Reporting Guidance for Business on Environmental Key Performance Indicators: a consultation on Guidance for UK Businesses

July 2012

Contents

Part I: Introduction

1. Purpose of this consultation

The purpose of this informal consultation is to seek views on revised guidance for how UK organisations should measure and report on their environmental impacts.   This guidance is intended to replace the current guidance which was published in 2006 and is currently available at:

http://www.defra.gov.uk/publications/files/pb11321-envkpi-guidelines-060121.pdf

2. Consultation Process

Geographical scope: This consultation covers the UK
Impact assessment: As this is an informal consultation, no impact assessment is included.
Duration of the consultation: 12 weeks
Body responsible: Department for Environment, Food and Rural Affairs

3. How to contribute

The closing date for this consultation is 17 October 2012. Responses should be sent to the following email address:

EnvironmentalReporting&Skills@defra.gsi.gov.uk

Or by post to:

Sackey Bennin
Area 5C
Ergon House.
Horseferry Road
London SW1P 2AL

Please contact us if you wish for these documents to be made available in a different format (large print etc.) and we will endeavour to accommodate your request.

4. Confidentiality

In line with Defra's policy of openness, at the end of the consultation period copies of the responses we receive may be published in a summary of the responses to this consultation. **If you do not consent to this, you must clearly request that your response be treated as confidential**. Any confidentiality disclaimer generated by your IT system in email responses will not be treated as such a request. Respondents should also be aware that there may be circumstances in which Defra will be required to communicate information to third parties on request, in order to comply with its obligations under the Freedom of Information Act 2000.

5. Compliance with Code of Practice on Consultation

This consultation complies with HM Government's Code of Practice on Consultation.

We will provide a summary of responses to the consultation within three (3) months of the end of the consultation period. The Government will publish a final version of the guidance by December 2012.

Part II: Background, structure of consultation and consultation questions

6. Background

The Defra guidelines on *Environmental KPIs – Reporting Guidelines for UK Business* were originally published in 2006: http://www.defra.gov.uk/publications/files/pb11321-envkpi-guidelines-060121.pdf

These guidelines were primarily intended for companies that are required under the Companies Act 2006 to report on environmental issues within their Annual Reports and Accounts and cover a range of issues including greenhouse gas emissions. In particular, the guidelines aimed to assist quoted companies meet the additional requirements placed on them by the Companies Act 2006 to include in a business review: *"to the extent necessary for an understanding of the development, performance or position of the company's business, include:*

    a) *The main trends and factors likely to affect the future development, performance and position of the company's business, and*
    b) *Information about –*
          i. ***Environmental matters (including the impact of the company's business on the environment)**,*
          ii. *The company's employees, and*
          iii. *Social and community issues,*
Including information about any company policies related to those matters and the effectiveness of those policies...."

In 2009 new "*Guidance on how to Measure and Report your Greenhouse Gas Emissions*" was published, as required by the Climate Change Act 2008, and this superseded the 2006 guidelines on greenhouse gas (GHG) reporting for all companies. In June 2012 the Government announced that regulation would be introduced to require UK quoted companies to report their GHG emissions and that regulation is the subject of a separate consultation.

The 2006 Environmental KPI guidance is now in need of updating to reflect developments over recent years. In recognition of this fact, the Government made a commitment in the Natural Environment White Paper (NEWP) *The Natural Choice: securing the value of nature*: "*The Government will publish new guidance for businesses by 2012 on how to measure and report their corporate environmental impacts*". This revised guidance fulfils that commitment.

The aim of the revised guidance is to provide clear advice to companies on how to measure and report on their environmental performance using environmental key performance indicators (KPIs); help determine which KPIs are most relevant to an organisation; and set out the rationale for managing environmental performance using KPIs. (This guidance is additional to the existing guidance on how to measure and report on greenhouse gas emissions).

This revised guidance on environmental reporting replaces the original 22 KPIs and now focuses on five key environmental categories. The aim has been to produce fuller

guidance that it is accessible and easy to use, and on similar lines to the GHG guidance. Its primary purpose is still to aid corporate reporting of environmental issues and impacts, in line with what is required by the Companies Act, but we are also aiming to encourage companies to take account of these issues when looking at corporate strategy.

The guidance has an introductory section (section 1) that sets out the general background on environmental corporate reporting framework followed by advice (section 2) on how a company may go about determining what key impacts should be measured and reported on. A step-wise approach to tackling what a company measures and reports is proposed. Advice is also included on considering wider strategic environmental matters, and encouragement to think about other issues and risks that might be of interest to their stakeholders, such as adaptation, environmental management systems or the number and level of environmental fines. The remainder of the guidance consists of five subject-specific chapters: on biodiversity/ecosystem services; waste; water; materials; and air pollution and other emissions.

These revised environmental guidance should complement the 2009 GHG reporting guidance and meet the Government's commitment in the NEWP for providing guidance for business on environmental reporting.

Government has also been looking more widely at the corporate reporting framework. BIS consulted in September 2011 on "*The future of narrative reporting – consulting on a new reporting framework*[72]" and the Government published its response[73] to that consultation in March 2012. The Government response indicates that, given the large degree of support to the BIS proposals on narrative reporting, proposals will be developed to change the structure of reporting to allow companies to produce a high level Strategic Report. BIS are discussing these developments with interested parties and are aiming to publish draft regulation later this year.

The BIS proposals should not impact on this draft guidance other than where it refers to the "directors report", this reference may be updated once the BIS proposals are finalised.

7. The structure of the consultation

Readers will find a list of consultation questions in paragraph 8 of this consultation document. We would welcome views on the structure, content, and more specific aspects of the guidance, and suggestions for making them a more useful tool for business.

8. Consultation questions

We would welcome your feedback and comments on all aspects of the guidance document but you might find it helpful to consider the following questions when responding.

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[72] http://www.bis.gov.uk/assets/biscore/business-law/docs/f/11-945-future-of-narrative-reporting-consulting-new-framework.pdf
[73] http://www.bis.gov.uk/assets/biscore/business-law/docs/f/12-588-future-of-narrative-reporting-government-response.pdf

Q1. Is the guidance easy to understand and practical to use?

Q2. Was section 1 clear on why and where you should report on environmental impacts? Do you have any comments to improve this section?   What more would you find helpful in developing your environmental strategy?

Q3. Is it clear in section 2 how an organisation should go about identifying the environmental issues and KPIs most material to its operations?   How could it be improved?

Q4. Did you find the references to legislation in the different subject chapters helpful?

Q5. Does table 1 at Annex **C** (Environmental Impacts and ICB and ISIC classifications) help you identify which are the main environmental impacts of your organisation? How to use table 1 is set out in the guidance in section two on page 13 under "**Your Key Performance Indicators".**

Q6. Do you agree with the categories of pollutants in chapter 1 on **Air Pollution and Other Emissions**? If not what do you consider to be a more sensible or realistic approach?

Q7. Have you any suggestions on how reporting of the pollutants could be improved?

Q8. Do you think the sample reporting tables in chapter 2 (**water**) are helpful? Do you any other proposals for water reporting?

Q9. Does the new chapter on **biodiversity/ecosystem services** adequately address the issues involved? What additional information would you find it more helpful to include?

Q10. Does the chapter on **materials** adequately address the issues involved? What could improve it?

Q11. Does the chapter on **waste** adequately address the issues involved? What additional information would you find helpful?

Part III: Reporting Guidance for businesses on Environmental Key Performance Indicators

Section one – Objectives of the guidance

This guidance has been written to help businesses and public bodies in the UK in identifying and reporting their significant environmental impacts. It establishes the importance of this reporting in the context of the existing legal frameworks and seeks to stimulate the provision of clear and comparable information on environmental risks. Whilst it is intended to be of use to all companies including SMEs who are seeking to improve their disclosure of environmental impacts, it is primarily written for those companies who are required by the Companies Act 2006 to disclose their environmental performance.

This guidance looks to explain:

- the policy rationale for disclosing environmental performance using KPIs,
- how to report on environmental performance using environmental Key Performance Indicators (KPIs), and
- which KPIs are most relevant to which sectors
- and how to go beyond basic reporting of impacts to set targets, normalise data and consider supply chain impacts.

The context for this guidance is the Companies Act 2006, which implements the requirements of the EU Accounts Modernisation Directive, requires large companies to report on environmental issues in a Business Review as part of their annual reports and accounts. This requires the Business Review to include, 'where appropriate, analysis using key performance indicators including information relating the environmental matters.' This will apply to approximately 1000 companies listed in the UK.

It is important that company directors understand these requirements and report on them correctly. If the Business Review does not contain this information, then it must point out the omissions and say why and what type of information has been left out. The legal liability for non-disclosure of financially material information in the annual report and accounts lies with the company directors.

The Environment Agency and the Institute of Chartered Accountants in England & Wales have published [guidance for company directors](#) and those preparing and auditing annual financial statements to help them in understanding what is required to be reported and how this relates to the latest statutory financial accounting and reporting standards[74].

I. Benefits of Reporting

There are direct benefits to your organisation in the measuring and reporting of environmental performance as it will benefit from lower energy and resource costs[75] gain a

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[74] Environmental reporting and annual financial reports – www.environment-agency.gov.uk/environmentalfinance
[75] 2011 report for Defra by Oakdene Hollins. The study estimated that the UK savings opportunities associated with no cost / low cost from resource efficiency activities

better understanding of exposure to the risks of climate change and demonstrate leadership which will help strengthen your green credentials in an increasingly environmentally conscious marketplace.

Investors, shareholders and other stakeholders are increasingly requesting additional and better environmental disclosures in statutory annual reports and accounts. The number of organisations that are seeking information from their suppliers on environmental performance is increasing too. Organisations of all sizes are increasingly expected to measure and report on their environmental performance or risk losing out to competitors who do record their environmental performance. A [Defra sponsored study](link)[76] on the evidence of the financial benefits of green business showed significant financial benefits to organisations that developed an accredited environmental management system to assess their environmental impact and it helped them to use resources more efficiently. The study involving a mix of small and medium sized enterprises showed that all organisations received requests for information from customers about their environmental management system since implementing it.

Increasing numbers of business are finding that their environmental risks are material to their operations and supply chains, or are likely to become so. This may take the form of physical risks from climate change or from water scarcity in parts of the world, or business risk from volatile energy and commodity prices or waste management costs. Equally some organisations are finding that early action to address such risks can generate new business opportunities. The Government expects that organisations will find they need to assess and report on such risk and opportunities and will find it helpful to use environmental KPIs to capture the link between environmental and financial performance

This guidance updates the UK Environmental Key Performance Indicators, published by Defra in 2006. This revised KPI guidance is intended to complement the "Guidance on how to measure and report your greenhouse gas emissions (GHG)" published by Defra/DECC in 2009, and available at: http://defraweb/environment/organisation/reporting/pdf/ghg-guidance.pdf

II. Guidance Structure

The guidance sets out general principles for how to measure and report on environmental key performance indicators (KPIs) and offers a structured means for reporting those indicators that may be significant to an organisations operation.

Section two takes you through a series of steps, starting with assessing which environmental issues are relevant to your organisation, going on to defining the boundaries of your organisation, and considering ways of measuring performance and of

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Were estimated at a total of around £23billion in 2009. [Resource Efficiency Study](link)
[76] An evidence based study (EV0440) into the benefit of EMSs for SMEs. http://randd.defra.gov.uk/

setting targets. The rest of the guidance is structured into five chapters each covering a specific environmental reporting category[77];

1. air pollution and other emissions
2. water
3. biodiversity/ecosystem services
4. materials
5. waste

Each chapter is intended to help you measure and report your environmental performance by:

- understanding the key environmental KPIs your organisation may be responsible for,
- addressing the most significant environmental impacts, and
- reporting on these impacts in a way that meets the needs of a range of stakeholders.

Whilst this guidance replaces the version published in 2006 it places no new mandatory requirements on an organisation. It has been designed, as far as possible, to be compatible with other reporting guidance and frameworks particularly the GHG reporting guidance and the Global Reporting Initiative.

III.   Where should I report this information

Some companies already report information on environmental matters (to the extent it is necessary for an understanding of the development, performance or position of the company's business) in their Business Review which forms part of their Annual Report and Accounts. You will want to consider if you wish to include this information there.

If you are not a company subject to the Business Review provisions then where you report your data is a matter of choice. Even if you are subject to the Business review provisions and publish information in your Directors Report you may wish to publish additional environmental information in your corporate responsibility report (CR), or stand alone sustainability or environmental report. We encourage organisations to publish their KPI data and supporting explanations electronically on company websites as it can be useful to shareholders and other stakeholders.

You may wish to use this guidance to report your environmental impacts alongside other matters such as social and community involvement in an integrated report which brings together material information about an organisation's strategy, governance, performance and prospects in a way that reflects the commercial, social and environmental context within which it operates. It provides a clear and concise representation of how an

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[77] Guidance on how to measure and report on greenhouse gas emissions is covered in a separate guidance document published in 2009 – see the link on page 1.

organization demonstrates stewardship and how it creates and sustains value. Further detail on integrated reporting can be found at http://www.theiirc.org/

This guidance makes no recommendations as to the structure and format of your report due to the recording and reporting variables of each of the KPIs. What is important is that your organisation understands and can be transparent about its actions to manage environmental and social impacts of its activities, products and services.

Annex I (Directors Report) in the Greenhouse Gas Guidance does provide an outline reporting template, and you may wish to review and follow a similar format exchanging the GHG the scope1, 2 and 3 emissions for your environmental impacts.

IV.   What is a KPI?

Environmental Key Performance Indicators (KPIs) provide organisations with a tool for measurement. They are quantifiable measures that reflect the environmental performance of an organisation in the context of achieving its wider goals and objectives. They focus on 'key' measures – i.e. those most important to an understanding of an organisation and they mitigate the need for lengthy reports on a wide range of measures many of which may be less relevant. Many companies already collect the data required to report on environmental KPIs, either because it is calculated from standard organisational data, such as utility bills, or because the company already reports such information to a regulator. This guidance aims to support you in making use of any data you may already collect.

V.   The scope of your reporting

The disclosure of environmental information should be of practical use so that investors, customers, and other stakeholders can assess the relative behaviour and prospects of different companies within and between organisation sectors.
When explaining and recording your KPIs four criteria are essential. These criteria are general accounting principles which you should already be using for reporting your financial results. KPIs should be:

Quantitative
KPIs need to be measurable, and therefore be quantitative in nature. This means that they can be acted upon; for example, targets can be set to reduce a particular emission if it is expressed quantitatively. In this way the effectiveness of environmental policies and management systems can be evaluated and validated. Each chapter provides the details for that subject area.

Measurement of environmental impacts often requires some form of conversion methodology or estimation, such as the estimation of sulphur dioxide emissions resulting from the consumption of coal. There are many standards that can be used to perform this type of calculation, and it is important to report on the protocols used to determine these impacts. Relevant details are in each chapter. Units of measurement should as far as

possible be uniform. Sources of underlying data should be as readily available as possible as transparency is a key issue.

Relevant

In addition to the quantitative information, a KPI should be accompanied by a general narrative, explaining its purpose and impacts. As part of this narrative, relevant information and comparators should be taken into account for that KPI. Each KPI should describe the steps taken, the calculation methods and any relevant assumptions. Progress should also be discussed, including against targets, whether improvements or set-backs have occurred and how these are being tackled. Any information relating environmental performance to financial performance should also be provided. This can include environmental expenditures and any fines (see step 3 page 10).

Comparable

The Government is seeking to stimulate the provision of comparable, full and quantitative data, without being over-prescriptive. As far as possible, all companies should be able to report data in a comparable format, so users of reports can assess the performance of like with like. It is important that organisations avoid inventing their own versions of potentially standard KPIs as this can frustrate comparisons of performance. The narrative part of a report provides the opportunity for a company to discuss any tensions which exist between providing comparable data and reporting company-specific KPIs.

Transparent

Transparency is essential to producing a credible report. Internal processes, systems and procedures are just as important as the quantitative data, i.e. the value of the quantitative data will be greatly enhanced if accompanied by a description of how and why the data are collected. Particular issues which could be relevant to this principle are:

- The level of public disclosure;

- Responsibility for environment/sustainable development within the organisation is defined ;

- Clear definition of boundaries of the company to which the report applies, and

- An explanation of internal processes to manage and report risk.

Section two – The steps to consider in reporting your environmental Impacts

This section covers the steps to take when reviewing your operations and considering your environmental impacts and which KPIs to report on. These KPIs have been designed with company reporting in mind.

When using this guidance the Government recommends as a starting point that you should work through steps 1 – 3 in order to report on your environmental impacts. We would then encourage you to consider steps 4, 5, 6 and 7 as these steps will help you develop your strategy through setting targets, both absolute and relative, and considering your supply chain impacts. It is possible that you may not be able to report on all your organisations key impacts in your first few reports (see step 1) for advice on this.

Ideally you will be able to present a summary of your environmental findings in relation to your organisations activities and what you did to improve the situation. Set out your organisations strategy regarding the environment and targets or goals therein. You should be clear how any targets reflect any regulations or international standards. Have a narrative description of your actions, highlighting any key developments for the year. Results may not be seen or felt until further down the time line.

After your narrative of your practices and targets you may wish to demonstrate these by pulling out specific case studies relevant to your organisation. Where you have detailed environmental performance data in areas where you measure and supply this data you should summarise this.

Step 1: What are the key environmental impacts for your organisation?

The Government expects organisations to report on their significant environmental impacts.

The first step is to understand which environmental issues are relevant to your organisation. To do this you need to understand the extent of the impacts your organisation has – your operational boundaries. The polluter pays principle is a way to clarify reporting boundaries. This principle assigns responsibility to those parties that directly cause the pollution or use a natural resource. Using this model, emissions caused or resources used directly by your organisation fall under your direct responsibility; all other impacts are indirect.

Direct environmental impacts result from your operations and can include emissions from vehicles or processes[78], or manufacturing operations, water used and waste produced.

The purchase of finished products, such as electricity and outsourced logistics, results in upstream indirect (supply chain) impacts that are embedded in the products and services supplied. Thus, the purchase of electricity, any form of transport where a company does not pay for the fuel, and supplied water, raw materials and finished products are considered indirect impacts. Downstream indirect environmental impacts (products in use) can be caused by the use or disposal of a product after it has been sold. Organisations are likely to derive benefit from positively influencing their indirect environmental impacts for at least three reasons:

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[78] See separate guidance on measuring and reporting GHG emissions for a description of direct and indirect GHG emissions.

The issues may be significant in terms of the organisation's overall environmental impact;
Organisations need to be able to demonstrate that reducing their direct impacts is not at the expense of increased impacts elsewhere; and,
Some stakeholders may expect you to account for supply-chain impacts, particularly where they reflect significant purchasing power.

Steps 6 and 7 explain in more detail about measuring your indirect impacts.

Climate Change

The [UK Climate Change Risk Assessment](#) outlines some of the most important risks and opportunities that climate change may present including the potential impacts on business. Climate change is projected to result in changes in temperature, rainfall patterns and sea level. Some of the impacts on your organisation may be positive and potentially profitable; others may be negative a pose a variety of operational threats as well as risks to revenue streams and brand value. Higher temperatures and extreme weather may present a range of risks to business continuity. These risks include: disruption to supply chains and transports links; interrupted supply of essential services such as energy and water and information and communications technology; damage to assets and lost productivity due to disruption to operations and workforce absenteeism. These risks maybe significant, although the scale of the risk is difficult to quantify.

The ability to adapt to climate change varies across different industries and organisations. A number have begun to take adaptation seriously by developing a clear response to the challenge in their long term business strategies and forward planning. However the vast majority have yet to recognise climate change as a material risk, or view it as a long term risk of little current relevance.

As an organisation if you are able to respond positively to the challenge you may be able to achieve significant commercial and competitive advantages. Potential opportunities for positive action include:

- Exploiting market shifts by developing new products and services
- Improving internal business processes to cope with the direct and indirect impacts of climate change
- Showing leadership and setting an example for other organisations

To help you integrate climate change adaptation into your mainstream management practices [Defra provide advice to business](#) on the implementation of climate change adaptation strategies. In considering your environmental impacts as set out in this document you should also be planning for the future and any potential impacts that climatic changes could have on your organisation and its supply chains to ensure business continuity.

The Environment Agency also acts as the Climate Ready Support Service to help organisations adapt to climate change. Visit the [Environment Agency's web pages](http://www.environment-agency.gov.uk/research/132323.aspx)[79] for the current information sources and tools which are available to help you now. It is also your opportunity to inform how the programme develops.

The Adaptation Reporting Power in the Climate Change Act 2008 also entitles the Secretary of State to request reports from companies with functions of a public nature such as water and energy utilities[80] on how they are assessing and acting on the risks and opportunities from a changing climate. The principles of the guidance developed for this can be used by all companies when considering climate change and any strategies developed to adapt to it.

Your Key Performance Indicators

Through this understanding of your own organisation's operations you should have a clear understanding of where your main environmental impacts occur. These are likely to fall into one or more of six categories which form the basis of the KPIs in this guidance.

1. Green house gases (covered by separate guidance)
2. Air pollution and other emissions
3. water
4. biodiversity/ecosystem services
5. materials
6. waste.

There are UK and EU regulations covering these issues and, in general, for any KPI of interest to your organisation you will wish to ensure that you are also complying with the relevant legislation.

If you are unsure which environmental issues ought to be of most concern for your organisation, table 1 attached provides a breakdown of the KPIs that are significant to the 41 Industry Classification Benchmark (ICB) sectors and corresponding International Standard Industrial Classification (ISIC) business sectoral classifications. These sector breakdowns were originally derived from an analysis of the impact that UK organisations have on the natural environment. The analysis took into account the value of a number of different ecosystem services[81]. To use this table look up your ICB/ISIC code and then across to see the corresponding environmental issues of most concern for your business sector.

Step 2: Determine the Boundaries of your organisation. Do you need to report on all parts of your organisation?

The next step is to establish your organisational boundaries. When a company wholly owns and operates an asset, the reporting boundaries for that asset are clear as the reporting from that asset will fall 100% within the company's reporting boundary. When a company owns only part of an asset, owns an asset that is operated by others or operates

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[79] http://www.environment-agency.gov.uk/research/132323.aspx
[80] http://www.defra.gov.uk/environment/climate/sectors/reporting-authorities/
[81] For further information on the value of ecosystem services please refer to the recently published United Nations Millennium Ecosystem Assessment, a 4 year study involving 1,360 experts worldwide. This can be found at http://www.millenniumassessment.org

an asset that it does not own, determining what environmental impacts from that asset fall within its reporting boundaries becomes more complex.

The key to applying organisational boundaries on the basis of equity share, operational control or financial control is the concept of the reporting unit. The identification and listing of all of the reporting units that are part of the reporting company for the purpose of the 5 specific environmental impacts covered in this guidance should be the starting point for setting organisational boundaries.

Reporting units should be selected to represent the smallest practical building blocks reflecting the internal management of the company and to allow data to be reported at local, country, region or global levels, as appropriate. A reporting unit can be all or part of a subsidiary company, joint venture, investment, facility, plant, office or organisation location depending on what works best for your company given the way in which it is organised and managed.

Reporting boundaries adopted for environmental reporting should be the same as for financial reporting purposes.

For further information on the different organisational boundaries and which operations to include in your environmental report see: [Annex D of the 2009 Defra GHG reporting guidance](#)

When considering your organisational boundaries you might also review your supply chain and products. Further information regarding this can be found at step 6 of this chapter.

Step 3: Measuring and Reporting

Each of the 5 subject chapters provides specific guidance on measuring and reporting against that particular KPI and once you are clear which KPIs are of most interest to you, you should refer to these sections. Before that though there are some general principles that apply across all of the KPIs and your whole report. These are detailed below.

In your report you should make clear any governance processes in place to support the management of environmental performance. For example, whether it is managed as part of your organisation's standard business strategy or performance management regime and how the information is used to support corporate decision making. As an organisation you are likely to have a business or market strategy. By understanding both your direct and indirect impacts you should be able to utilise the risk and opportunities of those impacts to develop an a forward looking strategy that takes account of your environmental impacts and any climate change adaptation and forward plan mitigation measures or an action plan so that you have a forward looking strategy which is both in harmony with your business plan/strategy and is a clear environmental policy for your organisation which in turn can have positive market strategy impacts.

Ideally you will be able to present a summary of your environmental findings in relation to your organisations activities and what you did to improve the situation. You may wish to set out your organisations strategy regarding the environment and targets or goals therein (see step 4). This could be with the context of your market strategy/business plan. You should be clear how any targets reflect any regulations or international standards and provide a narrative description of your actions, highlighting any key developments for the year. You may wish also wish to demonstrate key mitigating measures you have taken by

drawing on specific cases relevant to your organisation. Where you have detailed environmental performance data in areas where you measure and supply this data you should summarise this if you believe it is information that is relevant to the interests of your stakeholders.

To report on improvements you might find it helpful to look at your relative as well as your absolute performance. Step 5 provides more detail on this.

3.1 Environmental Management Systems.

You might wish to include a brief outline of the systems and methods used for collecting the data, and how assurance is gained to ensure that it is robust. Your organisation is responsible for applying appropriate data quality standards, collecting and presenting data that conforms to prescribed definitions. Your organisation is also responsible for introducing arrangements to satisfy themselves that information in sustainability reports is reliable – this is known as assurance (see below).

The most widely used form of ensuring good data management is by the use of an Environmental Management System (EMS). It is suggested that if you have an accredited EMS you state the type and whether it covers all your organisation or just part.

EMSs help all types and sizes of organisations to meet their own environmental and sustainability targets on climate change, sustainable development, waste, water, emissions, energy, resource efficiency and other environmental issues. Three types of formal environmental management systems are recognised in the UK, namely:

ISO 14001.[82]

EMAS

BS 8555

Companies can report on progress made in using their EMS to manage their environmental impacts, using both quantitative and qualitative data as evidence they are appraising and responsibly managing their environmental performance. EMS objectives and targets can be used to show a company's progress against stated plans and goals, including:

- quantitative targets based on outcomes, such as reduction of emissions or incidents;
- quantitative or qualitative objectives in terms of inputs, such as completion of management system initiatives by a planned date;
- annual progress measured against a commitment to continuous improvement; or
- case studies providing evidence of programmes planned across a specified period.

Alternative approaches to undertaking a structured assessment of an organisation's environmental performance are available from the Global Reporting Initiative / UNEP[83] or

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[82] http://www.iema.net/ems for information on ISO 14001, EMAS and BS 8555
[83] http://www.uneptie.org

from the World Business Council for Sustainable Development [Corporate Ecosystem Valuations[84]].

3.2. Environmental Fines/Expenditures.

As well as reporting on environmental KPI it is important to be clear in any annual report or sustainability report whether your organisation has been subject to any environmental fines. The date, location, reason and amount of fine should be stated.

It is also recommended that you report on any environmental expenditures/investments across your organisation where this is in development of new more efficient production processes, recycling facilities or for the reclamation/ rehabilitation of land to a more natural state or to invest in projects in the local community.

3.3. Assurance.

There is no statutory requirement to have environmental information audited. The auditor is not required to verify, or report on, the completeness of the information in the Directors' Report but an auditor must state in his report whether information in the Directors' report is consistent with that found in the financial statements. Where a company publishes a separate environmental or sustainability report, an auditor is not required to read it although they may consider it as contributing to a knowledge of the business[85]. Under the Companies Act, directors must ensure that the information in their Directors' Report complies with the statutory requirements.

Assurance and verification of reported sustainability and environmental data is a component of a responsible reporting approach. There is a considerable reputational risk in disclosing misleading data and assurance provides a check on the value and authenticity of the data in the public domain. While there are many methodological approaches to sustainability/ environmental assurance, the key components of a robust assurance statement, are that it should:

Clearly reflect the scope of matter material to both the company and its stakeholders
Transparently review the quality of reporting
Provide clear conclusions on data quality
Be conducted by a qualified, independent third party reviewer
Meet the requirements of a recognised standard
Be easily understood and jargon free.

The cost varies depends on the type of assurance or verification sought. For a company which uses internal verification, the costs are likely to be much lower than a company who employs a third party (e.g. auditing professional) to carry out reasonable assurance on a sustainability report. Internal costs are likely to be limited to staff time and resources, whereas third party assurance can be more expensive depending on the size and complexity of both the company and its report. There are risks to businesses of not obtaining verification of their report, as verification statements are a statement of confidence in the information reported.

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[84] http://www.wbcsd.org/work-program/ecosystems/cev.aspx
[85] ICAEW & Environment Agency (2009) Turning questions into answers: Environmental Issues and Annual Financial Reporting

There are two internationally recognised standards for assurance of sustainability reports: the IAASB's ISAE3000[86] and AccountAbility's AA1000AS[87]. These two standards are ideally used together as they complement one another[88]. A good assurance statement should include reference to the criteria or standards that the report has been assured against, for example in the case of GHG emissions, the ISO 14064-3 standard, the criteria in the GHG Protocol, or the Defra / DECC Guidance. Companies may select the data sources which have been verified or specify the parts of their reports to be assured to a limited or reasonable level, and this should be made clear in the assurance statement.

Step 4: Setting Targets.

To help you maintain a meaningful and consistent comparison of your KPIs over time, you will need to set targets and choose and report on a base year.

Clear targets should be set for each KPI where feasible. The most important point with regard to targets is that they should include a baseline against which the target will be measured.

Your base year should be:

The earliest year that verifiable data is available for either a single year, or a multi-year average (e.g. 2009-2010).

For consistent tracking of performance over time, you may need to recalculate your base year so that you can compare your current impacts with your historic impacts. You should develop a base year recalculation policy which explains the basis and context for any recalculations. If applicable, you should state any significance threshold applied for deciding on historic impact recalculation. You should consider recalculating your base year in the following cases:

Structural changes that have a significant impact on the company's base year, such as the transfer of ownership or control of environmentally important activities or operations from your company to another. While a single structural change might not have a significant impact on the base year, the cumulative effect of a number of minor structural changes can result in a significant impact. Structural changes include:

- Mergers, acquisitions, and divestments;
- Outsourcing and in-sourcing of activities;
- Changes in calculation methods or improvements in the accuracy of factors or activity data that result in a significant impact on the base year data; and
- Discovery of significant errors, or a number of cumulative errors, that are collectively significant.

You do not need to recalculate base year in the following cases:

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[86] International Audit and Assurance Standards Board: 'Assurance engagements other than audits or reviews of historical financial information'. This is a standard which provides guidance (basic principles and essential procedures) for professional accountants on how to conduct non-financial assurance.
[87] AccountAbility is the Institute of Social and Ethical AccountAbility. The AA1000AS is a free, open source set of principles which addresses sustainability and CSR aspects of reports. Under the AA1000AS's 'high level of assurance' is equivalent to 'reasonable assurance' and the 'moderate assurance' is equivalent to 'limited assurance'.
[88] Both require that the assurer performs the appropriate work and that the work performed is adequately described in the statement.

- Economic growth or decline – refers to changes in production output, and closures and openings of operating units owned or controlled by your organisation.
- Outsourcing or insourcing of activities – Structural changes due to "outsourcing" or "insourcing" do not trigger base year recalculation if your organisation is reporting its other indirect impacts from relevant outsourced or insourced activities. Only where the activities move outside the scope of your reported KPIs, or activities move within the scope of your reported KPIs, should you include them.

Operations acquired or sold that did not exist in the base year – You should not recalculate your base year where you acquire (or insource) and divest (or outsource) of operations that did not exist in your base year.

Update your base year following any changes that meet your significance threshold against the criteria outlined above. Once your organisation has developed its policy on how it will recalculate base year figures for your KPIs, you should apply this policy in a consistent manner.

For further guidance on setting a KPI reduction target, please refer to How do I set my emissions target? ([Annex K of the 2009 Defra GHG reporting guidance](#))

Step 5: Intensity Ratios/Normalisation factors

When presenting the detail of your KPIs they should be expressed in absolute terms that cover the entire organisation for each period of reporting (most commonly annually) (step 3), but it is also helpful if you use a normalising factor in reporting your data. Two commonly used normalising factors are turnover and production output; but there are others which may be relevant, for example companies with offices or retail operations may normalise to floor space

Environmental impacts data can be normalised by dividing the impact you are reporting on (whether tonnes of waste or emissions) by an appropriate activity metric (e.g. units produced, Full Time Equivalents) or financial metric (£ million turnover). The resulting normalised data is called an intensity ratio.

Normalising your data is useful because it facilitates:

• Comparison over time
• Comparison across different organisation sectors and products

This allows stakeholders to know how much environmental impact companies have relative to a given amount of goods and/or services produced. Normalised data can be particularly helpful in demonstrating environmental improvements in a growing organisation.

An activity ratio is suitable when aggregating or comparing across organisations that have similar products. A financial ratio is suitable when aggregating or comparing across organisations that produce different products. We recommend you use the intensity ratio which is most relevant to your organisation and will provide the most context to users of this information. If your organisation has many varied organisational operations e.g. a travel company which owns its own planes and also owns its hotels you may wish to calculate separate activity ratios for each activity i.e. one for the planes and one for the hotels.

When reporting, the simplest method is to present data on a clear and transparent like-for-like basis. So if the product lines are much the same and output has increased, then a normalised approach, with the factor in number of units or weight, as appropriate will be sufficient especially if backed up with absolute figures in order to understand the scale of the impact as well as the direction of change. If a 'value of output' measure has to be used, then it should be a volume measure (i.e. adjusted for relevant price changes).

Step 6: Your upstream supply chain

Most organisation will have (indirect) supply chain impacts that they should understand. The chapters on water, biodiversity and waste provide further detail relevant to water and waste in the supply chain.

There is no single, quantifiable measure that you can use as a KPI for the effect of your upstream supply chain on the environment. You can, however, use the environmental information that your suppliers report in order to make better procurement decisions. Many organisations have significant supply chain impacts and will wish to engage with their suppliers to reduce their environmental impacts. The following is an example of a strategic process that can be used to determine the impacts upstream in the supply chain.

1. Determine which companies your organisation spends its money with.
2. Categorise your expenditure into sector groupings by ICB/ISIC codes in table 1 where possible
3. Assess the typical environmental impacts and risks each supplier in each sector have.
4. Determine where to focus your efforts. Clearly some suppliers, even suppliers in the same sector, have more significant environmental impacts than others. It is important to prioritise your suppliers in a way that takes into account both the amount of money you spend with them and the relative environmental impact they have. This is especially important for companies with a significant number of suppliers.
5. Engage with your suppliers. Encourage your suppliers to report on the environmental KPIs relevant to their sector.
6. Establish a process enabling suppliers to record, measure and report back on their environmental impact.
7. Influence purchasing decisions with the information gathered. Improvements
in your suppliers' environmental performance will be more likely if they know that their environmental performance is a factor in your company's buying decisions.
8. Consider post-contract supplier development to focus on engaging suppliers
in continuous improvement in environmental management.

It is possible to get a broad understanding of which of your suppliers have the most significant environmental impact for you. This can provide you with valuable information to inform a strategic assessment of where, in your company supply chain, the most significant environmental impacts are occurring. You may also wish to consider whether environmentally significant suppliers have also measured and reported relevant environmental KPIs. This will help you ensure that the environmental performance of your supply chain as a whole is understood and improved and that environmental impacts are not simply displaced elsewhere.

These issues are best tackled by adopting a strategic approach to environmental purchasing and supply-chain management that is set within the wider context of an organisation's purchasing and environmental management activities.

Step 7 Your downstream impacts

Whilst identifying key performance indicators for downstream environmental impacts is beyond the direct scope of this guidance, there are some obvious issues that companies should be considering.

Legally compliant disposal of waste or waste products will be relevant for the majority of organisations. In some cases there are specific legal requirements associated with managing the end of life for products – e.g. batteries, electrical equipment and cars. Organisations may choose to disclose information on both the financial risks represented by any liabilities associated with managing end of life disposal, and narrative disclosures on their level of engagement with those organisations involved in the recycling or reuse of the particular products.

Products

This Guidance does not suggest KPIs for the downstream impacts of products.

Whilst the techniques of assessing life cycle impacts of products and subsequent eco-design solutions for more sustainable products, are diverse and can be resource intensive, there is increasing interest in using these techniques, and demonstrating that they can help businesses to deliver financial as well as reputational benefits.

Responsible company directors need to know where products end up to manage corporate reputation. This is best done through close liaison with companies who recycle or reuse products or materials, or those who manage waste landfill.

There is a great deal that individual sectors or organisations can do to identify the key performance issues for their downstream impacts.

WRAP provides information if you wish to consider this aspect further.
http://envirowise.wrap.org.uk/uk/Topics-and-Issues/Eco-Design.html

Chapter One

Key Performance Indicator - Air pollution and other emissions.

1. What this guidance covers

This chapter groups together a number of pollutants where a KPI can be monitored and recorded to demonstrate improvement.

This guidance groups the pollutants/emissions into two groups; (i) air pollutions and (ii) other emissions. It provides information on each of the categories below and details of the recording and reporting mechanisms for you to consider.

Air pollution covers:
- Oxides of nitrogen,
- Particulate Matter (PM); and
- Sulphur Oxides.

Other Emissions covers:
- Acid and Organic chemicals,
- Nutrients and organic pollutants,
- Volatile organic compounds (VOCs); and
- Metal emissions.

2. Why this matters to business

Even though air quality in the UK is generally good, more needs to be done, especially in the cities, to reduce the harmful effects of air pollution. Air pollution has negative impacts on human health and the natural environment. The other emissions group have a range of impacts and the effects are varied: some chemicals bind to soil and act as long term contaminants, whilst others will leach into local water sources and contaminate water supplies. Acids can concentrate in soil (and bodies of water) and can have highly detrimental effects on the local flora and fauna. VOCs can cause significant pollution and disruption to aquatic habitats. Significant discharges of organic waste (nutrients) into bodies of water can cause *eutrophication* in rivers, lakes, estuaries, coastal and marine waters. While nutrients have an indirect effect on oxygen levels, oxygen-demanding pollutants have a direct effect. For this reason, certain industries are regulated on their emissions and need to obtain permits for their operations. To find out more about legal obligations for companies, please see the Environment Agency website at

http://www.environment-agency.gov.uk/business/topics/permitting/32320.aspx

However, sectors that are not regulated through permits also contribute significantly to air pollution and other emissions through for example transport operations. There are a number of substances causing air pollution, such as sulphur, ammonia, volatile organic compounds (VOCs) and metal emissions. Ozone Depleting Substances are covered in the

guidance on reporting your Greenhouse Gas Emissions. More information on air pollutants can be found at http://uk-air.defra.gov.uk/air-pollution/causes

The National Atmospheric Emissions Inventory is also a source of detailed information on air pollution in the UK. http://naei.defra.gov.uk/index.php

3. Issues to consider

This section considers issues around air pollution and other emissions and provides practical information to help you understand the implications of your organisations activities in this area and details of what to measure and report for each.

Whereas greenhouse gases are most active high in the atmosphere, the most important factor for air quality is the concentration of pollutants closer to the ground. Nevertheless, air pollutants can travel long distances, chemically reacting in the atmosphere to produce other pollutants, leading to air pollution problems locally as well as a long way from the source.

There is an important distinction between emissions of air pollutants and the pollutants' concentrations in ambient air. Emissions contribute to the concentration in ambient air and so it is essential to monitor the amount of pollutants, but the concentration in ambient air – that is to say, the air we breathe – is what affects human health and the environment.

Historically, the main air pollution problem in both developed and rapidly industrialising countries has been high levels of smoke and sulphur dioxide emitted following the combustion of fossil fuels such as coal, used for domestic and industrial purposes. These days the major threat to clean air is posed by traffic emissions.

The three most common pollutants are:

3.1 Oxides of Nitrogen (NO$_X$)

All combustion processes in air produce oxides of nitrogen (NO$_X$). Nitrogen dioxide (NO$_2$) and nitric oxide (NO) are both oxides of nitrogen and together are referred to as NO$_X$. Road transport is the main source of NO$_X$ and NO$_2$, followed by the electricity supply industry and other industrial and commercial sectors. Although large combustion plants are polluting, they tend to be located away from major centres of population, and for this reason road transport contributes far more to the public's exposure to air pollutants. Deposition of pollutants derived from NO$_X$ emissions contribute to acidification and eutrophication of sensitive habitats leading to loss of biodiversity. NO$_X$ also contributes to the formation of secondary particles and ground level ozone, both of which are associated with ill health effects.

3.2 Particulate matter (PM)

Particulate Matter (PM) is made up of a wide range of materials and arise from a variety of sources. In the UK the biggest human-made sources of Particulate Matter are stationary fuel combustion and transport. Road transport gives rise to primary particles from engine emissions, tyre and brake wear and other non-exhaust emissions. Other primary sources

include quarrying, construction. Secondary PM is formed from emissions of ammonia, sulphur dioxide and oxides of nitrogen as well as from emissions of organic compounds from both combustion sources and vegetation. PM derives from both human-made and natural sources (such as sea spray and soil dust). PM is generally categorised on the basis of the size of the particles (for example PM2.5 is particles with a diameter of less than 2.5μm which is very fine material that can penetrate deep into the lung).

3.3 Sulphur Oxides

Sulphur oxides (SOx) are compounds of sulphur and oxygen molecules. Sulphur dioxide (SO_2) is the predominant form found in the lower atmosphere. Sulphur oxides in the atmosphere can influence the habitat suitability for plant communities as well as animal life. Sulphur oxide emissions are a precursor to acid rain and atmospheric particulates.

4. What to measure and Report

The main sectors contributing to NO_X and Particulate Matter emissions are the road transport and energy industry (fossil fuel burning electricity generators). All sectors that use fossil fuels such as petrol, diesel, coal or gas contribute towards air pollution.

If you are in the transport sector or energy industry you should aim to calculate and report the annual emissions of NOx **(tonnes per annum)**, SOx **(tonnes per annum)** and PMs **(tonnes per annum)**. You may also wish to support your reporting with a narrative of any investment made to reduce your emissions such as abatement technologies or process redesign.

A tool for calculating emissions is available at National Atmospheric Emissions Inventory http://naei.defra.gov.uk/data_warehouse.php

5. Other Emissions

Your organisation you should intimately be aware of its processes and practices and know whether you have any emissions, where these occur and whether it is through a permitted action and within agreed legislative boundaries or through spillage or accidents.

The main way of regulating these emissions is through the **European Pollutant Release and Transfer Register (E-PRTR) Regulation.** This EU Regulation applies directly to operators within 9 industrial sectors – covering approximately 65 economic activities:

- Energy

- Production and processing of metals

- Mineral industry

- Chemical industry

- Waste and waste water management

- Paper and wood production and processing

- Intensive livestock production and aquaculture

- Animal and vegetable products from the food and beverage sector

- Other activities

The Regulation requires operators to report annually emissions of any of the 91 substances listed in the Regulation which is emitted in quantities above the threshold for that substance. The objective of the E-PRTR is "to enhance public access to information through the establishment of coherent, nationwide pollutant release and transfer registers (PRTRs)".

5.1 Industrial Emissions Directive

This comes into force in the UK in January 2013. The Industrial Emissions Directive (IED) recasts seven existing Directives, related to industrial emissions, including the Large Combustion Plant Directive and the Integrated Pollution Prevention and Control (IPPC) Directive, into a single Directive. Much of the component Directives remains substantively unchanged or has been clarified, but a few new activities are subjected to IPPC, notably wood preservation and some waste recovery activities, and minimum requirements in respect of emissions from existing large combustion plants are significantly tightened from 2016.

Details of the industries and activities that will be subject to the provisions of the IED can be found here: http://www.defra.gov.uk/environment/quality/industrial/eu-international/industrial-emissions-directive/

Further detail on E-PRTR can be found here: http://prtr.defra.gov.uk/

and

http://www.environment-agency.gov.uk/static/documents/Business/pi_guidance_eprtr_1983013.pdf

If your operations are not subject to E-PRTR then you should review your activities to identify any potential emissions. Record what ,these emissions are (substance), the amount (weight/volume) of the substance emitted – estimation methods may need to be used. As there are many possibilities for emissions it is not practical to give guidance on each. What is important is that where a regular emission does occur if it is a substance that is among those in EPRTR you put in place steps to reduce or remove them and comply with the legislation.

5.2 Off Shore Chemical Notification Scheme

The use and discharge of hazardous substances in the offshore oil and gas industry have been identified as a cause for concern. To reduce the overall impact of offshore chemicals on the marine environment, OSPAR has adopted a harmonised mandatory control

[system](https://www.ospar.org)[89] for use and reduction of discharges of offshore chemicals. This system promotes the shift towards the use of less hazardous or preferably non-hazardous substances. There is a common OSPAR interpretation of which [chemicals are covered and not covered](https://www.ospar.org)[90] by the control system. The Offshore Chemical Notification Scheme [(OCNS)](https://www.cefas.defra.gov.uk)[91] manages chemical use and discharge by the UK offshore petroleum industries. The scheme is regulated in the UK by the Department of Energy and Climate Change using scientific and environmental advice from Cefas and Marine Scotland. If you operate in this sector and use chemicals that are covered by OSPAR you should report using your OCNS data/returns and discuss within your organisation plans for substitution where feasible to move to safer alternatives.

This guidance pulls together four categories where the Government believes emissions are of most concern from a reporting point of view:

- Acids and Organic chemicals

- Nutrients and Organic pollutants

- Volatile Organic Compounds (VOCs)

- Metal Emissions

5.3 Acid and Organic Chemicals

There is the potential for a wide range of organic chemicals to be emitted into the environment – for example, long chain hydrocarbons (from oil, petrol or diesel) and organic chemicals from industrial processes (e.g. solvents such as formaldehyde and alcohols). Organic and inorganic acids are also used in many industrial processes. These emissions are usually caused by accidental spillage. Any process using either oil based fuels or lubricants can give rise to these emissions, as can accidental spillages. Similarly any process using large amounts of industrial acids or organic chemicals may also give rise to this impact.

5.4 Nutrients and Organic Pollutants

Sources of nutrients commonly include human sewage, crops and animal production, food processing, pulp and paper manufacturing, detergent manufacturing and fertiliser manufacturing. Organic pollutants can be found in influent and effluent of wastewater treatment, drinking water, and boiler feed water, cooling water, and storm water. Organic effluent includes contaminants such as Polychlorinated Biphenyls (PCBs), Polycyclic Aromatic Hydrocarbons (PAHs), Hexachlorocyclohexanes (HCH), Benzene, Toluene, Xylenes, Ethylbenzene, Dioxins and Phenols, as well as general brewing waste and sewage. Oil spills can also contribute to organic pollutants.

Many sectors are responsible for emitting organic pollutants to water including farming, water treatment, textile production, the paper industry and chemical industry. Pollutants

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[89] http://www.ospar.org/documents/DBASE/DECRECS/Decisions/od00-02e.doc
[90] http://www.ospar.org/documents/DBASE/DECRECS/Agreements/02-06e_Common%20interpretation.doc
[91] http://www.cefas.defra.gov.uk/industry-information/offshore-chemical-notification-scheme.aspx

also reach water from the run-off from roads and highways. **Please refer to the chapter 2 of this guidance on water reporting for further information on organic pollutants and water**.

5.5 Volatile Organic Compounds (VOCs)

VOCs are either emitted to air as gases from certain substances or as a by-product of fossil fuel combustion.

Volatile organic compounds (VOC) are a group of commonly used chemicals that evaporate when exposed to air. VOCs are able to act as a solvent, or carrier, for many substances and as such are widely used as cleaning and liquefying agents in fuels, degreasers, solvents, polishes, cosmetics, drugs, and dry cleaning solutions. Some common VOCs are trichloroethylene (TCE), tetrachloroethylene (a dry cleaning fluid), trichloroethane, benzene, toluene, and xylenes. Industrial processes that emit VOCs include manufacturing, mining, textiles and paper production. VOCs also arise from fuel consumption. However, given the broad range of VOCs and their multitude of uses, it is not practical to give an exhaustive list of the processes that produce them.

5.6 Metal Emissions to Air

Metals that can have significant environmental impacts include lead, mercury, cadmium, arsenic and nickel. Certain metals that are in common usage are often emitted to air as particulates or dust. Metals emitted to air are eventually deposited on land or water and accumulate in soil, water, sediments and sludge, depending on the atmospheric conditions and type of metal. From here they can then accumulate in flora and fauna and, as they are often toxic, this can have a negative effect on the environment. The relative mobility of metals differs, and consequently their environmental effects can also be varied. For example, once lead has fixed into soil it takes a very long time to migrate out and can have long-term effects on soil quality. Mercury (and to a lesser extent Cadmium) quickly leaches out of soil and into watercourses; once there it is rapidly taken up by fish and subsequently accumulates in the food chain.

Heavy metals can be emitted from the burning of coal or oil and are also emitted from a variety of industrial processes. Metal ore mining causes metal based dust formation, as do manufacturing processes that involve working with large amounts of metal (in particular foundries, auto-manufacturers and heavy manufacturing). Smaller amounts of metal will be emitted from light manufacturing (for example, electronics) and power generation will have high emission rates if the combustion of coal or oil is involved.

5.7 Metal Emissions to Land

Emissions of metals to land by industrial processes can have a serious impact on the local environment. All metals can have adverse effects on natural habitats depending on the amount emitted and the acceptable biological limit. In particular, metals such as mercury, cadmium, arsenic, chromium, copper, zinc and lead, can be highly toxic.

Metals are emitted directly to land by a number of industrial processes or by heavy metal leaching from mineral wastes at mining facilities. Metals can also be found in sewage sludge used as fertiliser.

Please see chapter 2 on water for information about metal emissions to water.

6. What to measure and report

Organisations producing other emissions are likely to be regulated businesses covered by legislative controls. The information you are required to record for compliance purposes can also be used for corporate reporting.

If you are subject to E-PRTR or OCNS as outlined above, the data you provide for this can be used to give summary data on your levels of emissions and used for the purposes of corporate reporting. It is likely that most emissions are covered under the E-PRTR and IED.

There are no simple methods to measure metal emissions or many of the other substances emitted. If it is likely you are emitting metals or other substances please report on the amount emitted in ***kg or tonnes per annum*** and provide a clear description of how you arrived at these figures. Also report on abatement technologies in place, any plans for substitution where feasible to move to safer alternatives or investments made to clean up your processes, whether this is ensuring your entire vehicle fleet runs on low sulphur fuel and has catalytic converters, or capture and collection methods or changes to your processes.

6.1 Accidents and spillages

If there are any breaches of the permits set for your organization or accidental emissions or spills. These should be recorded for:

- the type of emission

- the substance and amount (weight or volume) emitted

- the absolute number of spills should be reported, and

- the volume of individual spills if they are significant.

You should also report on any investments made to prevent future accidents/spills.

If the treatment method for clean up after the spillage is the disposal of any land that has been contaminated then this should be reported according to the criteria set out in the waste chapter of this guidance and should also consider the implication of any accident or spillage on biodiversity and report on any action undertaken.

7. Other information

7.1 Best practice

If your company is meeting the threshold requirements for emissions under E-PRTR or OCNS requirements you may wish to confirm you are operating to best practice, or working towards more stringent emission limit values, by developing or having in place systems or investing in technology to ensure that any pollution emitted is below the reporting threshold requirements the Environment Agency set through its Pollution Inventory return (EA PI) data for England and Wales and the Scottish Environmental Protection Agency (SEPA) for Scotland. Then report what your new limits are and whether you are meeting these self set targets.

http://www.environment-agency.gov.uk/business/topics/pollution/32314.aspx

http://www.sepa.org.uk/air/process_industry_regulation/pollutant_release_inventory/what_is_spri.aspx

The difference between the EA PI /SPRI and E-PRTR is due to several factors: there are more pollutants to be reported by operators in EA PI/ SPRI, the pollutant thresholds are lower so it captures 95% of all UK industrial releases.

7.2 Company Locations outside of EU

Where you have sites that are in countries that are not signatories to the Aarhus convention and as such not required to keep a Pollution Release and Transfer Register (PRTR), you should report on whether these sites meet a standard comparable to those within the EU and generate a PRTR.   If the country where the operation is located has a comparable reporting standard you should report or include the data from that standard. If not you should endeavour to be operating all sites to best practice .

 More information on air pollution is available at Defra website at:

http://ww2.defra.gov.uk/environment/quality/air/air-quality/

Information about air quality laws and regulations for industry are available at Environment Agency

http://www.environment-agency.gov.uk/business/topics/permitting/32320.aspx

Information about air quality monitoring is available at UK Air:

http://uk-air.defra.gov.uk/

Chapter Two

Key Performance Indicator – Water

1. What this guidance covers

The guidance on water is split into 5 categories where a KPI can be recorded and monitored to assess any change in use and/or encourage improvement:

1. The water you use, both supplied and abstracted

2. Water reuse and efficiency

3. Water in your supply chain

4. Nutrients and organic pollutants in water

5. Metal emissions to water

This chapter provides information on a range of tools available that can help you evaluate or understand the implications of water as a resource in your organisation. There are emerging concepts on the ways of looking at water, such as techniques for looking at the water used, both directly and indirectly, by an organisation (or even a product). This then allows you to assess your use and plan strategies and policies for sustainable water use.

2. Why this matter to business

It is estimated that water scarcity will affect two thirds of the world's population by 2025 and is already a reality to much of southern Europe, the Southern United States and large parts of South East Asia and Australia. With the globalisation of supply chains you may find that there are risks associated with water scarcity either directly to your operations or along your supply chains. Water scarcity in other parts of the world will impact on UK organisations, especially those that are dependent on imports of materials or components (e.g. food & drink, metals, electronics sectors) as water availability becomes more of a risk to being able to source these raw materials.

Everyone has a part to play in ensuring that the water resources we have currently will meet the demands we may have in the future by looking at their water use. For business, water supply is generally metered so there could be direct cost savings from minimising use.

For business, water is not only essential to operate – but good management can provide opportunities to build relationships with local communities, demonstrate leadership, improve or maintain brand value, and reduce costs.

3. Risks

Current water trends translate into a set of material organisational risks that fall into four broad categories: physical, reputational, regulatory, and litigation risk. The significance of these water-related risks varies by sector and by company.

A lack of freshwater can limit your operations, raw material supply, and product use in a variety of ways. Declines or disruptions in water supply can undermine industrial operations where water is needed for production, irrigation, material processing, cooling, and cleaning. Clean water is critical to many industrial processes, and lack of it can present a range of costs. A contaminated water supply often requires additional investment and costs for pre-treatment. When alternative sources of water or treatment options are not physically or financially feasible, operations may be disrupted or require relocation. Industrial expansion may also be constrained in regions where the water supply is already contaminated or at risk of contamination. Many organisations also fail to recognise water demands embedded across their supply chain. For example, water supply risks are often hidden in companies' raw material inputs or in the inputs of intermediate suppliers.

3.1 Reputational Risks

Constraints on water resources can make your organisation more susceptible to reputational risks. Declines in water availability and quality can increase competition for clean water, giving rise to tensions between organisations and local communities, particularly in developing countries where local populations often lack access to safe and reliable drinking water. Community opposition to industrial water withdrawals and perceived or real inequalities in use can emerge quickly and affect business profoundly. Local conflicts can damage brand image or even result in the loss of a company's license to operate. Reputational risks increase as people become more aware of their right to access water. The concept of "access to clean water as a human right" is gaining more recognition globally, with multinational companies like PepsiCo adopting a companywide policy in support of the human right to water.

3.2 Regulatory Risks

Physical and reputational pressures are increasingly resulting in more stringent local and national water policies that, if unanticipated, can raise costs and limit industrial activity.

Water scarcity, coupled with increased concern among local communities about corporate water withdrawals and water pollution, puts pressure on local authorities to consider changes in water allocations or caps on water use, increase water prices, set new permit standards, reduce permit availabilities, and develop more stringent wastewater quality standards. Organisations operating in the European Union are facing growing pressure to reduce water pollution in response to the EU's Water Framework Directive. Enacted in 2000, the directive takes an integrated, water basin-based approach, and commits EU member states to achieving high water quality conditions for all water bodies by 2015.

3.3 Litigation Risks

With increased attention from regulators and communities on water scarcity, organisations face growing risks stemming from lawsuits or other legal actions responding to the impacts of a company's operations or products on water supplies.

4. Issues to consider.

This section goes through each of the five water KPI categories outlined in 1 above and provides you with practical information to help you understand your water impacts and give details of what to measure and report in each category. The first three of these issues to consider are applicable to all organisations and should form the basis of your reporting on water. The last two are specific considerations relating to forms of water pollution. In considering these you should also review chapter 1 on air pollution and other emissions as the guidance in that chapter will also be helpful to you as will chapter 3 on biodiversity and ecosystem services where you should consider your impacts on water ecosystem services

4.1 The water you abstract and the water supplied.

Nearly every business is supplied with water, and the quantity of this water use can be easily measured. However, it is important to distinguish between water abstracted directly from the environment from the water and water supplied by a water company.

Abstraction of water can have significant local and widespread impacts on the environment. Water can be abstracted for public water supply to produce drinking water or for use by businesses for a wide variety of uses such as irrigation and for industrial processes (e.g. raw material, coolant, carrier or solvent purposes). Water abstraction is carried out by numerous business organisations including water and sewerage companies, industrial and chemical companies, food production, farming, and power companies.

Most business will use supplied water in some way, from staff facilities through to cooking and cleaning. The environmental impacts associated with supplied water use are indirect and need to be viewed up and down the supply chain of your business. When understanding your business operations you need to be aware of any obligations or instruments related to water both financial and legislative that you are required to comply with and report accordingly, as should your supply chain.

It is also important to distinguish whether the water used is from a region under water stress or one where supplies are abundant, as this has implications of the risk levels to your business. Water-stress is caused by physical[92] and/or economic[93] water-scarcity.

4.2 What to measure and what to report

Your water company should be able to provide you with all the detail you need regarding any water supplied to you. If an estimation method has been used this should also be reported. You should report your water use water ***in cubic metres per annum***.

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[92] Physical scarcity occurs when demand for water in a region exceeds the supply due to limited physical availability.

[93] Economic scarcity occurs when the low supply is caused by inadequate water management practices due to lack of financial resources or capacity.

For abstracted water, the majority of charges are levied according to the licensed volume, but actual volumes abstracted are reported to the Environment Agency in England and Wales, SEPA in Scotland and the DOENI in Northern Ireland. Compliance with any abstraction consents, such as those provided by the Environment Agency in the UK, should also be reported. ***Direct abstraction should be reported as the volume taken, not the licensed volume per annum.***

You should also indentify whether any of your direct operations are located in water-scarce regions and what percentage of your direct operations is located in those regions. Doing so will enable you to identify any possible risks to your business related to water scarcity. If you are unable to do this you should explain why you are not able to identify which of your operations are located in water-stressed regions and whether you have any plans to explore this issue in the future.

There are suggested reporting tables at the end of this chapter. In most cases the reporting should be simple, as most organisations focus on a specific type of abstraction.

The introductory guidance in section two of the introduction (pg10) provides you with information on intensity ratios/metrics. You may find it useful from a comparison point of view to normalize you findings by using intensity ratios. If you are presenting data that is normalized please give a brief explanation of the ratios/metrics you have used.

5. Water Use, Reuse and Water Efficiency

There are number of basic steps you can take to reduce water use and wastage in your own buildings and operations. Simply ensuring that fixtures and fittings for domestic type purposes (taps, toilets, showers, and washing machines) are water efficient, and educating staff to use them in a more sustainable way, will help reduce water usage. Water audits are available through most water companies and suppliers (some do charge for this). They will look to see where efficiencies can be made. As an organisation you should also address any leaks; fitting water meters often helps to detect these, e.g. if you turn off your stopcock and your meter is still running this could indicate you have a leak on your premises.

All organisations have an interest in ensuring the water they discharge to their local environment is as clean as possible, hence the need to understand how we use the water available to us and the quality of this water after it was been used in an industrial process as this has an impact on the quality of rivers, lakes and aquifers and the atmosphere

You should have systems in place in to identify where your water has been re-used, recycled, returned to source or discharged to sewer.

5.1 What to measure and what to report

From the figures of your total volume of water used (both supplied and abstracted), confirm the proportion of this that is reused, and the amount and quality that is returned to source, via consented discharge to a water course, direct to sewer or elsewhere. This data should be reported in ***m3/year against the volume of water used, and the volume of***

water abstracted. If an exact figure cannot be given, estimation techniques should be used based on flow rates.

If you have made any investment into technologies that aim to improve your water efficiency you may wish to report on these and any targets that you have set. Information and general guidance on how your organisation can improve its water efficiency can be found at http://www.wrap.org.uk/

6. Water use in your supply chain and global operations

For many UK businesses, the main risks to water use aren't necessarily within the UK - but often in their overseas operations or global supply chains where materials, goods or services are imported from areas vulnerable to drought, pollution or flooding.

We know from WWF's 2008 UK's Water Footprint Report that around 62% of our total "water footprint" comes from the products we import from overseas.[94] But while many companies are well prepared to manage their direct water risk, disruptions that occur in supply chains are often much harder to understand and quantify. According to CDP's Water Disclosure Global Report 2011, the awareness of risk in supply chain was much lower than in direct operations (27% compared to 55%). And while 82% of respondents were taking direct action to manage water in their direct operations, a much smaller figure (41%) reported taking action in their supply chain and watershed management.[95]

Given the UK's reliance on "imported water", it is important for individual companies and for the UK as a whole, to better understand these global risks.

6.1 Tools to assess supply chain/global risks

International methods and standards used to assess and report the impacts of water use across supply chains are less advanced or accepted than for carbon. But in recent years, as we have become increasingly aware of the value and direct impact of water as a critical business issue, a range of tools have emerged, for example:

6.11 WBCSD's Global Water Tool can assist companies in estimating the percentage of their own operations and supply chain located in water-stressed regions (i.e. where availability does not meet demand). This web-based software allows companies to identify sites in water-stressed areas, identify how many employees live in countries that lack access to improved water and sanitation, and to identify suppliers in water-stressed areas. Please note that this tool provides an assessment of risks related to water availability and does not consider risks associated with water quality and discharges. Access to the tool and additional information is available in the WBCSD website.[96]

6.12 Global Environmental Management Initiative's (GEMI) Water Sustainability Tool developed to help business understand their opportunities and risks related to water – and help tailor a strategy to manage and track performance. The tool provides guidance to

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[94] http://assets.wwf.org.uk/downloads/water_footprint_uk.pdf
[95] https://www.cdproject.net/CDPResults/CDP-Water-Disclosure-Global-Report-2011.pdf
[96] http://www.wbcsd.org/work-program/sector-projects/water/global-water-tool.aspx

enable companies understand risk rather than specific quantified indicators, and is a useful tool.

6.13 The Ceres Aqua Gauge is an excel-based tool for investors to assess a company's water management activities. Although aimed at investors, the tool may also be useful for companies to facilitate internal assessment and engage with suppliers – by setting out key questions to ask.**[97]***

6.14 Water stewardship initiatives encourage business to reduce their water use and engage with all water users at catchment level to agree how the resource should be sustainably managed. The European Water Stewardship Partnership recently published a standard for pilot testing that sets out principles and criteria (covering water use, impact, and governance) a company must meet to be verified as meeting the standard.[98] The Alliance for Water Stewardship is also developing a global standard for water stewardship.[99]

6.15 Water footprinting is a tool for measuring both the direct and indirect (e.g. supply chain) water use of a product, organisation or community. Water footprinting is very useful in developing a comprehensive measure of a product or organisations water use. However, the methodology for water footprinting is insufficiently mature to support consistent assessments that account for both the "volume" of water consumed and it's "impact" in the local environment. The method can also be resource intensive to carry out and the level of accuracy can vary significantly depending on the season, location, data etc. Key tools include:

- The *Water Footprint Network* method to measure the volumetric water footprint – quantifying water use by source and type of water.[100]

- The *International Standards Organisation* is currently developing a water footprint standard that is aiming to represent both the volume and impact of water use in relation to local situations.

Note: Defra is currently undertaking a study to evaluate the tools available to business to assess the impact of their water use. This is expected to be published in late 2012.

7. Indicators for supply chain

If possible, address the key criteria and questions listed below as these will help you identify key risks and opportunities for this issue.

Identify any potential risk within your supply chain (e.g. using some of the tools above)

Do you know whether your suppliers operate in areas vulnerable to drought or flooding?

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[97] http://www.ceres.org/issues/water/aqua-gauge/downloads/aqua-gauge-executive-summary
[98] http://www.ewp.eu/
[99] http://www.allianceforwaterstewardship.org/index.html
[100] http://www.waterfootprint.org/?page=files/home

How many of your suppliers are located in water stressed regions? (You may wish to gather data on water use and compliance from suppliers, particularly in vulnerable regions)

What is the source and reliance on water by your suppliers in sensitive areas?

Is there any risk to degradation of water affecting your suppliers use of that water?

How is water managed in your supply chain?

Do your suppliers have management systems in place to mitigate any of the above risks and improve management in the catchment they operate?

Are they aware of the other users of water in their catchment? Is there competition for a limited resource?

Estimate the severity and timeframe whereby you may be exposed to the above risks

Are these near (i.e. within the next 5 years) or long term risks?

Is it a seasonal risk?

How might this affect your operations?

8. What to measure and what to report

When recording your water use you should, where possible indentify whether any part of your supply chain are located in regions vulnerable to drought, pollution or flooding and what percentage is located in those regions.

For your supply chain, it may not be possible to record quantitative indicators as a measure of your water impact/risk. Nevertheless, engaging with suppliers and starting to identify and record the types of risks you may be exposed is key to managing them.

9. Nutrients and Organic Pollutants to water

Organic matter is commonly found in groundwater and inland waters, and can cause pollution and disruption to aquatic habitats. Discharges of organic waste (nutrients) into bodies of water can cause *eutrophication* in rivers, lakes, estuaries, coastal and marine waters. Sources of nutrients commonly include human sewage, crops and animal production, food processing, pulp and paper manufacturing, detergents manufacturing and fertiliser manufacturing. Organic contaminants can lead to the death of animals and fish as well as changes in appearance, reproductive patterns or behaviour in fish. Organic pollutants can be found in influent and effluent of wastewater treatment, boiler feed water, cooling water, and storm water.

While nutrients have an indirect effect on oxygen levels, oxygen-demanding pollutants have a direct effect. They are contained in organic effluents such as sewage discharges and discharges from the industrial sectors (food and drink). Organic effluent includes contaminants such as Polychlorinated Biphenyls (PCBs), Polycyclic Aromatic Hydrocarbons (PAHs), Hexachlorocyclohexanes (HCH), Benzene, Toluene, Xylenes,

Ethylbenzene, Dioxins and Phenols, as well as general brewing waste and sewage. Oil spills can also contribute to organic pollutants.

9.1 What to measure and what to report

Many sectors are responsible for emitting organic pollutants to water including farming, textile production, paper industry, chemicals etc. Discharged organic substances are commonly measured in one of two ways:

- by determining the concentration of the emitted substances where it is known that specific substances have been emitted (where few substances are emitted or when they are easy to identify in processes); and

- by assessing the overall quality of the effluent when specific assessments are difficult to make due to the diverse nature of the components of the discharge.

For specific measures, standard laboratory tests can be performed to determine the concentration of the contaminant in the water. Water quality measures are more varied.

Combined parameters to assess potential eutrophication in water include:

- *Biochemical Oxygen Demand* (BOD), which refers to the amount of oxygen that would be used if all the organic components in water were consumed by bacteria.

- *Total Suspended Solids* (TSS or SS) are solids in water, which constitute an indication of high concentrations of bacteria, nutrients or pesticides and can harm the aquatic life / cause problems for the industrial use of water.

General organic matter concentration can be defined by the following measures:

- *Total Organic Carbon* (TOC), which measures the organic content of a sample that can be oxidised to Carbon Dioxide.

- *Chemical Oxygen Demand* (COD), which is the amount of oxidisable material as measured by the potassium dichromate test.

Materials and data collection processes are particular to each one of the methods stated and require more or less costly investments in resources and equipment depending on the technique used.

Total discharge of effluents should be recorded in absolute cubic meters per annum, and the content of effluent described. In addition, specific or general water quality measures should be undertaken to assess the impact of these emissions to water. ***For specific measures, the kilograms of pollutant per cubic metre should be reported.***

If spills have contributed to organic pollutant emissions to water directly, ***the absolute number of spills should be reported, and the volume of individual spills*** if they are significant. If an estimation method has been used this should also be reported.

If your organisation is involved in the sectors mentioned or has the potential to emit nutrients or organic pollutants you are likely to be subject to E-PRTR/IPPC (see Chapter 1)

or have to applied for a Environmental Permitting through your local Environment Agency (SEPA Scotland and DOENI Northern Ireland) and it is through meeting the requirements of these regimes that you will be carrying out such testing or the relevant body will be monitoring your outfall. **You should report on your environmental permits accordingly**.

The introductory guidance provides you with information on intensity ratios/metrics please refer to page 10. You may find it useful from a comparison point of view to normalize your findings by using intensity ratios. If you are presenting data that is normalized please give a brief explanation of the ratios/metrics you have used.

10. Metal Emissions to Water

Metals and metal compounds can be found in effluent, drinking water, cooling water and run-off water. Metal emissions to water include: Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Mercury (Hg), Nickel (Ni), Lead (Pb) and Zinc (Zn). Other metals that are regularly detected in waters comprise Antimony (Sb), Barium (Ba), Beryllium (Be), Boron (B), Cobalt (Co), Manganese (Mn), Selenium (Se), Silver (Ag) and Vanadium (V).

Metal can affect the aquatic environment in a number of different ways, and for some metals their concentration can increase in the food chain at each trophic level, a process called *biological magnification*.

Many sectors can cause metal emissions, by a variety of different processes.

Pollutant[101]	Processes & Activities
Antimony	Petroleum refineries Fire retardants Electronic production Ceramic production Steel production (solder)
Arsenic	Glass production Electronic production Fruit production

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[101] Main source: United States Environmental Protection Agency. Note that not all these will be applicable in the UK, but the table is left complete to assist multinational UK registered companies that wish to refer to these guidelines.

Pollutant[101]	Processes & Activities
Barium	Metal refineries Mining
Beryllium	Metal refineries Electronic and electrical production Aerospace and defence industries
Boron	Pyrotechnic flares Insulation fibreglass Sodium bleach and disinfectants Manufacture of borosilicate glasses Boron filaments in aerospace structures
Cadmium	Corrosion of pipes Stabilisers for PVC Alloys and electronic compounds Landfill Metal refineries Refined petroleum products Batteries Paint Coatings (marine - aerospace applications)
Chromium	Steel production (metal alloys) Landfill Pigments for paper, paints, cement and rubber

Pollutant[101]	Processes & Activities
Cobalt	Cobalt-bearing portables Rechargeable batteries
Copper	Corrosion of pipes Landfill Additives to control algal growth
Lead	Corrosion of pipes Batteries Petrol additives (forbidden in the EU) Pigments Landfill Cable sheathing Ammunition
Manganese	Used in quantitative analysis and medicine Paints Landfill Glass colorant Alloys

Pollutant[101]	Processes & Activities
Mercury	Refineries Crop production Landfill Batteries Lamps Thermometers Fillings (dentistry)
Nickel	Stainless steel and related alloys Coins Landfill Electronic devices' batteries
Selenium	Petroleum refineries Mining
Silver	Photographic material and processes Mirrors Electric conductors Batteries Table cutlery Dental and medical
Vanadium	Aerospace titanium alloys Chemical catalyst for glass and ceramics Dyes Target material for X-rays

10.1 What to measure and what to report

When considering what to measure and report you should also review the chapter 4 on materials and look at guidance on metals extraction and also Chapter 1 will help you report accurately and avoid duplication of effort.

Metal emissions to water arise from various processes as described in the table above. These emissions can be calculated using emission estimation techniques and manuals. Sampling and source monitoring procedures for analyses vary from country to country and requirements for direct measurement methods depend on the reporting requirements and methods established by pollution inventories. **Metals should be reported as absolute kilograms emitted per annum**. Details of the technique used for sampling and monitoring should be given to enable comparisons to be made. Where discharges are made to surrounding controlled waters, discharge consents are required, which may provide useful data.

11. Other information

Suggested Water Reporting Tables

WATER ABSTRACTION and USE			
	Tidal (saline) Water	**Non Tidal (Fresh) water**	
		Groundwater	**River or Reservoir Water**
Abstracted water (m3/year)			
Abstracted water used (m3/year)			
Water returned to source (m3/year)			
Mains Water Used (m3/year)			
Reused water (m3/year)			

Metal Emissions to water		
Metal Name	Kg/annum discharged	Other information i.e. discharge consent
Nutrients and Organic Pollutants		
Total discharge of effluent (m3/year) and description		
Kg of pollutant per m3		
Spills – number and volume m3 per spill		

At Section Two of this guidance on page 19 we talked about intensity ratios. You may wish to provide a financial related measurement for your water use (water unit/financial unit).

Volume of water	Water unit	Financial metric	Financial quantity	Currency Unit	

Environmental Impact	Measure	Cost	Provisional Target	Expense	Saving
					total

Chapter Three

Key Performance Indicator - Biodiversity and Ecosystem Services

1. What this guidance covers

This guidance is for organisations on how to measure and report on biodiversity[102] and ecosystem services[103] (BES). It:

- Sets out why biodiversity and ecosystems should matter to organisations

- Summarises what we mean by biodiversity and ecosystem services, and explains how they are linked

- Provides some guidance on how to report on biodiversity and ecosystem services.

- Suggests how organisations select and develop performance indicators for biodiversity and ecosystem services, to measure their dependency on them (and therefore identify risks) and to measure their direct and indirect impacts.

2. Why should this matter to business

Organisations affect biodiversity and ecosystem services, and also rely on them to deliver both business value and wider benefits to people. Managing biodiversity and ecosystems effectively can provide business opportunities. Your organisation can potentially have both a **direct** and **indirect** impacts on biodiversity and ecosystem services and impacts can be either **negative** (e.g. degrading the quality/quantity of biodiversity) or **positive** (e.g. creating a net contribution to the quality/quantity of biodiversity).

A **direct** impact is when your organisation's activities directly affect biodiversity and ecosystems. For example, when land is converted for the benefit of production activities, surface water is used for irrigation purposes, toxic material are released, or local species are disturbed through the noise and light produced at the sight.

Direct impacts can also have a positive effect – for example, the management of parks/land and estate to the benefit of wildlife and/or public enjoyment.

An **indirect** impact is when the impact is caused by parties in your supply chain(s) or from activities that have been triggered by your operations. For example, if you sell products the production of the inputs for those goods will have had direct impacts on biodiversity.

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[102]The UN defines biodiversity as "*the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems*"

[103] Ecosystem services are services provided by the natural environment that benefit people, such as clean water, clean air and food (see text for a fuller explanation)

Indirect impacts may be relatively difficult to predict and manage, but they can be as significant as direct impacts and can easily affect an organisation.

By reviewing your operations and, where possible, the impact of your supply chain you can understand where your organisations impacts lie and develop a corporate strategy and measureable operational responses. Your strategy should aim to reduce the negative impact of your organisation's operations and products on biodiversity and ecosystems services, maximise potential new business opportunities and increase activities that restore and preserve habitats. In effect it should become part of your overall strategic business plan.

Ideally you would have integrated your biodiversity/ecosystem service thinking into the reporting of the other aspects of this guidance i.e. water, greenhouse gas emissions, other emissions to air. For example, as well as measuring water use in your operations, you may want to consider the impact of activities in your supply chain on water resources and on the wildlife which they support.

Reporting on biodiversity is easier if there are facts and figures you can quote that measure aspects of your impact, but in many cases it will be difficult to capture these in hard numbers and what will be important is demonstrating what systems and structures you have in place to reduce any impact and ensure benefits from ecosystem services are maintained.

3. Risks

Organisations not only affect BES but also rely on them to deliver both business and societal value e.g. plant genetic resources are key to developments in the agricultural and the pharmaceutical industries. Given this reliance on ecosystems, challenges to them may pose a significant risk to your organisation as well as your suppliers, customers, etc including:

- Operational – increased scarcity and cost of raw materials, such as freshwater, disruptions to business operations caused by natural hazards and higher insurance costs from disasters such as flooding;

- Regulatory – development of policies to protect natural assets - such as taxes and limits on extractive activities – in different countries

- Reputational – damage to corporate reputation from media and other campaigns, shareholder resolutions and changing customer preference;

- Access to capital – restrictions as the financial community adopts more rigorous investing and lending policies.

4. Benefits

At the same time, these trends and challenges can create new business opportunities including:

- New technologies and products – that will serve as substitutes, reduce degradation, restore ecosystems or increase efficiency of ecosystem service use;

- New markets – such as water quality trading, certified sustainable products, wetland banking and biodiversity offsetting

- New revenue streams – for assets currently unrealised such as wetlands and forests, but for which new markets or payments for ecosystem services could emerge.

BES indicators are needed to:

- Understand the impacts and dependencies of different business models on biodiversity and ecosystem services;

- Track performance in a way that relates to strategic business goals and enable effective risk and opportunity management; and

- Communicate to stakeholders BES related performance and challenges

There is more information on indicators of impacts on biodiversity and ecosystems and how to select the appropriate ones for your organisation in section 5 below.

5. What we mean by biodiversity and ecosystem services, and how they are linked

5.1 Biodiversity

As noted in the National Ecosystem Assessment,[104] biodiversity underpins all ecosystem services and plays a wide range of roles in ecosystems and in the processes that support them. Examples range from the roles bacteria and fungi play in nutrient cycles which are fundamental in all ecosystems, to particular animal groups, such as birds and mammals, which are culturally important to many people. Studies have shown that ecosystem functions are more stable in the long run when there are relatively high levels of biodiversity; and there are comparable effects in natural ecosystems. In general terms, the level and stability of ecosystem services tend to improve with increasing biodiversity.

Our knowledge of the trends and drivers of change in biodiversity and the economic consequences of biodiversity loss on organisations and human well-being has improved considerably in recent years. Biodiversity ensures the functioning of ecosystems, and their ability to provide services to humans and other living organisms, including ecosystem resilience to future change. The sensitivity of ecosystem services to changes in biodiversity implies that achieving these services requires management measures that support a wide range of biodiversity. Looking at the conservation and management of biodiversity is therefore an important part of managing ecosystem services effectively.

5.2 Ecosystem Services.

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[104] Chapter 4: http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx

The Millennium Ecosystem Assessment (MA), grouped ecosystem services into four broad categories:

- Provisioning services: Goods or products obtained from ecosystems such as food, freshwater, timber and fibre;
- Regulating services: Benefits obtained from natural processes such as climate, disease, erosion, water flows and pollination, as well as protection from natural hazards;
- Cultural services: Non-material benefits obtained from ecosystems, such as recreation, spiritual values and aesthetic enjoyment (elements of biodiversity are included within this e.g. charismatic species);
- Supporting services: Functions that maintain all other services, such as photosynthesis, water and nutrient cycling.

The report on The Economics of Ecosystems and Biodiversity (TEEB) further refined this list of 4 by identifying 22 service types that ecosystems provide - see Annex B. You might find these helpful in understanding the linkages to natural capital[105] by making a distinction between the natural capital assets that give rise to a flow of benefits, and a particular aspect of human well-being.

6. What to measure and report

As noted in The Economics of Ecosystems and Biodiversity (TEEB) Report[106] *"the challenge is to establish reliable information management and accounting systems that can provide relevant information on biodiversity and ecosystem services to support operational decisions (e.g. the choice of production technology), to inform financial valuations or project assessments (e.g. capital investment), and for internal and external reporting"*. This section aims to help you understand how you might go about measuring and reporting on biodiversity and ecosystems.

Assessing impacts and dependencies on biodiversity and ecosystems presents a challenge as they may be outside the boundaries of your organisation's operations and changes in an ecosystem are typically not solely the result of your organisation's activities. Unlike other environmental indicators in this guidance document, there is no single easily quantifiable unit that can be recorded or measured.

There are a number of steps we recommend you consider when thinking about how to measure and report on biodiversity and or ecosystem services in relation to your organisation:

Step 1 - Assess the impact your organisation has on biodiversity and those aspects that depend on ecosystem services.

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[105] The term 'capital' is used to describe a stock or resource from which revenue or yield can be extracted. Four basic categories of natural capital are generally recognised: air, water (fresh, groundwater and marine), land (including soil, space and landscape) and habitats (including the ecosystems, flora and fauna which they both comprise and support).

[106] http://www.teebweb.org/ForBusiness/tabid/1021/Default.aspx

- What are the impacts on my organisation on biodiversity – both positive and negative?

- What are the risks and opportunities to my organisation from these impacts? (See section 2.1 and 2.2 for guidance). Detail your results and mitigation measures.

Step 2 - Develop a set of indicators relevant to your particular organisation (see next section). Narrative information to help stakeholders understand the implications of an indicator is helpful. This might include an explanation of the chain of causality linking performance and impacts, or commenting on the potential scale of change without estimating actual numbers. If using a tool, report which one and the data input. Have you used additional information from other decision making frameworks and tools to supplement this information?

There are many tools available[107] and recently there has been a focus on integrating biodiversity and ecosystem services data sets and indicators within pre-existing organisation decision-making frameworks, notably ISO standards (14000), the Global Compact Performance Model and the Global Reporting Initiative's G3 reporting framework.

Step 3 - Develop a corporate strategy in response to the findings in step 1 (above). You should report on what systems and structures you have in place to reduce any impact and ensure benefits are maintained from ecosystem services.

Step 4 – Report on any biodiversity offsets or other considerations.

7. Indicators

Indicators are measures that summarise complex data into simple, standardised and communicable figures. Many indicators relating to some aspect of biodiversity exist and none capture biodiversity in its entirety – see Annex A.

You might find it easier to understand, communicate and act upon your biodiversity indicators if you consider the linkages that connect your activities to outcomes as follows:

● Responses —actions to prevent or reduce biodiversity loss

● Pressures — the threats to biodiversity that your responses aim to address

● State — the condition of biodiversity and how it is changing

● Benefits — amount and change in benefits and services that humans derive from biodiversity

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[107] ,WBCSD CEV MIMES inVEST, ARIES IBAT Integrated Biodiversity Assessment Tool, Natural Value Initiative Environmental Impact Assessments (EIA), roundtables and standards, biodiversity offsets, NGO partnerships, investor questionnaires such as SAM (Sustainable Asset Management) and CDP (Carbon Disclosure Project),
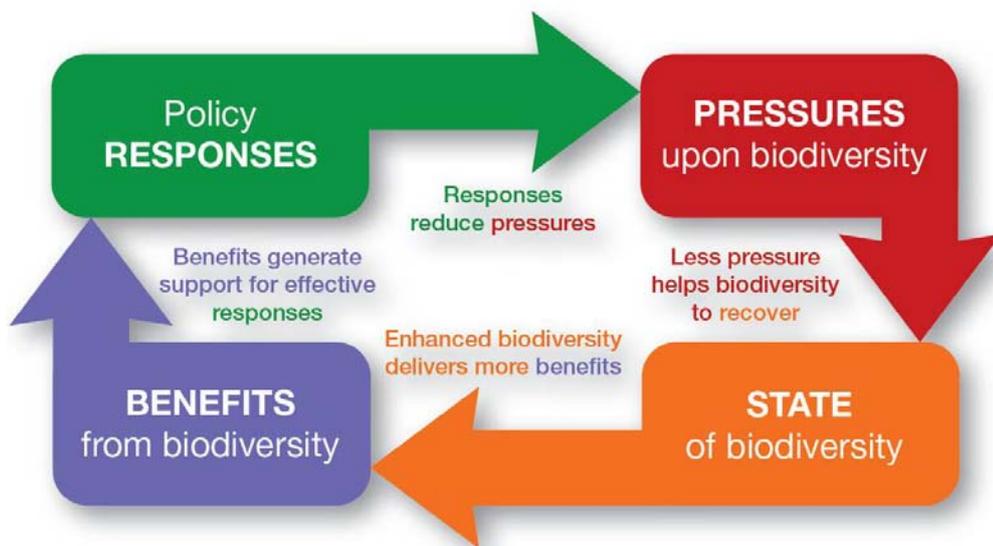
There is cyclical nature to these four indicators where the state of, or action in one impacts on the next. Linking these 4 indicator types together makes it clear that there is cyclical nature to your decisions and the corresponding impact on biodiversity. Simply put, your decisions can lead to pressures on biodiversity which in turn impact on the state of biodiversity which can then alter the benefits from biodiversity. You can start from any point in this cycle i.e. a change in the benefits from biodiversity could lead to a response by your organisation... etc. This approach can be applied to any organisation, sector or system and is a simple way of understanding the Response-Pressure-State-Benefit approach.

Details on the GRI biodiversity indicators and their use can be found at:

http://www.globalreporting.org

The GRI indicators provide a recognised structure and format for reporting on biodiversity but this has its limits as the framework contains biodiversity indicators, mostly relevant to habitat management. One indicator measures your organisation's indirect impacts on biodiversity, through the environmental performance of your suppliers and partners. To ensure an holistic assessment of biodiversity and ecosystems you are encouraged to use any baseline data from any environmental assessment done and supported by other sources of environmental information that you may already be producing (e.g. for an environmental management system or a strategic environmental assessment).

This next section offers some guidance on choosing the appropriate indicators for your organisation to help assess your impacts.

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[108] http//www.bipindicators.net

7.1 Steps to consider your indicator(s)

7.11. Ensure objectives are clear

Clear objectives and targets help to identify and define indicators as specifically as possible to avoid misinterpretation. Indicators are there to answer specific questions or to assess business objectives and should be developed in the context of those questions/objectives. A useful resource for indicator planning and development is the framework and guidance developed by the Biodiversity Indicators Partnership on national indicators. http://www.bipnational.net

7.12. Adopt a small set of specific, business-relevant indicators

Don't try to do everything. Resources should be used to address key elements (i.e. those most relevant to your organisation) and information gaps. No single indicator can tell the full story however and a combination of indicators that link to one another as they address pressures, impacts, dependence and responses in addition to a narrative on strategy and management ought to provide a comprehensive overview of your organisation's performance.

7.13. Start with biodiversity

There is potential for employing biodiversity indicators (which are generally more well developed) as proxies to indicate something about the flow of an ecosystem service (which is often difficult to measure or lacking in data), as long as the linkages between the two are well understood. However, although in some categorisations biodiversity is classified as an ecosystem service they are not inter-changeable. It is important not to lose sight of the importance of biodiversity by focusing only on ecosystem service benefits.

7.14. Go beyond provisioning services

Where possible, create indicators for different types of ecosystem service. Currently there is an overreliance on indicators that capture the value of a few species and ecosystems relevant to food and fibre production, which are rarely good proxies for other kinds of ecosystem service (See annex B).

7.15. Use existing data and proxies (but recognise limits)

Developing ecosystem service indicators is best viewed as an iterative process. Start by doing what is possible with your current levels of information, and improve over time. Use available knowledge and indicators as a starting point. Where direct measures are not yet developed or where there are no data, good proxy indicators can be used. Note that not all ecosystem services are easily quantifiable. Qualitative metrics can be as useful as quantitative ones.

7.16. Think about sustainability – include indicators for both ecosystems and benefits

Measure both the supply of the service (including state/condition of the ecosystem or its relevant components) as well as the benefits from services and impacts on well-being.

7.17. Be sensitive to scale

The scale at which ecosystem services are measured and reported should be appropriate to the decision making context. Some things are more appropriate at certain scales and not others. Not everything can be scaled up.

7.18. Assess trends and consider synergies and trade-offs

Some indicators are snapshots or baselines, but replicable measures are important for monitoring change and tracking progress. Monitoring multiple services over time allows a better understanding of synergies and trade-offs.

The World Resources Institute ecosystem service indicators database[109] can also be used as a source of reference on ecosystem services

8. Biodiversity Offsets

Biodiversity offsets are conservation activities designed to deliver biodiversity benefits in compensation for losses, in a measurable way. They can be used to compensate for residual impacts on biodiversity from development activities, as a final step after avoiding losses wherever possible, and mitigating for impacts on site.

Biodiversity offsets are distinguished from other forms of ecological compensation by the formal requirement to measure losses due to impact and gains achievable through the offset in the same way.

The Business and Biodiversity Offsets Program (BBOP) is an international partnership between companies, financial institutions, governments and civil society organizations to explore biodiversity offsets: http://bbop.forest-trends.org/. In January 2012, BBOP published the latest version of its standard for offsetting, which aims to help auditors, developers, conservation groups, communities, governments and financial institutions that wish to assess biodiversity offsets against the BBOP Principles, Criteria and Indicators.

In the Natural Environment White Paper, the Government committed to establishing a new voluntary approach to offsetting in England, and to testing this in a number of pilot areas. We will be working with six pilot areas from April 2012, for 2 years. The aim is to develop a body of information and evidence, so that the Government can decide whether to support greater use of biodiversity offsetting in England and, if so, how to use it most effectively. http://www.defra.gov.uk/environment/natural/biodiversity/uk/offsetting/

If you use offsetting in your work, you might want to report on:

- The methodology used to calculate the impact of your development
- The site you have chosen as an offset, and
- How you have used the methodology to ensure there will be no net loss of biodiversity.

Offsetting work should be considered as an additional tool in managing and reporting on impacts on biodiversity and ecosystems, and not a substitute for it.

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[109] http://www.esindicators.org/indicator_details/1776

9. Other Considerations

There are many organisations, charities and NGOs that can help with your environmental assessments of Biodiversity Action Plans or in your use of some of the tools mentioned in this guidance and you may wish to partner with one of these to support your work on biodiversity and ecosystems. They also provide information on issues such as working with other companies to improve environmental performance, raising awareness and regularly reviewing the policy and regulatory context for biodiversity.

Chapter Four

Key Performance Indicator – Materials

1. What this Guidance Covers

The term materials in the context of this guidance is defined as:

- **Metals** (The most commonly used metallic resources are Iron, Aluminium (Bauxite), Copper, Lead, Nickel, Zinc, Gold and Silver and rare (critical) metals

- **Minerals** include Asbestos, Barite, Boron, Diamonds, Diatomite, Feldspar, Flurospar, Graphite, Gypsum, Guano, Magnesite, Perlite, Phosphate, Potash, Salt, Sulphur, Talc, Vermiculite and Zirconium. This also includes aggregates – rock, sand, stones.

- **Fossil fuels** (coal, gas, oil, and peat).

- **Biomass** – wood and other.

This chapter covers each of these groups but because of the similar methods of extraction for some of these materials, metal and mineral extraction are covered together.

If your main business is in the extraction, manufacture or creation of any of the above it is likely that you record your production levels and publish a yearly statement of these as this demonstrates your core business activity. Whilst these headline figures are important, you should also consider what environmental impacts are relevant and, to what extent, the use of materials by your organisation is "material" to understanding the risks and opportunities that face your business.

2. Why this matters to business

Materials extraction, or mining activity, has environmental impacts: natural habitats are often disrupted, and other mining processes and by-products can have serious environmental consequences. Due to the invasive nature of mining, or extraction of raw materials, you should also review the chapter 3 of this guidance on biodiversity as your business is likely to have BES impacts.

These sectors also tend to produce large volumes of waste; use large amounts of water and have the potential, given the nature of some of the materials being extracted, for pollution to occur to the environment as result of the process undertaken or of industrial accidents. **Any initiatives to continually improve the environmental performance of a company's operations should be reported**, for instance on energy and water efficiency, raw material efficiency, waste minimisation and resource recovery projects, including the use and sharing of best available practices (BAP) in environmental management. Therefore you should review the chapters of this guidance on waste (5) water (2) and air pollution and other emissions (2).

Throughout the world, sustainability controls are being applied to mining operations (including oil, gas and coal), and project-specific key performance indicators are being developed to demonstrate to stakeholders that mining operations are complying with these wider requirements. Some sector specific guides are:

- The International Council on Mining and Metals (ICCM) has 10 Sustainability Principles with which members must comply[110].

- The Global Reporting Initiative (GRI) produces sector supplements that are relevant to this chapter for mining and metals sector and the oil and gas sector[111].If you have used the GRI reporting framework and obtained a GRI grade level this should be detailed, including where you have sought independent third party assurance. These GRI reports can be used in lieu of this guidance (except for the process of fracking - see below - which is not contained within the GRI documents and should be reported on).

- Minerals UK also offer an introduction to minerals and sustainability[112].

3. Issues to consider

This section goes through each of the 4 categories outlined above in 1 and provides you with practical information to help you understand the implications of your organisations activities in this area and details of what to measure and report under for each.

3.1 Minerals and Metals

This indicator includes only minerals and metals that are extracted rather than those that are recovered through recycling. If you are engaged in the production and processing of metals both this section and the sections on water and air pollution and other emissions will be relevant to you. The Water Framework Directive, the Habitats Directive, and the Mining Waste Directive apply to these industries[113] in the UK.

In recent years it has become increasingly apparent that there is a concern regarding the security of supply of **critical metals**[114] that are used in a wide range of consumer goods and advanced manufacturing. The UK has little domestic production of such material so there is a risk management issue for businesses that use these materials directly or in their supply chains. In terms of environmental impacts, the issues are the same as for mining of other metals and minerals although the magnitude of the energy and greenhouse gas impacts can be significantly greater than for the more common metals.

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[110] The world's largest mining companies are members of the ICMM. Further detail can be found at http://www.icmm.com/our-work/sustainable-development-framework/10-principles

[111] http://www.globalreporting.org/ReportingFramework/SectorSupplements/MiningAndMetals/#MM2

[112] http://www.bgs.ac.uk/mineralsuk/sustainability/home.ht
[113] http://archive.defra.gov.uk/environment/quality/water/wfd/index.htm
http://archive.defra.gov.uk/wildlife-pets/wildlife/protect/bird-habitat/index.htm
http://www.defra.gov.uk/publications/2011/10/03/pb13636-ep-guidance-mining-waste/
[114] These are: Antimony, beryillium, cobalt, gallium, germanium, indium, magnesium, platinum group metal (PGM), rare earth elements (REE), tantalum-niobium and tungsten.

The Resource Security Action plan[115] will help you ensure we are more resilient to changes in supply and price of these materials. It aims to develop better coordination between businesses and industry and to make sure everyone is armed with information about the availability of these resources to make the right choices.

3.2 What to measure and what to report

Extraction of mineral material is commonly measured at source. Companies should measure the quantity of mineral that is extracted. ***Minerals extracted should be reported in metric tonnes extracted per annum, broken down by type of mineral.***

4. Aggregates

Currently, the quarrying of aggregates as sand, gravel and crushed rock is by far the most common type of mining operation in England, both on land and at sea. Most of the output is consumed by the domestic building and construction industry. This includes the extraction of marine aggregates from the seabed.

 Aggregates in the context of this guidance are raw materials that are used to make construction products such as lime, mortar, asphalt and concrete. Specifically, aggregates are defined as a "granular material used in construction. Aggregate may be natural, manufactured or recycled." (European Standard BSEN 12620: 2002)

Aggregates are extracted by quarrying and mining operations but can also arise from secondary sources such as building and demolition waste. Quarrying, processing and the transportation of aggregates to the marketplace has the potential to both positively and negatively affect the environment, which in turn can have social as well as economic effects

The Aggregates Levy applies to any sand, gravel or crushed stone extracted in or imported into the UK. This levy was introduced to address the environmental costs associated with quarrying that were not already covered by regulation, including noise, dust, visual intrusion, loss of amenity and damage to biodiversity. The levy aims to bring about environmental benefits by making the price of aggregates better reflect these costs and encouraging the use of alternative materials such as recycled materials and certain waste products.

For aggregates that are dredged from marine sources there are regulatory controls in place enacted through Marine Works (Environmental Impact Assessment) Regulations 2007 [116]If you extract minerals or aggregates via this method you should confirm your compliance and the results of any Environmental Impact Assessment (EIA). As part of the EIA, a consideration of the potential ecological impacts of the proposed activity on seafloor substrates and their associated fauna is required. These regulations provide specific advice on the expected scope and standards of benthic ecological surveys conducted in support of the wider EIA process which ensures compliance against the following three stages of the regulatory and consenting process:

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[115] http://www.defra.gov.uk/publications/files/pb13719-resource-security-action-plan.pdf
[116] http://marinemanagement.org.uk/licensing/documents/guidance/08.pdf

1. The scope and conduct of benthic ecological surveys and desk studies required to inform an EIA submitted in support of a new or renewal licence application.

2. Ongoing operational monitoring surveys and substantive reviews carried out to determine if the extent and intensity of impacts predicted by the EIA are being realised and to assess the effectiveness of any licence specific conditions imposed.

3. Possible post-extraction surveys carried out following the relinquishment of a licence area to establish the nature and rate of faunal re-colonisation and restoration.

4.1 What to measure and report

Extraction of aggregate material is commonly measured at source.

Aggregates should be reported in metric tonnes extracted per annum, broken down by type of aggregate.

If you are a large user of aggregates you should ***record and report the source of aggregate used i.e. the percentage split between mined and recovered aggregate material or dredged from marine sources.***

You may also detail the amount of aggregate levy paid as an indicator.

You should also highlight the key points of any EIA survey. Where materials extraction has either positively or negatively affected species and habitats before, during and after their operational life-span, this should be reported. These impacts are relevant to indicators on biodiversity and further information can be found in chapter 3.

5. Fossil Fuels

5.1 Coal

The Department of Energy and Climate Change (DECC) is responsible for government policy in relation to the UK coal industry; the UK Coal Authority are responsible for issuing licenses and permits for mining of coal.

Like metals and minerals, coal is extracted by quarrying and mining operations either underground by shaft mining through the seams; or surface (strip) mining.

5.2 What to measure and report

Due to the similarities in the extraction of coal and the extraction of metals and minerals the considerations and reporting requirements are approximately the same.

Extraction of coal is commonly measured at source.

Coal should be reported in metric tonnes extracted per annum, broken down by type of coal (such as lignite or hard coal) and extraction (deep or open cast).

6. Oil and Gas

The Environmental Emissions Monitoring System (EEMS) is the mechanism used to record environmental data relating to the UK offshore oil and gas industry. The Department of Energy and Climate Change (DECC), as the main environmental regulator of the offshore oil and gas industry, are responsible for EEMS and require accurate, timely and consistent data to be submitted[117]. This allows DECC to carry out the necessary monitoring and reporting on the performance of the offshore oil and gas industry to take place.

IPIECA is the global oil and gas industry association for environmental and social issues and they provide a substantial body of guidance on environmental and sustainability reporting.

http://www.ipieca.org/focus-area/reporting

Oil and Gas are commonly but not exclusively found together and when extracted both the extraction of crude oil and the extraction of natural gas are measured at source.

6.1 Fracking.

One technique for extracting natural gas from shale rock deposits is known as hydraulic fracturing, or fracking. Fracking requires the injection of water and chemicals into the ground to force the release of natural gas. Concerns have been raised about potential environmental and health impacts associated with this technique, particularly impacts on groundwater.

6.2 What to measure and report

Crude oil should be reported in cubic metres or barrels of oil equivalent extracted per annum.

Reporting of natural gas quantities should be in cubic metres or barrels of oil equivalent extracted per annum.

You should report on the amount of any shale gas extracted by the use of fracking, the quantity of water used and plans and processes in place to prevent contamination of the water table.

Should contamination occur you should also have in place a clear set of procedures to manage and minimise the contamination.

The EEMS gives further details of the reporting requirements of the UK oil and gas industry and how to measure and report on these. If you operations are outside the scope of the UK requirements you should state the reporting regime under which you operate - if any and compare the reporting requirements. Any figures that are reported under these mechanisms should be considered for inclusion in any environmental reporting.

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[117] https://www.og.decc.gov.uk/EEMS/tech_docs/overview.pdf

7. Peat

Peat is unconsolidated soil material consisting mainly of decomposed or slightly composed organic matter accumulated under conditions of excessive moisture.

Peat formation is a very slow process, at an average of not more than 1mm per year.

There are two main types of peatland in the UK - lowland 'raised bogs' (in northern England) and the upland 'blanket bogs' (mostly in Scotland) the latter making up over 90% of total peat bogs in the UK[118]. Both types of peatland support a specialised range of species adapted to low pH and low nutrient levels and are included in the UK Biodiversity Action Plan.

Mechanical extraction by commercial companies can drain and damage the bogs and deplete this natural resource. Once drained the bog no longer functions as before, impacting on biodiversity. It should be noted that current UK commercial peat extraction licences expire in 2042; there is no intention for these to be renewed and the current practice of commercial peat extraction is therefore time-limited.

The UK Government is working with the horticulture industry to phase out the use of peat. Under proposals[119] set out in a detailed programme of action to repair damage done to the environment in the past, this will help to protect and restore peatlands, which are valuable carbon sinks, habitats and part of our ecological network. The Government has set a target to reduce peat use to zero by 2030 with milestones of a "progressive phase-out target of 2015 for Government and the public sector". A voluntary phase-out target of 2020 for amateur gardeners has been set and 2030 for professional growers of fruit, vegetables and plants.

7.1 What to measure and report

Extraction of peat is commonly measured at source. Peat should be reported in metric tonnes extracted per annum, (broken down by type of peat and extraction).

You should also report on biodiversity impacts.

8. Biomass

Biomass is defined as the total dry organic matter or stored energy content of living organisms[120]. Biomass is the fourth largest energy source in the world after coal, oil and natural gas.

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[118] For further information on peat please the Defra website http://www.defra.gov.uk/food-farm/land-manage/soil/peat/

[119] The plans are contained in 'The Natural Choice', the first White Paper on the natural environment in 20 years.

[120] "biodegradable fraction of products, waste and residues from agriculture (including vegetal and animal substances) forestry and related industries, as well as the biodegradable fraction of industrial and food waste' (EU Renewables Directive).

A practical way of looking at biomass is that it is the resource that is grown or collected, to be differentiated from bio-fuel which is a fuel manufactured from biomass (such as chips, pellets, biodiesel etc.). Bio-energy on the other hand is the use to which the fuel is put to supply energy, e.g. heat, transport or electricity. Regulations and directives that control how and where biomass derived fuels and conversion technologies can be used are listed in the footnote.[121].

Biomass resources can be classified according to the supply sector, as shown in the table below. There are five basic categories of biomass material:

1) virgin wood from forestry, arboricultural activities or from wood processing;

2) energy crops, both high yield and grown specifically for energy applications;

3) agricultural residues from harvesting or processing;

4) food waste from manufacture, preparation/processing, and post-consumer waste; and

5) industrial waste, including co-products from manufacturing and industrial processes.

Supply sector	Type	Example
Forestry	Dedicated forestry	Short rotation plantations (e.g. willow, poplar, eucalyptus)
	Forestry by-products	Wood blocks, wood chips from thinnings
Agriculture	Dry lignocellulosic energy crops	Herbaceous crops (e.g. miscanthus, reed canarygrass, giant reed)
	Oil, sugar and starch energy crops	Oil seeds for methylesters (e.g. rape seed, sunflower)
		Sugar crops for ethanol (e.g. sugar cane, sweet sorghum)

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[121] The Environmental Permitting Programme (EPP); Waste Incineration Directive (WID); the Building Regulations; the Clean Air Act; the Pollution Prevention and Control Regulations (England and Wales); the Large Combustion Plant Directive; and the Plant Health Import Regulations including on importing wood.

		Starch crops for ethanol (e.g. maize, wheat)
	Agricultural residues	Straw, prunings from vineyards and fruit trees and excess production.
	Livestock waste	Wet and dry manure, poultry litter
Industry	Industrial residues	Industrial waste wood, sawdust from sawmills
		Fibrous vegetable waste from paper industries
Waste	Dry lignocellulosic	Residues from parks and gardens (e.g. prunings, grass)
	Contaminated waste	Demolition wood
		Organic fraction of municipal solid waste
		Biodegradable landfilled waste, landfill gas
		Sewage sludge

8.1 What to measure and report

Biomass is usually measured by dry weight, and is the total mass of living matter.

Biomass is increasingly used as a renewable source of energy, cultivation of energy products can be accompanied by significant impacts on biodiversity, for example, due to taking up large areas of natural habitats or extensive water use. Due to these implications you should report on water and biodiversity KPIs.

If you are using significant amounts of biomass or if the use of biomass is critical to your operation you should report on the origins of your biomass source and the *amount used in metric tonnes per annum.*

Best practice is to have a clear auditable supply chain for your biomass and that it is sustainably sourced and produced. (You should refer to the GHG Guidance for how you should measure and report emissions from biomass combustion). Alongside this it is recommended that as a business you discuss your approach to alternative or renewable

energy, including descriptions of relevant operations, activities, investment plans or research and development projects when reporting environmental impacts.

9. Forestry

Wood is the largest resource of solid biomass. The forestry sector covers a wide range of different bio-fuels with different characteristics – wood logs, bark, wood chips, sawdust and more recently pellets. The ecological functions of forests are highly valuable (genetic, species and ecosystem diversity) and should be maintained.

Forestry and wood are often considered renewable resources, but over-exploitation from plantations which are not sustainably managed, threatens the environment as a whole and in particular biodiversity. Many governments have taken measures to encourage sustainable forest management and tackle illegal logging, including supporting certification schemes and reducing the exploitation of forests, but illegal logging continues to be a problem in many timber-producing countries, particularly in the developing world.

Harvesting and appropriate use of timber from legal or sustainably managed forests may be a positive indicator of environmental performance.

The UK Forestry Standard (UKFS) is the reference standard for sustainable forest management in the UK. http://www.forestry.gov.uk/ukfs

The UKFS, supported by its series of Guidelines, outlines the context for forestry in the UK, sets out the approach of the UK governments to sustainable forest management, defines standards and requirements, and provides a basis for regulation and monitoring.

Defra has also published guidance to help organisations report reductions in greenhouse gas (GHG) emissions resulting from investment in UK woodland creation projects and how organisations should account for the carbon savings associated with newly created woodland absorbing additional carbon dioxide from the atmosphere. The guidance should be used in conjunction with the Woodland Carbon Code whose purpose is to provide a robust quality assurance process that will promote market confidence in carbon sequestration by woodlands and re-assure investors that woodlands in which they have invested provide additional and permanent GHG abatement. [Insert links]

9.1 What to measure and report

Harvested timbers and other wood products, as well as residues of harvesting, should be reported in absolute cubic meters per annum by type of wood (prior to any drying process).

The geographical area that the wood was sourced from, whether from the organisation's own plantation or outsourced producers and any evidence of whether the wood was sourced from sustainably managed forests should also be reported.

Further guidance can be found here:
http://www.forestry.gov.uk/pdf/FCPH001.pdf/$FILE/FCPH001.pdf

Reporters may also find it useful to state whether the species harvested is listed on the Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES) and whether the species are Forest Stewardship Council (FSC)-certified, recycled or from sources that protect forest and communities.

Chapter Five

Key Performance Indictor - Waste

1. What this guidance covers.

This chapter covers the different types of waste and the different options for dealing with it that organisations may wish to measure and report on. As an organisation you will produce waste and it is a cost to you.

There is a hierarchy of how to deal with your waste (which now has legal standing). Under this you must give priority to waste prevention, followed by activities that prepare waste for re-use (e.g. cleaning, checking, repairing), followed by recycling, then other forms of recovery (including energy from waste). Disposal (e.g. landfill) is regarded as the last resort.

Prevention

Preparing for re-use

Recycling

Other recovery

Disposal
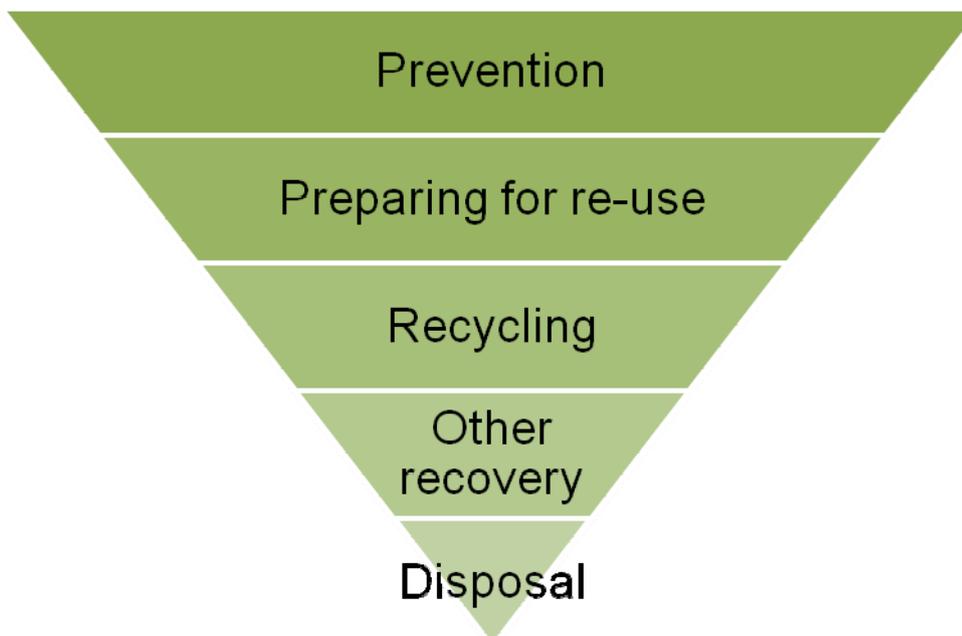
To reduce waste and manage it more sustainably, you need to work out what you are producing. If you have a contract with a waste management company, they should be able to provide you with much of the relevant data. (See 4. pg50 on what to measure and what to report).

2. Why this matters to business

Waste arises from day to day activities in all organisations. Any office will generate waste paper, packaging, glass and other waste. Different types of industrial premises will generate different categories of waste. For businesses waste disposal represents a cost, so measures you can take to minimise the waste you generate and to recycles or reuse what you do produce can have a direct financial benefit as well as making your business more environmentally friendly.

Basic resource efficiency measures such as reusing packaging and printing double-sided can contribute to realising real savings. But there are may be more fundamental changes in your operations or supply chain that could produce bigger savings, such as re-designing products and services to reduce materials used. Or for ease of disassembly, recycling and re-use. An introduction to the principals of eco-design is available from: http://envirowise.wrap.org.uk/uk/Topics-and-Issues/Eco-Design.html.

Waste is regulated in the UK and the laws that are in place regarding waste are designed to prevent the environment from being damaged and to encourage resource efficiency through the prevention and sustainable management of waste. At the end of this chapter are the details and relevant links of this legislation. Some of the legislation applies to all business waste, whilst some deals with particular types or sectors.

3. Issues to consider

This section provides information on the legal responsibility you have as an organisation to ensure that you produce, store, transport and dispose of your waste without harming the environment. This is called your *duty of care* and will help you understand the implications of your organisation's waste activities and detail of what to measure and report under for each.

You must ensure that you:

- Store and transport your waste appropriately and securely so it does not escape.
- Any hazardous waste is kept separately from other waste streams and from other types of hazardous waste
- Check that your waste is transported and handled by people or organisations that are authorised to do so.
- Complete waste transfer notes (WTNs) to document all waste you transfer and keep them as a record for at least two years. In the case of hazardous waste you will need to use consignment notes and keep them for 3 years.
- If a waste carrier takes your waste away, you may also need to check that the site it is taken to is authorised to accept it.

The trade and export of waste also follows the duty of care. If you sell or trade in waste you have a responsibility to know where any traded waste ends its journey, even if you sell to an intermediary or broker for onward sale.

There are also statutory Producer Responsibility Schemes on packaging, batteries, end-of-life vehicles and waste electronic and electrical equipment. You can find more information on all of these (including what your organisation may have to do to comply at http://www.environment-agency.gov.uk/business/topics/waste/32206.aspx

3.1 Hazardous Waste

Hazardous waste also follows these general principals of a duty of care and the waste hierarchy top down approach. However hazardous should always be kept separate from the general waste stream and from other types of hazardous waste. There are specific

requirements for those who produce, handle, transport, store and manage hazardous waste.

http://www.environment-agency.gov.uk/business/topics/waste/32180.aspx

3.2 Nuclear Waste

Nuclear waste also follows these general principals of a duty of care and the hierarchies top down approach. However, in conjunction with the nuclear industry, the Environment Agency has developed and published a Nuclear Sectoral Plan which sets out performance measures and targets for the Nuclear Sector. Objective 4 in this plan covers waste and gives targets therein and can be used as the basis for any data you wish to place in your corporate report.

http://publications.environment-agency.gov.uk/pdf/GEHO0709BQGI-e-e.pdf

3.3 What to measure and what to report

Waste can be measured by estimating the number and weight of waste containers that leave the organisation over a set period of time. If the waste is sorted prior to collection (i.e. via recycling bins), then a more detailed measurement of specific waste (e.g. tonnes of glass) can be made.

All sectors produce waste to some extent. For more information please refer to annex XX to see if waste is a key concern for your particular sector and one you should be reporting on.

Ideally you should report your waste in three ways:

1. *Total metric tonnes per annum ;*
2. *broken down into separate categories by weight (e.g. paper, glass, aluminium, plastics, WEEE, aggregates, hazardous etc); and*
3. *the final destination of the waste reported as per the hierarchy above (e.g. 30% re-used , 50% recycled, 10% incinerated with energy recovery, 10% to landfill, this can also be presented by weight or volume).*

You may also wish to report on:

- *Any waste prevention activities you have put in place and the expected benefits (savings) these bring about. This may include improvements to the design, manufacture and packaging of your products.*
- *Energy produced from your waste if you run an industrial process and have an on-site energy from waste plant. This may reduce your utility bills or feed back to the national grid.*
- *Any income generated from waste which you have sold.*

4. **Other information**

The main organisations which provide help and guidance with regard to your waste practices are the Environment Agency and WRAP**.**

The Environment Agency is also developing a set of tools known as **_Resource Efficiency Appraisal Development_** (READ) which organisations will be able to use to benchmark how well they manage resources such as materials and energy, and what are the biggest opportunities to improve. These tools will be available on the Environment Agency:

http://www.environment-agency.gov.uk/business/topics/performance/121909.aspx

http://www.environment-agency.gov.uk/static/documents/Business/READ_factsheet.pdf

http://www.environment-agency.gov.uk/business/topics/waste/default.aspx

The Government sponsored WRAP (Waste and Resources Action Programme) also provides support and guidance working closely with a wide range of business sectors and individuals to help them reap the benefits of reducing waste develop sustainable products and use resources in an efficient way. http://www.wrap.org.uk/business/index.html

Annex A - List of possible Biodiversity indicators.

This list is not exhaustive and does not preclude you using an indicator of your own that is relevant to your particular circumstance.

Convention on Biological Diversity Indicators (2006)

Focal Area Headline Indicator

1. Status and trends of the components of biodiversity
- Trends in extent of selected biomes, ecosystems, and habitats
- Extent of forests and forest types
- Extent of assorted habitats
- Trends in abundance and distribution of selected species
- Living Planet Index
- Global Wild Bird Index
- Waterbird Indicator
- Coverage of protected areas
- Coverage of Protected Areas
- Overlays with biodiversity
- Management effectiveness
- Change in status of threatened species
- Red List Index and Sampled Red List Index
- Trends in Genetic Diversity
- *Ex situ* crop collections
- Genetic diversity of terrestrial domesticated animals

2. Sustainable use
- Areas under sustainable management
- Area of forest under sustainable management: certification
- Area of forest under sustainable management: degradation and deforestation
- Area of agricultural ecosystems under sustainable management
- Proportion of products derived from sustainable sources
- Proportion of fish stocks in safe biological limits
- Status of species in trade
- Wild Commodities Index
- Ecological Footprint and related concepts

3. Threats to biodiversity
- Nitrogen Deposition
- Invasive Alien Species
- Trends in Invasive Alien Species

4. Ecosystem integrity and ecosystem goods and services
- Marine Trophic Index
- Water Quality
- Water Quality Index for Biodiversity
- Connectivity/fragmentation of ecosystems
- Forest Fragmentation
- River fragmentation and flow regulation
- Health and well being of communities

- Health and well being of communities directly dependant on ecosystem goods and services
- Biodiversity for food and medicine
- Nutritional status of biodiversity
- Biodiversity for food and medicine

Additional Indicators.

- Percentage of operations operating in areas with Red Listed species

- Number of Red List species within the path of operation, lease area, region, country, global or habitat affected by operations.

- Annual change (%) in Red List species population in habitats affected by operations.

- Number of invasive species from the IUCN Global Invasive Species Database recorded each year since entry of the company

- Annual change in species population in habitat affected (and/or managed) by operations to change in area outside of identified habitats (and/or area managed by company).

- Number of habitats affected by operations as the percentage of the total within the lease area, region, country, global.

- Share of watersheds dammed or channelized of the habitats affected by operations as the percent of the whole river per country (region and global).

- Km of new roads in areas of operation since entry of company.

- The percentage/No. of current or planned business operations operating in or around IUCN land categories 1-4, World Heritage Sites, or core buffer zones of any World Biosphere Reserve.

- The percentage/No. of current or planned business operations operating in or around areas that are widely recognised conservation management systems.

- Total land under conservation to compensate for land disturbed.

- Total area of land disturbed through exploration/extraction activity to total area rehabilitated.

- Total area of forest cleared due to operations, to total area restored to previous and total area replaced by exotic species.

- %/No. of business units with biodiversity strategies and action plans (BAPs) stating alignment with national/regional etc BAPs.

- Policy published in annual reports indicating a clear commitment to integrating the conservation of biodiversity into corporate operations.

- Appointment of an environmental manager with responsible for biodiversity issues.

- the number of projects generating credits linked to biodiversity safeguards – e.g. Climate, Community and Biodiversity Alliance Standard (CCBA), Voluntary Carbon Standard (VCS).

- Percentage of operating personnel with evidence to show a minimum of

- training in a subject related to conservation and protection of biodiversity.

- Percentage of supply chain firms and partners participating in biodiversity training and policy implementation.

- Number of environmental monitoring reports carried and submitted to Board yearly.

- Area in sq km/percentage of forest area impacted directly/indirectly by company activities.

- The annual extent of i) forest integration ii) degradation since date of commencement of corporate operations (e.g. sq km with i) spatially continuous tree cover ii) tree cover in excess of 10% and 0.5 hectares in extent with mature tree height of 5m in situ - this is the current FAO definition of "forest cover", which may change over time).

- The annual extent of forest under sustainable management (e.g. certification schemes such as Forest Stewardship Council)

- The number of operationally significant corporate planning and project i) documents and ii) processes containing safeguards for biodiversity and indigenous communities e.g. inclusion in project planning and execution documents such as business cases and accompanying processes, document templates for project monitoring and review and accompanying processes, lessons learned templates and processes, that take account of these area

- EIA lodged in corporate head office that contains the details of the assessment and the Guidance.

- Evidence to show that company's operations have biodiversity considerations built into emergency plans.

- Budget to implement plan has been authorised.

- If a company sells off an operation prior to closure, it takes into consideration preventing post-exit adverse impacts on biodiversity.

  http://www.parliament.uk/documents/post/postpn312.pdf

Annex B - The Economics of Ecosystems and Biodiversity (TEEB) classification of ecosystem services.

The Main service-types.

Provisioning services
1 Food (e.g. fish, game, fruit)
2 Water (e.g. for drinking, irrigation, cooling)
3 Raw Materials (e.g. fibre, timber, fuel wood, fodder, fertilizer)
4 Genetic resources (e.g. for crop-improvement and medicinal purposes)
5 Medicinal resources (e.g. biochemical products, models & test-organisms)
6 Ornamental resources (e.g. artisan work, decorative plants, pet animals, fashion)

Regulating services
7 Air quality regulation (e.g. capturing (fine) dust, chemicals, etc)
8 Climate regulation (incl. C-sequestration, influence of veg. on rainfall, etc.)
9 Moderation of extreme events (e.g. storm protection and flood prevention)
10 Regulation of water flows (e.g. natural drainage, irrigation and drought prevention)
11 Waste treatment (esp. water purification)
12 Erosion prevention
13 Maintenance of soil fertility (incl. soil formation)
14 Pollination
15 Biological control (e.g. seed dispersal, pest and disease control)

Habitat (Supporting) services
16 Maintenance of life cycles of migratory species (incl. migratory species nursery habitats)
17 Maintenance of genetic diversity (esp. gene pool protection)

Cultural services (provide opportunities for :)
18 Aesthetic enjoyment
19 Opportunities for recreation & tourism
20 Inspiration for culture, art and design
21 Spiritual experience
22 Cognitive development/information.

ICB Sector code and name	ISIC codes that match to ICB sector codes	ICB Subsector code	Equivalent ISIC codes	Significant Direct Key Performance Indicators					
0530 Oil & Gas Producers		0 533	0610, 0620, 1920	greenhouse gases	water	air pollution	waste	metal emissions to land	
		0 537	1910						
0570 Oil Equipment, Services & Distribution		0 573	0 910	greenhouse gases	water	air pollution	Waste	metal emissions to land	
		0 577	4930						
0580 Alternative Energy		0 583	No matching ISIC code found						
		0 587	No matching ISIC code found						
1350 Chemicals		1353	2011, 2013, 2020, 2029	water	greenhouse gases	metal emissions to land	waste	volatile organic compounds	
		1357	2012, 2021-2023,						

ICB Sector code and name	ISIC codes that match to ICB sector codes	ICB Subsector code	Equivalent ISIC codes	Significant Direct Key Performance Indicators					
			2030, 2219, 2220, 2391						
1730 Forestry & Paper		1733	0210, 0220, 0240, 1610	green house gases	waste	volatile organic compounds	air pollution		
		1737	1701, 1702, 1709						
1750 Industrial Metals & Mining		1753	0 899	water use & abstraction	metal emissions to air	greenhouse gases	metal emissions to water	metal emissions to land	waste
		1755	0729, 2420, 2432						
		1757	0710, 2410, 2431						
1770 Mining		1771	0510, 0520, 1910	water use & abstraction	greenhouse gases	air pollution	dust and PM		
		1773	2396						
		1775	0810, 0891-0893, 0990						

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ICB Sector code and name	ISIC codes that match to ICB sector codes	ICB Subsector code	Equivalent ISIC codes	Significant Direct Key Performance Indicators					
		1777	No matching ISIC code found						
		1779	2399						
2350 Construction & Materials		2353	1621, 1622, 1629, 2392, 2394, 2395, 2310, 3530, 4752	greenhouse gases	water	air pollution	waste	metal emissions to land & air	
		2357	2511, 2591, 2592, 2599, 4210, 4220, 4290, 4311, 4390, 7110, 7120						
2710 Aerospace & Defence		2713	3030	water use & abstraction	greenhouse gases	metal emissions	air pollution		

ICB Sector code and name	ISIC codes that match to ICB sector codes	ICB Subsector code	Equivalent ISIC codes	Significant Direct Key Performance Indicators					
		2717	2520, 3040, 8422			to land			
2720 General Industrials		2723	1623	greenhouse gases	waste	air pollution	volatile organic compounds		
		2727	No matching ISIC code found						
2730 Electronic & Electrical Equipment		2733	2393, 2610, 2731, 2732, 2733, 2790	water use & abstraction	greenhouse gases	metal emissions to land	waste		
		2737	2680						
2750 Industrial Engineering	2811, 2812, 2815, 2816, 2819-2821, 2823-2826, 2829	2753	3011, 3020, 4653	greenhouse gases	water	waste	air pollution	metal emissions to land, air, water	
		2757	2512, 2513, 2813, 2814, 2822, 3312						
2770 Industrial Transportation		2771	5120, 5223, 5310,	greenhouse gases	water use & abstracti	waste	air pollution		

ICB Sector code and name	ISIC codes that match to ICB sector codes	ICB Subsector code	Equivalent ISIC codes	Significant Direct Key Performance Indicators						
			5320		on					
		2773	5012, 5022							
		2775	4912							
		2777	3315, 4520, 5021, 5210, 5221, 5222, 5224, 5229							
		2779	4923							
2790 Support Services	3311, 3313, 3314, 3319, 6910, 7010	2791	1811, 1812, 3320, 7020, 8110, 8121, 8129, 8130, 8010, 8299, 8211, 8219,	greenhouse gases	waste					

ICB Sector code and name	ISIC codes that match to ICB sector codes	ICB Subsector code	Equivalent ISIC codes	Significant Direct Key Performance Indicators					
			8220, 8230, 8291, 9292						
		2793	7810, 7820, 7830						
		2795	6311						
		2797	No matching ISIC code found						
		2799	3811, 3812, 3821, 3822, 3830						
3350 Automobiles & Parts		3353	2910, 2920, 2930, 3091, 3099	greenhouse gases	water	waste			
		3355	4530, 4540						
		3357	2211						

ICB Sector code and name	ISIC codes that match to ICB sector codes	ICB Subsector code	Equivalent ISIC codes	Significant Direct Key Performance Indicators					
3530 Beverages		3533	1103	water use & abstraction	greenhouse gases	waste	air pollution	nutrients & organic pollutants	
		3535	1101, 1102						
		3537	1104						
3570 Food Producers		3573	0111-0116, 0119, 0121-0129, 0142-0146, 0149, 0160-0164, 0170, 0311, 0312, 0320-0322, 1080	water use & abstraction	greenhouse gases	waste	air pollution	nutrients & organic pollutants	pesticides & fertilisers
		3577	0230,1010, 1020, 1030, 1040, 1050, 1061, 1062,						

ICB Sector code and name	ISIC codes that match to ICB sector codes	ICB Subsector code	Equivalent ISIC codes	Significant Direct Key Performance Indicators					
			1071-1075, 1079						
3720 Household Goods & Home Construction		3722	1394, 1399, 1512, 2393, 2593, 2740, 2750, 2818	greenhouse gases	waste	water use & abstraction	air pollution	nutrients & organic pollutants	
		3724	2720						
		3726	1393, 3100						
		3728	4312, 4329, 4330, 4100						
3740 Leisure Goods		3743	2640	greenhouse gases	water use & abstraction	metal emissions to land	waste		
		3745	2670, 3012, 3092, 3220, 7420						
		3747	3240						

ICB Sector code and name	ISIC codes that match to ICB sector codes	ICB Subsector code	Equivale nt ISIC codes	Significant Direct Key Performance Indicators					
3760 Personal Goods	3230	3763	1511, 1311-1313, 1390-1392, 2652, 3211, 3212, 1410, 1420, 1430	greenhouse gases	waste	water use & abstraction	air pollution	nutrients & organic pollutants	
		3765	1520						
		3767	3290						
3780 Tobacco		3785	1200	water use & abstraction	waste	greenhous e gases			
4530 Health Care Equipment & Services		4533	8412, 8610, 8620, 8690, 8710, 8720, 8730, 8790	greenhouse gases	air pollution	waste			
		4535	2660						

ICB Sector code and name	ISIC codes that match to ICB sector codes	ICB Subsector code	Equivalent ISIC codes	Significant Direct Key Performance Indicators						
		4537	3250, 2100							
4570 Pharmaceuticals & Biotechnology		4573	7210, 7220, 7410, 7490	greenhouse gases	waste					
		4577	No matching ISIC code found							
5330 Food & Drug Retailers	4620, 4722, 4781,	5333	4772	greenhouse gases	waste					
		5337	4630, 4721							
5370 General Retailers	4610, 4659, 4662, 4669, 4723, 4774, 4782, 4789-4791, 4799	5371	4641, 4771	greenhouse gases	waste	air pollution				
		5373	4649, 4690, 4719, 4773							
		5375	4663, 4751, 4753, 4759, 4649							
		5377	4661, 4711, 8420,							

ICB Sector code and name	ISIC codes that match to ICB sector codes	ICB Subsector code	Equivalent ISIC codes	Significant Direct Key Performance Indicators					
			7500, 7721, 7722, 7729, 7730, 8030, 8510, 8521, 8522, 8530, 8541, 8542, 8549, 8550, 8810, 8890, 9512, 9521-9524, 9529, 9601-9603, 9609, 9700, 9810, 9820						
		5379	4510, 4651, 4652,						

ICB Sector code and name	ISIC codes that match to ICB sector codes	ICB Subsector code	Equivalent ISIC codes	Significant Direct Key Performance Indicators					
			4730, 4741, 4742, 4761-4764, 4770						
5550 Media		5553	1820, 5911-5914, 6010, 6020	greenhouse gases	waste	water use & abstraction	metal emissions to land	NOx SOx and PM	volatile organic compounds
		5555	7310, 7320						
		5557	5811-5813, 5819, 5820, 5920, 6391, 6399						
5750 Travel & Leisure		5751	5110,	Greenhouse gases	air pollution	waste	water		
		5752	9200						
		5753	5510, 5520, 5590						

ICB Sector code and name	ISIC codes that match to ICB sector codes	ICB Subsector code	Equivalent ISIC codes	Significant Direct Key Performance Indicators					
		5755	9000, 9101-9103, 9311, 9312, 9319, 9321, 9329						
		5757	5610, 5621, 5629, 5630						
		5759	4911, 4921, 4922, 5011, 7710, 7911, 7912, 7990						
6530 Fixed Line Telecommunications		6535	6110	green house gases	air pollution	waste			
6570 Mobile Telecommunications		6575	6120, 6130, 6190	green house gases	air pollution	waste			
7530 Electricity		7535	2710, 3510	green house gases	waste	NOx SOx and PM	radioactive waste	water use &	metal emissions

ICB Sector code and name	ISIC codes that match to ICB sector codes	ICB Subsector code	Equivalent ISIC codes	Significant Direct Key Performance Indicators					
		7537	No matching ISIC code found					abstraction	to air land, water
7570 Gas, Water & Multiutilities		7573	3520	green house gases	waste	NOx SOx and PM	Radio-active waste	water use & abstraction	metal emissions to air land, water
		7575	No matching ISIC code found						
		7577	3600, 3700, 3900	nutrients & organic pollutants					
8350 Banks		8355	6411	greenhouse gases	waste				
8530 Nonlife Insurance		8532	6621, 6629	greenhouse gases					
		8534	6622						
		8536	6512						
		8538	6520						
8570 Life Insurance		8575	6511	greenhouse gases					
8630 Real Estate Investment &		8633	6810	greenhouse gases	waste				

ICB Sector code and name	ISIC codes that match to ICB sector codes	ICB Subsector code	Equivalent ISIC codes	Significant Direct Key Performance Indicators						
Services		8637	6820							
8670 Real Estate Investment Trusts		8671	No matching ISIC code found	greenhouse gases	waste					
		8672	No matching ISIC code found							
		8673	No matching ISIC code found							
		8674	No matching ISIC code found							
		8675	No matching ISIC code found							
		8676	No matching ISIC code found							
		8677	No matching ISIC code							

ICB Sector code and name	ISIC codes that match to ICB sector codes	ICB Subsector code	Equivalent ISIC codes	Significant Direct Key Performance Indicators						
			found							
8770 Financial Services	6420, 6492, 6530, 6611	8771	6430, 6630	greenhouse gases	waste					
		8773	6492, 6920							
		8775	6499, 6619							
		8777	6612							
		8779	6419, 6491							
8980 Equity Investment Instruments		8985	No matching ISIC code found	greenhouse gases						
8990 Nonequity Investment Instruments		8995	No matching ISIC code found	greenhouse gases						
9530 Software & Computer Services		9533	6201, 6202, 6209, 9511	greenhouse gases	air pollution					
		9535	6312							
		9537	5820							

ICB Sector code and name	ISIC codes that match to ICB sector codes	ICB Subsector code	Equivalent ISIC codes	Significant Direct Key Performance Indicators					
9570 Technology Hardware & Equipment		9572	2620	water use & abstraction	greenhouse gases	metal emissions to land			
		9574	2817						
		9576	No matching ISIC code found						
		9578	2630, 3651						
Unmatched ISIC codes** No matches found with either ICB Sector name or ICB subsector	**Description**								
7740	Leasing of intellectual property and similar products, except copyrighted works								`
8411, 8413, 8421, 8423, 8430	General public administratio	greenhouse gases	waste						

ICB Sector code and name	ISIC codes that match to ICB sector codes	ICB Subsector code	Equivalent ISIC codes	Significant Direct Key Performance Indicators						
	n activities									
9411	Activities of business and employers membership organisations	greenhouse gases								
9412	Activities of professional membership organisations	greenhouse gases								
9420	Activities of trades unions	greenhouse gases								
9491	Activities of religious organisations	greenhouse gases								
9492	Activities of political organisations	greenhouse gases								
9499	Activities of other membership organisations n.e.c.	greenhouse gases								

ICB Sector code and name	ISIC codes that match to ICB sector codes	ICB Subsector code	Equivalent ISIC codes	Significant Direct Key Performance Indicators					
9900	Activities of extraterritorial organisations and bodies								

Glossary

Areas of high biodiversity value – Areas not subject to legal protection but recognized for important biodiversity features by a number of governmental and non-governmental organizations. These include habitats that are a priority for conservation (often defined in National Biodiversity Strategies and Action Plans prepared under the Convention on Biological Diversity). In addition, several international conservation organizations have identified particular areas of high biodiversity value.

BAPs – biodiversity action plan

CSR - Corporate and Social Responsibility report

EIA – Environmental Impact Assessment

EMAS – Eco Management and Audit Scheme

GRI – Global Reporting Initiative

IUCN red list - The IUCN Red List of Threatened Species (also known as the IUCN Red List or Red Data List), founded in 1963, is the world's most comprehensive inventory of the global <u>conservation </u>status of plant and animal <u>species</u>.

KPI –Key Performance Indicator

MA – Millennium ecosystem Assessment

NGO – Non-governmental organisation

SEA – Strategic Environmental Assessment

TEEB – The Economics of Ecosystem and Biodiversity is a global study initiated by the G8 and 5 major developing economies focusing on the global economic benefit of biological diversity, the costs of the loss of biodiversity and the failure to take protection measures versus the cost of effective conservation.

WBCSD – The World Business Council for Sustainable Development is a CEO-led, global association of some 200 international companies dealing exclusively with business and <u>sustainable development</u>.Instructions for use of table 1

Find the appropriate ICB sector classification for you company. The table contains information for 41 ICB sector. Each has a 4 digit number. You may also have an ICB sub sector code – there are 114 of these. If so look down column 3 until you find your code. Against each ICB sector code are the most significant direct KPI.

If you only have an ISIC code search column 4 once you have found your code this will then tell you which ICB sector you are in and your most significant direct KPIs.

The **Industry Classification Benchmark** (ICB) is an <u>industry classification</u> <u>taxonomy</u> developed by <u>Dow Jones</u> and <u>FTSE</u>. It is used to segregate markets into <u>sectors</u> within the <u>macroeconomy</u>. http://www.icbenchmark.com/

The **International Standard Industrial Classification of All Economic Activities** is a <u>United Nations</u> system for classifying economic data

http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=17