Regulating for people, the environment and growth

October 2018

This summary covers England and is for the calendar year 2017. Where information is only available by financial year, it is based on the financial year April 2017 to March 2018.

Chief executive's foreword

A strong economy and an environment in which people and wildlife thrive are vital for our future. The right regulation can deliver both. As the environmental regulator of industry, the energy sector, farming, the water companies and many other businesses, the Environment Agency has a central role to play in making sure we do get this right.

Our focus today is on enhancing the environment and supporting businesses to generate growth and prosperity after we leave the EU. We are working with government, industry and others to take advantage of the changes and challenges ahead. We have updated the way we charge businesses and we're working to make our transactions digital by default. Our aim is to provide better services to our business partners and meet the government's challenge to be the first generation to leave the environment in a better condition than we found it.

Most of the businesses we regulate are law-abiding, efficient and take their environmental responsibilities seriously. They, we and successive governments have a good story to tell. Over the last 2 decades better environmental performance by businesses, more effective regulation by the Environment Agency, and the introduction by government of new policies and laws to protect the environment have made our country cleaner and greener; and substantially reduced pollution of the air, water and the land.

But we all need to up our game now. To meet the challenging new goals in the government's 25 Year Environment Plan and Industrial and Clean Growth Strategies, we need to work even more effectively with businesses to improve, not just sustain, their environmental performance; and to enhance, not just protect, the environment around us.

There remain some big challenges. There are still too many serious pollution incidents, which damage the environment and affect local people. In 2017, the number of serious pollution incidents from the farming and waste sectors was equivalent to more than one a week. There were also 52 serious incidents caused by water companies, an equivalent of one a week. We can and must do better than this.

A guiding principle in environmental policy is that the polluter pays. Where a company causes serious pollution it is right that it pays a serious price. That is why we welcome the stronger sentencing guidelines now being enforced by the courts. The record £20 million fine imposed in 2017 for a series of very serious pollution incidents caused by a water company sends a clear and compelling signal that such events are simply not acceptable, and will have serious consequences for the company concerned.

We will always prosecute when a business causes severe harm to the environment. But court action is not always the right response, nor will it always repair the damage done to the environment. So where incidents cause less serious damage we are making increasing use of enforcement undertakings, under which companies admit liability and make a financial offer to put right the harm they have caused. That benefits both the environment and the local communities.

Waste crime continues to blight local communities, legitimate businesses, and the environment. On average the Environment Agency is closing down more than 2 illegal sites every day. I want to pay tribute to all of our staff who do this vital, difficult and sometimes dangerous work: they are brave and often unsung heroes, and we all owe them a debt of gratitude. And I want to thank the other agencies – the police, HMRC and other enforcement bodies – with whom we work to tackle this scourge. It is a long battle which we are determined to win.

Finally, a thought about regulation. No-one likes red tape. But the right kind of regulation – simple, risk-based, proportionate, aiming for partnership wherever possible between regulator and regulated – is not red tape. It is how we unlock growth, enhance the environment and protect our communities from harm. I am proud of the work the Environment Agency does, day in day out, to achieve that.

Sir James Bevan, Environment Agency Chief Executive

Main facts

Serious pollution incidents fell to **419**, down **18%** compared to 2016. Farming activities caused the most incidents – **68** – more than one a week. Waste management activities caused **65** and water companies caused **52** serious incidents.

The number of persistently poorly managed sites fell to **144**, down **18%** compared to 2016.

We stopped **812** illegal waste sites during 2017/18, a rate of more than **2 a day**, and about the same as in 2016. Our investigations found a further **856** new sites where there was illegal waste activity.

The courts fined companies a total of **£25.5 million** for environmental offences, a huge increase on the £8 million in 2016. This was due to an unprecedented £20 million fine for one water company.

We accepted **60** enforcement undertakings from businesses. Environmental charities, organisations or projects received almost **£2.2 million** as a result, compared to £0.9 million in 2016.

Since 2000, the businesses we regulate have reduced emissions of:

- nitrogen oxides by **71%**
- sulphur oxides by **93%**
- fine particles by **51%**

More waste is spread to land for agricultural benefit – **5 million tonnes** compared to 3 million in 2011.

Agriculture is the largest source of ammonia emissions. In 2016, **88%** of ammonia emissions in the UK were from agriculture. Of the sites we regulate, most of the ammonia emissions come from intensive pig and poultry farms, but this is just 6% of ammonia emissions in England.

Radioactive discharges from the nuclear sector have decreased. Total alpha and beta radioactive discharges from all the OSPAR (the Convention for the Protection of the Marine Environment of the North-East Atlantic) countries combined are respectively **60%** and **92%** lower than the baseline of 1995 to 2001. Our work on new nuclear build is helping secure around **£60 billion** investment in low carbon electricity.

Data for 2017 that show a similar performance to 2016 includes:

- bathing water standards maintained with **98.3%** passing quality standards, compared to 98.5% in 2016
- **68%** of waste produced by sites we permit was recovered, compared to 67% in 2016

Our role and approach

As a regulator we are responsible for implementing environmental regulations and standards set by government. We do this in a fair and balanced way, working to protect public health, natural resources and the environment, while supporting business and sustainable economic growth. Our role includes:

- issuing permits to businesses and individuals, and setting standards so that businesses operate without harming people and the environment
- reviewing permits and guidance to make sure they are up to date and meet current standards
- checking that businesses and individuals comply with regulations and their permits
- investigating incidents and complaints
- stopping illegal activities that blight communities and the local environment
- using influence, advice and other complementary approaches to help businesses and industries achieve and maintain compliance with regulations and permits
- using appropriate proportionate sanctions and enforcement actions to bring businesses back into compliance, and using the full force of the law to crack down on illegal activities to create a fair and level playing field for legitimate businesses
- monitoring and providing evidence on the state of the environment, so we can advise and inform government and others on policy development
- working closely with regulators who manage other environmental impacts such as local air quality, development, agriculture and major industrial accidents – this includes local authorities, Natural England, the Marine Management Organisation, the Office for Nuclear Regulation and the Health and Safety Executive

Enabling regulation

Andy from the Environment Agency's Radioactive Substances and Installations Regulation team said: "We play a significant enabling role in the nuclear energy sector, which is an important contributor to the clean growth strategy, while ensuring that people and the environment are properly protected. We are engaged in collaborative strategic, regulatory and advisory work at every stage of the nuclear energy lifecycle from design through to decommissioning and waste disposal. For example, in 2017, we continued to support government with innovative work on:

- an enabling framework for the potential deployment of advanced nuclear technology
- proposed improvements to the regulation of the final stages of nuclear site decommissioning
- ensuring an effective waste infrastructure to support the sector

We aim to focus on areas where we can achieve the most gains for the environment as well as for sustainable growth."

We continue to encounter new and varied challenges in the work we do, and we have limited resources to achieve our ambitions. We try to spot problems before they occur and resolve issues before they escalate, rather than reacting afterwards. We focus our efforts where we can have the most impact, and prioritise our resources based on risk. As a result we do not routinely visit a proportion of the sites we regulate.

Valuing the environment

The natural capital approach

The Natural Capital Committee was set up to advise the government how to achieve the ambition to 'leave the natural environment of England in a better state than it had inherited'. The result has been the production of a 25 Year Environment Plan based on the principles of a natural capital approach.[1] Natural capital is a way of measuring environmental assets that provide benefits or value to people, such as the stocks of forests, water, land, minerals and oceans. Damage to the environment is reflected in the decline of natural capital assets.

This approach brings established economic and accounting methods for public and private assets together with the best natural science understanding. It presents an economic and social opportunity that can genuinely transform the natural environment.

It will:

- support the growth of the economy
- allow citizens to reconnect with the health, wellbeing, spiritual and educational benefits of interacting with nature
- give our children a richer, better and more resilient natural inheritance

In the natural capital approach, the environment should not be regarded as an obstacle to economic development; rather, a healthy environment is the basis of sustainable economic growth. Protecting our natural capital is important because it adds to the country's gross domestic product, affects our economy's ability to grow, and impacts human health and wellbeing. Expressed as an asset value over the next 25 years, the UK's natural capital is estimated to be worth £1.6 trillion.[2]

Natural capital assets and costs include:[3]

- air quality – atmospheric pollution cost the economy an estimated £2.7 billion in 2012, due to effects on productivity
- ammonia emissions from UK farming cost an estimated £440 million to human health and the environment in 2015
- UK freshwaters are worth £40 billion to the economy through benefits for public water supply, recreational visits and fisheries
- recreational visits to coasts and beaches in 2015 were conservatively valued at £1.4 billion

Leaving the EU

The UK will leave the EU in March 2019 and this presents both risks and opportunities for the environment and economic growth. We have been working with government to mitigate the risks and identify future possible opportunities.

The majority of environmental regulations and standards in England are derived from EU legislation. Ensuring people and the environment continue to be protected when we leave the EU is one of our top priorities. We are also aiming to make the most of any greater flexibility we might have after leaving, to improve environmental outcomes rather than simply maintaining the status quo.

---

[1] Natural Capital Committee. Advice to government on the 25 Year Environment Plan. (www.defra.gov.uk.assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/677872/ncc-advice-on-25-year-environment-plan-180131.pdf).
[2] ONS, Natural capital accounting 2020 roadmap: interim review and forward look (www.gov.uk/government/statistics/natural-capital-accounting-2020-roadmap-interim-review-and-forward-look).
[3] Defra, 25 year environment plan, annex 1. (www.gov.uk/government/publications/25-year-environment-plan).

We have been supporting government (principally Defra and the Department for Business, Energy and Industrial Strategy) in their work to ensure current protections will be maintained, and to identify future opportunities for more effective and efficient regulation. More specifically, we have been working closely with relevant departments and other regulators to ensure EU-derived regulations are retained as part of UK law.

In parallel we have been working to ensure our internal processes and systems will remain relevant and functional under a range of exit scenarios. We are putting in place appropriate actions and resources to address any issues and communicate with our customers.

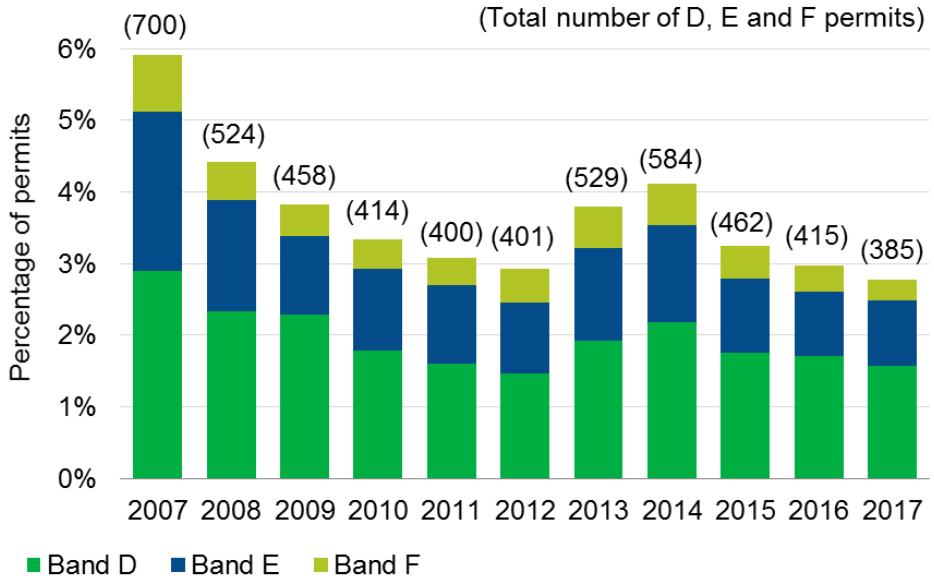
Since the 2016 referendum, we have emphasised to our customers that current standards, guidance and our expectations as a regulator will remain the same immediately after exit.

Healthier and safer communities

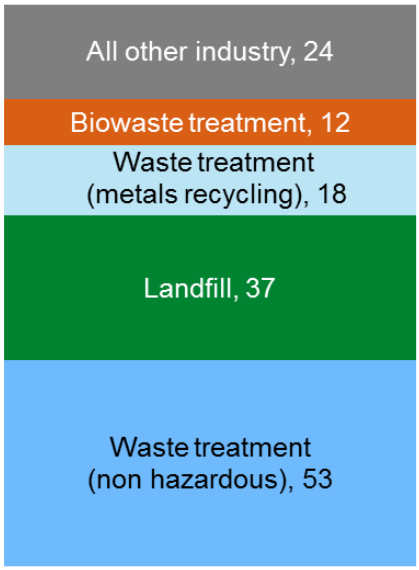
Operator performance

The majority of the sites we regulate under the Environmental Permitting Regulations (EPR) are well run. Over 93% of the 14,000 sites we regulated in 2017 were rated in our highest compliance bands A and B. 385 permits (3%) were rated in the lowest bands, D, E and F.[4]

EPR permits rated for poor compliance (all sectors), 2007 to 2017



Persistent poor performers. Permits in compliance bands D, E or F in 2016 and 2017



The number of persistently poorly managed sites (in D, E or F band for 2 or more consecutive years) fell to 144 in 2017; 18% fewer than in 2016.

Although it is by far the largest sector, with proportionally more permits, compliance in the waste sector still needs significant improvement. In 2017, 90% of sites rated D, E or F, and 94% of the persistently poorly

[4] This includes sites where there was no compliance check in 2017. Our approach to categorising permit compliance where there was no compliance check changed in 2013. This is in part responsible for the rise in D, E and F permits between 2012 and 2013 in the chart of poor compliance.

managed sites, were in the waste industry. Poorly managed sites can harm the environment, affect local communities and undermine legitimate business. We focus our regulatory action and compliance checks on the highest risk sites and activities. But we have to balance this with work to ensure we prevent risks from new or existing industry emerging, or poor compliance developing. Businesses are responsible for their own compliance.

Poor quality permit applications can prevent or delay businesses from operating or changing their activities. We're looking at ways applicants can access advice and support, to help them submit better quality applications and to assist new operators in putting the right systems in place from the start.

Enforcement action

We prosecute and use enforcement notices for businesses that commit serious offences, but we use different approaches with businesses who are trying to do the right thing. In some situations, issuing a warning letter at the right time is sufficient to bring an operator back into compliance.

Where businesses broke the rules or were operating illegally in 2017, we:

- issued 137 enforcement notices
- issued 36 formal cautions
- brought 48 prosecution cases[5]

The courts fined companies a total of £25.5 million for environmental offences in 2017, a huge increase on the £8 million in 2016. This was due to an unprecedented £20 million fine incurred by a water company for a series of significant pollution incidents. The change in sentencing guidelines in 2014 is now leading to far heavier penalties for companies where appropriate. We are pleased that fines are increasing, recognising the impact of such offences on people and the environment. Bigger fines are a significant deterrent to further unlawful activity or poor performance, and an incentive to businesses to manage their activities appropriately.

While we will hold offenders to account through prosecution where necessary, we are pleased to have a wide range of sanctions for environmental offences available to us. Some of these we can use directly, and give us more flexibility, such as enforcement undertakings. This type of sanction aims to change behaviour by requiring operators to pay to clean up the damage they have caused, improving the environment and helping the local community, rather than paying fines.

In 2017, we accepted 60 enforcement undertakings. Environmental charities, organisations or projects received almost £2.2 million as a result, the highest amount on record. County wildlife trusts received nearly £700,000 from 25 enforcement undertakings and rivers trusts received over £200,000 from 12 undertakings. A single enforcement undertaking was made to the Waste and Resources Action Programme (WRAP) for £650,000.

Pollution incidents

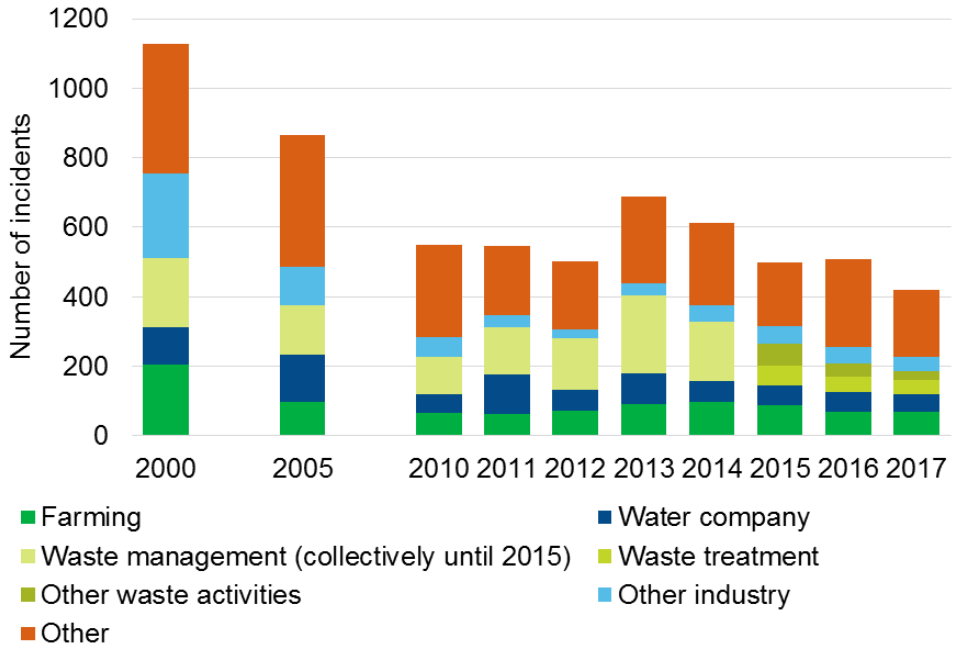
There were 419 serious pollution incidents (categories 1 and 2) in 2017, down 18% from 2016.[6] Where we were able to identify the source, less than half the incidents (44%) were from the industries we regulate. To reduce serious pollution incidents further, there has to be vigilance and action from all businesses, not just those we permit.

---

[5] This covers enforcement actions used for waste, water quality and emissions offences by registered companies. The data come from a live database and are subject to adjustment over time.

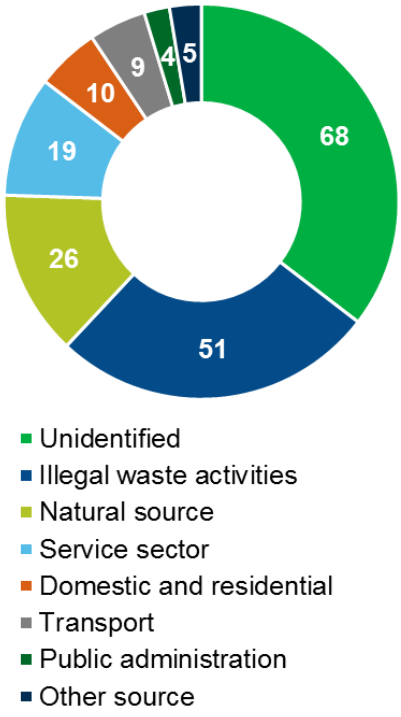
[6] In the chart of all serious pollution incidents, the substantial rise in total incidents in 2013 is largely due to the fact we changed the way we reported incidents, particularly amenity incidents, in 2013. This raised the impact level of some incidents to category 2 when they would have previously been reported as a number of category 3 events.

All serious pollution incidents (caused by activities we permit and those we do not) by activity type



From 2015 waste management activities (collectively) are split into the waste treatment sector and other waste activities (the latter including the biowaste, landfill, incineration with energy recovery sectors and exempt activities).

Types of 'other' pollution incidents in 2017



As well as causing environmental harm, serious incidents can have significant financial impacts on a business. This can include loss of productivity, clean-up and enforcement costs, and claims for damages from third parties. Pollution incidents can adversely affect business' reputations potentially damaging the ability to secure future contracts or subsidies.

Farming activities

In 2017, farming activities again caused the most incidents (68 incidents), an average of more than one a week. Although slightly less than 2016 (70 incidents) there is not enough action in this sector to reduce pollution incidents. Within the sector, the dairy sub-sector typically causes the most incidents. In 2017, 40 of the 68 incidents (59%) were caused by dairy farming activities. Containment and control failures caused 48 incidents (71% of the total). In the dairy subsector, 38 of the 40 incidents involved slurry or silage, and 33 of these (87%) were due to containment and control failures. The intensive pig and poultry sub-sector, which is the only farming subsector we regulate under EPR, caused 12 incidents.

Waste management

There were 65 serious incidents caused by waste management activities, which collectively includes 4 sectors; waste treatment, landfill, biowaste and incineration with energy recovery (energy from waste). This is almost 20% fewer than in 2016 (80 incidents), and almost two-thirds fewer than in 2014 (170 incidents). The biowaste sector reduced incidents from 46 in 2015 to 25 in 2016 and 15 in 2017. This is good progress, but overall there are still too many. The waste treatment sector did not manage to reduce the incidents it caused between 2016 and 2017 (42 incidents each year).

Water companies

Water companies[7] caused 52 serious pollution incidents in 2017. Although this has reduced each year for the last 4 years, progress is slow. Incidents fell 9% between 2016 and 2017, but are still only 15% lower than in 2014.

Other sectors

Incidents caused by permitted activities in the food and drink sector continue to rise from 3 incidents in 2015, to 7 in 2016 and 17 in 2017. One site caused 10 of the 17 incidents in 2017, all of which were odour-related. Non-permitted activities in this sector caused a further 3 incidents in 2017.

Odour pollution

Tackling odour pollution is an important part of achieving our strategic objectives to protect and improve the environment. We review and monitor air quality and regulate permitted sites to reduce the impact on people and the environment. We work with sectors to reduce amenity issues, including odour and noise, and prevent nuisance from regulated sites.

The causes of odour pollution vary depending on the site and sector. Sectors that cause odour pollution include food and drink, intensive farming, landfill, composting, anaerobic digestion and waste treatment. Our national amenity team is looking at where we can improve our approaches to odour regulation.

Supporting industry regulation

Andrew, in the Environment Agency's head office team supporting industry regulation said: "With colleagues I lead on the development of regulatory activities at major hazard sites to prevent accidents. We do this alongside colleagues in the Health and Safety Executive (HSE) with whom we are the Competent Authority, regulating these sites under the Control of Major Accident Hazard Regulations (COMAH). I work closely with operational colleagues, the HSE and industry to drive continuous improvements and share learning from accidents around the world. We do this to prevent future accidents and serious pollution incidents. As a result of the work we do together, we are seeing a reduction in accidents with environmental impacts. Future work will continue to help this with new work streams focussing on flood preparedness and leadership."

Causes of pollution incidents

Containment and control failures, such as spills and leaks from pipes and tanks, continue to be a leading cause of pollution incidents. Among the incidents where we could identify a source (351), 54% were caused by containment and control failures. Of the incidents at sites undertaking activities we permit, 67% were containment and control failures. In the farming sector, 71% of incidents were caused by containment and control failures. Among the farming activities that do not require a permit from us under EPR,[8] this rises to 82%. This type of incident is preventable and indicative of poor environmental management controls. We expect all businesses to actively manage these risks and have appropriate environmental management systems in place.

---

[7] In this report 'water companies' means the 9 main water and sewerage companies in England; the same as for our Water company performance report. (www.gov.uk/government/publications/water-and-sewerage-companies-in-england-environmental-performance-report).

[8] Under the Environmental Permitting Regulations, we only permit and regulate the intensive pig and poultry sector, which is a small proportion of total farming business.

Incidents involving fires

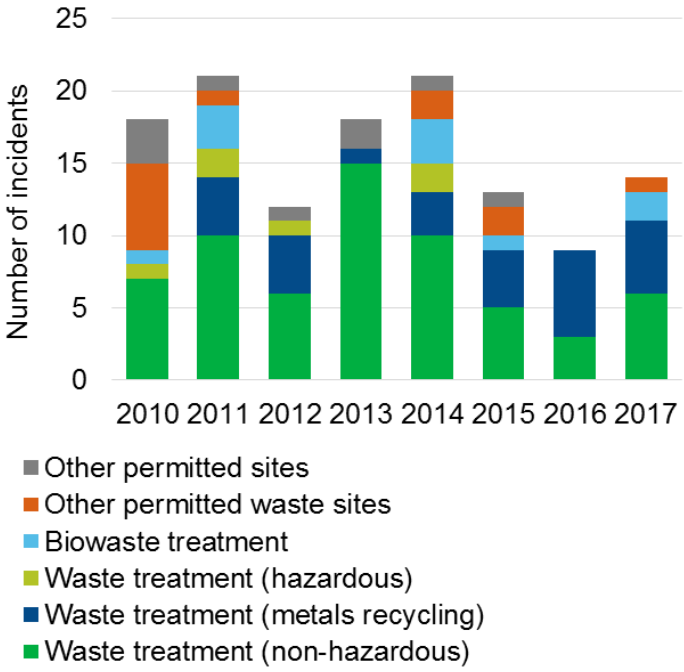
There were 14 fires at sites with permits that caused a serious pollution incident (category 1 or 2) in 2017. All of them were at permitted waste sites, with 6 at non-hazardous waste treatment sites, and 5 at metals recycling waste treatment sites.

Fires at non-hazardous waste treatment sites reduced each year from 2013 to 2016. But in 2017, were double that in 2016. Fires have significant impacts on local air quality, the water environment, and nearby residents and businesses.

In 2016, we revised our Fire Prevention Plan (FPP) guidance to help reduce the risk and impact of fires at regulated waste sites. New permit applications for sites that store combustible waste must be accompanied by a FPP. We can also require existing permit holders to submit FPPs following a fire, or if we consider the site to be high risk.

There were a further 12 serious pollution incidents caused by fires at sites we do not permit, 8 of which were at illegal waste sites.

Serious pollution incidents caused by fires at sites with permits



Waste crime

Waste crime:

- pollutes the environment
- puts communities at risk
- undermines the economic growth of legitimate businesses

Waste crime is becoming more organised, involving networks of career criminals. It is increasingly extending to fraud in the producer responsibility regime and in the mis-description of waste. This is to avoid or reduce charges for legitimate waste disposal or recovery. Tackling this type of illegal activity is complex. As well as resources, and new regulatory approaches, it requires even better partnership working with other enforcement bodies such as the police, HMRC and DVLA.

The government has recognised the work we do, and given us an extra £30 million of funding over 4 years to help tackle the problem of waste crime. The money is invested in tackling 3 important areas of waste crime:

- illegal waste sites
- illegal waste exports
- the mis-description of waste

We continue to use intelligence-led approaches to target the most serious crimes and evaluate which interventions are most effective. Our aim is to find the best ways to prevent, deter and disrupt waste crime, rather than act after it happens.

In 2018, we were given new powers. They give us the authority to lock up illegal waste sites and block access to prevent waste piling up and posing a risk to the environment. We can also require rogue operators to clear all the waste at a problem waste site, not just the illegal waste. Since August 2017, we've also been able to seize vehicles involved in waste crime. Between August 2017 and July 2018, we seized 22 vehicles. The majority have been flat bed tipper vehicles, some of which have been crushed.

The economic impact of waste crime in England in 2015 has been estimated to be at least £604 million

Proposals will be set out in the government's forthcoming Resources and Waste Strategy. This will include a strategic approach to waste crime that will drive initiatives to prevent, detect and deter waste crime through a range of actions for us and our partner regulators, Defra and local authorities.

Illegal waste sites

In the financial year 2017 to 2018, we stopped illegal waste activity at 812 sites. But we also found 856 new ones. This is almost the same as the previous year (824 stopped and 852 new sites found).

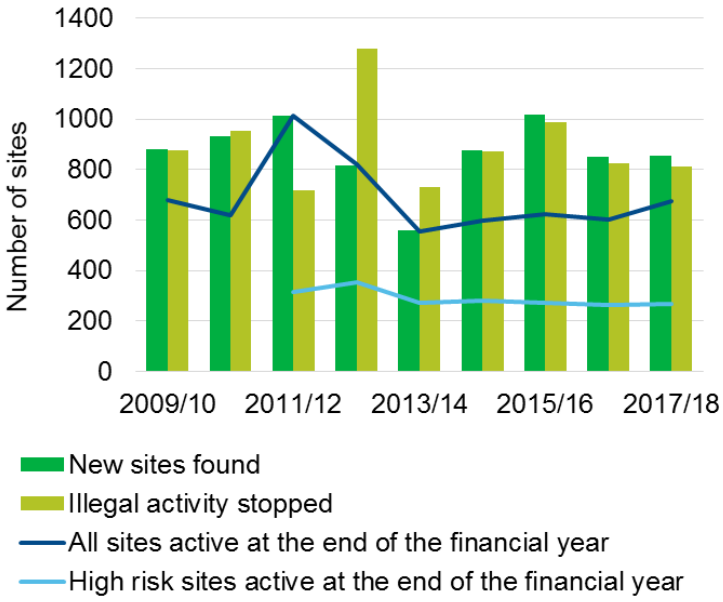
At the end of March 2018, 673 known illegal waste sites were still active. 267 (40%) of these were classified as high risk sites.

Of the 812 illegal waste sites where we stopped activity in the financial year 2017 to 2018, 70 sites brought their activities into regulation.

The top 3 types of waste found at illegal sites in this period were:

- household and commercial waste
- end-of-life vehicles
- construction and demolition waste

Illegal waste sites, 2009/10 to 2017/18



We dealt with 226 incidents of illegal large-scale dumping in the financial year 2017 to 2018. The largest proportion of these involved building and commercial type waste. While dumping is prevalent across the country, the south east of England is particularly affected. The trend in the number of dumping incidents is gradually rising. We classified the majority of these incidents as category 3, having a minor impact on the environment, people and property. However, these incidents can still have a pronounced detrimental effect on legitimate business and the welfare of the community.

Illegal waste exports

We continue to work closely with our partners to gather intelligence on waste shipments. This helps us target activities that prevent illegal exports of unsuitable wastes. These are often mis-described as recyclable materials. We inspected 1,012 containers in 2017, with 367 of these being returned to their site of loading. We stopped over 7,000 tonnes of waste at ports and prevented nearly 9,000 tonnes of waste from reaching ports. In total, this prevented the illegal export of 16,223 tonnes of unsuitable waste. In addition, not having to repatriate that waste saved the UK economy an estimated £1.3 million. Businesses involved in the shipment of wastes must ensure that the waste they handle is managed in an environmentally sound manner throughout its shipment and recycling.

Protecting and improving the environment

We actively improve the environment and health of our communities, but we do not do this alone. Many of the positive changes we have seen have been associated with UK implementation of EU law (directives and regulations) requiring industry and businesses to change their working practices. Our role as regulator has been to give practical effect to these requirements and ensure industry meets the required standards. We do this by reviewing and changing permits, checking compliance and taking enforcement action where necessary; all with the aim of reducing businesses' impact on the environment.[9]

We are currently working with Defra to ensure the environment remains protected after the UK leaves the EU. Our aim is to improve the environment for people and wildlife, and help Defra and the government achieve the ambitions of the 25 Year Environment Plan. This means working to conserve the UK's natural capital and leaving the environment in a better state than we find it.

Cleaner air

Air pollution is caused by natural sources and by people's activities, including the combustion of fuels for heat and power, industrial processes and manufacturing, agriculture and transport.

Air quality

Air quality is the fourth biggest public health risk, behind cancer, obesity and cardiovascular disease. It is the biggest environmental threat to health. Nitrogen oxides (NOx), sulphur oxides (SOx), and fine particles (PM10 and PM2.5) irritate the airways of the lungs. They increase the symptoms of those suffering from lung diseases and can exacerbate heart conditions. Ammonia reacts in the atmosphere to produce particulate matter. Non-methane volatile organic compounds (NMVOCs) react with other pollutants to form ground level ozone, which also irritates airways and can damage crops. The health problems resulting from exposure to air pollution have a high cost to society and business, including our health services. In the UK, these costs are more than £20 billion every year.[10]

Air pollution also has negative effects on natural habitats, ecosystems and processes, plants and animals. There are direct effects on animals and vegetation, and indirect effects on the acid and nutrient status of

[9] Environment Agency, Regulated industry sector strategies (www.gov.uk/government/publications/environmental-performance-sector-strategies).
[10] Royal College of Physicians. Every breath we take: the lifelong impact of air pollution. Report of a working party. London: RCP, 2016 (www.rcplondon.ac.uk/projects/outputs/every-breath-we-take-lifelong-impact-air-pollution).

soils and waters, which can alter nutrient cycles and damage plant growth. Ozone can be toxic to plants, and contributes to smog in cities which can harm wildlife and domestic animals. Poor air quality also reduces biodiversity by changing habitats that animals rely on for shelter and food.

Air quality in the UK has improved, but there is more to do. Of England's nitrogen-sensitive habitats, 95% are still adversely affected by nitrogen deposition, although this is a 3% reduction since 1996. Of England's acid-sensitive habitats, 59% are affected by acidification, a 17% reduction since 1996.[11]

In the 1980s, acid rain resulting from SOx and NOx in the atmosphere caused habitat destruction in northern Europe that became a major issue. Together with regulators in other countries, we have now virtually eliminated this acid rain. With action from the installations we regulate, we made a major contribution to this by massively reducing sulphur dioxide emissions from those industries.

Reducing emissions improves people's health by lowering the risk of respiratory illnesses, as well as protecting sensitive species and sites such as upland moorlands.

Industrial emissions

There are legal requirements to control emissions at source through permits and the setting of air quality standards and objectives, with targets set for 2020 and beyond to protect human health and the environment. We regulate emissions from sites across a range of process industry and energy sectors, and we're committed to maximising the impact we make.

Reducing air emissions

Chris from the Environment Agency's National Permitting Service said: "I've been working closely with colleagues in our areas and national office on the re-permitting of oil refineries, to ensure they meet the requirements of the Industrial Emissions Directive. This work will reduce the overall emissions to air from this important sector."

NOx, SOx, and small particulate matter

Since 2000, emissions from these sites of:

- NOx have decreased by 71%
- SOx have decreased by 93%
- PM10 has decreased by 51%

Emissions of NOx, SOx and PM10 from the sites we regulate were similar in 2017 to those in 2016, suspending the steady reduction we've seen in these emissions since 2012.

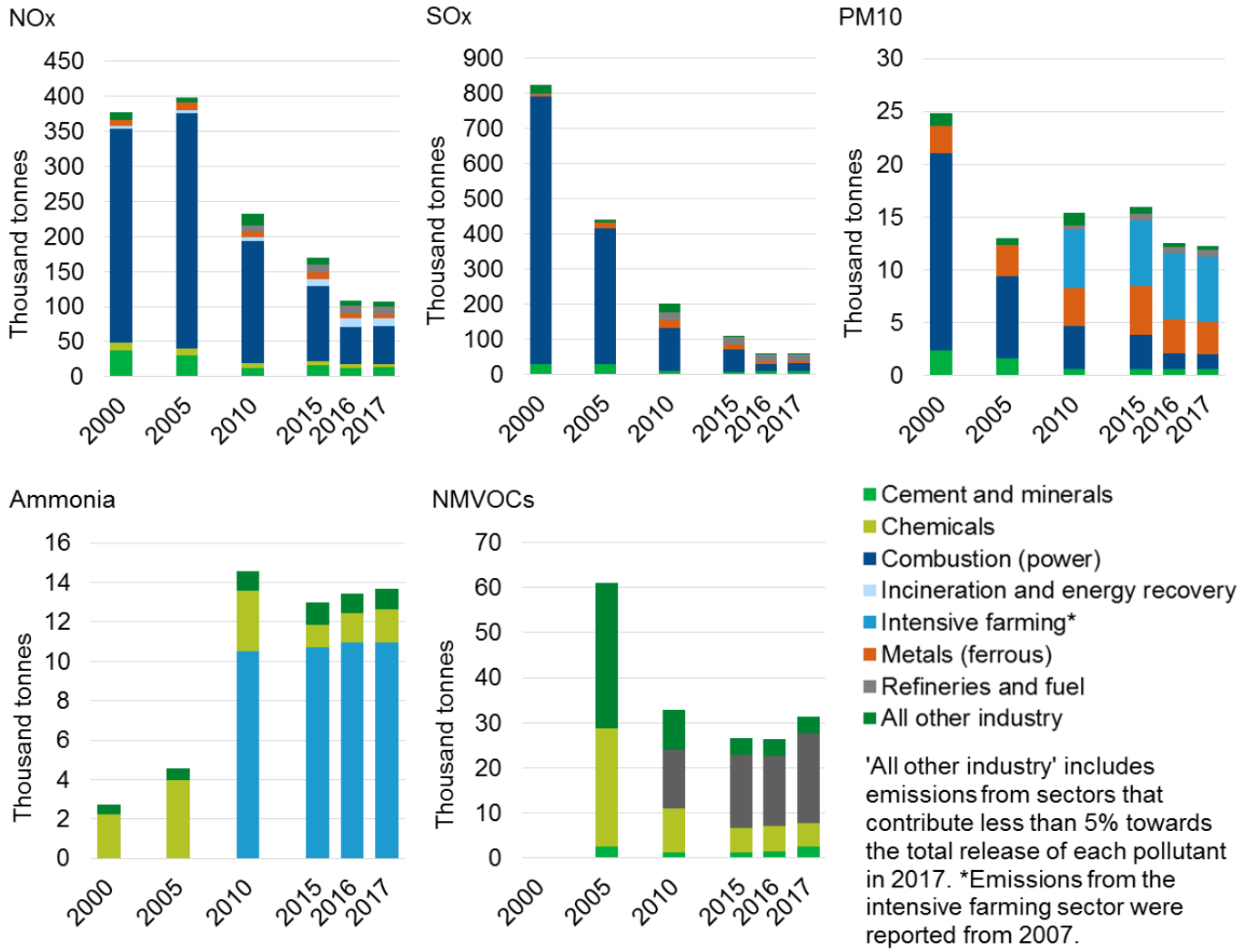
Emissions of PM2.5 from the industries we regulate have reduced by 61% since 2006 (the year we started recording them). In 2015, these emissions were just 6% of the UK's total.

Annual average PM2.5 levels measured in 31 of 54 English towns and cities listed in the World Health Organization's air pollution database were above the health-based guidelines they recommend. PM2.5 was the main cause of days of moderate or higher pollution in urban areas in the UK in 2017. Wood burning in

[11] Environment Agency, State of the environment air quality report. (www.gov.uk/government/publications/state-of-the-environment).

household stoves accounts for between 23% and 31% of PM2.5 emissions in Birmingham and London,[12] along with emissions of carbon monoxide, carbon dioxide, NOx, NMVOCs and SOx.

Emissions to air from sites with permits, 2000 to 2017



Ammonia

Emissions of ammonia to air from permitted intensive pig and poultry farms continue to rise. In part, this is because the number of this type of farm has increased, by 26% over the last 6 years. Most of the ammonia emitted by the industries we regulate comes from intensive farming. This is specifically intensive pig and poultry farming that we regulate under EPR.[13] But intensive pig and poultry is only a small proportion of total farming activity. Ammonia emissions from the intensive farming sites we regulate contribute just 6% of all ammonia emissions in England. Most of the ammonia emissions come from other, non-intensive, farming activity. Farming as a whole (including intensive pig and poultry and other non-intensive activity) is

[12] Environment Agency, State of the environment air quality report. (www.gov.uk/government/publications/state-of-the-environment).
[13] Other legislation such as the Water Framework Directive will also apply, and will apply to farms not regulated under EPR.

the biggest contributor to total ammonia emissions. In 2016, 88% of all ammonia emissions in the UK were from farming.[14] Manure management on livestock farms, manure applied to soils and nitrogen-based fertiliser application were the main contributors.

Bioaerosols

Emissions of bioaerosols, mainly from intensive livestock housing and the use of manure and slurry, are an emerging concern for localised air quality and human health impacts.[15] Bioaerosols are airborne bacteria and other biological particles such as fungal spores. There are currently no regulations covering emissions of bioaerosols in England. There are only guideline levels aimed at protecting human health.

Non-methane volatile organic compounds

Levels of NMVOCs from refineries, reported by operators, increased by 29% in 2017. Not all sources of NMVOC emissions can be measured, so they are assessed using a calculation methodology. The increase may be due to a change in the way one oil refinery has applied this calculation.[16] We are undertaking a joint wider sector review, with the industry, of the methods used to calculate NMVOCs. The refineries we regulate contribute 3% of total England NMVOCs; other sites we regulate contribute a further 2%.

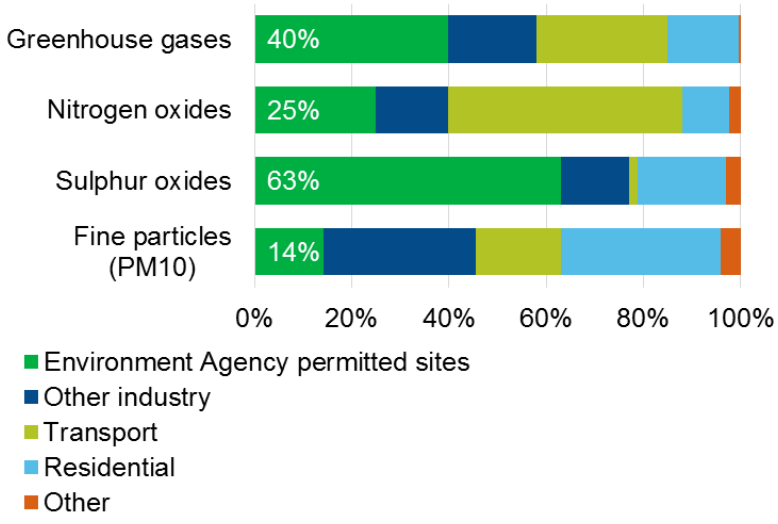
Improving air quality

We welcome the government's recently published draft Clean Air Strategy, currently out for consultation, which outlines planned policies and measures to reduce air pollution. Looking ahead, there's high confidence that with current measures the targets for sulphur dioxide will be met. The required emissions limits for ammonia, NOx and fine particles are more challenging. The government has identified new measures in the Clean Air Strategy to help meet these. For NMVOCs, further actions and reductions still need to be identified to close the gap.

The businesses we regulate contribute 40% of greenhouse gases, 25% of all NOx emissions, 63% of SOx and 14% of PM10 in England. Significant contributions to the reductions achieved so far include:

- coal and oil fired combustion plants closing as they are unable to meet the tighter emissions standards set in the Large Combustion Plant Regulations 2002
- an increasing amount of energy being generated from renewable sources, reducing the amount needed from fossil fuels
- application of best available techniques to improve process efficiency and remove pollutants from flue gases

Emissions to air from sites we permit as a percentage of all England emissions, 2015



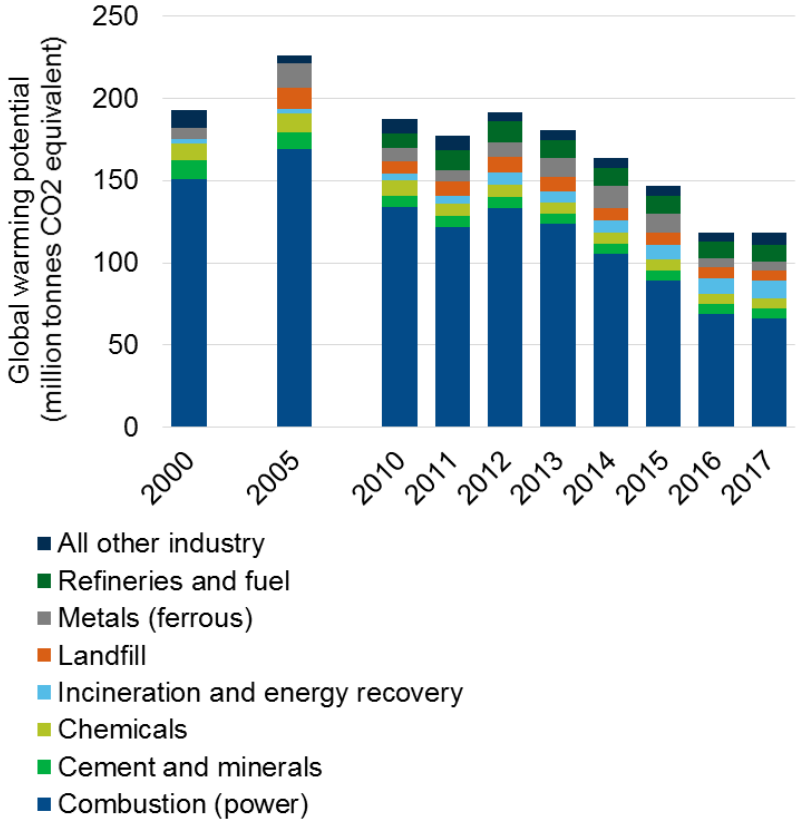
[14] Environment Agency, State of the environment air quality report. (www.gov.uk/government/publications/state-of-the-environment).
[15] Douglas, P. and others. (2017). A systematic review of the public health risks of bioaerosols from intensive farming. International Journal of Hygiene and Environmental Health 221:134-173 (www.doi.org/10.1016/j.ijheh.2017.10.019).
[16] We recognise this is a large increase in the emissions reported to us. We are currently working with the operator to verify that the calculation methodology has been correctly applied.

But, as the emissions of pollutants from the industrial activities we permit have reduced, the contributions from non-permitted industry and activities in our wider society have become more apparent. Ammonia from non-intensive farming, NOx from road transport and PM2.5 from domestic wood-burning stoves are examples.[17] High levels of nitrogen dioxide, ozone and particulate matter still remain in many urban areas – where most people live. We all have a part to play in further reducing these pollutants in the environment.

Climate change

The businesses we regulate contribute just over a third of all greenhouse gas emissions in England. Since 2000, emissions of greenhouse gases from these businesses have decreased by 39%. There was little change in emissions between 2016 and 2017. The combustion (power generation) sector contributes 56% of the emissions from the sites we regulate.

Greenhouse gas emissions (as global warming potential) to air from sites with permits, 2000 to 2017



'All other industry' includes emissions from sectors that contribute less than 5% towards the total release of greenhouse gases in 2017.

Methane emissions

The global warming potential of methane is estimated to be around 25 times greater than carbon dioxide, based on a 100-year time horizon. Even small decreases in methane can have significant benefits in terms of its contribution to climate change.

In 2017, the landfill sites we permit released 170,000 tonnes of methane to air. This accounts for 90% of all methane emissions reported from the sites we permit. It's about 14% of total methane emissions in England.[18] The landfill sector's methane emissions have decreased by 66% since 2002 and by 8% between 2016 and 2017. The decrease in landfill gas production is largely due to the diversion of biodegradable waste away from landfill and a decrease in the number of operational sites.

The farming sector contributes 43% of methane emissions in England. The majority of this comes from intestinal fermentation. Emissions of methane from farms have decreased by 13% since 2000 due to decreasing livestock numbers. Emissions from the intensive farming sites we regulate contribute less than 1% of all methane emissions in England.

[17] Environment Agency, State of the environment air quality report. (www.gov.uk/government/publications/state-of-the-environment).
[18] Defra, Greenhouse gas inventories for England, Scotland, Wales and Northern Ireland: 1990-2016 (www.naei.beis.gov.uk/reports/reports?report_id=958).

Low carbon electricity

Our work on new nuclear build is helping secure around £60 billion investment in low carbon electricity generation. This also reduces the emissions of other polluting gases arising from combustion-based electricity generation.

Cleaner, plentiful water

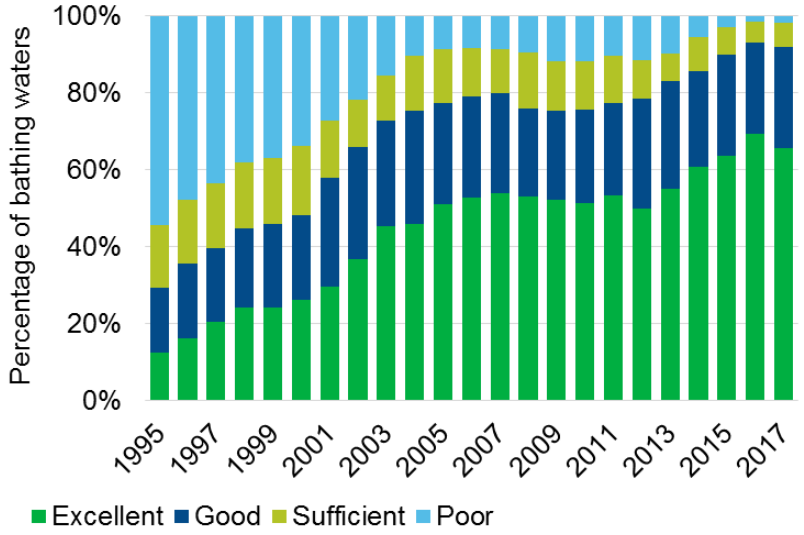
Bathing waters

Bathing water quality remained high following 2016's record results, which showed bathing waters were the cleanest since records began.

Of bathing waters tested at over 400 beaches and lakes up and down the country in 2017, 98.3% passed the standard, following 98.5% in 2016.

Sources of pollution in bathing waters are any sources of faecal matter. The Bathing Water Directive only considers faecal indicator organisms in the classification, no chemical ones.

Bathing water quality, 1995 to 2017



The most significant sources of pollution that impact bathing water compliance are:

- sewage from sewage treatment works or combined storm sewer overflows
- agricultural pollution from the faeces of grazing animals
- urban run-off which contains dog and bird faeces
- birds and animals on the beach such as seagulls, pigeons, dogs, horses and donkeys

Maintaining a high quality of bathing water benefits the seaside economy; worth more than £3.6 billion annually, with 146 million people visiting Britain's beaches every year.[19] Improvements in bathing water quality are largely due to improvements in the sewerage infrastructure at, or near, a number of bathing waters. Local action plans are in place for the waters that need improvement, involving a range of partner organisations.

Between 1990 and 2020, the water industry will have invested about £25 billion in environmental improvement work. We work with the water companies to target these investments to maximise water quality improvements.

Whatever action we take to improve bathing waters, an important factor in bathing water quality will always be rainfall. We cannot protect bathing water quality during the most extreme events, when sewage overflows are likely to occur. To do so would be prohibitively expensive and may not be beneficial as fewer people visit beaches and swim when the weather is bad. We take a long term view and prioritise waters for improvement where it matters most.

[19] Defra and Environment Agency press release. England's bathing waters best on record (www.gov.uk/government/news/englands-bathing-waters-best-on-record).

Freshwaters

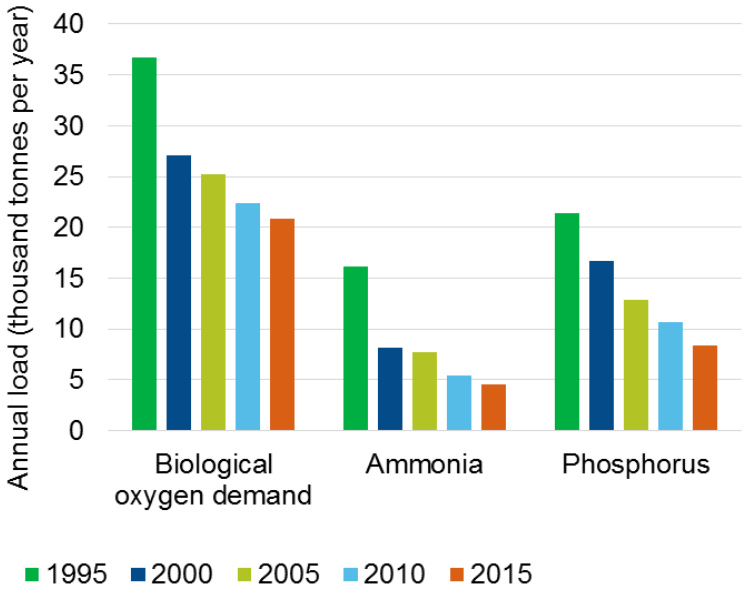
Freshwaters, which include surface waters and groundwaters, as a natural capital asset, are worth at least £40 billion to the economy.[20] In 2016, 86% of river water bodies had not reached the Water Framework Directive assessment of good ecological status, and only 53% of groundwater bodies achieved good chemical status. The main reasons are: agriculture and rural land management, the water industry, and urban and transport pressures.

Phosphorus

Phosphorus is one of our most significant water management issues, with 55% of assessed river water bodies and 74% of lakes failing the phosphorus standard for good ecological status. Water company discharges of sewage effluent are the largest source of phosphorus entering rivers, accounting for 60 to 70% of the total load. Agriculture, through run-off contaminated with fertilisers and manures, is the second largest source of phosphorus entering rivers. It contributes about 25% of the total load.

Environmental improvements have reduced phosphorus, as well as ammonia and biological oxygen demand loads from sewage treatment works discharges. For phosphorus, the reduction from 1995 to 2015 was over 60%. Reductions in fertiliser use and animal numbers, along with improved farm practices over the last 30 years, have helped to reduce phosphorus loadings to water from agricultural sources.

Loads discharged to rivers from water company sewage treatment works in England and Wales, 1995 to 2015



Nitrate

Nearly half of groundwater bodies will not reach good chemical status by 2021. For groundwaters that are protected for drinking water, nitrate levels were responsible for 65% of failures to achieve good chemical status in 2016. Nitrate enters groundwater from diffuse pollution on land or is deposited onto land from the air. Modelling suggests that in rural areas of the UK more than 80% of nitrate in groundwater comes from agriculture.

Agriculture

Tackling water pollution caused by agriculture remains a challenge. Agriculture covers 70% of England and consequently has a large impact on the environment. Agriculture is regularly responsible for more pollution incidents than any other sector in a given year, usually with most incidents caused by the dairy sector. It contributes to more water bodies not reaching good status under the Water Framework Directive than any other sector. As well as contributing 25% of the phosphorus load to rivers, it also contributes approximately 50% of nitrate and 75% of the sediment loads. Poor agricultural practice can also result in compacted soils.

[20] ONS, Natural capital accounting 2020 roadmap: Interim review and forward look (www.gov.uk/government/statistics/natural-capital-accounting-2020-roadmap-interim-review-and-forward-look).

Compacted soils allow less infiltration creating more run-off, which transfers top soil, nutrients and pesticides to rivers, and may increase flood risk downstream.

Over the last few years we've worked closely with Defra to produce new rules for farmers to help protect water quality. The rules offer a new approach to regulation and will help standardise good farming practices that many are already following. The rules came into force in April 2018. We're rolling them out through an advice-led approach, working with farmers to meet the requirements.[21]

Water companies

We published our latest report on the performance of water and sewerage companies in July this year (2018).[22] The report rates how well the 9 water and sewerage companies, operating wholly or mainly in England, managed their impact on the environment. This includes pollution incidents, managing sewage and complying with their permits. We use this evidence to encourage water companies, regulators and other partners to improve their performance to meet their legal obligations and our expectations of them.

In 2017, compliance with environmental permits at sewage treatment works and water treatment works remained good with 98.6% compliant, the same as in 2016. However, some companies still need to make significant improvements to cut pollution, reduce incidents and improve permit compliance to meet the 100% expectation. The cumulative effect of multiple small issues or incidents can have a significant overall impact on the environment or human health. Active monitoring programmes and self-reporting helps spot these issues before too much damage is done. We saw the highest ever level of water company self-reporting of pollution incidents in 2017 (76%, up from 72% in 2016).

We work with water companies and other organisations to prevent and mitigate pollution incidents when they happen. These include rivers trusts, wildlife trusts and community wardens and local campaigns and projects such as the Oil Care Campaign,[23] Yellow Fish[24] and ConnectRight.[25]

Plentiful water

Of the 9 main water and sewerage companies operating in England, 8 gained full marks for protecting water supply security in 2017. One company failed to gain full marks due to failing its leakage target. Over 3 billion litres of water a day are lost through leakage in England.[26] This is equivalent to the amount used in homes by over 20 million people (just under a third of the UK population) on an average day. Current leakage volumes, at around 20% of the water put into supply, are large enough to have a noticeable effect on the total demand for water.

Of the water taken from freshwater sources, 55% is abstracted by water companies for public water supply and 36% is used for electricity supply and other industries. Current levels of abstraction are unsustainable in more than a quarter of groundwater bodies and up to one-fifth of surface waters, reducing water levels and damaging wildlife.[27] In December 2017, we published a new plan with Defra to address this, making full use of our regulatory powers, local knowledge and partnerships.[28] Since 2008, we have returned over

---

[21] Defra and Environment Agency, Rules for farmers and land managers to prevent water pollution (www.gov.uk/guidance/rules-for-farmers-and-land-managers-to-prevent-water-pollution).
[22] Environment Agency, Water and sewerage companies in England: environmental performance report 2017 (www.gov.uk/government/publications/water-and-sewerage-companies-in-england-environmental-performance-report).
[23] Oil Care Campaign (www.oilcare.org.uk).
[24] Avoiding pollution: Yellow Fish scheme (www.gov.uk/government/publications/avoiding-pollution-yellow-fish-scheme).
[25] ConnectRight campaign (www.connectright.org.uk).
[26] Consumer Council for Water (2017). Water water everywhere? Delivering a resilient water system (2016-17) (www.ccwater.org.uk/research/water-resilience/).
[27] Environment Agency, 2018. The state of the environment: water resources.
[28] Defra, Water abstraction plan 2017 (https://www.gov.uk/government/publications/water-abstraction-plan-2017).

30 billion litres of water a year to the environment by stopping businesses taking more than the local environment can sustain. We will continue to review current and new abstraction licences.

We ensure compliance with abstraction licences to ensure abstraction does not harm the environment, to prevent water theft, and to prevent illegal activity undermining lawful abstractors. Of the 19,000 abstraction licences currently in force, we visited about 4,000 last year to check compliance. Most abstractors have a good compliance record. Of those visited, over 90% were compliant with their licence.

Radioactivity in the marine environment

The long-term trends in radioactive discharges to the sea, radionuclide concentrations in the marine environment, and in the resulting radiation doses to people, are downward in the great majority of cases. We have played a significant role in bringing this about through working with industry to identify the best solutions for managing radioactive waste, as well as through the permitting regime which requires applying the best available techniques to avoid or minimise radioactive discharges.

Radioactive discharges from the nuclear sector have decreased. An evaluation of progress by the OSPAR Commission (Convention for the Protection of the Marine Environment of the North-East Atlantic)[29] published in 2017, and a more recent UK government review[30] both demonstrated clear evidence of progress in meeting the objectives of the UK and OSPAR strategies for radioactive discharges to sea. These conclusions are backed up by the UK's environmental monitoring data,[31] which indicates there has not been a significant increase in environmental concentrations since the signing of the OSPAR Convention in 1998.

The levels of most radionuclides in the marine environment have decreased in response to decreases in discharges since the baseline period (1995 to 2001). In 66% of the assessments published by OSPAR in 2017, none of the assessments showed evidence of an increase in discharges. Discharges of total alpha and total beta radioactivity from all the member countries combined have reduced by 60% and 92% respectively since the baseline period, while discharges of technetium-99 have reduced by 97%. The monitoring programme also shows that the radiation doses to people resulting from permitted discharges to the aquatic environment and to air, are well below statutory limits.

Reduced waste

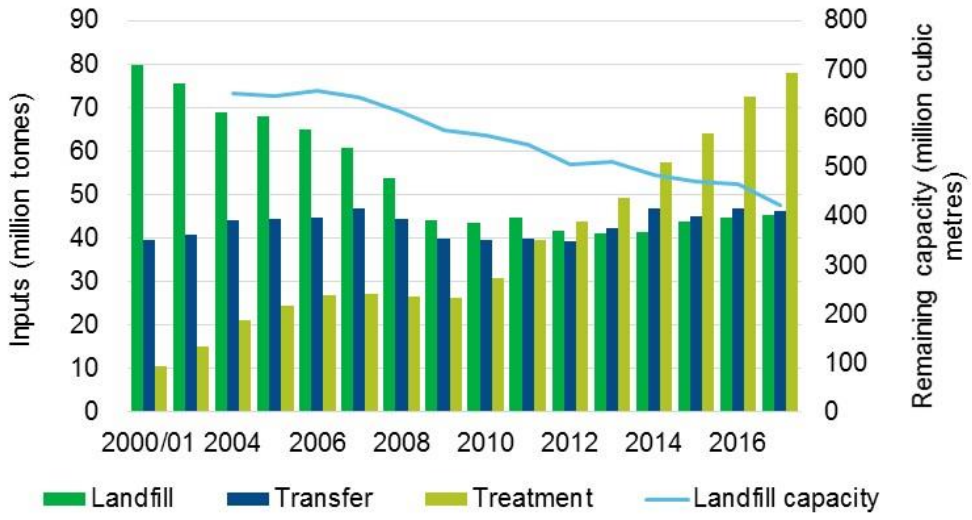
Waste re-use and recovery helps the environment by protecting natural resources and reduces the need to dispose of material. In recent years, more waste has been re-used and recycled, and less landfilled. Twenty years ago nearly all waste went to landfill. Now most is beneficially re-used or used for energy generation. This has led to a large increase in the number of sites storing and treating wastes, often in close proximity to communities. This has, however, also increased the risks of fires and odours.

[29] Ospar assessment portal, Radioactive discharges from the nuclear sector have decreased (oap.ospar.org/en/ospar-assessments/intermediate-assessment-2017/key-messages-and-highlights/discharges-nuclear-sector/).
[30] BEIS, UK strategy for radioactive discharges: 2018 review of the 2009 strategy (www.gov.uk/government/publications/uk-strategy-for-radioactive-discharges-2018-review-of-the-2009-strategy).
[31] Environment Agency, Natural Resources Wales, and Food Standards Agency, Radioactivity in food and the environment (RIFE) reports 2004 to 2016 (www.gov.uk/government/publications/radioactivity-in-food-and-the-environment-rife-reports-2004-to-2016).

The amount of waste going to landfill in England has decreased by 43% since the year 2000 to 2001.[32]

We promote the use of waste as a resource by issuing waste quality protocols. These define when a waste derived material can be regarded as a non-waste product. Since they were first issued in 2007, they have diverted over 61 million tonnes of material from landfill and saved businesses around £466 million. By 2020, waste quality protocols could help businesses save, on average, £122 million a year through reduced waste management costs, and generate a further £495 million a year through the sale of this resource. In some cases materials previously disposed of in landfills may be mined to recover materials now covered by a waste protocol. For example, pulverised fuel ash from coal-fired power stations can be recovered and used as a secondary aggregate.

Waste management, 2000/01 to 2017



Closing landfills

Nicky, an Environment Agency Senior Landfill Advisor said: "I have been working with colleagues, landfill operators and other agencies to bring over 350 landfills into definite closure. However, a landfill remains permitted for as long as the site continues to pose an unacceptable risk to the environment or human health, so we will be regulating these sites for decades to come. EPR legislation requires operators to ensure that landfills that are no longer accepting waste are managed, monitored and maintained in line with site-specific permit requirements. This work has improved infrastructure at these sites and investment in their future aftercare."

In 2017, the sites we permit produced 16.8 million tonnes of waste, an increase on the 15.4 million tonnes in 2016. A record 68% of this waste was recovered or reused.

The sectors that produced the most waste in 2017 were:

- biowaste treatment (4 million tonnes, 24% of waste produced by all sectors with permits)
- incineration with energy recovery (2.8 million tonnes, 17%)
- food and drink (2.6 million tonnes, 15%)

Most of the waste from these sectors is recovered.

[32] Environment Agency, Waste management for England 2017 (assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/741304/Waste_management_2017_England_summary.pdf).

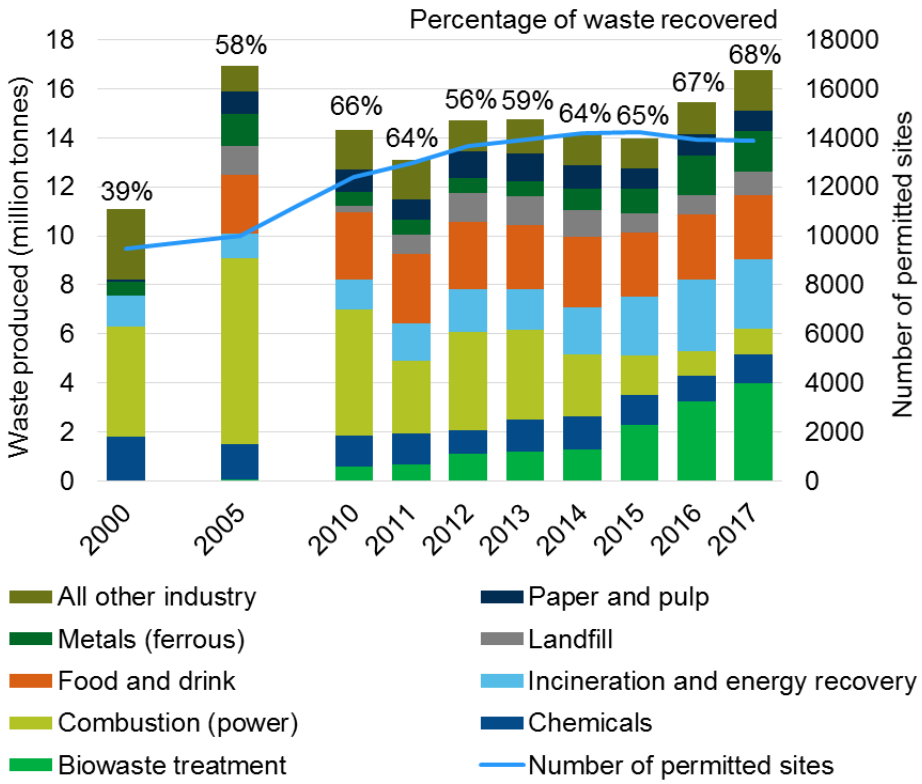
The biowaste sector is a rapidly growing and diverse emerging sector. It includes, for example, composting and anaerobic digestion processes.

The amount of waste produced by the biowaste treatment sector increased by 23% between 2016 and 2017. This increase is a reflection of waste increasingly being sent to treatment facilities rather than landfill. The sector recovered 80% of its waste in 2017. It also produces waste materials that have the potential to be valuable resources. They can be burned to produce energy or added to soil for agricultural improvement.

Waste produced by incinerators consists of incinerator bottom ash (ash left over from burning the waste) and air pollution control residue (from treating the exhaust gases). The amount of waste produced is proportional to the amount of waste burned. Between 2010 and 2017, the tonnage of waste incinerated more than doubled (from 5.9 million to 13 million). The sector recovered 80% of its waste in 2017. Most of this is used as secondary aggregate in construction and road building, replacing primary non-waste minerals. This material may contain residual pollutants, so we regulate its re-use to ensure continued protection of the environment.

There was a small decrease (4%) in waste produced by the food and drink sector between 2016 and 2017. This sector recovered 93% of its waste in 2017.

Waste produced and recovered by sites with permits, 2000 to 2017



'All other industry' includes waste from sectors that contribute less than 5% towards the total amount in 2017.

The circular economy

A more resource-efficient economy requires a change towards a more 'circular' approach, where we:

- use fewer resources at the outset
- re-use and recycle resources better once they are in use (reducing 'single use' materials)
- only send materials for waste disposal when there is no further value they can provide

The circular approach builds on the waste hierarchy model of reduce, reuse and recycle, by bringing in the concept of materials being in the economy for longer.

This approach is being implemented across Europe through the EU Circular Economy Package.[33] An action plan with a wide range of measures has been produced by the European Commission covering

[33] European Commission. 2018 Circular Economy Package. (www.ec.europa.eu/environment/circular-economy/index_en.htm).

production, consumption, waste management, innovation and a focus on some specific materials or waste streams of significance. These include plastics, food waste, construction and demolition waste, biomass and bio-based materials and critical raw materials.

The Defra 25 Year Environment Plan[34] sets out ambitions for using resources more efficiently and reducing environmental impacts and regenerating natural capital. Included is an ambition for zero avoidable waste by 2050. We will be looking at strengthening markets for secondary materials and helping businesses maximise the potential economic benefits. These details will be set out more fully in the forthcoming Defra Resources and Waste Strategy.

Waste spread to land

More and a greater variety of waste is being spread to land, where it can be beneficial to soil quality and reduce the need for chemical fertilisers. Over 5 million tonnes of waste was spread to land in 2017, compared with 3 million tonnes in 2011. The application to land of sludges from waste water treatment and food preparation and digestate from the anaerobic digestion of waste has increased. This reflects changes to waste management practices and the increase in anaerobic digestion as a treatment option. Done badly, landspreading contributes to diffuse water and air pollution problems, harms soil quality and can put at risk food grown for human consumption. It can also undermine confidence of land managers in selecting waste derived materials for use on their land.

To better control application of inappropriate wastes, and help prevent legitimate operators being undercut, in early 2017 we implemented revisions to landspreading mobile plant permits. One revision was a requirement for all operators to tell us when they plan to spread their waste. This allows our staff to target field inspections to high risk spreading activities so we can act early to protect the environment. Compliance information from the inspections is also available to inform our audit of the operator's permit. To better enable the audits, in 2018 we implemented an updated EPR charging scheme, which introduced funding for audits for landspreading mobile plant permit holders on a 4-year cycle.

The additional work we do is supporting beneficial recovery and stopping waste disposal to land. It links directly to the objective in the government’s 25 Year Environment Plan of maximising resource efficiency and minimising environmental impacts by improving management of waste.

Waste exports

We have a regulatory duty to control the export of waste. The controls that apply to waste shipments depend on the:

- waste type
- country of destination and the transport route
- treatment planned for the waste when it reaches its destination

The nature of the waste in terms of its properties or potential impacts will determine whether the waste is prohibited from export, requires prior notification and consent from the competent authorities before export, or can be exported without notification.[35] Waste with no or very low hazardous impacts sent for recycling overseas can be exported as 'green list' waste. Exporters of this waste do not require any prior approvals or consent from the Environment Agency. Where the waste is considered to be hazardous (classified as amber or red list waste) the exporter has to seek prior consent from the Environment Agency. Waste destined for disposal rather than recovery is generally prohibited from export.

[34] Defra, 25 Year Environment Plan (www.gov.uk/government/publications/25-year-environment-plan).
[35] Defra guidance on waste imports and exports.(www.gov.uk/guidance/importing-and-exporting-waste#article-18).

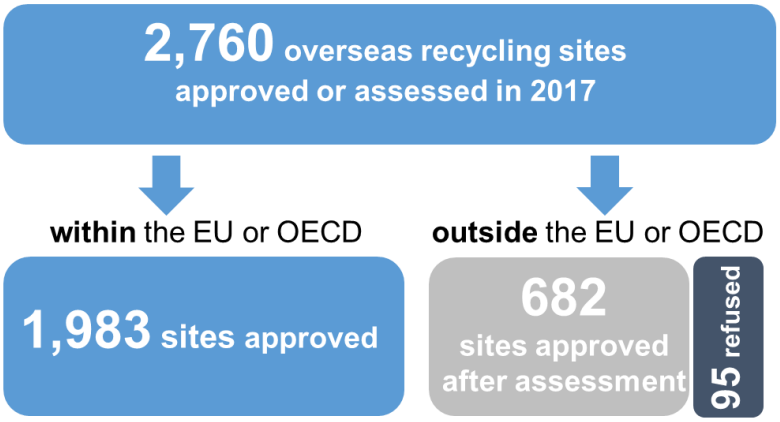
In 2017, we undertook 189 inspections of operators that notify us about waste for export. The majority of the sites we inspected were well run. Of the sites we inspected:

- 84% were rated as low risk (green)
- 14% were rated as medium risk (amber)
- 2% were rated as high risk (red)

In addition to the controls on waste exports, we also apply additional controls where the exported waste is packaging waste. This applies where the waste is being exported for the specific purpose of contributing to the UK packaging recycling rates. Accredited exporters of packaging waste must provide us with the details of the overseas recycling sites where the waste will be recycled.

In 2017, 2,760 overseas sites were approved or assessed to receive packaging waste for recycling. Of these, 777 sites were outside the EU and the Organisation for Economic Co-operation and Development (OECD). These sites are given a detailed assessment to ensure they are capable of recycling the packaging waste to equivalent standards as those within the EU. This includes for example, providing copies of relevant local permits, which show the site has been permitted to receive the prescribed waste for the purpose of recycling. Following these assessments 682 sites were approved and 95 sites were refused approval.

Overseas recycling sites for UK packaging waste, 2017



Plastics

There has recently been significant publicity on the negative impact of plastics on marine life. Plastic is one of the most versatile materials ever produced and has revolutionised the way we package, eat, travel and dress. Plastic use has increased significantly since synthetic organic polymers were developed in the mid-20th century. In 1950, 1.5 million tonnes of plastic was produced. Now, over 300 million tonnes of plastic is produced every year.[36] Globally, around 9.5 million tonnes of plastic waste is entering the world's oceans every year. This is damaging biodiversity and ecosystems. Large plastic wastes can result in injury, entanglement or suffocation of wildlife. Ingested plastic can cause direct harm to wildlife and may also be a human health risk as they enter food and water supplies.[36]

Although the recent focus has been on plastics in the marine environment, most plastic products are manufactured, used and disposed of on land. So there will be effects on both land and the freshwater environment, although the transport processes and pathways are not currently well understood.[37] Around 48% of microplastics released into the environment enter water, the remaining 52% are trapped in soil or sewage sludge. Their fate and effects over time is unknown and depends on conditions and practices in different places.[36]

[36] International Union for Conservation of Nature, Primary microplastics in the oceans: a global evaluation of sources. (www.portals.iucn.org/library/sites/library/files/documents/2017-002.pdf).
[37] Foundation for Water Research, October 2017, Microplastics in the freshwater environment.

To address the plastics issue we need to:

- reduce the need for plastics in the first place
- change the types of plastics produced
- improve collection and recovery of plastics
- reduce the amount of plastic in the waste management chain that enters the environment

However, we must also ensure alternatives to plastics are not worse for the environment.

Our regulation helps to prevent plastics escaping from waste streams or sites and we undertake work to prevent plastic becoming waste. Our activities include:

- ensuring our environmental permits for waste facilities have conditions to prevent litter escaping, and to prevent plastics going into compost, anaerobic digestion plants or landspreading activities
- implementing duty of care legislation, which prevents waste escaping from sites and vehicles
- implementing hazardous waste regulations, which help prevent harmful plastics escaping waste management controls
- overseeing requirements to destroy some types of plastics containing persistent organic pollutants (usually by incineration)
- checking that companies have looked at how to meet the waste hierarchy in their permitted activities
- implementing producer responsibility regulations, which require producers of plastic packaging to ensure it is recovered
- monitoring waste shipments, which regulates the import and export of waste, including plastics as segregated or in mixed municipal waste or refuse derived fuel

We also regulate a number of installations that manufacture the material for the production of plastic products.

Contributing to economic growth

We work to play our part in boosting growth in the economy while continuing to protect people and improve the environment. We look at ways we can help businesses save time and money and stimulate investment in new technology or infrastructure.

Ways we have supported businesses include:

- taking decisive action to improve compliance of poorer performing businesses and closing down illegal sites to help create a level playing field for good performers
- introducing more standard rules permits,[38] saving businesses time and money, and developing online permit application tools for standard permits
- reducing the time we take to determine permit applications, and at the same time improving the quality of applications
- introducing modern digital systems to allow businesses to register their activities online and carry out their business faster
- simplifying our advice and guidance

[38] Standard rules are subject to a process of regular continuous improvement & review and are revised to ensure environmental standards are met.

- improving our third party assurance scheme for intensive pig and poultry farms to reduce costs and increase biosecurity
- working with others to streamline regulation in the farming and chemicals sectors

We are also working closely with other nuclear sector regulators, including the Office of Nuclear Regulation and Natural Resources Wales. This is contributing to:

- securing around £60 billion of investment in low carbon electricity generation
- further development of our enabling regulatory regime for the development of advanced nuclear technology

Permitting activities

Our permitting and licensing activities enable businesses to carry out their operations, while robust regulation provides the level playing field legitimate businesses need to prevent being undercut by irresponsible or illegal operators. In return, we expect businesses to take responsibility for their operations.

Our national permitting service issues and deals with permits for waste, water quality, water resources and industrial activities. In 2017, it:

- issued 3,204 new permit applications
- issued 4,465 permit variations
- dealt with 1,386 permit surrenders
- dealt with 1,061 permit transfers
- registered 2,535 mobile plant deployments
- registered 243 exemptions

Updating our charging schemes

Last year we set up a programme of work to update many of our charging schemes. This came into effect on 1 April 2018. The changes will provide a long-term, sustainable charging framework that ensures we are compliant with Treasury guidelines and that our charges are simple, fair and effective. The charges are based on customers paying for the full costs of the regulatory service that we provide.

Digital technology

In 2017, we continued to invest in improving our services through the use of digital technology. This built on the successful implementation of the digital registration services of carriers and brokers and exemptions in 2016. We launched our 'I want to fish' rod licensing system in 2017, allowing over 1 million users to apply and pay online.[39] In March 2018, we launched the water resources licensing service, which allows licence holders to view and manage their licences online.[40] Some licence holders with 'hands-off flow conditions' in their licences will be better able to manage their abstractions as a result of improved access to river flow and level information online, and as a result of receiving notifications when low flows may affect their rights to abstract.

We are now using the knowledge and experience from building and operating these services on the development of future digital permitting services, for example on standard rules permits.

Nuclear build

Our work on new nuclear build is progressing well. We're continuing to regulate the Hinkley Point C construction site in Somerset where NNBGenCo is building a new £20 billion twin reactor nuclear power station. When complete, it will be capable of providing around 6% of the UK's future electricity needs while

[39] Environment Agency, Buy a rod fishing licence (www.gov.uk/fishing-licences/buy-a-fishing-licence)
[40] Environment Agency, Manage your water abstraction or impoundment licences online (www.gov.uk/guidance/manage-your-water-abstraction-or-impoundment-licences-online)

reducing emissions of greenhouse gases. In 2017, we also completed our generic design assessment (GDA) of 2 reactor designs proposed for construction in England and Wales. Our GDA process enables us to assess the acceptability of new reactor designs up front. This helps avoid time and cost risks arising from modifications during construction, thereby also improving potential investors' confidence. In our GDA activities we work closely with the safety and security regulator, the Office for Nuclear Regulation (ONR) and, where there are potential developments in Wales, with Natural Resources Wales. At the government's request we and ONR have also started a GDA on a new Chinese designed nuclear reactor. This design is the basis for a proposal to build a new nuclear power station at Bradwell B in Essex.

Working in partnership

One of the main ways we support businesses is by working in partnership where we can. We:

- speak to trade associations when new environmental standards are being set to ensure they are appropriate and achievable
- allow time for businesses to plan future investment or make changes to meet new regulations or standards
- listen – there may be good and justified reasons why businesses cannot meet new requirements
- agree derogations where, if certain criteria are met, a lesser standard can be applied

Would you like to find out more about us or about your environment?

Then call us on

03708 506 506 (Monday to Friday, 8am to 6pm)

email

enquiries@environment-agency.gov.uk

or visit our website

www.gov.uk/environment-agency

incident hotline 0800 807060 (24 hours)
floodline 0345 988 1188 (24 hours)

Find out about call charges (www.gov.uk/call-charges)

Environment first: Are you viewing this on screen? Please consider the environment and only print if absolutely necessary. If you are reading a paper copy, please don't forget to reuse and recycle if possible.