INFORMATION NOTE

Waste management policy in the United Kingdom

1. Introduction

1.1 In the United Kingdom ("UK"), a vast majority of municipal solid waste "("MSW") was handled by landfilling during the last century due to its persistently low handling cost. This situation started to change in the 1990s, when the European Union ("EU") imposed a number of obligatory requirements on its member states to reduce their reliance on landfilling. As a result, the UK saw marked reduction in the proportion of MSW sent to landfills from 86% in 1996 to 49% in 2011.[1] Over the same period, the proportion of recycling/composting[2] increased from 7% to 39%, and that of incineration rose from 7% to 12%.

1.2 This information note aims to provide an overview of waste management policy in the UK, with special reference to thermal waste treatment technologies in terms of their development, energy recovery process, monitoring and enforcement measures, and the extent of public acceptance of the technology in the country.[3]

---

1 See Eurostat (2014).

2 Composting means the biological treatment of biodegradable waste resulting in a recoverable product.

3 Under the arrangement of devolution, waste policy is a devolved matter in the UK, allowing Scotland, Wales and Northern Ireland to be responsible for their strategy and policy relating to waste management. Notwithstanding their differences in specific policy measures, these regions are subject to the same waste management framework set up by the EU. In order to avoid duplication, this information note has made reference to the case of England for the study of regulatory framework and monitoring and enforcement measures governing the waste management policy in the UK.

2. Regulatory framework for waste management policy

Responsible authorities

2.1 The Department for Environment, Food and Rural Affairs ("DEFRA") is an UK government department responsible for formulating policy and regulations on areas such as environmental, food and rural issues. DEFRA administers the environmental policy in England through the Environment Agency, which is a non-departmental public body tasked with (a) monitoring and enforcing legislation on the overall waste management in England, and (b) regulating waste management activities in England including the transport, treatment and disposal of waste.[4]

2.2 At the local level, local authorities are also responsible for enforcing waste legislation as well as formulating local waste management plans to foster good waste management in their communities. Local authorities are also required to identify sites suitable for constructing new or enhanced waste management facilities and grant planning permission for the construction projects.

Relevant regulations

2.3 In the UK, waste management is primarily governed by the EU's *Waste Framework Directive*. The Directive is transposed into England and Wales through the *Waste (England and Wales) Regulations*, which require the responsible authorities to prepare a waste prevention programme and a waste management plan.[5] The Regulations also set out the duties of planning and waste collection authorities, require businesses to apply the waste hierarchy, and introduce a two-tier system for waste carrier and broker registration.[6]

---

4 Scotland, Wales and Northern Ireland have also established their specific authorities for waste management. For example, Northern Ireland has established the Department of the Environment for the implementation of waste management policy. It carries out its functions through the Northern Ireland Environment Agency which regulates waste management licensing and law enforcement.

5 Scotland and Northern Ireland have separate regulations to transpose the requirements of the *Waste Framework Directive*.

6 Waste carriers transport waste as part of their business, which include, for example, carpet fitters carrying old carpets they have removed and plumbers carrying old baths or sinks they have removed. For waste brokers, they handle, transport, recycle or dispose of any waste on behalf of another business. Examples of waste brokers include letting agencies or shopping centre managers who arrange for the removal of waste from rented accommodation or premises.

2.4 Waste incineration plants[7] in the UK are specifically governed by the *Industrial Emissions Directive* issued by the EU which commits its member states to controlling and reducing the impact of industrial emissions on the environment. This Directive is implemented in England and Wales through the *Environmental Permitting (England and Wales) Regulations*[8], which stipulate a single regulatory framework for facilities carrying out thermal waste treatment. The Regulations also provide for a streamlined permitting system containing standard rules in terms of applying for, changing, extending and surrendering an environmental permit. Furthermore, they set out the powers and functions of the regulators and an appeal system to handle complaints against the decisions of granting the environmental permits.

3. Waste treatment in the United Kingdom

3.1 The UK is a member state of the EU and as such, its waste management has been developing along with the evolving European legislation. As early as in 1995, the concept of waste hierarchy premised on two EU Directives was proposed in the UK as the main conceptual policy framework for its sustainable waste management. The current adopted hierarchy accords top priority to waste prevention, followed by re-use, recycling and other types of recovery (such as thermal waste treatment with energy recovery), with disposal such as landfill as the last resort.

---

7 Under the *Environmental Permitting (England and Wales) Regulations*, the term "waste incineration plant" broadly covers facilities carrying out thermal treatment of waste, including incineration by oxidation of waste and other thermal treatment processes (e.g. pyrolysis and gasification) in so far as the substances resulting from the treatment are subsequently incinerated.

8 In Scotland and Northern Ireland, the *Industrial Emissions Directive* was brought into effect respectively by the *Pollution Prevention and Control (Scotland) Regulations 2012* and the *Pollution Prevention and Control (Industrial Emissions) Regulations (Northern Ireland) 2013*.

3.2 The subsequent implementation of the EU's *Landfill Directive* in 1999 requires all EU member states, including the UK, to reduce the use of landfill and develop alternative disposal methods. The targets for the UK are to reduce the biodegradable MSW going to landfill to 75% of the amount generated in 1995 by 2010, 50% by 2013 and 35% by 2020. The first two targets have been met accordingly. The *Landfill Directive* has also set the stage for the implementation for Landfill Allowances Trading Scheme[9] and escalation of landfill tax[10], resulting in a substantial reduction of the use of landfilling for processing MSW.

3.3 With the *Landfill Directive* in place, more MSW has been diverted from landfilling to recycling or incineration. The implementation of the *Waste Framework Directive* in 2008 has further underpinned the importance of recycling in the waste management policy. In particular, the Directive requires all EU member states to (a) recycle or prepare for reuse at least 50% of certain household waste by 2020 and (b) reuse, recycle or recover at least 70% of non-hazardous construction and demolition waste by 2020.

[9] In England, the Landfill Allowances Trading Scheme began in 2005 and ended in 2013. The scheme allocated landfill allowances to each waste disposal authority which they could trade the allowances among themselves. These allowances conveyed the right for a waste disposal authority to landfill a certain amount of biodegradable municipal waste in a specified scheme year. Similar schemes are separately implemented in Scotland, Wales and Northern Ireland.

[10] The landfill tax was implemented in 1996 and levied at £7 (HK$85) for active waste (mainly biodegradable) and £2 (HK$24) for inert waste. The government increased the landfill tax for active waste in 1999 in an effort to drive the diversion of waste from landfilling. The level of such tax has been on the increase since then and currently stands at £72 (HK$873) per tonne. In contrast, the landfill tax for inert waste has remained virtually unchanged since its introduction and is currently levied at £2.5 (HK$30).

4. Development of thermal waste treatment

4.1 Incineration is the most common thermal waste treatment adopted in the UK. It emerged in the late 19th century when the first incinerator was built in Nottingham in 1874. However, the incineration plants were largely unregulated until the implementation of two Directives by the European Economic Community (the forerunner of the EU) in 1989 to regulate MSW incineration. These two Directives[11] set out tight controls on emissions (such as dioxins, acid gases, nitrogen oxides, heavy metals and dust) from incineration plants, as well as regulations governing the prevention of air pollution from new plants. Many pre-1990s incineration plants closed down because of the more stringent regulatory framework, while the remaining ones were forced to upgrade to meet the obligatory requirements.

4.2 In the late 1990s, the implementation of the EU's *Landfill Directive* and the resultant increase in landfill costs resulted in a wider application of waste incineration in the UK. In November 2013, there were 44 incineration plants in operation or under construction in the country with a total incineration capacity of about 10 million tonnes per annum of MSW and other waste.[12] These plants were built with an annual capacity ranging from 3 500 tonnes to 850 000 tonnes, reflecting the difference in their investment cost, waste catchment area, distance from wider waste sources and site constraints.

4.3 In 2011, incineration accounted for about 3.8 million tonnes or 12% of MSW treated in the UK.[13] The percentage share was nearly doubled the corresponding figure in 2000. However, it is still lagging behind its European neighbouring countries such as Denmark, Sweden and the Netherlands, where waste incineration accounts for more than 30% of the MSW treated in the country.[14]

---

11 See the *Council Directive 89/429/EEC of 21 June 1989 on the reduction of air pollution from existing municipal waste-incineration plants*, and the *Council Directive 89/369/EEC of 8 June 1989 on the prevention of air pollution from new municipal waste incineration plants*.

12 See Eunomia Research & Consulting (2013).

13 See Eurostat (2014).

14 Ibid.

4.4 Driven by the need to reduce dependence on landfilling, local authorities have also been exploring alternative thermal waste treatment technologies – Advanced Thermal Treatments ("ATT") – for treatment of MSW. In the UK, most of the facilities adopting ATT are still under planning or construction while a few are operating as technology demonstration sites. These ATT facilities tend to use either pyrolysis and/or gasification, although some adopt plasma gasification instead. Their permitted annual capacity is typically less than 60 000 tonnes,[15] which is generally smaller than those of incineration plants. In addition, most of the ATT facilities can only treat pre-processed residual MSW, such as refuse derived fuel.[16]

Energy recovery

4.5 The use of thermal waste treatments allows the recovery of energy from waste in the form of electricity and/or heat. In the UK, many facilities solely produce electricity as it can be easily distributed and sold via the national grid. In contrast, there are few facilities solely producing heat as the users need to be local to the facilities and a dedicated distribution system is required. Apart from those solely producing heat or electricity, there are also facilities using combined heat and power ("CHP") applications.[17] The use of CHP helps to increase the overall energy efficiency. CHP facilities can also be designed to meet the variation in heat and electricity demand and hence maintain optimum levels of efficiency.

[15] Nevertheless, a large plasma gasification plant capable of processing 350 000 tonnes per annum will commence operation in 2014.

[16] Refuse derived fuel is a pre-processed fuel produced by shredding and dehydrating MSW, which consists largely of combustible components such as plastic and biodegradable waste.

[17] For example, a CHP plant in Sheffield can produce up to 60MW of heating power and 19MW of electrical power. The plant is connected to the largest district heating network in England.

4.6 In the UK, energy from waste is regarded as a valuable domestic energy source. For example in England, DEFRA published the Government Review of Waste Policy in England 2011 in June 2011 which recognized the importance of energy from waste in helping the UK to meet its renewable energy targets[18], diversify energy supply, and provide economic opportunities. The government paper also forecast that increasing waste treatment infrastructure could boost renewable electricity generated from waste in England through combustion technologies from 1.2 terawatt hours in 2011 to 3.1-3.6 terawatt hours by 2020.

4.7 To drive the growth in energy production from waste, the UK government has provided a number of financial incentive schemes to waste treatment operators, particularly those adopting new technologies and generating energy outputs beyond electricity. These schemes include the Renewables Obligation that provides financial incentives for operators of CHP and ATT to produce renewable energy[19], and the Renewable Heat Incentive that provides a subsidy for a period of 20 years to eligible non-domestic heat generators who move away from fossil fuels to renewable energy for heating.[20]

---

[18] The UK is legally required by the EU's *Renewable Energy Directive* to source 15% of its total energy from renewable sources by 2020. This will require an annual output of around 227 terawatt hours of renewable energy by 2020. Terawatt hour is a unit of energy used for calculating the quantity of electrical energy produced. See Department for Environment, Food and Rural Affairs (2013b).

[19] Under the Renewables Obligation, licensed electricity suppliers are required to acquire a specific and annually increasing percentage of the electricity they supply from renewable sources. This obligation requires them to obtain a sufficient number of Renewables Obligation Certificates ("ROCs") issued by Ofgem (the UK energy regulator) to renewable electricity generators. While those electricity suppliers who do not produce renewable energy can purchase ROCs from those who do so, the ROCs themselves have a market value that can add significantly to the income of a renewable energy supplier. The CHP and ATT operators can benefit from the above scheme as they can receive 1 ROC/MWh and 2 ROCs/MWh respectively from energy from waste.

[20] Generators of renewable heat for non-domestic buildings can be paid for a period of 20 years up to 8.7p/kWh (for the first 1 314 hours) and 2.6p/kWh (for the remaining hours) for the heat which they generate and use themselves.

Monitoring and enforcement measures

Planning permission

4.8 In England[21], almost all developments of thermal waste treatment plants are required to obtain planning permissions from local authorities. In granting the permissions, local authorities will consider various factors such as location of the facility, air emissions, and any negative impacts on the local communities.

Environmental permit

4.9 In general, thermal waste treatment plants are required to apply for environmental permits issued by the Environment Agency,[22] which will consult key stakeholders such as the local communities and relevant local authorities before making any decision. The Environment Agency only issues the environmental permit when it is satisfied that the plant concerned will be operated in an efficient way that will protect the environment and meet all legal requirements.

Reporting

4.10 Operator of a permitted facility is required to monitor emissions at given times and report the results to the Environment Agency. To enforce the compliance with the permit, the Environment Agency regularly inspects installations, reviews monitoring techniques and assesses monitoring results to measure the performance of the plant. It also carries out independent monitoring of emissions once a year or undertakes audit of operator's reports, as well as making spot checks.

[21] The monitoring and enforcement measures applied in England are similar to those adopted in Scotland, Wales and Northern Ireland.

[22] Small-scale incineration plants apply for their environmental permits from local authorities.

Prosecution and penalty

4.11 The Environment Agency may revoke the environmental permits issued to thermal treatment facilities if the latter contravene the permit conditions. Facility operators may also be prosecuted if they violate the *Environmental Permitting (England and Wales) Regulations.* For the most serious offences, conviction in a magistrates' court carries a fine of up to £50,000 (HK$606,500) and a maximum imprisonment of 12 months.

Public acceptance

4.12 In the UK, developing new facilities that apply thermal waste treatment (particularly incineration) within a locality has always aroused public concerns over the possible negative health and environmental effects from burning waste. This remains the case even after the implementation of the *Industrial Emissions Directive* in 2010 which imposes stringent restrictions on the emission levels of waste incineration plants in order to protect human health and the environment. As seen in South Hatfield and Haresfield, public resistance might affect the progress of a waste treatment plant project and its ultimate development.

4.13 In South Hatfield, the proposal of building an incineration plant has led to the involvement of the Secretary of State for Communities and Local Government, who ultimately decided to "call in" the planning application for his own determination.[23] This proposal was previously granted planning permission by the Hertfordshire County Council[24] in October 2012, notwithstanding the public concerns over the possible increase in pollution and traffic after the operation of the incineration plant. The case is currently under the investigation by the inspector appointed by the Secretary of State and a decision will be made by May 2014.[25]

[23] The Secretary of State for Communities and Local Government has the power to take over ("call in") planning applications from the local authority. If he or she decides to call in a planning application, an inspector will be appointed to carry out an inquiry into the proposal.

[24] South Hatfield is a town in the county of Hertfordshire.

[25] See Hatfield Anti Incineration Blog (2014).

4.14 In Haresfield, the development of an incineration project was voted down at the planning stage by the councillors of the Gloucestershire County Council[26] in March 2013. Earlier on, the councillors received 4 000 letters from the public protesting against the size and location of the incineration plant and the health and environmental impacts of the project. Following the Council's rejection, the project developer has appealed to the Secretary of State for Communities and Local Government who has appointed an inspector to investigate the case. It is expected that the Secretary of State will make a decision in the latter half of 2014.[27]

[26] Haresfield is a village in the county of Gloucestershire.
[27] See Gloucestershire County Council. (2013)

References

1. Air Products. (undated) *Air Products Tees Valley Renewable Energy Facility*. Available from: http://www.airproducts.co.uk/microsite/uk/teesvalley/ [Accessed February 2014].

2. Department for Environment, Food and Rural Affairs. (2011) *Government Review of Waste Policy in England 2011*. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69401/pb13540-waste-policy-review110614.pdf [Accessed February 2014].

3. Department for Environment, Food and Rural Affairs. (2013a) *Advanced Thermal Treatment of Municipal Solid Waste*. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/221035/pb13888-thermal-treatment-waste.pdf [Accessed February 2014].

4. Department for Environment, Food and Rural Affairs. (2013b) *Energy from Waste: A guide to the debate*. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/221042/pb13892-energy-from-waste.pdf [Accessed February 2014].

5. Department for Environment, Food and Rural Affairs. (2013c) *Environmental Permitting Guidance, Core guidance: For the Environmental Permitting (England and Wales) Regulations 2010*. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/211852/pb13897-ep-core-guidance-130220.pdf [Accessed February 2014].

6. Department for Environment, Food and Rural Affairs. (2013d) *Incineration of Municipal Solid Waste*. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/221036/pb13889-incineration-municipal-waste.pdf [Accessed February 2014].

7. *Environment Agency*. (2014) Available from: http://www.environment-agency.gov.uk/ [Accessed February 2014].

8. Eunomia Research & Consulting. (2013) *Residual Waste Infrastructure Review: High-level Analysis - Issue 5*. Available from: http://www.eunomia.co.uk/documents/Eunomia_Residual_Waste_Infrastructure_Review_High-level_Version.pdf [Accessed February 2014].

9. European Environment Agency. (2013) *Municipal Waste Management in the United Kingdom*. Prepared by David Watson ETC/SCP.

10. Eurostat. (2014) *Database: Municipal Waste.* Available from: http://epp.eurostat.ec.europa.eu/portal/page/portal/waste/data/database [Accessed February 2014].

11. Gloucestershire County Council. (2013) *Planning appeal details confirmed*. Available from: http://www.gloucestershire.gov.uk/article/115617/Planning-appeal-details-confirmed [Accessed February 2014].

12. *Hatfield Anti Incineration Blog*. (2014) Available from: http://blog.hatfield-anti-incineration.co.uk/#home [Accessed February 2014].

13. United Kingdom Without Incineration Network. (2014) *Table of Potential, Existing and Prevented Incinerators*. Available from: http://ukwin.org.uk/resources/table/ [Accessed February 2014].

Prepared by Shirley TAM
26 February 2014
Tel: 2871 2146