Climate Disclosure Standards Board

Proposals for reporting on Carbon Asset Stranding Risks

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www.cdsb.net/casr

Purpose

This discussion paper complements CDSB's consultation on edition 2.0 of its Reporting Framework by exploring the types of corporate reporting requirements that relate to fossil fuel energy resources and that could be developed to support disclosure of CASRs. The purpose of this discussion paper is to invite comment on seven specific proposals relating to reporting on carbon asset stranding risks and on the issues raised by the paper more generally. Responses received will inform the development of edition 2.0 of CDSB's Reporting Framework and our work on this topic. For information on how to respond please visit www.cdsb.net/consultation.

I) Executive summary

The Climate Disclosure Standards Board (CDSB) and Carbon Tracker work individually and in partnership to support market and regulatory policies and practices that limit risks associated with climate change and their economic consequences.

Carbon Tracker's work[1] demonstrates the scale of potential risk to the financial markets from stranded assets. However, CDSB, Carbon Tracker and others have uncovered evidence of the shortcomings of existing corporate reporting about those risks. CDSB's work and in particular the CDSB Reporting Framework is designed to help companies report on those risks in their mainstream corporate reports. This discussion paper explores ways in which mainstream[2] corporate reporting practices could be adapted or supplemented to supply decision-makers, particularly investors, with information that allows them to identify, assess and respond to Carbon Asset Stranding Risks (CASRs), that is, risks associated with fossil fuel energy resources[3] becoming unburnable due to policy commitments or other activity designed to address climate change.

The Intergovernmental Panel on Climate Change (IPCC) Working Group I contribution to its Assessment Report 5 in late 2013[4] concluded that warming of the climate system is *"unequivocal"*. It highlights that to have a 66% chance of limiting temperature rises to the internationally agreed 2°C target, cumulative CO_2 emissions from all anthropogenic sources will have to be limited to 3,670 $GtCO_2$; i.e. a global CO_2 cap or budget. This suggests that approximately two thirds of total global fossil fuel reserves are unburnable and cannot therefore been turned to profit. Some commentators have likened the risks associated with carbon-intensive activities to the sub-prime and so-called toxic assets that prompted the financial crisis of the last decade, while World Bank Group President Jim Yong Kim has identified carbon intensive activities as representing systemic risks[5].

This discussion paper recognizes that the potential stranding of fossil fuel reserves does not itself present systemic risk. However, the risk of a beyond 2°C scenario to which the combustion of fossil fuels would contribute is a systemic risk affecting whole economic and planetary systems. The European Central Bank[6] has identified one of the characteristics of systemic risk as being that it is *"inherently unobserved"*. CDSB and Carbon Tracker maintain that CASRs, as contributors to systemic risk, are indeed unobserved, at least in part because of the lack of

1. Carbon Tracker Initiative, 2014. [Online] Available at: [http://www.carbontracker.org]
2. Mainstream corporate reports are the annual reporting packages in which certain organizations are required to deliver their audited financial results under the corporate, compliance or securities laws of the territory or territories in which they operate. Mainstream corporate reporting consists of multiple elements including financial statements, management commentary and governance disclosures. Generally, the objective of mainstream reporting is to inform existing and potential investors about the performance and prospects of the reporting company. Mainstream reporting requirements therefore include provisions on disclosure about how resources are managed and governed so as to promote the success of the company, how results compare with plans and strategies and the types of risks and opportunities that threaten or support the company's success.
3. We define fossil fuel energy resources as deposits of oil, coal and peat resources that could be developed, produced, sold and burnt in the future.
4. IPCC, 2013: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp., available at [https://www.ipcc.ch/report/ar5/wg1]
5. The World Bank, 2014. World Bank Group President Jim Yong Kim Remarks at Davos Press Conference [Online] Available at: [http://www.worldbank.org/en/news/speech/2014/01/23/world-bank-group-president-jim-yong-kim-remarks-at-davos-press-conference]
6. European Central Bank, Bernd Schwaab, Siem Jan Koopman, Andre Lucas, 2011. Working Paper Series No 1327/April 2011: Systemic Risk Diagnostics; Coincident Indicators and Early Warning [Online] Available at: [http://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1327.pdf]

information about them in mainstream corporate reports. The absence of information prevails despite burgeoning voluntary reporting practices. However legislation exists that is capable of being interpreted to require disclosure of CASRs and the availability of private sector led reporting frameworks that could elicit disclosures that reveal CASRs.

Even in the absence of information, there are clear signals that investors and others are starting to recognize CASRs through divestment practice. However in order for the most effective responses and actions to be taken, reporting frameworks urgently need to be updated and supplemented to require CASR disclosures in mainstream corporate reports. This discussion paper offers proposals for reporting practices that would start to reveal CASRs. Carbon Tracker's work provides the business case for such reporting and CDSB's Framework together with CDP's Oil and Gas module offer ready-made means of formalizing those proposals.

This discussion paper has been prepared by the CDSB Secretariat to explore the types of amendment and supplement that could be made to mainstream corporate reporting practices in order to reveal CASRs. The discussion paper represents the work and views of the CDSB Secretariat not necessarily those of its Board members or Technical Working Group. Where appropriate, complementary work being conducted by CDSB Board members is referenced below.

Summary of proposals

1. Identify the most effective intervention points for bringing about reporting changes necessary to reveal CASRs
2. Agree on language for classifying and communicating fossil fuel energy resources in mainstream corporate reports
3. Define the scope of fossil fuel energy resources to be reported so as to provide a complete picture of risk beyond the balance sheet
4. Content and structure of reporting
5. Impairment testing
6. Disclosure in the notes and sensitivity analysis
7. Support and adopt relevant complementary activity

II) Introduction

The Carbon Budget

1) In 2010 at the 16th session of the Conference of Parties (COP16) to the UN Framework Convention on Climate Change (UNFCCC), States agreed to commit to a maximum temperature rise of 2º C above pre-industrial levels[7] (referred to here as the *"2ºC commitment"*). The Intergovernmental Panel on Climate Change (IPCC) has identified the amount of CO_2 that can be emitted if we are to have a likely chance of meeting this commitment and averting the most dangerous of climate change impacts. The World Resources Institute has published an info-graphic[8] illustrating the IPCC's carbon budget, the implications of exceeding it and actions that could be taken to stay within the budget.

7. UNFCC, 2010. Report of the Conference of the Parties on its 16th session, held in Cancun from 29th November to 10th December 2010. Decisions adopted by the Conference of the Parties (1/CP.16), available at [http://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf#page=2]
8. WRI, 2014. Infographic: The Global Carbon Budget [Online] Available at [http://www.wri.org/resources/data-visualizations/infographic-global-carbon-budget]

2) There are different interpretations of how the carbon budget should be calculated and what it means for fossil fuel reserves. Interpretations vary depending on which sources, (such as agriculture, forestry, land use, land use change etc.) of carbon dioxide are taken into account. The International Energy Agency has asserted that if we are to have even a 50% chance of meeting the 2°C commitment, two thirds of current fossil fuel reserves must stay in the ground[9]. Others, including the World Bank, HSBC and the Intergovernmental Panel on Climate Change have published similar findings. Carbon Tracker asserts that up to 80% of fossil fuel reserves will become unburnable and will therefore constitute *"stranded assets"* should policy pronouncements on limiting global mean surface temperature be enforced[10]. Researchers at the Smith School of Enterprise and the Environment[11] cite six reasons for the potential stranding of assets, all of which could apply to fossil fuel energy resources, including environmental challenges, the changing resource landscape, new government regulations, falling clean technology costs, evolving social norms, litigation and changing statutory interpretations. This discussion paper describes the risks associated with fossil fuel energy resources[12] becoming unburnable or stranded as Carbon Asset Stranding Risks (CASRs). Estimates of the economic implications of CASR range from $6 to $20 trillion[13] of wasted investment / write off. Nations would also need to phase out the $550bn that they currently spend on fossil fuel subsidies.

Corporate Reporting and the Carbon Budget

3) Extensive commentary is already available on CASRs and the associated implications for investors and others. There is also a significant body of literature on the more general subject of what Gunther Teubner calls the *"self-destructive growth-excesses"* that characterize dependence on and investment in fossil fuels as well as literature on the behavioral finance consequences of biased decision-making. However, there is a paradox between the amount of commentary and analysis devoted to CASRs and the conclusions reached in a report by Carbon Tracker and the ACCA[14] that *"for the fossil fuels sector at least, the existing [reporting standards] framework as currently applied would fail to recognize the warning signs…[and] information made available to investors fails to provide the complete story concerning the viability of fossil fuel reserves in a reduced demand scenario."*

4) This paper examines why, when it is estimated that between 60% and 80% of fossil fuels must stay in the ground in order to meet the 2°C commitment and carbon intensive activities are described as contributors to systemic risk, CASRs are almost invisible in mainstream corporate reports. The discussion paper also offers proposals for adapting and supplementing mainstream corporate reporting practices so as to elicit information about CASRs in corporate reports. However, before proceeding, we consider what is meant by the "existing reporting standards" framework to which the ACCA and Carbon Tracker›s report refers and what is meant by "mainstream corporate reports" and, by extension, corporate reporting. Again, there is a significant body of literature on the current state of corporate reporting. Many observe that it has become overly complex and cluttered but that the relevance of reported information has declined. The increasing demands by stakeholders for new types of information from corporations and the multiple objectives that corporate reports seek to achieve (including compliance, responding to stakeholder demand, participation in indices) have caused an

9. IEA, 2012. World Energy Outlook, Executive summary, available at [http://www.worldenergyoutlook.org/publications/weo-2012]
10. John Fullerton, Capital Institute, 2011. The Big Choice [Online] Available at: [http://capitalinstitute.org/blog/big-choice-0#.UzG6wdynPTS]
11. Caldecott, B. and McDaniels, J. 2014. Stranded Generation Assets: Implications for European Capacity Mechanisms, Energy Markets and Climate Policy Working Paper, [PDF] Available at [http://www.smithschool.ox.ac.uk/research/stranded-assets/index.html?content=publications]
12. We define fossil fuel energy resources as deposits of oil, coal and peat resources that could be developed, produced, sold and burnt in the future.
13. Bloomberg, 2013. "investors in carbon-intensive businesses could see $6 trillion wasted as policies limiting global warming stop them from exploiting their coal, oil and gas reserves" [Online] Available at: [http://www.bloomberg.com/news/2013-04-18/carbon-intensive-investors-risk-6-trillion-bubble-study-says.html]
14. ACCA and Carbon Tracker, 2013. Carbon Avoidance? Accounting for the Emissions Hidden in Reserves [Online] Available at: [http://www.accaglobal.com/hk/en/technical-activities/technical-resources-search/2013/october/carbon-avoidance.html]

explosion in the amount of information produced by organizations in their corporate reports. There are ongoing debates about the type of information that should be reported, where and for whom, how information should be prepared and so on.

5) Although the current reporting landscape presents rather a confused picture, this paper identifies certain components that typically appear in *"mainstream"* corporate reports, which, we argue, is the channel through which CASRs should be reported. Mainstream corporate reports are the annual reporting packages in which certain organizations are required to deliver their audited financial results under the corporate, compliance or securities laws of the territory or territories in which they operate. The package is primarily intended to provide information to existing and prospective investors about the financial performance and position of the company. Corporate reporting standards refer to the provisions, both mandatory and voluntary, that dictate or influence the way in which the package of information is prepared.

6) Typically a mainstream corporate report comprises financial statements prepared according to prescribed Generally Accepted Accounting Practices (GAAPs) and management commentary, which provides context for and supplements and complements the financial statements. Corporate governance information represents the third main component of mainstream corporate reports. Other categories of information appear within the three main components of mainstream corporate reporting, for example, a report about risks and opportunities faced by the organization is often contained within management commentary. Sometimes, information other than financial statements is known as narrative reporting. Generally, financial statements contain prescribed content and must be prepared according to prescribed standards. By contrast, although some jurisdictions prescribe the content of other reporting (e.g.: Board composition and remuneration policies), multiple approaches may be taken to the preparation of other/narrative information. Those multiple approaches may be influenced by internal corporate policies, stock exchange requirements, voluntary reporting standards and industry guidelines. For the purposes of this discussion paper, we distinguish the proposals made below between those that relate to the standard content of financial statements prepared according to prescribed standards, particularly International Financial Reporting Standards, and those that relate to other/narrative reporting where the content and preparation approach is currently more fluid.

7) This discussion paper maintains that information designed to enable readers to identify and assess CASRs must, by definition, be included in the mainstream report. In order to prevent a multiplicity of approaches to reporting on CASRs from developing, this discussion paper further argues that the structure offered by CDP's Oil and Gas Module and the CDSB Framework (updated based on reactions to this discussion paper), should be used to inform mainstream reporting. Although focused on continuous mainstream reporting practices, this discussion paper contends that similar principles should be applied to reporting requirements for new registrants to stock exchanges, so that they are required to disclose information about potential CASRs in their initial disclosures.

International Financial Reporting Standards and national Generally Accepted Accounting Principles are in many cases prescribed as required approaches to the preparation and presentation of financial statements and associated financial reporting. However, an IASB Discussion Paper entitled *"Extractive Activities"*[15] *(referred to here as the "IASB's Discussion Paper")* concedes that *"some extractive activities and the assets or expenditures associated with those activities are not comprehensively addressed by International Financial Reporting Standards…[thus contributing] to continuing divergence in the international financial reporting of extractive activities". The IASB concedes this, notwithstanding their comment "that the most important information about an entity conducting extractive activities is information about the mineral, oil and gas reserves and resources under that entity's control… it is the extraction of those reserves and resources that provides the basis for economic benefits flowing from extractive activities".*

15. International Accounting Standards Board, 2010. Extractive activities discussion paper, available at [http://www.ifrs.org/Current-Projects/IASB-Projects/Extractive-Activities/DPAp10/Pages/DP.aspx]

8) To conclude this introduction, we observe that under existing reporting standards, including International Financial Reporting Standards (IFRS), some information about oil and gas resources and reserves is legitimately excluded from balance sheets and from other parts of corporate reports that should arguably include information to enable users to identify and assess CASRs. The financial crisis of the 2000s has been partly attributed to off-balance sheet items and lack of transparency. Carbon Tracker's work warns of similar crises brewing if CASRs continue to be invisible or obscured by lack of disclosure. Preserving the status quo whereby fossil fuel energy resources are sought, invested in, valued and listed on stock exchanges threatens not just environmental, but financial and economic disaster. Given that the objective of financial reporting is *"to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions about providing resources to the entity"*[16] and that annual reports, at least in the UK, must be fair, balanced and understandable, it is time for reporting standards to be updated to require disclosures relating to CASRs.

Statistics from Carbon Tracker's unburnable carbon 2013 report: Wasted capital and stranded assets

+ The carbon embedded in the world's indicated fossil fuel reserves amounts to 2,860 $GtCO_2$
+ 762 $GtCO_2$ of embedded carbon is currently booked as so-called "P1 reserves" by listed fossil fuel companies.
+ If undeveloped, so-called P2 fossil fuel resources are also taken into account, the estimated embedded carbon rises to 1,541 $GtCO_2$
+ The fossil fuel that can be burnt between now and 2050 amounts to about 900 $GtCO_2$ for an 80% probability to satisfy the 2^oC scenario
+ In the second half of the century about 75 $GtCO_2$ could be burnt to have an 80% probability of hitting the 2^oC target, which is equivalent to just over two years of emissions at current levels
+ At the current rate of capital expenditure, the next decade will see over $6trn allocated to developing fossil fuels;
+ The top 200 oil and gas and mining companies have allocated an estimated $674 bn in 2012 for finding and developing more reserves and new ways of extracting them.

16. International Accounting Standards Board, 2010. IASB Conceptual Framework 2010 [PDF] available at: [http://www.ifrs.org/News/Press-Releases/Documents/ConceptualFW2010vb.pdf]

III) Why doesn't information about CASRs appear in mainstream corporate reports?

9) There is no single reason for the apparent failure of reporting standards to elicit disclosures about CASRs. Broadly the reasons fall into three categories:

a. First, it is not clear what type or types of **existing** reporting standard should be amended or developed in order to encourage disclosure of CASRs. As noted above, mainstream corporate reports contain different components that are dictated or influenced by standards governing the preparation of financial statements (discussed in more detail in Appendix A), management commentary, governance reporting, integrated reporting, stock exchange requirements, industry specific guides, sustainability and environmental reporting, extension of requirements under specialist initiative such as the Extractives Transparency Initiative[17] and so on. While there are numerous potential 'outlets' for reporting on CASRs, it is difficult to identify where best to intervene in fragmented reporting systems to reveal risks that cross governance, financial, management and other forms of management responsibility.

b. Secondly, the variation in practice for reporting fossil fuel energy resources can obscure information about risks. The variation is partly attributable to differences in the definitions of reserves and resources established by various industry bodies and partly due to variation in the application of industry codes for reporting of fossil fuel energy resources. Despite some widely used standards[18] on reporting requirements for reserves of minerals, oil and gas, both the ACCA and the IASB refer to the lack of universal definitions[19] of reserves and resources of minerals, oil and gas. Even where those codes are used, their application can vary in different countries according to ACCA's research[20] and the definitions used under industry codes are arguably not suitable for mainstream reporting purposes as explained in proposal 2 below.

c. Thirdly, there are some entrenched legal and conceptual structures that seem inherently to preclude recognition of CASRs in corporate reports. For example, oil, gas and minerals become categorized as reserves only when they are identified as being commercially or economically recoverable – meaning that they are expected to generate more income than the expense incurred in extraction. The evaluation process for determining whether discovered quantities of minerals or oil or gas are commercially or economically recoverable takes account of economic, legal, environmental, social and governmental factors that are expected to affect development over a future period, typically five years[21]. However, CASRs are not specifically taken into account as far as we are aware. The process for determining whether a project will be economically viable is based on the on the company's internal forecasts of future conditions that will prevail over the life of the project or, as a default basis, on a one-year historical average of cost and prices[22]. The process of identifying reserves and their economic viability is therefore predicated on the assumption that CASRs can be ignored from the outset, thus raising the question of what conditions would need to prevail in order for them to be recognized later in the reporting process.

17. EITI, 2014. What is the Extractive Industries Transparency Initiative?, available at [http://eiti.org/eiti]

18. The Committee for Mineral Reserves International Reporting Standards (CRIRSCO); The Petroleum Resource Management System sponsored by the Society of Petroleum Engineers, the World Petroleum Council, the American Association of Petroleum Geologists and the Society of Petroleum Evaluation Engineers; US Securities and Exchange Commission Regulation S-X Rule 4-10 and Industry Guide 7; The UN Framework Classification for Fossil Energy and Mineral Resources.

19. The IASB's Discussion Paper explains, at paragraph 2.5, the nature of the variation in definitions. [PDF] available at: [http://www.ifrs.org/News/Press-Releases/Documents/ConceptualFW2010vb.pdf]

20. ACCA and Carbon Tracker, 2013. Carbon Avoidance? Accounting for the Emissions Hidden in Reserves, page 18, available at: [http://www.accaglobal.com/hk/en/technical-activities/technical-resources-search/2013/october/carbon-avoidance.html]

21. IASB, 2010. Extractive activities discussion paper, para 2.31, available at [http://www.ifrs.org/Current-Projects/IASB-Projects/Extractive-Activities/DPAp10/Pages/DP.aspx]

22. Ibid.

IV) Challenges associated with bringing about changes to corporate reporting

10) There are clear signals that investors and others are starting to recognize CASRs, including divestment practices[23] and published reports on risks to investors[24]. However, the efficacy of those changes depends in part on the right information reaching decision-makers. Proposals on the actions necessary to elicit the information needed for decision-making are outlined elsewhere in this paper. However, challenges associated with bringing about the changes necessary to elicit that information and encourage decision-making based on it are significant. Those challenges include:

a. **Entrenched accounting rules** that focus on **known** risks and obligations based on **past** events and that allow costs to be capitalized only where sufficient information is available for an assessment of whether the investment can be recovered. By contrast, CASRs represent possible risks arising from future events where uncertainty is pervasive including uncertainty regarding prices, geology, input costs, political risk and so on. Furthermore, as well as in booked reserves, the risks are embedded in undeveloped resources where recovery of investment cannot be proved and no reporting is required.

b. **Technical challenges** – Devising and successfully implementing reporting structures for CASRs will present technical challenges that already manifest themselves in other forms of corporate reporting, including how to characterize CASRs (as assets, liabilities or something else), how to measure the risks, what indicators should be used to track progress, how to make forward looking statements, determining valuation implications, establishing reporting boundaries and value chain reporting approaches etc.

c. **Legal and contractual responsibility for reporting** – In its response to the IASB's Discussion Paper on Extractive Activities, AP Moller Maersk asks *"who has the right to provide information on the natural resources, being the estimate of reserves and resources?"*. They point out that the company has the right to extract but not the right of ownership and ask whether they can provide information without the permission of the owner? The structure of ownership, rights to extract, production sharing arrangements and so on might present challenges for reporting.

d. **Diversity and fragmentation of the reporting landscape between schemes, companies and jurisdictions** – As noted above and in Appendix A, financial statements do not necessarily allow for disclosures of CASRs. However, there are other reporting provisions under which information about CASRs might be required (see above). Unless and until one or more reporting regimes are identified as being appropriate for inclusion of requirements for disclosure of CASRs, information can fall between cracks in the reporting landscape.

e. **Multi-faceted, multi-disciplinary solutions** are needed to make disclosures relevant and meaningful. Determining what reporting requirements are needed in order to elicit relevant and meaningful disclosures that can be integrated into analyses and decision-making and acted upon, involves understanding and coordinating the multi-faceted, multi-disciplinary nature of CASRs, including scientific, engineering, accounting, risk, economic, financial, reporting and disclosure implications both singly and collectively.

23. The Guardian, 2013. Fossil fuels divestment campaign is gathering momentum [Online] Available at: [http://www.theguardian.com/environment/2013/oct/29/fossil-fuels-divestment-campaign-gather-momentum]

24. Generation Foundation, 2013. Stranded Carbon Assets – Why and How Carbon Risks should be Incorporated into Investment Analysis [PDF], available at: [http://genfound.org/media/pdf-generation-foundation-stranded-carbon-assets-v1.pdf]

f. **Contradictory messages** – The IEA has asserted that only one third of existing fossil fuel reserves can be burnt by 2050. However, according to BP's 2012 annual report, the IEA has also said that even under its most ambitions climate policy scenario, oil and gas will make up 50% of the energy mix in 2030, with combined demand projected to exceed current levels in absolute terms. Unless and until the tension between recognition of CASRs and a strategy for meeting energy needs is resolved, it is difficult to see how reporters can be expected to make disclosures that recognize the potential stranding of fossil fuel energy resources. This is evidenced by the disclosures of Exxon Mobil Corp in March 2014. The company reported that risks related to climate change pose little risk to its oil and gas reserves because producing those assets remains essential to meeting growing energy demand worldwide[25].

Mixed messaging also applies to the way in which investors respond to and use reporting information about climate change-related risks. A report by CDP and Sustainable Insight Capital Management[26] found that industry leadership on climate engagement was linked to higher performance on three financial metrics – return on equity, cash flow stability and dividend growth – but that no discernible value premium was awarded to such leaders. A report by KPMG[27] finds that, by contrast, a large carbon footprint has a negative impact on firm value.

V) Opportunities for bringing about changes to corporate reporting

11) As well as challenges, certain developments in corporate reporting and societal expectations of corporate behavior provide opportunities for bringing about a change in corporate reporting to recognize CASRs. These include:

a. **Transparency initiatives** such as Publish What You Pay, Basel III, Country by Country Reporting, Stock Exchange requirements on ESG disclosure and the IASB's Disclosure Initiative. These and other initiatives indicate a demand for greater transparency in corporate reporting that is consistent with calls for transparency regarding CASRs;

b. **Laws encouraging transparency** such as the Dodd Frank Wall Street Reform and Consumer Protection Act, (requiring disclosures by SEC registrants using conflict minerals) and proposed amendments to the EU Fourth and Seventh Accounting Directives;

c. **Initiatives aimed specifically at extractive industries** such as and the Extractives Industry Transparency Initiative[28] (EITI) and CDP's Oil and Gas Module that supplements the investor questionnaire on climate change;

d. **Integrated reporting** has been identified by the ACCA as "giving companies the structure to highlight relevant forward-looking information";

e. **G20 and OECD activity on base erosion and profit shifting**, which, whilst aimed at tax law and practice, provides useful insight into the consequences of using corporate structures to disassociate entities from the location of risk;

25. Exxon Mobil, 2014, Energy and Carbon – Managing the risks [PDF] Available at [http://corporate.exxonmobil.com/en/environment/climate-change/managing-climate-change-risks/carbon-asset-risk]

26. CDP, 2013. Linking Climate Engagement to Financial Performance, Sustainable Insight Capital Management and CDP [PDF] Available at: [https://www.cdp.net/CDPResults/linking-climate-engagement-to-financial-performance.pdf]

27. KPMG International, 2012. Carbon Footprint Stomps on Firm Value [PDF] Available at: [http://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/Documents/carbon-footprint-stomps-value-v4.pdf]

28. EITI provides for disclosure of licensing information, the contribution that extractives industries make to the economy of EITI participating countries and the beneficial ownership of corporate entities that bid for, operate or invest in extractive assets.

f. **Existing rules** that could already be interpreted as requiring disclosure of CASRs, particularly rules that require disclosure of risks that have the potential to affect investors' assessments of the performance and condition of the company. For example, the SEC[29] has already interpreted S-K Regulations on disclosure of risk as being capable of applying to climate change risk; and

g. **Extractive industries(EI)** have been identified by the IMF as *"simpler than other industries such as finance and telecoms in that they involve physical operations with output that can be analyzed, weighed and measured, with prices in most cases quoted on international exchanges...and the vast bulk...of transactions are conducted by a few large companies with a high stake in maintaining the goodwill of governments and others."* The IMF concludes that *"there is no intrinsic reason for effective and transparent administration to be harder for EI than other industries",* although the IMF goes on to observe that administration is nonetheless often difficult and badly performed.

Desired outcome of reporting activity

12) The intended outcomes from the proposals on reporting activity below are that:

a. Reporting requirements will develop through the CDSB Framework and other relevant channels that will encourage disclosures related to CASRs;

b. Corporations will make relevant and meaningful disclosures according to those requirements and take remedial/adaptive action to manage CASRs; and

c. Investors will demand and use disclosures on CASRs made in accordance with recognized and standardized reporting requirements so as to make decisions and take action designed to limit CASRs.

VI) Proposals for reporting requirements that reveal CASRs

13) The seven proposals outlined below are designed to prompt discussion about the development of reporting requirements that will reveal CASRs. They do not represent a comprehensive set of proposals for adapting or supplementing reporting requirements so as to reveal CASRs. Reactions to the proposals will inform the development of CDSB's Framework, in particular, to include reporting requirements on CASRs. As with all of CDSB's work, the list of proposals builds on CDP's work and in particular the development of its Oil and Gas Module[30]. CDP's work contributes much to the development of mainstream reporting practice by setting requirements for the content that should be reported. CDSB's work builds on this by examining what is required to bring relevant information into mainstream reports by filling gaps in mainstream reporting practice that ignore, hide or disguise CASRs. The proposals fall into four categories. Proposals 1 and 2 relate to the infrastructure of reporting, the way in which it is organized, where to intervene and what language to use for classifying and communicating fossil fuel energy resources. Proposals 3 and 4 relate to the scope, structure and content of reporting information that enables readers to identify and assess CASRs. Proposals 5 and 6 consider the way in which existing financial reporting standards could be extended or adapted to encourage reporting of information on CASRs. The final proposal 7 suggests activity that could complement CASR reporting processes. Discussion points are identified within or at the end of each proposal. We invite comments on the specific discussion points and on the matters raised by this paper more generally.

29. Securities and Exchange Commission, 2010. Commission Guidance Regarding Disclosure Related to Climate Change [PDF] Available at: [http://www.sec.gov/rules/interp/2010/33-9106.pdf]

30. CDP, 2014. CDP Questionnaires [Online] Available at: [https://www.cdp.net/en-US/Programmes/Pages/More-questionnaires.aspx]

Proposal 1 – Identify the most effective intervention points for bringing about reporting changes necessary to reveal CASRs

Where to intervene?

14) CASRs present environmental and financial risks to companies and their shareholders and disclosures about them are therefore arguably required under **existing** frameworks for mainstream corporate initial and continuous reporting. However, as noted in paragraph 9a, it is difficult to identify where best to intervene in fragmented reporting systems so as to reveal risks that cross governance, financial, management and other forms of management responsibility or so as to amend or change provisions that frustrate disclosure of CASRs (such as provisions that focus only on past events or known risks). Even within reporting disciplines, such as stock exchange initial and continuous reporting requirements, there is evidence of significant variation[31]. Interventions in individual reporting laws, standards or frameworks are therefore likely to perpetuate or exacerbate fragmented reporting on discrete aspects of CASRs, rather than encourage disclosure of information about a company's holistic approach to addressing CASRs. We therefore propose, as a starting point, that a coordinated review is required of all relevant existing laws / frameworks and practices that could be leveraged to require disclosure of CASRs or that currently frustrate disclosure of CASRs.

Intervention based on objective and purpose of reporting

15) We contend that the objectives of requirements on disclosure of CASRs (including the content requirements described in Proposal 4) should be to:

    a. Inform investors as to whether what the IASB calls *"the main drivers of cash flows"* i.e. the fossil fuel energy resources, are at risk from the carbon budget identified by the IPCC and others (see introduction);

    b. Provide an analysis of the risk, including a sensitivity analysis;

    c. Describe any remedial and adaptive actions.

16) Assuming that those objectives are correct, the extent to which amendments to existing mainstream reporting requirements are possible depends on whether there is alignment between the stated objectives of existing law, standard or framework and the:

    a. CASR reporting objectives described above; and

    b. Content requirements described in Proposal 4.

    Where they are at variance with proposed amendments or supplements, the objectives of a particular law, standard or framework might limit the extent to which amendments or supplements are possible and should therefore be identified and reviewed.

17) The objective of financial reporting is *"to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions about providing resources to the entity"*[32]. As the IASB's Discussion Paper (paragraph 5.4) states *"in making informed economic decisions about entities in the extractive industries, users need information about the main drivers of cash flows – the minerals or oil and gas reserves. Information about those reserves is also necessary in determining whether the directors and*

31. Michael T, Scott, SPE, Copia Consulting Pty Ltd, SPE International, 2012. SPE 155398 / Oil and Gas Reserves and Resources Reporting – The Market Rules [PDF] Available at: [http://www.nioclibrary.ir/Reports/9132.pdf]

32. International Accounting Standards Board, 2010. [PDF] IASB Conceptual Framework 2010 Available at: [http://www.ifrs.org/News/Press-Releases/Documents/ConceptualFW2010vb.pdf]

management have made efficient and profitable use of the financial and other resources entrusted to them". The Discussion Paper goes on to note that additional information is required from extractive industries in order to satisfy the objective of financial reporting. In particular, it states *"Given the limited relevance that users attach to the recognition and measurement of minerals or oil and gas properties in the statement of financial position, a disclosure objective for extractive activities should focus on providing additional information about these assets that is useful for making decisions and evaluating directors' and management's stewardship of the entity".* The type of additional information that we suggest might be required is described in proposal 4.

18) As well as the stated objective of reporting, new provisions are being introduced that clarify the purpose of reporting. For example, the 2012 version of the UK Corporate Governance Code requires directors to make a formal statement that they consider the annual report and accounts, taken as a whole, to be fair balanced and understandable and that they provide the information necessary for shareholders to assess a company's performance, business model and strategy (Code provision C1.1). Similar provisions are believed to exist elsewhere, for example, the requirement in IAS 1 for financial statements to be true and fair.

19) This Discussion Paper contends that the objective of financial reporting and requirements to produce fair and balanced annual reports are not satisfied where information about the main drivers of cash flows (fossil fuel energy reserves) is absent from mainstream reporting channels. We therefore propose a review of whether and to what extent existing mainstream reporting objectives allow for disclosures designed to reveal CASRs and, if not, to identify other suitable reporting channels or propose amendments to reporting objectives.

How to intervene?

20) Having identified the laws / frameworks or practices that need to be amended or supplemented in order to elicit information about CASRs, an approach to executing those amendments / supplements should be agreed that satisfies the objectives of mainstream reporting generally AND the objective of reporting on CASRs. Amendments / supplements to law, frameworks and practice designed to achieve a single objective are often made through amendments to different types of law. For example, an objective to limit climate change might involve a new requirement to report on greenhouse gas (GHG) emissions, introduced through amendments to environmental law and a new requirement to report on risks associated with climate change by amendment to securities or corporate law. This can result in different pieces of information about climate change lacking coherence and being presented in different places. For example, analysis of risk (in a business or securities report) can be disassociated from activity (e.g. GHG emissions disclosed in sustainability or environmental reports) that gives rise to the risk. An alternative approach is to introduce a single body of law with a defined objective that amends, supplements and 'joins up' existing law / practice for the purpose of achieving the defined objective and eliciting more coherent disclosures. The French Grenelle II is an example of such an approach. Described as a *"legislative marathon"*[33], it is acknowledged by Globe[34] as *"an integrated approach [that has brought] principles and policies on energy demand, energy supply and sustainable transportation into the mainstream [and] has either strengthened those policies and goals where already were part of national legislation or has incorporated them into a dedicated law on the environment".*

33. Ministry of Ecology, Sustainable Development, Transport and Housing, 2010. [PDF] Grenelle II Law, December 2010 Available at: [http://www.developpement-durable.gouv.fr/IMG/pdf/Grenelle_Loi-2_GB_.pdf]

34. Globe International and Grantham Research Institute, 2014. The GLOBE Climate Legislation Study, Fourth Edition [Online] Available at: [http://www.globeinternational.org/studies/legislation/climate]

Discussion points – Proposal 1

21) We invite comments generally on Proposal 1, but also on the following specific points:

a Which existing laws, standards or frameworks contain provisions that could be amended, supplemented or interpreted so as to require disclosure on aspects of CASRs (e.g. how risks are governed, the financial consequences associated with risks etc.)?

b. Do you agree with the objectives of reporting on CASRs as set out in paragraph 15?

c What is the most effective approach for amending existing provisions or introducing new requirements to elicit information about CASRs in mainstream reports?

Proposal 2 – Agree on language for classifying and communicating fossil fuel energy resources in mainstream corporate reports

22) Definitions and approaches designed to identify, communicate and classify fossil fuel energy resources have been produced by organizations such as Committee for Mineral Reserves International Reporting Standards (CRIRSCO), the Society of Petroleum Engineers Oil and Gas Reserves Committee (SPE OGRC), the World Petroleum Council, the International Atomic Energy Agency/International Energy Agency and the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (UNFC 2009). The SEC's Rule 410 (a) of Regulation S-X and associated material sets out an approach for US registrants to use when estimating and disclosing reserves. SPE International lists reporting requirements for companies on six main stock exchanges[35].

23) However, industry and stock exchange definitions are not necessarily standardized or consistently applied and there is evidence that views are changing on how best to classify and communicate resources. For example, paragraph 35 of the preface to the Central Framework for the System of Environmental Economic Accounting 2012 (SEEA 2012) states that it no longer uses terms such as *"proven resources", "probable resources"* and *"possible resources".* Instead, SEEA 2012 relies on UNFC 2009, which classifies resources based on the maturity of projects and criteria affecting their extraction, in particular, criteria for determining economic and social viability, feasibility and the level of certainty of geologic knowledge and potential recoverability of the resource concerned. Resources are then classified accordingly.

24) As well as the variation in language for communicating fossil fuel energy resources, the way in which such resources are classified according to industry standards is not always fit for accounting or corporate reporting purposes. For example the IASB points out in paragraphs 2.49 – 2.62 of its Discussion Paper that the economic assumptions used in resource estimation and classification are different from the assumptions that would be used for preparing estimates for financial reporting purposes. The CRIRSCO Template and PRMS use entity-specific internal forecasts of future conditions. By contrast, financial reporting would normally also refer to market-based evidence. Although the IASB project team concludes (paragraph 2.62) that the difference in perspective between the reserves classification system and the financial reporting system will not generally lead to materially different assumptions being selected in practice, we contend that a classification approach that legitimately ignores market based and external information might limit the extent to which the carbon budget and CASRs may be taken into consideration.

35. Michael T, Scott, SPE, Copia Consulting Pty Ltd, SPE International, 2012. SPE 155398 / Oil and Gas Reserves and Resources Reporting – The Market Rules [PDF] Available at: [http://www.nioclibrary.ir/Reports/9132.pdf]

25) While industry classifications offer a starting point for agreeing classifications, they need to be developed to suit the purpose and structure of mainstream reporting, including integrated reporting through which resources and reserves of minerals, oil and gas may be interpreted as stocks of natural capital. Furthermore, in the interests of transparency, the methodologies and approaches used to prepare information must be disclosed along the lines requested in CDP's Oil and Gas Module OG1.4 - *"Please explain which listing requirements or other methodologies you have used to provide reserves data…."*.

Discussion points – Proposal 2

26) We invite comments generally on proposal 2 but also on the following specific points:

a. What definitions and language should be used to communicate fossil fuel energy resources in mainstream corporate reports?

b. Which approaches to classification of fossil fuel energy resources are most consistent with the needs of and existing approaches to mainstream corporate reporting?

c Do certain industry classification approaches preclude recognition and reporting of CASRs, for example, because they are based only on internal forecasts of future conditions?

Proposal 3 – Define the scope of fossil fuel energy resources to be reported so as to provide a complete picture of risk beyond the balance sheet

27) Proposal 2 discussed the language, approaches and classifications used to describe and communicate fossil fuel energy resources. Proposal 3 explores how the scope of those resources should be defined and, in particular, whether the scope of reporting should be restricted to so-called proved reserves or also to probable and possible reserves (recognizing that the language for such distinctions needs to be agreed).

28) Paragraph 5.27 of the IASB's Discussion Paper states that of the users they had surveyed *"most said that the disclosure of proved and probable reserves is the minimum that should be provided on minerals or oil and gas quantities"*. The IASB project team went on to recommend (paragraph 5.28) that entities should disclose proved reserves and separately the sum of proved and probable reserves. The team also acknowledges (paragraph 5.29) that some entities may wish to disclose information beyond proven and probable reserves.

29) The scope of fossil fuel energy resources to be disclosed is not always restricted to or expressed in terms of proven and probable reserves. For example, the London Stock Exchange's AIM 16 Guidance for Mining and Oil and Gas Companies states that ongoing disclosures should provide a summary table of assets, defined *as "all assets, licenses, joint ventures or other arrangements owned by the applicant of AIM company or proposed to be exploited or used by it".* The disclosure template at Appendix 1 of the Guidance also requires disclosure of the *"status"* of the asset, meaning exploration, development or production only.

30) For financial reporting purposes, reserves constitute assets. However, financial asset recognition rules mean that balance sheets reflect only capitalized exploration and evaluation expenditure (see Appendix 1). The IASB's Discussion Paper (paragraph 2.64 et seq.) indicates that a reserve may not be recognized despite being economically viable, for example, where the cost of capital used for deciding whether to invest in a project exceeds the market discount rate or where the entity chooses to defer investing in a new project or expanding an existing project even where it will generate a positive net present value because other projects are assigned a higher priority to receive the investment first. All of this means that disclosures might not

always represent the total quantity of fossil fuel energy resources that the entity may be able to recover economically at market discount rates. Furthermore, the type and source of resources and reserves may not be clear.

31) We propose that reporting standards and frameworks should be reviewed to identify and define the precise scope of information required to assess CASRs and make capital allocation decisions, for example, whether information should include reserves and resources not in production and/or in the exploration phase, resources that have been identified but that are not classified as being economically viable or recognized on the balance sheet or that are not reported because the reporting organization has decided to defer investing in or expanding resources that have been identified as being economically viable. As noted in proposal 2, the language for describing the scope of resources to be included in corporate mainstream reporting also needs to be agreed.

Discussion points – Proposal 3

32) We invite comments generally on proposal 3 but also on the following specific points:

a. What is the scope of information that needs to be reported about fossil fuel energy resources in order to satisfy the objectives of CASRs reporting (proposed in paragraph 15)? Should the scope of information in mainstream reports be restricted to commercially recoverable / exploitable / developed resources or extended to known but non-commercial / undeveloped deposits?

b. How should the scope of information that needs to be reported be expressed?

c. Should the same requirements apply to all companies involved in the extraction and production of fossil fuel energy resources?

Proposal 4 – Content and structure of reporting

33) Having agreed the scope of fossil fuel energy resources to be reported and the language to communicate them, the exact content requirements and reporting structure for information relevant to an assessment of CASRs needs to be specified. This Discussion Paper proposes that CDP's Oil and Gas module 2014 is used as the basis for determining content. The proposals below are designed to supplement and complement the content elements in CDP's Oil and Gas module for mainstream reporting purposes, drawing on the IASB's Discussion Paper, Stock Exchange requirements for initial and continuous reporting and SEEA 2012.

34) The value attributable to an entity's fossil fuel energy resources - Scott[36] observes that *"for the average investor, reserves and resources appear to be used as direct indicators of investment desirability, company value and worth...Even though there is no direct correlation between reserves and resources and value (value being equal to the net present value of the future net after tax cash flows secured from the reserve or resource), investors devour reserves and resources information and trade up and down on stocks without generally knowing the value of the reported volume"*, although he goes on to concede the difficulty of determining value. We understand from paragraph 5.8 of the IASB's Discussion Paper that FASB requires disclosure of a current value measurement of proved oil reserves and that some find this helpful.

35) The alternative view is that reporting the quantity of fossil fuel energy resources (see IASB's Discussion Paper paragraph 5.6) in units of barrels of oil equivalent (BOE), as set out in CDP's 2014 Oil and Gas Module question OG1.2 and OG1.3 is sufficient to enable users of information to value the resources and reserves.

36. *Ibid*

Discussion points – Proposal 4

a. Do you think that resources should be valued by the reporting entity in their corporate mainstream report as an indication of financial risk relating to CASRs? If so

i. Should all resources within the scope identified in your response to Proposal 3 be valued or just certain classifications (e.g. economically viable resources);

ii. How should resources be valued? How (if at all) would the financial reporting concept of fair value be applied?

b. If not, is disclosure of the quantity of fossil fuel energy resources in units of barrels of oil equivalent (BOE) sufficient to enable users to determine their value?

36) **Mitigation and adaptation plans and activities** - Whether CASRs are recognized and reported on in corporate reports or not, reporting provisions should require extractive industries to make disclosures about their existing or prospective plans to adapt to a carbon constrained future, including whether:

a. Carbon is or will be transferred or sequestered (see CDP OG Module 4.1 – 4.9);

b. There are plans for investment in or development of renewable energy CDP OG Module 6.2 and 6.3; and

c. More energy efficient processes are underway or planned.

37) A system for describing and recognizing mitigation and adaptation activities should be developed possibly along the lines of the new asset classes proposed by Terrafiniti in their response to UNEP FI's Natural Capital Declaration. In particular, Terrafiniti proposes[37] *"restorative services"* and *"vital technologies"* as new asset classes as illustrated in Appendix B. Although designed with a natural capital focus as a way of conceptualizing sustainable activity, a similar approach could be contemplated for expressing and communicating mitigation and adaptation activities.

Discussion points – Proposal 4

a. What further information (if any) is required for users to assess organizations' mitigation and adaptation plans and activities?

b. Is there merit in developing a system and language for recognizing mitigation and adaptation activity as assets along the lines proposed by Terrafiniti?

38) **Future looking indicators** - Generally corporate reporting focuses on corporate performance for the past reporting period and on risks and obligations that are known at the time of reporting. In order to reflect the prospective nature of CASRs, reporting requirements should encourage commentary on how CASRs and carbon budgets might affect the company's short, medium and long-term strategy and business model. Forward-looking indicators should be developed to provide readers with indications of future risk. For example, CDSB plans to incorporate into its Framework requirements to report greenhouse gas emissions embedded in reserves according to the methodology being developed[38] by the World Resources Institute and World Business Council for Sustainable Development.

39) Other future-looking indicators that might assist in the identification and assessment of CASRs include disclosure of planned capital expenditure[39] on research, development, exploration and extraction, revenues predicted from reserves and prospective subsidies as requested in question OG6.1 and 6.2 of CDP's Oil and Gas Module 2014.

37. Terrafiniti, 2014. UNEP FI Natural Capital Declaration / Valuing Natural Capital in a Perfect World [Online] Available at: [http://www.terrafiniti.com/valuing-natural-capital.html]

38. At the time of writing, the methodology is unpublished

39. Building on CDP's Oil and Gas Module question OG6.2 CDP, 2014. [PDF] Available at: [https://www.cdp.net/CDP%20Questionaire%20Documents/CDP-O-and-G-information-request-2014.pdf]

Discussion points – Proposal 4

a. Are any other future-looking indicators necessary for the assessment of CASRs?

b. Would disclosure of the proposed future-looking indicators present particular challenges for extractive industries?

Proposal 5 – Impairment testing

40) To the extent that evaluation and exploration expenditure is capitalized and shown on the balance sheet, the assets are subject to tests of impairment under IFRS 6. Currently those tests do no specifically require CASRs and carbon budgets to be taken into consideration. Where IFRS 6 applies, we propose that it should require CASRs and carbon budgets to be taken into consideration in assessing whether the carrying amount of exploration and evaluation assets is likely to be recoverable.

Discussion point – Proposal 5

Do you agree that impairment testing should take account of CASRs and carbon budgets?

Proposal 6 – Disclosure in the notes and sensitivity analysis

41) To the extent that resources and reserves are not reflected on the balance sheet, there are two existing concepts that could be applied to require disclosures about them that reveal CASRs.

a. First, the IASB's Conceptual Framework (paragraph 4.43) already provides for disclosure to be made in the notes to accounts where an asset fails to meet the criteria for recognition but information about it is relevant to the evaluation by investors of the financial position, performance and changes in financial position of the organization.

b. Secondly, although specifically applicable to financial instruments, the sentiment of IFRS 7 could be extended to require a sensitivity analysis of CASRs and value at risk. NEF suggests that sensitivity analysis should include a category of unburnable carbon.

42) Generation Foundation's report on Stranded Carbon Assets[40] finds that CASRs are ignored because of a widely held view that assets will not become vulnerable to impairment or stranding until a meaningful carbon price is enforced by a unified, global accord. However, they say that sensitivity analysis and scenario planning must also take into account risks presented by regulation, market forces and sociopolitical pressure. We propose that CDP's Oil and Gas Module question 1.6 should be applied for mainstream reporting purposes for developing sensitivity analysis requirements on carbon budgets and CASRs – the questions read:

a. OG1.6 *"Do you conduct any scenario analysis based on a low-carbon scenario consistent with reducing GHG emissions by 80% by 2050 to achieve the 2 degree C goal in your assessment of the economic viability of proved undeveloped and undeveloped reserves?"*

b. OG1.6a Please describe your analysis and the implications for your capital expenditure plans

c. OG1.6b Please explain why you have not conducted any scenario analysis based on a low carbon scenario.

40. Generation Foundation, 2013. Stranded Carbon Assets: Why and how carbon risks should be incorporated in investment analysis, available at [http://genfound.org/library/]

Proposal 7 – Support and adopt relevant complementary activity

43) While it promises to offer much greater insight into the nature and extent of CASRs, mainstream reporting alone cannot solve the problems that have been brought to light by Carbon Tracker's work. Various new and emerging activities must also be supported in order complement developments in mainstream reporting. These include:

a. Reporting requirements aimed specifically at extractive industries such as CDP's oil and gas module;

b. Analytical tools such as Bloomberg's[41] tool that measures the risk of unburnable carbon assets;

c. Guidance that helps investors to identify and act on risks associated with emissions from investments, such as the Finance Sector Guidance on GHG Accounting an GHG Risk Management[42];

d. New forms of accounting such as confidence accounting and context-based accounting;

e. New measures of performance and risk such as Terrafiniti's proposed measures of "entropic overhead"[43] and "entropic valuation"[44];

f. Campaigns such as Ceres' effort to spur 45 of the world's top oil and gas, coal and electric power companies to asses financial risks that climate change and carbon budgets pose to their business plans;

g. Technical work such as CDSB's proposed development of shadow balance sheets that show the potential effect of CASRs and support a system of "carbon warnings" similar to profit warnings; and

h. Opportunities for enhancing reporting through development of "Competent Persons'" responsibilities as identified by ACCA.

Discussion Point – Proposal 7

Are there any other activities or initiatives that could support the development of CASR reporting?

VII) Conclusion

44) This Discussion Paper began by observing that systemic risks are often unobserved and that the shortcomings of existing disclosures about CASRs cause them also to be unobserved. The proposals above offer a starting point for suggesting how existing reporting laws, standards and practices could be amended or supplemented to elicit information that would enable users to assess and respond to CASRs. The proposals are not comprehensive, nor do they offer a full analysis of the possibilities for disclosure. We offer them as a means of advancing disclosure to reveal CASRs and welcome comments.

41. Bloomberg New Energy Finance, 2013. [PDF] Available at: [http://about.bnef.com/files/2013/12/BNEF_WP_2013-11-25_Carbon-Risk-Valuation-Tool.pdf]

42. Greenhouse Gas Protocol and UNEP Finance Initiative, 2014. Financed Emissions Initiative / Concept Note / Finance Sector Guidance on GHG Accounting and GHG Risk Management [PDF] Available at: [http://www.ghgprotocol.org/files/ghgp/Concept%20Note%20GHG%20Protocol%20Financial%20Sector%20Guidance%20final.pdf]

43. Terrafiniti, 2014. [Online] Available at: [http://www.terrafiniti.com/blog/entropic-overhead-measuring-the-circular-economy/]

44. Terrafiniti, 2014. [Online] Available at: [http://www.terrafiniti.com/blog/entropic-valuation-energy-pricing-as-if-thermodynamics-mattered/]

VIII) Appendices

Appendix 1 - Summary of existing financial reporting standards and principles

1) The following text summarizes the CDSB Secretariat's understanding of the way in which accounting rules apply to fossil fuel and mineral reserves. The purpose is to determine whether and to what extent the Climate Change Reporting Framework can be developed by adopting, extending and applying accounting rules to encourage disclosures by companies in the extractive industries about how (if at all) they respond to/account for/report on the risks revealed by Carbon Tracker's work.

2) Reserves of fossil fuels appear to meet the definition of asset in paragraph 4.4(a) of the IASB's Conceptual Framework – "*The elements directly related to the measurement of financial position are assets, liabilities and equity. These are defined as follows: (a) An asset is a resource controlled by the entity as a result of past events and from which future economic benefits are expected to flow to the entity.*"

3) In order to appear on the balance sheet of a company, assets must meet recognition criteria. According to paragraph 4.38 of the Conceptual Framework, *"An item that meets the definition of an element should be recognized if: (a) it is probable that any future economic benefit associated with the item will flow to or from the entity; and (b) the item has a cost or value that can be measured with reliability",* (meaning that it is complete, neutral and free from error). Recognizing an asset automatically requires recognition of another corresponding element, for example, income or a liability.

4) It is understood that, although meeting the definition of asset, reserves are not recognized in the balance sheet because it is not sufficiently probable that economic benefits will flow to the entity in the accounting period in which the expenditure on reserves is incurred. Arguably, the reserve is a contingent asset – one that arises from past events (e.g. exploration) but whose existence will be confirmed only by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of the entity. IASB 37 prevents contingent assets from being recognized. Paragraph 4.45 of the IASB Conceptual Framework explains that *"this treatment does not imply either that the intention of management in incurring expenditure was other than to generate future economic benefits for the entity or that management was misguided. The only implication is that the degree of certainty that economic benefits will flow to the entity beyond the current accounting period is insufficient to warrant the recognition of an asset"*.

5) If reserves are not recognized on the balance sheet, how are they reflected in financial statements? Is there any requirement to disclose them? Two possibilities seem likely in response to this question:

6) 4.43 of the Conceptual Framework suggests that there **IS** a requirement to make disclosures in the notes *"an item that possesses the essential characteristics of an element but fails to meet the criteria for recognition may nonetheless warrant disclosure in the notes, explanatory material or in supplementary schedules. This is appropriate when knowledge of the item is considered to be relevant to the evaluation of the financial position, performance and changes in financial position of an entity by the users of financial statements";* and

7) Evaluation and exploration expenditure ("e&e expenditure") can be capitalized and recognized in the balance sheet. The process and rules for doing this are explored below.

8) The accounting treatment of e&e expenditure is dealt with in IFRS 6 'Exploration for and Evaluation of Mineral Resources'. This paper assumes that e&e for hydrocarbons falls within the category of mineral resources for this purpose because of the definition provided in the introduction to IFRS 6 - *"mineral rights and mineral resources such as oil, natural gas and similar non-regenerative resources".* The e&e expenditure covered by IFRS6 only relates to expenditure that was incurred after the entity obtained rights to explore a specific area but before the technical feasibility and commercial viability of extracting the resource are demonstrable (IFRS 6 paragraph 5). (After technical feasibility and commercial viability has become demonstrable the expenditure/asset is re-classified). An entity applying IFRS 6 establishes a policy identifying which types of expenditure are recognized as e&e assets.

9) Once recognized as an asset, it is:

   a) measured at recognition, generally at cost;

   b) classified as an intangible or tangible (whereupon the provisions of IAS 38 and IAS 16 respectively apply); and

   c) obligations for removal from and restoration of the site are also recognized by virtue of IAS 37.

10) The recognized asset (representing e&e expenditure) must be assessed for impairment according to the conditions for impairment set out in IFRS 6, i.e. *"when the facts and circumstances suggest that the carrying amount of an e&e asset may exceed its recoverable amount"*. Paragraph 20 of IFRS 6 elaborates the facts and circumstances that require impairment testing:

    "One or more of the following facts and circumstances indicate that an entity should test exploration and evaluation assets for impairment (the list is not exhaustive):

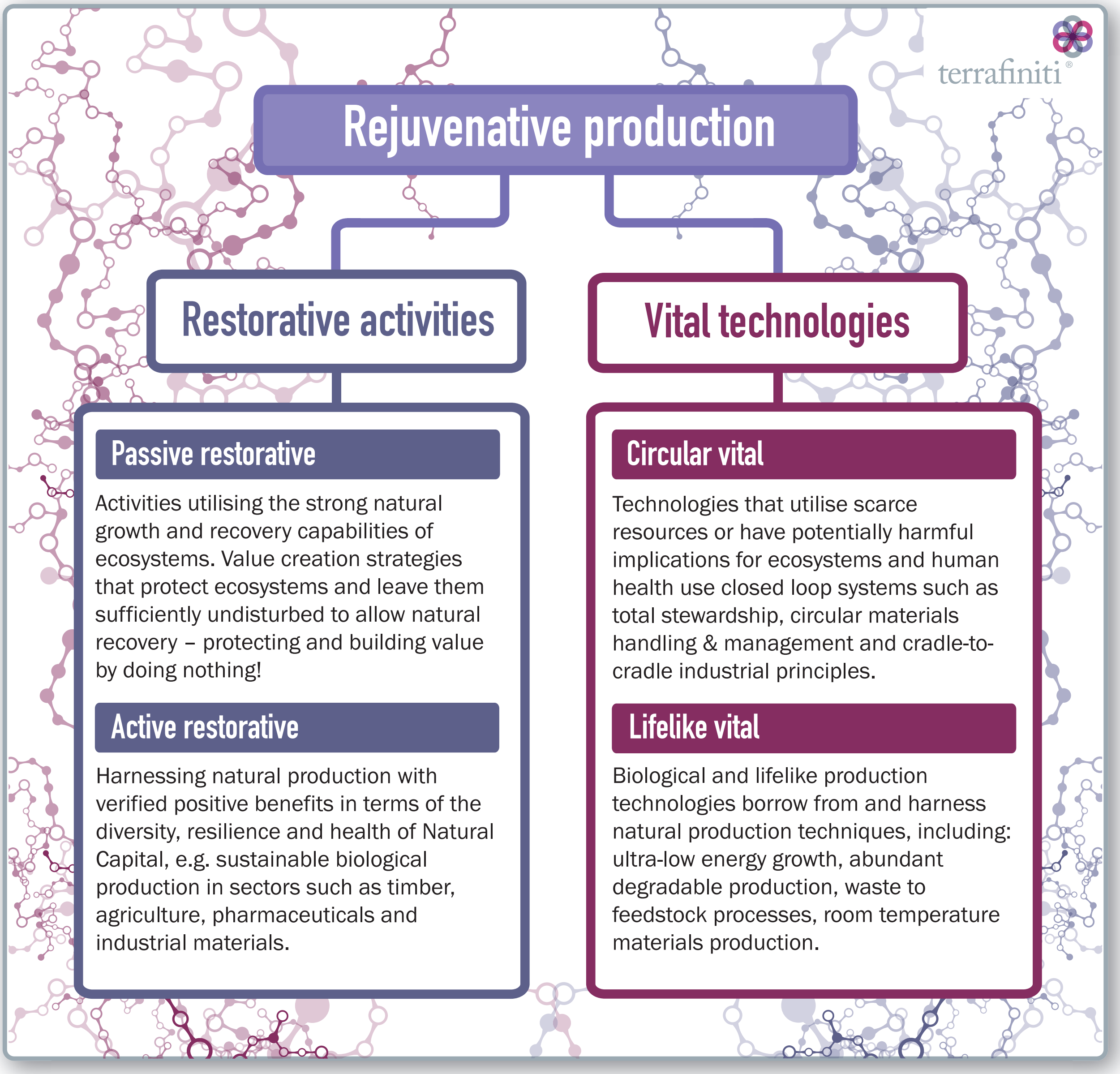
    (a) the period for which the entity has the right to explore in the specific area has expired during the period or will expire in the near future, and is not expected to be renewed.

    (b) substantive expenditure on further exploration for and evaluation of mineral resources in the specific area is neither budgeted nor planned.

    (c) exploration for and evaluation of mineral resources in the specific area have not led to the discovery of commercially viable quantities of mineral resources and the entity has decided to discontinue such activities in the specific area.

    (d) sufficient data exist to indicate that, although a development in the specific area is likely to proceed, the carrying amount of the exploration and evaluation asset is unlikely to be recovered in full from successful development or by sale".

Appendix 2 – Terrafiniti's representation of new asset classes for rejuvenative production



Terrafiniti, Joss Tantram, Dominic Tantram, 2012: Valuing Natural Capital in a Perfect World [PDF] available at: [http://www.terrafiniti.com/valuing-natural-capital.html]

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