

Towards a circular economy – Waste management in the EU

There are many waste management challenges in moving to a more circular economy – not only to achieve the targets currently proposed in the EU circular economy package, but eventually to take them further towards a 'vision' of prevalent, widespread and sustainable circular production and consumption models. Three general challenges identified in this study are to:

- Prevent waste generation
- Align the objectives of waste management and the circular economy
- Improve monitoring for evidence-based policy-making

The policy options presented in this report stem from key opportunities to meet these challenges.

These policy options focus on municipal waste and food waste streams, due to their high visibility in the population and high potential for inducing changed practices. However, waste streams such as critical raw materials and biowaste, including residues, are also key areas for greater policy support. In particular, these areas are in need of strengthened research to identify key challenges and opportunities in a more detailed way. Waste streams beyond municipal waste, in particular construction minerals, should also be noted as a key area for policy action, in particular due to their large volume, but are beyond the scope of this report. Moreover, the policy options present some key areas of action that are judged as feasible in the short and medium-term, with a focus on waste management. Each policy option is presented and describes a suggestion.

- There are a broad spectrum of potential measures to overcome the challenges associated with managing waste, to meet environmental and health criteria and make progress toward a circular economy transition. The study highlights some of these options, related in particular to municipal waste.
- To maintain the overarching goal of waste prevention, a holistic, systemic and integrated policy approach is needed that considers synergies and trade-offs between recovery, incineration and prevention measures. Preventing edible food waste is a key area of action for policy, in particular mandating prevention and improving both data quality (for monitoring) and information campaigns (for promoting behaviour change).
- To manage waste as a resource, instead of as a problem, the waste industry will have to become a key partner for businesses operating in the circular economy. This will require political support across all levels, including measures directed at the ground level, e.g. training, business infrastructure development, sharing municipal best practices; and overarching framework conditions, e.g. developing an EU-wide infrastructure for waste management toward recovery and recycling of waste streams at necessary economies of scale.
- Reliable, consistent and harmonised data is needed to better monitor and compare the state of waste management and progress toward a circular economy across and within EU Member States. Policy-makers may provide stronger clarity on definitions as well as support further research toward development of a monitoring system including future modelling assessments taking wider social, environmental and economic indicators into account.

1. Promote waste prevention

In the context of this study on waste management, and with specific reference to municipal solid waste (MSW), a fundamental question is: What waste prevention measures can be implemented to both drive

down the levels of waste generated in the high-GDP Member States and to avoid low-GDP Member States from progressively generating more waste as they develop?

Mandate the inclusion of food waste prevention as part of national waste prevention programmes
Revise the Waste Framework Directive to make it compulsory for food waste to be included within national waste prevention programmes, including clear responsibilities and milestones in the context of an action plan. In addition, suitable and measureable targets should be considered and recommended to Member States, which should include the setting of quantitative targets once agreement is reached on the issues of food waste measurement.
Take actions to directly engage and encourage key players able to influence food waste reduction
Consider and facilitate ways in which stakeholders (in particular key retailers) could support behaviour change. This could include: <ul style="list-style-type: none"> • Improving awareness and communication of best practices in edible food waste prevention across the EU28 MS; • Providing good practice and guidance to retailers on assisting households to reduce waste; • Considering ways to encourage transparent communication by corporations along the food value chain regarding the actions they are taking to tackle food waste.
Implement a new 'household or similar' waste target to encourage reductions in residual levels of mixed waste
An alternative or additional new target for 'household or similar' waste classification used in Eurostat should be included within the review of the Waste Framework Directive. In conjunction with recovery and recycling targets this would encourage reductions in residual levels of mixed waste. This could be undertaken in a similar way to that of biodegradable municipal waste, with the total quantity arising in the baseline year being set and reduction targets being subsequently set over an extended time period.

2. Align waste management objectives with those of the circular economy, and vice versa

A general conclusion cited in research is that much of the EU policy on waste centres on the diversion of waste from landfill to incineration or recycling. As such, it is very much an end-of-life disposal perspective (waste as a problem). The goal of a circular economy is to create value-added from waste (waste as a resource). It therefore aims to separate waste into high quality waste streams for re-use, recovery and recycling. This transition will require the active cooperation of waste industries with businesses engaged in the circular economy. It will also mean that more attention to end-of-life recovery options are needed as early as the design phase.

Provide clarity around incineration and achieving options higher up the waste hierarchy
Undertake a review and consider options to provide clarity regarding where incineration fits within the context of the circular economy. The objectives of such a review would include: <ul style="list-style-type: none"> • Highlight the issues and scale of the problem in relation to achieving a circular economy; • Provide direction for infrastructure investment decision-making • Offer realistic options for and targets needed for waste prevention, re-use, remanufacturing, and repair, to reduce reliance on incineration.
Develop an integrated EU-wide infrastructure for waste management toward recovery
Develop an infrastructure that encourages networks of recovery and recycling – which have co-developed smart logistics for waste collection, separation and transport together with municipalities, citizens and industry – to secure waste streams at economies of scale which lower investment risks (see also EIO, 2014).
Support business infrastructure for business models that consider end-of life recovery options in the design phase

Support business innovation and green skills training as well as information campaigns. In particular, promote individual producer responsibility to strengthen the link between producers and end-of-life management options as well as eco-design requirements to make re-use and repair activities economically viable (Wilts et al., 2014). Ultimately, embrace the idea of system innovation (see EIO, 2014) and specifically support development of networks of actors.

Implement individual re-use, remanufacturing or repair targets for waste electrical and electronic equipment (WEEE)

Undertake a review and consider options to provide individual targets for the re-use, remanufacturing or repair of WEEE. The objectives of such a review would include:

- To quantify the added value in promoting these waste management solutions;
- Identify and mitigate against the market barriers;
- Offer realistic options for and targets needed for re-use, remanufacturing, and repair.

Consider the wider role of economic instruments in promoting circular economy objectives

Undertake exploratory studies that consider how economic instruments might be used to support key players in the waste management and prevention sectors in achieving circular economy objectives. This would include understanding what conditions (such as good data quality) might be required to realise the potential of economic instruments, and whether such approaches could drive more rapid improvements. Options might include:

- Developing a trading scheme allowing countries with high GDP to meet their targets (in part) through supporting countries with lower GDP to improve waste separation and recycling where it is economically and environmentally favourable to do so;
- Promoting the development of the criteria required to raise capital through 'green bonds' to finance projects aimed at moving waste management practices up the waste hierarchy;
- Consideration of including the provision of PAYT for residual waste in all national waste plans
- Implement and/or gradually raise taxes on waste, e.g. for landfill, incineration, plastic bags, etc.

Consider specific targets to promote recovery of critical valuable materials (in addition to volume based targets)

Explore specific targets to promote the recovery of critical, valuable materials from end-of-life products. These could complement the existing volume-based targets. Along these lines, develop indicators that would demonstrate, both in terms of volume and value, the circularity of materials within the EU28.

Promote a coherent policy approach from the EU to municipal levels, in particular by sharing best practices at the municipal and inter-municipal level

Harmonisation and coherence across policy levels must be supported and promoted. The EEA (2013) call for European legislation and best practices to be cascaded down to the municipal and inter-municipal level.

Provide training and promote different kinds of employment, including financial support for high-level skills training and social jobs

Provide support for jobs training as well as support for social enterprises to boost the repair sector. In particular, aim to help remove socio-economic barriers to repair activities, such as competition with recycling and energy recovery.

3. Promote reliable, harmonised and consistent reporting and monitoring of waste statistics as well as research toward a circular economy

Data gaps and inconsistencies relate to a lack of harmonised definitions and measurement methodologies. This has large consequences on both the availability and quality of waste statistics and hinders a comprehensive assessment of waste management performance in the EU. Reporting on progress toward a circular economy is also largely absent and suffers from similar challenges concerning reporting and monitoring. This also lowers the reliability of future modelling of potential options and could limit progress in moving towards a more circular economy. While steps are underway to improve the quality and consistency of waste data, it should also be noted that the nature of the scale, collection

processes and multiple routes for treatment and disposal, present considerable challenges to the development of good quality data. The policy options presented here focus on strengthening monitoring capacities as well as research in general toward the circular economy.

Provide clarity on the calculation protocol for household waste fractions within municipal waste
Develop the Guidance Report (European Commission, 2012) to include a standard protocol for disaggregating the household and non-household fractions of municipal waste.
Harmonise the calculation of municipal waste recycling rates
Review the impact of retracting the Commission decision to determine the effect this will have on those Member States that have committed to infrastructure builds on the basis of the decision.
Include 'edible food waste' as a category into Member State waste data reporting requirements
The suggested policy options follow those outlined in the STOA (2013) study on food waste, namely, to develop a definition for edible food waste that can be used by Member States to measure the quantities of edible food waste being generated by householders and relevant business sectors. Integrate 'edible food waste' as a dataset on Eurostat and standardise the methods used by Member States for the collection and calculation of data on food waste generation, e.g. based on the 'Food waste quantification manual to monitor food waste amounts and progression' provided by the FP7 project FUSIONS (Tostivint et al., 2016). The European Commission is currently investigating ways in which food waste can more generally be included as a waste stream on Eurostat.
Promote transparency around the volume and end destination of residues from waste pre-treatment, treatment and recycling processes
Eurostat (European Commission) or the European Environment Agency (EEA) to review the reporting protocols used by EU28 MS in the latest dataset and the European Commission to amend the 2012 Guidance Document accordingly. This is a recommendation made by the packaging trade associations.
Promote transparency around the environmental outcomes arising from recycling options
Clarity on the environmental impacts of various technological options for different waste streams could be strengthened, considering also the wider impacts and implications within systems of innovation.
Develop a monitoring system tracking and evaluating progress toward a circular economy, including a dashboard of economic, environmental and social indicators
Strengthen data and indicators toward monitoring and evaluating a circular economy transition. For example, secondary material consumption as a percentage of overall material consumption is a key component. A dashboard could be a viable option to depict multiple facets of the circular economy transition.
Improve the effectiveness of European Union funding for waste management projects
An update of the 2012 report by the European Court of Auditors is recommended to determine the current state of play in terms of the success rates of the projects funded under the Cohesion Fund post 2012. A critical part of the review would be an assessment of the Cohesion Fund evaluation criteria.
Perform a more detailed STEEPED analysis as a key next step
To set options in a wider socio-economic framework and explore future scenarios a STEEPED analysis of circular economy transition scenarios may be elaborated on.

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