Welcome to our 2018 edition of The Profile of the UK Mineral Products Industry.

This is now the 4th edition of this publication, each of which we have looked to continuously improve. This review celebrates the diversity of the mineral products industry and brings out its essential role as an enabling industry for others to thrive on. The industry supplies the materials for building our homes, as well as the vital new and upgraded infrastructure to support future economic growth. We are playing our part in the transition to a low carbon and more circular economy, but primary resources will continue to form the major element of the supply.

This publication provides readers with a unique source of information on the Mineral Products Industry, including the latest statistics, to illustrate the changing patterns in the way we produce and consume our minerals and the manufactured products derived from them. As Government reduces support for data collection and consolidation relating to our minerals, the MPA data will increasingly help fill the gap.

We have also taken the opportunity to review the extent to which our industry contributes to the wider economy. The industry provides essential raw and manufactured mineral products to other industries, including construction to which we are the largest suppliers. It directly employs 74,000 people at over 2,000 active sites and plants, and supports an additional 3.5 million jobs throughout the supply chain.

I very much hope that you find this issue interesting, and I should welcome your feedback.

Nigel Jackson
Chief Executive
Mineral Products Association

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MPA Agenda
- Economic conditions that support investment
- Better Government support for an essential industry
- A reasonable “licence to operate”
- Proportionate legislation and regulation
- Recognition of progress
1 At a glance (2016)

390Mt
GB production of aggregates and manufactured mineral products

4 times
The volume of energy minerals produced in the UK including oil, gas and coal

£18bn
Annual turnover for the Minerals and Mineral Products Industry

£6.8bn
Gross value added generated by the industry

£513bn
Annual turnover of the industries we supply

£152bn
Value of construction output, our main customer

74,000
People employed in the industry

3.5m
Jobs supported in our supply chain

(unless otherwise stated)

<table>
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<td>Aggregates</td>
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<tr>
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<td>of which</td>
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<td>(Fly ash, GGBS)</td>
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<td>Ready-Mixed Concrete(b)</td>
<td>56.1Mt</td>
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<td>Concrete products</td>
<td>25.8Mt</td>
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<td>Asphalt</td>
<td>25.2Mt</td>
</tr>
<tr>
<td>Dimension Stone(c)</td>
<td>1.0Mt</td>
</tr>
</tbody>
</table>

Non-construction uses

| Rock(d)                            | 14.9Mt |
| of which                           |       |
| Industrial Lime                    | 1.0Mt  |
| Agricultural Lime(e)               | 1.6Mt  |
| Industrial Sand                    | 2.8Mt  |

TOTAL
387.9Mt

(a) Includes Northern Ireland.
(b) Converted using 2.38 tonnes per cubic metre of ready-mixed concrete.
(c) 2014.
(d) 2013.
(e) 2012.
1.b: **Number of MPA member active sites and plants in 2018.** Source: MPA.

<table>
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<tr>
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<td>Depots or wharves</td>
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<td>Railheads</td>
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<td>Cement quarries and plants</td>
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<td>Mortar plants</td>
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<td>Dimension stone quarries</td>
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<td>Silica sand quarries</td>
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<tr>
<td>Slag plants</td>
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</table>
2 An essential industry

2.1 Mineral production

The Mineral Products Industry is a vital enabling sector of the UK economy, which has a broad impact on overall economic activity. As the largest element of the construction supply chain, a supplier of key materials to many other industries, and the largest material flow in the UK economy, a healthy domestic Mineral Products Industry is essential for the UK.

The majority of the industry’s output is used in the UK construction industry - improving our housing stock, transport networks, commercial and industrial buildings, utilities, schools and hospitals. Non-construction markets include iron and steel manufacture, glass making, agriculture, cleaning power station emissions and pharmaceuticals.

Table 1a (page 1) shows that in 2016 about 177 million tonnes of primary aggregates were produced in Great Britain, to which the industry adds another 70 million tonnes of recycled and secondary aggregates, and just over 140 million tonnes of other raw minerals and manufactured mineral products such as cement, concrete and asphalt. As a result, there were about 390 million tonnes of aggregates and other manufactured mineral products produced in Great Britain for construction and non-construction uses. This is over 4 times the total volume of energy minerals, including oil, gas and coal that were produced in the UK.

These materials are mostly used in construction and manufacturing, underpinning every activity of the economy by supplying vital raw materials at the heart of UK growth. International trade in minerals and mineral products is limited with, for instance, domestic sources supplying about 85% of the cement market.

2.1a: UK production of primary aggregates and energy minerals, 2016. Source: BEIS (2017), BGS (2016), ONS (AMRI), QPANI, MPA.

(a) Million tonnes of oil equivalent (Mtoe). 1 GWh = 8.6*10^-5 Mtoe.
2.2 Gross Value Added (GVA)

The Mineral Products Industry is defined as the extraction of mineral resources, i.e. sand & gravel, dimension stone, limestone, igneous rocks, sandstone and silica sand, and their processing and manufacture into asphalt, cement, concrete (both ready-mixed and precast), lime, mortar and slag. It also includes a share of road freight activities, as mineral producers deliver most of their materials by road, as well as some road contracting work when asphalt producers lay the asphalt themselves.

Based on this definition, MPA estimates that the Mineral Products Industry directly contributed to the UK economy by generating over £6.8bn in GVA in 2016, up from £6.3bn in 2015 (figure 2.2a). This was comparable to the creative industry, and greater than programming and broadcasting activities or information service activities (figure 2.2b). The Mineral Products Industry had a turnover of over £18bn in 2016, and contributed to the £513bn turnover in industries downstream of the supply chain.

2.2b: GVA of selected industries in the UK, 2016. Source: ONS (2018c), MPA.

2.3 Productivity

Whilst directly employing 74,000 people and supporting 3.5 million jobs through its supply chain in 2016, the Mineral Products Industry is also a highly productive industry: each worker produced about £92,000 in 2016, equivalent to 1.7 times the national average of value added (figure 2.3a).

2.3a: UK productivity by industry, 2016. Source: ONS (2017a, 2017b), MPA.

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\[\text{This is not an official ONS Standard Industrial Classification (SIC), but reflects MPA members’ activities.}\]
3 Mineral product profiles

3.1 Aggregates (crushed rock, sand & gravel)

Within aggregates, the major supply tonnage is crushed rock with significant contributions from sand & gravel, recycled and secondary materials. The sand & gravel supply comprises both land-won and marine dredged materials. This broad breakdown disguises the fact that local and regional markets may be highly dependent on a particular type or source of aggregate as a consequence of the physical availability of particular resource types and/or the market demand for particular products.

Over the last 60 years, there have been some variations in the relative importance of the different sources of aggregates, most notably the increase in the supply of recycled and secondary materials evident since the early 1990s (figure 3.1a). Aggregate sales have been depressed since the onset of the recession in 2008, reflecting the significant decline in construction markets, but have started to recover since mid-2013. Nonetheless, despite increasing by 29% between 2013 and 2017 as construction activity picked up, the aggregates market remains about 10% below 2007 volumes (figure 3.1a). This suggests that there remains significant scope for further improvements in minerals products and construction markets, particularly outside London.

In 2017, marine aggregates satisfied about 23% (14 million tonnes) of the total construction needs for sand & gravel in Great Britain (figure 3.1b). Marine aggregates also support beach nourishment and contract fill projects in the UK and are also exported overseas for use in construction, although this market remains depressed compared to 2007 volumes. Total production of sand & gravel for UK construction, exports, beach nourishment and contract fill, shows that total marine aggregates production levels have been consistently lower than the total tonnage amount permitted across all operators' production licences (figure 3.1f). The difference reflects the fact that individual dredging areas can offer a variety of products.

3.1a: GB aggregates market by sources of supply. Source: ONS (AMRI), BGS (AM surveys), MPA.
of materials, from fine sand to coarse gravel, so multiple licence areas in each dredging region ensure that there are enough materials for each operator to supply both current and future market needs, and also provide the industry with the flexibility to respond to any future changes in market demand that may occur. Multiple licences also ensure dredging areas are near to customers.

The biggest use for marine dredged aggregates is the construction market. Aggregates are a high bulk, low cost, commodity and consequently are highly sensitive to transport distances. Where local sources of aggregates are constrained, either because resources are not geologically present or because existing sources have become depleted, alternative sources of supply have to be found. Through economies of scale, marine aggregates supplies can play an important role in the overall portfolio of construction aggregate supply by transporting large volumes (2,000 - 10,000 tonnes/cargo) over considerable distances and delivering them to coastal towns and cities close to where they are needed. As an example of this, in London and the South East of England, one third of all the primary aggregates consumed in construction activity come from marine sources.

Access to markets relies on the availability of suitable infrastructure to support the import of marine aggregates and crushed rock. Without the presence of suitable, unconstrained wharf and railhead facilities, the balance of supply cannot be maintained. This is why such sites should be subject to safeguard policies to protect their use, in accordance with the requirements set out in the National Planning Policy Framework.

The underlying geology of the UK determines the local availability of mineral products which are only transported long distances when necessary. However, resources are not always distributed evenly and some inter-regional movement is necessary. The South East, for example, has its own supplies of sand & gravel but relies heavily on crushed rock brought in by rail from the East Midlands and South West and by sea from Scotland. It also requires marine dredged sand & gravel from coastal waters. Figure 3.1g shows the main inter-regional crushed rock and sand & gravel movements.

3.1b: **Aggregates supply mix in GB, 2017.**
Source: The Crown Estate, BGS (AM surveys), MPA.

3.1c: **GB Primary aggregates sales by region, 2017.**
Source: ONS (AMRI), BGS (AM surveys), MPA.

3.1d: **UK primary aggregates sales, 2017.**
Source: ONS (AMRI), BGS (AM surveys), QPANI, MPA.

(a) Dredging does not currently occur offshore in Scotland or Northern Ireland.
3.1e: Trends in construction activity and primary aggregates sales. Source: ONS (2018b), ONS (AMRI), BGS (AM surveys), MPA.


3.1g: Inter-regional flows of aggregates, 2014(a). Source: BGS (AM surveys).

Crushed rock

Sand & gravel

For clarity, exports less than 20,000 tonnes are not shown.

(a) MPA does not hold data on regional flows. These maps are reproduced from the original source. © Crown Copyright - Collation of the results of the 2014 Aggregate Minerals survey for England and Wales.
3.2 Cementitious

Cement is the key component in producing ready-mixed concrete, precast concrete and mortar (figure 3.2a). Following a stable market in the early and mid-2000s, the economic recession saw cement sales drop by 34% between 2007 and 2009. Since 2012, markets have improved, but sales in 2016 remained 8% lower than in 2007.

Cement is made by crushing and heating limestone or chalk with small amounts of other natural materials, such as clay or shale, in a rotating kiln to a temperature of 1450º Celsius. This chemically combines the stones into a hard substance called clinker, essentially changing calcium carbonate (CaCO₃) to calcium oxide (CaO) which then reacts with silica (SiO₂) to form calcium silicates with Ferrite and Aluminate mineral formation completing the mineralogy of the clinker complex.

As well as the mineral content of the raw materials, their moisture content is an important feature. Chalk has a higher moisture content than hard limestone and this tends to come with an energy penalty for the process. As the final step in (CEM I) cement making, the clinker is ground to a powder with about 4%-5% gypsum, added to control the setting time of the end-product. Further blending occurs for the other cement types identified below.

Three main classifications of cement sold in the UK are:

- **CEM I** – made from ground cement clinker and a small percentage of gypsum to control the material's setting time when mixed with water;
- **CEM II** – is a cement containing between 6% and 35% fly ash(1), limestone or ground granulated blast furnace slag(2);
- **CEM III** – is a cement containing between 36% and 95% ground granulated blast furnace slag.

There are a variety of cement products designed for specific end-uses.

![MPA cement usage in the UK, 2016. Source: MPA.](image)

- **Other** (6%)
- **Products (including mortar & precast)** (23%)
- **Merchant** (20%)
- **Ready-mixed concrete** (51%)

(1) Fly ash is a by-product from coal fired power stations.
(2) Blast furnace slag is a by-product of iron production and is granulated and ground for use in cement.

![MPA cementitious sales in GB(1) (2). Source: MPA.](image)

<table>
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<tr>
<th>Year</th>
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<td>2015</td>
<td>0</td>
</tr>
<tr>
<td>2016</td>
<td>2</td>
</tr>
</tbody>
</table>

(1) Includes cement that goes into soil stabilisation, special grout formulation, diaphragm wall grouts and other applications that do not fall into either ready-mixed concrete products or merchant.

(2) Includes Northern Ireland from 2015.

(3) Includes imports, pulverised fuel ash and granulated blast furnace slag.
3.3 **Ready-mixed concrete**

Ready-mixed concrete is an essential building material and is therefore a reliable indicator of construction activity from home building to high-rise and infrastructure. It is readily available on-demand throughout GB where the average delivery distance is 8 miles. Demand for ready-mixed concrete is closely aligned with both construction activity and the general economy. Reflecting the general economy, there continues to be nearly three times more supplied in London and the South East than in most other GB regions (figure 3.3b).

3.3a: **MPA ready-mixed concrete\(^{(a)}\) sales in GB.** Source: MPA.

3.3b: **MPA ready-mixed concrete\(^{(a)}\) sales by region, 2017.** Source: MPA.

3.3c: **UK ready-mixed concrete\(^{(a)}\) sales, 2017.** Source: QPANI, MPA.

\(^{(a)}\) Includes ready-mixed concrete produced from fixed and site plants.

\(^{(a)}\) Based on the assumption that MPA sales represent 75% of the total GB market. Includes fixed and site plants.
3.4 Precast concrete

Precast concrete includes concrete elements of any size that are cast in a factory - from blocks to bridge beams. Precast elements are fundamental to many buildings and civil engineering projects. For instance, 80% of all new roofs are made from concrete tiles, whilst concrete and masonry provide strength, thermal mass and fire protection to 85% of new homes built over the last 30 years. The market is mainly supplied from domestic sources but the chart points to the vulnerability of this sector to international competition, as the UK has moved from a trade surplus to a trade deficit over the last 10 years. The UK has been a net importer of concrete products since 2009.

3.5 Lime

3.5.1: Industrial lime

Many diverse industries such as steel, chemicals, glass and construction rely heavily on industrial lime. This unique and versatile mineral is also used in the production of sugar, the treatment of contaminated land, the desulphurisation of flue gases from power stations and the purification of water for human consumption. The sector makes a positive contribution to the UK trade balance, with 26% of total industrial lime sales exported in 2017 (figure 3.5a).
3.5.2: Agricultural lime

Quarried agricultural lime remains UK agriculture’s principal tool in moderating the effects of climate change, excess soil acidity, and supplying essential calcium and calcium-magnesium plant nutrient. Agricultural lime plays a key role in protecting one of nature’s greatest assets, the soil; maintaining a healthy, sustainable and productive environment essential to meeting the challenges of future food security. It is estimated that twice as much agricultural lime as now needs to be applied to UK farmland to prevent soil becoming too acidic.

3.6 Asphalt

Roads are the economic and social arteries of the nation, ensuring door to door routes for delivery of goods and services. They are the primary means of access to all parts of integrated transport networks and as such, we depend upon asphalt for road construction and maintenance.

Asphalt is produced in a network of local plants, which serve both the local and national road networks. Asphalt provides sustainable solutions as it is uniquely 100% recyclable back into new asphalt, whilst delivering cost effective, safe, comfortable and quiet road surfaces. Research and innovation is striving to further enhance the durability and sustainable credentials of asphalt materials to support road user and owner demands.

Following the recession, these markets declined very steeply in 2012, but have picked up since 2013. Asphalt sales rose 25% between 2013 and 2017, but remain 9% below the pre-recession levels in 2007 (figure 3.6a).
Mortar

Mortar plays an essential role in the building and construction industries, providing the ‘glue’ that bonds bricks, blocks and stones into masonry. About 70% of mortars used in the UK come from factory-produced sources, as opposed to being mixed on site, reflecting the ever increasing demands for quality building products in the development of our built environment. With the financial crisis and the collapse in housing construction, mortar sales in Great Britain fell by half between 2007 and 2009. Mortar sales started to recover from 2013, growing by 65% between 2013 and 2017, in line with the sharp increase in new housebuilding. Despite the significant growth seen in recent years, mortar sales volumes remained about 9% below pre-recession peak in 2017 (figure 3.7a).
3.8 Dimension stone

The UK industry for dimension stone plays an important role in ensuring that the unique local characteristics of natural stone-built areas of the UK are maintained. In addition, there is demand from the heritage sector and from the prestige development market both at home and overseas. Annual production continues from quarries in Great Britain at about 1 million tonnes (figure 3.8a), but imports from China and India continue to impact on the overall market.

3.8a: Sales of dimension stone in GB (selected years)\(^4\), Source: ONS (AMRI).

\(^4\) Due to the cessation of the Annual Raised Mineral Inquiry (AMRI) survey, which used to be carried out by the Office for National Statistics, the latest statistics available only cover sales volumes up to 2014.

3.9 Industrial sand

As well as being used for glass making, paints, plastics and foundry moulds, high purity silica sands are also used in a wide range of essential industrial applications. After declining significantly between 2006 and 2009, in light of changes in the UK heavy industry and manufacturing sectors, the production of industrial sand in Great Britain stabilised at about 4 million tonnes per year until 2015. In 2016 however, sales volumes declined by 22% (figure 3.9a).

3.9a: Sales of industrial sand in GB. Source: ONS (AMRI), MPA.
3.10 Slag

Slag is produced during the manufacture of iron and steel, and is processed into a variety of products, which can be used in many applications ranging from aggregates for construction products, to water treatment, soil conditioners and cementitious materials. The cementitious properties of blast furnace slag were discovered in the late 19th century and it has been widely used in cement manufacture for over 100 years.

In the UK, ground granulated blast furnace slag (GGBS) generally replaces between 20% and 80% of the normal Portland cement. Air cooled blast furnace and steel slags are used as aggregates in construction products, with the latter playing an important role as a high skid resistant surfacing aggregate in maintaining the safety of our road network. They are also used in the treatment of waste water and for soil remediation in agricultural markets.

3.10a: Sales of slag aggregates in GB (selected years). Source: MPA.
4 MPA markets outlook

Summary. When considering the prospects for construction and the mineral products industry over the next two to three years, Brexit is inevitably a major stumbling block. Muted UK economic growth, alongside elevated uncertainty regarding the Brexit negotiations, are dampening activity. Mineral products demand growth all but stopped in 2017, except for mortar, which benefited from continued momentum in housebuilding. This year, markets are set to see more of the same, with demand remaining broadly flat in 2018, before picking up from 2019, as major infrastructure projects come to full capacity.

The MPA collects and analyses sales volumes for a range of mineral products, including primary aggregates, asphalt, ready-mixed concrete and mortar. The MPA sales volumes surveys are carried out on a quarterly basis from a consistent sample of member companies, and represent between 70%-95% of the total GB market for these materials.

Our survey showed that growth in mineral products sales in Great Britain ground to a halt in 2017 across all major markets, except for mortar. Sales volumes of ready-mixed concrete declined by 2.6% in 2017 compared to 2016, whilst asphalt (0.2%) and aggregates (-0.3%) sales remained broadly flat. Mortar sales, however, enjoyed another year of strong growth, up 10.6% compared to 2016.

Whilst mortar sales are closely linked to housebuilding, materials such as aggregates and ready-mixed concrete are ubiquitous to all types of construction work and are not usually stocked for future use on project sites. The sale of these materials can therefore be used as a reliable and straightforward indicator of ongoing construction activity. The weakening in these markets, not only at national level but also across all regions in Great Britain, suggests that outside new housing construction, there are limited sources of growth.

The prospects for construction activity over the next two to three years are mixed. Subdued UK economic activity and enduring uncertainty relating to Brexit, the future trading relationship and concerns about passporting rights for the financial sector, are expected to impact on major new private construction investment this year. Against this general economic and political backdrop, forecasters such as the Construction Products Association (CPA) expect construction output in 2018 will remain flat, before returning to growth in 2019 and 2020, when infrastructure work gradually speeds up. By sector, any growth is reliant on housebuilding outside London and on the delivery of major infrastructure projects and spending plans for roads, rail and energy. Meanwhile, prospects for the construction of office buildings are grim: the CPA expects work in the commercial sector, the second largest construction sector, to fall in 2018.

The outlook for mineral products follows a similar pattern, with a major shift between 2018 and 2019 that is conditional to the delivery of infrastructure projects and progress in the Brexit negotiations. Continued growth in housebuilding over the next two to three years will help further growth in mortar sales, but the aggregates, asphalt and ready-mixed concrete markets will have to wait for a boost from the planned increase in the Road Investment Strategy spending plans and work underway for HS2 and Hinkley Point C from 2019. As a result, the MPA forecasts mineral products markets will grow by 5% for asphalt over 2018-20, 4% for primary aggregates and by 2% for ready-mixed concrete. Continued muted growth in housebuilding over the forecast period will help mortar sales to increase steadily each year, and are expected to be 8% up in 2020 compared to 2017.

For this outlook to materialise, it is essential that there are no further delays on the delivery of these projects, and that any new and unnecessary sources of economic and political uncertainty are avoided, to avoid destabilising an already weak level of activity and hindering investment decisions, both in construction and within the mineral products industry.

This cautious assessment also needs to be put into a broader context as there are longer-term demand pressures that will be challenging the UK construction supply chain, including ensuring an adequate supply of mineral products. Ill-equipped infrastructure, housing and healthcare show how vital it is for both Government and industry to look beyond the short term economic and political uncertainties and focus on the longer-term needs. This is reflected in the Government Infrastructure and Construction Pipeline, which outlines planned construction investment to 2021 and beyond. Infrastructure and housing investment are a fundamental part of the Industrial Strategy, aiming at addressing the productivity challenge, and will be a fundamental part of the construction sector plan.

A study carried out by the MPA shows that significant volumes of mineral products, including primary aggregates, will be needed to build tomorrow’s prosperity. The industry faces a cumulative demand for aggregates between 3.2 and 3.8 billion tonnes by 2030. This is great news for the industry in terms of market prospects, but it comes with challenges. There are issues around the supply-mix of aggregates that will need to be addressed, as shown by the declining trend in permitted reserves of land-won sand & gravel (see Section 5). This puts growing pressures on other sources of supply, particularly crushed rock, marine sand & gravel and recycled aggregates, to meet future demand. There will also be challenges for the industry relating to future investment in operational and transport facilities, safeguarding of existing mineral infrastructure such as wharves and rail-heads, and access to skills.
4.a: **MPA sales volumes of mineral products, annual percentage change.** Source: MPA.

![Graph showing annual percentage change in MPA sales volumes of mineral products, 2016-2017.](image)

4.b: **Medium term outlook for MPA mineral products sales, percentage change, 2018-20.** Source: MPA.

![Graph showing medium term outlook for MPA mineral products sales, percentage change, 2018-20.](image)
5 Long term aggregates supply

Subject to geological conditions, a key factor influencing the supply of aggregates is the operation of the mineral planning system. In England, the Managed Aggregates Supply System is designed to ensure a steady and adequate supply of aggregates.

Figure 5.a indicates permitted reserves of aggregates since the early 1990s. However, replenishment rates are more meaningful statistics, as they provide information on the long term availability of supply. If the amount of aggregates receiving planning permission equals the level of production, the replenishment rate is 100%.

Figure 5.b indicates that whilst replenishment rates for crushed rock have been close to parity in recent years, sand & gravel is being replaced at a much slower pace: for every 100 tonnes of sand & gravel used, only 60 tonnes are being replaced through new planning permissions, which has resulted in significant decline in permitted reserves of sand & gravel over the last 15 years. The implication of long term replenishment rates below 100% is that shortages of supply may become apparent. Evidence from Local Aggregates Assessments and Local Plan formulation suggests that this is beginning to appear in parts of Yorkshire, the South West, the South East, the North West, and the West Midlands.

5.b: GB replenishment rates for sand & gravel and crushed rock. Source: MPA.

(a) Historical tonnages are from the aggregates minerals surveys, a 4-yearly survey which has been undertaken since 1973. Estimates for 2015 and 2016 are provided by MPA.

If the amount of aggregates receiving planning permission equals the level of production, the replenishment rate would be 100%.
6 Taxation

The industry is in the scope of the European Union Emissions Trading System, Climate Change Agreements linked to the UK Climate Change Levy and the Carbon Reduction Commitment Energy Efficiency Scheme, all of which are focused on carbon reduction. In addition, the industry has to manage the indirect impact of measures and associated costs related to generating and supplying energy used by the industry.

Climate change and energy measures in 2015 were equivalent to £4.20 per tonne of cement produced (figure 6.a). This fell to £1.93 per tonne of cement in 2016 after the introduction of compensation for the indirect cost of the renewables obligation and small scale feed-in-tariffs.

The cumulative burden of environmental and planning related taxation and regulation on mineral products is set to increase over the coming few years. For cement, this could rise to £6.70 per tonne reflecting the expected increase in the carbon price.

For aggregates, the annual cost of the Aggregates Levy alone reached £378m in 2016 (figure 6.b).

6.a: Estimated cost of energy and climate change measures for the cement industry. Source: MPA.

6.b: Aggregates Levy payments to Government. Source: HMRC, ABS.
7 Environment and sustainability

7.1 Recycling

Recycled and secondary materials accounted for 29% of total aggregates supply in Great Britain in 2016 (figure 7.1a).

Recycled aggregates are the product of processing inert construction and demolition waste, asphalt planings and used railway ballasts into construction aggregates. Just as primary aggregates, these materials conform to European aggregate standards and national specifications, and make a key contribution to total aggregates demand.

Secondary materials include blast furnace and steel slags. Other secondary aggregates include incinerator bottom ash (IBA), furnace bottom ash (FBA), china clay sand, slate and crushed glass sand.

Collectively, they contribute significantly to the total aggregates demand and are used, predominately, in the lower layers of road pavements, but also in some concrete manufacture and a range of other construction applications.

Sales of Portland cement are supplemented by the use of other cementitious materials including ground granulated blast furnace slag (GGBS) and fly ash (figure 7.1c). These cementitious materials are supplied either as a component of blended cements or directly to concrete manufacturing facilities.

7.1a: Share of recycled and secondary materials in total GB aggregates sales. Source: MPA.


7.1c: GGBS & fly ash in the MPA cementitious market in GB, 2016. Source: MPA.
7.2 Resource efficiency

UK sales of both aggregates and cement per capita are relatively low and amongst the lowest in comparison with the rest of Europe (figure 7.2a). Figures 7.2b and 7.2c below indicate that the use of aggregates and cement per capita is about 20% and 50% respectively below the European average.

7.2a: Aggregates\(^\text{a)}\) production in Europe, tonnes per capita, 2016.
Source: UEPG.

\(^\text{a)}\) Includes primary, manufactured, recycled (fixed and mobile) and aggregates re-used on site.

7.2b: Aggregates\(^\text{a)}\) production per capita, 2016.

7.2c: Cement consumption per capita, 2016.

\(^\text{a)}\) Includes primary, manufactured, recycled (fixed and mobile) and aggregates re-used on site.
7.3 Carbon emissions

Cement manufacture is, by its nature, energy and carbon dioxide intensive. The UK industry has been a world leader in its carbon reduction drive to date, reducing direct CO\textsubscript{2} emissions by 25% between 1998 and 2016 (figure 7.3a). UK manufacturers achieved this substantial decarbonisation through heavy investment and a progressive move toward using alternative waste-derived fuels. In 2016, the sector took 39% of its kiln fuel thermal input from waste derived sources, down from 44% in 2014. In addition, cement manufacturers replaced 6% of their raw materials with waste derived alternatives.

In October 2017, MPA Cement and the UK government published a joint action plan setting out the tasks required to decarbonise the industry. Three key technologies for reducing greenhouse gas emissions in the cement manufacture were highlighted, including carbon capture and storage, continuing ongoing efforts to switch fuel to biomass, and the deployment of a range of new low-carbon cements in the UK.

7.4 MPA National Nature Park

The minerals industry is uniquely placed to contribute to delivery of national and local biodiversity targets. At least 8,000 hectares of priority habitats have been created through the restoration of old quarries and management of land, the equivalent of eight times Richmond Park. Also, at least a further 10,500 hectares of priority habitat is currently planned through the restoration of sites.

Figure 7.4a shows some of the best restored sites that the public can visit, a nationwide network of quarries that have been restored for wildlife and which are accessible to the public. This map, which we are continually adding to, includes 71 sites around the country covering over 5,000 hectares, with a range of facilities including nature trails, viewing hides and visitor centres. Collectively they form the MPA National Nature Park.

The map displays some of the main restoration sites, a nationwide network of quarries that have been restored for wildlife and which are accessible to the public. It is available on the MPA website.
7.5 Sustainable Development Reports

Links to Sustainable Development Reports

Other than those noted, all reports are available from: http://www.mineralproducts.org/sustainability/reports.html

https://www.concretecentre.com/Publications-Software/Publications/The-Ninth-Concrete-Industry-Sustainability-Perform.aspx


https://www.concretecentre.com/Publications-Software/Publications/The-Ninth-Concrete-Industry-Sustainability-Perform.aspx
About the MPA

Who we are

MPA is the industry trade association for the aggregates, asphalt, cement, concrete, dimension stone, lime, mortar and silica sand industries.

Five key aims underpin the work of the MPA, creating the high level agenda it uses to influence Government and other key stakeholders.

We seek:
1. Economic conditions that support investment
2. Better Government support for an essential industry
3. A reasonable licence to operate
4. Proportionate legislation and regulation
5. Recognition of progress

What we do

MPA represents the interests of MPA members and the industry with all levels of Government, regulators, other organisations and external audiences.

Key activities include:
• Improving health & safety
• Representing the sector
• Raising awareness of the sector and its contribution to the economy
• Gathering and presenting evidence and information
• Influencing policy, regulation and legislation in the UK and EU
• Protecting the industry’s licence to operate
• Safeguarding and developing markets
• Improving perceptions
• Informing on markets and economic contribution
• Influencing technical and design standards
• Influencing supply chains
• Encouraging innovation
• Promoting the use of mineral products

The MPA Vision for 2025

Member consultation has established that the industry wishes:

‘to be valued as an essential and economically, socially and environmentally sustainable industry of significance to the economy and our way of life’

and perceived as:
• cohesive and well-organised, responsible and accountable;
• creative, collaborative and outward looking;
• professional and competent, setting high standards to retain and attract new people, reflecting UK diversity;
• innovative, embracing the use of best available technology and sharing best practices;
• engaging constructively and strategically with Government, regulators, local communities and other stakeholders.

MPA Strategic Priorities and Objectives

The following 7 Strategic Priorities and their related objectives will underpin the achievement of the MPA Vision for 2025.

- Employee & Contractor Health & Safety • Public Safety
- Employment • Skills & Competence Equality & Diversity • Local Communities
- Access to Sufficient Minerals & Resources Circular Economy & Resource Efficiency • Water • Waste
- Carbon & Atmospheric Emissions Energy • Transport • Adaptation
- Biodiversity • Land Restoration • Natural Capital Geodiversity • Heritage • Environmental Protection
- Technical Codes and Standards Sustainable Products • Sustainable Construction
- Communicating Industry Value Influence the Business Environment Stakeholder Engagement • Making the Link
MPA members

Producer, associate and affiliate members as of April 2018.

MPA Producer members
Aggregate Industries UK Ltd
Albion Stone Plc
Allen Newport Ltd
Ballast Phoenix
Bathgate Silica Sand Ltd
Bath Stone Group
Bestco Surfacing Ltd
Black Mountain / De Lank Quarry Ltd
Borough Green Sandpits Ltd
Breedon Southern Ltd
Brett Group
Brice Aggregates Ltd
Britannia Aggregates Ltd
Bromfield Sand & Gravel Co. Ltd
Burlington Stone Ltd
Caithness Flagstone Ltd
Cardigan Sand & Gravel Co. Ltd
The Casey Group Ltd
CEMEX UK
Chambers Runfold
Colas Ltd
Cormac Solutions Ltd
Cornish Lime Company Ltd
CPI Mortars Ltd
Cullimore Group
Day Aggregates Ltd
Deme Building Materials Ltd
Dunhouse Quarry Co.
Erith Haulage Company Limited
Eurovia Roadstone
F M Conway Ltd
Ferns Group
Forest Pennant
Francis Flower
Gallagher Group Ltd
G D Harries & Sons Ltd
GRS Roadstone Limited
Grundon Sand & Gravel Ltd
H Sivyer (Transport) Ltd
H.H. & D.E. Drew
H.Tuckwell & Sons Ltd
Hanson UK
Harleyford Aggregates Ltd
Harsco Metals Group Limited
Hereford Quarries Ltd
Hills Quarry Products Limited
Hogan Group
Holderness Aggregates Ltd
Hugh King & Co.
Hutton Stone Co. Ltd
Imerys Minerals Ltd
Ingrebourne Valley
J & J Franks Ltd
J Clibb Ltd
J.J. Prior Limited
John Carr (Liverpool) Ltd
John Wainwright & Co. Ltd
J Mould (Reading)
JPE Holdings Ltd
Kerneos Ltd
Lhoist UK Ltd
Lovell Stone Group
Mansfield Sand Co. Ltd
Marchington Stone
Marshalls Plc.
Midland Quarry Products
Moorhouse Sand & Gravel Pits
Morris & Perry (Gurney Slade) Ltd
Myers Group
Northumberland Quarries
O'Donovan Waste Disposal Ltd
Portland Stone Firms Ltd
Quattro (UK) Ltd
Raymond Brown Quarry Products Ltd
R Collard Ltd
Rotherham Sand & Gravel Co. Ltd
S Walsh and Sons
Salop Sand & Gravel Supply Co Ltd
Sea Aggregates Ltd / Euromin Ltd
Sibelco UK
Singleton Birch Ltd
Smith & Sons (Bletchington) Ltd
Springfield Farm Ltd
SRC Aggregates
SSG Quarries
Syreford Quarries & Masonry Ltd
Tarmac
TJ Transport Ltd
Tradstocks Natural Stone
Trefign Quarrries Ltd
Tudor Griffiths Group
United Recycled Aggregates Limited
Volker Dredging Ltd
W Clifford Watts Ltd
Wildmoor Quarry Products

MPA Associate members
ABB Ltd UK
Addax International Ltd
Addleshaw Goddard LLP
Ammann Equipment Ltd
Anglian Aggregate Bagging Co. Ltd
Archaeological Research Services Ltd
Aspen Advisory Services Ltd
Babcock International Group
Banner Contracts (Halnaby) Ltd
BASF Construction Chemicals (UK) Limited
BDS Marketing Research Ltd
Birketts Solicitors
BPP Consulting
Brigade Electronics Plc
British Sugar Plc
BSG Ecology
Burges Salmon LLP
Cathay Industries (UK) Ltd
Central (M&W) Planning
Chaselet Ltd
Christeyns UK Ltd
Command Alkon Ltd
The Crown Estate
Darren Broadhead Consulting Ltd
David Ball Group
Davies Planning Ltd
D B Cargo
DLA Piper UK LLP
DrumBlaster Pty Ltd
DustScan Ltd
EA Ltd
EIS Property
Envireau Water
EPC-UK
ESI Consulting
Farrar Natural Stone
Finning (UK) Ltd
Firstplan
Foot Anstey LLP
Freeths Solicitors
French Jones
GCP Applied Technologies
George F. White
Gerald Eve LLP
GridBeyond
G V A Grimley
Hafren Water
Hargreaves (UK) Services Ltd
MPA Affiliate Members

British Association of Reinforcement
AccelorMittal Kent Wire Limited
BRC Ltd
Celsa Steel (UK) Ltd
Dextra Manufacturing – UK
ERICO Europa (GB) Ltd
Express Reinforcements Ltd
Max Frank Ltd
Outokumpu Stainless Limited
RFA-Tech
ROM UK Ltd

British Calcium Carbonates Federation
Ben Bennett Jr Ltd
Francis Flower
Hanson Aggregates
Imerys Minerals Ltd
Leith (Scotland) Ltd
Longcliffe Ltd
Omya UK Ltd
Specialty Minerals Lifford
Tarmac Ltd

Eurobitume UK
Shell-Bitumen
Total Bitumen
Nynas
Puma Bitumen
ENI

British Precast Full Members
ABM Precast Solutions Limited
Acheson + Glover
ACP (Concrete) Limited
Aggregate Industries (UK) Limited
Amber Precast Limited
Banagher Precast Concrete Ltd
Barcon Systems Limited
Besblock Limited
Bison Precast
Blanc de Bierges
Breodon Northern Ltd
Brett Landscaping & Building Products
Broome Bros (Doncaster) Limited
Castle Construction Products Ltd
CEMEX
Charcon Construction Solutions
CCP Building Products Ltd
Collier & Henry Concrete (Floors) Limited
Collier Quarrying & Recycling Ltd
Cornish Concrete Products Limited
CPM Group Limited
Craven Concrete
Creagh Concrete Products Limited
Cross Concrete Flooring Ltd

British Precast Associate Members
Adomast Manufacturing Ltd
Arcelor Mittal Sheffield Ltd
BASF Construction Chemicals
BDS Marketing Research Ltd
Beresford’s Flooring Ltd
Besser Company
Bianchi Casseforme SRL
BRE
Breeden Cement Ltd
Cambrian Services Limited
Canadian Precast Institute

Decomo UK Limited
Delta Bloc UK Limited
E & JW Glendinning Limited
Ebor Concretes Limited
Elite Precast Concrete Limited
Evans by Shay Murtagh Precast
F P McCann Limited
Forterra Building Products Ltd
Forticrete Limited
H+H UK Limited
Hillhouse Quarry Group Ltd
Interfuse Limited
Jordan Concrete Ltd
Laid Bros (Forfar) Ltd
Lignacite (Brandon) Ltd
Litecast Limited
Longley Concrete Ltd
Marshalls plc
Milton Precast
Mona Precast (Anglesey) Limited
Naylor Concrete Products Limited
Newlay Concrete
Patersons of Greenoakhill Ltd
Plasmor Limited
Premium Concrete Products Ltd
Quinn Building Products Limited
Robeslee Concrete Company Limited
S Morris Limited
Sellte Blocks Limited
Skene Group Construction Services Ltd
Specialist Precast Products
Stanton Bonna Concrete Limited
Sterling Services Limited
Stocks Blocks Limited
Supreme Concrete Limited
Tarmac Building Products Ltd
Techrete Limited
Thakeham Tiles Limited
Thomas Armstrong Group
Thorp Precast Limited
Topflight Precast
Towens Products Limited
TTC Concrete Products Limited
WDL (Concrete Products) Ltd
William Rainford (Holdings) Limited

BRC Ltd
Celsa Steel (UK) Ltd
Dextra Manufacturing – UK
ERICO Europa (GB) Ltd
Express Reinforcements Ltd
Max Frank Ltd
Outokumpu Stainless Limited
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ROM UK Ltd

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Cambrian Services Limited
Canadian Precast Institute
Premier Cement Limited
Quinn Building Products Ltd
R J Mitten & Sons
Riddles Bros Limited
Robinson Quarry Masters Limited
RTU Ltd
Stanley Bell & Sons Ltd Sand & Gravel
T H Moore (Contracts) Ltd
Tobermore Concrete
Tracey Concrete Limited
Tullyraine Quarries Limited
W & J Chambers Limited
W J & H Crozier
Whitemountain Quarries Limited

QPA Northern Ireland
Affiliate and Associate Members
Adcrete (Affiliate)
Astute Software Applications Ltd (Affiliate)
CavanaghKelly (Affiliate)
CDE Global Ltd (Affiliate)
Cleaver Fulton Rankin Solicitors (Affiliate)
Close Brothers Commercial Finance (Affiliate)
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Quarryplan (Affiliate)
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SLR Consulting (Ireland) Ltd (Affiliate)
TBF Thompson (Affiliate)
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Ulster Industrial Explosives Limited (Affiliate)
William Orbinson QC (Affiliate)
White Young Green (Affiliate)
Atlantic Bitumen (Associate)
Tennants Bitumen (Associate)

For further information
- Mineral Products Association: www.mineralproducts.org
- Quarry Products Association Northern Ireland: www.qpani.org
- MPA Cement: http://cement.mineralproducts.org
- British Precast: www.britishprecast.org
- British Ready-Mixed Concrete Association: www.brmca.org
- British Lime Association: www.britishlime.org
- British Marine Aggregate Producers Association: www.bmapa.org
- Mortar Industry Association: www.mortar.org.uk
- Agricultural Lime Association: www.aglime.org
- Silica and Moulding Sand Association: www.samsa.org.uk
- The Concrete Centre: www.concretecentre.com
- British Association of Reinforcement: www.uk-bar.org
- Asphalt Industry Alliance, in partnership with Eurobitume UK: http://wwwasphaltuk.org/
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