

Title

Household waste management in England at an important crossroad: can the 'circular economy' model grow wings?

Introduction

When recycling rates of household wastes in England were as low as 11.2% in 2000/01 (DEFRA 2019), the focus of waste policy since then was on to ask local authorities to do more (e.g. through segregation of collected waste) and to support/nudge the 'end-user', i.e. households and businesses (e.g. by raising awareness to recycle more). This approach has to a great extent improved results on the ground. In 2016-17, the recycling rate in England shot up to 43.7%, with the whole of the UK averaging at 45% (DEFRA 2019). This is admittedly lower than the 50% target set by the EU for 2020 but nevertheless the effort is to be admired. But more needs to be done. And in the last two decades, policy makers in England (and in the UK) in an attempt to meet such targets, have been engaging with a number of important though not fully answered questions¹, for instance: (1) how best to increase awareness and raise levels of recycling?; (2) what can be done to overcome local barriers to recycling participation? (3) how to reduce levels of biodegradable waste reaching the landfill? (4) what are the key drivers and barriers to waste minimisation? These questions will have interesting significance in the short to medium term, particularly in relation to what happens when we eventually start meeting these targets, which are either set in the EU or depending on what emerges in a post-Brexit² scenario, what is set in the UK. Part of the answer lies in understanding what the emerging 'circular economy' discourse can do to future waste management practices in England.

To fully appreciate that however means looking back at what we have done over the last two decades. By tracing the emergence of waste strategy in the country leading up to the most recent strategy launched in 2018, this commentary might offer us useful cues to: (1) the development of a shared understanding of what 'waste' and the emergence of any competing interpretations of waste, either locally, nationally or at the EU level; (2) the shifting roles and responsibilities of various stakeholders. And following which, a discussion on what space does this leave for the 'circular economy' discourse. The commentary concludes by posing challenges for future policy making in the waste sector.

Household waste arisings: facts and figures

Waste is defined as "any substance or object which the holder discards or intends or is required to discard" (Waste Framework Directive, or Directive 2008/98/EC; Gillespie 2015:8). Wastes are "materials that are intended for disposal" (OECD 1998; Gillespie 2015:9). This commentary focuses primarily around municipal household waste management and given that different datasets from the last two decades will be referred to, it will be helpful to clarify the use of terms early on. Household waste includes "regular waste from household doorstep collections, bulky waste collection, hazardous household waste collection, communal

¹ Many of these questions have been raised in the Town and Country Planning, e.g. Cooper 1995; Fournier and Lloyd 1995; Davoudi 1999; Stott 2008; Tunesi and Rydin 2010

² For a fuller discussion on post-Brexit scenario for the waste sector, refer to Cowell et al (2017)

collection of garden waste, plus waste from schools, street sweepings and litter” (Cabinet Office 2002:20). Some of the datasets referred to in certain policy documents talk about ‘Municipal waste’ - this includes household waste (accounting for 89% of municipal waste), street litter, waste from council recycling points, municipal parks and garden wastes, council office waste, and some commercial waste from shops and small trading estates where local authority waste collection agreements are in place (Cabinet Office 2002:19). Within municipal household waste are also biodegradable wastes, which is defined in the Waste and Emissions Trading Act (2003) as "any waste that is capable of undergoing anaerobic or aerobic decomposition, such as food waste, garden waste, paper and paperboard".

In terms of the scale of waste arisings from household sector vis-a-vis other sectors³, roughly one can say that in England in 2014, wastes from households and commercial/industrial sectors hovered around 22 million tonne mark, with the construction, demolition and excavation sector generating roughly over 120 million tonnes of waste arisings (DEFRA 2018) - a 240L wheelie bin holds 0.24m³ of household waste, which is equivalent to 0.0648 tonnes. Of all the waste collected and treated each year in the UK, household wastes account for 9% of the total (Defra 2007a; Cole et al 2014). Table 1 shows the available data on household waste arisings in England since 1995.

	Waste arising from households, in thousand tonnes in the England ^a	Recycling rate for waste from households in England excluding Incineration Bottom Ash metal ^a	Municipal waste to landfill in thousand tonnes/percentage of Biodegradable municipal waste (BMW) of total municipal waste/ percentage of BMW to the 1995 baseline in England (the latter two in brackets) ^a	Separately collected food waste as a percentage of total waste from households in England ^b	Other organics as percentage of total waste from households in England ^b	Dry recycling as a percentage of total waste from households in England ^b
Targets		2020 EU target for the UK - 50% (recycling rate for UK in 2017 was 45%) 17% by 2003 and 25% by 2005/06, 30% by 2010 and 33% by 2015 - Cabinet Office (2002)	EU target - to restrict BMW landfilled to 35% of the 1995 baseline by 2020 (value for the UK was 21%)			
2017	22,437	44.4%	11,784 (48.2%;19.6%)	2%	17%	26%
2016	22,770	44.2%	12,381 (48.8%;20.8%)	2%	17%	27%
2015	22,225	43.9%	12,215 (48.9%; 20.6%)	1%	17%	26%
2014	22,355	44.8%	13,714 (49.9%; 23.6%)	1%	18%	26%
2013	21,564	44.2%	14,780 (49.7%; 25.3%)	1%	17%	26%

³ Given that this commentary focuses on household waste, wastes other sectors such as wastes from consumer goods (e.g. packaging waste, vehicle parts and materials, waste electrical and electronic equipments etc.), from specific sectors (e.g. construction and demolition wastes, wastes from extractive industries such as mines and quarries waste, agricultural waste including sewage sludge in farming, industrial emissions, ship generated waste and cargo residues, radioactive wastes, transboundary movements of hazardous wastes etc.) are excluded.

2012	21,956	44.1%	16,187 (50.2%; 28.0%)			
2011	22,170	43.3%	18,421 (50.8%; 32,2%)			
2010	22,131	41.2%	20,298 (50.8%; 35.61%)			
2000		11.2% ^c				
1996		7.5% ^c				
1995			29,030 - baseline value			

Table 1: Household waste arisings in England (1995-2017)⁴

Sources: ^aDEFRA (2019) UK statistics on waste 07 Mar 2019, ^bDEFRA (2018a) Statistics on waste managed by local authorities in England in 2017/18; ^cCabinet Office (2002);

Roles and responsibilities

The overarching EU waste legislation is the Waste Framework Directive, or Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste. The key waste legislation in England is the Waste (England and Wales) Regulations 2011. With regard to waste management operations, the two key European Union legislation that shapes household waste management practices are (the directive on port facilities for ship-generated waste is beyond the scope of this discussion): (1) Directive 2000/76/EC of the European Parliament and of the Council of 4 December 2000 on the incineration of waste; (2) Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste.

There are other strategies that influence waste management practices on the ground, for instance : (1) the 25 Year Environment Plan (DEFRA 2018), with targets in place such as 'achieving zero avoidable waste by 2050 and zero plastic waste by the end of 2042'; (2) the Clean Growth strategy (BEIS 2017), that sets out targets such as, 'zero avoidable waste by 2050', 'need to publish a new Resources and Waste Strategy' (which was published in Dec 2018), 'management of emissions from landfill' etc; (3) a (voluntary) framework for greater consistency in household recycling in England (WRAP 2017), where there are calls for consistent kerbside collection practices by recycling same sets of materials, fewer collection points etc.

⁴ BMW is the fraction of municipal waste that will decompose within a landfill to produce methane, a potent greenhouse gas. Amongst other materials it will include food waste, green waste, cardboard and paper. Residual waste includes residual waste from households' regular collections (black bags), bulky waste, residual from civic amenity centres and rejects from recycling. It excludes waste diverted for recycling from residual waste. Dry recycling includes paper and card, glass, plastic, waste electrical and electronic equipment (WEEE), scrap metals including those reclaimed from incinerator bottom ash as well as other materials. Other organics includes green garden waste, mixed garden and food waste, wood for composting and other compostable waste

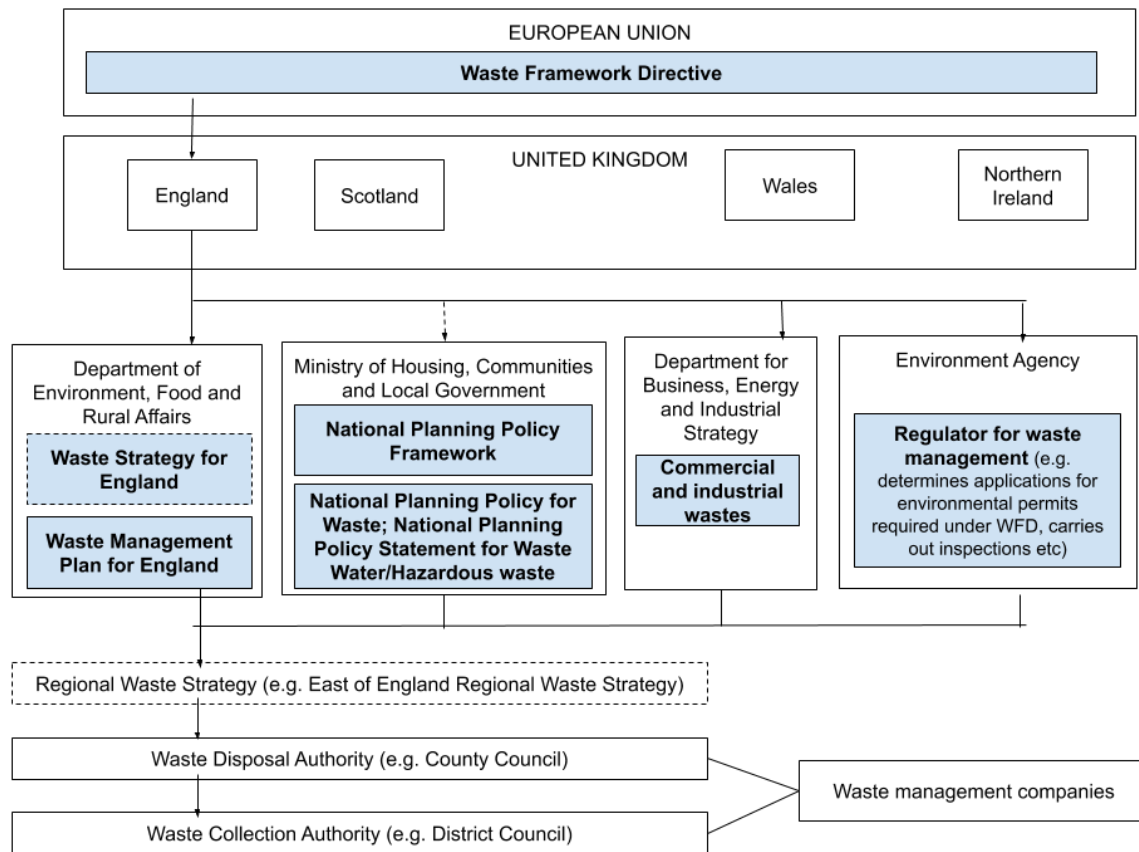


Figure 1: Waste management in England: roles and responsibilities

Responsibility for waste management (see Figure 1) although considers involvement of ‘individuals, businesses and other stakeholders’ (Cabinet Office 2002), has primarily been within the purview of government intervention; with central government setting the overall waste management policy and the Environment Agency in particular acting as the ‘waste regulator’ and local authorities, as ‘waste collection (district councils) and disposal (county councils) authorities’ (Sustainability Exchange 2016). Following the contracting out of municipal services including waste collection and disposal, waste management companies⁵ have become an important stakeholder providing these services.

DEFRA (Department of Environment, Food and Rural Affairs) has responsibility for formulating waste strategy in England. It has to produce a ‘waste management plan’ (mandatory requirement of Article 28 of WFD) which provides a detailed account of the current state of affairs in waste management practices in England (e.g. type, quantity and source of waste generated by local authority, existing waste collection mechanisms etc.). The ‘waste strategy’ (for instance, the latest strategy came out in December 2018, and the one before that in 2007) however is not mandatory. Ministry of Housing, Communities and Local Government is responsible for formulating the National Planning Policy Framework and along with it Policy and Policy Statements relevant to waste: National Planning Policy: Waste, and National Planning Policy Statement for Waste Water and Hazardous Wastes. These suite of Policy and

⁵ Examples include Sita (Suez), Onyx (Veolia), Remondis (Remondis) and Biffa (Severn Trent) (Hall 2006).

Policy Statements offer guidance to waste planning authorities⁶ in: (1) assessing the suitability of sites for waste development within the local plan area; (2) determining planning applications (DCLG 2014).

Then there are key principles that underpin how various stakeholders carry out their roles and responsibilities within the waste management processes. Firstly, the ‘waste hierarchy’, which in its initial form (Cabinet Office 2002) talked of six levels: (1) landfill (least sustainable); (2) landfill with energy; (3) energy recovery with heat & power; (4) recycling and composting; (5) re-use; (6) waste reduction. This was later amended (Article 4 of the 2008 Waste Framework Directive) with an emphasis placed on ranking them in order of environmental impact, i.e. (1) Prevention; (2) Preparing for re-use; (3) Recycling; (4) Other recovery, e.g. energy recovery; and; (5) Disposal (DEFRA 2012).

Secondly, the “polluter pays” principle (Article 14), which by allocating costs to the polluter, works either as a deterrent to prevent pollution in the first place or to determine liability procedures following the occurrence of pollution (de Sadeleer 2002). Thirdly, the self-sufficiency principle which emphasis the importance of ‘scale’ in waste management practices and where EU law requires all member states to adopt this principle at national, regional and sub-regional levels (Planning Service 2002). However in England, an emphasis on regional scale has fluctuated over the decades - currently regional waste strategy⁷ is indicated in dotted lines in Figure 1 as it is not mandatory. Finally, the ‘proximity principle’, sets out the need for waste to be managed within the geographical area in which it is produced as long as there are no significant effects on society (Planning Service 2002).

Emergence of waste policy in England

Waste is currently a devolved responsibility and hence the case for a distinct waste strategy for each of the constituent nations in the United Kingdom. So although the Waste Framework Directive applies to the whole of the UK, in England and Wales, these are transposed through the Waste (England and Wales) Regulation 2011 (Smith and Bolton 2018). However some aspects of waste management policy are addressed at the UK level, e.g. in meeting an existing EU target of recycling a minimum of 50% (by weight) of UK household waste by 2020 (Smith and Bolton 2018).

Listed below (Table 2: Evolution of waste policy in England) are some of the key milestones leading up to the current waste strategy in England.

⁶ The local authority responsible for waste development planning and control. They are unitary authorities, including National Park Authorities, and county councils in non-unitary areas (The Planning Portal 2019)

⁷ For further reading on regional/strategic waste planning, refer to Davoudi and Evans (2003)

		Targets set in relation to waste management (if any)
1975	Waste Framework Directive or Council Directive 75/442/EEC of 15 July 1975 on waste) - EEC (1975)	Regarded as first key EU legislation on waste management
1988	Local Government Act 1988	Introduction of CCT (Compulsory Competitive Tendering) for refuse collection, i.e. local authorities had to put out a tender for waste collection services (Davies 2007)
1990	This Common Inheritance: Britain's Environmental Strategy (DOE 1990)	UK's first waste strategy; an ambitious target of recycling 25% of household waste by 2000 was set
	The Environmental Protection Act 1990	Sets out role for local authorities in waste management, with district and borough councils as Waste Collection Authorities (WCA) (Section 45) and county councils as Waste Disposal Authorities (WDA) (Section 51) Led to contracting out of waste disposal services (Davies 2007)
1995	Making waste work: a strategy for sustainable waste management in England and Wales (DOE 1995)	First waste strategy for England and Wales Target of recycling 25% of household waste by 2000 maintained. 1 million tonnes per year to be composted by 2001 40% recovery of municipal waste by 2005
	Environment Act 1995	Led to the creation of Environment Agency; waste regulation powers shifted from local authorities to the Environment Agency.
1996	Landfill Tax introduced	To divert waste going into landfill into other sustainable options
	United Kingdom Management Plan for Exports and Imports of Waste (DETR 1996)	
1998	Waste Minimisation Act 1998	Powers to local authorities to "do or arrange for the doing of, anything which in its opinion is necessary or expedient for the purpose of minimising the quantities of

		controlled waste, or controlled waste of any description, generated in its area" (Waste Minimisation Act 1998, Section 1)
1999	Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste (1999) or the EU Landfill Directive	To reduce the level of biodegradable municipal waste to landfill to 35% of the 1995 baseline by 2020
2000	Waste strategy 2000: England and Wales (DETR 2000)	Second waste strategy for England and Wales 25% recycling for 2005, 30% for 2010, 33% for 2015 40% recovery of municipal waste by 2005, 45% by 2010, 67% by 2015 Reducing the amount of biodegradable municipal waste sent to landfill to 75% of the 1995 level by 2010, 50% by 2013, 35% by 2020
	Guidance on municipal waste management strategies - DEFRA (2000b)	Origins of locally assigned targets; each local authority was set targets (for 2003-04 and 2005-06) for recycling and composting based on their recycling rates in 1998/99
2002	Waste not, want not: a strategy for tackling the waste problem in England - Cabinet office (2002)	First waste strategy for England
2003	Household Waste Recycling Act 2003	Required all local authority by 2010 to provide kerbside household waste collection, and which allowed "for the collection of at least two types of recyclable waste together or individually separated from the rest of the household waste" (Household Waste Recycling Act 2003, Sec 1)
2006	Waste Framework Directive or Directive 2006/12/EC of the European Parliament and of the Council - European Commission (2006)	Revised Framework Directive on Waste
2007	Waste Strategy for England - DEFRA (2007a)	Second waste strategy for England
2008	Waste Framework Directive, or Directive 2008/98/EC - European Commission (2008)	The most recent Framework Directive on Waste
2011	Planning Policy Statement 10: Planning for Sustainable Waste Management (DCLG 2011)	
2012	National Planning Policy Framework (DCLG 2012)	England's first national framework for planning

2013	Waste management plan for England (DEFRA 2013)	The most recent waste management plan for England
2014	National Planning Policy for Waste (DCLG 2014)	
	Statistics on waste managed by local authorities in England in 2013-14 (DEFRA 2014)	A 'waste from households' calculation was introduced to create a consistent reporting on recycling rates from all local authorities across the UK
2015	The 2030 Agenda for Sustainable Development (UN 2015)	Goals 12 and 14 linked to waste management
	Closing the loop - An EU action plan for the Circular Economy (European Commission 2018)	A recycling target for municipal waste of 65% by 2035. By 2035 the amount of municipal waste landfilled must be reduced to 10% or less of the total amount of municipal waste generated.
2017	Agenda 2030 - the global goals for sustainable development (DFID 2017)	Goals 12 and 14 linked to waste management
2018	Our waste, our resources: a strategy for England (DEFRA 2018)	Third waste strategy for England launched
2019	National Planning Policy Framework (Ministry of Housing, Communities & Local Government 2019)	Revised NPPF

Table 2: Evolution of waste policy in England⁸

In the 1990s, there was broad consensus that waste management was about “the reduction of waste at source, by understanding and changing processes to reduce and prevent waste” (Environment Agency 1998). However there was lack of clarity in how this overall definition would translate into the commercial, industrial and domestic sectors (Philips et al 1998). The White Paper, ‘Making Waste Work: A Strategy for Sustainable Waste Management in England and Wales’ (DOE 1995) in particular starts to talk about the role of various stakeholders in waste management including central government, local authorities as well as industry partners. For instance, the industry partners expecting to meet targets and in adopting waste minimisation as central within their working practices. At the national level, the central government with the running of the Environmental Technology Best Practice programme (ETBPP) by providing good practice guide/waste audit mechanisms to support various industries. At the sub-national level:(1) the central government department, the Environment Agency prepared 5 year Local Environmental Agency plans (LEAPs) to manage the

⁸ Other relevant reports/publications include Commission of the European Communities (1989); DEFRA (2000a, 2005, 2006, 2007b, 2012); EA (2016); DETR (1997; 1998; 1999); EA (1997b, 1997c, 2003)

implementation of waste policy by setting up regional waste minimisation clubs; (2) in some regions, an advisory group was set up to provide free advice on waste and environmental matters, for example, the East Midlands Advisory Group on the Environment (EMAGE) jointly funded by Department of Trade and Industry (DTI) and the Department of the Environment (DoE) (Philips et al 1998).

Not much has changed in terms of organisational structure for waste management in England. The waste strategy 2018 document adopts a similar approach to previous waste strategies in that it presents the benefits for sustainable waste management, draws on the 'waste hierarchy' as the core approach to waste management, identifies key targets and lists important criteria with which to monitor progress. Key proposals particularly for the household waste sector include: (1) to change the current postcode recycling lottery system (where there is variation across local authorities in terms of what materials they recycle) and to bring a unified system across England; (2) require waste collection authorities to offer separate collections for food waste; (3) proposal for a Deposit Return Scheme for recycling cans, and plastic and glass bottles (Harrabin 2018). There is also an interesting mention of developing a new 'food surplus and waste hierarchy' (Grundon 2019), the current version, which DEFRA (2018c) outlines as having the following levels: (1) Prevent surplus and waste in your business; (2) Redistribute surplus food; (3) Make animal feed from former food; (4) Recycle your food waste - anaerobic digestion; (4) Recycle your food waste - composting; (5) Recycle your food waste - landspreading; (6) Incinerate to generate energy; (7) Incinerate without generating energy; (8) Send to landfill or sewer. Also, in relation to gradually embedding a 'circular economy' model, the latest waste strategy is suggesting that businesses design out waste for instance through an Extended Producer Responsibility (EPR) system where costs of packaging waste will be met by businesses (UK Gov 2019).

Discussion

The commentary points out that waste management practices in England have gone from strength to strength. But equally we are at an important crossroads and how we navigate this space will affect waste management practices in the decades to come. Firstly, in 2015, an EU action plan for the circular economy, titled 'closing the loop' was launched. Although it talks of recycling targets (e.g. that 65% of municipal waste is to be recycled by 2035), more importantly, the action plan points to a possible reframing of waste as a 'end-user' problem especially by bringing the notion of 'circular economy' to the fore. A 'circular economy' is one where waste need not exist instead is 'designed out' (Ellen McArthur Foundation 2013). In other words, products are designed with a view to how they would be taken apart after its functional life and then reused. An example would be to lease household products such as washing machines, which would benefit both the manufacturer (who would roughly make an additional profit with many of the working parts returning to them at the end of the lease cycle) and the consumer (who would save per wash cycle during the period of lease).

An emphasis on the 'circular economy' has the potential to shift the focus from 'sustainable consumption' to 'sustainable production'. This would then potentially result in a re-scaling of waste management roles and responsibilities, from individuals and local authorities, to local and international businesses. What would that mean for the future role of local authorities as WCAs (waste collection authorities) and WDAs (waste disposal authorities)? Currently, the local authorities have had a central role in implementing the goals for sustainable development

for instance by setting out targets for recycling, separating households collections into compostable and recyclable materials, raising awareness for promoting recycling (WRAP 2009; Cole et al 2014). Such intervention is seen as necessary to link up effectively with global level efforts, such as the Brundtland Report 'Our Common Future' (WCED 1987) identifies 'better waste management practices' as one of the elements critical for the achievement of 'sustainable development' (Cole et al 2014). We have also seen that 'self-sufficiency' and 'proximity' principles when viewed together present a complex dilemma for waste management practices especially for commercial and industrial sector as it is difficult to draw 'rigid' boundaries on the flows of materials within a country.

But what about the household sector? The impact of the circular economy for instance on the definition of waste has important implications as it engages with two key questions: (1) when does a substance or object qualify to be termed as 'waste'; (2) when/how does a substance or object cease to be 'waste'? (DEFRA 2012). The former considering whether in relation to the particular substance or object, waste was 'designed out' as in a circular economy and if not the more likelihood it would qualify as 'waste'. And the latter taking into account the range of recovery options that could be applied to convert 'waste' to 'non-waste'. Especially in a circular economy, in theory, household waste (except food and other organic waste) should cease to exist as 'waste will be designed out'. How will that potentially affect waste collection and disposal mechanisms that we currently have now? It might lead to two types of relationships: (1) one between households and businesses, where a circular economy is in place and at the end of useful life of a product, the 'producer collects' principle applies? (2) and the second between households and local authorities, for disposal of organic/food wastes from households. What it also means is that there is likely to be a shift in the use of targets from local authorities to businesses in the long run. That is of course, if and when the circular economy, fully dominates.

Conclusions

This commentary is a reminder that future 'waste policy' will need to strike a better balance between 'sustainable production'⁹ and 'sustainable consumption'¹⁰. However more thinking is needed around the potential shift to a 'circular economy' model and how that is likely to shape things on the ground. It is also not clear how/whether the notion of 'circular economy' will challenge the dominant discourse of 'waste hierarchy', which has been the basis for sustainable waste and resource management practices in the UK and in the EU for the last two decades. The rescaling of responsibilities and targets from local authorities to local/national/international businesses also seems likely if/when the 'circular economy' starts to get embedded. In conclusion it is important to note that despite a decade in the making, key elements of 2018 waste strategy effectively builds from waste policy since the 1990s and is clearly heading in the right direction.

References

BEIS (2017) The Clean Growth Strategy: Leading the way to a low Carbon Future. London: Department for Business, Energy and Industrial Strategy.

⁹ e.g. by referring to phrases such as 'sustainable and efficient use of natural resources' (DEFRA 2018a)

¹⁰ e.g. through the use of 'minimising waste' (DEFRA 2018a)

- Cabinet Office (2002) Waste not, want not: a strategy for tackling the waste problem in England. London: HMSO.
- Cole, C., Osmani, M., Quddus, M., Wheatley, A. & Kay, K. (2014) Towards a zero waste strategy for an English local authority. *Resources, Conservation and Recycling*, 89, pp.64-75
- Commission of the European Communities (1997) Community Strategy for Waste Management. Luxembourg: Publications Office of the European Union.
- Cooper, J. (1995) A strategy that's easy to rubbish? *Town and Country Planning*, 64(4), p.102
- Cowell, R., Flynn, A. & Hacking, N. (2017) Assessing the impact of Brexit on the UK waste resource management sector. Accessed from <https://orca.cf.ac.uk/103020/1/R%20Cowell%202017%20Post-Brexit-Waste-Report.pdf>
- Davies, S. (2007) Politics and markets: the case of UK municipal waste management. Working paper 95, School of social sciences, University of Cardiff. ISBN: 978-1-904815-66-2
- Davoudi, S. (1999) A quantum leap for planners. *Town and Country Planning*, January 1999, p.20
- Davoudi, S. & Evans, N. (2003) Strategic waste planning and the role of regional technical advisory boards. *Town and Country Planning*, February 2003, pp.49-52
- DCLG (2014) National Planning Policy for Waste. London: HMSO.
- DEFRA (2000a). Waste strategy guidance: best value and waste management. London: Department for Environment, Food and Rural Affairs.
- DEFRA (2000b). Guidance on municipal waste management strategies. London: Department for Environment, Food and Rural Affairs.
- DEFRA (2005). Guidance on municipal waste management strategies. London: Department for Environment, Food and Rural Affairs.
- DEFRA (2006). Review of England's Waste Strategy: A consultation document. London: Department for Environment, Food and Rural Affairs.
- DEFRA (2007a). Waste Strategy for England. London: Department for Environment, Food and Rural Affairs.
- DEFRA (2007b). Stakeholder engagement strategy on better waste regulation. London: Department for Environment, Food and Rural Affairs.
- DEFRA (2012) Guidance on the legal definition of waste and its application - August 2012. London: Department for Environment, Food and Rural Affairs.
- DEFRA (2018a) A green future: our 25 year plan to improve the environment. London: Department for Environment, Food and Rural Affairs.
- DEFRA (2018b) Digest of waste and resource statistics: 2018 edition. London: Department for Environment, Food and Rural Affairs.
- DEFRA (2018c) Food and drink waste hierarchy: deal with surplus and waste. Accessed from <https://www.gov.uk/government/publications/food-and-drink-waste-hierarchy-deal-with-surplus-and-waste/food-and-drink-waste-hierarchy-deal-with-surplus-and-waste>
- DEFRA (2019) UK statistics on waste. Accessed from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/784263/UK_Statistics_on_Waste_statistical_notice_March_2019_rev_FI_NAL.pdf

- de Sadeldeer, N. (2002) Environmental principles: from political slogans to legal rules. Oxford: Oxford University Press.
- DETR (1997) Sustainable Waste Management: Report of the Review Group on the Local Authority Role in Recycling. London: Department of the Environment, Transport and the Regions.
- DETR (1998) Less waste more value - a consultation paper on the waste strategy for England and Wales. London: Department of the Environment, Transport and the Regions.
- DETR (1999) A draft waste strategy for England and Wales: Part One and Two - A way with waste. London: Department of the Environment, Transport and the Regions.
- DETR (2000) Waste strategy 2000: England and Wales. London: Department of the Environment, Transport and the Regions.
- Ellen McArthur Foundation (2013) Towards the circular economy: economic and business rationale for an accelerated transition. Cowes: Ellen McArthur Foundation.
- Environment Agency (1997a) Waste Minimisation and Waste Management. An Environmental Good Practice Guide for Industry. Solihull, Environment Agency.
- Environment Agency (1997b) What a waste - reduce, re-use, recycle. Solihull, Environment Agency.
- Environment Agency (1997c) Sustainable Development - The Agency's Contribution to Sustainable Development Waste Minimisation. Solihull, Environment Agency.
- Environment Agency (2003) Waste Incineration In Waste Management Strategies. Solihull, Environment Agency.
- Environment Agency (2016) Regulating the waste industry - evidence summaries. Bristol: Environment Agency
- Fourner, R. & Lloyd, J. (1995) A new dawn in waste disposal. Town and Country Planning, 64(2), p.60
- Gilliespie, A. (2015) Waste Policy. Bristol: Edward Elgar.
- Grundon (2019) Can the Government's new Resources and Waste Strategy really help reduce waste? Accessed from <https://www.grundon.com/can-the-governments-new-resources-and-waste-strategy-really-help-reduce-waste/>
- Hall, D. (2006) Waste management companies in Europe. A report commissioned by the European Federation of Public Services Union. Accessed from https://gala.gre.ac.uk/id/eprint/3615/1/PSIRU_9615_-_2006-02-G-EUwaste.pdf
- Harrabin, R. (2018) Waste plan floats bottle deposit scheme. 18 December 2018, BBC. accessed from <https://www.bbc.co.uk/news/science-environment-46594380>
- OECD (1998) Guidance document for distinguishing waste from non-waste. Paris: OECD
- Patterson, A. & Theobald, K. (1996) Local Agenda 21, compulsory competitive tendering and local environmental practices. Local Environment, 1(1), pp.7-19.
- Phillips, P. S., Gronow, B. & Read, A. D. (1998) A regional perspective on waste minimisation: a case study of the East Midlands of England. Resources, Conservation and Recycling, 23, pp.127-161.
- Smith, L. & Bolton, P. (2018) Household recycling in the UK. House of Commons Library, Number CBP 7285, 12 September 2018. London: House of Commons Library.
- Stott, M. (2008) Love food, hate waste. Town and Country Planning, 77(3), p.151.
- Sustainability Exchange (2019) Waste management roles and responsibilities: England and Wales. Last accessed on 24 June 2019, from https://www.sustainabilityexchange.ac.uk/england_and_wales_MOVED_20160712.

- The Planning Portal (2019) Waste Planning Authority, accessed from https://www.planningportal.co.uk/directory_record/589/waste_planning_authority_wpa
- The Planning Service (2002) Planning Policy Statement 11 (PPS 11) Planning and Waste Management. Belfast: The Planning Service.
- Tunesi, S. & Rydin, Y. (2010) The way forward for waste management. Town and Country Planning, 79(5), p.241-243.
- UK Gov (2019) Government sets out to overhaul waste system. Accessed from <https://www.gov.uk/government/news/government-sets-out-plans-to-overhaul-waste-system>
- WCED (1987) Our Common Future. Oxford: Oxford University Press.
- WRAP (2009) Alternate weekly collections guidance. Banbury: The Waste and Resources Action Programme.
- WRAP (2017) A framework for greater consistency in household recycling in England. Banbury: The Waste and Resources Action Programme