



How to meet legal requirements – status, approaches and good practice identified



“Information Exchange Event on landfill of Waste“

Bulgaria, 13 November 2008



State of implementation of the Landfill Directive – basic aspects



The situation is comparable in quite a number of Member States

(1) Low priority of waste management

→ “waste doesn’t pay



(2) High share of landfilling in waste management

→ overall share of landfilling ~ 80-90% (cheap & easy) → slow activity towards separate collection systems and treatment facilities



(3) High content of biodegradables and combustible in landfills

→ fraction of biowaste in MSW ~ 30-50% (75%)





State of implementation of the Landfill Directive – waste collection

(1) Deficits in organisation of waste collection system

→ e.g. limited coverage with public collection system in rural areas



(6) Limited separation at source, limited quality of recovery material

→ poor separate collection system at household level

→ installation of collection points for household waste (glass, paper & cardboard, plastics) and civic amenity sites just started





State of implementation of the Landfill Directive – Landfill standard

(1) Huge number of “old, low standard” landfills



(8) No adequate implementation of the Acceptance Criteria Decision

→ certain steps of the control procedure during operation are disregarded



(9) Implementation of the “treatment prior to landfilling” principle

→ requirement of treatment of mixed MSW before landfilled widely ignored

→ only measure taken is compacting of waste



(10) Long-term storage of waste at temporary storage facilities

→ due to lack of treatment facilities



(11) Illegal dumping of waste

→ use old unmanaged dump sites, littering





Goals to reach

- (1) Compliant landfills
- (2) Meet separation targets
- (3) Meet biowaste targets
- (4) Meet acceptance procedure requirement



A) Examples for good practice – Legal instruments



- (1) Waste or landfill taxes
- (2) Graded waste fees
(quantity dependent, not per capita)
- (3) Environmental funds
→ Financed via taxes and fines for support of separation and recovery measures



B) Examples for good practice - Infrastructure



(1) Construction of **modern/compliant landfills**

- storage facilities for hazardous waste, dismantling of WEEE and waste metals
- leachate collection and treatment (cycling and evaporation or reverse osmosis)
- gas collection and treatment (flaring, energy production, biogas production)
- separation lines for effective recovery of valuable fractions (paper, glass, plastics...) from mixed municipal waste
- composting and gasification plants

(2) **Closure of non-compliant old landfills**

- priority ranking for closure and re-cultivation measures

(3) Identification and **elimination of illegal dumps**

- inventory on uncontrolled landfills using GIS technology, questionnaires and field data collection
- list of priority actions for closure and re-cultivation measures

B) Technical details of landfill construction

Upper coverage > 1m

Drainage layer $\geq 0,5\text{m}$

Impermeable mineral layer

Impermeabilisation system

Gas drainage layer

WASTE

Impermeabilisation system

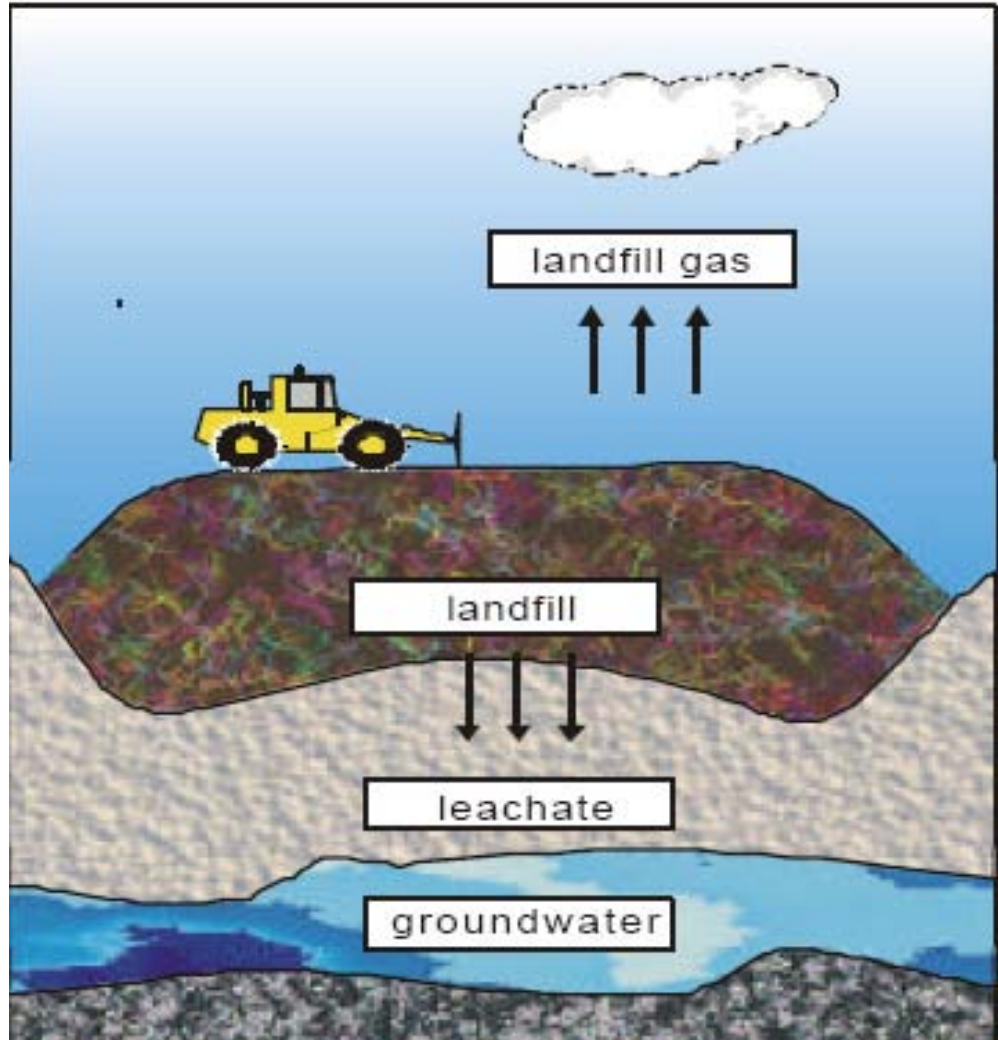
Drainage layer $\geq 0,5\text{m}$

Artificial barrier $\geq 0,5\text{ m}$

Natural barrier:

$K \leq 10^{-7*}$ (class A), 10^{-8} , 10^{-9} m/s

thickness: $\geq 1\text{ m}$





B) Practical examples of modern landfill construction



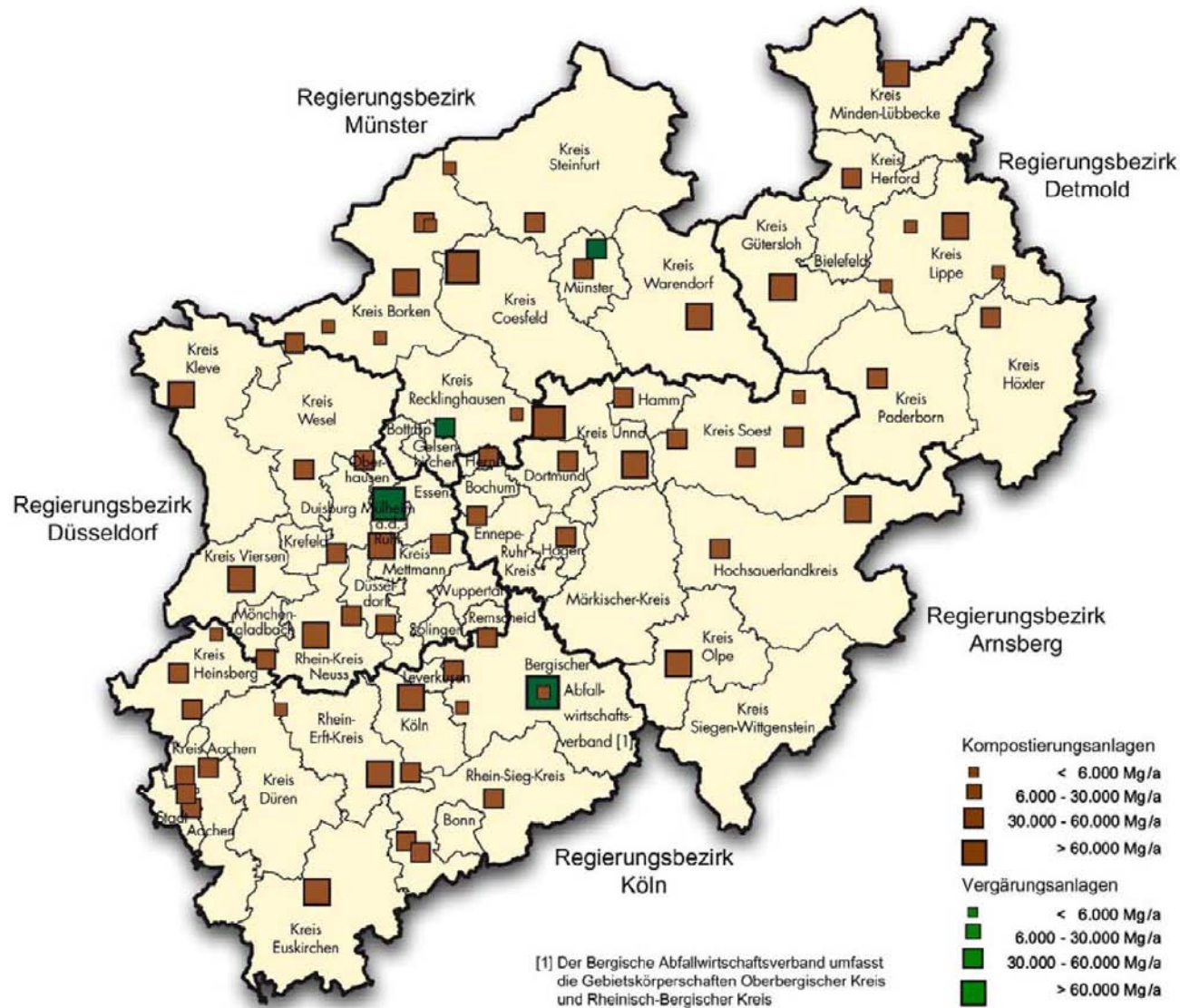


Examples for good practice - Infrastructure



- (4) Door to door collection of specific waste fractions
→ e.g. for packaging waste, bulky waste, hazardous waste, biowaste
- (5) Installation of **collection points**
→ collection points for separate collection of glass, paper, metal and plastics from citizens
- (6) Installation of **civic amenity sites** in towns (free of charge),
→ in addition to or instead of civic amenity sites in modern landfills
- (7) Establishment of take back systems
→ e.g. for batteries, WEEE, cork, waste tyres, print toners, etc
- (8) Establishment of deposit systems
→ e.g. beverage bottles
- (9) Establishment of alternative treatment and recovery systems

Example of good practice – Biowaste management





Examples of good practice – MBT of mixed MSW

- High caloric fraction = 45% (used in pressed form as RDF in incineration, co-incineration or gasification)
- Materials for recovery = 2,5% - 5% (metals, plastics)
- Biostabilised fraction = 29% (used in landfill as covering and filling material)



C) Examples for good practice – Information/Education

(1) TV sports, radio news, advertisements

(2) Children's games, award programmes (pictures, stories, etc.)

(3) School education

(health impacts ,threats to environment, most important waste streams, how to separate and why, do to do home composting, the climate effect, etc)

(4) Days of the open door

(5) Actions programmes

(e.g. waste week, collection events, etc)

(6) Brochures and flyers

(how to separate waste, our most dangerous wastes, what can be made from waste, etc)





D) Examples for good practice - Enforcement



- (1) **Combined control activities** of environmental inspectorates and police
- (2) Standardised **documents and guidelines for basic characterisation**
- (3) **Training** of regional authorities; **regular meetings** with central authorities
- (4) Early evaluation of **waste management plan** by means of indicators
- (5) **Qualification standards and training** concerning legal and technical requirements and practical enforcement for operators



Possible strategic approach

- A) Address priority wastes first
- B) Coordinated approach for establishment of infrastructure
- C) Find best approach for separation and recovery
- D) Establish appropriate tax/fee system
- E) Establish minimum requirement for acceptance procedures



A) Stepwise approach – Priority waste streams to address

High quantity
wastes

Precious wastes

Dangerous wastes

- (1) Construction and demolition waste
- (2) Municipal solid waste (plastics, organics)
- (3) Industrial waste (?)

- (1) Industrial sludges, slags, ashes, etc
- (2) WEEE, batteries
- (3) Paints, laques, etc
- (4) Drugs

- (1) Metals
- (2) Glass
- (3) Paper
- (4) combustibles



B) Coordinated approach for infrastructure

Regional cooperation
Waste management regions



Regional landfill
Regional collection infrastructure
Transfer stations
Regional recovery infrastructure

National cooperation



National recovery infrastructure
National disposal infrastructure

International cooperation

Recovery / (Disposal) infrastructure



C) Separation

Basic approach and starting point:

Separation at source: (door to door, container,)

Separation major streams: (plastics and paper, biomass, WEEE, metals, bulky waste)



Establishment of sophisticated system:

Separation at source of additional waste streams

Establishment of civic amenity sites

Additional separation of residual MSW at landfill (MBT)



D) Tax/Fee system for citizens – aspects to promote separation and compliance

- (1) Mandatory payment for waste services for all citizens
- (2) Local administrations (waste management associations) responsible and authorised to define „regional“ tax/fee
- (3) Contract citizen - authority
- (4) Waste management companies mandated to perform service
- (5) Incentives for increased separation (e.g. different taxes for mixed waste bin, packaging and biowaste bin; or environmental funds providing reimbursement to municipalities for amounts recovered)



E) Acceptance procedures

Priority steps
mandatory for all
waste types



- (1) Standard form for documentation of basic characterisation
- (2) Entrance check point
- (3) Balance for weighing at entry and exit
- (4) Visual waste control before un-loading
- (5) Visual waste control at discharge
(separation of non-acceptable items: WEEE, metals, bulky waste, wood, etc)

Secondary
steps

- (1) Sampling plan
- (2) Testing (chemical analysis)




Mandatory for all non exempted wastes; participate in IMPEL project)



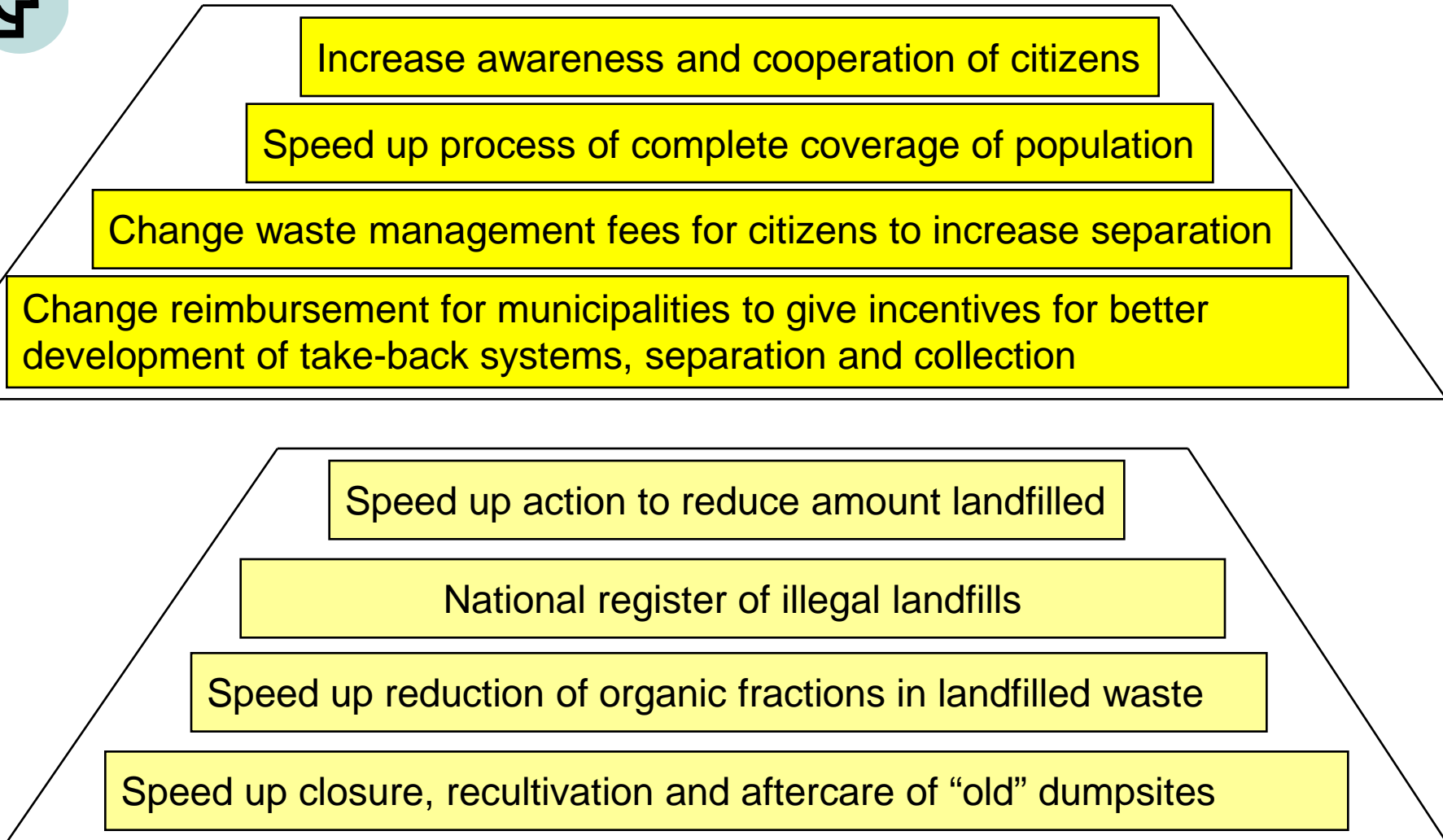
Waste management infrastructure – Suitability of alternative treatment methods

Generation = Recycling + Material recovery + Energy recovery + Landfill + other disposal

- 
- (1) Composting (easy) & Fermentation (high invest)
 - (2) MBT
(for mixed MSW in less populated areas; reduction to 35-40%)
 - (3) Gasification
(for energy recovery from high caloric fraction)
 - (4) Incineration with energy recovery
(for mixed MSW in densely populated areas; economic capacity threshold: 100.000 t/a; reduction to 28%)
 - (5) Co-incineration (e,g in cement plants)
(for energy recovery from high caloric fraction)

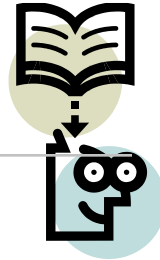


Priority activities for implementation of landfill directive requirements





Priority activities for implementation of acceptance criteria decision requirements



In-situ

Common understanding as concerns basic characterisation

Sampling plan and harmonisation of analysis methods

Physical inspection of all incoming waste; quick tests for all non MSW

At source

Increased separation of recoverable fractions



Suggestions addressing the European Commission for supporting the implementation

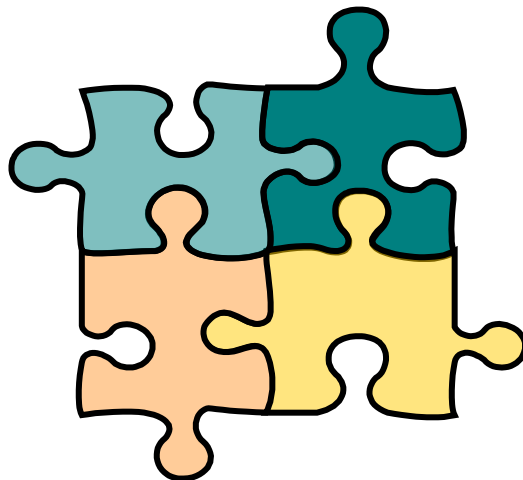
Provide guidance on legal requirements

(e.g. basic characterisation, treatment prior to landfill, sectors, sampling-analysis, on-site verification, waste tyres for engineering purpose)

biodegradable waste

(Harmonised calculation method)

Enhance cooperation within the IMPEL Network and support special projects for better implementation.



Establish procedure for **re-categorising certain waste-streams** as secondary material



Reasons why...





Reasons why...





...Yes we can !





Thank you for your attention

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Project reports on implementation of EU Landfill Directive

<http://www.bipro.de/waste-events/land/data.htm>