

# Economic Aspects of Landfilling

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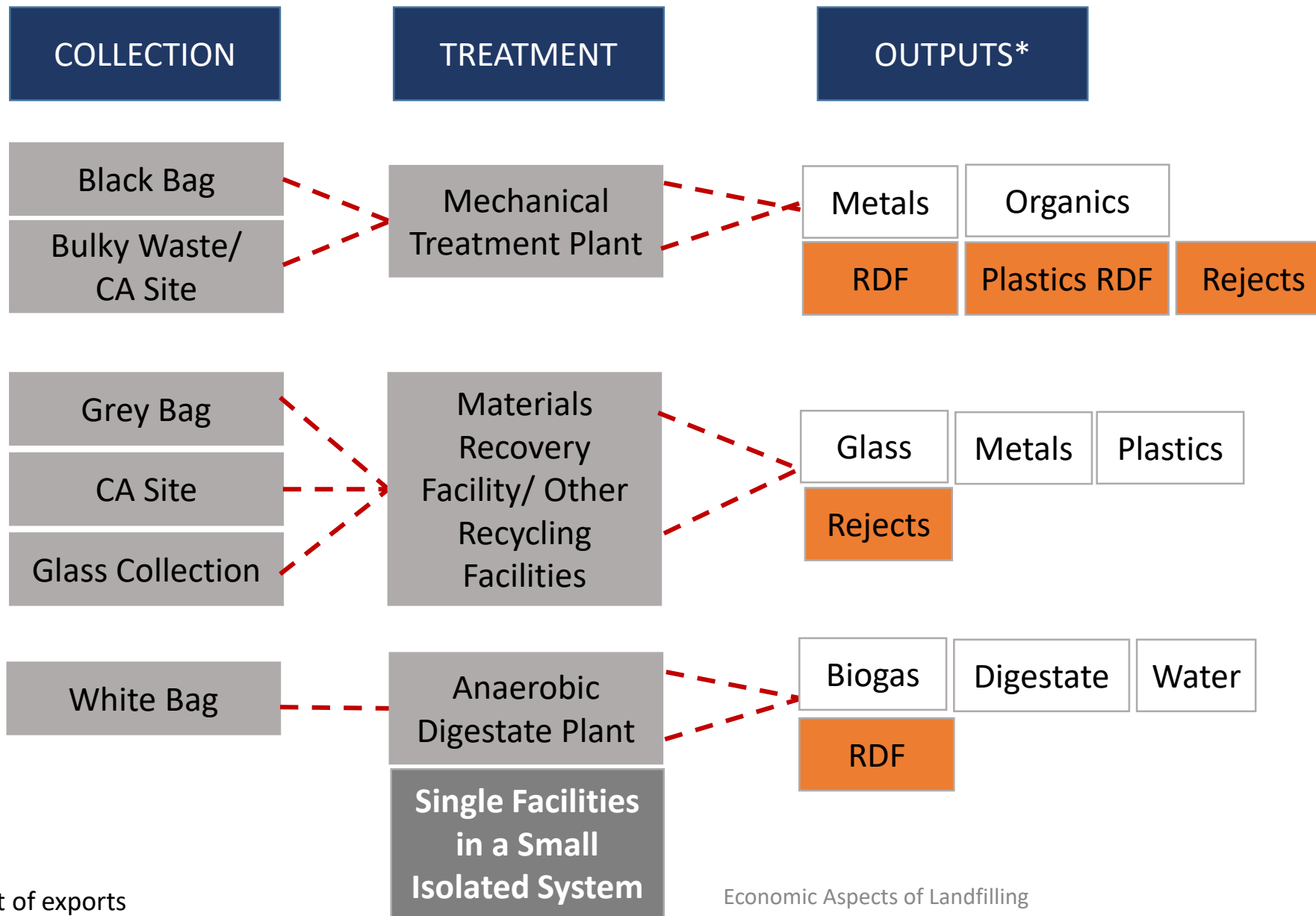
# Points for Discussion

- Introduction: The Economics of Waste
- Present State of Affairs of Waste Management in Malta
- Economic Impacts of Landfilling
- Key elements of the Waste Roadmap for Malta
- The use of Economic Instruments to improve waste management
- Conclusions: Towards an efficient and cost-effective outcome

# Introduction: The Economics of Waste

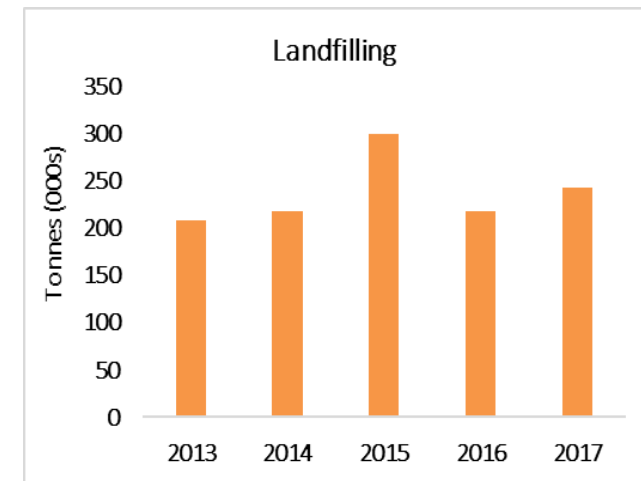
1. Waste is both a by-product of economic activity, by businesses, government and households as well as an input to economic activity - whether through material or energy recovery.
2. The management of waste has economic implications in terms of its effects on public sector spending, consumer behaviour and the environment.
3. Economics provides a framework that can be used to determine which policy interventions are the most desirable and appropriate for managing waste.
4. Some key economic principles in waste management policy include:
  - **a transition to a green economy** which implies a balance between the maximisation of economic value and growth and the sustainable management of all natural assets
  - **addressing market failures** by ensuring that economic decisions to produce and consume take full account of the environmental consequences of waste generated as a result
  - ensuring **cost effective waste management** which requires that waste is allocated amongst the various management options in a manner where the marginal social cost of each option is equalised across the various options

# Present State of Affairs of Waste Management in Malta



Landfilling has increased by around 17% from 2013 to 2017.

Nonetheless, the level of landfilled waste recorded a fall from 2015.



# Economic Impacts of Landfilling

- 1. Contribution to the Greenhouse Effect:** Gaseous pollutants have significant effects on plants, animals and entire eco systems. Risk of explosion and odour problems due to some trace gases can also be identified as significant impacts.
- 2. Landscape changes and loss of habitats:** The construction and management of landfills involves the use of land which could otherwise have been allocated to more productive use. Landfills can also represent an eyesore and may lead to the loss of habitats and displacement of flora and fauna.
- 3. Water Treatment Costs:** Leachate can migrate to groundwater or even to surface water through the flaws in the liners and this poses a serious problem as aquifers require extensive time for rehabilitation.
- 4. Human Capital Costs:** The degradation of waste in landfills results in in the production of leachate and gases, which emissions are potential threats to human health. In turn, this has implications on the level of human capital in the country.
- 5. Indicative Financial Costs of Residual Waste Disposal (€/tonne):**  
**Landfill: 60 to 70   Thermal: 140 to 180   Export: 250 to 300**

# Key Elements of the Waste Roadmap for Malta

## **Objective of the Waste Roadmap:**

to assist Member States at risk of failing to meet the 2020 target of 50% preparation for reuse/recycling of municipal waste

## **Main EU Waste Roadmap Recommendations for Malta contributing to lower landfilling**

1. Making **Local Councils** responsible for the collection of all household waste.
2. Measures to **prevent commercial businesses from free-riding within household waste collection services.**
3. Development of **national minimum service standards for waste collection.**
4. Development of a set of **national communications materials addressed to the public** for use at local level.
5. Introduction of **complementary economic incentives for households** in the form of pay-as-you-throw schemes, only once all other aspects of waste management have been addressed and systems are functioning as intended.
6. Introduction of **'top-down' mandatory recycling targets for local councils and minimum standards of service.**
7. In terms of funding requirements in the coming years, the specific **focus should be on projects supporting higher levels in the waste hierarchy.**
8. Thorough **review of EPR schemes** to identify shortcomings in the current system.

# Measures to address the Waste Roadmap Recommendations

## Waste Prevention Measures

1. Green marketing
2. Educational Campaign
3. Behavioural Triggers
4. Changes in fines related to waste
5. Food waste ban
6. Introduction of food waste legislation
7. Reuse Centre

## Waste Collection Measures

1. Expansion of the biowaste collection scheme
2. Biowaste collection scheme for commercial enterprises
3. Landfill fee
4. Waste management infrastructure in development plans
5. Data collection fine for non-compliance
6. Regionalisation of waste collection
7. Establishment of national targets on the regional units
8. Data Collection

These measures have been prioritised on the basis of **effectiveness, resource intensity, urgency and any predecessor relationships to the measure**. The three key measures that are considered to be of a higher priority are:

- **Expansion of the biowaste collection scheme**
- **Educational campaigns/Behaviour Trigger/Green marketing**
- **Change in landfill rate**

These measures address both waste prevention and waste collection and are viewed as being critical towards moving the country closer to achieving recycling targets. These measures must be supported by other measures related to implementation of food waste legislation, data collection requirements and ensuring that the commercial sector contributes towards implementing national recycling targets.

# Impact of Proposed Measures on Waste Management

## Expansion of Biowaste Collection Scheme

- **An increase of separately collected organic waste** of around 9,500 tonnes
- **A decline in the weight of the black bag** by an equivalent amount

The weight of the black bag could decline by about 25kg/capita on an annual basis – still low compared to the total weight of about 300 kgs/capita and waste separation targets. This implies that **for the scheme to be effective there is the need for behavioural changes.**

## Educational campaigns/Behaviour Trigger/Green marketing

Studies on the effectiveness of information campaigns in other countries suggest that **behavioural triggers/educational campaigns contribute to an increase in recycling rates.** Such results should be extended once the effectiveness of the information campaigns in Malta is known.

## Change in Landfill Rate

The cost of landfilling is currently €20/tonne plus VAT (18%) - on the lower end of disposal fees in Europe. The development of a rate reflecting the cost of disposal would allow for **better transparency** and **lead to the incentivisation of local councils to take measures against landfilling mixed waste.** In assessing waste management practices across European countries it is observed that countries using a variety of instruments have a higher municipal waste recycling rate than countries using few or no instruments. The **impact of this measure depends on the sensitivity of behaviour to price changes,** as well as the affordability and acceptability of the charges imposed.



# The Use of Economic Instruments (EIs)

*What is the relationship between the waste management performance in EU Member States and their use of EIs?<sup>1</sup>*

The main economic instruments used include:

- Charges for waste disposal and treatment (ex: landfill and incineration taxes)
- Pay-as-you-throw (PAYT) schemes
- Producer responsibility schemes

## (1) Landfill Taxes

- In 2017, 24 EU Member States had a landfill tax. Tax rates vary from 3€/t (LT) to more than 100€/t (BE)<sup>2</sup>.
- An analysis carried out by the EC in 2012 suggests that there is a relationship between higher landfill taxes and lower percentages of municipal waste being sent to landfill.
- In addition to simply reducing the amount of waste sent to landfill, higher landfill charges tend to push waste towards recycling and composting, therefore moving waste treatment up the waste hierarchy.
- It appears that MS are much more likely to meet a 50% recycling target once landfill charges (or the cost of the cheapest disposal option) approach €100 per tonne.
- It was found that there is a clear trend for landfill tax rates to increase over time. For 11 MS where adequate time series data was found, however, not all show a strong correlation between increasing tax rates and decreasing amounts of municipal waste sent to landfill.

(1) Source: European Commission (2012) Use of Economic Instruments and Waste Management Performances

(2) <https://www.cewep.eu/landfill-taxes-and-bans/>

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## (2) Incineration Taxes

- According to a study carried out by the EC in 2012, only 6 MS were found to have incineration taxes in place for the disposal of municipal waste.
- The level of taxation ranges very widely, from as little as €2.40 per tonne in FR to €54 per tonne in DK. According to the data found during the study, the total typical charge for incineration (i.e. the tax plus the middle of the range of gate fees) of one tonne of municipal waste in the EU ranges from €46 in the CZ to €174 in DE.
- There is a broad overall trend that higher incineration charges are generally associated with higher percentages of municipal waste being recycled and composted, indicating that higher incineration charges may help to push waste treatment up the waste hierarchy.
- All MS that have incineration taxes also have landfill taxes, and in every case the landfill tax is higher than the incineration tax.

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## **(3) Pay-as-you-throw (PAYT) systems**

- According to a study carried out by the EC in 2012, 17 MS employ PAYT systems for municipal waste. Many other MS do charge households for waste collection/disposal, but through flat charges or municipal taxes rather than variable charging.
- As PAYT systems vary so widely across the EU, the study looked at example schemes in a small number of MS (AT, DE, FI, IE, IT) with well-established PAYT schemes.
- For example:
  - in AT, increased PAYT fees may have had a small dampening effect on waste generation, but the effect is somewhat limited and is not the only factor influencing waste generation.
  - in DE, a weight-based PAYT scheme in the County of Aschaffenburg observed a significant reduction in household waste generation in the first year of its introduction (from around 22,000 tonnes to around 12,000 tonnes) and waste generation appears to have since stabilised at around 8,000 tonnes. No increase was observed in the illegal dumping of waste.
  - in IT, PAYT systems have had mixed results, although the most successful demonstrate some impressive results. In the Province of Treviso, the amount of waste sorted by households (and therefore the amount of waste recycled) increased by 12.2% following the introduction of PAYT.

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## (4) Producer Responsibility Schemes

- The study carried out by the EC in 2012 considered the following types of producer responsibility schemes:
  - Packaging producer responsibility schemes
  - WEEE producer responsibility schemes
  - ELV producer responsibility schemes
  - Batteries producer responsibility schemes
  - Producer responsibility schemes dealing with other waste streams

### Packaging producer responsibility schemes

- have been identified in **24 MS**
- **huge ranges of fees per tonne** of packaging material placed on the market in the MS
- **only three MS (AT, BE and DE) cover the full costs** of collecting, sorting and recycling waste packaging
- **no significant link was observed between the fees paid into producer fee schemes with the packaging recovery/recycling performance in the MS** - some 'cheap' schemes demonstrate high levels of recovery/recycling (notably BE and LU) and some 'expensive' schemes demonstrate low levels of recovery/recycling (notably EE and PL).

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## WEEE producer responsibility schemes

- have been identified in **25 MS**
- the vast majority of WEEE schemes were found to charge **fees based on the amount placed on the market by producers** (either per unit, or per kg or tonne)
- for schemes for **large appliances**, it appears that where **contributions are made per item** (rather than per kg), **a higher cost of contribution is associated with higher recovery and recycling rates**
- for schemes for **small appliances**, there **does not appear to be any relationship** between the cost of contributions and the rates of recovery and recycling, whether the contributions are per item or per kg

## ELV producer responsibility schemes

- have been identified in **24 MS**
- **all schemes specify that ELV must be taken back at no cost to the final owner of the vehicle**
- based on the lack of comparable data collected within the study on producer responsibility schemes for ELV, **conclusions have not been drawn on the performance of MS** in relation to collection, recovery and recycling/reuse of ELV and the impacts of ELV producer responsibility schemes

# The Use of Economic Instruments (EIs)

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## Batteries producer responsibility schemes

- have been identified in **24 MS**
- **fees are based on the amount of batteries placed on the market, either per kg, per battery or according to market share** - the MS determine the cost based on the type of battery, and the classification of batteries varies from country to country
- the **lack of data** collected within the study did not make it possible to draw conclusions on the performance of MS in relation to collection and recycling of batteries and the impacts of batteries producer responsibility schemes.

## Producer responsibility schemes dealing with other waste

- The additional materials subject to producer responsibility schemes range from the collection of **tyres and paper/card (frequent) to photo chemicals (rare)**. Of these 'other' materials covered, producer responsibility schemes were most commonly found for the recovery of tyres (15 MS), paper/card (nine MS), oils (including mineral, motor, edible and lubricating oils) (seven MS), and the collection and disposal of old and unused medicines (two MS)

# Conclusions: Towards an efficient and cost-effective outcome

- The pricing instrument can only be effective in a market where behaviour can be influenced through the availability of alternative choices.
- Since it entails a burden effect, it is also to be implemented in a manner that does not compromise financial sustainability and viability of the activities being undertaken, and that does not lead to perverse effects.
- Pricing instruments are considered to be inferior in Malta relative to infrastructural and systems investments, and behavioural changes induced through communication, education and regulation.



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