UK Biodiversity Indicators 2019

This document supports
B5b. Marine pollution

Fiche

For further information on B5b. Marine pollution visit jncc.gov.uk/ukbi-B5b

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B5. Pressure from pollution

b. Marine pollution

Type: Pressure indicator

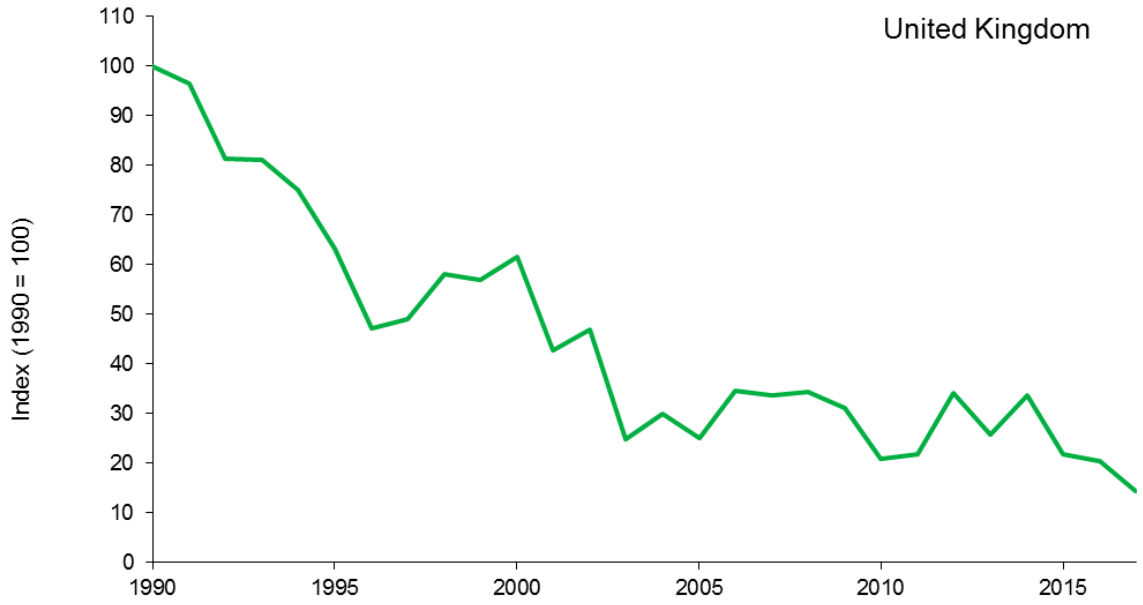
Summary

The combined inputs of all 6 hazardous materials into marine environments have shown a long-term decrease of 86% since 1990. Inputs of all 6 of these substances show decreases in the short term since 2012.

Indicator Description

The indicator shows the combined input of 6 of the most hazardous substances to the UK marine environment. The indicator is based on levels of 5 heavy metals (cadmium, mercury, copper, lead and zinc) and one organic compound (lindane). Pollution in the marine environment from these 6 substances should decrease to levels that are non-detrimental by 2020.

Figure B5bi. Combined input of hazardous substances to the UK marine environment, as an index of estimated weight of substances per year, 1990 to 2017



Source: Defra Marine Strategy and Evidence Division, using data provided by: Environment Agency, Northern Ireland Environment Agency, Scottish Environment Protection Agency.

Levels of all 6 substances declined over the period 1990 to 2017: lindane by 97%; both mercury and cadmium by 91%; zinc by 71%; copper by 68% and lead by 58%.

In the short term, inputs of hazardous substances decreased by 47% from 2012 to 2017 (using a 3-year average for 2012). Inputs of all 6 hazardous substances declined in the short term: lindane had the highest percentage decrease (-89%), followed by cadmium which decreased by 33%, and then lead (-30%), both mercury and zinc decreased by -28%, and copper by 25% since 2012.

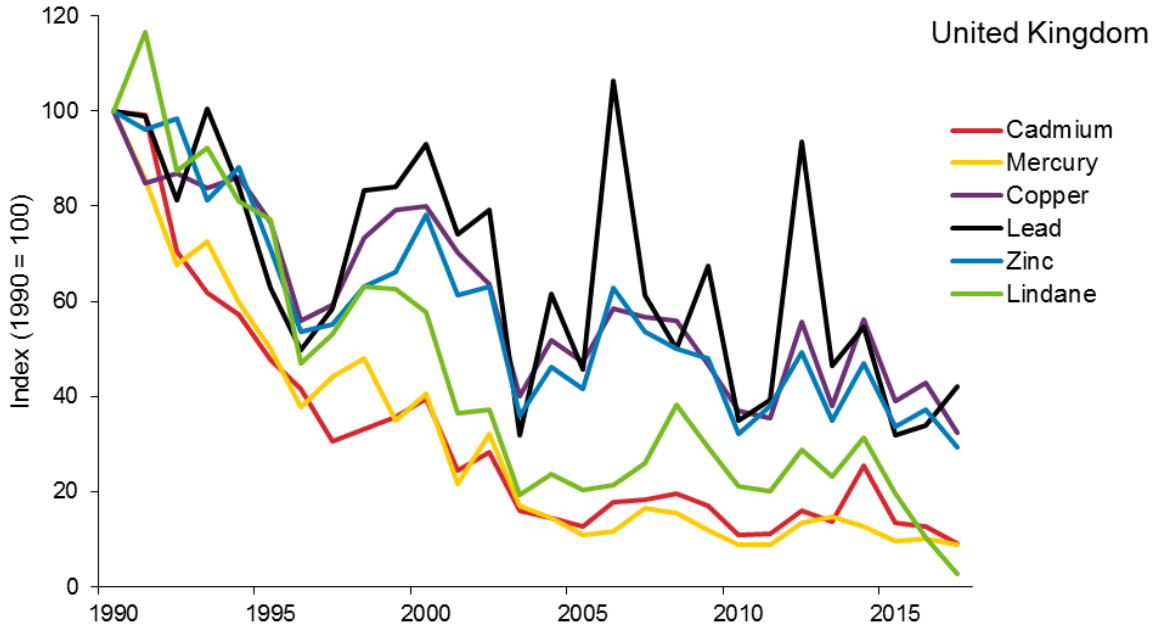
Inputs into the marine environment are estimated from concentrations and flow rates in rivers entering the sea and those from estuarine and coastal point sources. Riverine inputs reflect both point and diffuse sources upstream of the sampling point and tend to be strongly influenced by flow rates. Flow rates are heavily affected by rainfall patterns so year to year fluctuations in pollutant loads are likely.

Assessment of change in input of hazardous substances			
	Long term	Short term	Latest year
Combined input of hazardous substances	1990–2017	2012–2017	Decreased (2017)

Note: Long and short-term assessments are based on a 3% rule of thumb. Where possible, the base years for these assessments use a 3-year average. See Assessing Indicators.

A detailed illustration of changing levels of each input is seen in Figure B5bii. The low point in 2003 is thought to be a consequence of reduced river flows during an exceptionally dry year. Conversely, levels increased in 2012 and again in 2014 corresponding with years of heavy rainfall. In 2012, England had the wettest year since records began in 1910; the summer was the wettest since 1912 increased rainfall in November and December contributed to extensive flooding. In 2014, the winter (Jan to Feb) was the wettest since records began.

Figure B5bii. Inputs of hazardous substances to the UK marine environment, as an index of weight of substance per year, 1990 to 2017



Source: Defra Marine Strategy and Evidence Division, using data provided by: Environment Agency, Scottish Environment Protection Agency, and Northern Ireland Environment Agency.

Relevance

Pollution by hazardous heavy metals and pesticides can have adverse effects on the marine environment and biodiversity. Pollutants enter coastal waters either directly from point sources on UK coasts and estuaries or are carried via rivers.

One of the goals of the Convention for the Protection of the Marine Environment of the North-East Atlantic (the OSPAR Convention) is to implement the Hazardous Substances Strategy by making progressive endeavours, through appropriate actions and measures, to

move towards the targets of the cessation of discharges, emissions and losses of hazardous substances by the year 2020.

While many measures have already been put in place to prevent these persistent contaminants from entering the environment (e.g. bans on lead in petrol, marketing restrictions on the use of cadmium and mercury, a ban on the use of lindane), there are still reservoirs of these contaminants from legacy use in soils and sediments which are mobilised by various weather events.

Background

The assessment of change for the indicator was made by applying a 3% rule of thumb. The arithmetic mean of the first 3 years of the data series was compared with the last point to determine the assessment for the long-term trend, and an arithmetic mean of the year 5 years back in the time series and the year either side calculated to compare with the last point to assess the short-term trend.

Although data for total UK (direct plus riverine) inputs to the marine environment are available as lower and upper estimates, for ease of interpretation only upper (i.e. maximum) values have been used in this assessment, rather than presentation of the data range for each substance. The values for each pollutant are converted to an index scaled to 100 at the start year of 1990, and then combined with a geometric mean.

Goals and targets

Aichi Targets for which this is a primary indicator

Strategic Goal B. Reduce the direct pressures on biodiversity and promote sustainable use.

Target 8: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.

Aichi Target for which this is a relevant indicator

Strategic Goal B. Reduce the direct pressures on biodiversity and promote sustainable use.

Target 10: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.

Web links for further information

Reference	Title	Website
Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR)	Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR)	http://ospar.org/

Reference	Title	Website
Defra Clean Seas	CP2 index of hazardous substances	http://chartingprogress.defra.gov.uk/clean-seas-hazardous-substances

Full details of this indicator, including a datasheet are available at:
jncc.gov.uk/ukbi-B5b

Last updated: September 2019

Latest data available: 2017