



**JNCC Report
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Integrated Reporting and Natural Capital Accounting

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The logo for eftec, consisting of the lowercase letters 'eftec' in a bold, blue, sans-serif font.

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Executive Summary

Economics for the Environment Consultancy (eftec) have carried out this research on behalf of, and in collaboration with, the Joint Nature Conservation Committee (JNCC)¹ to review the ongoing development of private sector reporting practices, with a particular focus on where reporting can improve the accounting for, and management of, natural capital.

The review also shows why and how businesses take up 'Integrated Reporting' and 'Natural Capital Accounting', and what kinds of NC data are used for this purpose. The findings are, ultimately, intended to help improve the sustainable management of NC.

Integrated Reporting is the process of producing a periodic integrated report about an organisation's ability to create value over time. It is the product of 'integrated thinking' by the business about the six types of capital and how they contribute to the creation of value².

The term 'Natural Capital Accounting' refers to various approaches and methods that attempt to account both for a business's impacts on the natural environment (such as emissions to air and water) *and* for its dependencies on it (such as the supply of raw materials used for production, risk of flooding, and other events that pose risks to the business). 'Natural Capital', in turn, can be defined as the stock of natural resources, both renewable and non-renewable, including freshwater, land, soils, species, ecological communities, atmosphere, minerals, and seas.

Both IR and NCA are emerging fields of practice. IR can be formerly traced back to 2007 when the Prince of Wales's "Accounting for Sustainability" project introduced the Connected Reporting Framework. NCA in business is even more recent with only a handful of pilot accounts prepared.

Thus, both approaches are taken up by early adopter businesses. Their main motivations for integrated thinking and reporting seem to be to:

- Promote financial stability and sustainability in an increasingly resource scarce world;
- Identify the relevant information to understand complexities they face;
- Use IR as a tool for communicating to external stakeholders about their strategy; governance, performance and prospects that will lead to value creation; and,
- Create / maintain a positive corporate image.

Benefits of NCA, similarly, include:

- Reducing risks; e.g. identifying business dependencies on scarce NC resources;
- Identifying opportunities; e.g. actions businesses take that can reduce their impact on NC and also increase their efficiency and/or save costs;
- More efficient use of materials; e.g. prompting initiatives towards a circular economy;
- Competitive differentiation in the market; e.g. enhancing brand reputation through sustainable sourcing of inputs;
- Regulatory approval; and,

¹ The [Joint Nature Conservation Committee \(JNCC\)](#) is the statutory adviser to the UK Government and devolved administrations on UK and international nature conservation. Its work contributes to maintaining and enriching biological diversity, conserving geological features and sustaining natural systems.

² Integrated reporting as defined by the IIRC recognises six capitals as: Financial; Manufactured; Intellectual; Human; Social and relationship; and Natural.

- Responding to customer pressures, e.g. reducing impacts on NC in response to customers' demand for more sustainable products.

The influence of IR on natural capital management is determined (inter alia) by how material a business's dependence on NC is for the business itself, and how much this dependency is appreciated by the business. NCA approaches can help with this by identifying, measuring and accounting for the changes in the stocks, quality and benefits of NC. Making NCA a part of IR requires provision of appropriate NC data and using the language that is relevant for the concerns of businesses.

This project reviewed the relevant literature, interviewed a selection of business representatives and advisors to businesses on IR, and ran a webinar to test the initial findings. The resulting key findings include the following:

- Integrated thinking and reporting are seen, by the early adopters that are currently implementing them, as **sound pieces of business logic** that address the challenges of sustainable value creation in an increasingly resource constrained and interconnected world. However, for them this is an act of faith – **more evidence on practical benefits is needed to make a case in favour of integrated thinking for more mainstream businesses.**
- Shifting to integrated thinking takes time, even once a business is convinced of its benefits. It requires understanding the business's **dependencies** on NC as well as its **impacts** on it. This implies thinking about longer term issues, beyond the short-term costs and benefits to the business itself. Finally, changing business practices based on IR and NC accounts could take an even longer time.
- Prescriptive methods are not useful given the variety of businesses, capitals and context specific factors. Instead, **principles-based frameworks** are preferred. Businesses can develop the IR and NCA practice that suits their needs through **understanding** integrated thinking; **assessing** their impacts and dependencies; **implementing** the chosen approaches; **embedding** these in decision making; focusing on what's **material** for the business; and, analysing material relationships **in more depth.**
- An important feature of integrated thinking is its focus on issues that are **material** to the business, thus helping retain conciseness in the face of having to report on multiple factors linked to the various capitals. A matter is material to a business's decision making, and should therefore be taken into account, if it could substantively affect the business's ability to create value in the short, medium or long term. This 'materiality filter' should also be applied to NCA to focus the analysis.
- The communication aspects of IR are important for many businesses, but the primary motivation is the **lessons learnt internally for the business.** Some businesses benefit from integrated thinking without publishing an external report.

As experience with NCA increases, its links to IR and overall business decision making will likely improve through better handling of NC data by:

- Building on the structures and recommendations in existing frameworks to define NC data requirements, in terms of:
 - What data are needed;
 - How to source such data;
 - How to assess and assure data quality; and
 - Guidance on data provision, ownership and access.

- Encouraging co-ordination among the different initiatives that are working on ways to account for different types of capital – such as the Social Capital Protocol work of the WBCSD³.

There are opportunities for the UK public environment sector, including JNCC, to support the development of IR and NCA, such as:

- **Reorganising existing NC data to be more in line with businesses' concerns.** For example, data may currently be structured around habitats, whereas businesses may require data that are structured around and relate to NC benefits to business;
- **Building on the current trend to make Government data open-access⁴,** making it easier for potential users to discover data relevant to reporting and accounting;
- **Making it easier to integrate environmental data with other forms of data** (e.g. social, economic and technical), while being aware of the additional expertise and effort that would be needed to analyse such data;
- **Utilising new opportunities offered by technological developments,** such as through remote monitoring, earth observations and GIS; and
- **Promoting the potential benefits of a structured approach,** a 'natural capital data framework' for collecting, cataloguing, processing and quality testing data to make them more accessible for use in NC analyses.

Realising the above opportunities requires more of a consolidation of the current approaches and initiatives, rather than creation of new ones.

³ See: <http://www.wbcsd.org/SocialCapital.aspx>

⁴ The UK Government aims to release 8000 datasets to make data from public bodies open access under the open government licence discoverable through data.gov.uk by June 2016; JNCC has already released 1000 marine datasets under this project.

1 Introduction

Economics for the Environment Consultancy (eftec) has carried out this research on behalf of the Joint Nature Conservation Committee (JNCC)⁵. It aims to help JNCC better understand the ongoing development of IR⁶, with a particular focus on where it can improve the accounting for, and management of, NC by business. The project is mainly concerned with the management of NC in the UK, but has also drawn on expertise and evidence from other countries where it has been deemed relevant to UK operations.

The project also aims to show the motivation of businesses for taking up IR, and the NC data needed to support the emergent IR practices, so as to assist future JNCC planning for the provision of evidence suitable for a range of uses and applications.

IR and NCA are two emerging fields of practice developed to help businesses become more sustainable:

- IR promotes integrated thinking and connectivity of information when reporting how a business creates value using all types of capital assets (financial, manufactured, intellectual, human, social and relationships, and natural).
- NCA in business⁷ measures impacts and dependencies on the parts of the natural environment that provide the goods and services that underlie business activities and reveals the value (including, but not limited to, revenue) that the natural environment generates.

Both these fields are described in more detail in Section 2 of this report. Both have a number of recognised methodologies that reflect the broader trends, such as reporting becoming more integrated, and a better understanding of the role that NC plays in value creation.

The broad aim of this project, mentioned above, was detailed in ten objectives. The project methodology was designed to pursue these objectives and is described in Section 3.

Key findings that are likely to have implications for UK business activities are captured in Section 4 of this report and in two 'Practice Notes' which have been published on the JNCC website (<http://jncc.defra.gov.uk/page-7075>).

Finally, recommendations for future development are discussed in Section 5.

⁵ The [Joint Nature Conservation Committee \(JNCC\)](#) is the statutory adviser to the UK Government and devolved administrations on UK and international nature conservation. Its work contributes to maintaining and enriching biological diversity, conserving geological features and sustaining natural systems.

⁶ As defined by the IIRC.

⁷ NCA at a national level has a longer history than within business, with work on the 1990's to initially establish the System of Environmental-Economic Accounting (Obst, 2015).

2 Background

This Section gives a brief background on IR and NCA to put the findings set out in Section 4 into context.

IR and NCA have evolved to provide better information to improve the quality of management decisions on important capital assets that have been poorly recognised thus far in business. The business logic for adopting IR and NCA is clear: better information increases the chances of early detection of risks and opportunities for a business in an increasingly resource-constrained world.

IR has started as a voluntary response and the thinking (and more importantly the practice) is still developing. Consequently, the full picture of what is needed to make the case for NC is not yet complete. This study has focused on lessons that can be learned from the early adopters to inform the direction of future IR and NCA developments to enable more effective management of NC. Where possible (based on the literature review and interviews conducted as part of this project), we report examples of how IR or NCA can be linked to more sustainable business practice. However, it is not always possible to prove a direct link.

In thinking about the future direction of IR and NCA, it is important to recognise that the majority of businesses still don't fully accept the business case for taking better account of NC (or other non-financial capitals). "*The moral case is not enough*"⁸ (Accounting for Sustainability, 2012) to convince such businesses. The main challenge for making IR and NCA more mainstream is to use reliable information and more clearly articulate the benefits to businesses of integrated thinking and NCA. The A4S (2012) report commented, "*If senior management are to integrate environmental and social factors effectively into decision making, there is a need for more robust data and methodologies in order to increase management confidence in the information.*"⁹ There is, fortunately, increasing interest in IR amongst investors who realise existing financial disclosures are not sufficient to judge the financial and overall sustainability of businesses¹⁰.

2.1 Integrated Reporting

The International Integrated Reporting (IR) Framework, published by the IIRC, is the internationally recognised guidance on integrated reporting. This framework defines an integrated report as, "*a concise communication about how an organisation's strategy, governance, performance and prospects, in the context of its external environment, lead to the creation of value in the short, medium and long term.*"¹¹

The aim of IR is to embed integrated thinking within the mainstream of business practice, thus enabling efficient capital allocation and the promotion of financial stability and sustainability. The IR framework is not prescriptive, but principles-based, and there are several features that are designed to promote long term sustainability. This includes a focus on:

⁸ (A4S), Future Proof Decision Making, (p.19)

⁹ (A4S), Future Proof Decision Making, (p.19)

¹⁰ Views of three consultants interviewed

¹¹ Source: IIRC, at: <http://integratedreporting.org/>

- **Strategic long term value creation:** Developing an understanding of how the resources and relationships used by an organisation can be managed over time to create sustainable value.
- **Recognising value to all stakeholders:** Although the framework is geared towards the providers of financial capital, it requires an understanding of the value that an organisation can provide to its employees, customers, suppliers, local communities and wider stakeholders.
- **The six capitals:** The framework aims to enhance accountability and stewardship for the broad base of capitals (financial, manufactured, intellectual, human, social and relationship, and natural) and promote understanding of their interdependencies.
- **The interconnectedness of information:** An integrated report should show a holistic picture of the interrelatedness of and dependencies between the factors that affect the organisation's ability to create value over time.

These principles are designed to address some of the shortcomings in current reporting, which typically does not consider dependencies of a business on all capitals, stakeholders' needs, or the long term sustainability of business activities. Moving to IR can be a significant expansion in the horizons of many organisations, and such expansion is seen by the IR framework as necessary for achieving the goal of long term sustainability.

The IR framework covers eight core elements. The following are particularly relevant for making a substantial difference to the way an organisation reports and ultimately manages its activities:

- **Materiality assessment:** As IR is meant to be a strategic process that is focused on concise communication, an organisation must decide which factors are material to its business and its reporting. This simplifies the process but also carries the risk of omitting key information.
- **The business model:** Developing an understanding of the business model that creates value (in broader terms than financial value) through the sustainable use of all six capitals can be a particular challenge for an organisation.
- **Risk and opportunity analysis:** IR requires identification of the specific risks and opportunities that affect the organisation's ability to create value over the short, medium and long term and how these factors should be managed and monitored.
- **Strategy:** An expanded focus on six capitals can have a significant impact on devising a business strategy in terms of where the organisation wants to go and how it intends to get there.
- **Performance measurement:** The framework requires decisions on key metrics to monitor the organisation's progress against its strategic objectives.

The other elements of the IR framework are governance, organisational overview and outlook. Developing all of these elements for all six types of capital can be a challenge. However, the aim of IR is to develop all of these elements in an integrated way so that each can influence, and be influenced by, the others. The coherence of these elements, and the links between them, are a key aspect of integrated thinking.

IR is flexible and allows organisations a degree of freedom in adapting the principles to their own particular circumstances. It does not prescribe specific KPIs, measurement methods, or the disclosure of individual matters. However, it must include content on the elements and be consistent with the principles (as listed on p.3) before an integrated report can be said to be in accordance with the IR framework.

Although the IIRC's IR framework is the authoritative guide, this study has used the term IR to include all approaches to more integrated thinking in the management of resources. This

broader interpretation allows a fuller picture of business practice to be analysed, as many businesses may choose not to commit to a formal integrated report but may still embrace many of the principles of more integrated thinking.

2.2 Natural Capital Accounting

In this report, the term NCA is used in its broadest sense to refer to all different methods that 'take account of' a business's impacts and dependencies on NC assets. In other words, all approaches to record (the changes in) the economic value of the benefits that are realised from NC assets.

NC includes all biotic and abiotic assets in the natural environment. These assets can be defined at the national, regional or local scale; within a given geographic area, or even within a defined corporate sphere. The term 'capital' has been helpful in elevating the visibility of environmental impact, risk and option management issues in business decision making as it represents a more familiar language than alternatives, such as 'ecosystem services'. Capacity for production (of services as well as goods) is what economists refer to as 'capital'.

Natural capital thinking has been developing in response to concerns about the capacity of the natural environment to produce ecosystem goods and services, the significant value of which has been highlighted by numerous studies since the turn of the Millennium (e.g. international initiatives like MEA¹² and TEEB¹³ and UK initiatives such as UKNEA and the Follow On studies¹⁴).

To influence decision-making, NCA needs to provide credible information alongside other metrics, such as financial accounts. Increased comparability between metrics used to measure natural and other forms of capital can become integral to the way in which businesses measure and report on how they create and manage value.

The kind of information needed for NCA includes data on the stocks of NC assets and the flows of goods and services that those assets produce. Data on stocks should describe how much of an asset there is (i.e. its extent), its condition (or quality), and the observed and predicted trends in these parameters. Data on flows should quantify the goods and services provided (e.g., timber and minerals). Such quantitative data are needed before monetary metrics about the economic value of the flows can be used in NCA.

Currently, most businesses collect data on their impacts on the natural environment (e.g. emissions data), to show compliance (e.g. number of pollution incidents as defined by regulation) and/or to measure the inputs to their production process (e.g. litres of water consumed). With the exception of some primary industries, they do not tend to collect data on the stock of NC they use or are dependent on. Therefore, it can be necessary to use flow data as a proxy or indicator for the condition of stock in stock assessments. For example, a reduction in river flow may be indicative of declining volumes of groundwater and/or retention of surface water.

¹² Millennium Ecosystem Assessment: <http://www.millenniumassessment.org/en/index.html>

¹³ The Economics of Ecosystems and Biodiversity : <http://www.teebweb.org/>

¹⁴ UK National Ecosystem Assessment (2011) The UK National Ecosystem Assessment: Synthesis of the Key Findings and the Follow On Study (2014) UNEP-WCMC, Cambridge. <http://uknea.unep-wcmc.org/>

NC impacts, dependencies, risks and opportunities are being seen increasingly as potentially material issues that businesses and investors should manage.

“When we value dependencies we are thinking about the potential impact on the bottom line. For example, if a business didn’t have access to water from a groundwater source, what would it cost to replace that? Whereas when we think about impact on society, we think about the cost to society of the change the company is making. The cost to the business might be nominal or zero, but the cost to society might be significant. The techniques we use when looking at dependency or impact might build off the same resource consumption data set, but then diverge very quickly.” Will Evison, Environmental Economist, PwC’s Sustainability and Climate Change team (KPMG *et al.*, 2013).

Recent examples of NCA at the national and habitat level include the woodlands, marine, and protected habitats accounts conducted for Defra¹⁵. At the corporate level, several initiatives are being developed such as the Natural Capital Declaration, the Natural Capital Protocol, Environmental Profit & Loss accounts (e.g. for Puma, its parent company being Kering¹⁶), Corporate Natural Capital Accounting developed for the NCC and tested with the Crown Estate, National Trust, Lafarge and United Utilities (eftec *et al.*, 2015), Total Contribution Model¹⁷ (for the Crown Estate) and Natural Capital asset checks / risk registers¹⁸. Different corporate approaches to NCA can be justified based on the different features of the organisation (size, location, vertical integration, etc), as well as on the characteristics of the NC assets on which they depend.

Undertaking NCA can generate new insights for businesses, but many businesses do not feel inclined to disclose their results until there is wider experience and understanding of their content, robustness of data, and interpretation. In some cases, commercial confidentiality can be the key reason why businesses do not make public statements about their use of NCA. For example, in the water sector in England, Yorkshire Water has done work on Environmental Profit and Loss¹⁹ and United Utilities on the Triple Bottom Line²⁰ for their businesses. Both approaches provided insight for the businesses, but for commercial reasons both businesses have chosen not to publish the findings (or even the approaches) in detail.

¹⁵ For woodland and marine accounts, see:

<http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=18909>

For protected habitats accounts, see:

<http://sciencesearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=19271>

¹⁶ Latest eP&L report for Kering is available at:

http://www.kering.com/sites/default/files/document/kering_group_2014_environmentalpl.pdf

¹⁷ The latest total contribution report is available at:

<http://www.thecrownestate.co.uk/media/5282/total-contribution-report.pdf>

¹⁸ As developed in the UK NEA follow-on project and subsequent Natural Capital Committee risk register (Natural Capital Committee, 2014).

¹⁹ A method often used to investigate supply chain management:

http://www.trucost.com/uploads/publishedResearch/Yorkshire%20Water%20case%20study_2014.pdf

²⁰ In which environmental and other (e.g. social issues) issues are compared:

<http://corporate.unitedutilities.com/3587.aspx>

3 Methodology

Three tasks have been undertaken to achieve the project objectives as shown in Table 3.1:

- Task 1: A review of the relevant literature.
- Task 2: 15 interviews conducted with experts working in the field of IR and NCA. Interviews targeted a range of representatives from framework developers, business users and advisors.
- Task 3: A 75 minute webinar with over 30 experts from the IR development community. The webinar gathered opinions on our key findings from the above tasks and to help generate and test recommendations for future improvements.

Findings from all three tasks were combined to produce the main findings reported in Section 4, and recommendations in Section 5.

Table 3.1: Project tasks and objectives

Project Task	Project Objectives	
Task 1: Information review	1	Who is involved in the development of IR? What are their motivations? What methods do they use?
	2	Which key organisations and sectors undertake IR? To what extent is NC considered and how? Map network connections between key actors.
	3	How has IR developed to account for NC? What are the future plans for development in this field?
Task 2: Interviews	4	What types of NC data are being used in IR? How are these data sourced? What data gaps exist?
Task 3: Webinar	5	What are the most widely used IR approaches to NC? How can these approaches be categorised?
	6	Why have particular approaches been chosen?
	7	Provide clear examples of where IR has made a positive impact to businesses. What benefits did IR produce?
	8	Where are the major gaps in accounting for NC? What approaches could help IR take better account of NC?
	9	Test proposed ideas with the IR development community.
Produce technical report and practice note(s)	10	Publish practice note(s) Publish Technical report

3.1 Information/Literature Review

The literature review gathered information on the organisations, networks, individuals, developments, approaches, methods, and data involved in IR and NCA.

An initial review was conducted to understand the broad landscape of information in these fields, including:

- Resources on the websites of the standard-setting bodies (e.g. IIRC, GRI, CDP), including reporting guidance, research reports and example databases;
- Websites of the major networks in the IR and NCA field (e.g. A4S, WBCSD);
- Preliminary telephone conversations with experts in the field, including consultants and representatives from initiatives and networks such as NCC, WBCSD, A4S, and the Aldersgate Group; and,
- Reports known to the research team through their experience in this field.

Twenty publications were then selected for a more detailed review based on their relevance to addressing the project objectives and the potential to reveal *new* information. The priority areas for new information included: an analysis of current IR practice; business views on IR; and examples of how businesses report on NC information. The publications selected included:

- Reports from credible bodies (e.g. IIRC and the other bodies mentioned in the bullets above); and,
- Integrated reports by individual businesses regarded as representing good practice in relation to both NC and IR – determined by awards won, literature citations and recommendations from experts in the field.

A template was used to capture evidence to address the project objectives. The review structure used is provided in Annex A. The reports that were reviewed in detail are listed in Annex B.

3.2 Expert Interviews

A questionnaire proforma (see Annex C) was designed and followed when interviewing experts. Conversation was allowed to flow but the questionnaire was used to ensure that information aligned to specific project objectives was captured. The interviews were conducted over the phone and took 30-45 minutes. Briefing material on the project background and on IR and NCA terminology was sent out to interviewees prior to the interview.

Fifteen organisations were selected to be interviewed, in consultation with JNCC, on the basis of their level of experience with IR and NCA, and to ensure a good mix of framework developers, third party advisors and business users. In many cases the interviewees were recommended by experts in the field as having experience that was particularly valuable for this study. The interviewees were selected from the following organisations:

- Four development/network organisations from the IR and sustainability field;
- Three consultants/advisors providing an overview of practice from the viewpoint of multiple clients; and
- Eight businesses covering the pharmaceuticals, water (utilities), retail, extractives, land management and property development sectors.

The roles of the individuals included²¹:

- Eight Sustainability Managers/Directors;

²¹ Two of the interviews were conducted with two interviewees from the same organisation, making 17 participants taking part in 15 interviews. All interviewees participated in the responses to the questions.

- Two finance professionals (one Chief Finance Officer and one Group Financial Controller);
- Three consultants, and
- Four IR/NCA Development Managers/Directors.

Raw information collated in the interview transcripts and notes was analysed to identify emerging themes.

3.3 Webinar

A webinar was held between 14:00 and 15:15 on Wednesday, 10 February 2016. It was chaired by Richard Spencer, Head of Sustainability at the Institute of Chartered Accountants of England and Wales (ICAEW). Richard brought his broad experience of environmental and other sustainability issues as well as company reporting practices to the webinar.

The webinar attracted over 30 participants, including those interviewed for the project and other experts in the field of IR and NCA. Participants were encouraged to provide feedback throughout the webinar using the 'chat' function. This included responses to structured questions that were posed to reflect the initial project conclusions and recommendations in order to elicit expert views on these findings. Over 50 different comments were received from 15 different webinar participants.

Within 24 hours of the webinar, a request was emailed to all participants with a link to a feedback form produced using Google Docs. Eight webinar participants responded with feedback. The majority gave positive feedback about the webinar, and further comments about the content of the work were also received.

4 Main findings

This section reports the main findings of this study against the project objectives 1-7 in the order they are presented in Section 3. Throughout this section, the findings are supported by references to the literature reviewed and quotations from the interviews conducted for the study.

The discussion of some of the gaps identified in current practice (in Section 4.8) serves to introduce the recommendations (project objectives 8-9) which are discussed in Section 5.

4.1 Development of Standards and Frameworks for Integrated Reporting

The International Integrated Reporting Framework is the only framework to focus specifically on IR. Other corporate sustainability reporting initiatives can also play an important role, and have been used by many of the interviewees to support the development of integrated thinking within their businesses. The top four initiatives that the interviews and literature review indicate are most commonly used globally are described briefly in Table 4.1. The interactions between these and other initiatives with elements of IR and NC analysis and integrated thinking are shown in Table 4.6 in Section 4.3.

Table 4.1: Commonly used global corporate reporting initiatives

Initiative	Declared Purpose
International Integrated Reporting Framework	Help organisations explain to providers of financial capital how they create value over time.
GRI	Enabling all organisations – regardless of size, sector or location – to report the sustainability information that is material.
CDP (formerly the Carbon Disclosure Project)	Use the power of information disclosure to drive organisations to measure, manage and reduce their impact on the environment (covering disclosures on carbon and water use) and build resilience, while providing high quality information to the market.
CDSB Framework	Help organisations prepare and present environmental information in mainstream reports, to provide consistent, comparable and clear decision-useful information for investors.

Source: <http://corporatereportingdialogue.com/landscape-map/>

Details regarding the development of IR thinking and the framework, and further information on the development of the other three initiatives, are provided in the rest of this section.

4.1.1 Background to Development of IR and NCA

The chief aim of integrated thinking is to promote financial stability and sustainability. IR has emerged from a growing realisation that the creation of (financial) value by a business depends upon many of the factors of production (natural, social, human & intellectual capital) that are not properly considered by current corporate reports, which are mainly financial in focus.

Businesses realise that global trends such as increasing resource scarcity, climate change, population growth, and the shift of economic power from West to East, mean that the operating environment for business is changing dramatically. One consultant interviewee

said that “[businesses] *have to be aware and understand the environment in which they operate has changed and IR plays to that quite nicely through its different capitals.*” The clear risk is that businesses may not be viable in the long term if they continue to ignore their dependencies on all capitals.

Another motivation for IR has been the problem of information overload. The growth of financial and sustainability reporting has led to fragmentation of information, meaning that it becomes difficult to focus on the central messages that a business needs to communicate to its stakeholders. One Sustainability Director commented (with regard to their previous reports that were seen as purely compliance documents) “*you could read the report from cover to cover and not be sure about what the strategy was.*”

Development of IR can be traced back to the Prince of Wales's A4S Project which introduced the Connected Reporting Framework²² in 2007 (A4S, 2007). This framework linked sustainability performance reporting with financial reporting and strategic direction in a connected way. The companies which first used this framework included Aviva, BT and HSBC. The International Federation of Accountants (IFAC), GRI, CDSB, and The Prince's A4S Project then collaborated to establish the IIRC in 2010 to oversee the development of global IR standards and guidelines.

In parallel to these reporting developments, interest increased in reporting on GHG emissions, and more generally on businesses' impacts on and sensitivity to climate change. A major driver for this has been evidence on climate change, including from the IPCC, and the Stern Review (Stern, 2006) which encouraged environmental reporting (in particular reporting of carbon emissions) due to:

- The dominance of concerns over climate change within the environmental arena;
- The development of climate change legislation and policies (e.g. the EU ETS) that regulate and place a cost on carbon emissions;
- The clear links from climate change (impacts and policy) to key business inputs such as energy generation (e.g. for electricity) and fuel use (e.g. for transport), and the availability of data in these areas; and
- Its connection to financial costs (both for energy and due to policy instruments) and therefore a potential payback on efforts to reduce emissions.

Developments in measurement and reporting of carbon emissions by businesses have been consolidated and standardised through initiatives such as the CDP and the CDSB, aided by methods captured in the GHG Protocol²³.

Other environmental issues have generally developed with a lag behind climate change related reporting – unless there was already a regulatory requirement (e.g. water abstraction for licensing). Other issues typically covered after carbon emissions are other emissions to air and water usage; which often have some readily available data and relevance to financial costs. However, the range of issues reported on varies significantly across sectors according to their different impacts and materiality.

The policy focus on the monitoring and reduction of GHG emissions next moved to adaptation to the impacts of climate change. Adaptation is reliant upon the current environmental resources being of high quality (in a good state) and hence more resilient to

²² Available at: <http://www.accountingforsustainability.org/wp-content/uploads/2011/10/Connected-Reporting.pdf>

²³ Available at: <http://ghgprotocol.org/standards>

climate change than damaged or degraded resources. This link between the state of natural resources and their resilience to future change compounded concerns for other aspects of NC (even if the term was not used widely). Issues such as loss of biodiversity and ecosystems (e.g. as identified in the MEA in 2005) and predicted water scarcity were key considerations.

Thinking about ‘the capacity’ of the environment to deliver flows of goods and services that benefit businesses (and society in general) moved the discourse from individual impacts (e.g. GHG emissions) to a wider range of issues like supply chain and broader value chain impacts (e.g. environmental profit and loss accounts) to NCA (both for stock of assets and flows of profit and loss).

Activity on NC is still confined to a limited number of ‘early adopters’ in the business community. The NCC, (follow on from TEEB for Business)²⁴ was set up by such businesses, NGOs and advisors to help bring more businesses on board. One way in which they are doing this is by developing the Natural Capital Protocol. Current activity on NCA is spread across a wide range of sectors and geographical locations, with greatest activity in North West Europe. There is also significant activity in Asia and North America, which partly reflects the distribution of major business headquarters globally.

However, activity in North America is restricted by the more litigious business culture in the USA. This means that some elements of NC analysis, such as impacts on the environment and recognition of external issues as material are avoided due to concerns that they may imply legal liability for the businesses. The NCP’s language has been carefully devised in this respect – hence it provides an international benchmark of what is broadly acceptable with respect to reporting on NC. This may indirectly affect JNCC, and other similar agencies, as it can influence the language utilised in international guidance documents (such as the NCP) to separate analysis for NCA purpose from a statement of liability.

Early adopters include a number of mature brands such as Puma whose position in the market relies significantly on branding, suggesting that positive corporate image is an important motivation. However, these businesses have stated that they have identified new evidence to inform their business strategies through their NC work. In the case of Puma, this included the realisation of the brand’s reliance on leather and the negative environmental consequences of the farming methods used in production. This has resulted in Puma’s parent company, Kering, extending its NCA, which uses an environmental profit and loss approach (Kering, 2015), across the wide range of clothing and other brands it manages.

Other businesses have also engaged in NCA due to the significance of certain issues to their business strategies. For example, ASDA (a subsidiary of Wal-Mart) presented an initiative on security of global cotton supplies in the context of rising demand and risks to water supplies at the 2015 World Forum on Natural Capital in Edinburgh²⁵. This and other initiatives, such as the Roundtable on Sustainable Palm Oil, are often pursued through sector or issue-specific groups. This approach is likely to be favoured due to benefits from efficiencies in the costs of gathering and analysing data, and the time spent engaging with stakeholders. They also reflect the shared nature of the problem amongst all parties that hold an interest in global commodities.

Nevertheless, the case for more detailed analysis of NC issues by business remains contested, and NC is not a core concern for the majority of businesses worldwide. Indeed, in March 2016, a retraction from UK regulations of mandatory reporting requirements on

²⁴ <https://www.naturalcapitalcoalition.org>

²⁵ <http://naturalcapitalforum.com/>

carbon for large businesses was postulated, though the regulations were retained in the Government's budget statement²⁶. Supporters of mandatory carbon reporting highlighted the economic benefits as a result of mandatory reporting, including that it supports productivity gains within businesses and at the economy-wide level, and provides valuable information to investors²⁷.

The benefits of NCA for businesses include²⁸:

- Reducing risks: e.g. identifying business dependencies on scarce NC resources;
- Identifying opportunities: e.g. actions companies take that can reduce their impact on NC and also increase their efficiency and/or save costs;
- More efficient use of materials: e.g. prompting initiatives towards a circular economy;
- Competitive differentiation in the market: e.g. enhancing brand reputation through sustainable sourcing of inputs;
- Regulatory approval; and,
- Responding to customer pressures: e.g. reducing impacts on NC in response to customers' demand for more sustainable products.

The theoretical business case for NCA is that measurement and reporting of NC will lead to the realisation of some, or all, of these benefits, the value of which will be greater than the cost of NCA. In practice however, the areas of NC and specific sectors to which this business case will apply are not yet fully understood, nor systematically documented. There is a range of evidence on this issue presented in case studies in many reports (including this one: section 4.7) and a systematic review of this evidence to identify the potential strength of this business case could be a useful research initiative led by JNCC. Such a review could be hindered by companies not disclosing links between reporting and its impacts on business performance, due to commercial sensitivity of such information, as mentioned previously in Section 2.2.

4.1.2 Integrated Reporting Framework

The IIRC was established in 2010 as a global coalition of regulators, investors, companies, standard setters, the accounting profession and NGOs²⁹, to promote financial stability and sustainable development through the vehicle of IR and integrated thinking.

One interviewee remarked on the success of the institution-building aspect of this initiative. The approach was to encourage collaboration of coalition partners, via a very broadly constituted council of members, and engaging relevant parties through various advisory bodies, task forces and development activities. The council is the main forum for providing guidance and input, and consists of over 60 members drawn from accounting standards bodies, investors, businesses, accountancy firms, NGOs, academic institutions, and sustainability initiatives including GRI and CDP³⁰. In addition, there are over 30 ambassadors around the world whose aim is to promote IR. The activities of the IIRC are managed and coordinated by the operating company and its core team. The international

²⁶ <http://www.environmentalisonline.com/article/budget-2016-mandatory-ghg-reporting-retained> and https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/508159/reforming_business_energy_efficiency_tax_response_final.pdf

²⁷ Nick Mohlo, Executive Director of Aldersgate Group, pers com, March 2016.

²⁸ See Table 1.2 on page 14 of the draft NCP (2015).

²⁹ A4S were instrumental in the formation of the IIRC

³⁰ IIRC Website: <http://integratedreporting.org/the-iirc-2/structure-of-the-iirc/council/>

and broadly-constituted nature of the organisation has been important in establishing the acceptance of the framework thus far.

A pilot programme was launched in 2011 which set about the development and testing of the framework and culminated in the publication of the IR Framework in December 2013. The IIRC now sees itself in the 'Breakthrough Phase' (2014-17)³¹, in which it is encouraging early adoption by reporting organisations around the globe. The risks to further adoption have been identified by the IIRC in their strategy document³² and include:

- Insufficient evidence base in support of assertions about IR;
- Lack of investor buy-in for IR, leading to drop-off, or stalling interest; and,
- The fact that IR is viewed, particularly by the business community in some jurisdictions, as an example of 'disclosure overload', which adds to reporting requirements, complexity and compliance costs.

The challenge for the IIRC is to demonstrate the benefits that IR brings to investors and businesses over the next two years. The extent to which it succeeds in this undertaking will largely determine the prospects for more widespread use in future.

Unlike other sustainability reporting initiatives, the IR framework is more strategic and concentrates on how value creation depends upon the various capitals. This move from assessing impacts to understanding dependencies on NC is a significant shift in emphasis, and represents an opportunity to link more strongly to NC methods.

The approach to involving many different professional stakeholders in the working groups is likely to have been a key factor in the level of acceptance of the framework. However this may also have contributed to the framework being rather general in nature. One interviewee involved in the process commented that many terms, such as 'value creation', are very broadly defined, and therefore open to a wide range of interpretations. Another interviewee said that they did not have a problem with the use of broad principles, as the process of IR was still in an early stage of development, and required a certain degree of freedom, with the principles and terms being capable of being granted tighter definition at a later stage of development.

The approach of the IIRC has been that of encouraging voluntary adoption, partly because the approach is in the early stages of development. One interviewee (a consultant) saw momentum to adopt IR growing through this voluntary approach and encouraging businesses to lead by example. The work done by the Crown Estate on their IR reports over 2013-15, plus their work on the Total Contribution Approach³³, has inspired many of the organisations that were interviewed to pursue IR. In some regions there have been external or regulatory pressures to adopt IR, for example the Johannesburg Stock Exchange requires the publication of integrated reports as part of its listing requirements. Whilst this has substantially increased the rate of adoption in South Africa, it is not always the case that the level of integrated thinking within the reports or the business has been necessarily high.

Few governments appear ready to mandate an IR approach, even though some are building in more strategic and sustainability disclosure requirements into company reports. An

³¹ IIRC Website : <http://integratedreporting.org/the-iirc-2/>

³² IIRC: Strategy for the Breakthrough Phase: <http://integratedreporting.org/wp-content/uploads/2015/02/IIRC-Strategy-Summary-2015.pdf>

³³ The Crown Estate: <http://www.thecrownestate.co.uk/media/5282/total-contribution-report.pdf>

example of this is the UK requirement for quoted companies to provide information on GHG emissions in their Directors' Reports³⁴.

4.1.3 GRI

GRI was established in the US in 1997 to empower decision makers, stakeholders and public interest to drive greater sustainability in corporate decision making processes. Its multi-stakeholder approach means that a broad range of players (not just shareholders but employees, consumers, government policy makers and society in general) have an interest in the impacts of an organisation and in ensuring that information on these matters is made publically available. It is the most commonly used sustainability reporting framework globally, with over 23,000 reports logged on its disclosure database. The main focus is on a broad range of sustainability indicators covering economic, environmental and social disclosures.

The first draft of guidelines were issued in 2000 and the latest version (G4) in 2013. Policy and strategic direction is provided by the Stakeholder Council, which consists of up to 50 members from a range of five constituencies covering business, civil society, investment institutions, labour organisations and mediating institutions³⁵. The Board of Directors is the final decision making authority. Standards are set by the Global Sustainability Standards Board, which is an independent board of 15 members under the auspices of GRI. Standards are developed according to the 'Due Process Protocol'. This protocol covers the end to end development process including: project identification; the appointment of suitable working groups and technical committees; production of exposure drafts; the consideration of feedback to the final approval; and release of sustainability standards. Project working group members are normally drawn from the above-mentioned constituencies to provide a complete range of stakeholder interests and views, and some projects have been halted due to the lack of appropriate representation.

The current GRI strategy has four key priorities for the next phase of work:

- **Enabling Smart Policy.** GRI aims to work more closely with governments and the UN to encourage better policy making with respect to sustainability.
- **More Reporters, Better Reporting.** This involves encouraging more businesses to adopt sustainability reporting, and working to improve the quality of those who are already reporting.
- **Moving Beyond Reports.** Developing a process that can inform decision making on a real time basis.
- **Innovation and Collaboration.** This includes the on-going collaboration with the IIRC on the development of IR.

These strategic priorities provide a view of the direction in which GRI wishes to move; however, no firm details of plans have yet been disclosed.

GRI provides a range of online tools and services. These include guides, example databases, e-learning programmes, seminars and links to approved training providers. There are also several networking opportunities.

³⁴ Deloitte: IR: how does it fit into the UK corporate landscape? <http://www.iasplus.com/en-ca/publications/publications/ir-uk-landscape>

³⁵ A mediating institution is an individual or organisation that provides goods and/or services associated with the reporting process and derives benefit from doing so.

- The GOLD community represents GRI's core members (over 500 members), and provides networking and collaboration opportunities, and
- Corporate Leadership Groups are formed from GOLD members and work on specific topics such as the IR group (to encourage peer learning on the implementation of IR) and the Reporting 2025 group (which aims to identify the main future issues that should be at the heart of companies' agendas and future reports).

4.1.4 CDP

The not-for-profit organisation CDP (formerly the Carbon Disclosure Project) was founded in 2000 as a response to the lack of progress in getting nations to sign up to significant carbon reductions under the Kyoto protocol. Its main focus has been on corporate carbon emission disclosure and leveraging investor pressure to drive reductions in carbon emissions. It holds the largest global collection of companies' self-reported climate change data, and provides analyses linking corporate carbon emissions, risks, opportunities and investments to financial performance. CDP provides free disclosure data to a network of 822 signatory investors (covering \$92 trillion of assets), and works through the media, NGOs and activist groups to facilitate direct and indirect action on carbon by investors and corporations.

CDP aims to achieve this through:

- **Capturing and disclosing carbon emissions information:** Chiefly through an annual survey to which more than 4,000 corporations around the globe contribute. The self-reported data are cleaned by validation of responses, and modelling to populate the dataset with estimated emissions for companies that do not respond to the annual disclosure request; and,
- **Engaging with investors for action on climate change:** The disclosed information is made available to investors who may take note of it when making decisions about investing in companies. This includes targeting high emitting companies through media, NGO and legal action.

The provision of information to investors in a standard format allows investors to evaluate risks and performance on a comparable basis. Demand for this information varies across investors, but is supported by carbon-divestment (Ansar *et al*, 2013) and/or responsible investment approaches, such as those adopted by some public pension funds³⁶.

Essentially, CDP holds a database of corporate emissions information rather than being a formal reporting standard. However some interviewees stated that the CDP information request did influence their approach to reporting, at least to some degree.

In recent years CDP has broaden its focus to promoting the sustainable use of various natural resources. According to its current strategic plan³⁷ for 2014-16:

“Our theory of change is that measurement, transparency and accountability drive positive change in the world of business and investment. CDP requests environmental information from companies on the impacts and dependencies that they have on the world's natural resources and their strategies for managing these.

³⁶ For example, The Environment Agency's (England) pension fund is a responsible investor and is ranked 1st in the 2016 Global Climate 500 Index.

³⁷ CDP Strategic Plan 2014-16, at: <https://www.cdp.net/Documents/CDP-strategic-plan-2014-2016.pdf>

We provide an independent rating system to benchmark corporate disclosure and performance on environmental stewardship.”

The CDP’s current strategic goal is “to drive companies and cities to reduce GHG emissions, safeguard water resources and prevent the destruction of forests”. To pursue this goal it has launched new projects in the following areas:

- **Water.** The water programme was launched in 2010, aims to collaborate with investors, leading business groups and NGOs to develop standard water metrics and performance benchmarks to improve the comparability of reported water data. In 2015, 1,226 companies disclosed information to the programme, making it the largest publically available source of corporate water data.
- **Forests.** In 2013, CDP acquired the Forest Footprint Disclosure Project which targets transparency on the largest producers and consumers of timber, palm oil, biofuels, beef and soy, as the major commodities that generate pressures on forests. In 2015, 171 companies responded to the survey and the Project’s annual report highlighted progress towards addressing the deforestation risk from corporate supply chains.
- **Cities.** In 2010, the cities programme was launched, collecting data from over 300 cities worldwide. This enables cities to measure, monitor and compare carbon performance and actions, so encouraging learning and improving action on carbon emissions.

In terms of on-going developments, CDP looks to extend and enhance its annual survey and is developing into agricultural and marine commodities. It is also planning to broaden its disclosure profile by applying pressure to those businesses that do not respond to the survey, and by working with appropriate NGOs to utilise CDP data in formats that can inform consumer purchasing and investment decisions.

4.1.5 Climate Disclosure Standards Board

The CDSB is an initiative that was launched by CDP in 2007. CDSB is committed to advancing and aligning the global mainstream corporate reporting model to make NC comparable with financial capital. It does not work to develop new standards, but is a collaborative forum to improve existing standards and practices. The framework (first published in 2010 as a climate change related framework) is now a global NC and environmental information reporting framework which is geared towards investors. It is intended to guide NC and environmental related disclosure within, or linked to, mainstream financial reports.

The framework consists of seven principles (which guide the approach to the preparation and content of reports) and twelve requirements (which determine what environmental information should be disclosed). The approach of the framework is that NC and environmental information should complement and supplement information in the mainstream financial report. Although the framework is similar in approach to the IR framework, it provides a discussion of specifically NC related elements, which the IR framework does not do (it does not elaborate on any particular capital).

The CDSB is in strategic alliance with the IIRC, GRI, NCC and Natural Capital Declaration, emphasising the close interconnectedness of the IR and sustainability community.

4.1.6 Summary

The IIRC, GRI, CDP and CDSB have different aims but substantially overlapping areas of interest. The commonality of interest is recognised by the key participants in these initiatives, and also reflects the fact that many organisations and individuals are participants in two or more of these initiatives. For example, Prof. Mervyn King was Chairman of the GRI Board of Directors from 2007 until 2011, was instrumental to the creation of the IIRC, and is currently Chair of the IIRC Council. This illustrates the extent to which the IR community is a network of like-minded organisations.

In part this has been the motivation behind the Corporate Reporting Dialogue (CRD)³⁸ initiative which was created to respond to market calls for greater coherence, consistency and comparability between corporate reporting frameworks and requirements. In addition to the four organisations above, it includes the two main global accounting standards bodies (International Accounting Standards Board and the US accounting standards body, the Financial Accounting Standards Board, (FASB)), along with the US-based Sustainability Accounting Standards Board (SASB) and the International Organisation for Standardisation (ISO). It has been initiated as a forum in which members can discuss the ongoing work in corporate reporting. At present, it aims to improve the relevance of reporting, to reduce reporting burden, and to promote a common reporting language. These aims are pursued through dialogue within the network rather than through a common programme of work. Nevertheless the CRD does produce useful resources from time to time, such as the Corporate Reporting Landscape map³⁹ and the Statement of Common Principles of Materiality of the Corporate Reporting Dialogue⁴⁰. These documents highlight both the commonalities and the differences between the constituent members' frameworks.

4.2 Organisations and Sectors Undertaking Integrated Reporting

This section provides a picture of the current pattern of IR adoption and practice across sectors and geographically. It also describes some of the networks that underpin implementation and some general observations about the roles that different organisations play in the implementation of IR.

4.2.1 Patterns of Implementation of IR

Patterns in IR implementation are analysed by comparing the groups of organisations involved in recent work:

1. **IR Reporters:** 333 organisations listed as declared IR reporters from the IIRC website⁴¹ (as of March 2016).
2. **NCC BEPs:** 80 businesses surveyed by the NCC at the outset of the NCP development process (May 2015).
3. **NCC Members:** 201 organisations (as of March 2016).

³⁸ CRD Website: <http://corporatereportingdialogue.com/>

³⁹ CRD Website: <http://corporatereportingdialogue.com/>

⁴⁰ CRD Website: <http://corporatereportingdialogue.com/wp-content/uploads/2016/03/Statement-of-Common-Principles-of-Materiality.pdf>

⁴¹ IIRC: http://examples.integratedreporting.org/all_reporters

The two NCC groups reflect the growing engagement in the process of developing the NCP during 2015 – 2016.

Sectoral Analysis

Table 4.2 shows the sectoral proportions of the private businesses across the three groups. It should be noted that the comparisons are not precise, as the different sources do not use identical classifications of business sectors. However, the majority of categories used match, and therefore still provide an informative comparison.

Table 4.2: Sectors of Private Businesses involved in IR and NCC

	IR	NCC	
		BEP	All members
Sample (number)	333	80	201
	%		
Chemical	0	7	2
Financial services	27	8	11
Food and Beverage	2	13	6
Mining & materials	8	0	1
Industrial	19	17	5
Power & Utilities	7	9	11
Professional Services	14	7	39
Consumer Products	7	11	4
Healthcare (inc Pharmaceuticals)	5	5	3
Retail	1	10	7
IT	3	7	2
Property/Land management	5	3	3
Other	1	3	7

Note: BEP: NCC Business Engagement Partners; NCC: Natural Capital Coalition.

Some sectors have similar representations in all the samples (e.g. power and utilities, and pharmaceuticals). A higher proportion of the IR reporters are in the mining and basic materials, and financial services sectors than in the two NCC groups. The first is explained by the high proportion of South African IR adopters (see geographical analysis below) and the higher representation of mining businesses in South Africa. The second illustrates the high proportion of accountancy and consulting firms that have implemented IR mainly to showcase IR and present examples of good practice to potential adopters. However, the low percentage of industrial and mining businesses in the NCC membership is notable.

The NCC membership has a broad spread, with the 'other' category in Table 4.2, which includes the education, environment, infrastructure, manufacturing, publishing, transport, and waste sectors. The NCC also has a high proportion of professional services businesses. This category includes consultants who provide advice and support to other business sectors in their work on NC. High involvement by these businesses is likely to be akin to high involvement by financial (professional) services in IR – as providers of advice. Given that many organisations in the NGO community (who are not captured in Table 4.2) also provide this kind of service to business (albeit on a not for profit basis), this reflects a major constituency within the organisations currently engaged in the development of the NCP.

Geographical location

The geographical coverage of the three groups, by continent, is shown in Table 4.3. This shows a significant proportion of IR reporters are in Africa, due to the IR requirements of the Johannesburg stock exchange. Aside from this, there is a similar presence of European located organisations in each of the three groups. A high proportion of NCC members and its BEP are from Europe, which may partly reflect the location of the NCC (the UK).

The IR reporters also have a slightly higher proportion within Asia and Australasia than in either of the NCC groups, and a significantly lower proportion in North America.

Table 4.3: Geographic Analysis of Declared IR Reporters and NCC Members

	IR	NCC	
		BEP	All members
Sample (number)	333	80	201
	%		
Europe	26	63	57
Asia	17	13	10
Africa	44	3	2
N America	3	13	16
S America	4	4	3
Australasia	6	1	-
International	-	-	7
Other/unknown	-	-	2
Total	100%	100%	100%

Note: BEP: NCC Business Engagement Partners; NCC: Natural Capital Coalition.

Type of organisation

The BEP group and IR reporters are entirely from the private sector. Approximately 60% of the NCC membership is from private sector (Figure 4.1), however, a significant proportion (approx. 35%) are from the NGO sector, mainly nature conservation organisations and think-tanks working on environment and sustainability issues.

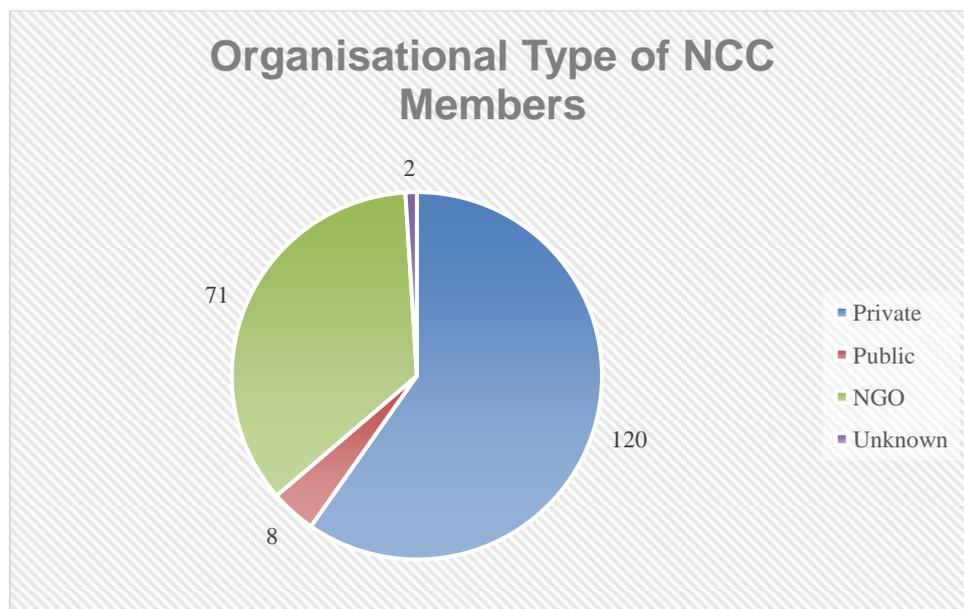


Figure 4.1: Organisational Type of NCC Members

4.2.2 Networks

From the interviews conducted for this project it was apparent that the implementation of IR (and approaches to sustainability reporting in general) is supported by practitioner networks, both within wider professional services bodies (e.g. ICAEW) and in sustainability-focused organisations such as A4S, the Aldersgate group, and Business for Social Responsibility. In addition, learning organisations like the Cambridge Institute for Sustainable Leadership provided a valuable network of contacts.

These networks play an important role in the development and spreading of best practice, and in encouraging others to adopt IR. One interviewee, when commenting on learning from another IR organisation in the A4S CFO network, said: “*When we saw what they were doing and we saw a lot of parallels between their business and ours, we aspired to get on that [IR] train.*” Several interviewees placed a great deal of importance on discussing the practicalities of implementation with other businesses, either within their sector or from other sectors. They valued the practical advice and experience gleaned from other implementers regarding:

- Identifying which initiatives were relevant to their particular business;
- Which approaches helped with understanding how NC related to business value; and,
- Clarity about what approaches worked well and were practically implementable.

This learning usually came about through personal contact, which is an important feature of these networks. This type of exchange often helped businesses more than the sometimes overly ‘academic’ advice supplied by consultancies and developers. This is because advice can be too focused on frameworks, principles and processes, whilst through learning from each other, businesses can focus on what is material (in terms of risks and impacts) to their businesses, and on what is practically achievable.

These networks also provide:

- Contacts and opportunities to work on various collaborative initiatives and working groups, which also expands the network of contacts;

- Specific training programmes and guidance materials; and,
- Awards programmes⁴² that encourage others to learn from, and adopt, best practice. Several interviewees had made contact with organisations recognised in award schemes, as they are seen as a useful first point of contact for those businesses considering adopting IR and NCA approaches.

Developers, consultants and reporters often work together collaboratively to implement and develop IR. Based upon information obtained from the interviews, the typical players and their roles include:

- The major consultancies (e.g. PwC, EY, Deloitte, KPMG) are often used in a variety of roles such as:
 - Creative development of integrated thinking;
 - Changing business processes;
 - Providing examples of best practice;
 - Reviewing outputs; and,
 - Providing assurance services
- Communication consultancies are often used when producing the IR to ‘tell the story’ in a manner that targeted stakeholders will readily understand.
- NGOs can play specific roles, such as expressing the collective views of major stakeholders or advocating particular projects or activities. Sometimes NGOs can act as researchers of specialist knowledge (e.g. one interviewee said that they worked with NGOs such as WWF in some tropical locations to understand the local pressures on forestry when considering timber sourcing decisions).
- Initiatives themselves (e.g. IIRC) can be involved directly with those implementing IR.

4.3 Approaches to Implementing Integrated Reporting

In terms of approaches to implementing IR, the main theme to emerge from the interviews was that the implementation of IR was often seen as a ‘journey’. The descriptive term ‘journey’ was used to characterise the need for: a relatively long time period in business terms, often spanning several years; an open approach to learning; and a recognition that the process is iterative and requires ongoing refinement and improvement.

The first aspect is the length of time required to establish and revise IR. Many of the leading companies in the implementation of IR have taken several years to progress to their current level of integration. One reason for this lengthy implementation process is the number of significant elements that need to be established and clearly articulated in an IR. For example, the Crown Estate used their first year of IR to perform their materiality assessment and produce their business model. The second year was used to identify the capitals that they used and to refine their materiality assessment. In the third year, strategic objectives were set and KPIs established for monitoring performance against those strategic objectives. The establishment or revision of each element may entail an update to others; for example, identifying the key capital dependencies may trigger a revision of the business model. The Crown Estate does not consider that it has *‘got there yet’*, and recognises that IR practice is a process of continuous improvement and refinement. One Sustainability Director said, *“Slowly but surely, with each report that you produce, you should be going further and further*

⁴² Such as A4S ‘Finance for the Future’ awards, EY’s Excellence in Integrated Reporting Awards or PwC Building Public Trust ‘Excellence in reporting’ awards

down that journey of demonstrating how you are creating value". Other interviewees described similar processes and timescales.

The second aspect is about business change. One Sustainability Director in the retail sector said: *"You can't really get to integration until you have integrated the thinking"*. Many interviewees emphasised the business benefits of embedding integrated thinking, but also emphasised that this takes time. At one level it involves changing business decision making processes, but it also involves changing senior managers' perspectives. One interviewee said, *"Actually it is a lot more about the hearts and minds piece which is much more important – how do you actually change the mind-set of the organisation and bring people into an understanding of all these different factors?"* Business change at this level does take several years, but the interviewees were very clear about the benefits of embarking on this change.

Another theme to emerge from the interviews was to test the process by which IR changed and improved NC management. The first point was that reporting, in and of itself, does not directly lead to better management. Almost all interviewees identified that it was the move towards *integrated thinking* within core business strategies, plans and decision making processes that lead to better management actions and decisions.

A Strategy Director in the property management sector put this point across clearly: *"So we didn't go to integrated reporting and then think, 'how can this change our business?' We changed the business and then we started thinking, 'how do we tell people about this?"* The essential point here is that businesses must first recognise integrated thinking around the capitals, and how the business works with those capitals. This is essential in order to change the way the business manages itself. Reporting may be a stimulus for disseminating this process throughout an organisation. However, it may also be a consequence and part of the iterative process, in that it then goes on to tell the outside world what the business has done to manage itself in a more sustainable way. Starting by adopting IR, without embedding this thinking within the way the business operates, is unlikely to lead to improved sustainable management of the six capitals.

Most interviewees shared the view that it takes time to take proper account of these considerations in business strategies, plans and decision making processes. However this is essential if IR is to contribute to making the business more resilient and sustainable. As a Sustainability Director in the retail sector said: *"What we have discovered on our journey in IR is that when you do things well, it has better benefits to society and the natural environment."*

These IR considerations increasingly apply to NC, as evolving definitions of materiality expand the boundaries of what might be deemed a material issue to an organisation. KPMG *et al.* (2013) state that NC is likely to be increasingly regarded as a material issue owing to its connection with the expanding boundaries in the following three key areas:

- The **scope of issues** included – broadening from only economic matters, to include wider social and environmental issues (including the NC issues described in the maturity model in McNab *et al.* (2015));
- The **stakeholder groups** considered – expanding from a focus on economic stakeholders to include other internal and external individuals and groups. For example one of the retail interviewees used the NGO, Friends of the Earth, to advise them on impacts in the forestry sector; and,
- The **time frame** over which issues are taken into account – extending from impacts that affect only the short term to those with longer term effects and consequences. Perhaps the most crucial of the long term issues is climate change, reflecting long term plans of

mitigation (e.g. Novo Nordisk’s aim to convert production plants to 100% renewable energy sources by 2020).

Discussion regarding the benefits of adopting IR is covered in greater detail in Section 4.7 of this report.

4.3.1 Iterations between IR and NCA

In 2015 the JNCC commissioned AECOM to investigate UK businesses’ motivations to incorporate NC and nature’s value in their operations (McNab *et al.*, 2015). This work identified a ‘journey’ or ‘maturity matrix’ (Figure 4.2) for NC-related business practices, drivers and challenges, and evidence obtained in this current study through interviews with business representatives highlighted this perception.

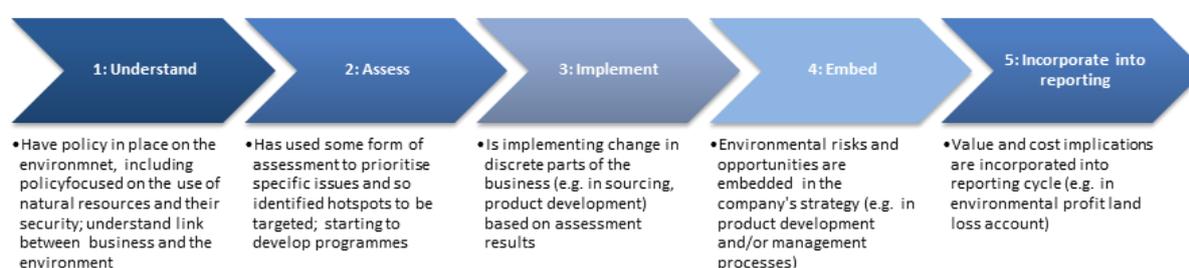


Figure 4.2: Natural Capital Maturity Matrix

Source AECOM: McNab *et al.*, 2015

One webinar participant suggested that for IR and NCA there is a maturity curve which businesses could understand and assess themselves against. This curve has parallels to the Natural Capital Maturity Matrix in Figure 4.2, and to other reporting activities, in areas like carbon and GHG reporting, and moves through the following steps:

1. **Understand:** Using readily available, but partial, data. For example, most business can readily access data on internal water use and direct CO₂ emissions but it is more difficult to work through the CO₂ emissions of their supply chain in their procurement activity.
2. **Assess:** Trying to report everything that is thought relevant (i.e. with which the business interacts, even though not material);
3. **Implement:** Standardising approaches by adopting protocols (e.g. NCP, GRI) to guide and present reports;
4. **Embed:** Identify material issues through evaluation of step 3, benchmarking against peer businesses, facilitated by common methodologies (such as on carbon disclosure), and linking to supply chain priorities;
5. **Materiality:** Deeper materiality assessment, with more focus, conciseness and precision on the things that really matter to the business (see Section 4.5); and
6. **Depth:** Fully developed, thorough reporting of how company strategies are delivering and addressing reported issues over a sustained period of time.

This process, which might take 5 to 10 years to complete, supports the idea that IR is a journey along which a business develops its thinking, and this process involves increasing complexity. A key aspect of this is the distinction between the actual analysis undertaken by businesses, and the way this is communicated. The analysis and communications distinction for NC and integrated thinking in general are summarised in Table 4.4.

Table 4.4: Differentiating between internal analysis and external communication

Activity Discipline	Internal Analysis	External Communications
Business Strategy	Integrated thinking	Integrated Reporting
Natural Capital	Analysis of NC impacts and dependencies. When approached systematically this becomes NCA.	CSR report content. NCA lends itself to more systematic communications.

As Table 4.4 shows, the distinction between analysis and communication is less clear with relation to NCA. As with financial accounting, NCA can involve systematic organisation of NC data for internal management purposes, but the nature of accounting means this data is also well suited to communication (e.g. with investors) by providing structured and comparable evidence on the performance of the business. In practice there are iterations between NCA for internal management and external communications (see Figure 4.3).

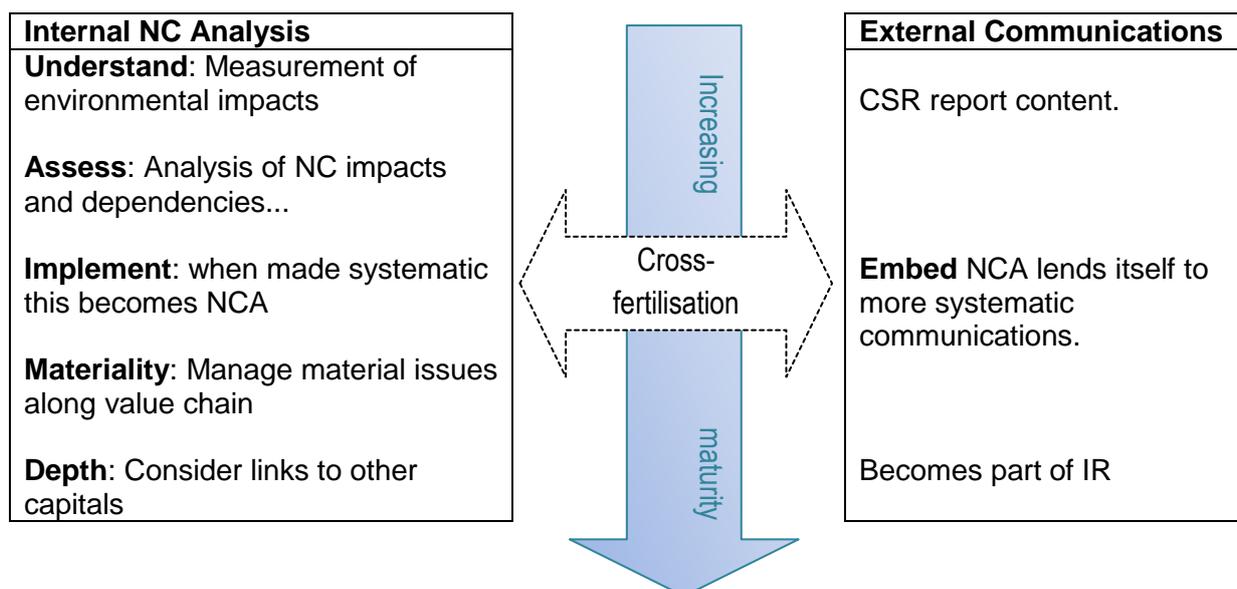


Figure 4.3: NC Analysis and Communications Development

The distinction between general NC analysis, and more systematic NCA, under both columns, builds on the NC maturity matrix reported in McNab *et al.* (2015). Linking the maturity matrix to IR produces a complex set of iterations, reflecting the analysis and communications split, and the maturity progression from Figure 4.3.

It is important to highlight that the different iterations require different types of knowledge and data. Data requirements are shown in the left hand column of Table 4.5. Within this, environmental evidence that requires contextual data is identified by underlining. This context is a feature of NC analysis, within which consideration of the state and trends in NC stocks provides context for the flows of goods and services. Understanding this context helps to assess whether the risks and dependencies associated with those flows are material to a business. As discussed in Section 4.1, Table 4.5 also shows the movement from carbon and energy analyses to supply chain and broader value chain impacts that pertain to NC and ecosystem services.

Emerging trends in NCA include:

- Expanding NCA to land and soil resources with methods like CNCA;
- Better understanding of supply chains through eP&L accounts and similar approaches;
- More careful organisation of the processes of NC analysis through mechanisms such as the NCP; and,
- Development of location specific impact and valuation analyses (as noted in the 'embed' stage above), bringing science and business closer together.

Table 4.5: Interactions between NC Data and Analysis, Integrated Thinking and Communications

NC Data and Evidence Implications	Analysis		Communications
	NC Analysis*	Integrated thinking/ business issues	
Initial Activity			
Using readily available, but often partial, data; often sourced internally and relating to impacts (e.g. GHG emissions).	Understand environmental links to the business; get policies in place.	Limited – Environment and NC is still an isolated issue, often only touched upon in CSR related activities.	Some environmental reporting (e.g. policy and impact statements), but separate from financial and business strategy.
	Assess relevance of different issues, some prioritisation takes place		Can include non-material issues due to other motivations (e.g. goodwill gestures for CSR reasons, or issues highlighted by pressure groups). Trying to report everything that is thought to be material.
Development			
Monitoring of internal environmental management actions. Some effort to collect different data (e.g. net water consumption) and contextual data may be used (e.g. comparisons across sector average).	Implement: Undertaking some analysis and adjust business activities accordingly (e.g. energy efficiency measures).	Thinking on how different capitals interact with NC (e.g. investment in equipment to mitigate environmental impacts).	Some environmental reporting (e.g. of effects of policies, such as actions to mitigate priority emissions), but can include non-material issues.
	Making a distinction between impacts and dependencies.		Cross-cutting learning from networking organisations.
Systematic collection of a wide range of data to satisfy reporting standards (e.g. GRI).	Embed Mainstream NC considerations into operations and strategies. Systematic organisation of data, leading to NCA . Standardising approaches by adopting protocols (e.g. NCP) to guide and present reporting processes.	Board level responsibility and leadership on NC and other sustainability related issues.	Adoption of standards on environmental reporting (e.g. GRI), with possible links to financial and business strategies, but still not fully integrated.
Mature Activity			
Continued motivation often includes some evidence of payback (e.g.	Materiality: Identify material issues through: evaluation of NCA data;	Material NC and other capital issues brought into financial and business	Reporting of paybacks and strategic decisions (e.g. improved risk

NC Data and Evidence Implications	Analysis		Communications
	NC Analysis*	Integrated thinking/ business issues	
reputational or financial) to business that justifies further activity. Require data for NC assessment (e.g. state and trends in NC) and potential changes to impacts as a result of management decisions and interventions.	benchmarking against peer businesses, facilitated by common methodologies; and, linking to value chain priorities.	strategies.	identification leading to better risk management) NCA considered as part of the company's IR: Fully developed IR setting out how company strategies are delivering and addressing reported issues over a sustained period of time.
Comparable data to judge trade-offs across different types of capital – either against specific business goals, and/or in monetary value terms.	Depth: Deeper assessment of materiality, with more focus, conciseness and precision on the things that really matter to the business. More analysis of impacts and dependencies, including along value chain, accompanied by contextual information about NC stocks.	Links between all capitals recognised, such as in equipment investment appraisals that integrate resource use (e.g. energy and water) and trade-offs with other capitals (e.g. financial and human). Environmental policies integral to employee responsibilities.	
* Adapted from McNab <i>et al.</i> (2015) Contextual NC data identified			

A limiting factor in all of these is the scale of resources required. The activities noted can be very involved, and are often seen by business to require considerable time and effort. Hence the role of elaborating the business case and payback identified in the data column of Table 4.5 is an important one. It is needed to make a cogent case for the resource commitments required by businesses

The interviews conducted with businesses as part of this project have identified that the use of the approaches described can be characterised as follows:

- They are highly experimental, as most businesses don't yet have a clear idea of what they will get by way of return, but want to trial and learn, making best use of what works well, and discarding that which is no longer useful. For example, some GRI KPIs have been dropped by some of the more experienced organisations;
- Some businesses adopt a 'wait and see' approach by following the trends in which methods and approaches are likely to be considered the best or become the most widely used. This may explain why many of the 'early adopters' keep the learning they gain to themselves (e.g. some water companies have completed TBL or eP&L but have not published the results). Conversely, a reluctance to publish may be due to a lack of established and widely recognised methods. Several interviewees referred to a lack of recognisable methods as a problem in gaining confidence in NC related information and consequently did not want to take the risk that information was inaccurate or likely to be misconstrued by investors. An organisation taking the step to publish would face potential critique over both the methods it had used *and* the results/content it published. The potential methodological critique is not a debate that most businesses want to engage in, and would potentially distract from the results that they want investors and other stakeholders to focus on;
- Others want to promote and encourage learning and adoption (e.g. The Crown Estate and Kering). This may be because these organisations assign a greater importance to the communications and public relations element of corporate reporting and disclosure activities. This may be down to a variety of reasons, such as good publicity, improving branding with consumers, and cultivating investor relations;
- The process of disclosure helps shape corporate thinking processes by acting as an informal peer review process. One interviewee commented that the process of understanding the linkage between the six capitals and business value creation became clearer when their organisation had to express these linkages to an external audience;
- Many organisations want to integrate other capitals into reporting or prioritise the understanding of other capitals (such as social) over NC. For many businesses the social dimension may be more important than the NC element, which will clearly influence the level of uptake of NCA;
- Some businesses want to use monetary values, whereas others believe they don't need monetary values to make good decisions but that information that is relevant to the specific decision should be sufficient;
- Some use stakeholder insights to help shape their approaches (e.g. NGOs); and,
- A business' interest in sustainability can be triggered by the challenges that are faced (e.g. increasing resource scarcity).

Several interviewees said that good IR is more than merging together different corporate reports (i.e. financials and sustainability) although it is evident that some businesses do this and claim to be undertaking IR. Proper IR needs to be informed and challenged through an integrating thinking approach to the way in which a business manages itself, both its operations and its capital assets. Some businesses do gradually merge sustainability reports with financial reports. In so doing a business may move to a more concise IR which discloses the material information and report other more detailed sustainability metrics separately, such as on the corporate web-site.

4.3.2 Future Trends

The two major current initiatives in NCA are the development of the NCP and the proposal for an ISO standard on monetary valuation of environmental impacts (potentially ISO 14008).

The proposals for ISO 14008 received sufficient, though not unanimous, support within ISO to allow a working group to be formed. Countries which were not supportive were those which felt that the methods involved were not sufficiently developed, and those which had philosophical objections to putting monetary values on environmental changes. The sources of these views are confidential within the ISO process.

If the ISO process does progress, it will be at least three years, more likely five, before any standard emerges (this is a typical ISO timescale). The standard aims to build on existing standards (e.g. on LCA and environmental management) within the ISO portfolio.

There are also proposals within the ISO system to develop further standards that involve NCA. However, these relate to NCA's application in business management activities, i.e. the interpretation of NC evidence. They are thus considered, at this initial stage, and therefore less relevant to potential future activities focused on developing NCA than the existing work conducted under the NCP and ISO 14008.

We regard the NCP as *the* major development in the NC arena at present. This is because it has major stakeholder involvement, with over 400 companies either piloting it currently or in the waiting list to pilot it⁴³. Elements of the Protocol with particular relevance to JNCC activities and data include the need for contextual data on NC stocks in the measurement and valuation of NC impacts and dependencies, and the application of different measurement and valuation methods according to business' needs.

4.4 Use of Natural Capital Data in Integrated Reporting

The strategic focus of IR on materiality means that information (and hence data) that can assess the NC upon which value creation depends is of the highest priority. Similarly, some sustainability reporting methods, such as GRI, can use a materiality process to determine which metrics are most relevant to the business and hence define the NC data requirements for reporting.

However, just because something is not considered strategically material at a given point in time does not mean that it will cease to be monitored or required by the business. Businesses will still need NC data for a variety of other purposes, such as internal operational decision making or meeting regulatory requirements. For example, a property developer may have obligations to protect specific species on one particular site that is under development, which may lead to a requirement for ongoing population monitoring data.

This section will focus on the kinds of environmental data that IR and sustainability reporting processes are likely to prioritise for reporting purposes.

A common theme to emerge from the interviews is that businesses find it hard to specify their general NC data needs. This is in part due to the evolving nature of their understanding of the relationship between NC and value creation. The businesses at the forefront of IR reporting are currently reporting high level measures of resource consumption, waste and emissions that serve as indicators of pressures put on NC. The section below illustrates the type of information being disclosed.

⁴³ Alison Jones, Relationship Manager, NCC, pers. comm., March 2016.

4.4.1 Examples of NC Related Disclosures in IR

Examples of the type of NC information disclosed in current IR practice are shown in Table 4.6. The reports referred to have been selected for being examples of best IR practice, in that they have received an award or have been frequently cited as an exemplar of best practice. The data used, however, is mostly focused on either the resources used by the business or the outputs of the production process that have the potential to impact on NC. However, the impacts themselves are not quantified, for example the emissions of GHG to the atmosphere are disclosed but not the social cost of these emissions to the general health of the human population affected by these atmospheric pollutants.

Table 4.6: NC Information Disclosed in Selected Reports

Report	NC Related Information Reported
The Crown Estate Annual Report and Accounts 2015 (Property and land management)	<p>Performance Measures or KPIs:</p> <ul style="list-style-type: none"> Operational renewable energy capacity (KPI) (4.6GW) <p>The impact of the business on NC:</p> <ul style="list-style-type: none"> GHG emissions intensity indexed trend (KPI) (94 compared to baseline 100 in 2012/13) Absolute emissions (Gross scope 1 and 2 emissions*: 19,991 tCO₂eq) <p>Other disclosures (potentially akin to extent and quality of NC stocks but not sufficiently detailed):</p> <ul style="list-style-type: none"> Percentage of SSSIs in favourable condition (42%)
The Crown Estate Total Contribution Report (2014)	<ul style="list-style-type: none"> Provision of ecosystem services - Area and type of habitats GHG sequestered - Tonnes of CO₂ absorbed by trees; GHG averted - Tonnes of GHG avoided through generation of electricity from renewable sources; GHG released - Tonnes of GHG released; GHG released (net) - Tonnes of GHG released minus tonnes absorbed by trees and tonnes avoided through generation of electricity from renewable sources; Water consumption - Cubic metres of water consumed; Waste (hazardous and non-hazardous) - Tonnes of waste generated; and, Mineral waste (tonnes 'enabled' as part of extractive activities).
Report	NC Related Information Reported
Novo Nordisk Annual Report 2015 (Pharmaceuticals)	<p>The impact of the business on the NC / operational KPIs:</p> <ul style="list-style-type: none"> CO₂ emissions (107,000tCO₂) Energy consumption (2,778,000 GJ) Water consumption (3,131,000m³, 14% of this is in water scare regions) Waste (34,751 tonnes) Organic Residues **(124,049 tonnes) Ratio between non-hazardous waste and total waste (0.42)
Eskom Annual Report 2015 (Utilities)	<p>The impact of the business on the NC:</p> <ul style="list-style-type: none"> Particulate emissions per unit of energy exported (0.37Kg/MWh) Specific water consumption (1.38l/KWh) Environmental legal contraventions (18)

* Scope 1 emissions are from own or controlled emissions, Scope 2 are emissions from purchased energy, as defined under the GHG Protocol.

**Organic residues relate to waste from production processes.

The information in Table 4.6 and other similar company reports can be summarised according to the types of data that are typically used in the production of this type of reporting information. Table 4.7 below illustrates:

- (i) the primary data required to produce this type of information;
- (ii) the context data sometimes required to convert the primary data into the reported information; and,
- (iii) potential sources of those data (both primary and UK examples of context data).

Table 4.7: Typical NC Information and Data used in IR

Generalised Info type	Primary Data	Context Data	Sources
Energy consumption	Energy consumption by operational unit and type (electricity, gas, oil). Renewable energy supplied by source.	None	Bespoke internal (metered usage and invoice data).
GHG emissions	Energy consumption by scope (1, 2, 3) and type (electricity, gas).	DECC GHG conversion factors.	Bespoke for prime data (energy consumption). DECC for factors.
	Transport fuel consumption. Travel mileage by mode of transport (air, rail, car).	DECC GHG conversion factors.	Bespoke for prime data (energy consumption). DECC for factors.
Water consumption	Water used by operational unit.	Regional scarcity data	Bespoke internal (metered usage and invoice data). Devolved environment bodies for scarcity.
Waste	Total tonnage/volume by type (by-products, packaging, mineral, organic, hazardous). Total tonnage/volume by recycled/disposal route.	None	Bespoke internal.
Land use	Area by land type (farmland, woodland, etc.).	Land use	Bespoke internal.
Emissions to water	Volume by type.	None	Bespoke internal.
Emissions to Air	Mass by type (NO _x , etc.).	None	Bespoke internal.
Status of designated sites	Sites and area by condition (e.g. favourable)	Overall status of sites, or relevant habitats	External – Devolved nature bodies (e.g. NE).

The examples in Tables 4.6 and 4.7 also reflect the general trend observed from the interviews that were conducted, in that most organisations begin by reporting the more apparent environmental impacts, such as GHG emissions, energy use, water use and waste production, hence they are the typical information reported. As they explore their NC dependencies and impacts further, the focus of attention shifts to more removed interactions, such as supply chain impacts and more indirect dependencies on NC. Businesses typically move from the consideration of regulated emissions to the consideration of risks and opportunities (or impacts and dependencies). This requires more contextual data, as reflected in Table 4.5.

The most complex area of all is biodiversity. There are interesting emerging approaches to managing biodiversity at a site level in the extractives, infrastructure and property development sectors, and use of certification and other methods for managing supply chains in the retail sector:

- In the extractives sector, the interviewed business aims to enhance biodiversity. Certain sites have regulatory requirements (some are protected areas), and the central estates team (who manage planning permissions) work with independent

ecologists to produce an EIA. The business uses this to develop BAPs and is moving towards BMPs which monitor important biodiversity indicators on a more frequent basis than that required by EIA (which is every 15 years). These site-based plans determine attributes that are measured and are designed primarily to give the information to the site managers so they can manage those sites within regulatory requirements but also “to achieve our [the business’s] net positive ambitions.” The data are specific to each site and so it is difficult to aggregate the data at a corporate level. Typical approaches to this problem are to report the proportion of sites that have plans or are being successfully managed to their plan.

- An interviewee from the property development sector also declared net positive biodiversity impact ambitions. They too develop site plans that are tailored to the specific needs of that particular development (e.g. to conserve species or create new habitats). These plans determine what targets are appropriate (if any), what is measured, and how frequently. As with the above example, it is not possible to aggregate these diverse measures, so the IR reports on the percentage of developments that have been preserved or enhanced.
- The SSSI indicator in the Crown Estate’s total contribution model (i.e. percentage of sites in favourable condition) can be seen as both an indicator of the state of NC (reflecting the condition of habitats which can be used as a proxy for their ability to deliver ecosystem services), and a measure of the flow of certain services (e.g. the cultural and recreational value of maintaining habitats and species). Whilst this may appear to aggregate complex underlying information, this is in part determined by the requirement for the report to be concise for communications purposes and in line with the IR principles. However, simply monitoring the percentage of sites in favourable condition would be insufficient for detailed NCA.

4.4.2 Reporting and Data Process Implications

Several points emerged from the interviews with regard to the themes of reporting information and data acquisition and processing:

- Several interviewees commented that conciseness is key to good communications with investors and retaining their confidence. There is also widespread recognition of the limits to a reader’s patience – if business reports are too long or difficult to follow they will not be read. This is useful for communicating key messages, but could limit the analytical depth of the reports – and hence type and extent of data needed.
- Too many pieces of information can lead to fragmentation and confusion, thus detracting from the overarching strategic picture. One IR developer said: “*The fragmentation of information means that users of information can’t understand the central messages.*” As the figures in Table 4.8 show, different indicators can be compared between reporting periods or industry averages to show trends. However, when pulled together, different types of data often cannot tell an overall story about the sustainability of the business. For example, we cannot conclude if reduction in GHG emissions versus an increase in water consumption is a positive or negative development overall for the business in terms of what this change means for the risks and opportunities the business faces. For this to be concluded, we would at least need contextual NC data (e.g. relative contribution of the business to, say, national GHG emissions, and relative scarcity of water in the catchment).
- Several sustainability professionals found that they were producing many metrics that were not being used in decision making. Some organisations had undertaken information reviews and streamlined their reporting and data collection processes. For example,

Eskom undertook a major streamlining of its reporting processes and several interviewees said that their organisations' had abandoned collecting data for some metrics that were no longer being used to inform decisions.

An important picture to emerge from the interviews is that businesses find it difficult to specify their NC data needs. For example, two interviewed businesses declared business ambitions to have a net positive impact on biodiversity, but struggled to demonstrate that at a corporate level. On a site-by-site basis different issues could be addressed, but consolidating impacts across different sites and issues was difficult, as was attaching an economic value to the net impacts. Attempts to produce a standardised biodiversity metric for the purposes of biodiversity offsetting in England has met with some success. Baker *et al.* (2014) report that such a metric generally improved assessment of impacts, and suggested areas for improvement in representing lower-value habitats and ecological factors like connectivity. However, its development has stalled in line with the halting of biodiversity offsetting policies.

It is widely recognised that the UK has a wealth of different types and time-series of environmental data. In many instances environmental data that are collected and managed by public sector organisations are typically organised for monitoring particular environmental issues or outcomes of policies, such as nature conservation interventions or environmental impacts (e.g. water pollution). To enable use in IR and NCA, contextual data on the extent and quality of NC are useful but not wholly sufficient. Business also needs data on how the output from their operations (e.g. emissions to water) affects the overall water quality in the catchment (e.g. a change in the Water Framework Directive quality status) and what does this result mean for the inputs to the business (e.g. below a certain quality level a business may not be able to use the water).

In short, four types of data are needed for a complete IR/NC:

- i. Contextual data such as that which is routinely collected in the UK – on the extent and quality of NC assets (stocks) and the benefits they provide (flows);
- ii. Impact data, such as emissions from the business operations;
- iii. Data showing how impacts on the environment (ii) change the extent and quality of NC assets and the benefits they provide (i); and
- iv. What such changes (as shown by data like in (iii)) might mean for the businesses.

Agencies such as JNCC routinely contribute to data type (i), and could analyse the trends in the data to contribute to (iii). Businesses could provide type (ii) for their own use but will probably need some analytical effort and external advice for type (iv).

Around the questions regarding sourcing data, the following points came to light from the interviews:

- Obtaining data on supply chain impacts is difficult, mainly because it involves activities outside direct business operations. The two retail businesses interviewed have interesting approaches to this problem, and work closely with suppliers and in some cases NGOs (such as Greenpeace and WWF who have teams deployed in the local region) to understand local impacts and inform the development of appropriate supplier contracts.
- There is widespread recognition of the immense quantity of research accumulated (mainly in academic institutions, but elsewhere too) that is difficult to access. It should be noted that change is underway through a major Government initiative in the UK to make publicly funded research and data, including that on NC, open-source. There were questions about how to make this more available, and also suggestions that research could be better directed towards business needs.

- Many ecosystem impacts are crucially determined by location and more locally relevant spatial data. Maps are also considered useful, for example catchment-specific data about water regulating services and flood risk, as is information about the condition of designated sites.

Two other NC data challenges were noted. Firstly, several interviewed businesses expressed the need for a NC data framework to assist in identifying data needs and to inform the design and management of data processes, which is discussed further in Section 4.8 on knowledge gaps. Secondly, there were questions raised about the level of assurance for NC information generally, in that it may not be as robust as financial data. However, even if NC information is not as robust as financial data, it may still be important in informing decisions on the use of NC. One IR developer said: *“I think it is perfectly legitimate for there to be some line item distinction between things I can report about robustly and things I can report about less robustly but are valuable pieces of information for stakeholders and decision makers.”* In contrast, the electronics business Philips states that, *“Given the importance of sustainability for both our company and stakeholders, we make sure that we clearly communicate about our programs and progress against targets. In line with this approach, we made a decision that the reporting quality of non-financial data (social capital and natural capital) must be the same as the quality of financial data.”* (WBCSD, 2015a). The provision of data is still undergoing considerable change, with different approaches emerging, often driven by technological opportunities such as:

- Emergence of private, 3rd party, specialist data subscription providers, offering organised spatial and regularly updated data (e.g. i-marine⁴⁴);
- Public sector projects aiming to enhance access to data both at the UK⁴⁵ and EU level⁴⁶;
- Protocols for data sharing collaborations between business and regulators/government, such as in MEDIN⁴⁷; and,
- Trends for open data in other parts of the economy⁴⁸.

4.5 Integrated Reporting and Natural Capital Accounting

From the information review and the survey interviews conducted it is evident that a large number of NC tools and approaches have been used for sustainability reporting generally, but also in support of more integrated reporting. This section reviews the more widely used IR approaches and some supporting NCA tools.

Table 4.8 looks more closely at the relationship between reporting initiatives that involve elements of the key features of IR and NC analysis. In particular the IIRC method is a big step up from previous methods and standards (which are not trying to compete with IIRC as fully integrated methods).

⁴⁴ <http://www.marinefind.co.uk/> learn from trends in data: <http://opendata.institute/our-focus> subscriptions services

⁴⁵ e.g. from NE: <http://www.magic.gov.uk/>

⁴⁶ e.g. in Europe: <http://www.i-marine.eu/Content/OurServices.aspx?id=599ee2b9-de2e-4ab2-80ee-808a9a973b13&li=0>

⁴⁷ <http://www.oceannet.org/>

⁴⁸ e.g. in the Open Data Institute: <http://opendata.institute/our-focus>

Table 4.8 Interactions between Initiatives with Elements of Integrated Reporting and NC Analysis and Integrated Thinking

Initiative	Purpose	Relationship to IR (value chain, materiality)	Relationship to NC (Stocks/flows; Impacts/dependencies)
International IR Framework (IIRC)	Helps organisations explain to providers of financial capital how they create value over time.	It is the defining method for IR, and representative of fully integrated thinking.	Recognises NC as one of six capitals. Focuses on the capitals' roles in value creation, rather than specific NC issues like stocks and flows.
CDPs Information Requests	Uses the power of information disclosure to drive organisations to measure, manage and reduce their impact on the environment (covering disclosures on carbon and water use) and build resilience, while providing high quality information to the market.	Promotes steps towards more integrated thinking through expansion to different types of NC (e.g. water) and links to built capital (i.e. it's energy intensity per unit of output). Materiality as CDSB below.	Originally considered flows of one type of NC impact (GHG emissions) but now expanding into water, forests and supply chain impacts. By considering GHG Protocol's 3 scopes of emissions ensures coverage of impacts along value chain.
Climate Disclosure Standards Board (CDSB) Framework	Helps organisations prepare and present environmental information in mainstream reports that provide consistent, comparable and clear decision-useful information for investors.	Scope similar to CDP above, but this approach has expanded to reporting all relevant information on NC. Materiality defined as having a significant positive or negative effect on the organisation's financial condition, operational results and its ability to execute its strategy.	Originally considered flows of one type of NC impact (GHG emissions) but now also covers NC in general.
GRI	Enables all organisations – regardless of size, sector or location – to report the sustainability information that is relevant to stakeholders (broadly defined as entities or individuals that can be significantly affected by the organisation's activities).	Encourages consideration of a wide range of NC, economic and social issues. Material aspects are defined as significant economic, environmental and social impacts, or aspects that substantively influence the assessments and decisions of stakeholders. Whilst broad in scope, true integrated thinking towards business value creation is not assessed.	Wide range of KPIs covers range of NC issues. Some supporting KPIs involve the explicit requirement to examine stocks of NC (e.g. state of water catchments).
SASB	Assists public corporations disclose material sustainability information in SEC filings; this is a mandatory USA requirement.	Encourages development of IR by reporting different sustainability issues (human, social, environmental) that are material to the business.	Range of environmental impacts (emissions, resource use, biodiversity impacts).

Initiative	Purpose	Relationship to IR (value chain, materiality)	Relationship to NC (Stocks/flows; Impacts/dependencies)
IFRS	Provides high quality, transparent and comparable information for investors. This is the main international accounting standards setting body.	Encourages development of IR by reporting different sustainability issues where there is a direct financial impact on reported financial results.	Only to the extent that NC has a direct impact on financial results, and is analysed in accordance with accounting standards.
FASB Accounting Standards	Establishes and improves standards of financial accounting and reporting that foster financial reporting by non-governmental entities to provide decision-useful information to investors and other users of financial reports. FASB sets the generally accepted accounting principles within the USA.	Encourages development of IR by reporting different sustainability issues where there is a direct financial impact on reported financial results.	Only to the extent that NC has a direct impact on financial results, and is analysed in accordance with accounting standards
ISO 26000 – Social responsibility	Provides guidance on how businesses and organisations can operate in a socially responsible way.	Considers social capital (e.g. people’s health and wellbeing) along value chains which can inform materiality judgements.	May consider NC where relevant to social capital, but otherwise it is not linked.

Adapted from Corporate Reporting Dialogue Landscape map. At: <http://corporatereportingdialogue.com/landscape-map/>

Table 4.9 looks more closely at the relationship of several NCA tools and approaches with the key features of IR and NCA

Table 4.9 Relationship of NC Tools and Approaches to Integrated Reporting

Type of Tool	Description	Examples	Relationship to IR (value chain, materiality, other capitals)
Frameworks & protocols	Provide guiding principles and a structured approach to dealing with NC analysis or management.	NCP	The NCP is designed to provide a definitive NC analysis framework for business. It is compatible with IR in being explicit on value chain and materiality issues. It identifies some links to other capitals (e.g. social) but not all six capitals are covered.
		Natural Capital Declaration	Gives a broad statement of NC management principles. Organisations behind the Declaration have taken subsequent actions to develop tools for business (e.g. investment and water risk tool ⁴⁹) that can inform IR on specific NC issues but their uptake is voluntary and at an early stage.
Accounting methods	Methods to account for NC under different analytical boundaries and purposes.	CNCA	Recognises relationships to other capitals but does not detail how the links from NC to other capitals should be analysed. Covers assets directly under management so does not examine value chain outside organisational boundary. Provides balance sheet to compare and/or merge with other reporting processes.
		eP&L	Explicitly examines value chain outside organisational boundary across a range of NC impacts. Provides monetary valuations, but comparisons to other financial values requires judgement.
		Triple bottom line	Gives structure for consistent treatment of natural, social and economic capital performance, but consideration of six capitals, and interrelationships between capitals, is not addressed.
		EValuATe	Provides method to analyse and value environmental externalities, across a range of NC types. Helps assess materiality, but not interactions with other capitals.
Reporting Standards	Clear statements of how to measure and report specific impacts/metrics.	GRI	Encourages consideration of wide range of NC issues, but does not apply fully Integrated Thinking.
		CDP CDSB	Encourages systematic disclosure, and enables materiality judgements through benchmarking. They offer little explicit consideration of other capitals (especially beyond built capital) or value chain.
Ecosystem Service Modelling tools	Assessment of ecosystem goods and services and benefits (non-monetary).	ARIES LUCI SENCE Co\$ting Nature Woodland carbon	Provide methods and structures for modelling ecosystem services flows and information to help assess materiality (this also requires significant expert judgement). These tools may help improve reporting, but have little relevance to IR as they do not filter material issues, and offer no systematic consideration of other capitals or value chain.

⁴⁹ <http://www.naturalcapitaldeclaration.org/bonds-water-scarcity/> accessed 16/3/16

Type of Tool	Description	Examples	Relationship to IR (value chain, materiality, other capitals)
		code Peatland carbon code	
Externality Valuation models (Resulting in monetary valuations, or other assessment of value(s) to people)	Bio-physical measures of emissions and resource use combined with market and non-market economic value estimates of impacts and benefits.	InVEST TIM MIMES Total Contribution approach CEV	Provide methods and structures for modelling and valuing ecosystem services flows, thus providing information to judge materiality. They can thereby help to improve reporting, but offer little explicit consideration of other capitals (especially beyond built capital) or value chains (unless boundaries are explicitly set for this purpose).
		Trucost Plc LCA methods	Explicitly based on LCA methods and considers value chain. However, the valuation method is commercially sensitive and not publicly available, therefore it is hard to evaluate.
Life Cycle Analysis tools	Through life impact assessments. These are generally performed as a one off exercise.	Various LCA software (e.g. SimaPro, openLCA).	Provide comparable evidence on product impacts along the whole value chain (when in scope). This can inform materiality, but does not explicitly link to other capitals.
Certification and eco-labelling	Assessing conformance or accreditation to recognised sustainable management standards, and are generally considered to meet a pass/fail standard.	FSC MSC RSPO	These and similar schemes require consideration of (and chain of custody) along entire value chain. Some accreditations have requirements that are linked to the sustainable use of NC (e.g. MSC requires maintaining fish stocks) But there are limited links to other capitals (e.g. human capital).

Several interviewees revealed an experimental approach to the use of NC tools, trying several out in order to acquire new learning and insights.

Others expressed the difficulty in selecting tools and approaches, when there are so many available. A Sustainability Director in the retail sector said: *“I don’t feel that it helps businesses move to more sustainable behaviours, when the sustainability movement promotes a whole range of frameworks and nobody understands the difference between them”*. A consultant said: *“It is actually quite a challenge for businesses to understand what the most appropriate tools are”*.

Many interviewees recognised this problem and were supportive of the need for greater harmonisation. Many also looked to the forthcoming NCP (to be published in June 2016), which signposts when to use which tool and why, as much needed guidance.

A key opportunity for development is the potential for IR to add value to NCA and reporting. Given the complexities and choices of NC data, the conciseness and materiality requirements of IR could be useful to prioritise which data and measurement approach is relevant to business. IR can be concise because it uses the filter of what is considered material amongst the vast information that can be reported on all six types of capital. However, there is very little experience of IR fully involving NC, so these links remain theoretical and high-level.

KPMG *et al.* (2013) identified the following recommendations for a relevant materiality assessment:

- Be transparent about how external guidelines or tools have been applied to the materiality assessment process;
- Link stakeholder engagement processes to the identification of NC material issues, and explain how the former inform risk-assessment processes;
- Specify which NC issues (e.g. biodiversity, water, etc.) are material to the organisation, and develop goals/strategies for their appropriate management;
- Report on those NC issues that are material to the organisation in more detail;
- Connect identified NC material issues to their long-term risk assessment process; and,
- Explicitly incorporate NC risk analysis into relevant governance structures.

In theory the prioritisation/filter of materiality works by using NC data to give context to environmental data, allowing judgement of whether a business’ impact or dependencies are material, either directly to its operations or supply chains, or indirectly because they are material to others in society and therefore bring stakeholder risks.

Thus, the materiality filter in IR can also be applied to identify opportunities for streamlining how NCA is developed by business. This possibility is supported by the observation that adoption of IR is matched by an increasing focus on business dependencies on NC. This is reflected, for example, in the way the draft NCP is developed⁵⁰ to explicitly distinguish businesses’ impacts and dependencies on NC.

⁵⁰ Consultation currently available to NCC members through <http://www.naturalcapitalcoalition.org/about.html>

4.6 Factors Influencing Choice of Integrated Reporting and Natural Capital Accounting Approaches

This section describes the factors influencing business decisions around choice of approaches to IR/NCA at two levels:

- 1) The motivations to undertake IR/NCA at all, and
- 2) The considerations that are important in selecting a particular approach.

4.6.1 Motivations for Undertaking IR/NCA

The interviews revealed a broad range of declared motivations for undertaking IR, and many businesses highlighted several reasons as being important in influencing the decision to implement IR/NCA. The most prominent reasons included:

- **Sound Business Logic and Better Strategy** – Building resilience and enhancing competitive advantage is a pivotal element in a business’s strategy. In an increasingly resource constrained world, business survival will depend upon an ability to manage capital dependencies and adopting an integrated approach to meeting this challenge. A consultant said, *“I think what is making companies think that IR is worthwhile is that it might help them become better businesses as a result of the connections that they can make, and that is definitely supported by the standards setting bodies.”*
- **Better decision making** - One interviewee stated that, *“If we get the capitals right, I think that the methodology might be able to get into the offices of the people making the big decisions in the companies.”* ‘Getting the capitals right’ involves providing the right information that links NC (and the other capitals) to business and societal values. Another interviewee said that *“If the environmental and social impacts of investments could be better quantified, then the quality of investment decisions would be enhanced enormously, so improving the allocation of capital”*.
- **Risk Management** - This motivation was frequently cited, and risks to business value, liabilities, customer base and reputations are strong hooks for business interest in IR and NCA; some of this was noted as being in response to NGO pressure.
- **Regulation (or the Threat of)** - One interviewee from the UK water industry described how the players in this sector had been developing carbon reporting for some time, and then the regulator Ofwat began to take the reporting of carbon emissions seriously and started to develop regulated measures. Once that happened investors started taking increasing interest in carbon performance, which has gone on to become a top performance measurement within the industry. Early involvement in particular NCA measures and approaches can be seen as a means of anticipating future regulation within a particular industry. Some regulators have responsibilities for resilience and this may become an important factor influencing further adoption of IR/NCA practice, especially as the pressure of climate change affects NC flows and supply chain deliveries.
- **Leading the field** - Several businesses interviewed stated their motivation as wanting to be at the leading edge of the IR/NC development and to share their learning with other businesses. One Sustainability Director said *“We are a leading business in our industry in terms of sustainability, and we want to tell that story”*. Leading examples of knowledge sharing include the Crown Estate’s Total Contribution approach, and Kering’s reports on their eP&L methodology. There are important reputational benefits that come from being a leading developer and implementer, such as enhancing investor confidence and building brand loyalty.
- **Leadership from the top** - Several of the interviewees mentioned the importance of visionary business leaders who pushed the integrated approach within their business.

One CEO challenged the board to think in more depth about how the company's strategy should be amended to recognise capital dependencies properly.

- **Communication with investors** - One CFO that was interviewed said that the concise nature of IR is highly important to good communications with investors and retaining confidence. The Sustainability Reporting Manager of an electricity utility company stated that the clear articulation (in the IR) of the business strategy and approach to sustainable power generation was a major factor in securing new funding for investment in new power generation plant. There is some evidence that the implementation of good quality IR can attract longer term investors (Knauer and Serafiem, 2014).
- **Communication with other stakeholders** - Many interviewees expressed a need to communicate more effectively with various stakeholders such as employees, customers or society in general. IR was seen by some interviewees as a means of sharing the strategy and performance of the business with employees in way that would enhance staff motivation, and so improve business results.

One of the interviewed businesses did not intend to produce an integrated report. This was because there is no perceived benefit in declaring their report to be an integrated report. However, they did see the benefits of greater integration between their annual report and their sustainability report, and are taking active steps to improve the connectivity between these reports. This highlights the possibility that a business does not need to produce an integrated report to embark on the process of, and benefit from, more integrated thinking and management.

4.6.2 Factors in Selecting Particular Approaches

The interviewed consultants said that businesses often find it difficult to select tools and approaches, chiefly because they are unsure as to how a particular tool or approach might assist them in meeting sustainability objectives. The role of consultancies is important in providing expert guidance and assisting businesses in the process of selecting NC tools and approaches. One consultant commented that some businesses see the various tools as '*stepping stones*' in a progression from traditional sustainability reporting to fully implementing IR. Given the effort and business change required, this is a sensible strategy to adopt when embarking on an IR or NCA implementation. Some businesses consciously make best use of tools to aid their learning and then move on to something else. For example, some interviewees used GRI reporting for several years but then ceased using it when they began implementing IR.

Some examples of why choices of methods are made that were articulated by interviews included (varies by business):

- **Usefulness of information for decision making** - One interviewee from the pharmaceuticals industry said that they stopped using certain tools (such as GRI) once they found that it was no longer informing their business decisions. The business is constantly seeking new tools that will provide new insights and inform better decision making. Where the business is located on the maturity curve of IR / NCA (see Section 4.3.1) will also determine the usefulness of information and hence approaches.
- **Robustness of results** – This was frequently mentioned by interviewees as an important criterion for selecting particular tools and methods. The credibility of results was seen as important for informing decision makers within the business and building the confidence of external investors.
- **Transparency** – Some interviewees mentioned the importance of the transparency of methods. For some, this is about building the confidence of external stakeholders

and for others it is about being able to compare their performance with other competitors across the sector.

- **Purpose of the analysis** – Different purpose, and hence scope, for the business's analysis can dictate the choice of methods. For example, the CNCA framework uses accounting principles to construct a NCA for spatially defined NC assets that are owned or managed by the business. It is therefore particularly relevant to land managing organisations. The eP&L method compares environmental impacts along a business value chain and is useful in informing the management of NC risks and opportunities across complex supply chains.
- **What others in the sector are doing** - One interviewee from the construction industry said that the players in that sector often respond to what others in the sector are doing and use the industry benchmarking network body 'Next Generation'⁵¹ to keep up with developments within the industry.
- **Leadership at the top and networking** - Many businesses leading the development of NCI approaches have advocates for IR that generate attention on NC amongst their senior leaders. Organisations that provide thought leadership in this area (e.g. A4S, ICAEW and WBCSD) play an important role, both in providing a forum for senior leaders to learn from and contribute to informal peer review. Such networking is important for businesses that are leaders in their sectors and therefore value the exchange of information and good practice with leaders of other sectors to help develop their ideas and learn to trust the approaches taken by peers.
- **Ease of implementation and cost** – For those interviewed this was not a primary decision criterion on whether to undertake IR, but a consideration when selecting an approach. Many organisations mentioned the constraints they have on resources and an important part of the selection process is to consider how an approach will fit within constraints.

There are different reasons for the choice of NCA tools and approaches by businesses as they develop IR further. Firstly, the issues covered are often driven by sustainability accounting approaches, particularly where environmental metrics have become established to some extent, such as in the GRI's metrics. However, there is also a desire for business to focus on the most material issues (including NC issues), which may not match the environmental metrics specified in some reporting guidelines. Secondly, as mentioned above, reporting often develops within a business over time, starting from readily available environmental data (which is not necessarily the right information for IR/NC) and moving to a better understanding of the information (and hence data) and the analysis that is required to include NC in an IR. This improved understanding should arise as the linkage between the business and its NC impacts and dependencies becomes better elucidated.

Other circumstances that influence a business' approach and data requirements will be its overall risk management strategy. NC risks can relate to both dependencies and impacts, span business value chains and include the views of a wide range of stakeholders. For example, The Crown Estate's publication of SSSI condition data for its land mirrors the UK Government's policies to publish data on the condition of these designated sites in response to stakeholder concerns. This could be deemed a strategy to minimise regulatory risk (in the case of the Estate's activities affecting SSSI condition). While this example may not influence the choice of approach, it influences the data chosen to be reported. In future the Estate may chose a NC approach that does not focus on SSSI condition but may still want to report it to minimise the regulatory risk.

The shared development of approaches, and a maturity curve, may eventually lead to assurance of NC information for IR. There is some evidence of demand for such assurance,

⁵¹ <http://nextgeneration-initiative.co.uk/>

which is in line with the comparability requirement in IR. However, given the range of challenges involved, it is unsurprising that there is little provision of assurance or comparability of information currently reported by different businesses. This is understood to be mainly due to the lack of standardised methodologies for company-level activity, and associated with that is a lack of published evidence from businesses.

4.7 Benefits of Integrated Reporting

From the interviews it was evident that businesses did not set any specific targets for the benefits they were hoping to realise from IR. Neither did they have expectations of a target payback period nor any specific measurement schemes for attempting to quantify the benefits of IR in financial terms or otherwise. Most participants stated that it wasn't possible to directly attribute benefits to IR alone.

The benefits of IR were seen as it being an important part of an overall management process that attempts to drive businesses in the direction of sustainable value creation. Disclosure is an important part of the management cycle and is the main mechanism by which the Directors of a business are held to account.

All interviewees believed IR to be beneficial and important to the business. The overall approach was to commit to IR as good management practice and in the process indirectly facilitate business benefits through better strategy, planning, management practice and decision making. Many interviewees mentioned that the real benefits come through embedding integrated thinking within the business rather than external reporting *per se*. This corroborates a view noted by Deloitte (2015)⁵²:

"The biggest benefits from integrated reporting will not come from being compliant or from attracting investors. They will come from the discipline of needing to think, plan, and manage in a more integrated way. This will help companies achieve the agility and flexibility they need to respond to change – and seize opportunities – in an increasingly transient world."

Paul Barnett, CEO, the Strategic Management Forum

An extractive industry executive interviewed for this study claimed that having a track record of sustainability reporting enhanced credibility with local authorities and other stakeholders when seeking permissions for the quarrying of new sites. A similar benefit has been reported for Dutch Builder, Royal BAM, presented in the Deloitte report⁵³: "...embedding and increasing sustainability helps us to become more efficient and to improve our reputation, which helps us get invitations for tenders for new projects. It also helps with community support for project sites." This is in line with procurement processes asking for certification with relevant ISO standards – while the exact impact of ISO registration on each business is not measured, the existence of certification is assumed to have a positive impact on the business's operations and improves its reputation.

One of the benefits IR brings is its explicit consideration of a business's entire value chain. This links to NCA by putting increasing emphasis on NC dependencies. Brazilian agribusiness BRF Brasil link the NC risk associated with deforestation in the Amazon

⁵² IR: how does it fit into the UK corporate landscape?, Deloitte, at: <http://www.iasplus.com/en-ca/publications/publications/ir-uk-landscape>

⁵³ The IR journey: the inside story, Black Sun and IIRC (2015), p.13, at: <http://integratedreporting.org/wp-content/uploads/2015/07/The-Integrated-Reporting-journey-the-inside-story.pdf>

rainforest to risks in their supply chain: *“In 2012, the Company expanded its Supplier Chain Monitoring Program precisely to identify and mitigate risk controlled by third parties, which although not under the direct management of the Company, may influence the business.”* (KPMG et al., 2013)

Ways in which IR can be said to more directly influence the realisation of benefits are illustrated by the five case study boxes below.

Box 4.1: Yorkshire Water case study

Yorkshire Water: Moving to more integrated thinking leads to a different approach to important business processes such as investment decisions. The case below illustrates the change in thinking for Yorkshire Water which initiated a partnership which improved the environment and reduced costs.

Esholt is Yorkshire Water's second largest Waste Water Treatment Works, treating the waste water from 750,000 customers in Bradford and North Leeds in order to safely return it to the environment. Between 2006 and 2009, £44m was invested at the plant to install an activated sludge treatment process to enhance treatment capabilities to meet tightened river water quality standards. This investment made redundant 13 hectares of percolating filter beds, some of the largest in Europe, containing 500,000 tonnes of gravel and blast furnace slag.

The gravel and slag might traditionally have been considered as waste, with a £20m cost put on demolishing the redundant beds, disposing of the 'waste' media and preparing the land for redevelopment. In order to avoid this and instead maximise the value of the redundant material and minimise environmental impact, a partnership investigation assessed innovative options and analysed the gravel and slag to confirm the material as a product not a waste.

In 2015 Yorkshire Water entered a partnership with Thompsons of Prudhoe to recover and process the gravel and slag into construction grade aggregate for sale to third parties or for use in Yorkshire Water's own construction activities. As of February 2016, approximately 40,000 tonnes has been sold for reuse. Of this, about 25,000 tonnes has been used without a lorry 'hitting the highway', supporting the construction of the new Apperley Bridge Rail Station adjacent to the Esholt site.

Once the last of the material has been recovered, the large footprint of the redundant filter beds will be prepared for brownfield redevelopment. This is part of Yorkshire Water's larger ambition to make the Esholt site one of the most sustainable in the world and an internationally leading demonstration of the circular economy in practice. The site is already almost entirely self-sufficient for its large energy needs from low carbon renewable energy generated on site, primarily from the digestion of sewage. Yorkshire Water's vision for the site is one that supports sustainable economic growth in the region by maximising the value of currently under-utilised energy, land and water resources on the site.

Box 4.2: NC Risk Evaluation in Brazil

Financial Institutions: A study was commissioned by GIZ⁵⁴ and CEBDS⁵⁵ from Trucost (2015) to provide Brazilian financial institutions with an understanding of the relevance and magnitude of the NC risks they are exposed to through their funding and investments. It uses an environmentally extended input: output model to quantify the external NC costs of 45 business sectors in Brazil. The study derives 'natural capital exposure ratios (NCERs)' which express the NC costs in relation to the financial value of investments. The majority of the sectors examined had exposure ratios greater than 1, indicating that their external costs to NC are greater than the investment in the sector by the financial system. For half the sectors this ratio was around 3 or more, and for beef cattle it was 22, showing that environmental impacts greatly exceed the value of investments.

The sectors analysed were mainly in primary production such as agriculture, mining, forestry, and oil and gas, as well as primary processing including petrochemicals, cement manufacturing, pulp mills, and iron and steel plants. For each sector, the NC costs associated with six key environmental impacts were calculated: GHGs, land-use conversion, water consumption, waste, water pollution, and air pollution, with the impacts differentiated across five regions of Brazil. The exposure of banks and pension funds to these NC costs was calculated by mapping the amounts invested or loaned to those sectors and regions.

The risk exposure of the Brazilian financial system was then quantified by mapping the sector NC costs to an average bank loan book and a representative pension fund listed equity portfolio. It is important to stress that the NC costs are risk indicators, not the exact cost that financial institutions will face.

Box 4.3: Eskom case study

Eskom: The state owned South African electricity generator realised benefits in streamlining its reporting processes as a consequence of implementing IR. The company acknowledges that it is difficult to attribute benefits solely to reporting. However one benefit that it could tie to IR was the move to align internal reporting with external IR. *“By applying the principles to the quarterly shareholder’s report, the report became more streamlined and focussed on material items. Eskom also uses the same teams, same format and same processes to produce the quarterly reports and the interim and integrated reports – therefore consistently improving the process.”* Although not disclosed, the savings in reporting time and effort are believed to have provided a quick return on investment (private communication).

⁵⁴ German International Development Agency- Deutsche Gesellschaft Für Internationale Zusammenarbeit (Giz) GmbH

⁵⁵ Brazilian branch of WBCSD - Conselho Empresarial Brasileiro para o Desenvolvimento Sustentável

Box 4.4: National Australia Bank case study

National Australia Bank: The company found that ESG investors and other stakeholders were not well served by existing compliance and reporting documentation. It decided to produce a single unified annual integrated review which was more concise and holistic in nature. This reduced the reporting burden on internal subject matter experts. *“NAB has reduced its reporting burden to ESG analysts by including the information most commonly requested in its streamlined integrated report.”*⁵⁶

In addition the company has been able to better articulate its broader value creation process, and the company’s corporate responsibility agenda has become more linked to business drivers. NAB’s reporting has developed over the last decade from simple reporting on GHG emissions from energy use, to a ‘performance summary’ on group GHG emissions.

Box 4.5: Novo Nordisk case study

Novo Nordisk: The company has changed some of its strategic priorities and goals as a consequence of adopting IR. For example, the desire to reduce GHG emissions has led to a reassessment of the decision making process for investments in a new plant. This change triggered a switch to lower fossil fuel investment and has been the initiation of the new drive to make all production plants 100% renewable by 2020⁵⁷. Similarly, in considering the social impacts of the company’s products, the business has considered how it could double the number of patients it reaches. *“In this case, Novo Nordisk’s desire to improve the transparency of its social impact through reporting has led to adjustments in certain aspects of strategy.”*⁵⁸

⁵⁶ Black Sun and IIRC, 2015: The IR journey: the inside story, (p.34). At: <http://integratedreporting.org/wp-content/uploads/2015/07/The-Integrated-Reporting-journey-the-inside-story.pdf>

⁵⁷ Novo Nordisk Annual report 2015. At: <http://www.novonordisk.com/annual-report-2015.html>

⁵⁸ Black sun and IIRC, 2015: The IR journey: the inside story, (p.38). At: <http://integratedreporting.org/wp-content/uploads/2015/07/The-Integrated-Reporting-journey-the-inside-story.pdf>

4.8 Gaps Assessment

An assessment of gaps was carried out in order to inform the priority areas for future improvements and developments (see Section 5). The list below is drawn mainly from the interviews, in which participants were asked to identify the most significant gaps in IR practice and the management of NC. Table 4.10 presents a summary of the key gaps. Gaps were selected for analysis on the basis that they were mentioned by at least three interviewees. The issues are elaborated upon in the remainder of this section.

Table 4.10: Summary of Gaps Analysis

Gap	Description	Assessment of Addressability
Need for NC Framework	Too many approaches to NCA present a challenge in choosing the most appropriate method to adopt. Consistency of approach would help and may encourage more widespread adoption.	Development in progress (NC Protocol - NCP).
Need for NC Data Framework	There is no framework for establishing what NC data are needed to support NCA, as well as information on how to acquire, evaluate and quality assure such data, and knowledge on how to use them to produce useful information that can inform stakeholders and decision makers.	Propose the launch of an NC data framework project.
Need for library/ repository of standard factors, NC data	A general desire for more standardised sources of NC information and easier sources/sites for reference (e.g. DECC factors ⁵⁹ for calculating CO ₂ emissions for units of energy consumed by type is a useful standard). Checking whether this approach can be replicated for other NC data (e.g. CO ₂ sequestered by soils for a given site, land use type, or management practice).	Could be done on an opportunistic basis, where a suitable organisation may have appropriate data and authority.
More open source approach to data	Open access to data may save time for search and expense.	Some open access initiatives are underway (e.g. UK government and UK Devolved Administrations).
Improve the linkage between NCA methods and IR	NCA methods have been developed for specific purposes, but the linkage and degree of support to IR is not always clear. For example, how a better understanding of NC's contribution to long term value creation can be reflected in IR is not specifically articulated. Currently, most tools only partly align with understanding value creation, although this is receiving more attention (such as the forthcoming NCP).	It is feasible for NCIs to consider linkages to IR and be revised accordingly. This is a key area for development and the subject of specific recommendations in Section 5.
Need to develop integration of NC with other capitals	IR emphasises the interconnectedness of capitals but the current NC approaches could do more to recognise the linkages to other capitals.	Some initiatives in this area (e.g. WBCSD and the social capital protocol) but more co-ordination is needed to link together initiatives on different types of capitals.

DECC, 2015. 2015 Government GHG Conversion Factors for Company Reporting: [online]. Available at:

<http://www.ukconversionfactorscarbonsmart.co.uk/Documents/Emission%20Factor%20Methodology%20Paper%20-%202015.pdf>

Gap	Description	Assessment of Addressability
Use of new technology	New technology such as satellite monitoring presents a growing opportunity to acquire more spatially relevant and timely data in a cost effective manner. The increasing use of Geographical Information Systems (GIS) to combine different type of Earth Observation data is also an example of where emerging and evolving technologies could enhance IR and NCA.	Earth Observation and satellite technology is an important growth area for the UK economy and is the focus of one of the recently established BIS 'Innovation Catapults' ⁶⁰ . Understanding what kind of data would be helpful for identifying material NC impacts and risks to UK business will help shape this growth.
Clarity on reporting purposes and definitions	The linkage between IR and mainstream reporting could be clearer. Certain NC terminology is not considered business or general stakeholder friendly (e.g. ecosystem services). There is a need to make these terms more familiar or develop simpler translations that are more recognisable and understood by businesses.	Forming linkages between frameworks could help improve terminology, sharpen up definitions and improve compatibility between different nomenclatures and typologies.

Some of these gaps are more easily addressed than others, and some are being addressed by current initiatives. For example, the need for an NC framework that is relevant to business is being addressed by the development of the NCP. The draft NCP does include guidance on data issues, but this could be developed further to be specific to IR needs (as the Protocol aims to cover all relevant business decisions requiring analysis of NC, but not to explicitly support business reporting). It could in future be expanded to include links to other types of capital, in particular social capital.

Many interviewees mentioned the need for more standardisation in NCA approaches. Russ Houlden, CFO of United Utilities (a publicly listed water company) said: *“We continue to follow developments in bodies working on the standardisation of methods. Our current judgement is that the benefits of going into a lot more detail externally on natural capital accounting will not outweigh the risks until clear standards are developed. This will give greater confidence to all key stakeholders in the choice of methods which should avoid a potentially distracting debate and thereby allow a focus on what the information really means for the organisation and give better comparability between organisations.”*

One challenge for a NC data framework is how to select NC data and transform them into information that could be usefully communicated to stakeholders and business decision makers. One consultant saw the challenge as conveying the complexity of NC and the ecosystems services they provide, as taking research knowledge and, *“turning it into something that can be meaningfully reported to stakeholders.”* Several other interviewees felt that more work could be done at the ecology/decision making boundary to translate the science of ecosystems into a narrative that businesses could understand. This is a very broad challenge, but one that is an immediate concern for some sustainability professionals.

Another perceived challenge is the need for a general process for dealing with NC data. One interviewee said: *“There are no rules of engagement about what is good or bad data, who owns that data, who develops that data, where that data should sit, when we should use common or proprietary data, how that relates back to different decisions. All of that is still very much up in the air and we need to start addressing that framework for NC data.”* This interviewee was keen to see a project launched that would develop such a framework. Such

⁶⁰ The UK Department for Business Innovation and Skills Innovation Catapults <https://www.catapult.org.uk/catapult-centres>

a framework for data would need to link in with the emerging NCP and be compatible with IR and support other sustainability reporting frameworks.

Several interviewees mentioned the scarcity of standardised and recognised sources of NC data in many areas. There are good examples of authoritative and standardised data. These include the DECC (2015) '2015 Government GHG Conversion factors for Company Reporting,' and the Forestry Commission (2012) 'Woodland carbon sequestration lookup tables'. The general desire was for more NC data to be provided in a similar fashion. The examples provided here apply to relationships that are reasonably stable and so have been amongst the first to be standardised. As research becomes more robust there may be opportunities to publish more data sources that are standardised for use in IR and NCA activities.

Poor accessibility of data was also frequently cited as a problem, and some advocated a more open source approach to data as a possible solution. For example, one interviewee in the extractives industry explained that in talking to the EA about the impact of their quarrying operations on river basin management plans the Agency would not share modelling river data unless they were prepared to pay a considerable sum for it. This organisation also felt that sharing of more local planning information would be beneficial, saying "*...having that data [local planning] at county or regional level, to be able to look at master planning natural capital elements associated with large scale developments within that area would be very useful, rather than looking at it on a development by development level, which has the potential to stall progress.*"

Some respondents also mentioned the unreasonable time and expense incurred in obtaining some data. One consultant felt that the UK Government should take the lead in this area as a means of encouraging the uptake of NCA, saying: "*Accessibility is most important. A good example is how the Crown Estate freely shared evidence with offshore windfarm developers, including essential information for the offshore windfarm business case.*" The UK Government's open-source data policy⁶¹ is relevant here, although it should be noted that there still needs to be expertise and effort to interpret the data.

Participants to the project webinar supported a range of suggestions to encourage better use of existing data to support accounting for NC in IR including:

- Further efforts in making more data available, including open-access;
- Improving ease of data access (e.g. through data partnerships and easy-to-use data portals, and signposting on how these link to NCA (see recommendation on a NC data framework);
- Supporting further development and use of NC and ecosystem services modelling capabilities; and,
- Guidance to increase robustness of data and use of best quality data.

The first two of these actions need to be led at least in part by the public sector, because it is a holder of much of the data and because there are market failures (e.g. coordination failure and public goods properties of data resulting in free-riding). The latter two may be delivered by the private sector, but can be more effectively developed through a partnership between public, private and third sectors. NCC is an example of such a partnership with its backing from public sector (e.g. Dutch Government) and the data quality standards being developed by MEDIN.

⁶¹ <https://data.gov.uk/about>

Several interviewees thought that there was a need for greater clarity on how NC approaches linked to IR. This covered a range of needs including:

- Some form of guidance on what NC assets a business should consider within the IR framework. There are materiality guides that can be built upon, as the NCP does, however businesses still don't necessarily have information on all their material impacts and dependencies, particularly those in their supply chains; and,
- Whether economic valuation was needed? Some felt that economic valuation of all benefits was important to present the case for NC. Others felt that not all NC dependencies need to be expressed in economic terms, but that other quantitative information may be sufficient to make sound decisions on NC. This is another broad area but is a pertinent challenge for the main NC methods to address.

The interrelatedness of capitals was mentioned and this aspect is a challenge for all methods that seek to account for the six capitals. One Project Manager from a standards development organisation said during the interview for this project that: "*There are obviously huge amounts of interdependencies between the capitals, so trying to look at one of them in isolation is not beneficial for organisations and is not how the framework [IR] was structured.*" There were views that this connectedness has not been handled well in practice, but also recognition that it is a difficult task. For example, a public woodland created as part of a housing development could provide habitat for flora and fauna, recreational benefits for the residents, increase the value of the properties and generate social benefits in terms of increased sense of belonging, etc. Different approaches are generally used to estimate these different types of benefits. Trying to account for all benefits could be complex and costly, and could even lead to double counting (e.g. increase in property prices could be a direct reflection of parts of recreational and social benefits, rather than an additional value). Thus one of the main challenges that remain is the identification of multiple benefits and the appropriate accounting for all the benefits and costs.

There are on-going initiatives to close some of these gaps such as the Social Capital Protocol under a project led by the World Business Council for Sustainable Development (WBCSD, 2015b). This and any future similar developments should be coordinated to ensure consistency.

Some of the project webinar participants mentioned the potential of new technology, such as satellite monitoring and readily accessible GIS information. This was not explored at length in the interviews, as it was not the main expertise of the interviewees, but it does serve as a reminder that there are opportunities for utilising new technology. JNCC has existing specialist expertise in these areas, and is therefore well placed to explore their interactions with NCA, such as through:

- Earth observation data to provide more timely, regular and spatially explicit information;
- More timely information delivery, improved accessibility to data and reduced costs of acquisition using information technologies; and,
- Using GIS for spatially explicit analysis, such as of the condition of particular NC assets, and increased spatial resolution and accuracy of NC data.

Finally, some interviewees expressed concerns about the purpose and definitions of the reporting standards and frameworks, including:

- The need for more consistent definitions between frameworks;
- Greater clarity on the purpose of each reporting framework and how they fit together. For example, IR reports can include financial statements, but how best to combine IR and financial reports has not been described properly yet; and,

- The use of language in communicating NC to business users and stakeholders in general can still appear too technical.

The feeling amongst the interviewees was that the sort of language used in this area is somewhat specialist and technical and as such could be a barrier to general user understanding and acceptance. This highlights another potential area for future work, perhaps to improve the suitability of IR and NC terminology for communications. For example, Valuing Nature Network is due to publish a simple introduction to economic valuation, with the explicit purpose of 'demystifying' the concept, defining the key concepts and making them relevant to decision making, without introducing technical complexity⁶². The paper is being prepared by a large group of economists and others who work on economic valuation and decision makers who use economic value evidence but are not experts in its generation. Such a collaborative approach can be used to create similar 'go to' papers and JNCC is well placed to lead on similar issues that are considered within its remit.

⁶² <http://valuing-nature.net/economics>

5 Recommendations

The following section summarises the key findings and considers the implications for the ongoing development of NCA and IR.

5.1 Integrated Reporting and Implications for NCA Methods

Although the organisations that are currently adopting IR and NCA are a minority of businesses, these early adopters are discovering new trends and developments in the practice of the sustainable management of resources. These trends have implications for business practice should/when IR/NCA approaches become more mainstream. These trends and their implications include:

- **Integrated Thinking.** Perhaps the most significant lesson to emerge from the interviews was that the real transformative change in business practice arose from a shift to more integrated thinking (as opposed to reporting per se). Integrated thinking means recognising that many factors of production and business relationships are interdependent and that this interdependence should be reflected in business decision making. An example of this is the consideration of a business' dependencies on NC *and* human capital when investing in new production processes. ***In an increasingly resource constrained and interconnected world, integrated thinking is seen as an appropriate management response to this complexity and a route to long term resilience.*** However, this change in thinking takes time for an organisation to assimilate as it requires fundamental shifts in approach to developing business strategy, assessing risks and opportunities, business planning and communicating with stakeholders. Reporting is just one element of this change process, but communicating to stakeholders via IR helps businesses align their management processes with integrated thinking;
- **Understanding Dependencies.** IR places an increasing emphasis on businesses dependencies on NC and other capitals. This implies a shift towards understanding NC in terms of inputs to a business, alongside the current practice of reporting on impacts upon the environment (such as GHG emissions). From the interviews ***it is clear that businesses need more information and tools to assist in understanding their dependencies on NC, especially in the supply chain;***
- **Materiality.** All reporting frameworks utilise the concept of materiality. The concept is used to prioritise those aspects that are considered important to the business and stakeholders, even though the term 'material' is defined differently by each framework to reflect the needs of their respective primary stakeholders. Within the IIRC and NCP frameworks material factors are those that determine future value creation for the business, and this seems to be a useful way of thinking about what's important;
- **Interconnectedness of Capitals.** Several reporting frameworks (such as GRI) recognise the importance of the various capitals. However none has adequately managed to deal with their interconnectedness so far⁶³. The interaction between social capital and NC is a key area of interest and is on the agendas of several

⁶³ The IR framework requires this to be considered but there are no tools for assessing all combinations of these interactions.

networking organisations (e.g. WBCSD), even though there is currently no collaborative initiative underway to address this linkage.

Given the complexity of integrated thinking, the newness of the approaches, and the range of initiatives available, it is unsurprising that most businesses find it difficult to select the most appropriate NC approach for them. Consultancies play an important role in facilitating businesses through this decision and in developing their learning. Some businesses are experimenting and freely sharing their learning, whilst others are reluctant to do so until there is wider experience and understanding of the information generated. The main learning points are:

- While there are a large number of NC tools and approaches, most focus only on NC;
- Few methods consider any links between NC and other capitals, and none do so across the six capitals in the manner required by the IIRC framework;
- Most of the methods provide information that can inform materiality, but this still requires a varying degree of expert judgement. Several forms of analysis (e.g. eP&L and LCA) can explicitly set boundaries along the value chain; which can help with identifying material issues; and,
- The NCP explicitly focuses on material issues and recognises links between NC and human and manufactured capital. The NCP covers the whole value chain, and is currently the best developed approach in terms of links to IR.

A maturity curve for NCA activity is defined in this report that involves a business developing their IR and NCA practice through *understanding* integrated thinking; *assessing* their impacts and dependencies; *implementing* IR / NCA approaches; *embedding* these in decision making; focusing on what's *material* for the business; and analysing material relationships *in more depth*. The vast majority of UK businesses, including the majority of large businesses, are at the start of this maturity curve. There is a sizeable gap between this majority and the most advanced businesses, such as those utilising the NCP for more detailed NC analysis. Businesses will need to progress through this curve at a speed that suits them: too complex an approach could easily deter the majority of businesses, which are not yet convinced by the business case for NCA.

Although there are many gaps it is important to recognise that developments are more likely to evolve through existing initiatives as there are already many initiatives aiming to engage with business on NCA, therefore appetite for further groups is likely to be limited unless clear added value can be demonstrated.

5.2 Linking Natural Capital Data to Integrated Reporting

As experience with NCA increases, its links to IR and overall business decision making will likely improve through better handling of NC data by:

- Building on the structures and recommendations in existing NCA frameworks (in particular the NCP) to define NC data requirements in terms of:
 - What NC data are needed to support NCA objectives;
 - How to source such data (beyond a company's own internal and supply chain data);
 - How to assess and assure data quality; and,

- Guidance on data provision, ownership and access.
- Encouraging co-ordination between the different initiatives that are working on ways to account for different types of capital – such as the Social Capital Protocol work of the WBCSD⁶⁴.

While there is a vast amount of NC data in the UK, this can be hard to get hold of by businesses (due to lack of knowledge on access), or are published in ways (e.g. for scale or boundaries) that do not readily inform business' NCA. There are opportunities to address this issue, including:

- Reorganising existing NC data to be more in line with corporate reporting and NCA. For example, data may currently be structured around habitats, whereas businesses may require data that are structured around and relate to NC benefits to business;
- Building on the current trend to make Government data open-access⁶⁵, making it easier for potential users to discover data relevant to IR / NCA;
- Making it easier to integrate environmental data with other forms of data (e.g. social, economic and technical), while being aware of the additional expertise and effort that would be needed to analyse such data;
- Utilising new opportunities offered by technological developments, such as through remote monitoring, earth observations and GIS, and.
- Promoting the potential benefits of a structured approach to collecting, cataloguing, and processing data to make them more accessible for use in NC analyses.

⁶⁴ See: <http://www.wbcasd.org/SocialCapital.aspx>

⁶⁵ The UK Government aims to release 8000 datasets to make data from public bodies open access under the open government licence discoverable through data.gov.uk by June 2016; JNCC has already released 1000 marine datasets under this project.

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Annex A: Literature search questions and guidance notes

Objective		Question	Guidance Notes
1. Development of IR	C	List organisations involved in development of IR	List who has been involved in the development of IR - full organisation names where the acronym is not clear, plus the programme (e.g. IIRC).
	D	What methods were used to develop frameworks & standards?	Document methods used for the development of IR standards and frameworks only. For tools used in reporting see objective 5. Search for 'standards' 'guidance' 'methods' also 'assurance' and 'verification' // identify all methods used by all parties if there are several companies included in a given report
2. Users of IR	E	What were the motivations for doing an IR?	This is about WHY the IR was commissioned & published. Note overlaps with 'positive impact' and 'benefits' columns, but here we are interested in envisaged benefits in advance. What was their reason for the IR? Search for 'aims' 'goals' 'motivation' 'purpose'. Also there is broad typology of purposes in NCP - could search for these. Note if the discussion is on the retrospective (after doing the IR) benefits then that text goes in column P.
	F	Key organisations & sectors that undertake IR	List who undertook IR reporting - full organisation names where the acronym is not clear. Include sector.
	G	To what extent is NC considered and how?	We are interested in; (a) which NC assets are covered in business reporting - LIST (b) if the report identifies / covers any of the assets as impacts, dependencies, or risks or combination of these, and (c) what kind of information (if any) is provided on (i) on flows of ecosystem services (e.g. m ³ of water used) or (ii) on NC asset impacts (e.g. area of habitat owned or impacted), or both.
3. Application of IR to NC	H	Mapping of network connections	Which organisations are involved in preparing and disseminating this report. Be specific and explain the acronyms when not popular. For example: who did the IR? Why were they hired? Who did they consult inside the company(ies) whose report this is? Who was consulted outside the companies? If there were more than one company doing joint-reporting (e.g. as a consortium or through their trade association) - was this the case, how and why this format was selected? In short, any information to list and to show the links between those who COMMISSION the report, those who CONTRIBUTE to the report and those who UNDERTOOK the report.
	I	Development of IR to account for NC?	Where NC has been related to business activity (as in column G), has its role in value creation been identified (e.g. role in production process, level of dependency on an ecosystem service flow, role in brand). See list of dependencies in NCP and search for these.
	J	What are future plans?	The scope of issues included: the stakeholder groups considered; the time frame over which issues are taken into account...What further issues / actions are on the horizon related to the NC assets or ecosystem services or communicating with stakeholders bodies? Any timeline/objectives to develop IR/NC work (further)? Think of this like eftec asking clients what future policy/dissemination plans they have on the basis of our reports (in our evaluation forms) Search for '20' to identify dates for plans and 'years' for vaguer objectives.

Objective		Question	Guidance Notes
4. NC Data	K	What types of NC data are used?	Relate data used/quoted to the NC types considered in column G. Report both what data are covered and what is mentioned but not covered. Searching for 'services' 'values' and 'benefits' should identify if explicitly mentioned.
	L	How is it sourced?	For data specified in column K, state sources. State if no source is stated. Also list external sources, note if public data or not.
	M	What are the data gaps?	Restrict search to clear statements of gaps - i.e. insufficient or lack of accurate data quoted. Sub-questions that can help the reviewer: (a) for real data gaps...are there any explicit statements that say we wanted to include X in our report but didn't have data on it (b) for perceived data gaps...are there any statements in the report that says we didn't think we would have the data /// or does the reviewer conclude that there are gaps and then refer to page of report that leads to that conclusion.... also actual vs perceived data gaps could be judged (a) on the basis of what's in the IR and (b) assessment of what's in the IR. So a company might say we don't know the impact on X and hence present it as an actual gap but the reviewer may know that there is say academic research on X so it becomes a perceived data gap
5. Approaches to NC	N	Most widely used IR approaches to NC?	List tools and methods used - e.g. GRI, eP&L, CDP etc. By approaches to NC we also mean ecosystem services, NC assets, consideration of risk, spatial analysis or mapping/GIS - so search on each of these terms.
6. Selection of approaches	P	Why have particular approaches been chosen?	For tools/approaches specified in Column N, where possible, identify reasons for selection, e.g. sector preferences, ease of use, transparency of method, co-development
7. Benefits	Q	Examples of IR that have positive impact to businesses.	Capture any benefits that businesses see from reporting. Cut & paste quotes.
	R	What are the benefits of IR?	Have the owners of the report learnt anything from the experience of conducting the IR? For example, do they make a statement to the effect 'while we were conducting IR we found that we could do X better, we did X better and it saved us money. What are the reported benefits? Search for 'savings' '£' 'valuation' 'cost' 'returns'. Absence of these terms implies that benefits have not been explicitly stated. Check this during other parts of review.

Annex B: Literature Review Sources

Research Reports

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Company Annual Performance Reports

Business	Year	Report
The Crown Estate	2015	Annual Report and Accounts
The Crown Estate	2014	Our Contribution A report on The Crown Estate's Total Contribution to the UK
Novo Nordisk	2015	Annual Report and Accounts
Eskom	2015	Integrated Report
Kingfisher	2014/15	Annual Report and Accounts
M&S	2015	Annual Report and Financial Statements
Unilever	2014	Annual Report and Accounts
Yorkshire Water	2015	Annual Report and Financial Statements

Annex C: Interview Template

Interview Questionnaire

Name of interviewer:		Date of interview:	
Name of interviewee:		Organisation & sector:	

1) Introduction/background

Hello, my name is [X, from ettec]. Thank you for agreeing to take part in this project. The Joint Nature Conservation Committee (JNCC) have commissioned ettec to research the potential of integrated reporting for improving the management of natural capital. [See advance brief attached].

- If need be, explain IR – integrated thinking, value creation in short/medium/long term.
- State definition of NC we work to and relation to Ecosystem services (in proposal).
- Ditto, natural capital & accounting – assume NCA in the broadest sense, in terms of assessing and measuring the state and value of the natural assets upon which the business and society depends. Accounting as any system of measurement and monitoring.
- Mention model of 6 capitals (but others acceptable).

The interview will take 30-45 mins. We would like to use examples and quotes in the final report wherever possible, however if you prefer, your information will be treated in strict confidence and will not be attributed to either you personally, or to your organisation. In this case, findings will be reported in a generalised way only and may be attributed to an economic sector or business type. With your permission may we quote your responses or do you want them to be treated in strict confidence?

With your permission I'd like to record this interview so that I can ensure I pick up all your points accurately. Once we have written up the interview we will delete the recording. We will inform JNCC of whom we have interviewed, but otherwise the identity of interviewees will remain anonymous.

Any questions before we begin?

- OK recording now.

2) Personal Experience

Please can you summarise your own experience of integrated reporting, with particular emphasis on the approach to assessing the natural capital element of the six capital types?

[The aim of this question is to form a general overview of the interviewee's, experience and perspective on IR and natural capital accounting. This ensures that we don't miss anything by rigidly following the questionnaire and may also provide useful hooks for later questions].

3) Development of IR – This question is about the **development of the concepts and methods of IR**, (rather than implementation which is the subject of the next question).

[This is related to Project Objective 1]

Question	Detail/follow on.	Other Info.
3.1 Are you familiar with any organisations (including your own), that have been involved in the development of IR standards or frameworks?	If Yes, name the key organisations, sectors and details of the developments involved. When did these developments take place? If 'no', go to question 4.	Prompt: [IR Framework, GRI guides, A4S Guides.]
Response:		Objective Key.
	3.2 What do you think were the motivations for involvement in this development work? Who asked/pushed for the development?	Prompt: [Enhance comparability across businesses, improved investor confidence, greater stakeholder engagement, identify strategic risks, cost savings.]
Response:		Objective Key.
Question	Detail/follow on.	Other Info.
	3.3 How was the development of these concepts pursued? What materials were selected and why – how collaborative partners were selected and	Prompt: [Collaborative working, tweaking existing approaches, use standard framework, start from blank sheet....more

	why? What methods were used in the development process?	
Response:		Objective Key.

4) Organisations Undertaking IR – This question is about your experience of organisations that have implemented, (or plan to implement) IR with a strong focus on the natural capital component of the six capitals. Other capitals are clearly important, but for the purposes of this project we are focusing solely on examples with clear natural capital implications.

[This question is related to Project Objectives 2, 3, 5, 6 &7. Where multiple examples are given the questions may need to be asked in turn for each example. Alternatively a generalised answer to each question may be appropriate.]

Question	Detail/follow on.	Other Info.
4.1 Please tell me about the main organisations (including your own), that have implemented (or plan to implement) IR.	[capture organisations and sectors] • Ask what sector [if not clear]	
Response:		Objective Key.
4.2 In your opinion what was the motivation of each for undertaking this kind of reporting?	Who have been the key champions of IR in these organisations?	Prompt: [Improved stakeholder engagement, improved investor confidence, identifying risks to; business model, resources, liabilities, reputations...]
Response:		Objective Key.
4.3 What approach did they take and why?		Prompt: [i.e. IR framework, GRI, NCA, eP&L, triple bottom line]
Response:		Objective Key.
4.4 What were the important factors used in choosing this approach?		Prompt: [cost, ease of implementation, transparency of method, stakeholder demands, etc.]
Response:		Objective Key.
4.5 Which organisations, sources or resources were used to help in this process? What role did they perform (e.g. expert guidance, development, performing, auditing, etc.)?		Prompt: [Consultancies, IIRC framework, Professional bodies,...]
Response:		Objective Key.
4.6 Have any of these examples demonstrated a clear benefit to the business (or to others)?	What were the benefits? Who benefits? How does the organisation expect to monitor and measure/track these benefits (if at all)?	Prompt: [e.g. cost reduction, customer satisfaction, reducing risks and dependencies, etc.]
Response:		Objective Key.

5. Natural Capital Accounting Methods and Data – This question is about the Natural Capital Methods and data used to support IR. [This question is related to Project Objectives 4 & 5].

Question	Detail/follow on.	Other Info.
5.1 What natural capital accounting methods are used in support of integrated reporting?	[capture methods] How effective are they?	Prompt: [e.g. eP&L, carbon disclosure and reporting, Triple Bottom Line, ...]
Response:		Objective Key.
5.2 What natural capital data are used to assess natural capital in the IR process?	5.2.1 How is the data sourced? 5.2.2 Where could data collection be improved? Explain: Collection in the sense of acquisition and includes internal processes, commissioning and access to external data. This question is interested in accessibility and availability.	Prompt:[National data sets, bespoke, Public data] [Methods, data, skills] [Automated capture, use of new technology, availability]
Response:		Objective Key.
5.3 What gaps are there in the data acquisition process (i.e. data, methods or skills)?		
Response:		Objective Key.
	5.4 [if not answered above] How are ecosystems assessed in IR?	Clarify ecosystem services if needed
Response:		Objective Key.
	5.5 [if not answered above] How is biodiversity assessed in IR? What Methods, what data?	Clarify if needed
Response:		Objective Key.

6. Gaps and Potential Improvements – This question is about the gaps in the reporting of natural capital within IR. Gap is taken to mean any short fall in information that prevents a fully informed decision of assessment to be made around the sustainable use of natural capital. [This question is related to Project Objective 8].

Question	Detail/follow on.	Other Info.
6.1 In your opinion, what are the most significant gaps in the process for accounting for natural capital within the framework of integrated reporting?	[capture gaps]	Prompt: [Failings in NC methods, lack of data, IR is missing something...]
Response:		Objective Key.
	6.2 How could these be addressed? (internal or external)	
Response:		Objective Key.
6.3 How could better integrated reporting improve the management of natural capital?	How would this help? In what way?	
Response:		Objective Key.

Wrap Up – There will be a webinar on 10th Feb to review the initial findings, gaps and possible recommendation for future improvements. Would you like to attend?

GLOSSARY

Accounts – Taken here to mean a company annual report and financial accounts, which is a comprehensive report into the activities and the financial performance of the business over a specified period.

Business Model – An organisation’s system of transforming inputs through its business activities into outputs and outcomes that aims to fulfil the organisation’s strategic purposes.

Capitals – Stocks of valuable assets upon which all organisations depend for their success as inputs to their business model – referred to by economists as the capacity for production of goods and services. The capitals are categorised in the Integrated Reporting Framework as financial, manufactured, intellectual, human, social/relationship, and natural.

Ecosystem – A dynamic complex of plant, animal, and microorganism communities and their non-living environment interacting as a functional unit.

Ecosystem Services – The benefits people obtain from ecosystems, generally categorised as provisioning (e.g. food), regulatory (e.g. water, nutrient and carbon cycles) and cultural (e.g. recreation, spiritual) services.

Integrated Reporting – A process founded on integrated thinking that results in a periodic integrated report by an organisation about its ability to create value over time.

Integrated Thinking – Is the active consideration by an organisation of the relationships between its various operating and functional units and the capitals that the organisation uses or affects. Integrated thinking leads to integrated decision making and actions that consider the creation of value over the short, medium and long term.

Key Performance Indicators – Metrics used to measure an organisation’s progress against its strategic objectives.

Materiality – A matter is material to an organisation’s decision making, i.e. should be taken into account, if it could substantively affect its ability to create value in the short, medium or long term.

Metrics – Any unit of measurement for a given variable that is of interest to the organisation (e.g. measures of performance, measures of consumption).

Natural capital – A stock of natural resources, both renewable and non-renewable, including freshwater, land, soils, species, ecological communities, atmosphere, minerals, and seas.

Natural capital accounting – Refers to the methods of identifying, measuring and accounting for the changes in the stocks, quality and benefits of natural capital. This was developed to influence decisions about the use and conservation of natural capital.

Sustainable use of capital – Ways to use a capital asset so that it benefits current users without jeopardising its potential to meet the needs of future users. In other words, the benefits from the capital do not decline over time (is “non-declining”).

Value Creation – The performance of actions that increase the worth of goods, services or businesses as a whole. Businesses focus on increasing their value (in terms of profitability and share values). Many businesses now focus on value creation for customers. Sustainable

businesses aim to increase value while maintaining the capital assets that contribute to that value. Unsustainable businesses decrease capital assets without creating comparable value.

LIST OF ACRONYMS

Term	Definition
A4S	Accounting for Sustainability
ARIES	Artificial Intelligence for Ecosystem Services (Tool)
BAP	Biodiversity Action Plan
BEP	Business Engagement Partner (of Natural Capital Coalition)
BMP	Biodiversity Management Plan
CDSB	Climate Disclosure Standards Board
CEO	Chief Executive Officer
CEV	Corporate Ecosystem Valuation (Tool)
CFO	Chief Financial Officer
CNCA	Corporate Natural Capital Accounting
CO ₂ eq	Carbon dioxide equivalent
CRD	Corporate Reporting Dialogue
CSR	Corporate Social Responsibility
EA	Environment Agency
EIA	Environmental Impact Assessment
eP&L	Environmental Profit & Loss
ESG	Environmental Social & Governance
EU ETS	European Union Emissions Trading System
FASB	Financial Accounting Standards Board
FSC	Forest Stewardship Council
GHG	Greenhouse Gas
GIS	Geographic Information System
GRI	Global Reporting Initiative
ICAEW	Institute of Chartered Accountants in England and Wales
IFRS	International Financial Reporting Standards
IPCC	Intergovernmental Panel on Climate Change
IIRC	International Integrated Reporting Council
InVEST	Integrated Valuation of Environmental Services & Trade-offs (Tool)
IR	Integrated Reporting
ISO	International Organisation for Standardisation
JNCC	Joint Nature Conservation Committee
KPI	Key Performance Indicator
LCA	Life Cycle Analysis
LUCI	Land Utilisation & Capability Indicator (Tool)
MEA	Millennium Ecosystem Assessment
MEDIN	Marine Environmental Data and Information Network
MIMES	Multi-scale Integrated Model of Ecosystem Services (Tool)
MSC	Marine Stewardship Council
NAB	National Australia Bank
NC	Natural Capital
NCA	Natural Capital Accounting
NCC	Natural Capital Coalition
NCI	Natural Capital Initiative
NCP	Natural Capital Protocol
NE	Natural England
NGO	Non-Governmental Organisation
RSPO	Roundtable on Sustainable Palm Oil
SASB	Sustainability Accounting Standards Board
SENCE	Spatial Evidence for Natural Capital Evaluation (Tool)

SEC	Securities and Exchange Commission
TEEB	The Economics of Ecosystems and Biodiversity
TIM	The Integrated Model (Tool)
UKNEA	UK National Ecosystem Assessment
UN	United Nations
WBCSD	World Business Council for Sustainable Development