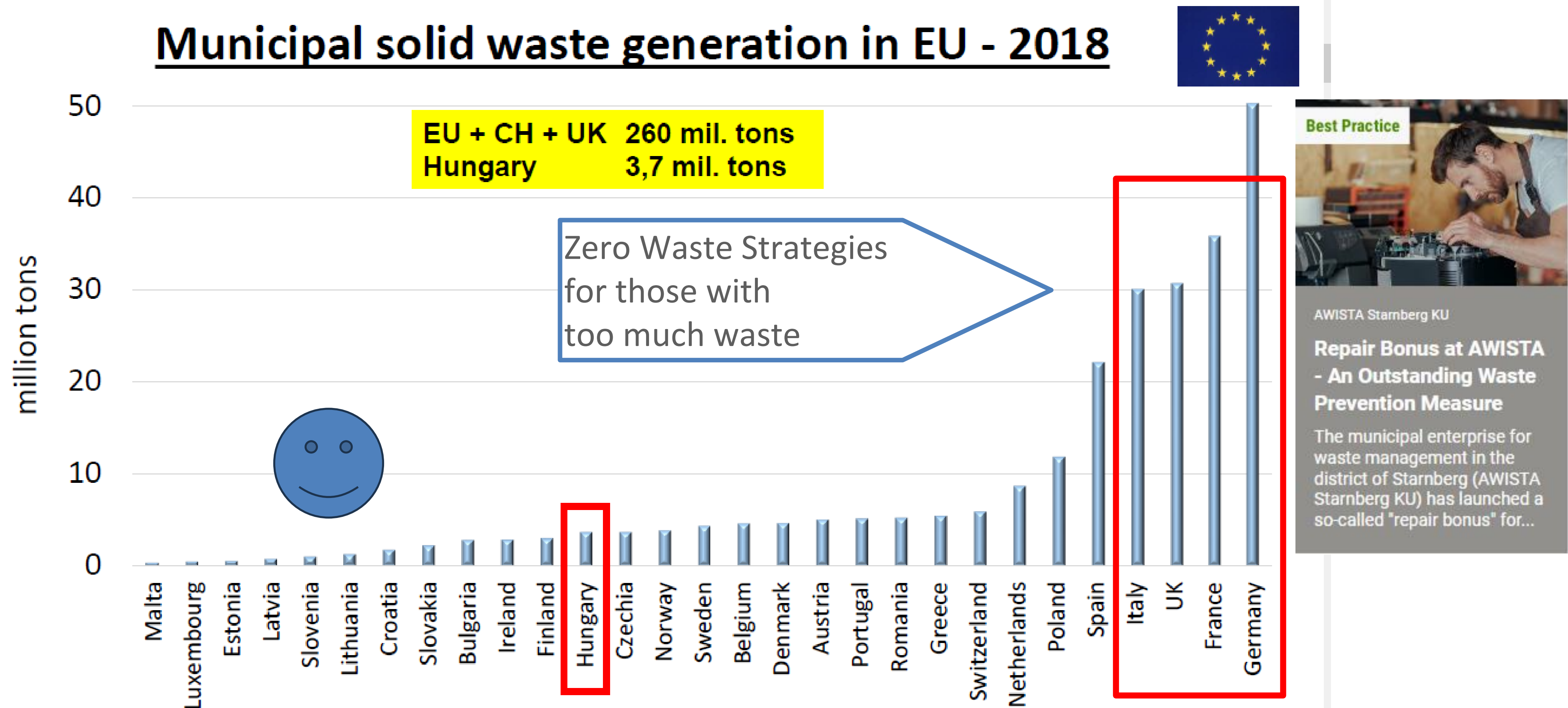
Thorsten Pitschke  
bifa environmental institute

# Starting Position for SWM-Strategy Development

What is your AIM where the strategy should lead you to?



# ... Starting Position for SWM-Strategy Development



Copyright Jeffrey D. Kimball

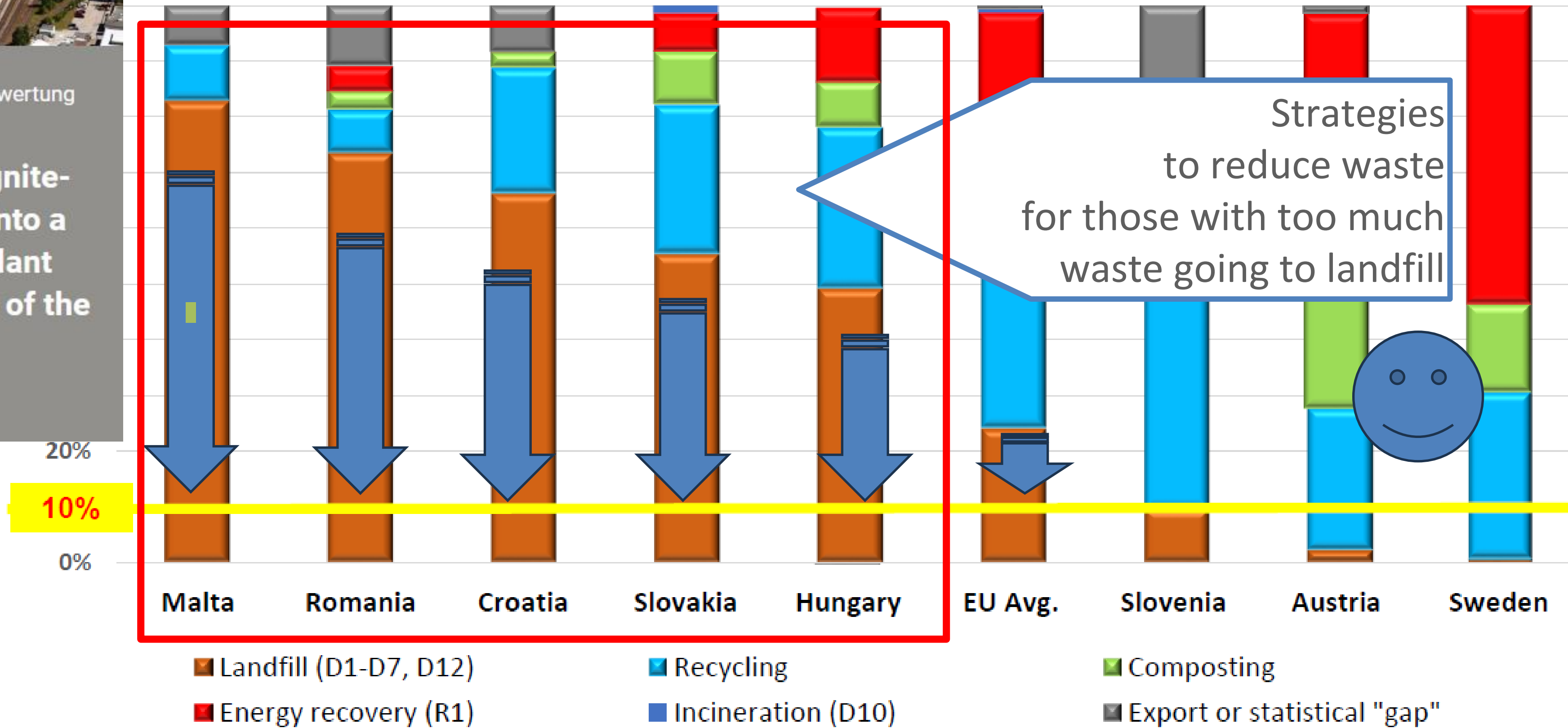


ZMS Zweckverband Müllverwertung Schwandorf  
**Conversion of a lignite-fired power plant into a waste-to-energy plant using the example of the ZMS Schwandorf, Germany...**

# Starting Position for SWM-Strategy Development

EU high / low / Avg. and "our neighborhood" - 2018

*Municipal Solid Waste (% of total treated) + EU landfill target for 2035*



Strategies to reduce waste for those with too much waste going to landfill



Copyright Jeffrey D. Kimball

# ... Starting Position for SWM-Strategy Development

What is your AIM where the strategy should lead you to?

Clean City



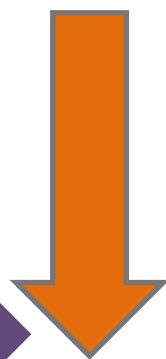


# ... Starting Position for SWM-Strategy Development

But what is your AIM where the strategy should lead you to?

Clean City

Littering



Municipality of Siliana

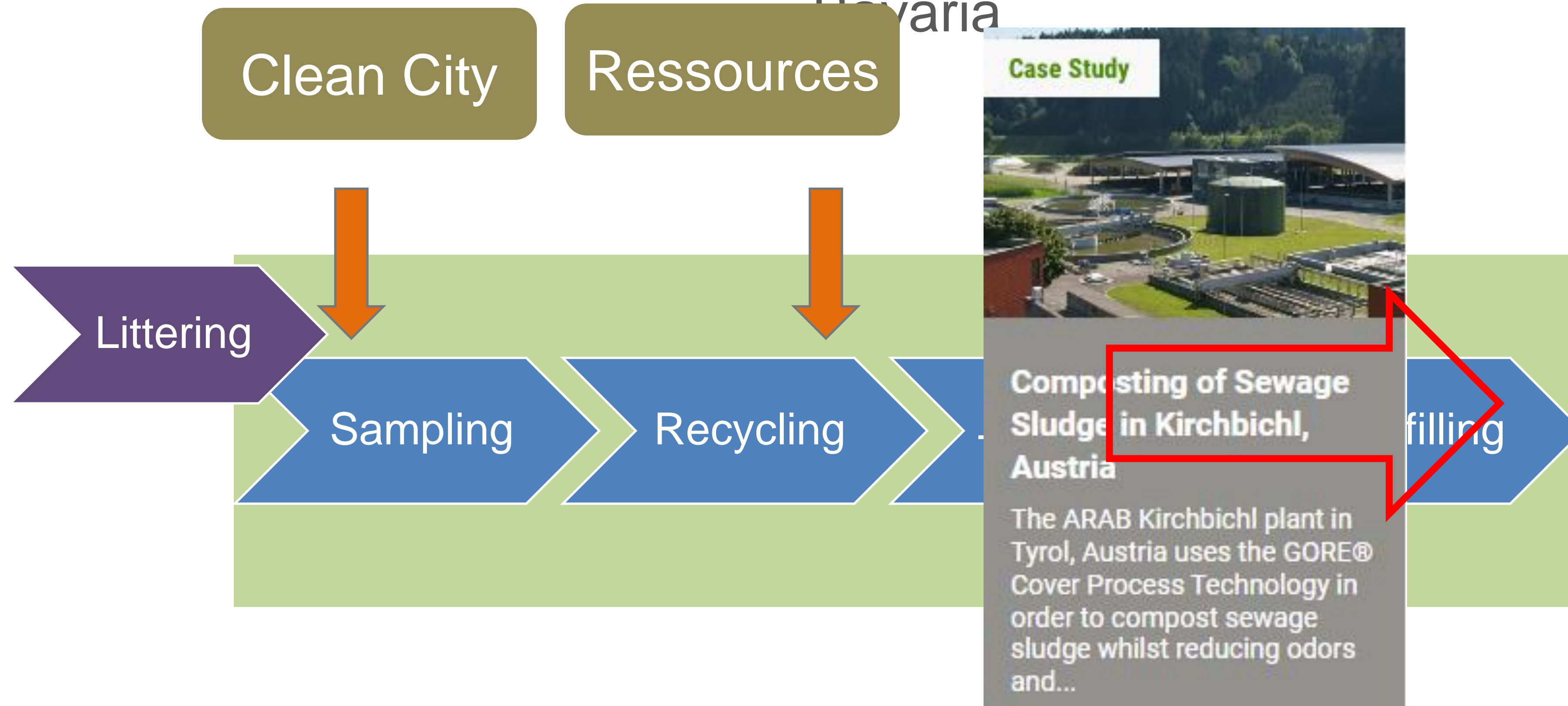
**On its Way to a Cleaner City, Siliana Begins Operation of Tunisia's First "île de propreté"**

Raising awareness for waste separation and environment among the population is the...



# ... Starting Position for SWM-Strategy Development

Let us come back to the AIMS and all the companies here in Bavaria



Case Study



Composting of Sewage Sludge in Kirchbichl, Austria

The ARAB Kirchbichl plant in Tyrol, Austria uses the GORE® Cover Process Technology in order to compost sewage sludge whilst reducing odors and...

Composting of Sewage Sludge in Kirchbichl, Austria

The ARAB Kirchbichl plant in Tyrol, Austria uses the GORE® Cover Process Technology in order to compost sewage sludge whilst reducing odors and emissions. 6 GORE® Cover system units in the intensive rotting phase have been installed in 2009.

W. L. Gore & Associates GmbH



**Site name:** ARAB Kirchbichl GmbH (Abwasserreinigungsanlagenbetreibergesellschaft m.b.H.)  
**Ownership:** Abwasserverband Wörgl-Kirchbichl  
**Location:** Kirchbichl, Bichlwang, Austria  
**Inhabitants:** 13 communities, for max. 100.000 people  
**Wastewater volume:** 15.000 m³/day

**Start-Up:** December 2009  
**Total Design Capacity:** 15.000 t/y total (mixed material)  
approx. 7.500 t/y of Biosolids + Digestate Foodwaste (DM of 24%)

Contact



W. L. Gore & Associates GmbH  
Creative Technologies Worldwide  
Hermann-Oberth-Strasse 24  
D - 85640 Putzbrunn

phone:+49 (89) 46120

More case studies:

Slag processing at the waste-to-energy plant Schwandorf

Clean Cities in North Italy

A new life for old treasures - a second chance for discarded items



**W. L. Gore & Associates GmbH**  
Creative Technologies Worldwide  
Hermann-Oberth-Strasse 24  
D - 85640 Putzbrunn  
  
+49 (89) 46120  
<http://www.gore.com>

A uniquely inventive, technology-driven enterprise focused on discovery and product innovation.

Contact



Dip.-Ing. (FH) Ulf Harig  
Project Development Europe

Case Study



**Composting of Sewage Sludge in Kirchbichl, Austria**

The ARAB Kirchbichl plant in Tyrol, Austria uses the GORE® Cover Process Technology in order to compost sewage sludge whilst reducing odors and emissions. 6 GORE® Cover system units in the intensive rotting phase have been installed in 2009.

Case Study



**Sustainable Waste Management and Optimization of Gas Purification**

The waste that cannot be avoided, recovered or recycled can still be used to generate energy. The "fuel" is free, the CO2 emissions are partially climate neutral (biogenic waste) and the waste replaces valuable fossil fuels that would otherwise...



**W. L. Gore & Associates GmbH**  
Creative Technologies Worldwide  
Hermann-Oberth-Strasse 24  
D - 85640 Putzbrunn

phone:+49 (89) 46120

More case studies:

Slag processing at the waste-to-energy plant Schwandorf

Clean Cities in North Italy

A new life for old treasures - a second chance for discarded items

Founders Bill and Vieve Gore started W. L. Gore & Associates in the basement of their home in 1958. The company initially served the electronic products market. Gore has achieved long term success at translating dreams into tangible, valuable realities for customers and communities around the world.

**How GORE is operating in Waste Management:**

-GORE® Cover for Organic Waste Treatment

## Dip.-Ing. (FH) Ulf Harig

Development of Organic Waste Treatment Projects, using GORE(R) Cover. Our actual focus is on the effective treatment of Biosolids



Dip.-Ing. (FH) Ulf Harig  
Project Development Europe

**W. L. Gore & Associates GmbH**  
Organic Waste Treatment with GORE(R) Cover  
85640 Putzbrunn  
Germany

send message

**Fluency:**  
English, German

**Thematic field of expertise:**  
Material Recovery, Biomass

**Geographical field of expertise:**  
EU, Germany

### Detailed description of working activity

Implementing our Membrane Technology into application for either composting of Organic Waste, Biosolids, or for stabilization + drying of MSW.

### Current activity

Offer an easy waste treatment process to control effectively emissions and produce high quality end-products.

### Former activities

1992 starting with W.L.Gore & Associates until 2003 working for Team GORE-TEX(R) Filterbags (e.g. Filterbags for Incineration, Cement Kiln, Process-Filter,..) since 2004 working for Team GORE(R) Cover

### Education

Dipl.-Ing. (FH), Cologne University of Science

### Memberships

ECN, BGK  
US Compost Council  
Canadian Compost Council  
UmweltCluster Bayern



**W. L. Gore & Associates**  
Creative Technologies W  
Hermann-Oberth-Strasse  
D - 85640 Putzbrunn

+49 (89) 46120  
http://www.gore.com



Dip.-Ing. (FH) Ulf Harig  
Project Development Europe

#### Case Study



#### Composting of Sewage Sludge in Kirchbichl, Austria

The ARAB Kirchbichl plant in Austria uses the GORE Process Technology in compost sewage sludge reducing odors and emissions. The GORE® Cover system is installed in the intensive rotting phase since 2009.

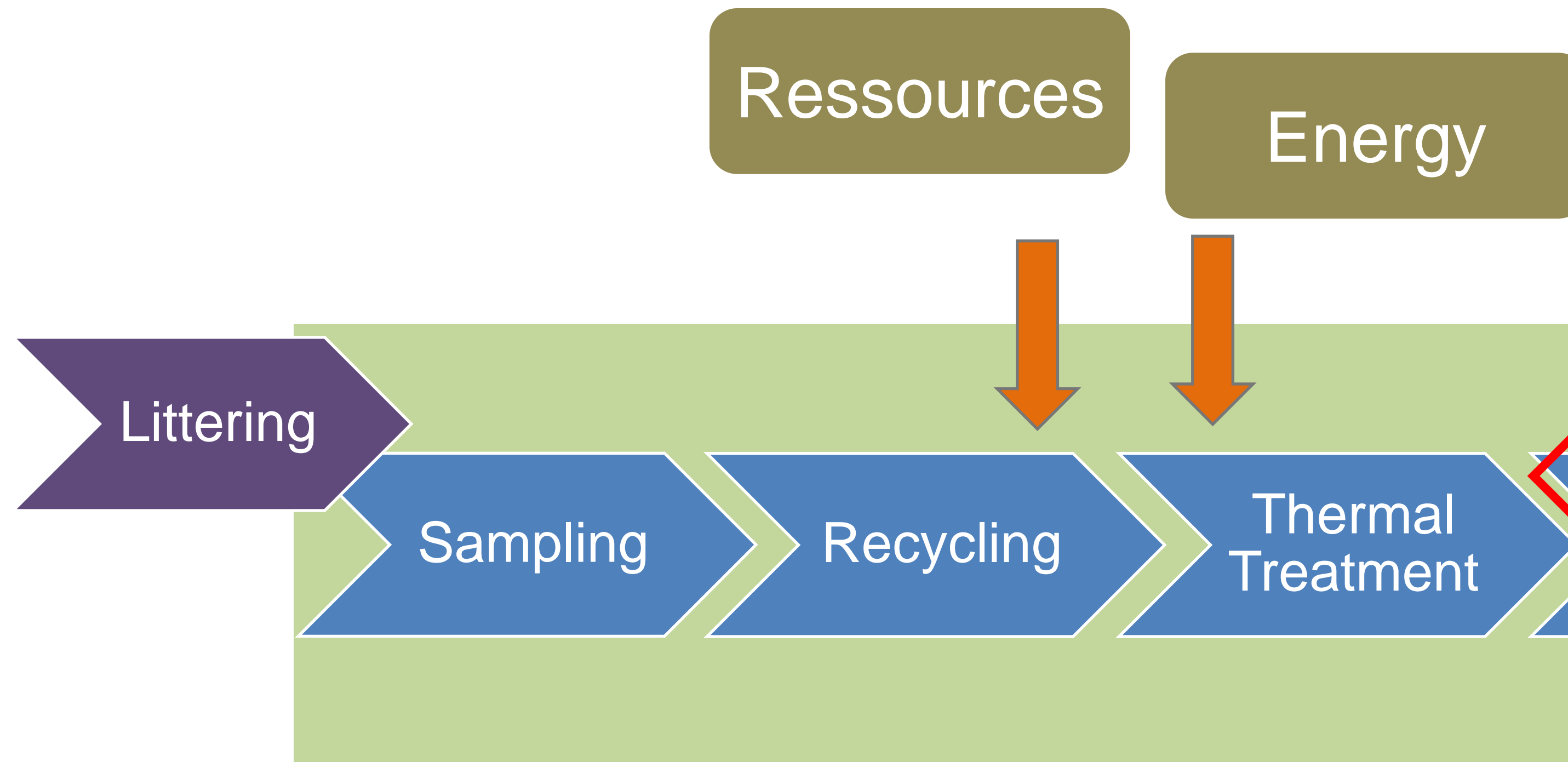
Founders Bill and Vieve Gore started W. L. Gore & Associates in the 1960s and have achieved long term success at translating dreams into tangible, valuable products.

#### How GORE is operating in Waste Management:

-GORE® Cover for Organic Waste Treatment

# ... Starting Position for SWM-Strategy Development

... and all the companies behind the Cas



**Case Study**



ete.a ingenieurgesellschaft für  
Energie- und Umweltengineering &  
Beratung mbH


**New Plant - EEW Energy  
from Waste Delfzijl B.V.  
(NL)**

In the industrial park  
Osterhorn Delfzijl in the Dutch  
province of Groningen, EEW...




**ete.a Ingenieurgesellschaft für Energie- und Umweltengineering & Beratung mbH**  
 Hofgut Kolnhausen 12  
 D - 35423 Lich  
 +49 (0) 6404.658164  
<http://www.ete-a.de/english/>

Our main concern is to backup and secure a maximum of ecology and economy. That means, to reach highest efficiency with existing resources under observance of the ecological requirements.




**Professor Dr.-Ing. Rudi Karpf**  
 Technische Hochschule Mittelhessen Gießen



**M.Sc. Environmental Science Linda Drukmane**  
 Project Engineering



**Case Study**  
**Basic features of the dry absorption process for flue gas treatment systems in waste incineration - Germany**  
 The separation of gaseous substances takes place via adsorption over a solid or via...



**Case Study**  
**Optimization of the WtE-plant - Rothensee, Germany**  
 Waste-to-Energy (WtE) plant Rothensee GmbH operates a modern waste management and energy concept at the Magdeburg Rothensee site.



**Case Study**  
**New Plant - EEW Energy from Waste Delfzijl B.V. (NL)**  
 In the industrial park Osterhorn Delfzijl in the Dutch province of Groningen, EEW Energy from Waste operates a waste incineration plant for industrial and household waste as well as for refuse derived fuels.

Our strength is the exploitation of the actual knowledge within the market in order to always be able to offer our customers the optimised solution.

Our customers profits from...

- ...a large expert knowledge in the field of flue gas treatment
- ...a significant participation in further development of flue gas cleaning systems
- ...a longtime practical experience in planning, building and commissioning of power and wte plants
- ...an engineering company as an consultant in a nodal point of a network of universities, organisations, plant manufacturers und operators.



**Case Study**

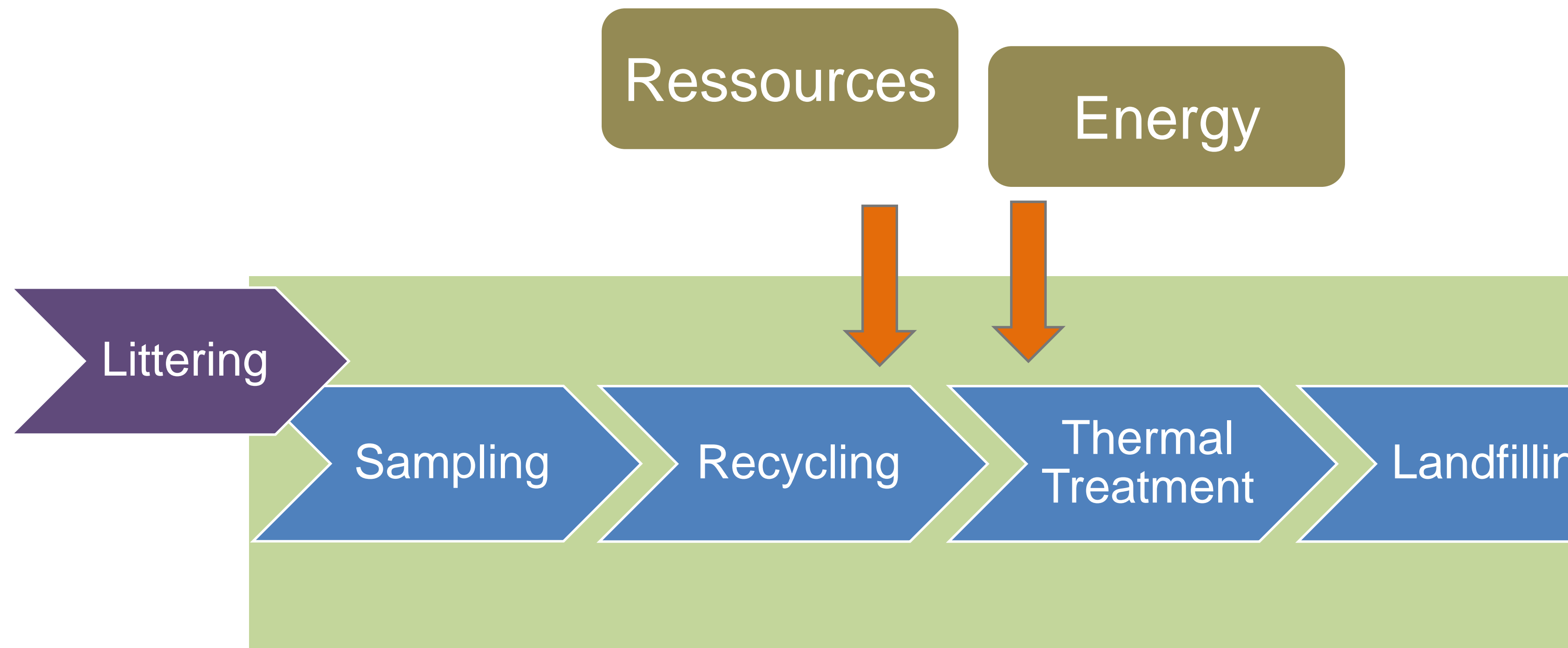
ete.a ingenieurgesellschaft für Energie- und Umweltengineering & Beratung mbH

**New Plant - EEW Energy from Waste Delfzijl B.V. (NL)**

In the industrial park Osterhorn Delfzijl in the Dutch province of Groningen, EEW...

# ... Starting Position for SWM-Strategy Development

... and all the companies behind the Case Studies



**Best Practice**



**Gannert**

Bayer. Staatsministerium für Umwelt und Verbraucherschutz

**Cost-intensive aftercare of the Gallenbach household waste landfill, Germany**

In the first twenty years after the closure of the...



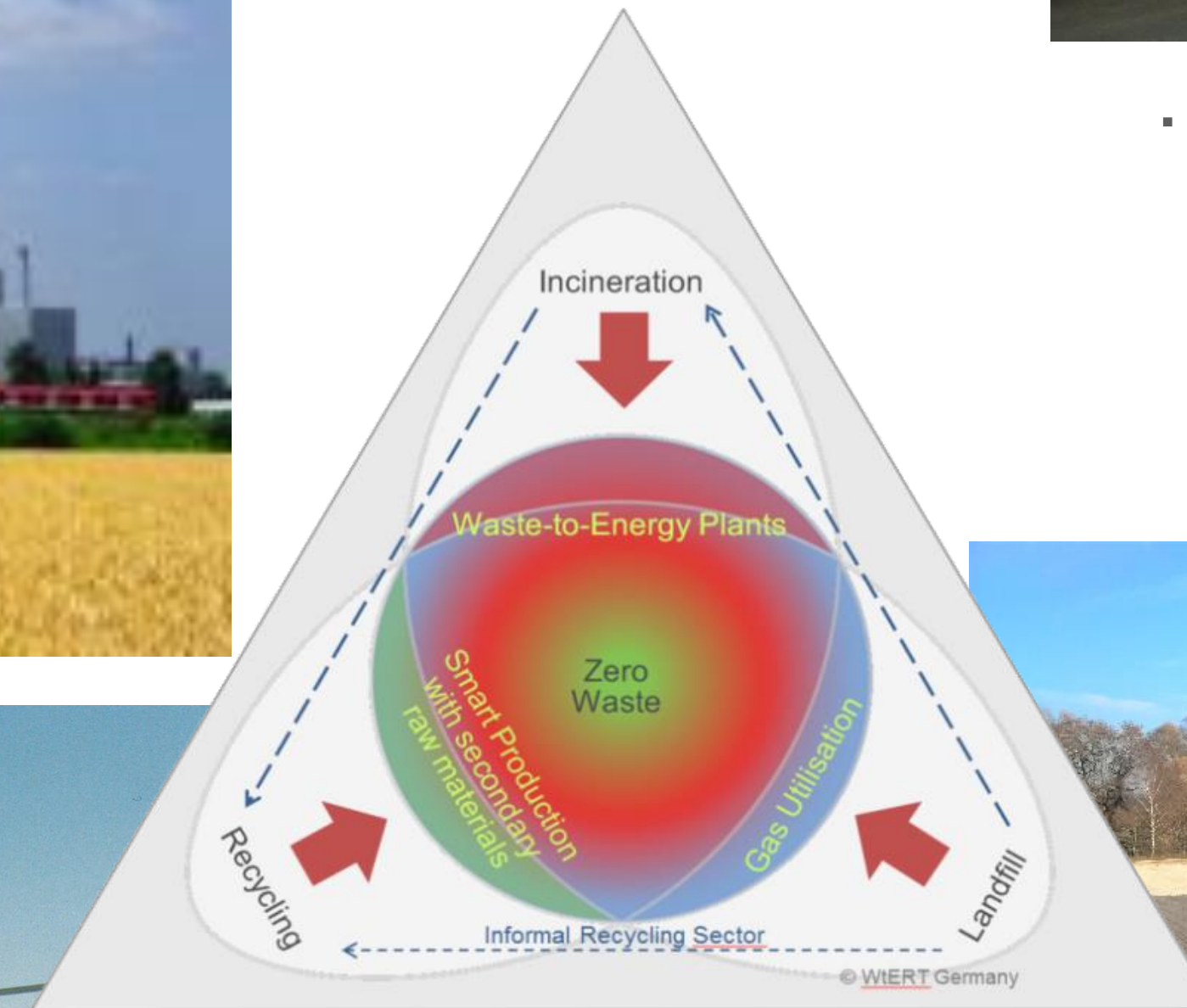
On [www.wtert.net](http://www.wtert.net)  
we promote:



energy  
recovery...



... reduce and reuse strategies...



... the benefit of recycling, e.g.  
fermentation.....

... and the need  
for good landfill  
operation.



District heating

## Bescheinigung/Zertifikat

für das

Gemeinsame Kommunalunternehmen für Abfallwirtschaft AdöR (GfA)  
Josef-Kistler-Weg 22, 82140 Olching

über den

Primärenergiefaktor  
nach AGFW FW 309-1 (05/2014)  
(bzw. inhaltsgleich DIN 18599, Teil 1, DIN V 4701, Teil 10, DIN EN 15603)

für Fernwärme im Wärmeversorgungssystem des GfA  
(Abfall-Heizkraftwerk Geiselbullach)

Der Primärenergiefaktor  $f_p$  nach den genannten Normen liegt  
für Fernwärme im Wärmeversorgungssystem des GfA bei

nach AGFW FW 309-1 (05/2014)  
(bzw. inhaltsgleich DIN 18599, Teil 1, DIN V 4701, Teil 10, DIN EN 15603)

**$f_p = 0,00$**

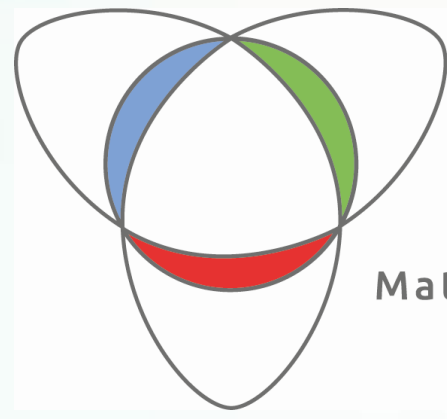
Dieser Wert wurde aus Betriebsdaten der Jahre 2011 - 2014 ermittelt

Der Primärenergiefaktor gibt an, welche Menge an Primärenergie für die Bereitstellung von Wärmeenergie eingesetzt wird. Er ist für die Wärmeversorgungsanlagen des GfA für den Nachweis nach Energieeinspar-Verordnung (EnEV) bzw. für weitergehende Berechnungen zu verwenden.

Dieses Zertifikat gilt nach AGFW 309-1 (05/2014) bis zum 16.11.2025

Berlin, 17.11.2015

Prof. Dr. rer. nat. Peter Loose  
AGFW FW 609-008



**WtERT**  
Material AND Energy Recovery

We must oppose with a  
scientific mind and a  
brave heart. Let us bundle  
our arguments in  
[www.wtert.net](http://www.wtert.net)