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Integrating Impact Investment and Nexus Thinking – Opportunities and challenges

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About the Nexus Network think piece series

Funded by the ESRC, the Nexus Network is a collaboration between the University of Sussex, the STEPs Centre, the University of East Anglia, and the Cambridge Institute for Sustainability Leadership. The Nexus Network brings together researchers, policy makers, business leaders and civil society to develop collaborative projects and improve decision making on food, energy, water and the environment. In 2014, the Nexus Network commissioned a series of think pieces with the remit of scoping and defining nexus approaches, and stimulating debate across the linked domains of food, energy, water and the environment.

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Integrating impact investment and nexus thinking

The need for nexus approaches

The world is facing enormous challenges in achieving sustainable development. Predictions of significant population and economic growth as well as increasing rates of globalisation, urbanisation and climate change raise questions about humanity's ability to continue with existing economic growth patterns. Despite progress in many areas, there are widespread concerns about providing water, energy and food security, particularly for many of the world's poorest citizens[1].

Currently, basic services are not available to a large proportion of the world's population; about 0.9 billion people are without adequate access to water for their basic needs, and for many more the water is not safe for consumption, 2.6 million lack access to safe sanitation, close to 1 billion are undernourished, and at least 1.5 billion are without access to modern forms of energy[2]. More importantly, these trends are believed to heighten the potential for social and political pressures leading to resource competition, unrest, war and migration[3].

Increasingly, there is a growing understanding that many of the world's most extreme problems are caused by a web of issues interconnected across sectors and in space and time suggesting "that we will not reach these objectives [*of sustainable development*] without addressing the nexus between water, food, energy and population dynamics"[4]. In response, the 'Bonn2011 Nexus Conference' brought together a wide range of stakeholders to discuss these challenges and implications. The key conclusion of this conference was that "a new nexus oriented approach is needed to address unsustainable patterns of growth and impending resource constraints and, in doing so, promote security of access to basic services. It is an approach that better understands the interlinkages between water, energy and food sectors as well as the influence of trade, investment and climate policies"[5]. The financial sector in particular is seen a key stakeholder and enabler in the development of a ‘Green Economy’ and new approaches such as impact investment may provide potential solutions in this context.

In this paper, I investigate the extent to which the financial community is aware of and integrates the notion of the ‘energy-water-food nexus’ in its decision-making and investment processes. Specifically, the research explores whether investors and professionals in the financial sector already employ suitable strategies, frameworks and metrics or whether other, more innovative investment criteria, data and information are needed to support a nexus-based investment approach. To achieve this aim, the paper begins with a review of key initiatives, developments and reports of relevance to nexus thinking in the financial sector and then supplements these findings with responses from several open-ended, semi-structured (face-to-face or telephone) interviews with a variety of investment professionals. Details of the respondents and the survey questions are listed in the appendix.

In order to pursue the aim of this think piece, the review and interviews were structured and conducted with the following strategy in mind. The purpose was to arrive at rich and insightful responses from a variety of sources designed to explore the overlap between nexus thinking and impact investing, in order to:

- Assess the conceptual understanding of the nexus in the financial community;
- Evaluate strategic compatibility between nexus and impact investment;
- Determine investment opportunities and barriers;
- Identify operational challenges in terms of metrics and objectives;
- Develop a research agenda for future high impact studies.

Interview findings were largely summarised in an interpretive manner, whereby key concepts and expressions mentioned by the respondents were woven together using the author’s narrative. In order to protect confidentiality specific findings were not attributed to the individuals involved in this research. The findings suggest a number of emerging challenges which are discussed in a separate section outlining potential responses and solutions. These should predominantly be seen as an invitation for reflection and consultation among the broader readership of this paper in order to promote enhanced understanding and actions.

The underlying premise of this think piece is that ‘impact investing’ may be an ideal vehicle for targeting ‘energy-water-food nexus’ issues. While impact investing potentially covers a much larger range of investment opportunities[6,7], I argue that by integrating a nexus-based approach, impact investors may be able to maximise their broader sustainability related impact intentions, specifically in emerging and developing countries[8, 9].

As a result, this think piece aims to make two key interrelated contributions. First, it comes as a direct response to research questions raised during a recent ESRC workshop on ‘Sustainable Prosperity’ and the role of the green and ethical investment movement in particular[10]. It therefore addresses broad themes of interest to funding bodies and policy makers.

Second, the more practical goal of this think piece is to develop a better understanding of the views and needs of the financial community regarding the nexus with the anticipation that this could lead to a more comprehensive and detailed academic study in a future research project. In doing so, this think piece starts involving the financial industry in the nexus network with the long-term goal of developing clear guidelines and measures enabling the financial community to optimise its impact investment strategies. This think piece therefore actively seeks to engage practitioners and academics with the ultimate goal of integrating and promoting innovative practices and concepts in order to overcome existing market and policy barriers for wider implementation.

Key initiatives and developments

Financing and the green economy

The need for developing nexus approaches is shared by those keen on enabling the transition to a more resource efficient Green Economy in general. "The Green Economy approach 'seeks, in principle, to unite under a single banner the entire suite of economic policies of relevance to sustainable development'. To succeed, a Green Economy must go beyond sectoral solutions and actively address the water, energy and food security nexus, in-line with human rights-based approaches"[11]. "The Green Economy aims to bring a broader perspective into decision-making where 'growth in income and employment is driven by public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services"[12].

To get this process started, the Bonn2011 Nexus conference proposed several policy recommendations including the need to increase private sector capital and leverage innovative financing models from responsible investors. Finance, specifically, is seen as a key enabler of addressing nexus challenges together with governance and innovation. Promoters of nexus approaches focus on investment in natural capital and infrastructure and call for specific actions to:

- Increase collaboration between the public sector, business and finance, and civil society, including proactive and innovative financing arrangements to achieve water, energy and food security;
- Incorporate nexus considerations into existing initiatives such as the UNEP-Finance Initiative and UN-based Principles for Responsible Investment, and further support Water Disclosure such as through the Carbon Disclosure Project;
- Adopt international good practice for infrastructure development (e.g. energy generation, dams, waste treatment etc.), and foreign direct investment (e.g. commercial agriculture and forestry, biofuels) and recognize relevant

sustainability guidelines, assessment tools and certification schemes;
- Leverage sustainable finance and responsible investments to place a premium on long-term investment horizons that incorporate environmental and social issues as a matter of risk-management and so are synergistic with a nexus approach;
- Adopt social and environmental safeguards in infrastructure projects including the Equator Principles;
- Reflect nexus thinking in corporate sustainability reporting of investment portfolios.[13]

For instance, six specific 'Nexus Opportunity Areas' have been identified. They support sustainable growth and achievement of water, energy and food security by cutting across interlinked decision spaces and identifying win-win solutions. In addition, they address the often-competing tensions between sectoral objectives and the consequential 'push-pull' pressures on the water resource and associated land and natural resources. These *'Nexus Opportunity Areas'* are: increasing policy coherence; accelerating access; creating more with less; ending waste and minimizing losses; valuing natural infrastructure; and mobilizing consumer influence.[14]

Specifically, the opportunity of '*valuing natural infrastructure'* seeks investment for securing, improving and restoring the considerable multi-functional value of biodiversity and ecosystems to provide food and energy, conserve water, sustain livelihoods and contribute to a green economy, while strengthening the role that nature plays in supporting life, well-being and cultures[15]. This entails developing and adapting sustainable financing mechanisms to maintain ecosystems services and adopting new instruments, such as output based aid, and existing ones such as risk guarantees to leverage private funding.

On the investee side, the Bonn 2011 Nexus conference called on businesses to pursue a number of actions to integrate the nexus within their companies' strategic decision-making processes, including: incorporating a nexus perspective in business planning;

broadening water and energy stewardship and the application of corporate sustainability principles; maximising resource efficiency and productivity gains; recognising the rights and needs of workers and the contributions they can make to productivity gains; and including a nexus perspective in corporate sustainability reporting[16].

Investing with impact

Meanwhile at its Annual Meeting in Davos in January 2012, the World Economic Forum (WEF) brought together mainstream investors, impact investors and social entrepreneurs to discuss how to harness the potential of 'impact investing'. Although still regarded by some as a marginal but growing activity, "*impact investing* is an investment approach that intentionally seeks to create both financial return and positive social or environmental impact that is actively measured"[17]. Major impact investors include international development finance institutions, wealthy families, high-net-worth individuals, foundations and endowments.

Investing for impact can be made in both emerging and developed markets, and target a range of returns from 'below market' to 'market rate', depending upon the circumstances. More specifically, while some consider impact investing a form of socially responsible investing (SRI), the World Economic Forum identifies the following characteristics: it is an investment approach and not an asset class; intentionality matters; the outcomes of impact investing, including both the financial return and the social and environmental impact, are actively measured.[18] Estimating the size of the impact investment community turns out to be more difficult than would at first appear. Much depends on the definition of what is included in this approach, leading the WEF to suggest that US$40 billion of capital are committed cumulatively to impact investments out of the tens of trillions in global capital[19]. By contrast, a recent review differentiates between traditional investments that create positive impact 'by-default' while pursuing financial returns ('financial first'), and investments that seek to intentionally create impact in areas where there are market failures without necessarily generating financial returns ('impact first'). Here, estimates vary from US$ 9bn for 'financial first' to significantly less for 'impact first' investments[20].

Despite the slow uptake of impact investing, financial markets have generally witnessed quite significant growth in other forms of sustainable and responsible investment (SRI). Spurred on by the creation of the United Nations' Principles for Responsible Investment (PRI), currently about 1,200 investors representing US$ 35 trillion in assets under management have signed on to the six core principles for institutional investors looking to incorporate environmental, social and governance (ESG) criteria into their long-term investment decision-making. These changes in investment trends also reflect underlying social shifts, whereby younger generations of investors appear to be much more interested in and concerned with investment outcomes beyond financial results[21, 22].

The World Economic Forum is now actively, but separately, promoting both impact investment and nexus thinking[23, 24] and has outlined a road map for a variety of stakeholders to identify suitable investment opportunities that generate positive economic, social and environmental outcomes. It calls on these currently discrete stakeholder groups and strategies to combine in the future to advance a single, integrated approach to investing capital for financial returns and impact. More importantly, it urges policy-makers to engage with market stakeholders and develop government capacity for action, while intermediaries should work to 'connect the dots' between related investment areas, promote total portfolio investment strategies with asset owners and engage institutional investors in creating new investment platforms.

Defining impact investment metrics for the nexus

One of the key challenges in the context of sustainability, investment and business management is the identification and operationalisation of performance and outcome metrics. Organisations such as the Global Reporting Initiative (GRI), International Integrated Reporting Council (IIRC) and the Sustainability Accounting Standards Board (SASB) have been working hard to create common standards, norms and measures for public companies around the world. In addition, the Global Impact Investor Network (GIIN)[25] is a not-for-profit organization dedicated to increasing the scale and effectiveness of impact investing.

Impact investments are made into companies, organizations, and funds with the intention of generating measurable social and environmental impact alongside a financial return. The GIIN has therefore developed a catalogue of generally-accepted performance metrics that leading impact investors use with the purpose of measuring social, environmental and financial success, and evaluating deals. This catalogue is called IRIS (Impact Reporting and Investment Standards).

IRIS draws on a wide range of existing standards, such as, for example, the Global Reporting Initiative, the OECD, the World Health Organization, the World Resources Institute, the IFRS, the International Labor Organization, and many others. Though being an important part of developing an impact measurement programme, impact measurement is not limited to the selection of particular IRIS metrics. An 'impact measurement program' includes the processes and activities that an organisation implements in order to manage investee performance and track progress toward desired social and environmental objectives. These activities include determining what to measure, collecting and analysing the related information, and using the results in decision-making and reporting. IRIS is not, however, an evaluation tool, a data management platform or a reporting framework[26].

The latest IRIS catalogue (v3.0) currently contains 488 qualitative and quantitative metrics covering five different performance areas: financial; operational; product; sector; and social and environmental objectives. Users can combine any of these metrics to create their individualised portfolio of performance objectives, which they then apply to their investments by collecting performance data, monitoring progress and reporting outcomes. With regard to the energy-water-food nexus, a number of specific metrics exist that could usefully be employed. For instance, the following metrics allow the *separate* identification of performance and impact in domains of the nexus:

- Energy Saved/Conserved (PI4009)
- Greenhouse Gas Emissions of Product (PD9427)
- Water Produced for Service Sale: Potable (PI8043)

- Water Savings from Services (PI2884)
- Land Reforested (PI4907)
- Trees Planted (PI4127)
- Ecosystem Services (PD8494)
- Crop Type (PD1620)
- Livestock/Fish Type (PD4686)

At the same time, the closest metric that addresses nexus considerations through a more integrated perspective is captured by '*Environmental Impact Objectives*' (OD4108). This metric includes the following impact objectives pursued by the investee organisation: biodiversity conservation; energy and fuel efficiency; natural resources conservation; pollution prevention & waste management; sustainable energy; sustainable land use; and water resources management. Using this particular metric, however, raises potential concerns in so far as that:

- it is not prescriptive;
- it may allow a very selective approach of individual impact objectives;
- Even if all objectives were measured, there is no guarantee that investee companies will consider these objectives in a holistic, integrated and dynamic manner as would be necessary for a nexus approach.

Consequently, the question arises as to whether there a need for specifying a new metric(s) dedicated to addressing the energy-water-food nexus in a more comprehensive and systemic way[27]?

Considering the variety of existing levels of engagement by the impact investment community, it appears that IRIS currently offers a useful and comprehensive starting point for developing a measurement framework designed for targeting specific forms of impact. One drawback, however, is that despite the existence of this framework, impact investors rely on third party providers or are having to collect data and information themselves from their investee firms. This means that standardisation and verification remain considerable challenges.

For the purposes of this report I searched the IRIS database for examples of impact investors that already incorporate metrics aligned with the nexus. Table 1 below indicates potentially nexus related metrics included in the IRIS catalogue and the respective number of impact investors using them.

Social objectives	**Environmental objectives**	**Product/service sector**
Access to clean water	Biodiversity conservation	Agriculture
Access to energy	Energy and fuel efficiency	Energy
Food security	Natural resources conservation	Water
	Pollution prevention & waste management	
	Sustainable energy	
	Sustainable land use	
	Water resources management	
93 impact investors	*119 impact investors*	*108 impact investors*

Table 1: Impact investors using IRIS metrics associated with the energy-food-water nexus

Despite this encouraging picture, a problem exists in that these investors don't necessarily target nexus issues in an integrated manner. In other words, while the organisations summarised in Table 1 use nexus related metrics, there is no guarantee that investee firms address these social or environmental objectives together. As a consequence, there would be no way for these investors to report specifically on their systemic impacts regarding broader energy-food-water issues. It seems that trade-offs and synergies from using these particular metrics therefore only occur at investment level rather than "on the ground" where investee firms operate. For example, an impact investment organisation may separately invest both in a renewable energy firm and in a water management firm elsewhere. As a result, while two individual nexus elements from the IRIS catalogue are addressed at the investor level, they are not comprehensively taken into consideration by the particular investee firms.

Of course, such decisions all depend on the main purpose of the impact investment organisation, its size as well as that of their investee firms and the products and services offered. If nexus approaches are to be successfully included, impact investors and managers would need to calculate impact, risks and trade-offs at the investee firm level rather than for the impact investor.

Interview findings

In the following section I further explore the themes and issues identified from the review phase on the basis of comments and feedback received from the investment community.

The nexus - A key sustainability concept in need of a clearer definition?

Differentiating between the nexus and general environmental sustainability issues*.* The first key observation from conversations with representatives of the financial community is that many of their firms and organisations already claim they are taking energy, food and water considerations into account when making investment decisions; however, the degree to which they are integrated in a more holistic manner is less obvious. Some may even be using nexus approaches without necessarily calling them such. Yet it also appears that there is quite some degree of unfamiliarity with the nexus concept (or at least how to use nexus approaches) and even some confusion with other applications of the term. In fact, some had never even heard of the term before being contacted for the interview; greatest familiarity was among those who were closely involved and interested in water issues.

Inherent within the nexus concept, there is also growing interest in renewable energies; this is a trend, which also appears to occur in parallel with investors beginning to worry about 'carbon stranded assets'[28]. Institutional investors are becoming increasingly comfortable with the risks involved in renewable energy assets and are increasing their capital in this particular sector whilst seeking to decarbonise their portfolios. Yet exclusive investment in renewable energies most likely doesn't qualify as taking a nexus approach. Although this part of the nexus is witnessing strong growth and as such may contribute to a green economy, it doesn't guarantee a more systemic investment approach to sustainable development has been taken in a way that would recognise the wider interlinkages between energy, food and water.

From the interviews, it also became evident that active engagement with the nexus depends on an organisation's role and purpose within the broader financial/investment community. For example, international development banks were widely considered the most advanced in this regard because of their inherent purpose and interests. By contrast, for many institutional investors such as pension funds and insurance firms, energy, food and water issues represent predominantly risk and reputational challenges, which they expect their investee firms to address. Increasingly, though, there are also wider shifts emergent in the broader financial sector where traditional banking institutions are being encouraged to incorporate activities that used to be covered and targeted by the shadow banking sector. Following stricter regulation in the wake of the global financial crisis, the opportunity here lies with commercial banks and investment management firms to engage in investment projects which they would not have considered in the past. The question is whether the nexus might present such opportunities.

The growth in green bonds. Respondents also frequently mentioned the increasing attention that is being paid to the growth of ‘green bonds’. 2014 turned out to be a record year for this emerging market of fixed income assets, reaching $37 billion. Bloomberg New Energy Finance[29] even predicted this sector could grow to US$ 100 billion by the end of 2015, although there are some concerns that this may be too optimistic. Historically the preserve of international development finance institutions, increasingly also corporations, insurance firms and banks are developing an appetite for financing environmental benefits. Further legitimacy for this new market has come from the recently agreed ‘Green Bond Principles’, which define which investments count as green by clarifying the approach for issuance of a green bond[30]. A key question raised again is whether such green bonds could play a greater role in addressing integrated nexus issues rather than supporting specific technologies, projects, and companies. In particular the following main uses of green bond proceeds are listed:

- Renewable energy and energy efficiency (including efficient buildings);

- Sustainable waste management;
- Sustainable land use (including sustainable forestry and agriculture);
- Biodiversity conservation;
- Clean transportation;
- Clean water and/or drinking water.[31]

This suggests that the green bond sector may become a powerful driving force behind adopting and supporting nexus approaches, particularly given the fact that such innovative methods are also used for project, government and municipal financing. In the vast majority of cases today, however, the investment is used for renewable energy, energy efficiency and water management projects only. So far, therefore, there is no sign that Green Bonds are issued for more holistic approaches to energy, food and water security. This presents a clear opportunity for the financial community to work with other stakeholders and to develop projects and revenue models that would benefit from taking a broader and more integrated range of environmental impacts into account.

Role of engagement, disclosure and reporting. Aligned with these considerations, the financial community, and socially responsible investors (SRI) more specifically, are keen to get a better understanding of companies' exposure to the many sustainability challenges they face. This is both a question of risk mitigation and strategic decision-making with regard to potential business opportunities. Many investors are therefore reliant on the multitude of rating and ranking agencies, as well as companies' own efforts towards measurement and reporting. In the most advanced cases, investors will also engage directly with their investee firms to understand whether managers have understood their risk exposure and are putting in place appropriate strategies and policies. While dealing with nexus issues appears less prominent in this context, the role of water has significantly increased in terms of corporate and investor focus. Managers and investors are keen to understand their exposure and, as with climate change, are under pressure to provide greater transparency[32]. Examples include growing concerns over water availability for the production of consumer goods, food and energy. But also challenges of obtaining or renewing social licenses to operate in land resource intensive industry sectors (e.g., mining or unconventional oil and gas sectors) and competing claims over economic development priorities in the case of energy, food and water needs (e.g., biofuel production; hydro power development) have risen on the corporate agenda.

The risk, however, is that such insights remain purely oriented towards monitoring and focused on separate resources at a time, rather than intent on promoting more systemic corporate understanding and responses.

Redefining the nexus for the finance and business community. As a result, there is an urgent need for improving clarity around the term 'nexus'. In fact, some are sceptical that introducing yet another concept will lead to greater engagement. Given the already high levels of ambiguity and complexity surrounding sustainability in general, investment and business communities would generally prefer simplification and consolidation of concepts and terms rather than further differentiation. This becomes even more important when dealing with clients and selling the wider benefits of SRI/impact investment. In fact, while there is growing interest from investors (both retail and institutional) in addressing sustainability issues, investment managers and other intermediaries find themselves in the position of having to educate their customers about the risks and benefits of taking more enlightened investment approaches.

To raise the level of buy-in from customers, investment managers therefore need simple, yet powerful concepts and terms that incorporate these issues without requiring highly advanced levels of understanding of the underlying physical and social factors and actors. Such efforts to review the definition and use of the nexus concept would also benefit governmental agencies, the investment community in general, corporations and start-ups. For instance, nexus considerations were initially concerned with addressing security of access to energy, food and water, and thus mainly promoted the need for driving sustainable development at the ‘bottom of the pyramid’ in emerging and developing countries. Increasingly, however, nexus considerations are also becoming important general business and investment risks and thus enter the realm of strategic management.

Reviewing the definition and application of the nexus would therefore help companies with taking more systemic approaches towards managing their environmental, and ultimately social, issues and responsibilities. This would reduce companies’ operational risks, increase efficiencies, create new customers and improve their wider social standing as providers of sustainability solutions. The investment community, in turn, could use a refined nexus concept to integrate and promote its various existing and emerging financial products, funds and services, which either actively or passively benefit from an improved understanding of environmental risks, impacts and opportunities.

Impact investment to the rescue?

One key observation about ‘Impact Investing’ is that this is another new and somewhat ambiguous concept that requires greater clarity. Despite the definitions provided by the GIIN and World Economic Forum, discussions indicated that differences in understanding and use remain, for example, even between the US and the UK. Others view it as an evolving concept, which initially had more of a niche appeal to private equity investors interested in direct involvement and social enterprise but is rapidly gaining traction among larger investors as well. In that sense not everyone is convinced that there is actually a big difference between impact investing and socially responsive investment. Perhaps the prioritisation of approaches (‘Finance First’ vs. ‘Impact First’)[33] or the notion of impact investment as part of a responsible investment approach continuum[34] represent useful starting points for locating impact investment in the complex world of today’s financial markets.

Generally speaking, there is broad agreement that impact is something that can be defined, measured, captured and reported on. As a result, impact is inherently embedded in risk-return profiles and can be spread across different types of assets, investment portfolios and themes. In the UK, for example, public sector impact investment generally falls into three categories: environmental (Green Investment Bank, GBP 3bn), social (Big Society Capital, GBP 8000m from unused bank accounts) and international development (DFID, which runs its own investment fund and tends to use environmental issues as a way of improving social issues). Private impact investors often prefer to focus on 'Base of Pyramid' issues, promote local income generation and, in line with the 'theories of change or value creation (ToC/ToVC)', work backwards from their desired impact to decide on investments and policies that need to be implemented.

Increasingly, many large corporations are also challenging the view that they don't have impact and are actively measuring and communicating their wider benefits in line with 'triple-bottom-line accounting'. The belief is that large corporations too are enterprises which create social impact. This diversity among the global impact investment community ranging from private individuals to large institutions makes generalisation a considerable challenge, but also offers potential advantages in terms of flexibility.

As a result, there may be significant concerns over the proposal to combine the two emerging concepts of impact investment and nexus thinking, both of which are still subject to uncertainty in terms of their conceptualisation and application. In fact, the outcome of this proposed "merger" may turn out completely incomprehensible to all but those expertly knowledgeable about the details of the nexus and impact investing. Conversely, such an idea may actually support the development of an innovative and straightforward approach that delivers maximum impact on both social and environmental scales for a variety of investor types.

In this context it is also important to contrast impact investment approaches with environment, social and governance (ESG) screening: while in the former case investors focus on actively delivering positive impacts, in the latter case investors only seek to eliminate certain negative aspects or impacts of their investment. This has significant implications for investors who want to understand the trade-offs between both approaches and therefore require realistic models and comparisons of the financial and broader impact returns. Many investors would probably prefer some form of mixed method approach whereby they can combine negative screening with different investment forms of active ownership.

Seeing that many institutional investors are already looking for liquid investments, closed ended funds and green bonds, the energy-food-water nexus therefore presents a real and growing opportunity with enormous scope for growth. Nevertheless, it also carries significant challenges as opportunities and risks vary across markets and sectors. In future, the recently published 'impact investment guidance' published by the G8 and the UK's drive towards more coordinated approaches such as Social Impact Bonds may provide greater transparency and measurability[35, 36, 37].

Who should deliver nexus approaches?

Broadly, though, the proposal for impact investors to apply nexus thinking generally appears to evoke positive responses from the financial community. Particularly the commodities, mining, and energy sectors are highlighted as having significant potential for impact investment in emerging and developing economies. Yet despite mounting investor interest in understanding their risk exposure and often in obtaining more than just financial returns, for the foreseeable future investment managers are likely to remain the key intermediaries and educators along the way. They believe their task is to offer new products and services that capture their clients' interests and concerns with environmental issues whilst demonstrating commensurate risk-return profiles. To achieve this aim, investment managers for their part have to be able to communicate the real values as well as the environmental and social risks embedded in their investments. This may also entail a mandatory commitment to proving that environmental, social and governance issues have been taken into account in the process of fund and portfolio selection. Supportive legislative and regulatory initiatives that drive transparency and disclosure will facilitate the process of comparing companies' performance with regard to ESG issues and the nexus in particular. With regard to implementation, then, two key types of organisations need to be involved.

Large companies and corporate sustainability strategies. For many institutional investors and investment managers, the main focus is on the role played by multinational corporations operating in sectors and geographies where nexus issue come to the fore. In response to concerns from (socially responsible) investors about operational risks and reputational damage, companies' efforts have been bundled into their corporate sustainability strategies.

Corporate sustainability reporting is seen as particularly crucial for the investment community, which is pushing for the use of integrated measures and reporting while seeking to retain richness and diversity in the information provided. Quality rather than quantity of reporting is particularly important, not least because, as one respondent put it, *"What gets disclosed, gets discussed"*. Indeed, reporting too much information isn't necessarily seen as being more valuable to investors. Instead, companies need to decide how risks and opportunities can best be addressed and disclosed, and then explain what these issues really mean for their business. Given the complexity of the energy-food-water nexus, investor engagement with their investee firms also needs to be more systematic. It has been proposed to make it mandatory for environmental, social and governance to be included in investment decision processes. Likewise, greater multi-front engagement with a variety of stakeholders beyond companies' executives is required in order to manage investments in line with broader ESG/nexus considerations.

Intriguingly, it also means that investors for their part need to develop greater clarity as to how they want to handle the social and environmental trade-offs (for example, investment in tobacco firms or the arms sector). Where do they draw the line when integrating environmental and social issues? When should they exclude firms and assets from investment considerations? When should they proactively engage with their investees to change behaviour? Too often, investors suggest they are torn between wanting or having to maximise financial returns and broader ethical considerations. The answer to such dilemmas needs to be clearly thought through and justified in order to develop coherent investment strategies. Such concerns are even more important in the context of the nexus where it is vitally important for both investors and companies to understand the risks as well as the opportunities for greater involvement. Once they have been identified and illustrated, they can be translated into a broader impact investment agenda that highlights both its potential but also remaining barriers.

Start-ups and SMEs. Representatives of the financial community acknowledged that there are significant differences between public and private equity firms and the roles they play as part of solving environmental and social problems. Existing, publically-owned corporations are viewed as far better in terms of having access to the resources and capabilities needed to address nexus issues, not least because they are often responsible for negative impacts, and also because of the growing need for disclosure. By contrast, many investors believe private equity firms to be much better positioned to provide the business model innovations and entrepreneurial spirit required for tackling energy, food and water security. Start-ups and small and medium sized enterprises (SMEs) are hailed as the more innovative, agile and responsive actors that can create the necessary business solutions.

It is not by chance that many of the investors involved in 'impact-first' funds are backing emerging organisations that operate with very different mind-sets and business models. Examples are listed in the G8's Social Impact Investment Taskforce case studies[38] and the GIIN's ImpactBase[39]. A big difference, however, is that, almost by definition, private equity firms don't have the same reporting and transparency requirements, which makes impact measurement an even greater challenge in this sector.

Measuring the impacts from nexus approaches

Finally, when it comes to defining and measuring the impacts from using nexus approaches, a clear gap emerges. While numerous data providers and analysts offer standardised and bespoke solutions (e.g., CDP, Trucost, Global Footprint Network, Natural

Capital Business Hub, etc.), there is no clear and obvious measure for assessing whether the energy-food-water nexus has been taken into account.

There is great appreciation for the large improvements that have been made with regard to these data services, but problems often arise because providers draw on different definitions and metrics, and because there are diverging assumptions behind the aggregation of data at company level. Consequently, many investment managers struggle with robustly defending their proposed investment strategies when the underlying data reliability remains uncertain. With regard to the nexus, this problem is even more acute because it can be characterised as:

- **Location** specific;
- **Dynamic** in the sense that it requires time sensitive modelling and understanding of feedback loops;
- **Cross-sectoral** in so far as companies and a multitude of stakeholders can influence it;
- **Values based** because individual preferences and priorities differ and therefore affect options and choices.

The question is what positive outcome or impact from using a nexus approach should be measured? Impact investors prefer to focus on positive benefits rather than negative screening, so how can that impact be captured, measured and reinforced for further investment? Measuring such a complex and dynamic issue poses a variety of challenges, including whether it can indeed be measured at all. Can it be reflected in a numerical value, a qualitative assessment, or both? How can potential knock-on effects, risks and trade-offs be integrated? Ultimately, an integrated nexus reporting framework is required which would also help investors to decide whether to create 'net impact' through one fund or across different funds. IRIS is widely held as an excellent starting point for many impact measurement considerations given its development of a common taxonomy. Unfortunately, so far IRIS struggles with establishing its wider influence on the community as there is limited insight into who is already using the catalogue, what and how users report impact, what the value of this catalogue is to its users, how it can be improved for wider marketing efforts and what the actual results from impact measurement are. In fact, a lack of positive impact data and cases may be among the biggest barriers to its wider application.

This suggests a greater need for understanding how investment and measurement activities can be used to drive the desired impact. Ultimately, the aim should be to use IRIS as a tool and guideline for general impact investment and peer-comparison. In this context, the International Integrated Reporting Framework (<IR>),[40] should also be highlighted as driving greater cohesion and efficiency in the reporting process. Importantly, it adopts 'integrated thinking' during the capital allocation process and includes some assessment of possible knock-on effects. Users again need to decide how best to draw on the existing measurement and reporting frameworks to consolidate these efforts.

Some argue it is easier to invest in reducing environmental impacts, rather than in social issues, because more advanced understanding and scientific measurement of many environmental factors. Yet a key reason for the need to address the nexus is that although superficially concerned with environmental considerations, the greatest impacts are felt socially in terms of improving human rights, health and economic development.

'Nexus impact measurement' could therefore consist of two layers: one focused on more tangible environmental impacts; the other on less quantifiable but wider social impacts. This is one of the key reasons why using an integrated approach towards the nexus potentially provides a raft of spillover benefits. Importantly, the nexus may provide a powerful impact target that transcends environmental benefits by having positive social effects as well. Gaining greater clarity on *'nexus impacts'* could therefore promote wider benefits, regardless of the investment or corporate strategy chosen.

Future challenges and potential responses

How can we define the nexus in a way that facilitates its use by the financial and business community?

Given the many other applications of the nexus term (e.g. in technology, health or international security), it is important to add the terms 'energy-food-water' for clarification. More importantly, should this term be used at all or are there better alternatives? Whichever term is chosen, relevance and applicability across all asset classes is crucial. Recent efforts to explain why there is convergence on the 'energy, food, water nexus' concept[41] serve as a useful starting point for future debates on the use of this term.

How can impact investing leverage nexus thinking if both terms remain ill-defined and devoid of broad acceptance?

One possible response would be to explain what a combination of these two concepts would look like if actively implemented. Case studies would need to describe the detailed steps and methodologies involved, disseminate how impact was measured and specify any achievements over time. Over time, the notion of '*nexus investing*' might derive its meaning not from contentious definitions and a diversity of implementation styles, but from the obvious and quantifiable environmental, social and economic benefits created through a range of sophisticated investment strategies into systemic energy-food-water challenges.

How can impact investors more actively target nexus issues?

For the wider financial community it is important to demystify terms such as socially responsible investment (SRI) and impact investment; in both cases profits can be made and sometimes even exceed those of traditional investment strategies, but they may also perform very differently[42]. A high degree of investor scepticism remains over the validity and benefits of such approaches. In order to entice a wider investment audience and demand beyond a hard core of impact investors, greater efforts must be made to highlight and quantify these opportunities. Especially when a new term such as the nexus is introduced, the onus lies with investee firms and their stakeholders to demonstrate the wider merits of their operational processes and impacts. Perhaps we should ask if there should be dedicated *'nexus funds'?* Or should impact investors at least specify when they address the nexus in an integrated manner rather than targeting individual issues separately? These questions go to the heart of the nexus as an emerging concept. While there is a growing understanding around the ecological principles and problems, much less is known about how to address this issue from a social science perspective. Questions remain over the implications for business, finance, and policy. In any case, impact investors should start by outlining their positions towards the nexus.

How can investors and executives integrate nexus approaches as part of corporate sustainability and SRI?

It is clear that the response to this challenge is determined by how large corporations integrate and support nexus considerations that benefit not just their shareholders, but crucially also alleviate concerns over security of access to energy, food and water.

Companies often struggle with understanding where in their supply and distribution chains the nexus applies and how consumers fit into this picture. They also need help with supporting their staff during the data collection stages, ensuring that these data points are acknowledged, monitored and acted on. The aim is thus to support an improvement in employee motivation to become involved in nexus thinking and action.

Consequently, the challenge lies in demonstrating that individual investee firms can positively affect these issues in an integrated manner. Where that is not the case, companies should at least provide evidence that proves they have considered the nexus in their decisions and operations and are seeking to mitigate potential negative impacts. In both cases, measurement and transparency are absolutely vital.

What kind of start-up firms could provide nexus products and services?

This challenge naturally raises the question of whether there are already suitable organisations in existence that tackle energy, food and water security issues in an integrated manner. The

Permaculture Association[43] was mentioned as a possible starting point for inquiry. This is a charity which uses permaculture principles and design techniques to support the creation of sustainable, agriculturally productive, non-polluting and healthy settlements. It also highlights the need for deploying a systemic approach towards business generation, which recognises the vital role played by principles of the circular, low-carbon economy.[44]

The fact remains, however, that there is currently a lack of investment opportunities. For a ‘nexus fund’ to be successful, a whole generation of new enterprises would need to emerge. These nexus start-ups would actively need to devise business models that simultaneously provide sufficient levels of energy, food and water access. Yet many difficulties already exist in implementing business models for just one of the nexus areas; witness, for example, the problems with establishing rural renewable energy projects that are both financially and socially self-sustaining. Creating innovative enterprises that provide all three is likely to be even more challenging. Apart from intricate technological considerations, it requires a new type of entrepreneur who understands the interconnections between energy, food and water, and a desire to address all three. This must then be achieved if not within the same operation, at least under the instructions of the same organisation. This may require a significant consideration of whether to leverage technology, behavioural change or both.

Even if successful, a key challenge is to ensure scalability and replicability elsewhere without affecting the nexus across a larger geographical area and over time. It is at this stage that nexus start-ups and corporations may want to seek working together in order to achieve maximum impact. In addition, nexus start-ups will need to be able to engage a whole range of stakeholders, suggesting that complex strategic thinking is necessary to ensure all factors are covered from an organisational perspective.

What measure of impact should be used for the nexus?

Option 1: Include the provision of security of access to all basic services of energy, food and water. For example, nexus impact metrics would cover the following:

As a result of the investee's operations, products and services, how many people have gained sufficient access to energy, food and water?

This '*nexus metric'* could rely on the following definitions:

- *Water security* as defined in the Millennium Development Goals as 'access to safe drinking water and sanitation', both of which have recently become a human right;
- *Energy security* defined as 'access to clean, reliable and affordable energy services for cooking and heating, lighting, communications and productive uses' (UN), and as 'uninterrupted physical availability [of energy] at a price which is affordable, while respecting environment concerns';
- *Food security* is defined by the FAO as 'availability and access to sufficient, safe and nutritious food to meet the dietary needs and food preferences for an active and healthy life'. Adequate food has also been defined as a human right.

Importantly, we must understand security as not being so much about average (e.g. annual) availability of resources, but as something that encompasses variability and extreme situations such as droughts or price shocks, and the resilience of the poor[45]. This becomes even harder during the evaluation of trade-offs, especially when they occur over time. And so in addition to temporal and spatial dynamics, the task turns into devising a measure that captures 'sustainable systemic impact'.

Option 2: Create a more comprehensive and detailed measure combining a variety of IRIS metrics that incorporate energy, food and water considerations as well as wider benefits in terms of health and economic development.

Developing such a measure would exceed the scope of this report, but it should be noted it is not without precedent, as IRIS recently completed a wide-ranging development of its new health metrics.

To define this nexus measure requires the engagement and agreement of a wide community of stakeholders. In any case, the purpose of such an exercise would be to ensure that the nexus has been sufficiently addressed in a way that guarantees at the very least that the energy, food and water security characteristics listed above have been taken into account. Furthermore, a number of other considerations are important:

- Reducing complexity of definitions and metrics in order to attract interest from the general investment community;
- Standardising impact measurement approaches and publication of financial returns and benchmarks for advisors to improve transparency and help with marketing;
- Translating the nexus message from an investment in pure environmental issues to an involvement that creates wider social impact as well;
- Ensuring that metrics do not just exist for measurement's sake;

Both public and private equity firms need assurance that these metrics are not just about reporting to investors but also for helping to improve the business (and the inherent financial impact). In other words, *"measure what matters!"*

Conclusion

It is clear that the nexus represents a unique opportunity where the many interests of a variety of stakeholders could become aligned. Achieving the goals of greater nexus thinking requires cross-stakeholder engagements and collaborations. In particular, business, policy-makers, academics and other stakeholders need to establish rigorous yet adaptable definitions and measurement frameworks that are comprehensive and flexible enough to suit a variety of circumstances. Unsurprisingly, such efforts require much greater levels of data gathering, case studies, pilot projects, communication protocols and knowledge exchange to help in the development of a shared understanding. Governments can do more to regulate the environment in a way that attracts long-term investment, but the wider dissemination and integration of nexus approaches depends on all stakeholders.

While some warn against the wider impact investment market growing too rapidly without clearer definitions and standards, one participant also questioned, *“Is the nexus a necessary revolution?”* She wondered whether wider engagement with the nexus could lead to a more comprehensive cultural and economic transition towards greater levels of distributed energy and food production that is cognisant of the crucial role of water. Hopefully, this think piece can help to stimulate readers from all backgrounds to promote and develop the potential of nexus thinking.

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Appendix

Appendix A: Research participants

Name	Role	Organisation
Amra Balic	Managing Director	BlackRock
Julie Hudson	ESG & Sustainability Analyst	UBS
Karin Malmberg	Manager, Environmental and Social Themed Investing and Principles for Investors in Inclusive Finance	United Nations Principles of Responsible Investment (UN PRI)
Katherine Ng	Academic Network Manager	United Nations Principles of Responsible Investment (UN PRI)
Kelly McCarthy	Manager, IRIS Adoption	Global Impact Investing Network (GIIN)
Meg Brown	UK Liaison	Global Impact Investor Network (GIIN)
Neil Bailey	Senior Programme Manager	Earthwatch

Research participants were identified through online sources, personal networks and recommendations on the basis of their involvement and interest in impact investment and sustainability. This is therefore not a representative sample but rather a random cross-section of individuals available and willing to discuss the broad themes of this think piece. Participants' time and contributions are greatly appreciated.

Appendix B: Interview sheet

Impact investing and the Energy-Water-Food Nexus – Points for consideration and discussion

Research ethics

For the purposes of this think piece pilot study I might like to quote you and/or your organisation with your permission. Please let me know if you do not want to be named personally or as an organisation. I'm also happy to email you with the specific quotes prior to publication if you prefer.

Aims of this research/think piece:

To assess the conceptual understanding of the nexus;
To explore strategic compatibility between nexus and impact investment;
To determine investment opportunities and barriers;
To identify operational challenges in terms of metrics and objectives; and
To develop research agenda for future high impact studies.

Person & organisation

- Please briefly describe your organisation and your role in it.
- How many years of experience do you have working in this area?

Nexus

- How familiar are you with the term 'Nexus'? Please try to define it.
- What do you think are the key drivers behind the nexus?
- How widely used is this term? Is it clear or does it require a better definition?
- Does it represent a social and/or an environmental challenge for you?

Nexus and impact investment

- Are you aware of any investor conversations around the nexus?
- How are funds integrating nexus approaches?
- Is *impact investing* suitable for applying a nexus approach?
- Are you aware of any impact investors already targeting the Nexus directly and specifically?
- What are their motives?
- What are the *opportunities*? What are the *barriers*?
- How could or should the broader investment community and businesses engage with the nexus?
- What innovative (impact) investment financing models are needed to apply a nexus approach?
- How could impact investing in the area of the nexus become more widespread; for instance, in which areas do you see the need for more support through *policy engagement*?
- How can you (and impact investors) encourage the growth in *nexus oriented investment, entrepreneurship and business opportunities*?
- What type of businesses will need to be established so that impact investors can apply a nexus approach?

Data, information & metrics

- Do you think the nexus requires *different investment approaches, methods, tools*?
- What *metrics and objectives* should be used to incorporate the nexus in investment decisions?
- What *data* should be relied on?
- What sort of currently *missing data/information* would most improve decision-making?
- Which organisations (if any) should *collaborate* on discussing and agreeing on industry standards?

Future

- How do you see the concept of nexus developing in the future?
- What *questions and issues* would you like to see resolved in this area?

- Which other (impact) investors should/could I speak to? Would you be able to provide contact details please?
- Are there any other organisations or sources of information you think I should consult?

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