DYNAMIX policy mix evaluation

More efficient use of aggregates in the UK
AUTHORS

Ms Martha Bicket and Mr Roger Salmons, PSI

With contributions by:
Ana Faria Lopes, IEEP

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DYNAMIX PROJECT PARTNERS
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List of Abbreviations

AL Aggregates Levy
ALSF Aggregates Levy Sustainability Fund
Defra Department for Environment, Food and Rural Affairs
DETR Department of the Environment, Transport and the Regions
LFT Landfill Tax
QPA Quarry Products Association
UK United Kingdom
WTP Willingness to pay
1 Resource/Issue

Name of resource targeted (or focus of the case study, if the policy mix is broader than the specific resource(s) we have decided to analyse).

Construction materials, with a specific focus on aggregates.

Aggregates are defined here to include sand, gravel and crushed rock, along with associated substances such as those that naturally occur mixed with sand, gravel and crushed rock (HM Revenue and Customs 2011). Aggregates are extracted from land or dredged from water (‘primary aggregates’), produced as a by-product of other activities (‘secondary aggregates’), or recycled from construction and demolition waste (‘recycled aggregates’).

2 Geographical area of policy mix coverage

Country name, and region or city if appropriate (if policy mix is applied regionally or locally)

The policy mix explored in this case study covers the United Kingdom (UK).

3 Policy context

3.1 Needs assessment: The environmental problem /resource challenge

What is the environmental problem/concern (consider both quantity and quality), e.g. soil erosion, excessive use of non-renewable or renewable resources and the crossing of environmental thresholds/tipping points for impact, resource scarcity concerns?

Are there any economic or social problems related to the issue and environmental problems – e.g. is there important price volatility, (risk of) unavailability of resources for the economy or society?

Who is the target group affected that have been, are or will be beneficiaries of the policy response?

The policy mix in question addresses two aspects of the use of aggregates in the UK: supply and disposal. The UK Landfill Tax, introduced in 1996, primarily targets disposal issues, while
the UK Aggregates Levy, introduced in 2002, primarily targets the supply of aggregates\(^1\). Key research around the environmental impacts of the supply and disposal of aggregates has largely been grouped around the background work to the introduction of each of these two policies.

The environmental problem as identified by research in the run up to the introduction of the Landfill Tax (1996)

The external environmental costs from landfill were estimated in a 1993 UK Government-funded study to include: dis-amenity; contribution to global warming risks through the release of carbon dioxide and methane; damage from leachate; pollution and accidents associated with the transportation of waste to landfill (Department of the Environment 1993).\(^2\) Estimated external costs to the environment from landfill are tabulated in Table 1. Costs associated with road congestion, road wear and tear, and noise associated with disposal were also anticipated but not estimated in the study.

\(^1\) Both the Landfill Tax and the Aggregates Levy can be argued to indirectly affect all stages of the supply chain. For example, taxes on waste may reduce supply (due to substitution and a reduction in demand) and vice versa.
Table 1: UK externality values for landfill

<table>
<thead>
<tr>
<th>Externalities</th>
<th>L₁</th>
<th>L₂</th>
<th>L₃</th>
<th>L₄</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(£/tonne waste other than Disamenity)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global Pollution</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO₂ as C</td>
<td>0.32</td>
<td>0.46</td>
<td>0.32</td>
<td>0.46</td>
</tr>
<tr>
<td></td>
<td>(0.08-0.87)</td>
<td>(0.12-1.27)</td>
<td>(0.08-0.87)</td>
<td>(0.12-1.27)</td>
</tr>
<tr>
<td>CH₄</td>
<td>2.36</td>
<td>1.36</td>
<td>2.36</td>
<td>1.36</td>
</tr>
<tr>
<td></td>
<td>(0.86-5.40)</td>
<td>(0.45-3.32)</td>
<td>(0.86-5.40)</td>
<td>(0.45-3.32)</td>
</tr>
<tr>
<td>Air Pollution</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
</tr>
<tr>
<td>Transport Impacts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pollution¹</td>
<td>0.09</td>
<td>0.09</td>
<td>0.38</td>
<td>0.38</td>
</tr>
<tr>
<td></td>
<td>(0.05-0.16)</td>
<td>(0.05-0.16)</td>
<td>(0.10-1.06)</td>
<td>(0.10-1.06)</td>
</tr>
<tr>
<td>Pollution⁶</td>
<td>0.10</td>
<td>0.10</td>
<td>0.46</td>
<td>0.46</td>
</tr>
<tr>
<td></td>
<td>(0.06-0.17)</td>
<td>(0.06-0.17)</td>
<td>(0.14-1.19)</td>
<td>(0.14-1.19)</td>
</tr>
<tr>
<td>Accidents</td>
<td>0.23</td>
<td>0.23</td>
<td>0.55</td>
<td>0.55</td>
</tr>
<tr>
<td></td>
<td>(0.13-0.33)</td>
<td>(0.13-0.33)</td>
<td>(0.31-0.79)</td>
<td>(0.31-0.79)</td>
</tr>
<tr>
<td>Leachate</td>
<td>0.45</td>
<td>0.45</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>(0-0.9)</td>
<td>(0-0.9)</td>
<td>(0-0.9)</td>
<td>(0-0.9)</td>
</tr>
<tr>
<td>Pollution Displacement²</td>
<td>0.81</td>
<td>0.81</td>
<td>(1.54-0.45)</td>
<td>(1.54-0.45)</td>
</tr>
<tr>
<td></td>
<td>(1.54-0.45)</td>
<td>(1.54-0.45)</td>
<td>(1.54-0.45)</td>
<td>(1.54-0.45)</td>
</tr>
<tr>
<td>Pollution Displacement⁶</td>
<td>1.12</td>
<td>1.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.92-0.69)</td>
<td>(1.92-0.69)</td>
<td>(1.92-0.69)</td>
<td>(1.92-0.69)</td>
</tr>
</tbody>
</table>

= Total⁷ Range Mean⁷                   | 1.12 to 7.66 | -0.80 to 4.63 | 1.35 to 9.02 | -0.57 to 6.00 |
|                                      | (3.45) | (1.33) | (4.06) | (1.94) |
= Total⁸ Range Mean⁸                   | 1.13 to 7.66 | -1.17 to 4.91 | 1.58 to 9.15 | -0.91 to 5.89 |
|                                      | (3.45) | (1.03) | (4.14) | (1.72) |

Note: 1. L₁ is existing urban landfill without energy recovery as described in E3.11.
2. L₂ is new urban landfill with energy recovery (see E3.11).
3. L₃ is existing rural landfill without energy recovery (see E3.11).
4. L₄ is new rural landfill with energy recovery (see E3.11).
5. Conventional air pollution including damage to the UK only.
6. Conventional air pollution including damage to the UK and the rest of the ECE region.
7. The mean value shown for the total, and for pollution displacement, transport and global impacts reflects specific statistical techniques used to capture the uncertainty in CH₄ and CO₂ estimates. The mean does not therefore equal the midpoint of the range values.

These estimates omit any disamenity costs which may well be significant.


The environmental problem as identified by research in the run up to the introduction of the Aggregates Levy (2002)

Two reports were carried out by London Economics for the then Department of the Environment, Transport and the Regions (DETR) exploring the externalities associated with the supply of aggregates in the UK (London Economics, and Department of the Environment Transport and the Regions 1999; London Economics, Spash and Department of the Environment Transport and the Regions 1998).³ ⁴

Using existing data and contingent valuation analysis, these studies attempted to estimate the value of the externalities associated with the supply of aggregates in the UK. Impacts
identified included **noise, dust, traffic, visual impacts, and blasting, ground water, surface water and loss of amenity.** Attempts were also made to explore the impacts on archaeology, heritage and wildlife.

Table 2 illustrates the relative degree of different impacts on the environment from various aggregates sources (hard rock quarries; sand and gravel quarries; marine dredging; and recycling).

**Table 2: UK summary of potential environmental impacts of aggregate sources**

<table>
<thead>
<tr>
<th>Source</th>
<th>Transport</th>
<th>Dust</th>
<th>Noise</th>
<th>Blasting</th>
<th>Visual</th>
<th>Water</th>
<th>Wildlife</th>
<th>Heritage</th>
<th>Amenity</th>
<th>Restoration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard rock quarry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand and gravel quarry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>n/a</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marine dredging</td>
<td>n/a</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>n/a</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recycling</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td></td>
<td>n/a</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>n/a</td>
</tr>
</tbody>
</table>

The final, conservative estimates of national average willingness to pay (WTP) per tonne for averting the environmental impacts of the supply of aggregates were (London Economics, and Department of the Environment Transport and the Regions 1999):\(^5\)

- £0.34 per tonne for the local impact of hard rock quarries not located in National Parks;
- £1.96 for the local impact of sand and gravel quarries; and
- £10.52 for the non-local impact of quarrying in National Parks.

Researchers also attempted to estimate the value of externalities that arise from the transportation of aggregates from source to site of use (e.g. **traffic noise, pollution and congestion**) but, given the high additional costs of transportation relative to the cost of aggregates, this impact was considered limited, with most quarries selling aggregates within a radius of no more than 50km (London Economics, Spash and Department of the Environment Transport and the Regions 1998).\(^6\)

**Current geographic scope**

Below is a map illustrating the geographic scope of aggregates extraction (sand and gravel only) in the UK, indicating a relatively even distribution of sand and gravel resources and active quarry sites across the UK in 2010.
Figure 1: UK sand and gravel resources and active sand and gravel quarry sites, 2010

The core target group of beneficiaries, as identified and sampled in the contingent valuation studies carried out by London Economics (1999; 1998)⁷ ⁸, comprises of residents living near quarries and nation-wide patrons of National Parks. Beneficiaries of the policy response also include those who benefit from revenue generated through the levy and the tax. These include, for example:

- Beneficiaries of the Aggregates Levy Sustainability Fund (ALSF)⁹;
- Employers benefiting from the reductions in National Insurance Contributions (NICs); and

---

⁷ For a partial list of ALSF beneficiaries, see Hansard HC. 2007. 17 October 2007, Column 1071W.
• Those benefiting from indirect effects of the reduction in employer NICs, e.g. those taking up newly-created jobs.

3.2 Policy context and policy needs

What policy challenge(s) did the problem pose and what policy challenges does it still pose?

What is the policy context related to the policy mix being evaluated? What policies have been put in place to address the issues, what policies are currently in place and which ones are already foreseen for future introduction (e.g. to address past, existing and future objectives)?

What sort of policy response did (and does) the problem call for?

Prior to the introduction of the Landfill Tax in 1996, waste disposal management was already subject to increasing legislation from the UK and the EU. In 1993 in the run up to the introduction of the Landfill Tax, relevant legislation included (Department of the Environment and Coopers 1993):8

• The Environmental Protection Act 1990 Parts I and II, including:
  o Waste disposal licensing provisions;
  o Duty of Care for waste producers and handlers; and
  o The registration of waste carriers.

• The Control of Pollution (Special Waste) Regulations 1980.


• A draft EC Directive on landfill.

Prior to the introduction of the Aggregates Levy in 2002, the Quarry Products Association (QPA) proposed a voluntary package of measures as an alternative to a levy, including measures to introduce energy reduction targets and to promote recycled materials with construction clients. In its Regulatory Impact Assessment on the Aggregates Levy, the Government stated that despite amendments to the voluntary package, these were still insufficient, and the implications of the package on Government procurement policy were “unacceptable” (HM Treasury 2000).10

The perceived policy challenge posed by the problem of aggregates disposal consisted of a need to: (i) internalise the environmental costs associated with landfill; (ii) minimise waste; (iii) promote recycling; and (iv) bring UK landfill costs in line with those in nearby countries (Department of the Environment and Coopers 1993).11

Similarly, the policy challenge with regard to the supply of aggregates focused on the internalisation of environmental and social costs associated with the supply of aggregates, especially at the point of extraction.

3.3 Historical performance and projections into the future: Insights on decoupling

What has been the trend vs. GDP (or other economic performance metrics, such as sectoral growth) and what type of decoupling has been achieved?
Figure 2 illustrates the trend in aggregates use against construction output in Great Britain against 1995 baseline levels. While closely correlated pre-1995, the data broadly implies an absolute decoupling effect with an overall increase in construction output in combination with an overall decrease in aggregates consumption over the period 1995-2010. This decoupling is observed against the backdrop of several key relevant policy changes: the introduction of the Landfill Tax in 1996; the Aggregates Levy in 2002; increases in the Landfill Tax and Aggregates Levy in 2008; and another increase in the Landfill Tax in 2009.

Figure 2: Policies and decoupling of aggregates consumption from construction output against a 1995 baseline


4 Drivers affecting change: resource use/ environmental issues

*What are the drivers affecting resource use (driving demand for the resource and leading to resource overuse) or other environmental impacts?*
Figure 3 shows the relative proportions of the sources, processes and end uses of aggregates in the EU as given by the European Aggregates Association (UEPG). Figure 4 and Figure 5 look more specifically at UK output and consumption of aggregates over time.

**Figure 3: Uses of aggregates in the EU**

Figure 4 shows the trend in share of construction output by sector between 1985 and 2010. While a report by the European Environmental Agency (2008) links the reduction in aggregates consumption to a general decline in road-building, new infrastructure accounts for only a small proportion of construction output between 1985 and 2010, while aggregate-consuming activities of new housing and new other (which includes factory, warehouse, school and office construction) together account for a much larger proportion of construction output of approximately 50% of the total. Figure 5 explores the trend over time of aggregates consumption and road infrastructure investment; while the decline in aggregates consumption echoes the decline in road infrastructure investment in the period around 1995, the gentle decline in aggregates consumption between 2000 and 2007 despite an overall increase in investment in road infrastructure during the same period points to the possibility of other contributing factors.

Other potential drivers of growth in the construction and aggregates industry include population change; between 1995 and 2010, the estimated UK resident population grew from 58 million people to 62.3 million (ONS 2011).
5 Situation/trend prior to introduction of policy mix

Information on the baseline situation before the policy mix was introduced.
6 Policies, guidelines and regulations in place prior to the introduction of the policy mix and relevant to the extraction and disposal of aggregates are discussed in section 3.2. The trend in aggregates consumption and construction output prior to the introduction of the policy mix is illustrated in the first part of Error! Reference source not found.

**Description of policy mix(es)**

*This section presents the main policy mix that will be the focus of this ex-post assessment.*

**Lifecycle focus (point of application(s) of the policy mix):** Supply and disposal phases

**Sector(s) covered:** Aggregates

**Scale of application of policy mix:** National Level (UK)

**Implementing body:** HM Revenues and Customs (and others)

**Objective of policy mix:**

The policy mix is composed of 4 instruments (see section 6b), each one with its own objective. Overall, the policy mix aims at internalizing externalities related with aggregates use in the construction sector and encourage their recycling.

6a. Supplementary context questions including elements pertinent to paradigm discussions in DYNAMIX

*Timeline for the different phases of the policy cycle (i.e. rationale and objective-setting; appraisal; implementation and monitoring).*

*Description of the government in power during each of the three following policy phases: rationale and objective-setting; appraisal; and implementation and monitoring.*

*Does the mix contain policies that are unusual or not typical of the country/ies or regional/local administration that implemented it?*
Names of resource efficiency concepts, terms, models, ranking/classification systems, accounting methods etc. used or relied upon in each of the three phases of the policy cycle: rationale and objective-setting; appraisal; and implementation and monitoring, and how they were used (e.g.: ‘waste hierarchy’ – used in objective-setting to link policy objectives to more desirable uses for waste).

Table: 3 List of resource efficiency concepts used

<table>
<thead>
<tr>
<th>Term</th>
<th>Explicit / Implicit</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polluter pays principle</td>
<td>Explicit</td>
<td>(HM Treasury, 2000)¹⁴</td>
</tr>
<tr>
<td>Waste hierarchy</td>
<td>Explicit</td>
<td>HC Deb 23.1.96 c.167</td>
</tr>
</tbody>
</table>

Error! Reference source not found. Evolution of the policy mix throughout its existence – details of the introduction of the first policy tool(s), then all subsequent relevant tools, and related revisions/reforms (e.g. progressive increases in rates applied through economic tools, broader extension of regulation requirements, etc.).

Table 4 lists the key events (e.g. reports, consultations, implementation, and changes) associated with the policy mix. Government changes are noted at a national level.
### Table 4: UK aggregates policy mix and government timeline

<table>
<thead>
<tr>
<th>Date</th>
<th>Relevant tool</th>
<th>Event</th>
<th>Source</th>
<th>Supplementary information</th>
<th>Government</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td></td>
<td>John Major (Conservative party) takes office as Prime Minister.</td>
<td></td>
<td></td>
<td>Conservative party (John Major)</td>
</tr>
<tr>
<td>Nov-94</td>
<td>Landfill Tax</td>
<td>Introduction of a new tax on landfill proposed by</td>
<td>1994 Budget</td>
<td></td>
<td>Conservative party (John Major)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conservative Chancellor Kenneth Clarke.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mar-95</td>
<td>Landfill Tax</td>
<td>Government publishes a consultation paper on a landfill tax:</td>
<td>Seely, 2009&lt;sup&gt;15&lt;/sup&gt;</td>
<td></td>
<td>Conservative party (John Major)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HM Customs and Excise, Landfill Tax - A Consultation Paper, March 1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02-Aug-95</td>
<td>Landfill Tax</td>
<td>In response to consultation responses, the Government proposes in a</td>
<td>Seely, 2009&lt;sup&gt;16&lt;/sup&gt;</td>
<td></td>
<td>Conservative party (John Major)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>press notice that the tax would be charged per tonne of waste, with</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>inert waste subject to a lower rate.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Seely (2009) notes that this change was &quot;generally welcomed, especially by the National Association of Waste Disposal Contractors&quot;.&lt;sup&gt;13&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sep-95</td>
<td>Landfill Tax</td>
<td>A report on the Landfill Tax consultation exercise is published:</td>
<td>Seely, 2009&lt;sup&gt;17&lt;/sup&gt;</td>
<td></td>
<td>Conservative party (John Major)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Landfill Tax - Report on Responses Received to Consultation Paper,</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>September 1995.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28-Nov-95</td>
<td>Landfill Tax</td>
<td>Tax rebates are announced for landfill operators paying trust for</td>
<td>Seely, 2009&lt;sup&gt;18&lt;/sup&gt;</td>
<td></td>
<td>Conservative party (John Major)</td>
</tr>
<tr>
<td></td>
<td>Credit Scheme</td>
<td>remediation of closed landfill sites when liability is unclear,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>research into new waste technologies, and other environmental</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>improvements. Landfill operators are to be able to claim a 90% rebate</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>of their payments to such trusts, up to a maximum of 20% of their</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>landfill tax bill.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>iii</sup> See “Landfill tax to be based on weight”, Financial Times, 3 August 1995
Case study: More efficient use of aggregates in the UK

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Details</th>
<th>Source</th>
<th>Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>28-Nov-95</td>
<td>Landfill Tax</td>
<td>Chancellor Kenneth Clarke announces the introduction of the landfill tax to the House of Commons, to come into effect on 1 October 1996: - a standard rate of £7 a tonne, and - a lower rate of £2 for inactive waste. Clarke describes it as &quot;a tax on waste in order to reduce the tax on jobs. The money raised by the landfill tax will allow for a matching cut in the main rate of employers’ national insurance contributions by a further 0.2 per cent to 10 per cent from April 1997. That will cut the cost of employment by half a billion pounds and will make it cheaper for businesses to create new jobs.&quot;</td>
<td>HC Deb 28 November 1995 cc 1063-1064</td>
<td>Conservative party (John Major)</td>
</tr>
<tr>
<td>Jan-96</td>
<td>Landfill Tax</td>
<td>The House of Commons debates the Landfill Tax.</td>
<td>HC Deb 23 January 1996 c 170</td>
<td>Conservative party (John Major)</td>
</tr>
<tr>
<td>Apr-97</td>
<td>Landfill Tax</td>
<td>Money raised by the landfill tax is used to reduce the main rate of employers’ national insurance contributions by a further 0.2 % percentage points to 10 %.</td>
<td>Seely, 200919 [HC Deb 28 November 1995 cc 1063-1064]</td>
<td>Conservative party (John Major)</td>
</tr>
<tr>
<td>May-97</td>
<td>Tony Blair takes office as Prime Minister (Labour party)</td>
<td></td>
<td></td>
<td>Labour party (Tony Blair)</td>
</tr>
<tr>
<td>Jul-97</td>
<td>Aggregates Levy</td>
<td>The 1997 Budget includes proposals for a new levy to be charged on the extraction of aggregates.</td>
<td>Seely, 201120 [HC Deb 2 July 1997 c311]</td>
<td>Labour party (Tony Blair)</td>
</tr>
<tr>
<td>Date</td>
<td>Event</td>
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<td>Source/Notes</td>
<td>Party/Author</td>
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<tr>
<td>Nov-97</td>
<td>Landfill Tax</td>
<td>Friends of the Earth surveys waste management companies, landfill site operators and local authorities and publishes a report of its findings on the Landfill Tax’s first year. The report found that the tax's impact on waste management was limited. It proposes raising the rate of tax and supplementing the instrument with new taxes on incineration and the quarrying of aggregates.</td>
<td>Seely, 2009 [Friends of the Earth, Taxing waste: making the landfill tax work, November 1997]</td>
<td>Labour party</td>
</tr>
<tr>
<td>Nov-97</td>
<td>The Environmental Audit Committee is established.</td>
<td></td>
<td>Environmental Audit Committee press notice no.1, 25 November 1997</td>
<td>Labour party</td>
</tr>
<tr>
<td>Mar-98</td>
<td>Landfill Tax</td>
<td>CBI (Confederation of British Industry) publishes a report criticising the landfill tax for being too blunt an economic tool to deal with the environmental impacts of landfill.</td>
<td>Seely, 2009&lt;sup&gt;21&lt;/sup&gt; [CBI, Coming clean: using market instruments to improve the environment, March 1998 p16]</td>
<td>Labour party</td>
</tr>
<tr>
<td>Mar-98</td>
<td>Aggregates Levy</td>
<td>The CBI report is also highly critical of the proposal of an aggregates tax.</td>
<td>Seely, 2011&lt;sup&gt;22&lt;/sup&gt; [CBI, Coming clean: using market instruments to improve the environment, March 1998 p16]</td>
<td>Labour party</td>
</tr>
</tbody>
</table>
### Case study: More efficient use of aggregates in the UK

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Description</th>
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<th>Party</th>
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</table>
| 17-Mar-98 | Landfill Tax                              | Following the Landfill Tax review, to make the tax more effective environmentally, the following changes are announced by Chancellor Gordon Brown in his Budget speech:  
- the standard rate is to increase from £7 to £10 per tonne from 1 April 1999 while the lower rate remains frozen at £2 per tonne; and  
- inert wastes used in the restoration of landfill sites and quarries are to be exempt from the landfill tax from 1 October 1999. | Seely, 2009<sup>24</sup> | Labour party (Tony Blair) |
<p>| Apr-98   | Aggregates Levy                           | London Economics publishes a report for DETR on <em>The Environmental Costs and Benefits of the Supply of Aggregates</em> (also referred to as the ‘Phase 1’ report).                                                                                                                                                                                                 | History of proposals on aggregates taxation <a href="http://www.publications.parliament.uk/pa/cm199900/cmselect/cmenvaud/76/7606.htm">http://www.publications.parliament.uk/pa/cm199900/cmselect/cmenvaud/76/7606.htm</a> | Labour party (Tony Blair) |</p>
<table>
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<tr>
<th>Date</th>
<th>Description</th>
<th>Details</th>
<th>Source</th>
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<tbody>
<tr>
<td>Nov-98</td>
<td>Aggregates Levy (Voluntary alternative)</td>
<td>The Quarry Products Association (QPA) submits a set of voluntary proposals to Government as an alternative to an aggregates tax.⁴</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>Aggregates Levy</td>
<td>London Economics is commissioned to carry out further research to value the environmental externalities associated with the supply of aggregates in the UK, building on the Phase 1 research and addressing weaknesses in the methodology raised by critics. Government analyses responses to the Aggregates Levy consultation, and reviews the alternative package of voluntary measures proposed by industry.</td>
<td>Seely, 2011²⁷</td>
</tr>
<tr>
<td>1999</td>
<td>Aggregates Levy (vs. Voluntary alternative)</td>
<td>Government states that it will introduce an aggregates tax unless industry can commit to an improved package of voluntary measures. HM Customs and Excise publishes draft clauses for a tax on aggregates.</td>
<td></td>
</tr>
<tr>
<td>Mar-99</td>
<td>Landfill Tax</td>
<td>The Government announces in its 1999 Budget that the standard rate of landfill tax is to be increased by £3 to £10 per tonne from 1 April 1999, with further yearly increases until 2004 at pre-set rates.</td>
<td>Seely, 2009²⁸ [HC Deb 9 March 1999 c 182]</td>
</tr>
</tbody>
</table>

⁴ For details of the final package of voluntary proposals, see Annex A: QPA Voluntary Proposals.
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Description</th>
<th>Source</th>
<th>Author</th>
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<tbody>
<tr>
<td>Apr-99</td>
<td>Aggregates Levy</td>
<td>HM Customs &amp; Excise publishes a summary of responses to the June 1998 consultation paper. 199 responses were received from a range of industries, environmental groups and other stakeholders.</td>
<td>Seely, 2011&lt;sup&gt;29&lt;/sup&gt; [HM Customs &amp; Excise, Consultation on a potential aggregates tax: summary of replies, April 1999 p4]</td>
<td>Labour party (Tony Blair)</td>
</tr>
<tr>
<td>01-Apr-99</td>
<td>Landfill Tax</td>
<td>Standard rate of landfill tax increases from £7 to £10 per tonne.</td>
<td>Seely, 2009&lt;sup&gt;30&lt;/sup&gt; [HC Deb 9 March 1999 c 182]</td>
<td>Labour party (Tony Blair)</td>
</tr>
<tr>
<td>Jul-99</td>
<td>Aggregates Levy</td>
<td>Following further discussion with Government, QPA submits a revised set of voluntary proposals as an alternative to an aggregates tax.&lt;sup&gt;5&lt;/sup&gt;</td>
<td>History of proposals on aggregates taxation <a href="http://www.publications.parliament.uk/pa/cm199900/cmselect/cmenvaud/76/7606.htm">http://www.publications.parliament.uk/pa/cm199900/cmselect/cmenvaud/76/7606.htm</a></td>
<td>Labour party (Tony Blair)</td>
</tr>
<tr>
<td>Jul-99</td>
<td>Aggregates Levy</td>
<td>London Economics publishes a second report for DETR on <em>The Environmental Costs and Benefits of the Supply of Aggregates – Phase 2</em>. The report complements the Phase 1 report, addressing methodological weaknesses, and estimates that the total cost externalities associated with aggregates extraction at the time are about £380 million.</td>
<td>History of proposals on aggregates taxation <a href="http://www.publications.parliament.uk/pa/cm199900/cmselect/cmenvaud/76/7606.htm">http://www.publications.parliament.uk/pa/cm199900/cmselect/cmenvaud/76/7606.htm</a></td>
<td>Labour party (Tony Blair)</td>
</tr>
<tr>
<td>01-Oct-99</td>
<td>Landfill Tax</td>
<td><strong>Inert wastes used in the restoration of landfill sites and quarries become exempt from the landfill tax.</strong></td>
<td>Seely, 2009&lt;sup&gt;31&lt;/sup&gt;</td>
<td>Labour party (Tony Blair)</td>
</tr>
<tr>
<td>Mar-00</td>
<td>Aggregates Levy</td>
<td>Mr Brown confirms in the 2000 Budget that a levy is to be introduced in April 2002.</td>
<td>Seely, 2011&lt;sup&gt;32&lt;/sup&gt; [HC Deb 21 March 2000 c869]</td>
<td>Labour party (Tony Blair)</td>
</tr>
</tbody>
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<sup>5</sup> For details of the final package of voluntary proposals, see

## Case study: More efficient use of aggregates in the UK

### 2001

<table>
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<tr>
<th>Date</th>
<th>Event</th>
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</table>
| 2001  | Aggregates Levy | The following details about the Aggregates Levy are published in the 2001 Budget:  
- The aggregates levy is to be introduced in April 2002 at £1.60 per tonne.  
- The levy will ensure that the environmental impact of aggregates extraction are more fully reflected in prices and encourage a shift in demand away from primary aggregate towards alternatives such as recycled construction and demolition waste and china clay waste.  
- It will also encourage the more efficient use of all aggregates, greater resource efficiency in the construction industry, and the development of a range of other alternatives including the use of waste glass and tyres in aggregate mixes. | Seely, 2011[^34]  
[Budget 2001 HC 279 March 2001 pp 118-119] |

### Apr-02

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<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>Apr-02</td>
<td>Aggregates Levy</td>
<td>Aggregates levy is introduced.</td>
<td>Labour party (Tony Blair)</td>
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</table>

### Apr-02

<table>
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<tr>
<th>Date</th>
<th>Event</th>
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<th>Source</th>
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</table>
| Apr-02| AL Credit Scheme | Commission gives state aid approval for the Aggregates Levy credit scheme in Northern Ireland (annulled in Dec 2010). | Seely, 2011[^35]  
[HC Deb 20 December 2010 c974W] |

### 2003

<table>
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<tr>
<th>Date</th>
<th>Event</th>
<th>Description</th>
<th>Source</th>
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</table>
| 2003  | Landfill Communities Fund (ex - Landfill Tax Credit Scheme) | After strong criticism, the Landfill Tax Credit Scheme is reformed and becomes the Landfill Communities Fund. | Seely, 2009[^36]  
[HC Deb 3 February 2003 cc5-7WS] |

### 24-Jun-07

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<tr>
<th>Date</th>
<th>Event</th>
<th>Description</th>
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<tbody>
<tr>
<td>24-Jun-07</td>
<td></td>
<td>Gordon Brown (Labour party) takes office.</td>
<td>Labour party (Gordon Brown)</td>
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<tr>
<td>Date</td>
<td>Event</td>
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<tr>
<td>01-Apr-08</td>
<td>Aggregates Levy</td>
<td>The levy increases from £1.60 to £1.95 per tonne to &quot;take account of inflation since the introduction of the levy.&quot; Government also announces further exemptions on aggregates as by-products of construction and maintenance of railways, tramways and monorails. A similar exemption already exists for secondary aggregates from the building and maintenance of highways and waterways.</td>
<td>Budget 2007 HC 342 March 2007 para 7.98</td>
</tr>
<tr>
<td>01-Apr-09</td>
<td>Aggregates Levy</td>
<td>The rate is increased again by 5p to £2.00 per tonne.</td>
<td>Budget 2009 HC 388 March 2008 p120</td>
</tr>
<tr>
<td>11-May-10</td>
<td></td>
<td>David Cameron (Conservative party) takes office as Prime Minister of a coalition government with Nick Clegg (Liberal Democrat party) as Deputy Prime Minister.</td>
<td></td>
</tr>
<tr>
<td>01-Dec-10</td>
<td>AL Credit Scheme</td>
<td>The European General Court annuls state aid approval of the Aggregates Levy Credit Scheme for Northern Ireland. Government suspends the scheme.</td>
<td>Seely, 2011[37]</td>
</tr>
<tr>
<td>15-Dec-10</td>
<td>AL Credit Scheme</td>
<td>The Government sends evidence to the Commission for its reconsideration of the AL Credit Scheme in Northern Ireland.</td>
<td>Seely, 2011[38]</td>
</tr>
<tr>
<td>Mar-11</td>
<td>ALSF</td>
<td>Following the October 2010 Spending Review, Government announces that the ALSF is to be discontinued.</td>
<td>Seely, 2011[39]</td>
</tr>
<tr>
<td>Date</td>
<td>Description</td>
<td>Details</td>
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<tr>
<td>01-Apr-11</td>
<td>Aggregates Levy</td>
<td>It is announced that the levy will rise from £2.00 to £2.10 per tonne from 1 April 2011 “to maintain the levy’s environmental effectiveness”. The increase is delayed until April 2012 and again until April 2013. In the 2013 Budget it is announced that the levy will remain at £2.00 per tonne in 2013-2014.</td>
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<td></td>
<td></td>
<td>HC 451 March 2010 para 7.50, table A1 (item 25) (HM Treasury, 2013)</td>
<td>&quot;The rate was increased under s16 of Finance Act 2010. The Act was passed before the Election, and was not debated at any length&quot; (Seely, 2011)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.165</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conservative/Liberal Democrat coalition (David Cameron and Nick Clegg)</td>
<td></td>
</tr>
</tbody>
</table>
7 Evaluation of policy mix: effectiveness (environmental sustainability)

Does/did the policy mix result in a positive environmental outcome?

Were its stated objective(s) met? Were the instruments used sufficient to meet the objectives?

Did other, unforeseen/unintended positive outcomes or impacts (environmental, social, economic) result? Did other such negative outcomes or impacts result?

Were these objectives set at a level to meet environmental needs (e.g. avoid crossing environmental thresholds/tipping points or achieve more sustainable levels of resource use/extraction (e.g. maximum sustainable yield (MSY) in fisheries)?

Which sectors/actors were identified as having key impacts/influences on the problem/issue? (e.g. specific industrial/business sectors, consumers, economy as a whole?) Did any of the instruments specifically target these key sectors/actors? Was there significant take-up/implementation of (voluntary) instruments by these sectors?

Was the policy mix applied to a sector previously not targeted by policies on the issue under question, or in a new area/issue – thereby aiming to stimulate change?

What were the anticipated and actual outcomes, impacts and effects of the policy mix on the behaviour of sectors and actors targeted? (e.g. reductions in emissions from industry, increased recycling rates, increase/decrease in certain product purchases, etc.).

Relationships between the instruments, identifying positive/negative influences on the overall policy mix or on key instruments in the mix, as well as any positive or negative impacts from changes to the mix (introduction or termination of instrument(s), increase or decrease in tax/levy/charge, etc.). Level of ‘connectivity’ (strong, weak) between each instrument and the primary one(s).

Are there any indicators, monitoring systems, review processes or other monitoring mechanisms in place to track progress?

Unforeseen / unintended outcomes

One unintended outcome of the Landfill Tax anticipated by some was an increase in fly-tipping to avoid the new charges associated with such a tax. However, in January 1999 the Government dismissed reports of increased fly-tipping as a result of the tax to be anecdotal (Seely 2009).41

A report by the European Environment Agency (2008) (European Environment Agency 2008)42 explored the potential impact of the Aggregates Levy on transport, noting the improved relative economic viability of secondary aggregates (which are exempt from the levy) and whose sources tend to be further away from construction markets. However, the report went on to argue that any additional transport costs arising from the transport of what are more likely to be remote secondary aggregates is liable to be partially offset by a
reduction in transport due to the increased use of local, recycled aggregates (European Environment Agency 2008).43

See also section 8.

Target sectors and actors

The business sectors identified as having a key impact on the supply of aggregates included operators of quarry sites producing aggregates and importers of aggregates. The Aggregates Levy was designed to target these, although it was anticipated that much of the financial burden of the levy would be passed on to purchasers of aggregates (HM Treasury 2000).44

In 1999, the Quarry Products Association (QPA) proposed a voluntary package of measures as an alternative to the introduction of an aggregates levy, including measures to introduce energy reduction targets and the promotion of recycled materials with construction clients. However, the Government dismissed the voluntary package as falling short of the environmental and economic effects of a levy. Furthermore, the Government also expressed concern at the disproportionate impact of compliance costs for the alternative QPA package of voluntary measures on small and medium businesses in comparison to large operators (HM Treasury 2000).45

Based on a study combining interviews and a literature review, the European Environmental Agency concluded that the Aggregates Levy had "acted as a stimulus towards environmental improvements", crediting the combined policy mix of the Aggregates Levy, Landfill Tax and ALSF with giving "a signal to producers of the need to change production methods and practices" (European Environment Agency 2008, p.29).46 Similarly, one might also attribute changes and technical improvements in construction practices (such as thinner, high performance asphalt layers for road construction requiring lower levels of aggregates) to the success of the policy mix.

8 Evaluation of policy mix: efficiency (economic sustainability)

Is/was the policy mix considered cost-effective?

What has been the level of impact on resource use of the policy mix (the effect)?

What have been the costs of implementing the policy mix for target audience (e.g. business, households, etc.)?

What are the costs (financial, human) of implementing the policy mix for the implementing authority – i.e. the administrative/transaction costs?

Were sufficient resources made available to ensure an effective implementation of the policy-mix?

Was anything foreseen in the policy-mix to address competitiveness concerns (e.g. use of exemptions) or minimise transaction costs (e.g. thresholds below which monitoring wasn't required)?
Did the policy mix involve providing financial support (e.g. subsidies, low interest loans, tax breaks etc.) to key actors (e.g. sector, households, etc.)?

Did the measures generate revenues (e.g. in the case of taxes) and if so, was revenue recycled/re-injected into the economy, and to what levels and activities? Did revenue recycling have positive amplifying effects?

In synthesis - was the policy mix cost-effective?

What elements of the mix were (un)helpful in improving cost-effectiveness?

How was relative/absolute decoupling achieved?

Were resource limits or other thresholds taken into account and how were they addressed?

Table 5 outlines the set up and on-going compliance costs to the aggregates industry as estimated for the Landfill Tax and as predicted for the Aggregates Levy. These vary by operator size.

**Table 5: Compliance costs for UK aggregates levy and landfill tax**

<table>
<thead>
<tr>
<th></th>
<th><strong>Aggregates Levy (predicted costs)</strong></th>
<th><strong>Landfill Tax (estimated costs)</strong></th>
</tr>
</thead>
</table>
| **Initial costs**   | For large operators: £50,000 - £100,000  
For medium-sized companies: £10,000 - £20,000  
For small operators: £750 | For large operators: £25,000 - £50,000  
For small operators: £750 |
| **On-going costs**  | For large operators: up to £10,000  
For small operators: £1500 | For large operators: up to £10,000  
For small operators: £1500 |
| **Total costs to the industry** | Total set-up costs of approximately £1.2 million (average of 0.5 pence per tonne)  
Total on-going costs of approximately £750,000 per annum (average of 0.3 pence per tonne) | |


The UK Government predicted set-up and administration costs for the Aggregates Levy of around £2 million to Customs and Excise (the implementing authority) in the first year of implementation, with £1 million per year after that (HM Treasury 2000).

An unintended, high level of illegal trade was observed across the border between Northern Ireland, which was subject to the Aggregates Levy, and the Republic of Ireland, which was not. To address competitiveness concerns and to attempt to reduce the level of illegal trade, the Aggregates Levy Credit Scheme was introduced in Northern Ireland in 2004, giving
aggregates operators a tax credit of 80 % in return for signing an agreement to make environmental improvements on-site (European Environment Agency 2008).49

Competition concerns were another reason for the Government’s rejection of the QPA package of voluntary measures as an alternative to the Aggregates Levy. The voluntary measures involved restricting Government procurement to firms who had obtained a proposed new standard. Government argued that this would compromise competition for its aggregates procurement and could have been the basis for a legal challenge (HM Treasury 2000).50

The Aggregates Levy was presented as revenue neutral with revenue recycled via reductions in employer’s National Insurance contributions (NICs) and, until March 2011 through the Aggregates Levy Sustainability Fund.

When the Landfill Tax was introduced, the employer NIC rate was reduced by 0.2 percentage points. However, since inert waste (charged at the lower Landfill Tax rate) accounted for only around 20 % of Landfill Tax revenue in the early years (falling to around 1.5 % of revenues by 2010 due to rises in the standard rate and a reduction in inert waste volumes going to landfill), only around 0.04 % of the reduction in employer NIC was attributable to the tax on inert waste, and this declined considerably over time.

Figure 6 below illustrates the total revenue generated from the lower landfill tax rate on inert materials and the Aggregates Levy, with the actual spend on ALSF activities shown for comparison. However, Government spend on the reduction in the rate of employer NICs is not shown; at the time of the Aggregate Levy’s introduction in 2002, the cost of cutting the rate of employer NICs by 0.1 percentage points was estimated to be £370m, rising to £400m the following year in 2003 (Seely 2011).51

Figure 6: Revenue generated from UK inert waste and aggregates charges

9 Evaluation of policy mix: welfare (social sustainability)

What social impacts have you found associated with the policy mix? E.g. jobs created, reduced health impacts, distributional impacts etc.

Were social aspects included in an ex-ante impact assessment of the policy mix if one was undertaken? What were these?

Has monitoring of social impacts been included in implementation, to identify actual effects compared to anticipated ones?

Was the policy mix designed to not be socially regressive? What measures were undertaken to ensure this?

Were equity concerns addressed and, in case of re-structuring of the economy/sector, measures in the area of reskilling of the workforce foreseen?

What other public acceptability elements were addressed or considered?

ECOTEC Research and Consulting (2001) (ECOTEC Research and Consulting 2001) suggest that since the aggregates supply industry is not a substantial provider of jobs in the UK, the recycling of revenue to reduce the National Insurance Contributions of employers across other sectors might generate more new jobs than would be at risk due to the reduced demand for aggregates as a result of a tax.

In the Aggregates Levy Regulatory Impact Assessment (HM Treasury 2000), the Government addressed the issue of equity and fairness of the proposed levy with reference to the environmental and social costs resulting from the extraction and transportation of primary aggregates - both on individuals and more widely to firms in society in general - by using the ‘polluter pays principle’ to argue that “it would be fair to make the aggregates industry take responsibility for these costs” (HM Treasury 2000 p.2).

10 Overall assessment

What is your overall view on the success(es) or failure(s) of this policy mix?

How did the policy mix enable decoupling?

How could it have been improved to achieve its original objective(s) and to achieve absolute decoupling?

The trend in absolute decoupling of aggregates consumption from construction output observed in Figure 2 is consistent with the introduction of policy mix elements related to the Landfill Tax and the Aggregates Levy. The corresponding substitution of primary aggregates with secondary and recycled aggregates has contributed to a reduction in the environmental externalities associated with the aggregates industry.
11 Relevance to the EU and transferability

Can the policy mix be applied at the EU level? Is it transferable to other Member States/countries?

What lessons are there that may be of general interest regarding policy mixes and what issues are there as regards transferability of the insights?

Drawing upon findings from its assessment of aggregates policy in the UK, the European Environment Agency makes the following recommendations for EU countries considering the introduction of a tax on aggregates (European Environment Agency 2008)55:

- Combine the tax in a package with other policy instruments (such as permits or standards)
- Consider the elasticity of demand for aggregates, i.e. how sensitive producers and consumers will be to price changes. Generally, due to their low cost relative to transport and overall construction costs, demand for aggregates is inelastic. The role of the tax in affecting the cross-price elasticity between primary and recycled or secondary aggregates plays a vital role in encouraging the substitution of primary aggregates.
- Recycle revenues to correct market failures and further reduce external costs (e.g. through training in best practice methods to make extraction and transport more efficient and less disruptive). Recycling revenues is also likely to improve the public acceptability of a tax.
- Consider tax distortions across country borders when setting the tax rate. Different tax rates for regions with borders may be necessary to discourage illegal trade activity which is otherwise costly to monitor and penalise.

12 Stakeholder contribution

What insights did stakeholders provide?

Not available.
13 Annex A: QPA Voluntary Proposals

Details of the voluntary measures proposed by the Quarry Products Association (QPA) as an alternative to the Aggregates Levy, as set out in HM Treasury (2000) (HM Treasury 2000):

1. Industry-wide introduction of ISO 14001;
2. Production of QPA environmental management best practice guide;
3. Environmental management guidance for smaller operators;
4. Piloting of ISO 14001;
5. Universal introduction of community liaison committees;
6. A no quibble guarantee of Environmental Impact Assessments (EIAs);
7. Production of best practice guidance on EIAs;
8. Surrender of dormant quarrying permissions in National Parks that will not be reactivated;
9. Agreement not to operate National Park dormant sites on behalf of other owners;
10. Strict qualifying criteria for new quarrying applications in National Parks;
11. Finance fundamental research into the impact of quarrying on SSSIs;
12. Introduction of key sustainability indicators;
13. Establishment of an index linked Sustainability Foundation financed by the industry;
14. Major investment in recycling plant and equipment;
15. Promotion of recycled materials with the construction clients;
16. Establishment of a restoration guarantee scheme for all aggregates;
17. Funding and joint management of the Aggregates Advisory Service;
18. A compulsory Transport code of conduct;
19. Mandatory membership of a “Well Driven” scheme;
20. Introduction of transport plans for all aggregates supply sources;
21. Mandatory use of low sulphur fuels in the transport fleet;
22. Environmental training for all drivers, including subcontractors;
23. Environmental training for all employees;
24. 50 per cent of employees to obtain NVQ by 2004;
25. Proposed introduction of planning enforcement fees;
26. Extension of local authority air pollution controls to sand and gravel processing;
27. Mandatory use low sulphur fuels on internal quarry plant;
28. Introduce energy reduction targets;
29. Establish a Quality Mark for environmental performance; and
30. Promote environmental purchasing policies with clients.
14 References


European Environment Agency. 2008. "Effectiveness of environmental taxes and charges for managing sand, gravel and rock extraction in selected EU countries", Copenhagen, p.29


European Environment Agency. 2008. "Effectiveness of environmental taxes and charges for managing sand, gravel and rock extraction in selected EU countries", Copenhagen, p.29


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49 European Environment Agency. 2008. "Effectiveness of environmental taxes and charges for managing sand, gravel and rock extraction in selected EU countries", Copenhagen, p.29