STRANDED ASSETS

PROGRAMME

SMITH SCHOOL OF ENTERPRISE AND THE ENVIRONMENT

UNIVERSITY OF OXFORD

Investment consultants and green investment: Risking stranded advice?

Working Paper

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About the Stranded Assets Programme

The Stranded Assets Programme at the University of Oxford's Smith School of Enterprise and the Environment was established in 2012 to understand environment-related risks driving asset stranding in different sectors and systemically. We research how environment-related risks might emerge and strand assets; how different risks might be interrelated; assess their materiality (in terms of scale, impact, timing, and likelihood); identify who will be affected; and what impacted groups can do to pre-emptively manage and monitor risk.

We recognise that the production of high-quality research on environment-related risks is a necessary, though insufficient, condition for these factors to be successfully integrated into decision-making. Consequently we also research the barriers that might prevent integration, whether in financial institutions, companies, governments, or regulators, and develop responses to address them.

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Executive summary

Investment consultants (ICs) play a key role as advisers to asset owners (AOs). They provide strategic advice to AO boards about asset allocation and develop plans for how AOs can achieve the performance they need to match liabilities. The advice from ICs is also used to construct mandates for asset managers and they often assess asset manager strategies and/or help AOs select asset managers for mandates.

Examining these and other roles played by ICs makes it evident that they occupy a key position as 'gatekeepers' for many AOs, and that they operate at the interface between different parts of the investment ecosystem. As such, they are instrumental in determining whether innovative ideas are accepted or not by the financial community. This role as gatekeeper applies to products and services related to green investment[1].

Yet extensive formal and informal dialogue with diverse stakeholders suggests that: how ICs are engaging with their AO clients may not be accelerating innovation in and uptake of green investment practices.[2] Instead, and in general, they seem to be hindering them. As a consequence of these observations from stakeholders, we inaugurated a project to investigate and understand what is happening and why.

Methodology

We opted to pursue a multi-modal research approach that has gained traction and found success in studies of the financial services industry: "close-dialogue" approaches (see especially: Clark 1998). More specifically, the methods employed entailed a three-pronged approach:

- Semi-structured interviews with leading practitioners who are, or for a significant portion of their earlier careers, were, high-ranking members of investment consultancies;
- A purposed forum which convened a specially-selected list of participants from across the financial services industry, as well as relevant policy experts and academics[3]; and
- A web-delivered survey instrument designed for asset owners to report facts and opinions on how they engage with investment consultants, as well as their views on and understanding of the investment consultant industry, both on green investment issues, as well as more general topics.

This threefold approach ensured the comprehensiveness of the project and allowed for cross-verification of findings over different formats of engagement with subjects.

Summary of findings

- We found that the expansion of green investment is hindered by both demand and supply factors in the investment consultancy industry, and the power balance between ICs and AOs may largely be to blame. AOs are, by and large, not sufficiently engaged with issues surrounding and connected to sustainability, environment-related risk, and social responsibility; and confusion over whether fiduciary duty compels and/or allows AOs to even act and/or transact on these issues continues to suppress demand. For their part, ICs seem not to be pressing as proactively as they could do to address these issues. In the long-term, this passivity might be seriously harmful.

[1] Throughout this paper we favour the term *green investment* and this is meant to be broadly defined, and includes such concepts as 'sustainable investment' 'socially responsible investment', 'environmental and social
[2] See Clark (1998) on the role that methods of close dialogue have to play in financial research.
[3] A summary of proceedings for this event appears in Caldecott and Rook (2015).

- Both sides appear to desire less short-termism in their interactions with each other, yet a fixation on the short-term nonetheless seems to characterise many relationships. There seems to be an imbalance in the issues that AOs tend to bring to ICs for solution, against fees paid to ICs. That is, AOs seem to want to fund 'measurable' results from their ICs, and the measurement systems used may unfairly bias ICs against focusing on changes that are rooted within green investment.

Examples of Frictions in IC-AO Relationships that Harm Green Investment

Friction	Description
Fixation on Labels	Despite growing visibility of green investment concepts within mainstream finance, no standard set of labels (i.e., terms and categories) has emerged that is universally accepted. Use of different terms by ICs and AOs (both among themselves and with each other) can therefore lead to unnecessary or exaggerated disagreements and misunderstandings. Moreover, because many green investment concepts and products do not easily fit under conventional labels (e.g. modern portfolio theory approach to handling risk; asset-class-based allocations) many AOs encounter difficulties in 'making green investment fit' within their broader investment aims.
Measurement Dependence	Many of the deepest threats from environmental change suffer from not being easily quantifiable. For example, they may require a good deal of 'subjective judgment' to forecast, or face competing standards for calculation, which erodes confidence in them. Because many green investment considerations and opportunities may not be construed as being as 'objectively' measurable as other concerns that AOs face, they can be downgraded in terms of amount of time that ICs spend on them.
Belief Misalignments	Although the role of investment beliefs for governance is becoming increasingly acknowledged by AOs, there remains a commonplace misalignment between some beliefs that AOs express, and the actions taken on green investment For example, an AO might have a belief in the value of long-term investing, but fail to take proper account for how environmental policy could or will most likely affect some of its illiquid holdings decades into the future.
Fee Imbalances	The structure of fees that ICs receive (especially margins and internal redistribution of fees across the firm) inhibits long-term research on, and cultivation of, solutions that do not realise a near-term return. Because AOs may not be keen to pay explicitly and directly for 'green investment' services, many ICs may not be adequately incentivised to develop such capacity, even if it might provide a long-term advantage.
Misunderstanding on Duty	Education of AOs about issues material to their operations is a key part of the role played by many ICs, but can be blocked by AOs' misunderstanding of their obligations as fiduciaries. For example, a popular misconception is that making decisions which include consideration for environmental factors is essentially a breach of fiduciary duty; such misconceptions can cause AOs to decline or refuse to pay for advice from ICs on issues that they perceive to be outside of their spheres of responsibility, even if they accept the 'business cases' that can be made for the impacts from them.
Distaste for Step Changes	Because the resources (especially time and expertise) of AOs are always limited, the capacity to implement changes is necessarily constrained. This typically means that ICs are incentivised to deliver solutions that reflect 'slight variations on familiar themes' rather than revolutionising innovation. Consequently, change aversion hampers green investment.
Mismatched Timelines	AOs and ICs oftentimes face conflicting time horizons. While nominally both might agree that short-termism is a 'bad thing', management teams and directors at AOs are characteristically

	pressured to deliver performance according to quarterly and/or annual benchmarks. For their part, ICs must deliver and are evaluated on solutions that must demonstrate merit according to their appraisal cycles, or when mandates/contracts are otherwise up for renewal. Hence, even when longer-term perspectives and focus might be inarguably a sound pursuit, one party or the other in any IC-AO relationship may be compelled to press for alternatives that perform 'better' in the short-term.

- Implementing green investment practices may require not only changes in measurement practices for AOs and ICs, but also changes in concepts and language. Innovation in green investment seems to be substantially impeded by ICs seeking to cater to mandates from AOs that can be incompatible with effectively integrating green investment into wider strategies.

- Although investment beliefs are becoming more widely used as a tool, they may not be currently used to best effect when building green investment possibilities more comprehensively into processes such as risk budgeting and management, portfolio construction, manager selection, and portfolio maintenance. This improper/under-utilisation of investment beliefs, however, presents an opportunity for improvement.

- Supply and demand frictions appear to be preventing investment consultants from playing as effective a role as they could be to expand and deepen use of green investment principles and practices among their asset owner clients. The challenging wrinkle for progress on green investment, however, is the multi-causal nature of this mutual deficiency in both supply and demand (see table above). It is simultaneously structural (e.g., fees and resources allocations both within ICs and AOs), relational (e.g., in terms of the power balance between ICs and their AO clients), and informational (e.g., misunderstandings about the boundaries of responsibility for fiduciary duty by AOs, and the duty of care by ICs), as well as a litany of other factors that this report has only been able to touch on.

Solutions and recommendations

The frictions outlined above share a common factor: a de-prioritisation of the long-term. Thus, it stands to reason that practically any change that has the net effect of allowing both ICs and their AO clients to refocus their attention and actions onto longer timescales should reduce many frictions at once.

ICs should be compelled to seek such a refocusing toward the long-term, because they face risks of stranding their own most valuable assets – their reputational and relational capital with their AO clients – if such a transformation is not realised. AOs may find their ICs culpable for not having sounded alarms loudly enough when they had opportunity to do so. In short, we anticipate that ICs could face a jolting devaluation of their reputational capital if they fail to help their AO clients plan for and cope with a long-term future that arrives 'sooner than expected'.

Unfortunately, given the scale of some of the problems identified here, it does not seem likely that isolated efforts by single ICs acting alone will suffice to provide the kinds of changes needed to promote green investing services and products that can better guard against the types of stranding risk which we have cited. Without the cooperation of their AO clients, for example, ICs who act alone may simply lose mandates, and be supplanted by competitors willing to cater to short-termism at the expense of their long-term reputational assets.

Instead, proper solutions will require collaborations between: ICs and AOs; ICs and regulators; ICs and asset managers; and individual ICs with one another. With respect to the specific forms of collaboration needed, we list some possibilities below:

- **Resource sharing**: ICs struggle to allocate sufficient resources to genuine innovation on green investment topics. Part of the problem is a lack of adequate fee margins and internal resource sharing to be able to accomplish adequate scale. Yet, through collaborative efforts with one another, ICs may be able to build durable pools of resources through consortia: by sharing expertise, time, and experiences, they may be able to achieve breakthroughs in both concepts and products that would be unreachable separately.[4] Obviously there are organisational hurdles to implementing such resource-sharing facilities. Nonetheless, if preserving reputational capital for the industry as a whole is recognised as a worthwhile goal, then such resource-sharing efforts may yet gain traction. And pooled resources among ICs may not even need to generate innovations to pay dividends for the industry. For example, collective campaigns to correct pervasive misinformation, such as continued misunderstanding by many AOs about the implications of fiduciary duty for green investment possibilities (and even obligations) could help.

- **Collective standards**: Although many AOs may feel that ICs' advice and/or products may not be sufficiently differentiated from one consultancy to the next (i.e., some ICs' offerings are too 'commoditised') there are genuine limits in terms of how bespoke solutions can be without IC fees being substantially increased. As widespread fee increases seem unlikely, the logical alternative is for AOs to engage in more pronounced collective action to set some standards for their ICs about what is a priority for individualised solution-building, and what can be tolerated as 'recycled' solutions across clients. If conducted appropriately, such standards would not require sacrifices in quality, and indeed could generate more competition among ICs in areas that are most beneficial for AOs.

- **Regulatory involvement**: Given that the value of IC expertise is why so many AOs continue paying for IC services, that expertise which is the most 'uncommon' should command a scarcity premium that may lead to either or both 1) improved fee margins; or 2) more mandates. Many of the environmental, social, and economic threats that green investment seeks to address will inevitably cause reactions by policymakers and regulators. Because such reactions may be outside familiar domains for AOs, ICs could conceivably add substantial value (and make their reputational assets more robust) by becoming expert navigators of potential long-term policy and regulatory reactions. And what better way to gain durable expertise in a changing policy and regulatory environment than by taking a proactive role in informing it. Hence, while ICs already take steps to help inform policymakers and regulators, they could substantially advantage their AO clients, and their own reputational capital, by helping to inform a wide variety of future policies and regulations that may help promote green investment.

Invariably, the broad classes of action path indicated above will find a mixture of obstacles and successes, and will proceed along varying timelines. Managing them together should be part of a shift by ICs to acting on, and not just discuss, a proactive campaign for longer-term perspectives. For the sake of driving more immediate transformation, however, we also propose a straightforward strategy by which ICs may start forcing change now.

Time for the long-term: Proposing a 'rule of thirds'

A common refrain heard in conducting this research is that both ICs and their AO clients wish (at least nominally) for AO-IC relationships to be more focused on the long-term. The basic underlying problem, however, is that the time available for AO-IC interaction is both scarce and valuable. Thus, considering the long-term and reorienting perspectives towards it requires the allocation of time for it. But such allocations fail to

[4] For example, agreement on and development of better tools for quantifying environment-related risks with the potential to strand assets could help to make green investment more 'objective' in the eyes of asset owners, and consequently lead to new advisory mandates.

happen in the absence of suitable forcing mechanisms: structured commitment devices and governance systems that require both AOs and ICs to balance the short-, medium-, and long-term horizons over which problems and solutions must develop.[5]

Without such forcing mechanisms, there inevitably arises an unending parade of shorter-term problems that swamp the resource of time, and crowd out planning and proactivity on the long-term. Forcing such attention on the long-term may not be as hard as it may sound if it is built into mandates heuristically. The particular heuristic we propose is what we call the 'rule of thirds'.

Simply, AOs hire ICs to solve particular problems (albeit with varying levels of specificity), and all such problems invariably have an embedded time dimension. The heuristic that we propose merely involves dividing any interaction or discussion that is had between AOs and ICs in resolving that problem into equal thirds. That is, AO-IC interactions on solving any problem should be spent (approximately) one-third deliberating on and solving short-term aspects of the problem, one-third deliberating on and solving medium-term aspects of the problem, and one-third deliberating on and solving long-term aspects of the problem. By giving the long-term its due time, ICs and AOs will find it difficult not to confront green investment issues.

Encouraging asset owner proactivity: An alternative approach

Apart from the more forward-looking solutions that we have identified above, we also see need for the immediate provision of tools to aid both asset owners and investment consultants in bolstering green investment capabilities. In response to this, we have created a comprehensive set of criteria for AOs analyse the competencies of ICs on green investment (see Section 6). This checklist also represents a prescription for ICs about how to improve their own abilities in helping AO clients to solve their green investment problems.

We have also proposed an approach that may be used in conjunction with our checklists to provide a more holistic means of assessment. The method we describe (see Section 6 and the Appendix) can be straightforwardly used by AOs to determine which, if any, candidate IC is best situated to handle those green investment problems that AOs themselves identify as priorities; as well as assign indicative scores that help to establish degrees of difference among the candidate ICs.

The approach revolves around an algorithmic view: it defines a step-by-step procedure for: 1) ordering the green investment ambitions of any particular AO *relative to* its abilities for the specific green investment goals that it identifies for itself; and 2) establishing which ICs (if any) can furnish green investment solutions with an acceptable level of expediency and customisation. Our approach empowers AOs to better identify more targeted green investment priorities, and then match these needs to IC services in a thoroughly demand-led fashion.

[5] Gilovich, Griffin, and Kahneman (2002) give an excellent exposition of many of the human cognitive proclivities that drive a need for forcing mechanisms.

1. Introduction and background

How are the relationships that investment consultants (ICs) have with their asset owner (AO) clients (such as pension funds, endowments, etc.) influencing the continued development of green investment[6] products and services? This paper presents findings from a study into this challenging question.

Evidence from various sources suggests that, in general, the ways in which ICs and AOs currently interact may be inhibiting both the expanded use of, and continued innovations in, green investment products and services. We find that the root of this problem tends to be driven by multiple simultaneous 'frictions' (including, e.g., forms of: transaction costs; agency and organisational problems; and communicational lapses) in how ICs and AOs engage over not just green investment issues, but in general.

An indicative list of some of the most pervasive frictions that we have unearthed is set out below. Although most IC-AO relationships will not suffer from all of these frictions at once, we suspect (and have found evidence) that the majority will suffer from several of these frictions simultaneously at any given point in time.

Figure 1: Examples of Frictions in IC-AO Relationships that Harm Green Investment

Friction	Description
Fixation on Labels	Despite growing visibility of green investment concepts within mainstream finance, no standard set of labels (i.e., terms and categories) has emerged that is universally accepted. Use of different terms by ICs and AOs (both among themselves and with each other) can therefore lead to unnecessary or exaggerated disagreements and misunderstandings. Moreover, because many green investment concepts and products do not easily fit under conventional labels (e.g. modern portfolio theory approach to handling risk; asset-class-based allocations) many AOs encounter difficulties in 'making green investment fit' within their broader investment aims.
Measurement Dependence	Many of the deepest threats from environmental change suffer from not being easily quantifiable. For example, they may require a good deal of 'subjective judgment' to forecast, or face competing standards for calculation, which erodes confidence in them. Because many green investment considerations and opportunities may not be construed as being as 'objectively' measurable as other concerns that AOs face, they can be downgraded in terms of amount of time that ICs spend on them.
Belief Misalignments	Although the role of investment beliefs for governance is becoming increasingly acknowledged by AOs, there remains a commonplace misalignment between some beliefs that AOs express, and the actions taken on green investment For example, an AO might have a belief in the value of long-term investing, but fail to take proper account for how environmental policy could or will most likely affect some of its illiquid holdings decades into the future.
Fee Imbalances	The structure of fees that ICs receive (especially margins and internal redistribution of fees across the firm) inhibits long-term research on, and cultivation of, solutions that do not realise a near-term return. Because AOs may not be keen to pay explicitly and directly for 'green investment' services, many ICs may not be adequately incentivised to develop such capacity, even if it might provide a long-term advantage.
Misunderstanding on Duty	Education of AOs about issues material to their operations is a key part

[6] Throughout this paper we favour the term *green investment* and this is meant to be broadly defined, and includes such concepts as 'sustainable investment' 'socially responsible investment', 'environmental and social governance', and 'stranded assets' among others.

	of the role played by many ICs, but can be blocked by AOs' misunderstanding of their obligations as fiduciaries. For example, a popular misconception is that making decisions which include consideration for environmental factors is essentially a breach of fiduciary duty; such misconceptions can cause AOs to decline or refuse to pay for advice from ICs on issues that they perceive to be outside of their spheres of responsibility, even if they accept the 'business cases' that can be made for the impacts from them.
Distaste for Step Changes	Because the resources (especially time and expertise) of AOs are always limited, the capacity to implement changes is necessarily constrained. This typically means that ICs are incentivised to deliver solutions that reflect 'slight variations on familiar themes' rather than revolutionising innovation. Consequently, change aversion hampers green investment.
Mismatched Timelines	AOs and ICs oftentimes face conflicting time horizons. While nominally both might agree that short-termism is a 'bad thing', management teams and directors at AOs are characteristically pressured to deliver performance according to quarterly and/or annual benchmarks. For their part, ICs must deliver and are evaluated on solutions that must demonstrate merit according to their appraisal cycles, or when mandates/contracts are otherwise up for renewal. Hence, even when longer-term perspectives and focus might be inarguably a sound pursuit, one party or the other in any IC-AO relationship may be compelled to press for alternatives that perform 'better' in the short-term.

Some of these frictions are more easily removed and/or mitigated than are others, and we discuss the ways in which ICs and AOs, separately and collectively, can address them. While we find that some frictions are attributable more directly to one party than the other (i.e., ICs more than AOs, or AOs more than ICs), we discover that, in many cases, the persistence of frictions is attributable to both. For example, a disbelief by an AO that water scarcity is a material concern for its investment strategies might inhibit development of green investment solutions that address water scarcity; but a failure by a partnering IC to properly inform the AO about how addressing water-scarcity risks in its portfolio might be part of its fiduciary duty puts some of the fault with ICs.

Yet, while the problem seems to be one of both 'supply' and 'demand', we conclude that ICs should be most strongly motivated to pursue resolutions, because they face stark threats from maintaining the *status quo*. Perhaps our most unexpected finding, however, is that, in continuing to allow relationship practices with AO clients that inhibit continued development of green investment solutions, ICs may be exposing their core assets to stranding.

Assets 'strand' when they suffer from "unanticipated or premature write-downs, devaluations, or conversion to liabilities" (Caldecott, Howarth, and McSharry 2013, p. 7). The most valuable assets of ICs are typically non-physical: their client relationships, as well as their reputations for trustworthy, high-quality service (whether it be through provision of advice, or managed products). Both of these intangible assets, however, could suffer devaluations as a result of environment-related factors. Pointedly, although some uncertainties still remain about many environment-related risks (e.g., socio-economic impacts from, and policy responses to, increasing resource scarcity and climate change), the majority of environment-related risks seem now to be 'known unknowns' rather than 'unknown unknowns': they are issues that can be studied and planned for, rather than being "Black Swan" events that cannot be anticipated *ex ante* (Taleb 2012).[7] Thus, because a primary function for

[7] Although such studied planning may require some deep thinking and possible changes in how both ICs and AOs approach these types of problems and seek solutions on them. Scenario planning is one area in which such process changes may be needed, see, e.g., Caldecott, Tilbury, and Carey (2014). For more detail on distinctions between risks from knowns and unknowns, see, e.g., Diebold, Doherty, and Herring (2010).

ICs is in helping AOs to cope with developments that may have material impacts on their financial performances, a failure by ICs to properly help AOs address environment-related risks may cause the relationships and reputations of ICs (i.e., their primary assets) to become stranded.

This study thereby adds to the growing realisation that stranding, as a socio-economic phenomenon, can apply to intangible as well as physical assets (e.g., coal-fired power stations, oil refineries), even though the latter typically receives more attention from many stakeholders. Yet, helpfully, many of the general classes of feasible solutions for physical assets can also be applied to intangible assets that are vulnerable to stranding. We discuss some of these potential remedies with specific application to what ICs might wish to pursue.

Furthermore, we also supply the reader with two other tools – a checklist mechanism and a rating algorithm – for practical evaluation of ICs' green investment savviness and fitness to meet AOs' specific green investment needs. The checklist approach is rooted in a list of three desiderata for green investment expertise among ICs: domain-specific expertise; proactive development; and full organisational permeation. We give justification for why these desiderata are essential for ICs to provide their AO clients with appropriate green investment products and services, and identify a series of simple 'checks' that AOs (and others) can perform that help to appraise the level of expertise of specific ICs. Regarding the algorithmic approach, we discuss briefly how such a tool is superior in many ways to more staid practices within the financial community, such as relying on rankings of investment consultants and other service providers. (We place more complete technical exposition of the algorithmic approach in appendices to this report.)

When used together, our checklist application and the ambition-driven algorithmic tool can present a fairly comprehensive – but straightforwardly and rapidly implemented – indication of: 1) how relatively expert a particular IC is in specific fields of green investment; and 2) how fit that IC is to address an AO's specific green investment needs. This tandem approach alleviates or bypasses many of the relational frictions that we have identified in our research on AO-IC interactions.

1.1 Project origin and scope

In 2014 members of the Stranded Assets Programme at the University of Oxford's Smith School of Enterprise and the Environment, along with a number of external project partners[8], launched an investigation into what role ICs 1) are playing, and 2) could potentially play, in advancing green investment practices within financial communities worldwide. Specific interest in investment consultants sprung from a realisation and appreciation surrounding the central position that ICs have within the investment ecosystem. Below is a selective list of important functions that ICs often provide.[9]

- ICs provide strategic advice to trustees of many (both private and public) institutional-investment funds (e.g., pensions, endowments) about asset allocation, and develop plans for how pension funds can achieve necessary risk-adjusted performance to match their liabilities;
- ICs construct mandates for asset managers;
- ICs assess asset manager strategies and/or help pension funds to select asset managers for mandates;
- ICs match fund demand from asset owners with fund supply from asset managers; and
- ICs play an essential advisory role for many pension funds that have few in-house staff and layperson trustees.

[8] The Prince's Accounting for Sustainability Project (A4S), Institutional Investor Group on Climate Change (IIGCC), Investor Group on Climate Change (IGCC), Investor Network on Climate Risk (INCR), Ceres, and ShareAction.
[9] This list also appears in Caldecott and Rook (2015). See also: Bodie, Kane, and Marcus (2007); Clark and Monk (2015).

Examining these and other roles played by ICs makes it evident that they occupy a key position as 'gatekeepers' for many AOs, and that they operate at the interface between different parts of the investment ecosystem. As such, they could be – and generally are – instrumental in determining whether innovative ideas are accepted or not by the financial community. This role of ICs as gatekeepers for novel ideas should apply to green investing.

Nevertheless, extensive formal and informal dialogue with diverse stakeholders over the course of the last several years (including asset owners, as well as investment consultants themselves) suggests that: how ICs are engaging with their AO clients may not be accelerating innovation in and uptake of green investment practices.[10] Instead, and in general, they seem to be hindering them.

As a consequence of these observations from close dialogue with stakeholders, as well as academic and other third-party experts, we inaugurated a project to investigate the following six research objectives, which centre on understanding what is happening, and what could potentially be done, with ICs and green investment.

Project Aims

1. **Examine** to what extent the under-provisioning of advice on green investment (broadly understood and defined) is a material issue for pension funds and the investment consultant industry.[11]
2. **Investigate** the scale of such under-provision, its potential causes, and where it manifests itself most acutely.
3. **Explore** the processes that pension funds (and other asset owners) use for selecting investment consultants and managing investment consultant relationships over time.
4. **Uncover** more precisely how the trend to delegate asset owner duties to investment consultants could affect consideration of green investment.
5. **Identify** and assess criteria to rate investment consultants with regards to green investment.
6. **Generate** actionable recommendations for how to address the various problems identified.

A major challenge faced by the project from its inception was the thin availability of predecessor studies. Although the IC industry has long been studied by practitioners and academics alike, systematic studies concerned with the specific issues that we seek to address are limited in number (as is treated in Section 2, where a literature review is undertaken). Furthermore, where studies do exist, they tend to focus on specific questions or subsets of issues for the industry, rather than on full characterisations that span the IC industry at large.

Hence, in order to fulfil its aims, the project needed to begin with the establishment of relevant 'baselines' to determine whether the perceived problem of under-delivery of green investment was a concern specific to green investment within the IC industry, or whether it stemmed from wider issues. This report represents a distillation of much of that baselining activity to date. That activity has focused mainly on gathering perspectives, opinions, and other data on Aims 1 and 2. As part of efforts to fulfil the latter aims, we have been active in developing suites of tools for both deeper assessment of the relevant problems, as well as that help to 'build-in' solutions. Partly as consequence of our findings from work on Aims 1 and 2, approaches, such as the algorithmic-assessment tool developed in Rook (2015) and summarised later in this paper, situate the project for action in the near future.

1.3 Methodology

Given that this project is primarily exploratory, we opted for a suite of research methods that prioritise open-minded investigation and observation, but that still retain rigour and reduce inadvertent or unintended biases. As such, we were led to pursue a multi-modal research paradigm that has recently gained traction and found

[10] See Clark (1998) on the role that methods of close dialogue have to play in financial research.
[11] Caldecott and McDaniels (2014) give a review of different definitions for financial materiality.

success in studies of human factors within the financial services industry: the method of assembly that has come to be known as "close-dialogue" approaches within the disciplines of financial and economic geography (see especially: Clark 1998).

More specifically, the methods employed in this phase of the research project entailed a three-pronged approach, comprised of:

- Semi-structured interviews with leading practitioners who are, or for a significant portion of their earlier careers, were, high-ranking members of investment consultancies;
- A purposed forum which convened a specially-selected list of participants from across the financial services industry, as well as relevant policy experts and academics[12]; and
- A web-delivered survey instrument designed for asset owners to report facts and opinions on how they engage with investment consultants, as well as their views on and understanding of the investment consultant industry, both on green investment issues, as well as more general topics.

This threefold approach was essential to expanding the scope and comprehensiveness of the project, and allowed for cross-verification of findings over different formats of engagement with subjects, which – per best research practices – guards against misinformation that is due to contextual pressures which might otherwise instigate inaccuracy. More will be said on each of these specific research approaches, and findings from them, in Sections 3 and 4 of this report. For now, however, we wish to enter a caveat to our preliminary conclusions with the observation that results here should be understood as part of a work in progress: we make no claims about the universal nature of our findings; we merely convey to the reader the general perspectives among various sets (and subsets) of industry practitioners (especially investment consultants and asset owners) that we, as researchers, encountered as 1) regularly repeated and consistently emerging among respondents we studied; 2) confirmed by those respondents as 'popular' impressions among their comparable peers; and 3) coming from sources that we could verify as credible and very unlikely to deliver false or misleading information or claims.

Notably, we clearly indicate within the report where disclosed perspectives may be minority opinions, or (potentially idiosyncratic) stances that are most attributable to individuals, rather than representing wider views.

1.4 Structure of report

The remainder of this report is structured as follows. Section 2 discusses some relevant industry and academic research and finds a gap in knowledge that this report and project attempt to fill. Section 3 discusses the results to date under the project from interviews and a purposed forum on the topic of investment consultants and green investment. Section 4 covers results from a survey on the same topic. Section 5 integrates and distils the findings from Sections 3 and 4 and proposes a number of action paths that concerned stakeholders may follow. On the back of these major findings, Section 6 familiarises the reader with two purposely-developed tools to better empower AOs and assist them in identifying which ICs may be most aptly positioned to provide them with green investment products and services, as well as how to proactively use these tool to demand (in clearer terms) the types of IC expertise that they desire most. Section 7 summarises, and describes next steps for this research project.

[12] A summary of proceedings for this event appears in Caldecott and Rook (2015).

2. Related literature and studies

In this section, we give an overview of some of the existing work that has been done in both industry and academia on investment consultants (ICs) and green investing. The purpose of this section is not to be exhaustive, but to identify where major gaps in understanding exist, as well as to equip readers with a list of some relevant reports and discussion on related themes beyond the immediately addressable scope dealt with in this report. We begin with some of the industry literature. Given the enormity of the topic of investment consultancy at large, most industry reports that deal substantially with the IC industry focus on particular subsets of the industry by concentrating on, e.g., particular geographies or specific branches of service provided by ICs; few reports deal explicitly with issues facing the IC industry at large. A notable exception is the large National Association of Pension Funds (NAPF) survey report (conducted most recently in 2014; see NAPF 2014). Other industry reports, such as Investments and Pensions Europe's (IPE) annual report on the European institutional asset management industry (IPE 2014), or the OECD's annual survey of large pension funds (OECD 2014), include special subsections that deal with the IC industry.[13] A common theme among such reports is that – although many asset owners appear at least moderately satisfied with their ICs' performances in terms of advice and service provision – there are signs that the IC industry may not be as functional as could be (or should be) expected. Particularly, concerns over lack of competitiveness, and innovation relative to value, are continually apparent from many such studies.

A considerable number of studies that address the state of the IC industry do so from the vantage point of ICs' predominant clients: institutional AOs. KPMG, for example, has begun producing an annual survey of the fiduciary management (FM) market (see, e.g., KMPG 2014). Recent findings from that report suggest that there may not be sufficient competitiveness in the selection processes that AOs use in choosing, and especially in renewing, relationships with ICs dealing in fiduciary management. That report, however, like many other industry reports, does not deal specifically with how the IC industry is coping with green investment issues, or how the issues on which the particular report focuses (e.g., fiduciary management) bear on the continued evolution of green investment.

Very recently, however, a number of industry studies have emerged that are beginning to investigate the intersection of investment consultancy and green investment. Eurosif, for example, published a report in 2009 entitled 'Investment consultants & responsible investment study' (Eurosif 2009), which discusses the results of a 30-question survey of nearly 50 European ICs on the topic of responsible investment. That study found that respondent ICs felt that their AO clients misunderstood their fiduciary obligations on responsible-investment matters, but also suggested that ICs might lack many of the necessary skills and tools to help clients most effectively resolve those problems. Moreover, it raised the issue of whether or not ICs are taking a sufficiently proactive and forward-facing stance in helping their clients to understand whether and how such issues pose material concerns for their own operations. (Unfortunately, the study has not been repeated by Eurosif in the past half-decade to check progress on these concerns.[14]) Additionally, a contemporaneous study done by the Institute for Responsible Investment (IRI 2009) based on a roundtable discussion with ICs similarly found that, at that time, there was a candid perception among ICs that they needed stronger acumen and capacity in being able to furnish sustainable investment advice and service for their institutional investment clients. Likewise, a more recent investigation by Ceres (2014) found (from a small sample of 13 ICs globally) that ICs may lack expertise on environmental, social, and governance (ESG) factors in providing advice to their AO clients, and that they may not regularly incorporate such considerations into their formal recommendations (especially when such advice is model-driven or quantified).[15] Perhaps partly in response to this and similarly identified shortcomings, Aviva's (2014) 'Sustainable Capital Markets Manifesto', which is a proposal for how the world's

[13] See also the recent results of the AICIO (2014) survey and report.
[14] Although see the recent report by Eurosif (2014) about socially responsible investment (SRI).
[15] Comparably, recent survey results in Ambachtsheer and McLaughlin (2015) demonstrate that many pension funds (and likely other AOs) are also improperly taking these factors into account, especially by not having an adequate focus on longer-term impacts from these factors. See also Laing et al. (2012).

financial systems could be made more sustainable, makes specific calls for ICs to formally integrate ESG factors into all of their processes.

In sum, the major gap that we encounter in the industry literature is that major studies which look at the IC industry more broadly (but which are relatively few in number) tend to exclude specific considerations for green investment-related issues, whereas more focused studies (and even studies that look at the nexus between ICs and green investment) perhaps do not take a global enough view on the issues and challenges that are facing the IC industry, and would necessarily need to be resolved going forward (i.e., the latter group of reports recurrently finds evidence that ICs are not doing enough to promote green investment practices among their AO clients, but they tend not to delve deeply into the causal forces behind this thin provision, nor identify and scrutinise closely the relevant barriers to changing this *status quo*). Hence, we find a vacancy within the industry literature that this project and report seek to make progress on, and aim to fill.

Meanwhile, although investment consultancy seems to be a favoured topic of research in academic finance, much of the published work in the area concentrates on consultancy for retail investment, and not upon institutional investment (see, as excellent examples: Hackenthal, Haliassos, and Jappelli 2012; Inderst 2010; 2011; Inderst and Ottaviani 2012; Mullainathan, Noeth, and Schoar (2012). Moreover, even though these studies are numerous, they tend not to focus on green investment issues among ICs and their clients (see, however: Valor, de la Cuesta, and Fernandez 2009). Nevertheless, some highlight papers have emerged in recent years that are beginning to look at some intriguing issues inside the investment consultancy industry that apply to those ICs who serve institutional investors. For example, from a theoretical standpoint, Gennaioli and Shleifer (2015) deliver an insightful treatment of why the long-term development of trust between ICs and their clients may actually impair performance if it is prioritised over innovation. Although their model is not expressly applied to green investment considerations, its results appear extensible to them. On the empirical front, a recent study by Jenkinson, Jones, and Martinez (2014) calls into question how much value ICs actually provide to their clients in terms of increasing returns (see also the earlier study by Gohal and Wahal (2008) on hiring and firing of intermediaries by asset owners).[16] Furthermore, Clark and Monk (2015) provide a case-based consideration of how investment consultants and other financial intermediaries may be the beneficiaries of, and leverage, ambiguity in relationships with their asset owner clients.

Noticeably, practically none of these studies emphasises the role of investment consultants in green investing, even though many furnish insights into some of the ways in which the IC industry itself (including IC relationships with AO clients) may be inefficient or otherwise improvable (and in clear need of improvement). Examining such highlight literature thus provides us with some comfort that this project is investigating questions that have received unsatisfactory answers in both academic and industry research relative to their importance.

[16] See also Jones and Martinez (2015).

3. Results from assembly studies

This section reports on findings from in-person assembly studies conducted for the requisite exploratory phase of this research project. Namely, it discloses major findings from 1) semi-structured interviews held with industry practitioners; and 2) a special-invitation forum that convened selected experts from the field. The first part of the section focuses on the former, and the second part on the latter, largely on the basis that the two research segments were conducted in chronological succession, but also owing to the fact that some of the topics discussed and debated among participants at the forum were inspired by findings from the semi-structured interviews. This approach allowed for a degree of 'controlled public validation' of claims and commentary from the interviews, but also a multi-perspective expansion on some of the assertions from interviews. (Importantly, all interview participants were invited to, and attended, the forum, but were not explicitly identified to the other participants.)

We conclude this section with a synopsis of findings which focuses mainly upon clearly distinguishing between which perspectives seemed to be reflective of the majority of participants in both forms of assembly study (i.e., interviews and forum), as well as further questions that were raised by both sets of study.

3.1 Semi-structured interviews

3.1.1 Format, participant characterisations, and considerations

For this assembly study, senior (current or recent) members of investment consultancies were recruited. The individuals contacted were drawn from a representative list of UK consultancies that have significant investment advisory or service functions. The representativeness of the recruited organisations was meant to span scale from the largest such consultancies, to consulting organisations comprised of single (but prominent, 'brand name') individuals with established reputations in the financial sector. For confidentiality reasons, the list of organisations and individuals contacted will remain anonymous, but this list was shared with academic colleagues and expert practitioners outside the project, and was judged as fair and balanced in its composition. Given the care that must be taken in vetting potential interviewees, as well as to prepare for and validate interview questions and protocols, we did not undertake to expand the list of recruited respondents (although we intend to conduct further interviews with other relevant individuals in future stages of this project). Of the 14 individuals contacted we were able to arrange one-on-one interviews with six interviewees.

Each of the interviewees was given a comprehensive overview of the project and its aims in both their invitation to partake, as well as again when the interview commenced. In both cases the description was scripted to make sure that all interviewees were provided with the same level of detail, so as not to introduce bias in the form of differential information. All interviewees were given the choice to conduct the interview in-person or via telephone. All but one individual opted to perform the interview via phone rather than in-person (in the single instance of the in-person interview, the interview was conducted at the offices of the consultancy at which the interviewee is employed, so as to maximise the 'contextual familiarity' of that interviewee during the dialogue).

Interviewees were, in conformity with best practices, advised that responses would remain anonymous and that they could choose to have any of their statements omitted from the project (none of the interviewees opted for such omission). Further, all interviewees were informed that the process would take approximately 30 minutes, but that in all cases the interview would not be required to end until they felt satisfied their views had been fully and fairly divulged. Only one interview was less than 30 minutes (lasting 23 minutes). One interview lasted for nearly two hours exactly, whereas the remaining interviews all took between 30 and 50 minutes to be completed.

The semi-structured interview format is popular in many social-science fields (especially human geography) for exploratory studies such as the current phase of this research project. It allows the interviewer to ask a number of pre-formulated questions, and for the interviewee to respond to an extent and in a fashion (e.g., with anecdotes, reference to specific data/case studies, or simply conversationally) that they feel best suits their

perspective and style. Given the equal footing of these pre-formulated questions, responses can then be more evenly compared. Yet, the format permits questions by the interviewer in response to statements by the interviewee that are not pre-planned, and therefore allows for additional detail to be extracted from the dialogue, which can make it an invaluable tool for garnering unexpected insights. Hence, semi-structured interviews balance comparative baselines and standardisation against the merits of dynamical flexibility.

All interviews were conducted during January and February 2015. Structured questions from those interviews are reproduced in full below.

Figure 1: Structured Questions from Interviews

1. Do you think that the 'market' for investment consultancy on green investment faces an appropriate level of supply and demand?
   a. From the demand side: are asset owners (whether at the Board or Executive levels) desiring such advice and/or services?
   b. From the supply side: are there too few or too many investment consultants who offer green investment advice and/or services? And are they being too (or else insufficiently) 'assertive' in offering such advice/services to their clients?
2. In your opinion, should sustainability (whether environmental, social, etc.) be a fiduciary duty at the Board level for asset owners? If you feel that it should be, then do investment consultants have a role to play in properly equipping asset owner clients on the matter, even if it is not demanded directly? Should asset managers have this same obligation?
3. Has the role or nature of sustainability-related engagements (where they are indeed happening) of investment consultants by asset owners changed lately? Where/when do you see it changing most markedly in the future, if at all?
4. Are investment consultants focusing on the appropriate timelines when it comes to their relationships with their asset owner clients?
5. Are there any reasons that one might expect ways in which asset owners and investment consultants interact to change drastically in the future?
6. Is the role of investment beliefs becoming any more or less pronounced in the outcomes of asset owner/investment consultant interactions, especially with respect to green investment and sustainability issues?

Interviewees were allowed to ask for clarifications as well as definitions of any components of questions posed to them (specifically, 'green investment' was given the same definition – and explicitly provided for interviewees – as is used throughout this project: the most general and encompassing view of sustainable, responsible, and ethical investment that operates within the rule of law, but gives primary consideration to financial outcomes, i.e., its intention is not as a charity but as a returns-seeking activity, although it may entertain and give consideration to additional aims). We report now on both the consensus and non-consensus responses of interviewees to each of these questions in turn. Where appropriate, we include responses on non-structured content from interviews.

3.1.2 Question #1

Do you think that the 'market' for investment consultancy on green investment faces an appropriate balance of supply and demand? From the demand side: are asset owners (whether at the Board or Executive levels) desiring such advice or services? From the supply side: are there too few or too many investment consultants who offer green investment advice and/or services? And are they being too (or else insufficiently) 'assertive' in offering such advice/services to their clients?

The general consensus emerging among interviewees was that the market for IC on green investment is not facing appropriate supply-demand balance, as both are lacking. In short, interviewees predominantly felt that the main issue was lack of demand by asset owners for green investment advice and services, and that this lack of demand in turn degraded supply. Hence, while a typical view was that problems facing general lack of green

investment is exacerbated by both insufficient demand for and supply of consultancy services for green investment, the primary causal element is persisting inadequacy among asset owners in interest about green investment.

Notably, half of the interviewees were careful to point out that this lack of interest among asset owners (especially trustees and Board members) is not mostly an issue of unawareness or misunderstanding of the main arguments underpinning sustainability, social and environmental responsibility, etc. Instead, those interviewees asserted that the main predicament is many AOs feeling that either (and sometimes both): 1) such issues are not entirely or at all material; or 2) that they have no ability – within the scope of fiduciary duty – to act on such issues as asset owners. Some specific further causes of thin demand are enumerated below.

- One interviewee was careful to elaborate that what many AOs find troubling about sustainability and related matters is that there is a lack of 'objectivity' surrounding many aspects of it. In particular, it is seen by some that there is too much dispersion of opinion on many problems of sustainability, and that for AOs who are seeking cohesion and consensus to ensure that choices are soundly made, 'nebulous' possibilities and a lack of concrete evidence are difficult to prioritise over other types of investment and governance decisions that seem 'objective'.
- Another point raised on this matter (by a separate interviewee) was the notion that there is an increasing appetite among many institutional asset owners (especially defined contribution pension schemes) for investment strategies that require minimal and simple governance structures. Simply, green investment typically requires extra governance, and makes it antithetical to what some AOs are aiming to achieve.
- A third interviewee made the point that most pension funds (whether defined contribution or defined benefit) are under-resourced, regardless of which geography they are operating in. Ergo, the fact that many still see sustainability topics and green investment as 'controversial' issues (in terms of how they should be handled financially) causes them to become a lower-level priority for even those AO teams that recognise them as being material. This interviewee was, however, quick to underscore the point that many trustees still feel that they have no legal ability to act on sustainability issues, even if they personally see them as material, strictly for the (falsely held) belief that fiduciary duty does not allow for it. (The interviewee was careful to spell out that this view was, in the interviewee's opinion, a false interpretation of the spirit and letter of fiduciary duty, but that many consultants are reluctant to correct this misconception, or possibly even that many are still not fully aware of it).
- Another interviewee was careful to note that some very large public pension funds have built their own internal capacities for green investment, and that these entities do not necessarily now seek IC services on those matters. It was noted that if this trend were to deepen, then it may depress supply, because demand for green investment advice would come predominantly from smaller AOs, which are not able to pay large consultancy fees, and thus making provision of the service less profitable.

A further blanketing opinion that was expressed by all interviewees is that the lack of demand among AOs is the primary driver behind an inadequate supply of consultancy on green investment. The main opinion among interviewees seemed to be that ICs are loathe to force issues onto their AO clients, and that if clients express a lack of interest or concern that an issue is not material or meaningful to them, then many ICs will not attempt to press the issue further, and instead attempt to pursue other issues or problems (and giving priority to those matters that AOs themselves especially identify as important to manage).

In summary, interviewees were generally in agreement that the present supply-demand balance is inadequate for green investment consultancy, and that such imbalance is driven directly by scarcity of demand, which leads to a scarcity of supply because ICs tend to cater to issues especially identified by their clients as needing attention. These views seem to be especially revealing about the perceived power balance between ICs and AOs in terms of how issues are broached and prioritised in typical IC-AO relationships. While a few interviewees

supplied anecdotes about situations in which ICs were allowed to dictate what issues should be dealt with, the impression primarily delivered was that AOs are the primary initiators, and that most ICs deliver advice and services that fall within circumscribed boundaries on such issues.

3.1.3 Question #2

Should sustainability (whether environmental, social, etc.) be a fiduciary duty at the Board level for asset owners? If it is, do investment consultants have a role to play in properly equipping their clients on the matter, even if it is not being demanded directly? What about asset managers?

All interviewees agreed that sustainability concerns (of both environmental and social types) should be a duty of AO Board members, and that these concerns are material for most investment activities. It was also stressed that ICs have a 'duty of care' to their AO clients to present issues that they perceive as material, even if solutions to address these issues are not demanded directly by clients. The opinions of interviewees, however, seemed moderately divided when it came to follow-on inquiries regarding how ICs should deal with situations wherein AOs, once made aware of such issues, persist in claiming them as not material or of first-order priority. Some interviewees felt that such an expression by a client should be sufficient grounds to not pursue such topics further. Others, however, thought that 'quality' ICs would look for solutions that were encompassing (the possibility of broaching and dealing with such issues in the form of 'stranded assets' was specifically mentioned as one approach that has been of interest to AOs, wherein other sustainability topics were claimed by the AO to be either of little interest or else of no direct concern). Another interviewee noted that, if an AO client shows little interest in sustainability matters despite attempts by an IC at addressing them, then the IC should try to reposition such matters as strategies and opportunities that are more immediately actionable, rather than as general constructs. Other interviewees expressed similar concerns that – once a client has expressed disinterest – the topic should be pressed further by the IC *only if* some new, significant, and helpful opportunity for action can be found.

One interviewee in particular had very elaborate opinions about how asset managers might contribute to the solution. Specifically, the interviewee identified the measurement processes (in terms of how performance by investee companies and assets is tracked and reported) used by asset managers as a significant area for improvement with respect to sustainability issues. It was suggested that better attention be paid to how sustainability performance is monitored among investee companies, and that, rather than reporting financial results to asset managers (and hence then along on to asset owners) on a quarterly or monthly basis, that such results should be delivered only annually. This lengthening of the reporting horizon for financials, the interviewee suggested, would allow more attention to be paid by asset managers (and, vicariously, owners) to issues of sustainability in the intervening time windows. Other interviewees suggested that managers should have (ideally or actually) an obligation to help their asset owner clients to address sustainability issues, and support green investing independent of specific demand.[17] In particular, a few interviewees cited the opportunity for collaboration between asset managers and investment consultants in improving both information flow and delivery of innovative products for green investment. This was suggested as being particularly likely in the future, as more investment consultants are moving into the space of asset management, and not just provision of advisory services.

3.1.4 Question #3

Has the role or nature of sustainability-related engagements (where they are indeed happening) changed lately? Where/when do you see it changing most markedly in the future, if at all?

Two interviewees noted a significant increase in the demand and appreciation for the role of environment, social, and governance (ESG) data (especially through brand-name venues, such as MSCI, FTSE, etc.) on investee (and potential investee) companies. It was stated that this change is not necessarily due to strengthening interest

[17] The 'duty of care' was specifically invoked by one interviewee as the rationale for doing so.

in green investment, but in quantitative tools in general for monitoring non-price factors in portfolios. The existence of this change highlights the importance that 'objectivity' (or, at least, the appearance thereof) seems to carry for many AO clients, and the potential rise in importance of 'big data' for AOs' strategies may be one point of entry for ICs to introduce quantified aspects of green investing.

One interviewee noted an increased appetite among AO clients for customised reporting by asset managers and investee companies on both green investment and more general issues of performance (although it was noted that this change seems to be coming only from very large AO clients). This change seems to be translating into increased demand for advice from ICs about the ideal format and content of such customised reports, as well as the grading whether or not asset managers can report to requested standards.

Two interviewees claimed a pattern of stronger appetite for delegation of sustainability/green investment issues by their AO clients, such that they wished to be advised about how to best 'outsource' governance and oversight functions for sustainability and green investment concerns. Two interviewees noticed a deepening of demand and interest in engagement over investment beliefs, especially related to sustainability.

3.1.5 Question #4

Are investment consultants focusing on the appropriate timelines when it comes to their relationships with their asset owner clients?

One popular viewpoint was that many ICs make efforts to focus on longer time horizons, but that these efforts are often offset by several forces, including:

- Pushback from AO clients in favour of focusing on 'more immediate' issues and concerns;
- Occasional 'crises' (typically in response to news or recent events) requiring work to craft reactive responses, taking away time that could be spent focusing on the longer term;
- A need to 'demonstrate value' in the near term to continue winning mandates and new or repeated business from AO clients in the face of competitive pressures from other ICs; and
- Competition and pressure internal to ICs over resources and remuneration that force a prioritisation of projects that can lead to monetised results in the near term.

Also noteworthy is the fact that one interviewee reiterated a need by ICs to stress to their AO clients the benefits of focusing on annual financial figures, and to spend more time in engagements thinking about non-financial and non-price factors (e.g., sustainability and governance) in the interim.

Overall, a general view held by all interviewees was that most ICs would (at least nominally) be content to focus on longer horizons, especially if arrangements could be contracted with AOs to guarantee exclusivity of mandates and/or business for longer timespans. It was repeatedly observed, however, that short-termism among AO trustees was the most substantial form of friction preventing this.

3.1.6 Question #5

Are there any reasons that one might expect the ways in which asset owners and investment consultants interact to change drastically in the future?

Interviewees were split over whether they were willing to make projections about how relationships between ICs and AOs would change in the future. One interviewee in particular was vocal in the belief that many ICs would continue to transform their business models to more closely resemble asset managers, and offer portfolios and products directly rather than simply advise on aspects of them. It was suggested that this change would be driven by the higher margins associated with it, and that it may create more space for smaller, specialised ICs because the larger ICs undertaking such changes would no longer be able to give independent advice without

becoming conflicted. This particular interviewee, however, questioned the extent to which independence was necessarily a helpful virtue for all ICs if high-quality outcomes could still be delivered to their AO clients.

Another interviewee suggested that there may be a decline in the demand for specific IC services, as a trend of insourcing on specific functions for advisory services and expertise is occurring among major (especially public) AOs (notably in countries like Canada and the United States). This interviewee noted a recent trend among some AOs in collaborating to share research and ideas, as well as to access particularly novel opportunities. It was remarked that if such activity increases in the future, then it could be rather damaging to larger ICs.

3.1.7 Question #6

Is the role of investment beliefs becoming any more or less pronounced in the outcomes of asset owner-investment consultant interactions?

There was clear consensus on this question: all interviewees felt that investment beliefs were becoming more prominent points of fruitful exchange, discussion, and interaction in most AO-IC relationships.[18] A popular point made, however, was that there still exists a great diversity among AOs in terms of their sophistication in using their investment beliefs to formulate strategies and decisions for investment (green or otherwise).

3.1.8 Remarks

The responses and perspectives gathered during the process of administering the semi-structured interviews offered valuable and in-depth insight into the current views of prominent actors within the investment-consultancy industry. We wished, nevertheless, to vet these views more widely than could be done in one-on-one interviews, and to seek elaboration on some of the claims made. In order to do so, we convened a purposed forum for specially-invited participants. Much of the forum was structured around the early findings from the interviews. We now turn to some of the main results gleaned from that event.

3.2 Forum

3.2.1 Particulars of the forum

In this subsection we give an overview of the structure and operation of the 'forum method' of investigation that we implemented (further details appear in Caldecott and Rook 2015).[19] The forum was titled 'Investment Consultants and Green Investment' and was convened by the Smith School of Enterprise and the Environment at Waddesdon Manor in Aylesbury, Buckinghamshire, UK on 6th March 2015. Forty prominent members of the financial and research communities were invited and attended (a full list of participants appears as Appendix B in Caldecott and Rook, 2015). These attendees included representatives from ICs, AOs, asset managers, various universities in the UK, and several public organisations. Participants were provided in advance with some background literature (listed in Appendix C of Caldecott and Rook 2015) that they were asked to read prior to the day. Furthermore, at both the point of invitation and at the start of the day's event, participants were instructed that no identifying quotations would be permitted in any form from the event or reports on its proceedings (although a list of participants and panellists would be made publicly available). We uphold that agreement here.

[18] Work by investment scholars such as Koedijk and Slager (2011) was cited as being particularly influential in the rising popularity of investment beliefs as a governance mechanism within the financial services community. Adoption of investment beliefs by larger organisations such as CalPERS was also identified as being a further driver behind momentum.

[19] Independently from this project, the Stranded Assets Programme has used similar methods of forum-based investigation to gain insights on other topics. Summaries of these other investigations can be found as: Caldecott, Rook, and Ashwin (2014); Caldecott, McDaniels, and Dericks (2014).

Participants were instructed that the 'purpose' of the day's event was twofold, and involved:

1. Informing the research by helping identify forces and effects that are bearing upon how investment consultants have treated, continue to treat, and may treat in the future, issues of green investment, both during client engagements and otherwise; and by suggesting promising extensions and/or expansions beyond the initial scope of the project[20]; and
2. Identifying points of consensus by discussing the nature and extent of the problem, as well as some prospective solutions.

These motivations were posed as the framing for the day's discussions, and were reiterated to participants by moderators throughout so as to help in focusing the (at times wide-ranging and lively) deliberation.

The primary format for the day involved two panel sessions, each followed by open discussion. The two panels were respectively entitled 'Client demand: The missing ingredient?' and 'Barriers to progress: What other factors might be at work?' Both panels entailed four expert speakers, who each delivered independent presentations that fitted within the overarching themes. Moderated discussion then followed the presentations. The next sub-section gives a distilled overview of the main findings which emerged from the event overall.

3.2.2 Main findings of the forum

Because the results of discussions during the forum are covered in considerable detail in the 'Summary of Proceedings' (Caldecott and Rook 2015), we give only a bulleted summary of highlight findings and the main consensuses here.

Session I: Client Demand – The Missing Ingredient?

- A major function served by ICs is to inform and educate AO trustees about risk factors and opportunities. Yet, trustees rarely demand solutions that address risks and opportunities about which they are 1) unaware; or 2) aware but cannot clearly act on.
- AOs often face issues of misaligned beliefs, values, and investment policies. While an obligation of ICs is to help AOs address these misalignments, it may not be the place of ICs to dictate what the specific beliefs and values of AOs should be in the first place.
- Demand by AOs for green investment advice and solutions from ICs may be considerably depressed by inappropriate reliance on labels, and a desire by ICs to deliver products and services that fit with labels used by AO clients (particularly those appearing in mandates).
- A focus on labels is exacerbated by strict adherence to the 'risk as volatility' paradigm, which may be stifling demand for new forms of advice and products connected with threats and opportunities that concern climate, environment, and sustainability (i.e., green investment).
- Although some AOs may be reluctant to pay higher fees to ICs, the relatively small margins (as compared to many asset managers) faced by ICs means that customised solutions are not as commonplace as they could be. And a lack of fees linked specifically to green investment might be behind the fact that most ICs have shown less innovation there than they have on other issues.
- The scarcity of step changes among AOs and preference instead for incremental change limits the extent to, and pace at which, ICs can drive transformations. Governmental interventions may be one recourse for accelerating change, but pose significant challenges and guarantees.

Session II: Barriers to Progress – What Other Factors Might Be at Work?

[20] Participants were given a comprehensive description of the project's genesis and progress. A summary of details provided to participants appears in Caldecott and Rook (2015).

- Confusion by AOs over the boundaries of fiduciary duty may be one major barrier slowing progress on green investment uptake and innovation (by ICs and others). Plenty of myths seem to exist about what fiduciary duty requires and allows regarding incorporating environmental, climatic, or sustainability factors in investment decisions, and many of these falsities stem from misunderstanding by AOs themselves on the scope of fiduciary duty.
- Some of the greatest risks, as well as some of the largest opportunities, connected with climate and other forms of environmental change involve significant opacity, and this lack of concreteness introduces prohibitive difficulties for ICs in convincing some AOs about merits of green investment solutions.
- The dominant portfolio-construction paradigm based on fixed asset classes (e.g., equities, bonds) may be seriously impeding the expansion of green investment due to overly restrictive categories. By focusing on risk factors rather than on asset classes ICs could achieve more progress.
- Much of the value in pension schemes is located with near-term claimants (i.e., those nearing retirement), whereas many of the largest liabilities to both those schemes and society with respect to green investment issues sit with long-term claimants (e.g., with younger or future members of schemes and/or society). When ICs offer solutions to clients that prioritise value over liabilities, ICs may be missing a significant opportunity to advance green investment objectives.
- Finding more effective ways for ICs to promote green investment possibilities will require a wider appreciation of the investment ecosystem as a whole, and should not be restricted to considering only ICs' relationships with AOs, but also those with asset managers, policymakers, lawyers, and pension beneficiaries, plus those with other stakeholders.

Overall, the present-and-discuss format for the forum strongly validated perspectives put forth by subjects in the semi-structured interview segment of the research. Recall that all interviewed subjects were invited to, and attended, the forum. Notably, however, most of the opinions that did materialise during the course of the forum did so without domination of the conversations by any of the interviewees (who were 'anonymous' to the other forum participants, in the sense that other participants were not alerted to the fact that any participants of the forum had been separately interviewed about perspectives). This 'natural' development semi-validates the authenticity of viewpoints and commentary derived from the interview-based component of research efforts.

Nevertheless, it is worthwhile here to stress some of the issues that received relatively more focus and attention in the course of the forum and its moderated discussion than during any of the individual interviews (or were otherwise unmentioned by interviewees). These issues can be approximately categorised into several clusters:

- Methodological and proprietary problems: These issues related to the 'public availability' of tools used by ICs. Concerns that some of the approaches used by ICs were 'overly proprietary' and might not be broadly disseminated was voiced as one possible impediment to expansion of green investment practices (a general narrative being that if analytical or strategic tools for green investment analysis used by ICs are only available through paying a single IC, then this limited availability may hamper widespread expansion of green investing by asset owners). It was noted that 'cost-versus-differentiation' concerns might be a driver.
- Training issues: It was noted that the nature and structure of ICs' training may have impacts on how effectively ICs provide green investment advice and other services to asset owners, as well as how much effort they expend on researching and developing new green investment expertise, products, and services for clients. (Obviously, such training may extend to pre-employment training, and thus bears on the recruitment practices of ICs.) It was questioned how much topic-specific training ICs receive on green investment issues and methods (both standard and 'cutting edge'), and what the lag time is between receipt of any such training and the ensuing transmission to asset owner clients.

- Remuneration, retention, and turnover problems: It was suggested that issues around billable hours by ICs, as well as other disincentives in terms of individual career progression and budget allocation (i.e., organisational/structural frictions within ICs), can play a significant role in the quantity and quality of delivery/circulation for green investment advice and services. Furthermore, the flow of talent both into and out of the industry was also suggested as playing a part (specifically, it was noted that young ICs, who may have the most topic-specific training in green investment methods and analysis, might be the most likely to exit the industry in pursuit of other career opportunities; this turnover was suggested as likely to be problematic).
- Regulation and professional practice: A number of prevalent financial practices (both mandated and voluntary), such as mark-to-market accounting, were proposed as being detrimental to provision of many forms of green investment services by investment consultants.
- Conflicts of interest: Whether ICs face strong and harmful conflicts of interest in providing green investment services to AO clients was also debated. Although no consensus emerged, it was raised as a possibility that (at least minor) conflicts could be a genuine hindrance to changes.

In Section 5, we further reflect on these obstacles; in that section we also propose some potential paths for remedy that may be pursued by investment consultants themselves, as well as other concerned parties and stakeholders. But first we turn to the findings from administering the survey instrument. As will be seen, while the survey-derived findings do overlap with and bolster findings in other branches of the research project, they also deliver new insight.

4. Results from survey study

4.1 Survey construction and respondent pool

The 'Investment Consultants Survey' instrument was developed over the course of several months and through close collaboration with a number of academic and industry experts in both financial services and survey architecture and administration. The final content of the survey was reduced from a larger universe of items, and was agreed upon by both the core project team and affiliated project partners. The survey instrument itself was administered through a well-respected and secure online platform (SurveyMonkey®) to both ease and speed dissemination, as well as to facilitate the data collection, aggregation, and analysis research tasks.

The specific content of the survey was selected and crafted to supply insights about both general and nuanced views that respondents may have about the investment consulting industry in general, as well as its interplay with green investment in particular. Importantly, the survey was especially designed for asset owner (AO) respondents, and it implemented a 'gating' structure that allowed for a tailored menu of items that depended upon the personal experiences that respondents have had with investment consultants. Notably, the main decision gates that respondents encountered related to whether the AO that they represent 1) hires or has recently hired one or more ICs to provide it with advice (whether green investment advice or otherwise), and 2) hires or has recently hired one or more ICs to manage a portion of assets under management (AUM). (Note that these gates are not mutually exclusive).

Beyond these gated items, the survey also asked all respondents a battery of questions, regardless of their own experiences (as well as those of their organisation) with ICs (although in all instances respondents were allowed to express a response of not 'not knowing' how to answer an item due to lack of direct experience with ICs; where appropriate this response option was separate from a generic 'don't know' response alternative). A further helpful feature of the specific instrument design involved a free-response space on all items for respondents to elaborate on their view. Although most respondents did not utilise this option on most items, we found that a minority of respondents used this opportunity for additional elaboration to express detailed opinions, as well as especially strong sentiments, which might not otherwise be thoroughly captured by the fixed response alternatives. This 'added colour' was useful for our understanding in many instances, and selected, anonymous excerpts are reported in the following when appropriate.

As in other segments of this project, responses to the survey were collected on an understanding that the identities of respondents and the organisations that they represented would remain anonymous. We uphold that promise here. Nevertheless, proper analytical protocol requires that we divulge the general approach that we used to recruiting respondents, which necessarily demands giving some generic details about the types of respondents sought, and our specific methodology for reaching respondents to request survey participation.

Given the difficulty that often obtains in contacting busy financial services professionals, we relied on designated project partners to disseminate the survey instrument. Although this approach relinquished some control over the sampling methodology that was employed (we elaborate on this issue shortly), it allowed for acquisition of a potential sample that otherwise may have been difficult to obtain without the direct contacts of the project partners. Hence, as with any empirical research endeavour, we made a decision on trade-offs: full control of the survey's dissemination for a potentially insightful and prestigious sample of respondents. Given the ultimate response set, we feel that this tactic was appropriate, but it imposed restrictions on the final response set.

First and foremost among these restrictions are those due to the sampling procedure. Because we knew little about the prospective recipients of the survey *ex ante* (i.e., we were not given access to the distribution lists

beforehand) we had no control over whether sampling was random, stratified, etc.[21] Obviously, in terms of claiming representativeness of the sample, this restriction is severely limiting. As a consequence, we can make no assertions that the results from the survey are in any way representative of typical perspectives among asset owners. Nonetheless, the particular nature of the non-selective sampling methodology employed does not itself preclude this possibility. In brief, we cannot tell whether our sample is representative or not.

The second restriction imposed by reliance on project partners to disseminate the survey instrument involves issues of response clarification and follow-up. Succinctly, because project partners controlled the listing of contacts for respondents, we had no immediate way of contacting respondents to ask for clarification on what appeared to be erroneous or unintended response patterns (e.g., selecting multiple responses in a multiple-choice listing of mutually exclusive alternatives). Although we did have information about the AO organisation to which most respondents belong, reaching out to respondents that generated incongruous response patterns through project partners (i.e., with project partners intermediating) was not seen as feasible. Resultantly, we were compelled to omit the responses of particular individuals. These omissions resulted in slight reduction of the sample size of respondents.

In total, however, we felt that, for the purposes of preliminary exploration at the heart of this phase of the research, these drawbacks were acceptable in the face of insights that the final sample ultimately furnished (as discussed shortly).

4.2 Data description and protocols

To maximise potential response volume, we opened the survey on 26th January 2015 and it remained open for invited responses until 31st March 2015. At the start of this period, project partners contacted prospective respondents in their distribution lists via electronic mail with a message specifically scripted by our research team that requested participation. The email contained a link to the electronic survey allowing it to be taken in standard web browsers. Over this span of time 56 individuals began the survey. Of this pool of respondents, 18 completed too few questions (three or less) to be considered as valid responses.

Of the remaining respondents, there were two groups – a pair and a trio – that were from the same AO organisations. Because counting these responses as distinct individuals risked duplication and double-counting on the basis of shared views (which was confirmed upon close inspection of the responses given by these 'colleague' respondents), these responses could not – per best practice – be treated as distinct. We therefore opted for a 'priority rule', whereby the earliest respondent in the two groups to submit responses was treated as the single respondent for her/his organisation. Given that the responses within each of the two groups were nearly identical, this choice had little consequence for the ensuing results. Application of these protocols resulted in a final sample size comprising 35 distinct sets of response.

Although this level of response constitutes 'small-sample statistics' in nearly all respects, it is notable for the volume of assets under management (AUM) controlled by the organisations connected to the individual respondents. By an approximate calculation – as of April 2015 – the 35 respondents to the survey represented some USD 2.3 trillion in AUM. Hence, although the actual number of individual respondents is relatively few, we feel that the results from these responses are of importance and interest given the amount of financial capital controlled by the organisations that respondents represent. We hasten to add the caveat, however, that although the survey's instructions did prompt respondents to answer 'as if' they were representing their employers (unless otherwise indicated), we cannot guarantee that the opinions of individual respondents in any way reflect

[21] Furthermore, because we did not have direct access to the distribution lists used by project partners, we can say little about the geographic balance of prospective respondents contacted, as well as what the overall response rate was. We know at most that the number of prospective respondents contacted was large (several thousand), but that only about 50 responses (and 35 usable responses) were received by us, and makes the response rate low by most standards.

the actual 'average' or 'typical' opinions and/or experience of members of the organisations they represent. Hence, while respondents' organisations control some USD 2-plus trillion in AUM, the opinions captured by the survey might not reflect actual 'decision capital' at work.

4.2.1 Demographic features of response sample

We now characterise some of the demographic features of the response pool reported to us by respondents.[22] We convey these values here in order to better frame the following analysis. To begin, respondents were predominantly employees of pension funds (18; 37%). Endowments represented a minority (4; 11%) of respondents, with the remainder (13; 37%) identifying as 'other asset owners or financial institutions'. A significant number of respondents (12; 34%) identified themselves as 'trustees or Board members', while 23% of respondents (8) identified as executives. The remainder identified themselves as senior managers or officers of various types. The respondent set was overwhelmingly European in character (24; 69%), with minority groups of respondents from North America (7; 20%) and Australia (4; 11%) (note, respondents were asked about where the main offices of their employer are located; ergo, an Australian pension fund with satellite investment offices in London would have reported itself as Australian).

The respondent pool also exhibited high levels of educational attainment, with the vast majority (29; 83%) having earned at least an undergraduate degree (notably, 5 respondents expressed that they would prefer not to state their level of educational attainment, and therefore this figure could actually be higher). Many respondents also held masters or doctoral qualifications, as well as a variety of relevant professional qualifications (especially actuarial accreditations). The majority of respondents (27; 77%) also had worked for ten years or more within the financial services industry, with a significant minority (11; 31%) of this group having two or more decades of cumulated experience working with one or more financial services organisations. Most respondents also identified as 'deeply familiar' (21; 60%) with sustainable-investment topics, or else 'somewhat familiar' (12; 34%), whereas only a small minority (2; 6%) felt themselves as 'minimally familiar'.

Hence, overall, the respondent pool was by-and-large educated and experienced, as well as at least moderately familiar with green investment topics and issues. Moreover, the majority of respondents represented large and prestigious AOs from both private and public sectors. With the respondent set now characterised, we can turn to our main aim of analysing response patterns.

4.3 Response analysis

As reported, the response set of 35 individuals constitutes a data structure that falls squarely within the realm of 'small samples', despite the volume of AUM that it represents. It was therefore unsurprising that many forms of statistical analysis that we attempted to apply to look for systematic response patterns failed to achieve significant results (even for relatively permissive levels of significance). For example, we attempted to conduct the following forms of pattern analysis: clustering; class (including latent-class and relational-class) analysis; hierarchical analysis; and entropy analysis.[23] All of these various tests, however, failed to unveil any significant structured patterns of response. We take this outcome as evidence that there is significant diversity in terms of the perspectives that respondents have about the investment-consulting industry. That is, we interpret the non-emergence of any categorical patterns as demonstrating something that also became apparent from interviews and the forum: asset owners tend to look at investment consultants in considerably heterogeneous ways, and require a wide variety of services from them.

[22] We report these demographic figures for the reduced set of 35 respondents that met our retention criteria stated earlier.

[23] All analysis was conducted in the statistical computing language 'R' using standard packages (e.g., those described in Adler 2010). Exceptions include relational-class analysis (Goldberg 2011) and entropy methods (Rook 2012), which were run with specially designed R packages available from those authors.

Nevertheless, the lack of significant test results from the aforementioned methods means that the ensuing analysis must be more localised, and focus on intra-item rather than inter-item response patterns. As will be shown, this approach yields some further interesting results. We begin with a report of our general results (i.e., responses to items that were non-gated, and applied to the majority of respondents; no non-responses were given for these general items).

4.3.1 General items

Are there enough top-quality ICs?

- Too few: 12 (34.3%)
- About enough: 12 (34.3%)
- Too many: 4 (11.4%)
- I do not know: 7 (20.0%)

This response distribution suggests intriguing possibilities: pointedly, it does not indicate that respondents feel the IC industry suffers from an excess of quality. Rather, if anything, it conveys that perceived 'quality' may be in scarce or just-sufficient supply within the IC industry. Noteworthy is the realisation that this distribution does not rule out the likelihood that undersupply of green investment expertise is a factor inhibiting the expansion of green investment. Yet it does not by itself help to establish causes for this possibility. The next pair of items, however, gives more direct clarity on green investment.

Are there enough ICs that provide top-quality sustainable investment advice?

- Too few: 24 (68.6%)
- About enough: 3 (8.6%)
- Too many: 1 (2.9%)
- I do not know: 7 (20.0%)

Are there enough ICs that provide top-quality sustainable investment management services (e.g., directly-managed sustainable investment funds)?

- Too few: 20 (57.1%)
- About enough: 3 (8.6%)
- Too many: 3 (8.6%)
- I do not know: 9 (25.7%)

The responses on green investment specifically are noticeably more pronounced that those on investment consultancy generally; whereas only about a third of respondents felt that there are too few top-quality ICs in general, a clear majority thought that there is not enough quality IC supply of advice or investment-management services regarding sustainability. A clear interpretation of these results is the stark perception of undersupply among respondents with regard to capacity on green investment in the IC community.

If there is not much perceived oversupply of IC services in general (or green investment in particular), a logical question then becomes: is there (at least the perception of) significant distinctions among ICs? That is, if there is no strong excess supply of IC services, is there evidence of sufficient motivation among ICs to differentiate from the competition? The next survey item addresses this.

Do you think that there is meaningful differentiation among service offerings of ICs?

- No: 15 (42.9%)
- Yes: 15 (42.9%)
- I do not know: 5 (14.3%)

The fact that respondents were effectively split over whether meaningful differentiation exists among ICs' service offerings is an intriguing one. It hints that some AOs might not see the 'value' generated by one IC as sufficiently distinct from that of another, and calls into question whether the selection and assessment mechanisms used for choosing ICS might indeed be appropriate. Although the survey instrument itself is incapable of determining such suitability, this result does raise the possibility that offering distinctive excellence to AO clients in green investment products and services might be a possible future dimension for differentiation within the IC industry.

Another important question regarding the vitality of green investment services and products in the IC industry pertains to timelines stressed by ICs to clients.

Do you feel that ICs tend to focus on the appropriate time horizons for investing?

- No, they focus too much on the short-term: 19 (54.3%)
- Yes, they focus on the correct investment horizons: 13 (37.1%)
- No, they focus too much on the long-term: 2 (5.7%)
- I do not know: 1 (2.9%)

Interestingly, respondents did not predominantly feel that ICs were overly focused on the long-term, and the majority felt that they were too short-termist (although a significant minority felt their time horizons were well-calibrated).[24] This results seems to conflict with claims in interviews that the timescales emphasised by AOs preclude AOs from focusing on the longer term. Indeed, one could interpret this situation as highly conflicting, which suggests that better – possibly more explicit and concrete – communication may be needed among ICs and their AO clients about what constitutes suitable time horizons.

Another obvious concern for the health of the IC industry involves usual fee levels.

What is your general impression of the typical fees charged by ICs?

- Too expensive: 11 (31.4%)
- About right (or even just right): 7 (20.0%)
- Inexpensive: 3 (8.6%)
- It is too hard to generalise: 8 (22.9%)
- I do not know: 6 (17.1%)

Responses to this item seem to show another complication in remedying some of the causes cited in the interviews for why green investment practices may not be sufficiently prioritised by ICs: fee margins.[25] The above results indicate that the majority of respondents (more than half) felt that IC fees were either appropriately priced or too expensive. Recall, however, that an insight drawn from some of the semi-structured interviews was that many ICs may face tight margins, and that these narrow margins might be restricting the extent to which ICs feel it appropriate to invest in expanding capacity and resources on green investment advisory services. What the above results suggest is that this problem may not be best remedied by raising fees; AOs might resist attempts to do so. Indeed, more than a quarter (9; 25.7%) of respondents answered 'yes' to the follow-on question: 'Has your firm recently (e.g., in the past year) not hired or consulted with an IC due to excessive fees?' Instead, what might be of interest to all parties is a search for higher-margin services related to green investment that ICs might deliver for comparable fees. With these more general items covered, we turn now to responses about various specific experiences with ICs.

[24] An intriguing view of one respondent was that 'It is not an explicit short-term focus, but the outworking of their priorities.'

[25] One respondent delivered a particularly cynical view of the fee levels charged by ICs: 'ICs form a cosy club that keeps fees elevated.'

4.3.2 IC-experience items

In this subsection, we investigate specific response distributions to two 'gating' questions: one that filters those respondents who hire ICs for investment advice; and another that filters respondents who hire ICs for managing assets.

Does your firm hire external investment consultants (ICs) to provide it with investment advice?

- Yes 23 (65.7%)
- No 12 (34.3%)

Plainly, a meaningful majority of respondents hire ICs to provide advisory services. Among those respondents who reported that their organisation hired ICs for advisory services, the following distribution was reported for the question:

How many different external IC organisations does your firm hire annually to provide it with investment advice?

- 1 IC 13 (56.5%)
- 2 ICs 5 (21.7%)
- 3 ICs 2 (8.7%)
- 4 ICs 1 (4.3%)
- 5+ ICs 2 (8.7%)

Hence, from this sample, it seems normative that many organisations might hire only relatively few ICs for advisory services (perhaps as a response to fees).

Are you personally satisfied with the quality of advice your firm receives from its ICs?

- Very satisfied: 3 (13.0%)
- Somewhat satisfied: 15 (65.2%)
- Neutral 3 (13.0%)
- Somewhat unsatisfied: 2 (8.7%)
- Very unsatisfied: 0 (0.0%)

Does your firm receive any advice from its ICs regarding sustainable investment? If yes, how satisfied are you personally with the quality of that advice?

- No 10
- Yes - very satisfied: 1 [3] (4.3%)
- Yes - somewhat satisfied: 7 [8] (30.4%)
- Yes - neutral: 3 [1] (13.0%)
- Yes - somewhat unsatisfied: 1 [1] (4.3%)
- Yes - very unsatisfied: 1 [0] (4.3%)

What is intriguing to note from the above figures is the relatively high level of satisfaction that most respondents report with the advice received from their ICs in general, as well as for specific sustainable-investment advice.[26] Although nearly half do not receive specific sustainable-investment advice from ICs, those that do are generally content with it (bracketed numbers for responses on satisfaction with sustainable-investment advice indicate relative numbers for contentment with general advice from those respondents claiming to also receive advice from ICs on sustainable investment). A pattern can be discerned, however, in the slightly lower levels of satisfaction reported for ICs' sustainable-investment advice than for their advice in general: there seems to be

[26] An intriguing rationale given for by one respondent for being only 'somewhat satisfied' with overall IC advice was that: 'There is a reasonable relationship but proactive flows of ideas is spasmodic.' This sentiment indicates the value placed on ICs reliably providing ideas to AOs.

more dissatisfaction with sustainable-investment advice than for general investment advice. Although, as remarked above, this small sample may not reflect wider circumstances, it does suggest that – for respondents asked – green investment advice from ICs may be of a lower relative level of quality than other forms of advice, which suggests that perhaps insufficient resources are being allocated to it relative to other services.

If not enough resources are being allocated to green investment advice compared to other services, it might be helpful to understand views on reasons why AOs hire ICs.

Among the following, which is the primary reason that your firm hires ICs for advice? (Please select all of the following options that apply.)

- Expertise: 22 (95.7%)
- Time savings: 9 (39.1%)
- Reductions of personal and/or firm liability: 6 (26.1%)
- Other: 4 (17.4%)
- Cost reductions: 3 (13.0%)

Clearly, expertise is the predominant motivation for hiring ICs for advice among respondents, with time savings a distant second. By logical extension, in order to satisfy AO clients, ICs must have a basis of expertise in green investment for clients to feel that they are deriving value from that relationship. Although we can only tenuously point to the prospective connection between ICs' lack of expertise on green investment matters and lower levels of resources provided to that area of advisory services the data do not seem to discredit that hypothesis.

It thus becomes important to hunt for reasons why ICs might choose not to 'invest' in green investment expertise. The nature of the balance of power between ICs and AOs in their relationships may be among the causal influences.

Consider the ICs which your firm has hired/worked with in the past year for investment advice. In general, which party do you feel had more power/influence in those relationships (i.e., which party seemed 'dominant')?

- My firm: 10 (43.4%)
- Both parties generally have equal power/influence: 8 (34.8%)
- The IC: 4 (17.4%)
- It is too hard to generalise: 1 (4.3%)

Interestingly, most respondents who hire ICs for advice do not feel that the IC is the dominant figure in the relationship, and instead most feel that their firm is in control, or else that power and/or influence are shared evenly. This situation may explain why ICs might not feel comfortable in being overly assertive on green investment issues: they are not in sufficient advisory control. Logically, it can also explain why they may 'underinvest' in expertise on them.

We now turn to consider the second main gating question:

Does your firm hire ICs to directly manage any of its financial capital/investment portfolio?

- Yes: 8 (22.9%)
- No: 27 (77.1%)

Succinctly, within the sample hiring external consultants to manage capital is less commonplace than is hiring ICs for advice. Yet, among those eight respondents who do hire external consultants for portfolio/capital management purposes, it seems to be more normative to hire more investment consultants.

How many different external investment consulting (IC) firms does your firm hire annually to directly manage its financial capital?

- 1 IC 4 (50.0%)
- 5-9 ICs 2 (25.0%)
- 10+ ICs 2 (25.0%)

All respondents were also either 'very satisfied' or 'somewhat satisfied' with the performance of those ICs that were hired by their organisation to manage portfolios/capital (seven were somewhat satisfied, one was very satisfied, and none were unsatisfied or neutral). Reasons for being only somewhat satisfied included 'limited access' by the hired IC to new products. Further, of eight respondents who claimed their organisations hire ICs to directly manage capital/portfolios, four indicated some of that management is for 'sustainable-investment funds'. Of these four respondents, one was very satisfied with the performance of ICs hired to sustainably manage a portion of its capital, two were somewhat satisfied, and one was neutral. Overall, then, most seemed content with results. Understanding the reasons why ICs are hired for direct management of AOs' financial capital may help in explaining this situation.

Among the following, which are reasons that your firm hires ICs to directly manage some of its financial capital? (Please select all that apply).

- Cost reductions: 6 (75.0%)
- Expertise: 7 (87.5%)
- Better access to investment opportunities: 8 (100.0%)
- Reduction of personal/firm liability: 2 (25.0%)
- Time savings: 3 (37.5%)

From the responses, it seems that access to opportunities is an important motivation for IC hires with respect to direct capital/portfolio management. Expertise and cost reductions are also plainly important. Hence, ICs seeking to offer directly-managed green portfolios should be able to provide enhanced capital access, and cost savings, over what AOs may be able to do themselves.

We now turn to examining the perspectives of those respondents who answered 'yes' to either gating question (i.e., whose organisations hire either or both at least one IC to provide advice; and/or one IC to directly manage a portion of the organisation's capital). 26 (74.3%) respondents fit such a criterion.

Do you feel that any of the ICs which your firm hires face conflicting interests?

- Yes: 11 (47.8%)
- No: 11 (47.8%)
- I do not know: 1 (4.3%)

What is notable here is that the item asks specifically about conflicts faced by ICs which the respondents' firms hire; it is rather surprising that more than very nearly half perceive that any of the firms they hire face conflicts of interest. What would be interesting to study further (but was not directly asked here) is the degree to which such conflicts are construed by AOs as serious detriments.

Below are some of the additional comments provided by respondents as reactions to this survey item.

- 'Our large institutional investment consultant is now trying to sell us other kinds of more lucrative services (e.g. managing direct investments in hedge and PE funds) but income from those services would dwarf income they receive from us to give impartial advice about strategies including whether we should be using their direct program or using fund of funds.'
- 'The rise of fiduciary management and implemented consulting has meant there are clear conflicts of interest.'
- 'The pressure to obtain short-term performance by ICs who also provide managed funds is likely to result in issues where the longer term outlook for a company may be negatively affected by sustainability issues.'

Potential conflicts of interest aside, what is essential for AOs in many cases when evaluating their ICs is whether or not such consultants are able to deliver what they promise to do with respect to mandates and other hiring/selection mechanisms that AOs use to choose ICs (intuitively, AOs may accept conflicts of interest among their ICs if those ICs are still able to deliver promised results).

In your experience with ICs, how would you rate their ability to deliver on their promises?

- Usually over-deliver and exceed expectations: 1 (4.3%)
- Usually deliver on-target and meet expectations: 11 (47.8%)
- Usually under-deliver and fall short of expectations: 6 (26.1%)
- It is too hard to generalise: 5 (21.7%)

What is surprising about this response set is its asymmetry. Although nearly half of respondents found that ICs tend to meet expectations (and one-fifth found generalisations difficult or uncomfortable), four times more respondents (and more than a quarter in total of those that hire ICs) felt that ICs tended to fall short of expectations, rather than exceeding expectations. This finding is especially alarming in light of the following response set regarding IC reliance.

In general, how reliant upon ICs is your firm in its decision-making processes?

- Very reliant – it would struggle without ICs' help: 11 (47.8%)
- Somewhat reliant – it uses ICs regularly: 9 (39.1%)
- Minimally reliant – it uses ICs only irregularly/rarely: 3 (13.0%)

Furthermore, the following response distribution suggests that the 'typical' IC's skill-set might not be all that adapted to meeting the needs of its AO clients.

For what proportion of ICs with which your firm has worked recently is the following statement true: 'They have the appropriate tools/skills to address the problems which are most pressing for my firm.'

- All: 1 (4.3%)
- Most: 12 (52.2%)
- A minority (only a few): 8 (34.8%)
- None (or practically none): 1 (4.3%)
- I do not know: 1 (4.3%)

And given the following result, which conveys attempts by respondents' firms to build long-term relationships with ICs they hire, the above is troubling.

Which one of the following best characterises how your firm tries to engage ICs?

- Try to build durable relationships: 15 (68.2%)
- Try to find the best consultant for every job, even if it means hiring for one-off projects: 5 (22.7%)
- It is not possible to generalise my firm's approach: 2 (9.1%)

Overall, results from this subsection indicate the following points about the sample of respondents with respect to their relationships with consultants:

- Their organisations tend to rely strongly or moderately on ICs, which are hired predominantly for their expertise, and with the hope of building a long-term AO-IC relationship.
- Respondents feel that their organisations hold either an even or majority share of power in their AO-IC relationships.
- Yet, many respondents feel that their ICs are conflicted, and also may not always (or regularly not) have tools that solve pressing problems.

This combination of majority findings for the respondent sample raises some questions. In particular, if AOs are so reliant on ICs to aid decision-making processes, yet hold a dominant share of power in relationships with them, then why would they not be insisting upon focusing on longer-term issues with their ICs – such as green investment and sustainability issues – if their aim is to build long-term relationships with their ICs?

A plausible answer seems to be consonant with verbalised findings from other segments of research in this project: ICs might not be effective in convincing AOs that these issues are sufficiently material to their long-term futures. If AOs are mostly dictating what issues are being dealt with by their ICs, but these issues are actually a subset of larger problems of longer-term sustainability (whether economic, social, or environmental), then it should be unsurprising that ICs may not always (or even regularly) have the right 'tools for the job' because they are incentivised to build capacity in the wrong areas. This phenomenon of AOs leading and ICs following may be a major cause for why ICs have not been as effective as they could be in helping to expand the reach of green investment practices.

A preliminary hypothesis of this research project is that investment beliefs are a mechanism to 'rebalance' the relationship between ICs and AOs. They may help ICs become more effective in helping AOs address material issues, rather than simply the issues that AOs feel are immediately material at any given point. In order to more thoroughly investigate the usefulness of such an approach, our survey instrument also polled respondents on a number of questions about their attitudes towards investment beliefs, as well as how their organisations utilise investment beliefs in their interaction with their ICs.

4.3.3 Investment-belief-related items

Responses to the following three items particularly indicate that investment beliefs (IBs) are a construct that is supported by most respondents, and that they indeed may be regularly used during the course of AOs' decision making.

Do you personally agree that having officially-stated investment beliefs helps a firm like yours to generate value?

- Strongly agree: 21 (60.0%)
- Somewhat agree: 9 (25.7%)
- Neutral: 1 (2.9%)
- Somewhat disagree: 1 (2.9%)
- Strongly disagree: 2 (5.7%)
- I do not know: 1 (2.9%)

Does your firm have any formalised or officially-stated investment beliefs?

- Yes – and I agree with them all: 22 (62.9%)
- Yes – but I only agree with some of them: 7 (20.0%)
- Yes – but I do not agree with any of them: 1 (2.9%)
- No: 5 (14.3%)

Does your firm actively use its officially-stated investment beliefs to guide its decisions?

- Yes – always: 20 (66.7%)
- Yes – sometimes: 9 (30.0%)
- I do not know: 1 (3.3%)

The above responses are encouraging, as they suggest that respondents are typically supportive of and familiar with using investment beliefs within their normal decisional processes. The question remains, however, about whether or not ICs are responsive to the investment beliefs of their AO clients.

The following results indicate that ICs may not prioritise their clients' investment beliefs as strongly as they could in many cases.

Do you think that ICs try to specifically tailor their solutions/advice to the investment beliefs (whether official or non-official) of your firm?

- Yes – always: 2 (6.7%)
- Yes – sometimes: 14 (46.7%)
- Yes – only rarely: 5 (16.7%)
- No – never: 5 (16.7%)
- I do not know: 4 (13.3%)

Furthermore, it seems that respondents already may be in the habit of discussing investment beliefs with their ICs in a variety of ways. This pre-existing familiarity in conversing with ICs over investment beliefs suggests that introducing green investment innovations through the vessel of beliefs may be a pragmatic, and mutually acceptable, way for ICs to make headway with AOs.

Does your firm ever discuss investment beliefs with ICs?

- Yes – but only officially-stated investment beliefs: 7 (20.0%)
- Yes – but only unofficial/informal beliefs: 6 (17.1%)
- Yes – both official and non-official investment beliefs: 17 (48.6%)
- No: 3 (8.6%)
- I do not know: 2 (5.7%)

In all, findings from the survey suggest that investment beliefs may be a useful tool by which ICs can engage with AOs and potentially address green investment issues in a way that could circumvent some of the frictions faced in raising such topics in ways that do not highlight as clearly how green investment pathways may align (or not) with AOs' larger beliefs on investing.

5. Synthesis, stranding risk, and potential solutions

The most pronounced finding *thus far* seems to be that: supply and demand frictions appear to be preventing investment consultants from playing as effective a role as they could be to expand and deepen use of green investment principles and practices among their asset owner clients. The challenging wrinkle for progress on green investment, however, is the multi-causal nature of this mutual deficiency in both supply and demand. It is simultaneously structural (e.g., fees and resources allocations both within ICs and AOs), relational (e.g., in terms of the power balance between ICs and their AO clients), and informational (e.g., misunderstandings about the boundaries of responsibility for fiduciary duty by AOs, and the duty of care by ICs), as well as a litany of other factors that this report has only been able to touch on.

Yet, readers should not conclude that a problem with these many tangled causes requires managing a matching number of solutions. These frictions share a common factor: a de-prioritisation of the long-term when it comes to what problems the IC-AO relationship is deployed to try and resolve. Thus, it stands to reason that practically any change that has the net effect of allowing both ICs and their AO clients to refocus their attention and actions onto longer timescales should reduce many frictions at once.

One assertion in this paper is that ICs should be compelled to seek such a refocusing toward the long-term, because they face risks of stranding their own most valuable assets – their reputational and relational capital with their AO clients – if such a transformation is not realised. Expertise and the capacity to innovate take time to build, and these are the main resources (as evidenced in this study) that ICs claim to possess and that justify their hiring by AOs in the first place. But if ICs are locked into focusing predominantly on short-term issues, then they may not be able to acquire the tools and knowledge that will help their clients to identify and avoid some of the most threatening risks to their business. ICs should have strong incentives to redirect their AO clients' attentions toward longer-horizon thinking, even if they are at first reluctant to comply.

Yet AOs may find their ICs culpable for not having sounded alarms loudly enough when they had opportunity to do so. In short, we anticipate that ICs could face a jolting devaluation of their reputational capital if they fail to help their AO clients plan for and cope with a long-term future that arrives 'sooner than expected'. By this we mean precisely that ICs face a risk of their most precious assets becoming stranded when they fail to help AOs guard against risks that not only could have been, but should have been, dealt with earlier.

The basic narrative that we see for such reputational stranding among ICs is straightforward: because of reluctance to concentrate on the long-term, an AO experiences negative impacts from risks that more advanced green investment practices could have mitigated or eliminated. (Examples might include: an overinvestment in fossil-fuel related assets; lack of protection against rapid materialisation of more rigid governmental policies on carbon pricing or taxes; or failure to realise the risks that major financial institutions, such as reinsurers, face from deepening risks of mass-systemic environmental threats. And these illustrations are only a minute sub-sample of the overall list of possible threats.) And in the fallout from such a negative outcome, the AO would very likely realise that much of its misfortune might have been prevented had it only received more suitable guidance or performance from its ICs; then it might have emerged less damaged, or even unscathed. Particular consequences for the AO-IC relationship thereafter would likely be terminal; and such a termination would almost certainly reduce the prospects of the IC for winning future mandates with other AOs (or may even cause some of its other AO clients to revisit renewal or continuation of their own relationship with the IC). The end product would be a devaluation – or stranding – of the relational asset.

5.1 A spectrum of solutions and solution-seekers

Given the potential gravity that stranding would entail for not only individual ICs, but also for the structure of the IC industry at large, ICs – both individually and collectively – should be attuned to solutions that could prevent such situations. Unfortunately, given the scale of some of the problems identified here, it does not seem likely that isolated efforts by single ICs acting alone will suffice to provide the kinds of changes needed to

promote green investing services and products that can better guard against the types of stranding risk which we have cited. Without the cooperation of their AO clients, for example, ICs who act alone may simply lose mandates, and be supplanted by competitors willing to cater to short-termism at the expense of their long-term reputational assets. Instead, proper solutions will require collaborations between: ICs and AOs; ICs and regulators; ICs and asset managers; and individual ICs with one another. With respect to the specific forms of collaboration needed, we list some possibilities below:

- **Resource sharing**: One of the many findings from this research project is that many ICs struggle to allocate sufficient resources to genuine innovation on green investment topics. Part of the problem is a lack of adequate fee margins and internal resource sharing to be able to accomplish adequate scale. Yet, through collaborative efforts with one another, ICs may be able to build durable pools of resources through consortia: by sharing expertise, time, and experiences, they may be able to achieve breakthroughs in both concepts and products that would be unreachable separately.[27] Obviously there are organisational hurdles to implementing such resource-sharing facilities, and proper precautions would have to be taken to prevent free-riding and other challenges to cooperative motivation. Nonetheless, if preserving reputational capital for the industry as a whole is recognised as a worthwhile goal (and one that is in many ways as fragile as the reputations of individual ICs in the face of a recent trend of in-sourcing by many AOs), then such resource-sharing efforts may yet gain traction. And pooled resources among ICs may not even need to generate innovations to pay dividends for the industry. For example, collective campaigns to correct pervasive misinformation, such as continued misunderstanding by many AOs about the implications of fiduciary duty for green investment possibilities (and even obligations) may help.
- **Collective standards**: Another main challenge identified in this report is that of the strains placed on ICs by heterogeneous demands from AOs. Although many AOs may feel that ICs' advice and/or products may not be sufficiently differentiated from one consultancy to the next (i.e., some ICs' offerings are too 'commoditised') there are genuine limits in terms of how bespoke solutions can be without IC fees being substantially increased. As widespread fee increases seem unlikely, the logical alternative is for AOs to engage in more pronounced collective action to set some standards for their ICs about what is a priority for individualised solution-building, and what can be tolerated as 'recycled' solutions across clients. If conducted appropriately, such standards would not require sacrifices in quality, and indeed could generate more competition among ICs in areas that are most beneficial for AOs. Moreover, such collaboration among AOs on standards-setting seems more likely to be pursued in practice than resource-sharing among ICs, because many AOs do not necessarily consider themselves competitors.
- **Regulatory involvement**: Given that the value of IC expertise is why so many AOs continue paying for IC services, that expertise which is the most 'uncommon' should command a scarcity premium that may lead to either or both 1) improved fee margins; or 2) more mandates. Many of the environmental, social, and economic threats that green investment seeks to address will inevitably cause reactions by policymakers and regulators. Because such reactions may be outside familiar domains for AOs, ICs could conceivably add substantial value (and make their reputational assets more robust) by becoming expert navigators of potential long-term policy and regulatory reactions. And what better way to gain durable expertise in a changing policy and regulatory environment than by taking a proactive role in informing it. Hence, while ICs already take steps to help inform policymakers and regulators, they could substantially advantage their AO clients, and their own reputational capital, by helping to inform a wide variety of future policies and regulations that may help promote green investment.

[27] For example, agreement on and development of better tools for quantifying environment-related risks with the potential to strand assets could help to make green investment more 'objective' in the eyes of asset owners, and consequently lead to new advisory mandates.

Invariably, the broad classes of action path indicated above will find a mixture of obstacles and successes, and will proceed along varying timelines. Managing them together should be part of a shift by ICs to acting on, and not just discuss, a proactive campaign for longer-term perspectives.

For the sake of driving more immediate transformation, however, we also propose a straightforward strategy by which ICs may start forcing change now.

5.2 Time for the long-term: Proposing a 'rule of thirds'

A common refrain heard in conducting this research is that both ICs and their AO clients wish (at least nominally) for AO-IC relationships to be more focused on the long-term. The basic underlying problem, however, is that the time available for AO-IC interaction is both scarce and valuable. Thus, considering the long-term and reorienting perspectives towards it requires the allocation of time for it. But such allocations fail to happen in the absence of suitable forcing mechanisms: structured commitment devices and governance systems that require both AOs and ICs to balance the short-, medium-, and long-term horizons over which problems and solutions must develop.[28]

Without such forcing mechanisms, there inevitably arises an unending parade of shorter-term problems that swamp the resource of time, and crowd out planning and proactivity on the long-term. Forcing such attention on the long-term may not be as hard as it may sound if it is built into mandates heuristically. The particular heuristic we propose is what we call the 'rule of thirds'.

Simply, AOs hire ICs to solve particular problems (albeit with varying levels of specificity), and all such problems invariably have an embedded time dimension. The heuristic that we propose merely involves dividing any interaction or discussion that is had between AOs and ICs in resolving that problem into equal thirds. That is, AO-IC interactions on solving any problem should be spent (approximately) one-third deliberating on and solving short-term aspects of the problem, one-third deliberating on and solving medium-term aspects of the problem, and one-third deliberating on and solving long-term aspects of the problem. By giving the long-term its due time, ICs and AOs will find it difficult not to confront green investment issues.

5.3 Encouraging asset owner proactivity: An alternative approach

Apart from the more forward-looking solutions that we have identified above, we also see need for the immediate provision of tools to aid both asset owners and investment consultants (as well as other interested and relevant parties) in bolstering green investment capabilities. Based upon our research one mechanism that was found absent was one for consistently assessing the green investment capabilities of ICs to advise on, and/or provide product-based solutions for green investment problems. Such a mechanism would involve equipping AOs with a transparent, straightforward, and personalised procedure for assessing both green investment expertise of ICs, and whether that expertise fits their specific needs. We turn now to discussion of such a tool.

[28] Gilovich, Griffin, and Kahneman (2002) give an excellent exposition of many of the human cognitive proclivities that drive a need for forcing mechanisms.

6. Assessing ICs: Checklists and Algorithmic tools

This section of the report is comprised of two parts. The first conveys some proposed guidance and mechanisms for how AOs (and other concerned parties) can appraise the green investment capabilities of investment consultants. It briefly treats some of the stumbling blocks for accurate and practical assessment, and suggests how these might be circumvented to best effect. The second portion of this section extends such ideas to consider a class of approaches that allows AOs to more efficiently determine whether the particular green investment skills of a specific IC adequately suits their needs, and also provides some steering for comparing ICs on this same basis. The majority of concepts and techniques appearing in this section are borrowed from Rook (2015), which presents a lengthier and more detailed exposition than is possible here and interested readers are encouraged to consult it. Moreover, we gather and confine all technical elements of the proposed procedure into an appendix of the report.

6.1 Criteria for assessing ICs' green investment capabilities

Although a general finding thus far has been that some AOs are disinterested in (or else insufficiently willing to engage with) green investment issues and techniques outright, we have been pleased to find that a significant proportion of AOs are indeed eager to embrace green investment, and widely wish to seek out IC expertise in doing so. And it is this class of AO that we feel decidedly comfortable in describing as being 'under-served' within the marketplace for green investment advisory and products.

Our basic premise is as follows: for those AOs who have recognised the need to incorporate aspects of green investment into their operations and strategies, substantial difficulty can arise in discerning both the level of green investment expertise at any particular IC, as well as whether that particular expertise is appropriately suited to address the green investment problems which face them. In this subsection we confront the first facet of that problem and prescribe a checklist-based solution; the next subsection then does likewise for the second aspect of the problem.

Determining the level of expertise of an IC in a particular green investment topic or product entails unavoidable asymmetric information: ICs know more about their own skill levels and acumen in green investment than do their clients (for classic work on asymmetric-information problems in identification and selection, see Akerlof (1970)). And this asymmetry presents a curious problem; it exists for the primary reason (supported by our survey instrument) that AOs seek to hire ICs in the first place: perceived superior expertise.

Indeed, in many cases, AOs may not be able to fully evaluate whether or not a particular IC has adequate expertise in a particular green investment application (or any application, for that matter) until well into the engagement; and, even then, AOs may sometimes not be able to establish whether or not they received truly expert consulting until well after the fact, after results have had time to materialise. Nevertheless, those AOs who are sufficiently motivated to improve their own green investment abilities and resources must have an appropriate method for judging whether or not specific ICs possess a suitable level of skill, understanding, and innovativeness in the sorts of green investment problems which AOs agree are pressing. And because, in general, the only rigorous way to test an IC's true level of green investment expertise is to *actually hire them* to provide relevant services or products, there is a necessary reliance on proxies to stand in for paid engagement; we thus suggest some useful proxies here.

Each of the proxies that we suggest corresponds to a specific dimension of green investment expertise among ICs that should be desirable from the vantage of an AO client. These specific dimensions are elaborated upon below:

- *Specific domain expertise*: Some AOs are looking for specific green investment solutions, and assessing ICs on green investment thereby necessitates examining the depth of their domain-specific expertise on

specific green investment topics. We see this realisation as a crucial path to addressing one of the shortcomings identified by our survey instrument: many AOs feel that the services and products supplied by IC are not significantly differentiated across ICs. Because the field of green investment is so vast, no single IC could feasibly have deep expertise in each of its sub-domains; hence, there is opportunity for many distinct ICs to differentiate themselves by building best-of-breed domain-specific expertise across areas advantageous to AO clients.

- *Proactive development*: Green investment is composed of sets of practices that are in a state of near-constant and rapid development, and being (or becoming) expert in any one of them requires that ICs not only 'keep up with the latest' developments, but also correctly anticipate the next stage in their evolution. And the most reliable way to do that is to directly and meaningfully shape those developments. As applies to ICs, actively shaping green investment practice means conducting cutting-edge research and innovating in ways that does not just absorb existing knowledge and best practices, but pushes boundaries of what can be achieved in green investment. Hence, in evaluating ICs, AOs need to assess whether the target ICs are genuinely 'thought leaders', rather than simply aggregators or imitators.

- *Full permeation*: Effectively incorporating green investment into their operations, strategies, and mission is not something that AOs can achieve via a 'bolt-on' exercise; it requires deep integration that ideally permeates the entire organisation and its routines. To be in a solidly justifiable position to advise on such full integration, ICs themselves must have undertaken similarly extensive integration: ICs with true expertise and capabilities in green investment services and products should be striving to find ways to incorporate green investment objectives and methods into all of the work they do, not just that confined to what is explicitly labelled 'green investment', 'sustainability', or comparable. In short, ICs who are best positioned to deliver green investment consultancy are also those who have had green investment goals and processes fully permeate their own organisations.

We view these three desiderata – 1) domain-specific expertise, 2) proactive development, and 3) full permeation – as cornerstone criteria in evaluating the competency and capabilities of ICs regarding green investment. And being specific in stipulating these criteria allows us to identify ways in which AOs (and others) can judge whether an IC is meeting them, and to what extent. We discuss the checks to assess ICs in connection with each of the three criteria that we have identified. Note that some of these checks may overlap across the three criteria. Moreover, as with other checklist-type approaches to assessment, it is unlikely that any one IC will demonstrate evidence or participation in all of the ensuing activities and functions that we cite below.

Specific domain expertise

- Familiarity with current research: A true domain expert should be able to discuss immediately and at length the most recent breakthroughs, successes, and failures in her own domain. One relevant check for domain-specific expertise involves an IC being able to identify a large volume of 'in-date' (i.e., very recent) reference material for interested AOs.

- Subject-matter 'gurus' on staff: Building domain-specific expertise is an effortful undertaking, and should be a carefully-cultivated *process* within ICs. A good indication that an IC may not have deep expertise in a specific domain of green investment is if one of its senior consultants cannot rapidly identify who within their organisation possesses deepest expertise on that domain-specific matter.

- Publications: Building and maintaining deep domain-specific expertise is costly, and, due to capacity constraints, domain experts in an IC may not be available to involve themselves fully in every AO relationship; publications, whether as internal white papers or pieces for external distribution, are an efficient mechanism for more broadly distributing domain-specific expertise inside the IC organisation and beyond. Such publications may summarise recent developments and research by others, or

represent new contributions entirely. If an IC does not produce distributable publications, then there are grounds for questioning the true depth of the IC's command in a domain.

- Collaboration with external experts: Even if an IC is well-resourced, maintaining peak expertise in green investment involves active collaboration and engagement with external experts. Doing so entails forging durable relationships and connections with practitioners (such as asset managers), academics, and policymakers. Checking the efforts an IC makes to actively maintain and harvest ideas from its research network is a quick and robust diagnostic of likely levels of expertise.

Proactive development

- Active membership: They should tend to be members, signatories, and participants in organisations, agreements, and initiatives that help to promote green investment practices and understanding. And not only should ICs be participants in these initiatives and organisations; they should be proactive *leaders* who prioritise identifiable outputs and other measurable results, and are instrumental in recruiting others to join. If ICs have few active memberships in such establishments, then an AO should call their expertise into question.

- Innovations: ICs who are expert in green investment can be expected to have been (and continue to be) closely involved in developing either proprietary or public-good innovations, such as indices, scoring methodologies for various services within the financial services community (e.g., ways of assessing asset managers on green investment performance), new green investment products, and alike. An absence of green investment innovations could be a good flag that green investment credentials are lacking.

- Events: ICs who are, or are aiming to be, green investment experts can be anticipated to both regularly convene and attend green investment conferences, forums, planning sessions, and governmental (possibly even intergovernmental) hearings because these events and fora mark essential opportunities for exchanges on the latest best practices and ideas with other experts. ICs who do not attend such green investment events could be missing opportunities to deliver better service and product offerings to their clients.

- Publications: As with domain-specific expertise, publications are an integral tool for disseminating knowledge, and proactivity implies that an IC is not just a consumer, but also a primary producer of fresh and well-studied thinking about green investment; publications are a way of demonstrating such novelty.

Full permeation

- Universal fluency: If, when posed a suitable basic or general question on green investment, (almost) any consultant at an IC claiming green investment prowess cannot respond directly, thoughtfully, and immediately, then green investment has not actually fully permeated that organisation.

- Maps of integration: Full permeation of green investment principles and practices within an IC does not 'just happen' of its own accord; its accomplishment and permanence requires an orchestrated plan for doing so. Senior consultants should be able to 'map out' for AO clients (and others) how various teams and individuals within their organisations are taking ownership of relevant domains of green investment knowledge and skill, and maintaining their currency through active engagement and research. If no such clear plan for mapping the continued improvement of green investment knowledge and skill exists within an IC, then it might well be feared that significant gaps in expertise could exist and go unnoticed, which would result in less comprehensive advisory, or less-than-optimal products, being delivered to AO clients.

- Vision statements: ICs should carry an articulated vision for how their own organisations contribute to attaining such goals, and are continually raising the bar for what can be expected. This vision for continued improvement should be suitably clear over the near and medium terms, and both senior and junior consultants alike should be familiar with its basic features; if not, full permeation of green investment ideals in an IC may be lacking.

The checklist above is an attempt to construct a comprehensive set of criteria for AOs analyse the competencies of ICs on green investment. It also represents a prescription for ICs about how to improve their own abilities in helping AO clients to solve their green investment problems.

Nevertheless, the above checklists for rating ICs are (when used solely by themselves) necessarily handicapped by one obvious feature: they do not lend themselves directly to a clear-cut scoring process allowing AOs (or others) to cardinally rank ICs. We have reasons to suspect that rankings may (due to various flaws) not be the best tool for appraising ICs – at least from the standpoints of AOs; these arguments are articulated both in the next subsection and in Rook (2015). While it is clear that ICs who do more from the above checklist are likely to be more deeply involved and expert in green investment than those who do less, the checklist approach by itself does not provide a faithful scale for measuring the *degree* of difference between ICs. Moreover, it does not address specifically whether a particular IC is situated to deal with the particular green investment problems faced by an individual AO. We now turn to an approach that may be used in conjunction with these checklists to provide a more holistic means of assessment, and that can remedy the shortcomings identified above.

6.2 Usefulness of ambition-defined algorithms for rating ICs

The basis of any AO-IC relationship can be pithily characterised as: asset owners hire investment consultants to help solve specific problems. In this subsection we describe one method that is superior to generic IC rankings that can be straightforwardly used by AOs to determine which, if any, candidate IC is best situated to handle those green investment problems that AOs themselves identify as priorities; as well as assign indicative scores that help to establish degrees of difference among the candidate ICs.

This method revolves around an algorithmic view: it defines a step-by-step procedure for: 1) ordering the green investment ambitions of any particular AO *relative to* its abilities for the specific green investment goals that it identifies for itself; and 2) establishing which ICs (if any) can furnish green investment solutions with an acceptable level of expediency and customisation.

Our proposed tool empowers AOs to better identify more targeted green investment priorities, and then match these needs to IC services in a thoroughly demand-led fashion. Secondarily, the algorithmic method deals with the issues from labelling and mismatched time horizons that we have established as contributing to supply-demand imbalances for green investment consulting.

To streamline the presentation of the algorithmic approach for the reader, we have relegated all technical elements of the algorithmic approach to appendices at the end of the report. Interested parties may consult those appendices for both more detailed exposition and examples; even more extensive treatment of the tool exists in Rook (2015). We therefore devote the remainder of this section to: 1) describing more exactly the advantages of this algorithmic assessment tool; and then 2) discussing its basic usage and how it can be combined with elements of the checklists from Subsection 6.1 in order to let AOs more efficiently bolster their green investment capabilities with ICs' help.

6.2.1 Ambition-driven algorithmic method

The ambition-driven, algorithmic method for AOs to assess the green investment capabilities of ICs is best described in terms of its: 1) constituent phases; 2) its inputs; and 3) its outputs.

The output of the method is an assignment of scores ranging from 0 to 100 (with 0 being worst and 100 best) to each IC in a candidate list. These scores correspond to 'anticipation levels' for how well each candidate IC can be expected to help the AO applying the algorithm to solve particular green investment problems that it specifies. In essence, these scores are tailored to match the priorities of the AOs who use the algorithm, because they factor in and combine the following inputs:

- **Timelines** defined by the AO user along which its green investment needs/goals must or should be met;
- A specification of the relative **degree of involvement** (in terms of customised support) that an AO expects from its ICs on the green investment problems that it faces and deems most pressing;
- How much each green investment problem an AO user faces is an **immediate priority** in its leadership's eyes, relative to the present **stage of development** of the AO's own **resources** for addressing the problem.

Although each of these inputs may sound involving, they are implemented in the algorithm using *Likert scales*, which make the entire process straightforward, democratic (for when collective decisions are required), and quantifiable, as well as transparent. Hence, the amount of time and resources needed for leadership at any AO (whether large or small) to utilise the method is extremely minimal when compared to the insights it can provide.

Procedurally, the algorithm 'runs' in two phases: the first involves stipulating a list of green investment objectives for the AO using the approach, as well as assigning Likert ratings to the resources and ambitions that the AO presently has for each of the objectives; and the second phase involves assigning Likert ratings to how rapidly each IC from a list of candidate ICs can address each of the green investment priorities stipulated by the AO, as well as the degree of personalised involvement that can be allocated by the IC for each of the stipulated priorities. Either or both of these phases can be repeatedly iterated in order to generate more refined outputs, and thus the approach can be used both for immediate, 'back-of-envelope'-type calculations, as well as much deeper diligence.

And while we primarily intend the tool for use by AOs in selecting ICs to help on specific green investment mandates, it stands readily applicable to a number of related applications, such as: evaluation/benchmarking of IC performance as part of the review of existing mandates and/or IC relationships; mandate design and request-for-proposal processes; budgeting or costing exercises; and analysing decisions on in-sourcing advisory functions.

Finally, we suggest that this algorithmic approach could be used in conjunction with the checklist approach that we detailed earlier in this section, in order to supply a more holistic protocol for determining not only how fit a given IC is to address specific green investment problems of any particular AO, but also to help identify the best paths for ICs to improve on their own green investment capabilities, both for existing and prospective AO clients. That is, we propose that the tools together be used as part of the ongoing 'conversations' that ICs and AOs have on the suite of products and services – both involving green investment and otherwise – which ICs supply to AOs.

7. Conclusion and next steps

This report has described a study to understand how ICs are influencing the development of green investment services and products. Through a multi-modal research process, we have been able to uncover a number of helpful findings about what is causing an imbalance of both supply of and demand for these products and services within the larger financial ecosystem. At this stage, our main findings are that the causes of the current state of the situation are many and interrelated. Yet, as detailed in earlier sections, we do not suspect that the solutions needed to right the current challenges must necessarily be complicated or complex. We do anticipate, however, that they will need to be collaborative, and involve the active and willing participation of different members of both the IC industry, as well as the broader financial community.

We have also endeavoured to introduce a number of convenient, transparent, and robust tools to better enable AOs and others to enhance their abilities in selecting suitable IC partners to realise their green investment goals, as well as to evaluate and help ICs build their own green investment capabilities. We hope that these utilities prove useful to the practitioner community and openly welcome opportunities for collaboration in their further development.

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Appendix: Details of the ambition-driven algorithm

This appendix delivers a more detailed depiction of the ambition-defined algorithm for assessing ICs' green investment competencies that is described briefly in Section 6 of the main text. The algorithm is developed in Rook (2015), which gives a more exhaustive treatment. Portions of this appendix are drawn from that original research. In this appendix, we both describe the algorithm (first generally, and then in greater detail), as well as provide for interested readers a 'worked example' of how the algorithm might be implemented by an (fictitious) asset owner.

For the reader's convenience, we decompose this section into two main parts. The first gives a 'high-level' overview of our algorithmic approach. Specifically, it succinctly describes the constituent components of the algorithm and how they fit together, the relevant inputs and outputs to the procedure, and a general notion of how the approach ideally should be applied. The second part is more methodical, and builds the entire approach in more detail 'from the ground up'.

A.1.1 Overview of the algorithm

An algorithm can usually be summarily described by its inputs, its outputs, and the successive phases involved in converting the former to the latter. We use this scheme to describe our own algorithm here. Regarding inputs, there are essentially two: the green investment problems of a specific asset owner (hereafter the 'implementing asset owner': IAO); and a simplified listing of capabilities for a selection of candidate ICs. To make the process a streamlined and robust as possible, the inputs are formulated as Likert scales. Likert scales are desirable for several reasons. Firstly, they should be familiar to even those without much experience in financial services, as they are ubiquitous in modern life. (For those unfamiliar with the specific term Likert scale, they are an ordinal scaling response for particular hypotheses or questions. They generally assume forms similar to "How much do you agree with the following statement: 'Strongly agree', 'Somewhat agree', 'Neutral', 'Somewhat disagree', 'Strongly disagree'".) Secondly, they are straightforward to work with, even for those IAOs that may not have particularly sharp quantitative skills; yet they have some appealing mathematical properties (which will be explained later). Thirdly, Likert scales have a longstanding and well-studied position in psychological and management-science literature; their usefulness and respondents' general interpretations of them are widely understood and predictable, and material on best practices in designing instruments that utilise them is copiously available (which further amplifies the transparency of this approach).

The output of the proposed algorithmic-assessment procedure is a score assignment to each candidate IC. This score is, by design, personalised to reflect the green investment needs and objectives of the IAO. It also reflects aspects of the IAO's governance-budgeting decisions (Clark and Urwin 2008), a feature that will be discussed later. For simplification, the scores are normalised to range from 0 to 100 here, but other normalisations are straightforward. These scores reflect, in a robust and heuristic way, how well each candidate IC's capabilities and available resources in green investment consultancy are relatively 'fit' to address the prioritised ambitions and needs of the IAO in its green investment pursuits. We stress that the degree to which the tool should be considered an 'approximating heuristic' versus a 'precise measure' is actually a function of the effort and time that the IAO itself is willing to expend. Hence, the approach is a strong-form embodiment of the hypothesis that AOs should generally take a more proactive role in telling ICs – in detail – the green investment services that they expect. While the amount of effort and time that any particular IAO is able to devote to calibrating the algorithm will certainly vary across organisations, we emphasise that even a modest expenditure in this regard is likely to be highly worthwhile and is in itself a mechanism for trustees to more faithfully and comprehensively execute their fiduciary duties.

The stepwise structure of the approach can essentially be divided into two broader phases, based on the two types of input. The first phase involves a relative ranking of the green investment need of the IAO along two dimensions: ability and ambition. The second phase then implements what is essentially a 'waterfall' or 'knock-out' procedure for mapping the output of the first phase into a relative scoring of ICs' capacities to address the prioritised (in an ordinal listing) green investment needs of the IAO. To aid this second step, we have developed a simplified scaling procedure that avoids some of the difficulties in asymmetric information that we identified in the main text.

At risk of repetition, we state once more that the value in this procedure (as contrasted against alternatives such as universal rankings) lies in the simple fact that each IAO is likely to have its own specific needs and objectives when it comes to green investment, including distinct timelines, existing level of knowledge and resources, constraints, and obligations. In combination with the complexity and multifaceted nature of green investment, we these realities as grounds for preferring customised algorithms to generic rankings. Nevertheless, the same procedure that we describe here could also be used to construct a more universal ranking of ICs on green investment capabilities so long as the problems and capabilities that were used as inputs could be presumed as sufficiently uniform across the AOs that were to use the outputs of that particular 'run' of the algorithm. As we in general find such pursuits of limited value, we do not pursue that possibility further in this paper, and instead now turn to the more immediate task of describing the procedure in detail.

A.1.2 The algorithm in detail

In the detailed exposition of the algorithm in this subsection, we proceed step-by-step in describing the procedure and its features. Yet, before we can begin detailing the algorithm itself, we find it necessary to begin in describing a requisite pre-step: the governance budget.

A.1.2.0 Phase 0: The governance budget

Budgets are hugely familiar to asset owners. Apart from the financial budget, which consists of the capital under management as well as the funds available for growing that capital (including, for example, the fees that must be paid to internal and/or external managers and staff, reporting costs, and expenditures on critical infrastructure and other overhead costs), the concept of a 'risk budget' has also become ubiquitous (see Litterman et al. (2005)). More recently, however, the notion of a governance budget has also entered the awareness of many asset owners. Clark and Urwin (2008) is a seminal reference on this construct, which acknowledges that, apart from capital and risk, expertise and time are also scarce resources that AO leadership must allocate judiciously. Such allocations must take account of not only the relative levels and distributions of skills and knowledge that exist within the AO (or can be contracted from outside it) and the time available for key decision makers to deliberate on and investigate various problems and solutions, but also the overarching mission and strategy of the AO. It is becoming increasingly clear that sustainability concerns and green investment considerations merit their place in any governance budget, and we thereby suggest that each of the successive steps in our algorithm is only responsibly undertaken if it is conducted with due consideration for its own place in the larger governance budget and structure of the IAO.

A.1.2.1 Phase 1: Prioritising green investment needs

As implied by Phase 0, an in-depth consideration of the IAO's governance budget and overarching goals should prove to be strong initial guidance on how it should be prioritising its green investment needs, as well as shed some insights on the standing of its green investment resources and goals. Once again, the specific constellation of green investment needs, resources, and goals is almost certainly not the same between any two IAOs. Hence,

spending the necessary time on establishing a prioritised ordering of what these needs, resources, and objectives are with respect to green investment is essential to finding ICs that are able to adequately address them.

We are quick to add that, while this stage of the procedure carries an obvious price-tag in terms of time, it may readily generate cost savings in other terms. For example, in clearly identifying its own green investment objectives and deficiencies, and IAO can avoid the (potentially expensive) predicament of paying an IC for green investment advice that "it already knew", or supplying services that are redundant or improperly suited. In short, the self-criticality demanded by this step is at the heart of fiduciary responsibility.

Perhaps the most difficult element of this step is for an IAO – and particularly those IAOs that may be utter newcomers to green investment – to sift through the many possible needs, capabilities, and objectives that they may have, or potentially could (or even should) have relating to green investment. We are convinced that the most practical and actionable way to formulate this step is in terms of discrete (but potentially overlapping) green investment actions or activities. To aid practitioners (and other readers), we have constructed an extensive, but necessarily partial list of such actions/activities. It appears below.

Illustrative list of potential actions/activities relating to green investment for AOs

- Sustainability science (e.g.: climate change science; ecology; hydrology; geomorphology/petroleum geology; nutrient-cycle research)
- Monitoring green investment risk
- Assessing green investment risk
- Managing/hedging green investment risk
- Reporting/disclosing green investment risk
- Selecting green investment funds/portfolio managers
- Selecting specific green investment products (e.g.: bonds; index funds; hedging instruments)
- Shareholder activism on green-investment/sustainability topics
- Green investment screening (e.g.: equities; bonds)
- Divestment from specific/categorical investments that do not meet green investment criteria
- Assessing political opportunities and/or risks connected to green investment legislation (e.g.: sub-nationally; nationally; internationally/multilaterally)
- Assessing legal threats and/or opportunities connected to (existing or prospective changes to) green investment regulations or statues
- Assessing threats or opportunities from natural-resource-specific considerations (e.g.: water; carbon; petroleum products; agriculture; fisheries; biodiversity; timber; rare-earth minerals)
- Requirements and best practices (current and future) for discharging fiduciary duty with respect to green-investment
- Impact of green investment on emerging-market investment opportunities and risks
- Hiring personnel (e.g., insourcing individuals and/or teams) with green investment expertise
- Assessing opportunities and risks posed by existing and emerging environmental technologies
- Scenario planning for threats and opportunities connected to sustainability (environmental, social, economic)
- Development and maintenance of investment beliefs related to green investment
- Assessment/capacity for direct investment in sustainability projects
- Benchmark/index development or interpretation on green-investment-related issues/topics
- Assessing and/or analysing participation in carbon markets (or other natural-resource-derived markets)
- Assessing and/or engineering partnerships with non-profit organisations
- Assessing and/or engineering public-private partnerships
- Economic/macroeconomic analysis and/or forecasting on green investment themes/issues
- Training of leaders/staff on green-investment-related topics
- Building analytical capabilities for assessing green investment data
- Conducting materiality assessments on green investment topics
- Conducting reputational impact assessments on green investment threats/risks/opportunities

- Designing/structuring mandates for green investment services/products
- Communicating green-investment-related topics/issues with beneficiaries
- Appraising potential cost reductions from green investment pursuits
- Stress-testing investment models for green-investment-related risks
- Assessing recent or potential future changes in accounting standards related to green investment topics (e.g., natural-capital valuation, integrated reporting standards)
- Fee and performance analysis for portfolio/fund managers on green investment objectives
- Assessing impact footprints (e.g., carbon, ethical/social, biodiversity)
- Assessing present or changing risks of litigation associated with sustainability issues

We expect that two features of this list should especially should strike readers. First, despite its length, it only touches the surface of a deep pool of possibilities that an IAO might consider in terms of its needs, abilities, and objectives connected with green investment. Second (and relatedly), most IAOs will not be able to pursue all of these actions/activities simultaneously: for nearly all, there is simply too little 'bandwidth' in terms of the associated governance budget (and, likely, the financial budget as well). What we therefore advise is a lexicographic approach: leadership at the IAO should convene and establish a set of green investment priorities that is most relevant to their organisation's individuating circumstances. We do not here provide explicit advice on this sub-process, as generalising across AOs would represent an irresponsible stroke on our part. Nonetheless, we do suggest that the actions/activities that should appear on the resulting list (as well as the size of the list), should be dictated by the governance budget, strategy, and investment beliefs of the particular IAO.

Once a list of green investment priorities is established there arises a need to assign to each element of this list both an ordinal and cardinal value: that is, to give each desired green investment action/activity a relative position on the list, and designate a score for each position such that an appraisal can be made of how relatively more important each element is to the IAO's green investment ambitions than is the next element below it in the ordering. We now discuss a mechanism for doing so.

The root of the mechanism that we describe rests in the fact that the reason why any AO hires any IC in the first place is ambition: AOs wish to improve themselves along some dimension, and it is for this reason that an IC is (or may be) engaged. Ambition plays a role because the nature of the problem faced by the AO is that a gap lies between where it is and where it aims to be. The role of the IC may be to provide: more precise estimate of the size of this gap (or even whether it actually exists); an appraisal of the costliness or feasibility of closing the gap; suggestions on paths for closing the gap and/or their relative advisability; to actually close the gap; or some combination of the above. One may notice from the above that, generally, the role of the AO is to provide an initial identification of the gap, and a rough, relative estimate of its importance to the AO's mission: the task of a more precise quantification of the gap is left to the IC in most instances. Ergo, our mechanism embraces this need for coarse approximation of 'ambition gaps' by the IAO by using Likert scales.

In specific, for each item in the green investment priority set of the IAO, two Likert scales are applied: one for ability; and another for ambition.

A.1.2.1.1 The ability scale

The ability scale is a decreasing scale, and its levels are essentially answers to the question "How capable is our organisation [the IAO] with respect to green investment action/activity X?" where 'X' is the particular element of the green investment priority set being scored. Qualitatively, the levels could correspond, for example, to "Excellent", "Fair", and "Poor". We set no restrictions on the number of levels, but instead stipulate that they should be essentially equally spaced (i.e., balanced), and range from best to worst. The only notable restriction is that there be the same number of levels for every element of the green investment priority set. Quantitatively, the procedure requires that each level correspond to a positive integer (i.e., a whole number greater than zero), with the value 1 assigned to the best option (e.g., 1 = "Excellent"), and progressively higher values assigned to lower levels (e.g., 2 = "Fair", 3 = "Poor).

A.1.2.1.2 The ambition scale

This ability scale is crossed with an ambition scale that is constructed somewhat similarly. Levels of the ambition scale for each element of the green investment priority set should essentially answer the question "How much should the organisation [i.e., the IAO] improve on green investment activity/action X to meet its goals?" For this scale, the qualitative responses should be ascending from least to greatest, and might be, for example: "None", "A little", "A lot". Note that the number of levels for this scale may be greater than, less than, or equal to that of the ability scale (though should be the same for each element of the green investment priority set). Quantitatively, the scale values should correspond to the non-negative integers, such that the lowest level (e.g., "None") correspond to a value of zero, and successively higher levels are unit increments (e.g., 1 = "A little", 2 = "A lot").

The weight assigned to each element of the green investment priority set is then the product of the ability and ambition scale values. This procedure for weighting ends up being both straightforward and robust in several senses, as we discuss now.

An important but difficult consideration for any AO in pursuing green investment improvements is the issue of comparability across possible activities/actions for improvements. As stated, budget constraints typically will keep most IAOs from pursuing all possible green investment improvements at once, and therefore there is need to establish comparability across possibilities. In many respects, it is impossible to compare possibilities on a fine scale (e.g., 0 to 100). Nevertheless, coarser comparisons are usually easily feasible, and the Likert approach respects this: IAOs are free to choose the relevant scales of precision that suit them.

Another issue facing IAOs is that of collective decision making. Decisions at IAOs are not often vested in a single individual, but are often determined by committee. The Likert procedure here allows for straightforward aggregation of individual views into a collective one. For instance, means can be taken of the values assigned by relevant leaders at IAOs to the ability and ambition scales for each element of the green investment priority set, and be used throughout the remainder of the algorithm as if they were derived from a single decision maker. This potential for straightforward translation from individual to collective input adds to the flexibility of our approach.

Finally, the fact that the ability scale starts at 1, while the ambition scale starts at 0, and both scales increment as integer progressions endows this scoring mechanism with a useful capability to tease out especially high-priority elements of the green investment priority set and assign them 'boosts' in their scores, while at the same time culling elements that may not actually be a priority for the IAO. To see this, consider the value scale {1, 2, 3} for the ability scale, and {0, 1, 2} for the ambition scale. Crossing these two scales leads to possible scores for the element of {0, 1, 2, 3, 4, 6}. If the respective scales correspond to (e.g.) {"Excellent", "Fair", "Poor"} and {"None", "A little", "A lot"}, respectively, then some helpful outcomes are built into the system. One can plainly see that, from the standpoint of ambition, any element that an IAO does not wish to improve is assigned a score of 0

automatically. This outcome is logical, because if the IAO does not seek to improve in that green investment activity/action, then it should not expend resources seeking/hiring ICs for that problem. Further, notice that the highest possible score (here, 6) is further from the second-highest score (here, 4), then the second-highest score is from the next-highest score (here, 3). This extra spacing gives added priority to those elements on which an IAO identifies itself as requiring the greatest improvement (for example, those in which it sees its capabilities as "Poor" and for which its ambition is to improve "A lot"). As stated earlier, there is no restrictions on how many values each scale can have, but this property of the 'boost' for most desirable elements for improvement will hold for any choice of scaling that begins with 1 for the ability scale and 0 for the ambition scale.

A.1.2.1.3 Normalising the weighted priority set

Thus, after assigning and crossing the ability and ambition scales as described above, the IAO is left with a set of scores, with each score linked to an element of the green investment priority set. To be useful in the second phase of the algorithm, this score set must be normalised. This normalisation is, however, a straightforward operation, and simply involves summing all of the scores in the priority set, and then dividing each individual score by this sum to produce the normalised score (which should then be in the range of 0 to 1).

In notational form, if there are n elements of the green investment priority set, with the score of element i denoted by y_i, then the normalised score for element i, denoted by $\hat{y}_i$, is:

$$\hat{y}_i := \frac{y_i}{\sum_{j=1}^{n} y_j}$$

With normalised weights in hand, the IAO can proceed to the second phase of the procedure.

A.1.2.2 Phase 2: Filtering investment consultants

The first phase of the algorithm was centred on determining the relative importance of various green investment ambitions. The next phase of the algorithmic approach concerns matching the IAO's weighted green investment priorities with the capabilities of ICs on those facets of green investment. To this end, the algorithm must address a hurdle that was identified in Section 2: the genuine, actionable expertise of candidate ICs when it comes to the areas of green investment prioritised by the IAO. By actionable expertise, we mean the functional capacity of a candidate IC to provide acceptable solutions, given its actual level of knowledge of the subject matter. Why is actionable expertise important to distinguish from overall expertise? The answer is simple and depends upon capacity constraints. That is, a particular IC may be 'best of breed' in its knowledge on a particular green investment topic, or in its design for some green investment product, but excess demand for its advice/product may limit its availability/quality to any particular IAO. From the IAO, then, actionable expertise is of utmost importance. In the following, we detail a method for approximating an IC's actionable expertise on particular green investment priorities.

A.1.2.2.1 Gauging actionable expertise

It should be perhaps obvious that the actionable expertise of an IC on a green investment topic, like overall expertise, is nearly impossible to gauge with exact precision for any AO. Heuristics and proxy variables, therefore, become necessary to approximate this very important aspect of the relative fitness of an IC to meet the green investment problems of the IAO in question. We recommend a pair of such proxies that we consider

robust: immediacy and customisation. We view these two variables as fit for purpose because they are easily obtained: relevant team members of an IAO should be able to obtain them with sufficient specificity from a candidate IC within (e.g.) the exchange of a single email, a single meeting, or a single phone call. This possibility is due to the fact that they lend themselves to direct and straightforward assessment, and can be formatted so as to be directly comparable across candidate ICs. Additional rationale for selecting these two proxies over others is that they cleanly convey relative effects from the IC industry, and can 'snoop out' differentiating capacities among ICs. We give some colour on these claims below.

To begin, it should be self-evident that any AO would rather have its problems solved sooner rather than later (the reasons for which, when ICs are concerned, is that sooner, rather than later, solutions are likely to carry lower fees, in general). Thus, if two ICs carry equivalent levels of overall expertise on a topic or solution (related to green investment or otherwise) that is a priority for an AO, then, all else being equal, the AO should prefer to engage the IC that can resolve the problem sooner. Indeed, an AO may even be satisfied in selecting an IC with slightly (although not meaningfully) less expertise, if doing so translates into a quicker resolution of the problem (due, e.g., to capacity differences between the two ICs). Moreover, after accounting for capacity differences, an IC that is more expert in a topic or service, or else better equipped in terms of resources, should be able to provide solutions sooner. These arguments all favour immediacy as an appropriate proxy variable, provided that it is utilised with an appropriate companion proxy that can generate the appropriate 'tensions'. We feel that such an appropriate companion variable is customisation.

Ideally, every AO would like perfectly customised solutions every time it engages an IC. That is, AOs should not desire 'boilerplate' solutions, but form-fit ones, that account for all the particular constraints and circumstances faced by the AO. In most instances, however, perfect customisation is infeasible due to costliness. Hence, the grand ideal of total immediacy (instantaneity) and total customisation is a joint target from which to work backward in scoring ICs. And, like immediacy, the degree to which a candidate IC can provide customised solutions conveys valuable information to the IAO about the actionable expertise of the IC. As with immediacy, more expert ICs should be able to provide higher levels of customisation, given their greater fluency in the particular subject matters. Moreover, all else being equal, they should be able to provide it more immediately than less-expert ICs. And if significant customisation is generally not available across the population (or subpopulation) of ICs considered, then this absence relays a valuable realisation to the IAO: either none of the ICs considered is expert enough to provide a form-fit solution, or none of them (or their other clients) views customisation as sufficiently meritorious. The assumptions underlying this interpretation of course rely on sufficient competitiveness in the IC market, but they are nonetheless defensible, verifiable via direct interrogation, and pragmatic in the sense that they expedite decisions.

Before we turn to our exposition on scoring the immediacy and customisation variables, a brief digression on selecting the candidate pool of ICs is in order. Obviously, a great many ICs exist worldwide, and indeed there are too many for any single IAO to screen them all. Nevertheless, the 'lightness' of our algorithm does allow for rapid assessment of (potentially very) large numbers of candidate ICs because of the relatively coarse assessments (detailed shortly) of each IC that are required. Hence, what we advise is an 'iterative filtering' approach that relies on multiple applications of our algorithm. Roughly, we recommend that each search process begin with a relatively 'large' pool of candidate ICs and spend only minimal resources in deriving the relevant variables for each IC (in terms of immediacy and customisation proxy measurements). From this initial large pool, a great many ICs will become quickly excluded (we discuss thresholds for such an approach later in this paper), and for the 'trimmed' list of remaining candidates more refined values can be derived from (e.g.) more extensive dialogue with them. This filtering procedure can be iterated as many times as needed until, for example, either only a pre-specified number of candidates remain (perhaps only one), or a comfortable level of granularity/precision in the immediacy and/or customisation variables remains, or both. As with the selection processes that might be used for establishing the relevant green investment priority actions/activities, we cannot prescribe a single protocol for selecting the initial pool of candidate ICs that will suit all AOs. Yet, because such a prescription stands outside the bounds of our procedure itself, this situation contributes to the robustness and flexibility of our algorithmic approach, as the approach will work on whatever set of inputs is fed into it, with the understanding that the quality of its outputs scales with the quality of its inputs (i.e., if the IAO spends more

time and energy in considering a larger number of green investment priorities and candidate ICs, then it can expect a better quality output than if it were to consider only smaller lists of either, or both).

With such a caveat in place, we now treat the matter of quantifying immediacy and customisability as proxy variables. Our designated method once again involves a crossing of Likert scales, and essentially follows the same path as for the ability and ambition scales in Phase 1 of the algorithm. For each element in the set of green investment pursuits, an IC is assigned a Likert score on both the immediacy with which it can provide a solution, and the degree to which such a solution can be customised for that level of immediacy. We recommend that the lowest value for the immediacy dimension be qualitatively equivalent to "Not at all" or "Never", and that successive levels then increase in order of proximity to the present. Further, we advise that the lowest value be assigned a value of 0, with the remaining levels assigned scores that progress unit-wise as integers. For example, an immediacy scale might consist of: {"Never" = 0, "36 months" = 1, "12 months" = 2, "Within 6 months" = 3}. As before, the exact granularity of the scale is otherwise completely at the discretion of the IAO, with the observation that more refined scales will allow finer discrimination between candidate ICs. For the customisation variable, we recommend a similar approach, and suggest that the smallest level be equated to the lowest level of customisation, and the highest level correspond to the greatest degree of feasible customisation. For this scale we recommend that the lowest level carry a value of 1, with each increment in level having a unit-wise increment in score, e.g.: {"No customisation" = 1, "Moderate customisation" = 2, "Extensive customisation" = 3}. We recommend that, to derive a score for a particular IC on a specific element of the green investment priority set, that its immediacy and customisation scores be multiplied together. Notice that the selection of the relative number of levels for each of the two variables essentially controls how much proportional weight is given to each.

As before, using the Likert-crossing approach yields desirable properties. For instance, ICs that are unable to deliver relevant solutions (and thus are assigned zero scores on the immediacy dimension) will be essentially excluded on that element of the green investment priority set. Further, there is yet again the commensurate 'boost' in score for those ICs that are able to provide a top blend of immediacy and customisation.

Note that this phase of the procedure has so far only dealt with deriving scores for ICs on individual elements of the green investment priority set for an IAO. Yet, what is desired is a scoring for each candidate IC over the entire priority set for the IAO in question. For this process, we recommend a 'waterfall' technique to enhance efficiency. That is, we advise that IC scores be derived sequentially for each element of the green investment priority set, beginning with the element of highest score from Phase 1. Thus, for example, an IAO would begin by assigning scores (derived from the product of immediacy and customisation scores) to each candidate IC for the top-ranking green investment priority activity/action, and then eliminating ICs that did not achieve a specified score (e.g., above zero) on that activity/action. The same would be repeated for the second-ranked green investment priority activity/action from the reduced list of candidate ICs, which may then yield further eliminations. The procedure could terminate in a number of ways which we describe below.

- Termination after a set number of elements;
- Termination after the pool of remaining IC candidates falls below a certain number;
- Termination after only a single IC candidate remains.

Each of these termination rules may yield slightly different outcomes, and each is fit for purpose for different applications. For example, continuing to 'let the algorithm run' until only one candidate remains ensures that this surviving candidate can cover the greatest number of prioritised green investment problems (assuming that the input variables are accurate) to a specified level of satisfaction. In some cases, however, the list of remaining candidates may be greater than one after the priority set is exhausted, or else the list of remaining candidates may fall to zero before the priority list is exhausted. In such instances, the first two termination rules may take precedence.

In any instance, it should be useful for an IAO to run the algorithm a number of separate times under different rules in order to craft a more diverse action space. That is, running the algorithm on different 'settings' can help

to clarify the various trade-offs that the IAO faces in selecting various ICs with different sets of actionable expertise.

A.1.2.2.2 Normalising IC scores

The final step in the base procedure of our approach involves normalising the scores of each IC across the set of green investment priorities. For this normalisation we recommend a straightforward procedure that involves the following steps in sequence:

- First, divide the score of each candidate IC that remains after the algorithm has terminated by the maximum possible unweighted score (i.e., by the largest value on the immediacy scale multiplied by the largest possible value on the customisation scale). For example, if the immediacy scale involves values of {0, 1, 2, 3} and the customisation scale entails the values {1, 2, 3, 4}, then each IC score across all of the green investment priority elements would be divided by 12. Call each of these values the 'adjusted score' for a remaining candidate IC on that element of the priority set.
- Second, each adjusted score is multiplied by the weight (derived from Phase 1) for the element of the green investment priority set to which it is associated. So, for example, if the adjusted score of an IC on a priority element is 0.5, and the weight on that element is 0.6, then the 'weighted adjusted score' would be 0.30.
- Finally, the sum of the weighted adjusted scores for each remaining candidate IC are summed across all of the elements of the green investment priority set. For example, if there four elements in such a set, and an IC earns weighted adjusted scores of 0.15, 0.30, 0.25, and 0.10 across these elements, then its normalised score would be 0.80.

Recall that normalised scores range from 0.00 (at worst) to 1.00 (at best). This normalised scoring allows for comparisons among candidate ICs, as well as facilitates analysis of whether or not ICs should potentially even be engaged at all. For instance, if the IAO stipulates that it would not be content to engage any IC without a normalised score above 0.7, yet no IC can be found that is able to achieve this level of actionable expertise (even after implementing different rules for the termination of the algorithm, and other manipulations), then the IAO may wish to consider other courses of action, such as attempting to hire 'in-house' expertise (i.e., in-sourcing), seek other forms of assistance (e.g., academic expertise), or even reconsider its strategic plans in order to pursue green investment by other means.

The procedure that we have described in this portion of the appendix is intended to serve as a flexible and dynamic platform from which asset owners may begin to empower themselves further in their pursuits of green investment improvements. It should be clear to many readers that, while this basic approach described here may be suitable for many situations, it will require modifications in order to address others. And such is our intention in its design, and a contributing feature to its robustness: we aim for the approach to be reconfigured and adapted to suit the particular needs of asset owner users as needs demand.

We now turn to equipping the reader with a 'worked example' that we hope gives further concreteness and clarity to the various components and phases of the core procedure described up to this point.

A.2 Worked example of the algorithm

To endow this example with generality, we envision a generic asset owner; that is, we do not specify its particular classification (e.g., corporate pension fund, endowment), size of assets under management, headcount, geography, or any other individuating feature. Instead, we merely describe some of its abilities and ambitions with respect to the green investment priorities that its leadership have established. Our generic asset

owner (GAO), after examining its resource budget and conducting a series of internal discussions and meetings, has decided that it wishes to tackle the following three green investment pursuits as priorities:

A. Explore methods for rating its external portfolio managers on how well they are integrating environmental, social, and governance (ESG) factors into their portfolio-management processes;
B. Develop a hedging strategy for the risk of carbon pricing on its equity portfolios;
C. Assess the foreseeable long-term impacts of international climate change policy outcomes on key macroeconomic variables that it deems vital to its beneficiaries

To give slightly more concreteness to the situation, we presume that our GAO does not at present hire any investment consultants to provide it with green investment advice or services; indeed, we cast our GAO as green-investing novices, and presume that leadership is looking to ICs for assistance as it has little depth of expertise in the green investment priorities that it has decided to pursue.

Having read our report closely, our GAO sets about assessing both its own abilities, as well as its ambitions, on priorities A, B, and C (listed above). Leadership at our GAO who have been tasked with this assessment decide upon a three-level scale for ability, and a four-point scale for ambition. Specifically, they decide to rate their organisation on a scale of {"Excellent" = 1, "Fair" = 2, "Poor" = 3} with respect to current ability on the three green investment priorities (A, B, and C). And, with respect to ambition (and in answer to the implicit question "How much do you desire GAO to improve on element X?"), the scale that our GAO selects involves {"None" = 0, "A little" = 1, "Moderately" = 2, "Extensively" = 3}. Furthermore, after careful deliberation and discussion, the leadership at GAO assign the following scores to both the abilities and ambitions of their organisation on its green investment priorities:

- Priority Element A:
  - Current Abilities: Poor (3)
  - Ambition to Improve: Extensively (3)
- Priority Element B:
  - Current Abilities: Fair (2)
  - Ambition to Improve: Moderately (2)
- Priority Element C:
  - Current Abilities: Poor (3)
  - Ambition to Improve: A little (1)

Hence, the crossed Likert values for each of the three elements becomes, respectively: A = 9, B = 4, C = 3. The associate weights for the three elements are therefore: A = 0.5625, B = 0.2500, C = 0.1875 (such that the weights sum to 1.0000).

Next, our GAO sets about the task of assembling a list of candidate investment consultants to potentially assist it on the three elements in its green investment priority set (A, B, and C). GAO has previous direct experience with four ICs on investment matters unrelated to green investment, but, after arranging a few brief phone calls and satisfying themselves that indeed those four ICs all have green investment practices, these four ICs are added to the list of candidates. Four more ICs are added on the basis of recommendations from peers at other asset ownership organisations who are similar in (generic) size and geography to our GAO. Finally, four more are added due to their 'name-brand' reputations in green investment consulting. In total, the GAO's candidate list of prospective ICs to assist it has twelve (fictitious) members listed (all curiously with Greek names): Alpha Advisors; Beta Consulting Group; Gamma Partners; Delta Services; Epsilon Brothers; Zeta Group; Eta Incorporated; Theta Consultancy; Iota Insight, Kappa Strategies; Lambda Limited; Mu Advising. Based on available governance and financial resources, our GAO establishes that this is the largest feasible list of candidates that it responsibly considers that it can investigate.

Note that, apart from using an assortment of channels and resources to assemble this list, our GAO does not pre-assign any of the twelve ICs any values. Such is undertaken in order to minimise biases and, prior to

undertaking any further steps, leadership at the GAO establishes its scoring system for immediacy and customisability. Recognising that its three priorities are likely to proceed along different timescales, leadership settles on the following, unified scale for immediacy: {"No capacity/Never" = 0, "24 months" = 1, "12 months" = 2, "6 months or less" = 3}. Furthermore, because leadership at our GAO does not have much previous experience or knowledge with the extent of customisation that it can expect on solutions offered to it by the candidate ICs, it establishes a fairly coarse scale for customisation, which is: {"No customisation" = 0, "Moderate customisation" = 1, "Extensive customisation" = 2}.

After establishing its scales for immediacy and customisation, a member of the GAO team composes a single, brief (but polite) e-mail which does the following:

- Clearly, but succinctly, states each of the three priorities agreed upon by leadership at the GAO with respect to green investment aims
- Inquires whether the IC to which the e-mail is addressed could furnish a solution to each of the three priorities and, if so:
  - How long such a solution would take to be completed
  - What extent of customisation could be provided, given GAO's specific needs

The e-mail is then sent to contacts at each of the twelve candidate ICs. After replies from each are gathered, the responses are considered by the GAO team, and grafted into their two-dimensional scale of immediacy and customisation. To aid their analysis, the team inputs these values into a simple spreadsheet, much as in the one below.

	Priority A		**Priority B**		**Priority C**	
Candidate	*Immediacy*	*Customisation*	*Immediacy*	*Customisation*	*Immediacy*	*Customisation*
Alpha	12 months = 2	Moderate = 2	24 months = 1	Extensive = 3	12 months = 1	Moderate = 2
Beta	24 months = 1	Extensive = 3	No capacity = 0	None = 1	No capacity = 0	None = 1
Gamma	6 months = 3	Moderate = 2	6 months = 3	None = 1	24 months = 1	Extensive = 3
Delta	No capacity = 0	None = 1	12 months = 2	Moderate = 2	24 months = 1	Moderate = 2
Epsilon	24 months = 1	Moderate = 2	No capacity = 0	None = 1	12 months = 1	Moderate = 2
Zeta	6 months = 3	Extensive = 3	6 months = 3	Extensive = 3	6 months = 3	Moderate = 2
Eta	No capacity = 0	None = 1	24 months = 1	Moderate = 2	No capacity = 0	None = 1
Theta	No capacity = 0	None = 1	6 months = 3	None = 1	12 months = 1	Moderate = 2
Iota	24 months = 1	Moderate = 2	12 months = 2	Moderate = 2	No capacity = 0	None = 1
Kappa	12 months = 2	Extensive = 3	24 months = 1	Moderate = 2	24 months = 1	Moderate = 2
Lambda	No capacity = 0	None = 1	No capacity = 0	None = 1	6 months = 3	None = 1
Mu	12 months = 2	Moderate = 2	24 months = 1	Extensive = 3	No capacity = 0	None = 1

After assembling and categorising these responses, GAO's leadership decides to implement the waterfall method as described in Section 3. As such, they order there priorities according to decreasing weights. Hence, A, is the first priority, B the second, and C the third. Furthermore, GAO decides to implement a zero-threshold progression policy: candidate ICs are 'knocked out' from consideration if they have no capacity (i.e., a 0 score for immediacy) on any priority.

As consequence of implementing these decision rules, our GAO's list of candidate ICs to prospectively implement its green investment priorities is reduced from twelve to four. The remaining candidates are: Alpha Advisors; Gamma Partners; Zeta Group; Kappa Strategies. Due to the fact that each of the four remaining IC candidates has expressed an ability to accomplish all three of GAO's green investment priorities, leadership at GAO wishes to explore the feasibility of issuing a single mandate to the top candidate across all three projects, based on the resulting scores from its analysis. Hence, it sets about the adjustment, weighting, and normalisation processes described in Section 3 in order to arrive at the following normalised scores (rounding to three decimal places) for the four candidates.

- Zeta: $0.938 = (9/9 * 0.5625) + (9/9 * 0.2500) + (6/9 * 0.1875)$

- Gamma: 0.521 = (6/9 * 0.5625) + (3/9 * 0.2500) + (3/9 * 0.1875)
- Kappa: 0.472 = (6/9 * 0.5625) + (2/9 * 0.2500) + (2/9 * 0.1875)
- Alpha: 0.375 = (4/9 * 0.5625) + (3/9 * 0.2500) + (2/9 * 0.1875)

Clearly, on this basis (but absent other factors of consideration), Zeta represents the best relative fit (by a factor of 1.8 times) for our GAO. Of course, GAO's leadership may wish to run a competitive process before offering Zeta a mandate outright; but, if resources are considerably limited, they may pursue Zeta as a first 'port of call' in seeking an IC.

While substantially more diligence may be entertained in reality than in the scant space permissible for our illustrative example, what we intend to convey is that, in actual practice, multiple rounds of calibration and refinement are likely to be needed to verify the initial indications and messages of such heuristic analysis. Indeed, the real-life counterpart of GAO should, after it has slimmed its list of initial candidates down, conduct more extensive dialogue with the remaining candidates to reaffirm that its initial classifications and score assignments were appropriate. Furthermore, it may wish to refine its analysis by increasing the granularity of the scales that it uses for immediacy and/or customisation, or even adding extra dimensions of scoring (discussed in Section 5 of Rook (2015)). In short, we stress that our base procedure can and should be freely adapted and itself customised to fit the particular needs and culture of the AO that is implementing it.

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