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Please cite this report as Blackstock, K.L.; Juarez-Bourke, A.; Tindale, S.; Maxwell, J.; Waylen, K.A. (2018) O1.4.2biD3: Aligning existing and new delivery mechanisms for multiple environmental benefits., Research Briefing on 'New' Instruments, James Hutton Institute, Aberdeen, 44pp.

Acknowledgments

This research is funded by the Rural & Environment Science & Analytical Services Division of the Scottish Government, as part of the 2016-2021 Strategic Research Programme. This briefing corresponds to Deliverable 3 within the project formed by Research Deliverable 1.4.2 Objective bi. More information about this project is available from

https://www.hutton.ac.uk/research/projects/analysing-how-policy-instruments-shape-soil-waterand-biodiversity





Scottish Government Riaghaltas na h-Alba gov.scot

01.4.2biD3: Aligning existing and new delivery mechanisms for multiple environmental benefits: Research briefing on 'new' instruments

Summary

The protection and restoration of natural assets is a central Scottish Government policy objective (as noted in the Economic Strategy¹, Programmes for government² and recorded in the National Performance Framework³). There has been increasing interest in the role of the private sector in protecting and restoring natural assets and this review focusses on delivery mechanisms initiated or led by private commercial companies that aim to reduce pressure on natural assets and invest in their protection. As such the review concentrates on voluntary action that go beyond compliance with existing regulatory or statutory approaches. The review tries to focus on new delivery mechanisms, or at least those that are novel for application to the Scottish land-based sector.

The objectives of the review are to:

- Scope the range of delivery mechanisms that can be led by non-state actors and are relevant to integrated management of natural assets;
- Focus on those that have emerged within the last decade, or where existing approaches have a novel twist; and
- Assess what is claimed about these mechanisms and whether they might deliver more than existing public policy-led approaches.

The review does not consider public policy led mechanisms (e.g. fiscal instruments) nor does it consider general 'steering' concepts like sustainable development or very specific technical measures. Furthermore, it is not exhaustive but illustrates a range of mechanisms for further discussion with stakeholders.

The review presents sixteen mechanisms categorised as investment, management or information mechanisms (see table below); as traditional academic distinctions obscure the way in which market based and other mechanisms tend to interact. Investment mechanisms are voluntary mechanisms to increase resources available to restore or protect natural assets, taking account of the need for 'new' sources of income given austerity in the public sector. Management mechanisms are voluntary mechanisms to reduce environmental impacts and restore assets in order to manage risk and reduce costs. Information mechanisms are means by which efforts to protect or restore natural assets are communicated to consumers, citizens and shareholders in order to retain the private sectors 'social

¹ https://www.gov.scot/publications/scotlands-economic-strategy/

² https://www.gov.scot/programme-for-government/

³ http://nationalperformance.gov.scot/

licence' to operate. An important finding is that these types interact and can be mutually supportive.

Investment Mechanisms	Management Mechanisms cont.
Green Finance	Sustainable Procurement
Impact Bonds	Best Practice Guidance and Tools
Offsetting	Non-State Standards
PES Including Investment Models	Sustainable Supply Chain Management
Public-private Partnerships	Information Mechanisms
Management Mechanisms	Accreditation, Certification and Labelling
Conservation Covenants	Ecological Footprinting
Corporate Social Responsibility	Product Premiums
Green Lending Policies	Sustainability, Triple Bottom Line or True Cost
	Accounting

The review found that there were very few applications of investment mechanisms within Scotland or the UK; whereas management and information mechanisms were more established. Furthermore, many of these emerging mechanisms (e.g. green finance, natural capital accounting) are not yet well used in the Scottish land-based sector. Many of the mechanisms are designed to target 'sustainability' rather than having a specific focus on natural assets and are used by large multinational corporations, raising questions about their transferability to the land-based sector dominated by small and medium sized enterprises. There are some common challenges across investment, management and information mechanisms including the challenge of aligning private sectors of commercial return on investment with longer-term objectives of restoring ecosystem health. Furthermore, some of the claims for the mechanisms are contested – such as whether investment is really 'new' money or investment diverted from other fields; and whether there is sufficient evidence to claim that mechanisms really do result in improved condition of natural assets. Finally, although the focus is on the role of the private sector, there are still important roles for the State and NGOs or social movements in the overall governance of natural assets. Thus, adopting any of these new mechanisms does not necessarily reduce the need for action from the State and third sector, although it may change the role that these organisations play.

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1: Introduction:

Globally, there is increased awareness of the threats to natural resources such as water quality, soil health and biodiversity; whilst there is an increasing awareness of the value of such resources as assets for economic development and societal wellbeing. Such thinking has given rise to renewed interest in the concept of natural capital, a concept first described by Schumacher (1973). For example, the need to encourage investment in natural capital is highlighted in the Scottish Government's Economic Strategy (2015) and reiterated in the current Programme for Government (2018). The use of the term natural capital and natural assets deliberately echoes business language, to better engage with this sector in an effort to include the private sector in managing Scotland's natural environment. Therefore, this review deliberately focusses on the role of the private sector in management of Scotland's natural assets and the potential delivery mechanisms that could be used to increase private sector involvement.

Delivery mechanisms are the means by which objectives are translated into action. Objectives for environmental management may be set by public policy or agreed within not-for-profit organisations or social movements; or reflect the goals of private enterprise or individuals. Delivery mechanisms are part of wider institutions that shape how our environment is managed – institutions create a predictable framework through formal and informal rules (North, 1990). Delivery mechanisms are part of the suite of formal institutional arrangements, in that they are codified and agreed with the relevant parties (Hodge, 2007). Delivery mechanisms are influenced by meaning and informal social norms, customs and practices (Ostrom and Cox, 2010); but our focus here is on explicit formal mechanisms as enacted in specific contexts with specific actors.

Our earlier work focused on how public policy objectives enshrined in law or statutory guidance were translated into policy instruments that were developed and implemented by the State (Scottish Government) or its agencies (Scottish Environment Protection Agency, Scottish Natural Heritage and Rural Payments and Inspections Directorate). One of the main conclusions from O1.4.2biD2 (Blackstock et al., 2018) was that there was interest in the delivery of multiple benefits (both across natural assets and between environment and socio-economic objectives) using policy instruments. Although some gaps were highlighted, at that time there was a preference for voluntary cooperation and less enthusiasm for formal integration of existing policy or policy instruments⁴. Therefore, our attention turns to considering delivery mechanisms that are not driven by public policies, but still aim to protect, restore and enhance the natural assets (water, soil and biodiversity) that underpin the provision of ecosystem services and benefits.

We focus on delivery mechanisms that are developed and implemented by **non-state actors**. Nonstate actors are normally involved in any public environmental policy regime; for example land management policy instruments usually aim to change behaviours by private land-managers (McKee, 2018). The category of non-state actor therefore can encompass individuals, businesses, not-for-profit charities, NGOs and other 'third sector' organisations, including both informal social networks and formal multi-stakeholder partnerships. We recognise that the State and its agencies will often be involved in these delivery mechanisms, either directly as part of a partnership or indirectly through setting constraints or providing support on actions. However, here we take a

⁴ This may be a consequence of the timing of the research interviews, at a period of uncertainty around plans for leaving the EU.

more precise focus on private commercial businesses as initiators and leaders in the delivery of natural resource management, motivated by their own business, rather than public policy, objectives. As such, their actions entail going beyond compliance with existing regulatory regimes.

Whilst it is arguable to what extent any delivery mechanism is 'new', we want to focus on those mechanisms that are considered new for the Scottish context, or where an existing approach has been given an innovative twist. We wish to understand what these 'new' instruments add to the existing repertoire of delivery mechanisms and consider their benefits and challenges in order to consider what role they can play in delivering sustainable and integrated management of Scotland's natural assets. Therefore, the objectives of this review are to:

- Scope the range of delivery mechanisms that can be led by non-state actors and are relevant to integrated management of natural assets;
- Focus on those that have emerged within the last decade, or where existing approaches have a novel twist; and
- Assess what is claimed about these mechanisms and whether they might deliver more than existing public policy-led approaches.

The methodology for this review is presented below.

2. Methodological Approach

A huge literature exists on institutions, policies, management and governance approaches; with many more examples of delivery mechanisms to be found in domain specific literatures writing about individual management measures (e.g. Pyo et al., 2017) Therefore, this rapid literature review has built on existing reviews carried out using Scottish Government funding (Byg et al., 2017; McKee, 2018; Waylen and Martin-Ortega, 2018) and also recent literature on private sector governance and management to develop an overview of the types of mechanisms in the literature (e.g. Vatn, 2018). We are not reviewing all mechanisms that have been labelled as 'market-based instruments'. According to the Institute for European Environmental Policy (IEEP), MBis can encompass "taxes, charges, fees, fines, penalties, liability and compensation schemes, subsidies and incentives and tradable permit schemes" (Ten Brink et al., 2009). Our focus is on those that are initiated and driven by the private sector to target the review on an under-researched area. Delivery mechanisms, or instruments, are often categorised as: (i) regulations that prohibit or require actions; (ii) nontraded economic instruments; (iii) support for voluntary actions; and (iv) traded economic mechanisms. This review focusses on the last three categories (non-traded economic instruments; support for voluntary actions and traded economic mechanisms). However, we agree with many authors e.g. Muradian and Gómez-Baggethun (2013) who argue that most natural assets are governed using hybrid instruments, combining traded and non-traded approaches; often also requiring 'supporting' actions as well. This makes the distinction between the above categories problematic for understanding how 'new', often hybrid, mechanisms work in practice.

Another way to think about these mechanisms is how they influence the management of natural assets in different ways. Firstly investment – this is a set of mechanisms by which the private sector provides financial capital to invest in future management of natural assets. Secondly, management – these are mechanisms by which businesses adopt pro-environmental behaviours in their own practices; or require pro-environmental behaviour in their supply chain. Finally, information – these

are mechanisms that inform consumers, shareholders and supporters about sustainable practices to allow them to differentiate products in the market place. Whilst Figure One below presents this a simple cycle, the reality (discussed below) is that these three segments are mutually supportive and interactive.



Figure 1: Three forms of Delivery Mechanism

The three forms of delivery mechanism shown in Figure 1 above relate to the three main arguments made in the academic literature for involving private sector in the management and restoration of natural assets. Firstly, in an age of public sector austerity, there is a need for new funding and investment sources to finance the protection or restoration of natural assets (Shames et al., 2014; OECD, 2015). Involving the private sector is seen as a way to divert investment from existing markets into the environmental domain. Associated with this argument are some commentators who believe that private investment can increase efficiency and flexibility of funding procedures (Cui et al., 2018). Muradian and Gómez-Baggethun (2013) suggest proponents argue that marketoriented instruments constitute more cost-effective options. Secondly, increasingly private sector businesses are considering how best to manage risks associated with reliance on natural assets within their supply chain, particularly access to clean and plentiful water, healthy soils, and resilient, biodiverse ecosystems (Mari et al., 2014). Therefore, they are motivated to adopt sustainable practices to ensure long-term access to the assets on which their business relies - which includes natural assets as much as human or technological assets. Finally, both the private sector and the third sector are aware of the importance of reputational capital to their competitiveness and market position. Increasingly, both consumers and citizens expect organisations to behave sustainably to ensure they continue to have a social licence to operate (Kish and Fairbairn, 2018). Therefore, organisations are increasingly investing effort on informing others of their sustainability credentials, in order to protect or enhance their reputational capital.

These mechanisms both exist within and are influenced by dominant paradigms and strategic frameworks, that shape what is considered promising, possible or preferred. For example, there is literature on 'nudge economics' (Thaler and Sunstein, 2008), highlighting the role of influencing choice architecture to encourage sustainable consumption; or on 'sustainable intensification' (Mahon et al., 2018) to describe an approach combining increased production without compromising natural limits. These general approaches are not included in our review, as they are not specific delivery mechanisms; but they do provide the context in which mechanisms are applied. We also do not consider fiscal, trade and monetary mechanisms as these are normally initiated by the State. Finally, there are many technical practices initiated by the private or third sector that have beneficial effects on natural assets (e.g. water reduction manufacturing processes or minimal till farming). We are focussed at the level above these specific practices, looking at the mechanisms that might encourage or require an enterprise to adopt such practices.

In addition to these academic insights, we consider what we have been told by key stakeholders. Through engagement with the Scottish Forum for Natural Capital, we are aware that there is strong interest in a variety of approaches felt to have promise for Scotland. These include:

- Natural Capital Protocol
- Investment Models that link businesses to land and catchment management
- Landscape Enterprise Networks
- Sustainable or Green Finance
- Impact Bonds

Therefore, we will consider to what extent these are delivery mechanisms and how they fit within the academic categories and most importantly, how they might work to deliver sustainable and integrated management of natural assets. The full list of mechanisms can be found in table 1 below.

Investment Mechanisms	Management Mechanisms cont.
Green Finance	Sustainable Procurement
Impact Bonds	Best Practice Guidance and Tools
Offsetting	Non-State Standards
PES Including Investment Models	Sustainable Supply Chain Management
Public-private Partnerships	Information Mechanisms
Management Mechanisms	Accreditation, Certification and Labelling
Conservation Covenants	Ecological Footprinting
Corporate Social Responsibility	Product Premiums
Green Lending Policies	Sustainability, Triple Bottom Line or True Cost
	Accounting

Table One: List of Mechanisms Reviewed for this Report

These terms were searched using a combination of web-based databases (Web of Science, Google or Alternatives) to develop a list of the most recent academic, policy and business literatures on the topic. The researchers then summarised the insights from these references using a common template (see Annex 1). Team meetings were used to draw out common themes from these examples. Attributing these mechanisms to one of our three categories (investment, management, information) is an imprecise art, and our choices are open to debate. The presentation in the report

is designed to invite reflection and discussion about whether, how and where such approaches might be implemented in Scotland, rather than prescribing any approach.

The rest of the report briefly describes each of the delivery mechanisms we have reviewed in terms of:

- Their function or purpose
- Whether and where they have been applied
- The main actors involved and
- Any pertinent critiques or comments

We then discuss what we have learnt about the potential for these mechanisms to contribute to the management of Scotland's natural assets and delivery of multiple benefits. The report finishes with some suggested discussion points with stakeholders, to finalise our selection of an empirical case to study in more depth.

3. Findings

We present our findings from the review brigaded under the three different entry points in which private-sector led action to protect and restore natural capital might occur: Investment, Management and Information (see section two above for explanation). In each section, we summarise the main insights from the literature for each mechanism; and then provide an overview of the instruments in terms of the main motivations for adoption; the role of different actors including the state; whether it has been applied to natural assets and whether it is in use within Scotland.

3.1. Investment Mechanisms

From the overall list of 16 delivery mechanisms, five could be considered to be about investment (Green Finance, Impact Bonds, Offsetting, Payment for Ecosystem Services Including Investment Models, and Public-Private Partnerships).

Liski et al. (2018) recognise that businesses are dependent on natural assets but rarely invest directly in their protection as difficult to determine tangible returns from investment. From a business perspective, investments in protecting or restoring natural assets need to:

- Provide tangible returns and/or solve an environmental problem quantifiable clear targets and clearly defined impact.
- Provide control to the business over where funding goes and include business in decisions
- Have an effective regulatory framework to set the direction of investments for long term impacts and risks.
- Demonstrate an ability to deliver to the business goals

Scherr et al. (2017) and World Economic Forum (2013) also argue that private sector decision making is faster and more flexible than government or third sector grants.

There is an important distinction between market investment and social investment (also called socially responsible investment) mechanisms (Nicholls and Pharoah, 2008). The former requires a commercial return on investment, so whilst it is useful to open up an alternative source of funding

for environmental challenges, these are not grants or donations but loans with repayment requirements. The latter, social investments (which also cover investments to improve the environment), often have no expectation of high profits from these investments. The World Economic Forum (2013) note the rise in 'impact investment' where a desire for financial returns is balanced with a desire to show how the investment provides social or environmental value (see comments on corporate social responsibility in section 3.2.2). In this review we are focussing on 'asset' investments, investing in the natural assets themselves; rather than 'enabling' investments which invest in the institutions that support and manage natural assets (Shames and Sherr, 2015)⁵.

3.1.1. Investment Mechanism: Green Finance

This is a voluntary economic instrument and form of market investment. The concept of 'green' financing is focussed on accessing the existing trillion-dollar investment market and using some of this capital investment to promote environmental benefits (Clark et al., 2018). Green finance is often thought of in relation to green bonds⁶, but can also encompass other aspects of finance, such as equities in the forms of shares. Those seeking more pro-environmental action hope that private sector investment will help redress the shortfall between the scale of action required versus the actual public money so far available. For example, the London Stock Exchange states it has raised over \$24.5 billion in 'green bonds' as part of a global market worth \$155 billion⁷. Although these numbers sound impressive, to date, only a tiny proportion of available finance is being invested in 'green' investments (Clark et al., 2018). It is also hard to assess how 'green' these investments are, since there is no universal standard or accreditation for green finance⁸. The detail and scale of effort and impacts may not be easy to assess as private companies are under no obligation to disclose their investments and interventions (Clark et al., 2018). Currently there is most focus on using 'green finance' to support actions to combat climate change (Boulle et al., 2016). This is a relatively new concept with a large increase in publications and standards arising since 2016; and our review did not uncover any examples specific to Scotland. Whilst the main focus is on the private sector investors, there is increasing interest in the role of third sector organisations to help broker investors and those requiring funds; and the role of the State in incentivizing private investment through fiscal policies and risk mitigation mechanisms – as called for by the European Banking Federation (2017). Both the UK government and the European Commission seem to be strongly supportive (UK Government, 2017; European Commission, 2018) of the approach. This mechanism has many characteristics in common with Public-Private partnerships and Impact Bonds (see below).

3.1.2. Investment Mechanism: Impact Bonds

As Green Finance, this is a voluntary economic instrument and a form of market investment. The concept of impact bonds is to again use private sector investors to provide the financial capital for a policy intervention, releasing the State from the need to find the finance at that time. The private sector investor and State enter into a 'pay for success' contract; and when a successful outcome has been achieved the State repays with interest based on savings made through the intervention (World Economic Forum, 2013). This is a very new instrument that has not be widely used, partly because of issues of how 'success' should be evaluated, and the risks associated by payment for

⁵ <u>https://ecoagriculture.org/wp-content/uploads/2015/12/LPFN_FinanceWhitePaper_Brief.pdf</u>)

⁶ <u>https://www.climatebonds.net/market/explaining-green-bonds</u>

⁷ <u>http://greenfinanceinitiative.org/</u>

⁸ <u>https://brodies.com/blog/banking-finance/green-finance-recent-developments-in-the-green-loan-market/</u>

results are mitigated (Edminston and Nicholls, 2018). To date it has mainly been applied to social issues in the UK, such as interventions to reduce prisoner reoffending rates (Berndt and Worth, 2018) but there is some interest in using the approach in financing natural flood management interventions – such as the Flow Partnership's River and Landscape Bond (The Flow Partnership, N.D). Again, whilst the provider of finance is the private sector, the State and other third sector partners will be involved in the investment partnership; and in providing accountability regarding achievement of the environmental outcomes. This generates challenges for aligning objectives and ensuring positive outcomes for all parties (Maier and Meyer, 2017); such that Park (2018) believes the mechanism may not be mature enough for application to sustainability.

3.1.3: Investment Mechanisms: Offsetting

The idea of biodiversity offsetting, or mitigation banking or planning net gain is relatively new to the UK although it has been in use since the 1970s in France and Germany and more recently in the USA, Brazil and Australia (Bull et al., 2013). To date, most examples are in urban settings, focussed on habitat loss; but there is increasing interest in applying the concept to protect soil and water as well (McVittie and Faccioli, 2018). We have included it here when is used as a voluntary non-market traded instrument, used to avoid net loss and encourage net gain of biodiversity through urban development. In order to qualify for this review, the voluntary investment has to be initiated by the private sector rather than be a regulatory requirement as part of the planning process. Most often offsetting is associated with the State-led planning process, as found in many of the existing examples in Europe or the US. For example, the Scottish Government provides a further regulatory backstop - the Nature Conservation Act that stipulates no net loss on Natura 2000 sites; therefore off-setting only qualifies if it is focussed on net gain. We are interested in offsetting as a form of impact investment; when the existing regulatory planning mitigation requirements have been met and developers voluntarily chose to invest additional funding in habitat restoration offsite to achieve net gain, often as a form of corporate social responsibility and to raise their reputational capital by going 'beyond compliance'. The approach is contested due to debates how to measure net loss or net gain; debates over implementation and management; and debates over how to evaluate success (McVittie and Faccioli, 2018). Despite trials of the approach in England, the mechanism is yet to be implemented in the UK (Defra, 2016), although the State has provided the enabling Biodiversity Strategy (no net loss and maximising net gain where possible) to encourage this voluntary investment in natural assets by private developers.

3.1.5. Investment Mechanism: Payment for Ecosystem Services including Investment Models

Payment for Ecosystem Services (PES), also known as Payments for Watershed/Catchment services, is when an ecosystem service is bought by one or more buyers from a provider, who must ensure provision of the ecosystem service (Wunder, 2005). The goal of PES is often seen as correcting a market failure, internalising an externality (a public benefit not normally costed by markets), in order to incentivise delivery of those public benefits, e.g. ecosystem services. There are debates over what 'counts' as PES and whether to be labelled a PES scheme, it should deliver benefits that are additional to that delivered by any pre-existing schemes (the idea of 'additionality'), such that PES goes beyond compliance with existing regulatory requirements (Martin-Ortega and Waylen, 2018). Originally, the concept was mainly applied in the developing world, particularly to water management (Martin-Ortega et al., 2013) but there is increasing interest in PES in Europe, particularly to manage delivery of ecosystem services from agriculture (Schomers and Matzdorf,

2013). Within the UK, Defra commissioned three rounds of pilot PES projects between 2012 and 2015 (Environment Analysis Unit Defra, 2016). Within Scotland, Scottish Water commissioned the Sustainable Land Management Incentive Scheme in 2014 (Thomson et al., 2014) whilst Kuhfuss et al. (2018) consider 8 other schemes affecting Scotland to be PES or PES-like (Peatland Code, Woodland Carbon Code, Agri-environment carbon scheme, Forestry Grant Scheme, Scottish Farm Carbon, Pumlumon Project, MoorFutures, Conservation Reserve Program). However, not everyone would define these schemes as being PES. The mechanism can enable trade between private sellers and private providers e.g. Marks and Spencer's pay local land managers in the Tweed Catchment to plant trees to offset some of their carbon emissions (Lipski et al., 2018). Furthermore, most PES schemes require an intermediary (an NGO or the State) to set up and manage the scheme.

To have an impact on landscape scale ecology, PES schemes could be implemented at the landscape scale, and entail collective action. Therefore, any such schemes that involve collective organisation of those making or receiving payments, start to blur with other investment models that focus on landscape or catchment scale investments. These integrated landscape investments (Shames and Sherr, 2015) and landscape-scale restoration investments (Marshall, 2018) focus investments at larger scale interventions that aim to deal with the whole ecosystem and their services; rather than individual services or individual natural assets (Vogl et al., 2017). Whilst these investments can be direct relationships from a private investor and landowners, they tend to be mediated via intermediaries that connect investors with those who own or manage landscapes or catchments. In this way, they share many similarities with PES schemes. Our review focusses on voluntary investments by the private sector. There are examples of such approaches in Latin America financing fruit, tea and cocoa production (Shames and Sherr, 2015), Philippines (den Besten, 2018) or wetland restoration in the USA (Marshall, 2018). There are also examples of Company-Community partnerships (CCPs) where companies directly sponsor community based natural resource management such as in the Amazon (Bennett et al., 2018). Within Scotland, Liski et al. (2018) have explored the potential to implement catchment-based investment models within the River Spey catchment to see how to encourage businesses reliant on the Spey's natural assets to invest in these assets. As with the PES literature, the landscape investment models also tend to require an intermediary or facilitating organisation (that tends to be an NGO) and an enabling State which can set out a strong regulatory framework to ensure that these 'beyond compliance' mechanisms are properly implemented (Faruqi and Landsberg, 2017).

3.1.5. Investment Mechanism: Public-Private Partnerships

PPPs are voluntary collective mechanisms where government works with the private and non-profit sectors to provide delivery of public goods and services. They are investment mechanisms as they enable the state to raise private investment to provide infrastructure, when public funds are constrained (although the private sector will require repayment). They can be loosely defined as 'cooperative institutional arrangements between public and private sector actors' (Bhan (2013) quoting Hodge and Greve (2005)). However, the label covers a range of approaches, including contracts, concessions, projects and divestitures (Akintoye and Kumaraswamy, 2016). Formal PPPs have existed in the UK since 1992 when specific regulatory and legal frameworks were put in place, but wider ideas partnership between state and private sector are common in tackling the 3rd wave of sustainability issues (Bhan, 2013). In the UK, the common PPP investment mechanism is a form of PFI (private finance initiative) and the UK are one of most active PFI countries in the world (700 active PFI projects) (OECD, 2015). In the UK, most PPP are focussed on infrastructure development

(schools, roads, hospitals) and there are very few examples with a focus on the environment; these tend to be focused on water or energy utilities (Barbrook-Johnson, 2018). However, environmental examples labelled PPPs exist overseas, such as reducing persistent climate damaging gas emissions in the USA (Bhan, 2013); Peruvian forestry management (Bennett et al., 2018); Senegalese forestry and habitat restoration (Ece, 2017); Italian contaminated soil management (Morano and Tajani, 2018), or South African forestry and land reform (Tshidzumba et al., 2018). The criticisms of PPP are that these mechanisms have not always offered good value for money, and much of the risk is still borne by the public sector and tax payer (Cuthbert, 2018). Furthermore, in some cases (e.g. Frost and Laing, 2018) the commercial pursuit of profitability overrode environmental and planning concerns. As highlighted in the name, PPPs require the direct participation of the State, but also require strong regulation to counter the above criticisms. The Scottish Government replaced PFI with the Non-Profit Distributing (NPD) model of procurement (OECD, 2015); has set out statutory guidance (see https://www.gov.scot/Topics/Government/Finance/18232/12271) and designated an NGO (Scottish Futures Trust) to facilitate the development and delivery of PPP.

3.1.6. Summary of Investment Mechanisms

It is often claimed that there are many trillions of untapped investments that could be harnessed to finance the restoration and protection of natural assets (den Besten, 2018). Furthermore, it is argued that such models are required to resolve bureaucratic and market failure (Bhan, 2013; Zhang et al., 2018). Private finance can be diverted from other investment routes, but unless it is social investment, which is an extremely 'niche' market (WEF, 2013); this investment is driven by profitmotivation that does not always fit well with environmental objectives unless tied to supply chain risks (see management section 3.2 below). It should be noted that despite many claims about harnessing the 'green dividend' this investment may simply be finding new ways to spend existing private-sector investment by diverting existing investments towards more pro-environmental domains. It is not additional since many instruments (such as impact bonds) use private equity to fund public investment now that will need to be paid back later. Some commentators argue that it is not appropriate to expect the private sector to show leadership in tackling long-term wicked problems e.g. for climate mitigation and adaptation or soil restoration, since their motivations, priorities and management perspectives are typically relatively short-term, limited to specific domains, and whose viability depends on safe-guarding profitability in the short- to medium-term (Storbjork et al., 2018; Reynaers and van der Wal, 2018). Therefore, whilst these mechanisms may be worth exploring further, they must be understood as commercially driven transactions. It may be possible to use these mechanisms to simultaneously pursue different objectives or motivations if these differences are transparent and appropriate incentives and accountability mechanisms are put in place (Bhan, 2013, Maier and Meyer, 2017).

Table two below summarises this section. In most cases the motivations for investment are to realise profit from new markets from the private sector perspective; and find new sources of capital during austerity from the State's perspective. Therefore, despite being a review on voluntary action by the private sector, the State and often the third sector are primary participants and their involvement is required to ensure these mechanisms can work. Although there is much interest in these mechanisms, there are not many examples where they have been applied to natural assets worldwide; and very few active examples in the UK or Scotland.

Table two: Summary of Investment Mechanisms reviewed

Mechanism	Actors involved (Role of the State)	Motivation	Application to Natural Assets	Application in Scotland
Green Finance	Commercial and Social investors to provide funds; Projects to receive funds State to regulate the market	New market for investors; new source of funds for projects	Mainly Climate Change Mitigation and Adaptation	New, no evidence of implementation specifically tailored to Scotland though some schemes e.g. green loans from banks are available
Impact Bonds	Commercial and Social investors to provide funds; Projects to receive funds State to regulate the market	New market for investors, new source of funds, risk sharing between private, public and NGOs	Potentially Natural Flood Management	New, no evidence yet in Scotland
Off-setting	Developers to provide funds, restoration projects to receive funds, State to ensure planning compliance	Reputational impact for developers, new source of funds for projects	Potentially habitats, water and soils	Not new, but not used in Scotland
Payment for Ecosystem Services & Integrated Landscape Investments	Land managers to supply PES at business and landscape scale, Private sector buyers State or NGO to coordinate transactions (as well as State being potential buyer)	Suppliers seeking incentives for environmental practices; buyers seeking	Mainly water to date	Some PES-like schemes principally in relation to the management of water, forestry and moorland (Kuhfuss et al., 2018)
Public-Private Partnerships	Private sector to invest funds; project to receive funds, State or NGO to coordinate transactions	New market for investors, new source of funds, risk sharing between private, public and NGOs	Not really applied to Natural Assets	Not new, but not really used for Natural Assets in Scotland

3.2 Management Mechanisms

From the overall list of 16 delivery mechanisms, nine could be considered to be about management practices, including: Conservation Covenants, Corporate Social Responsibility, Green Lending Policies, Sustainable Procurement, Best Practice Guidance and Tools, Continued Professional Development and Training, Non-State Standards, and Sustainable Supply Chain Management. These mechanisms are closely associated with the need to manage risk by protecting supply chains from loss of natural materials (Mari et al., 2014) or the desire to enhance effective delivery of a differentiated product (McMillan et al., 2017) - see also the information section below. Therefore this section is about actions that private sector companies are doing to protect the natural assets on

which they rely, either those they directly control or through exerting pressure on those in their supply chain. Mechanisms that are implemented individually are described in sections 3.2.1 to 3.2.4. These are mechanisms that do not require collective action between private sector organisations but can be implemented by internal organisational decision making; or via transactions between one firm to another. Collective mechanisms are presented in sections 3.2.5 to 3.2.7.

3.2.1. Management Mechanism: Conservation Covenants

A conservation covenant is an agreement made between a landowner and a conservation body which ensures the conservation of natural or heritage features on the land for the public interest. The agreement persists beyond change in ownership to ensure long term management (Law Commission, 2014). These are known as conservation easements in the USA and Australia; and conservation burdens in Scotland. They are voluntary legal instruments that ensure that natural or cultural assets on privately owned and managed land are protected. Generally, land owners are incentivised to participate through some form of tax-relief. They are widely used in Australia and the USA for water and forestry management (Olmsted, 2011), where they are seen as allowing the blending of conservation objectives with active productive land use (Brenner et al., 2013). They are not yet implemented in England and Wales, although the 25-year Environment Plan pledged to take forward Law Commission proposals from 2014. In Scotland, the Title Conditions (Scotland) Act 2003 enabled conservation burdens to be used, but the opportunity is rarely taken up (Reid, 2013). They show potential to open up new partnerships for conservation without requiring the State to purchase or manage land, but there are concerns about how the agreements are enforced or adapted if required (Reid, 2013).

3.2.2. Management Mechanism: Corporate Social Responsibility (CSR)

This a voluntary mechanism whereby companies engage in sustainable business activities that go beyond legal requirements to protect the well-being of employees, communities, and the environment (Heslin and Ochoa, 2008). Although it is generally called CSR, it can also be labelled corporate sustainability, sustainable business sense, a corporate conscience, corporate citizenship or responsible business practice, which illustrates that the focus is on environmental as much as social issues. CSR can strengthen companies' commercial profit and competitiveness (Walker et al, 2008, in (Zhao, 2017), through adopting pro-environmental measures that also reduce costs (Teixeiria et al., 2018). Whilst companies undertake corporate social responsibility measures as a way to improve or maintain their reputation (Flohr et al., 2010) (see section on information below) it is also about preempting State regulation by illustrating self-regulation and proactively seeking to mitigate harm arising from business practices (Yoon and Lam, 2013). This is not a new mechanism as the concept was discussed in the 1970s but has since become an active driver of environmental good practice. For example, cashmere manufacturing in Scotland used the principles of CSR to improve water quality and mitigate climate change (Towers et al., 2013). Although the State is not directly involved in CSR, they can support it (see for example the EU strategy for Corporate Social Responsibility⁹); whilst NGOs and citizens can also influence it through social pressure (Heslin and Ochoa, 2008).

3.2.3. Management Mechanism: Green Lending Policies

This is a voluntary economic instrument. Mulder (2007) argues that companies fear compromising their access to loans, as banks may refuse to be associated with large-scale environmental damage

⁹ https://ec.europa.eu/growth/industry/corporate-social-responsibility_en

and may have made commitments to that effect. This mechanism goes further by illustrating how environmental best practice can save money. Green lending policy usually refers to supportive products such as preferential interest rates offered by banks for environmentally friendly projects or restrictions of projects with negative environmental performance. Green lending includes, but is not limited to, personal housing mortgage loans, motor vehicle loans and green credit card services, along with project financing, construction lending and equipment leasing for enterprises (European Banking Federation, 2017). It should incentivise the loan taker to make environmentally friendly choices; and should benefit both parties since it is cheaper for the debtor and should reduce risks to the investor. Whilst the concept of preferential lending rates is not new, there has been a recent upsurge of interest in the approach as part of the wider interest in 'green finance' (Volz, 2018). It is most often associated with the built environment, for example, Barclays Bank is offering preferential mortgage rates to people purchasing new energy efficient homes (Business Green, 2018). Those involved are private banks and private individuals or companies. However, the State can play a role through supporting activities e.g. UK government's Green Finance Task Force (https://www.gov.uk/guidance/green-finance) and the European scheme to pilot green mortgaging mechanisms. There are examples of Central banks instructing private banks to implement green finance (Volz, 2018) but within the UK, the focus tends to be on enabling factors rather than regulation. There are no specific Scottish cases relevant to natural assets that we could find, but the approach could be interesting to reward land managers for conserving or restoring habitats or

protecting ecosystem health.

3.2.4. Management Mechanism: Sustainable Procurement

This is a choice by organisations to use procurement to address social and environmental goals products are assessed on price, performance and the impact on the environment. Zero Waste Scotland (2011) presents sustainable procurement as a way of minimizing environmental impact, and as a way to be competitive in the market, because of the scarcity of resources and pressure from the Government and society to reduce environmental waste. Our review illustrated that this mechanism acted on the climate, water, habitats and wildlife, through the sustainable use of raw materials and through reduction of waste, but there was no explicit mention of soils. The mechanism is mostly voluntary although there are some regulatory requirements regarding waste and duty of care to the environment (Zero Waste Scotland, 2011). Sustainable Procurement is implemented by private producers and processing companies (Zhao, 2017) social enterprises (Sahasranamam and Ball, 2016), and the public sector - "Government is often the single biggest customer within a country, and governments can potentially use this purchasing power to influence the behaviour of private sector organisations." (Walker and Brammer, 2009, p. 2). The UK government also stated it wished to be a world leader in sustainable procurement by 2009 (ibid), illustrating how the State can both act, and enable others to act. NGOs and citizens can also exert pressure on companies to procure more sustainably. Barriers to the use of sustainable procurement include contractual issues, difficulty in reconciling different criteria for sustainability and higher prices (Meehan and Bryde, 2011; Sahasranamam and Ball, 2016; Zhao, 2017) whilst organisational and public policy support are important enablers (Zhao, 2017; Walker and Brammer, 2009). This is not a new mechanism but could potentially be better utilised in respect of ensuring protection of natural assets in Scotland at the beginning of the production cycle, not only with regard to waste disposal. Whilst sustainable procurement is listed in the sub-set of actions by individual organisations, it is closely linked to the

collective endeavour of sustainable supply chains (e.g. Esfahbodi et al. (2017) and good practice (e.g. de Raymond and Bonnaud, 2013).

Mechanisms that are implemented collectively are summarised below.

3.2.5. Management Mechanism: Best Practice Guidance and Tools

Best or good practice guidelines are systematically developed statements or documents that help practitioners apply a particular concept, method or process. They are usually developed collaboratively amongst a community of organisations and institutions, often tested by stakeholders before being published. They offer central principles for practice that multiple organisations can follow to maintain industry standards and progress application and implementation of environmental goals and standards. Although the development is collective, the implementation is normally done by individual organisations rather than in a collective setting. It is a voluntary support mechanism that enables the private sector to manage natural assets more effectively through providing principles, tools and guidance. The mechanism is not new, but the concept continues to be influential with guidance and tools continuing to be produced. In terms of the protection or restoration of natural assets, there is UK relevant guidance developed by industry or 3rd sector for Biodiversity Net Gain (CIEEM et al., 2016) Water services (Water UK, 2018) (WWF); Soil (WRAP, 2012), Ecosystem services assessment (IES, 2013); Agriculture GlobalG.A.P. (de Raymond and Bonnaud, 2013); Agro-ecology (IAFN, 2018) and Agriculture (SOAAN, 2013). Of interest to Scottish stakeholders was the support for natural capital in business decision making. There is best practice guidance for reporting on Natural Capital (CREM and Arcadis, 2017); but also a toolkit, the Natural Capital Protocol, to help individual organisations to identify, measure and use an understanding of natural capital in future business decision making (Natural Capital Coalition, 2016). A recent pilot of this approach in Scottish estates and their farms illustrates the potential value of raising awareness of the risks and opportunities associated with managing on-site natural assets (Silcock et al., 2018). Criticisms of best or good practice highlight the fact that its voluntary nature means it can tend to attract the informed environmental pioneers (Pritchard and van der Horst, 2018) whilst those committing environmental damage do not change their practices.

3.2.6. Management Mechanism: Non-State Standards

These are also known as voluntary sustainability standards. They are standards specifying requirements that member of a supply chain may be asked to meet, relating to a wide range of sustainability metrics (UNFSS, 2013). Some focus on specific sectors such as forest management, or agriculture; others on particular groups such as cooperatives, small-scale farmers or artisanal miners. They can cover environmental or social factors such as water use, biodiversity, greenhouse gas emissions or workers' rights. For example, GlobalG.A.P., initiated in 1997 by members of the Euro-Retailer Produce Working Group (EUREP), is a global quality assurance standard developed to regulate business between producers and distributors, focused on food safety, occupational health and environmental protection in relation to agricultural activities (plant protection products, drug residues from livestock farming). The process is often linked to information mechanisms like certification and accreditation as the standards form the basis for issuing certification and accrediting environmental practices (see section 3.2.7 below); and development of good practice (see section 3.2.5 above). However, it can also be used to strengthen a process within a project and deliver improved outcomes such as the use of a non-statutory Environmental Impact Assessment in Somerset (Transform, 2015). Although they can be developed and adopted by individual

organisations, it is more common for them to be developed and implemented by a trade association or in partnership with the public sector. Standards can reduce public sector costs the since the enforcement of regulations is outsourced to private actors (Fouilleux and Loconto, 2017). Firms embrace standards in order to manage supply chain risks, ensure conformity among all suppliers, limit competition and transaction costs, or gain competitive advantages (Fouilleux and Loconto, 2017). This is not a new mechanism, as many of those in use in the UK were developed in 1990s, but the standards are still going and being constantly updated.

3.2.7. Management Mechanism: Sustainable Supply Chain Management (SSCM)

SSCM is the management of the flow of goods and services used in a business' supply chain, to minimise the negative environmental impacts of a product or service throughout its lifecycle, including the design, acquisition of raw materials, consumption and disposal (Ahi and Searcy, 2013). The ideas inherent in the SSCM also relate to "Industrial Symbiosis" (Leigh and Li, 2015) or the circular economy (Genovese et al., 2017), an association between two or more companies in which the wastes or by-products of one become the raw materials for another. SSCM also is about social responsibility and economic competitiveness. SSCM involves companies cooperating with suppliers, but also with recipients of their goods and services, and other stakeholders to improve the sustainability practices of firms across the whole supply chain. Although individual firms can decide to adopt SSCM practices, they depend on other companies along the supply chain to also have good environmental practices. As Kot (2018) points out, SSCM illustrates how every company is part of a system, which is a part of even larger socio-ecological system. The main applications in the UK are in manufacturing and construction; often these involve protection of natural assets elsewhere (e.g. Amazon basin, sub-Saharan African woodland) as much as natural assets in the UK. Esfahbodi et al. (2017) found that manufacturing firms in the UK use it to respond to institutional pressures (waste regulations and tax policies) and other stakeholders' expectations for them to adopt environmentally friendly practices produce environmentally friendly products and services. However, construction firms also use it to improve their reputation and competitive advantage, as well as follow requirements from legislation (Supply Chain Sustainability School, 2017). Wolf (2014) gives an example of Wal-Mart who invested in SSCM for fish products, not only due to consumer pressure but also due to a supply shock in the 1990s. Whilst SSCM is managed by the private sector (SMEs, large corporations and multi-nationals); consumer expectation and State regulation and tax policies are also important drivers. Finally, environmental and development NGOs often have fair supply chain practices within their remit and these amplify pressure on international firms (Vermeulen, 2015). Although these pressures are drivers are important, this is an interesting mechanism as it helps us to focus on how private entities putting pressure on each other to adopt good practices. (Runhaar, 2016) believes that voluntary approaches like SSCM are "too ambitious" to see much change in practice, but others believe it can result in improved environmental outcomes but also improved supplier relationships and increased legitimacy (Esfahbodi et al., 2017; Wolf, 2014; Genovese et al., 2017). However, as with sustainable procurement, sustainable practices can be more expensive, and it can be difficult to exert control over 'out-sourced' practices (Esfahbodi et al., 2017). Finally, Dauvergne and Lister (2012) draw attention to how large brands and their explicit focus on sustainability are altering the power relations within global supply chains

The concept of **Landscape Enterprise Networks** is a voluntary enabling mechanism to support sustainable supply chain development that was particularly highlighted as of interest by Scottish stakeholders during Spring-Summer 2018. The term was developed by a consultancy 3Keel as a way

to improve organisations' supply chains. The motivation is consistent with other supply chain approaches - to secure the supply of critical raw materials, attract staff and protect capital investments, recognising the need to do this on a landscape scale and in collaboration with other organisations also active in the area. The analysis focusses on beneficiaries (businesses that have a practical interest in the landscape), functions (the practical outcomes of a landscape that beneficiaries are interested in), and assets (landscape features that underpin those functions). The networks function to connect supply and demand – private sector wanting to protect supply chains, property and infrastructure investments and policy or NGO clients who want to harness commercial spending power. The focus on a network of enterprises goes beyond traditional approaches (e.g. certification) as working with single producers is too slow and not strategic (3keel, 2016). As with many other mechanisms, it requires a trusted intermediary to facilitate these relationships and support the analysis – Jennings et al. (2015) highlight the need for private voluntary action to overcome market failure, a failure that means there are very few mechanisms to encourage landscape scale coordination. The approach has been applied to the Lower Avon in Hampshire (targeting effluents, soils and terrestrial habitat); Bolton, Greater Manchester (to develop enterprises from estate woodland); Cumbria (food manufacturing, flood risk and habitat restoration) and East Anglia (soil, water supply, greenspace). The approach has been highlighted as best practice in Defra's (2018) 25 year Environment Plan. It has been categorised here as a form of sustainable supply chain management, but has also been labelled a radical form of PES (Woodland Trust and 3keel, 2015).

Deans et al. (2018) use the term 'advanced value chain collaboration' to describe private organisations working with non-chain actors to tackle food security, poverty and sustainability issues in landscapes where these businesses are actively creating value for their shareholders; as well as for society. Ingram et al., 2018 make similar points using the terminology "sustainable commodity value chains" Both Deans et al. (2018) and Ingram et al. (2018) see these supply chain collaborations as linking mechanisms of market governance (e.g. certification, see 3.3.1 below) with multi-actor platforms. Therefore, perhaps we should see these supply chain collaborations within social and literal landscapes are an emerging way to harness the more enduring idea of a partnership between many actors including the state and NGOs.

3.2.8. Summary of Management Mechanisms

This section has summarised a range of mechanisms, some of which can be implemented within individual companies and others that require some form of collaboration with others. However, these mechanisms tend to overlap and mutually reinforce one another. For example, CSR could be seen as a driver for implementing approaches such as Sustainable Procurement, rather than an approach in itself (Towers et al., 2013). Likewise, Sustainable Supply Chain Management is an important aspect of illustrating the practice of CSR (Heslin and Ochoa, 2008). According to Zhao, 2017 sustainability accreditations and labelling schemes would help companies improve their sustainable supply chain management. At the mid-point of the cycle (Fig 1 above), these management mechanisms both influence and are influenced by investment and information mechanisms. For example, green investment brokers may use SSCM procedures as criteria to select whether the investment is 'green'; and many SSCM procedures rely on accreditation and certification (information mechanisms described below) to publicise and legitimate these 'green' claims.

Table three below summarises this section. In most cases the motivations for management of natural assets are to protect access to valued raw materials and increase the resilience of the supply chain; as well as anticipating or conforming to state regulation and responding to NGO pressure to be responsible global citizens. The main outlier here is conservation covenants, where the main driver is individual preference and tax incentives. Whilst there are some mechanisms that just involve implementation within firm or a simple transaction between two parties, many explicitly or implicitly rely on collective interaction between firms on a long-term basis – whether generating best practice guidance or training; or managing complex supply chain relationships. Despite this being a review on voluntary action by the private sector, the State and often the third sector are key participants and their involvement is required to ensure these mechanisms can work. Many of these mechanisms are not new, but are becoming increasingly mainstream. Whilst improved environmental outcomes are claimed, there is little information about how they do protect natural assets, so these mechanisms perhaps deserve further critical assessment of whether they can play an important role in the Scottish land management context.

Individual Mechanisms	Actors involved (Role of the State)	Motivation	Application to Natural Assets	Scale of application (in Scotland)
Conservation Covenants	Landowners and designated organisations (local authorities and NGOs); State to provide oversight	Landowner desire to ensure conservation in perpetuity; organisations get management for 'free'; State to provide fiscal incentives	Mainly habitats and catchments (incorporating water and soils)	Available since 2003, but not often applied in Scotland
Corporate Social Responsibility	Corporations and SMEs	To ensure social licence to operate; competitive advantage	Indirectly via encouraging more sustainable and ethical production practice	Widespread, not new
Green Lending Policies	Lenders (private banks) and lendees (businesses including land- based SMEs)	Banks protect assets from risk; lendees lower cost of inputs	Climate change mitigation and adaptation	New, not widely applied to land- based business in Scotland
Sustainable Procurement	Corporations and SMEs	Competitive advantage, protect supply chain from risks; reputational capital	Climate change mitigation, water, habitats and wildlife, through the sustainable use of raw materials and through	Not new, widely used

Table three: Summary of Management Mechanisms reviewed

			reduction of	
			waste	
Collective				
Mechanisms				
Best Practice	Corporations and	Improve	Soil and water	Not new, widely
Guidance and	SMEs; Industry	efficiency;		used
Tools	bodies	competitive		
		advantage,		
		reputational		
		capital, avoid		
		regulation		
Non-State	Corporations and	Improve	Soil, Water,	Not new, but not
Standards	SMEs; Industry	efficiency;	biodiversity,	widely applied to
	bodies; but also	competitive	climate change	natural
	State or NGOs	advantage,	mitigation	assets/land-
	for scrutiny	reputational		based businesses
		capital, avoid		
		regulation		
Sustainable Supply	Corporations and	Improve	Soil, Water,	Not new but
Chain	SMEs; Industry	efficiency;	biodiversity,	becoming more
Management	bodies; but also	competitive	climate change	important
	State or NGOs	advantage,	mitigation	
	landscape	reputational		
	networks	capital, avoid		
		regulation		

3.3 Information Mechanisms

From the overall list of 16 delivery mechanisms, four could be considered to be about information, including: Accreditation, Certification and Labelling; Ecological Footprinting; Product Premiums; and Sustainability, Triple Bottom Line or True Cost Accounting. There is some potential for overlap here with both investment and management mechanisms as firms might promote information about their investment or management approaches to gain reputational capital and try to leverage competitive advantage. However, here we focus on the mechanisms by which firms provide information about how natural assets are being protected or restored to the consumer, citizen, shareholder or stakeholder. Increasingly, businesses require to have, and to protect, reputational capital, which is the positive and negative perceptions about the corporation's compliance with sustainability standards and their impact on a firm's market value (Cairns and Macdonald, 2016). Therefore, reputational capital is a driver for environmental practices. For example, managing reputation was the main driver for firms to undertake CSR (Flohr et al., 2010), sustainable procurement (Zhao, 2017; Meehan and Bryde, 2011) or SSCM (Wolf, 2014). Reputation is also a driver for companies to get certifications, such as the Marine Stewardship Council (Cairns and Macdonald, 2016). This reputational capital is gained or lost through perceptions, requiring brand management and information campaigns to ensure these environmental practices are recognised and rewarded. Furthermore, these processes allow consumers and citizens a voice in the governance of natural assets through using this information modify their consumption choices (Roheim et al., 2011).

3.3.1. Information Mechanism: Accreditation, Certification and Labelling

Although these are three different mechanisms, they should be considered an interconnected trinity. Accreditation is "the independent evaluation of conformity assessment bodies against recognized standards to ensure their impartiality and competence" (Loconto, 2017, p. 130). Certification is "the provision by an independent body of written assurance (a certificate) that the product, service, or system in question meets specific requirements" (Loconto, 2017, pp. 129-130). Certification is a mechanism by which firms can signal their environmental or sustainability practices and contributes to their organisational accountability (Boiral and Gendron, 2011). Labelling, or valuebased labelling (also eco-label, 'quality assurance label' and generic 'green' labels) is a means for providing accurate and verifiable information to consumers (Retail Forum for Sustainability, 2011). They come together thus: "Increased interest in ethical consumption has promoted the creation of incentives for product differentiation, which has been adopted by the market in terms of a variety of labels and certificates to describe a whole collection of product attributes related to health, social, or environmental sustainability" (Sayogo et al., 2016, p. 67). These certification and labelling processes need to be accredited to be seen as credible (Fouilleux and Loconto, 2017). These delivery mechanisms operate as voluntary traded economic mechanisms designed to encourage sustainability in commodity production, trade and consumption. They work indirectly on the market, by providing information to steer consumer choices and financial incentives for producers to improve their environmental, social, and economic performance (Sayogo et al., 2016; Blackman and Rivera, 2011).

Accreditation ensures the credibility of certification bodies and labelling messages (Fouilleux and Loconto, 2017). Therefore, accreditation is required to enable certification to be seen as valuable, signalling a point of difference against a firms' competitors to its consumers and shareholders. Therefore, accreditation helps with legitimacy (Sayogo et al., 2016); and is closely associated with, if not a synonym for, assurance schemes. Often associated with the International Organization for Standardization (ISO) approach to product safety, accreditation has become enshrined in European market governance of sustainability agriculture (Galland 2017). Labelling carries explicit value-laden messages relating to a product's process and quality illustrating its merits viz a viz a non-value labelled product (McEachern and Warnaby, 2008). The communication of this information can be between the business and its consumers (business-to-consumer (B2C) communication) or between businesses operating within the same supply chain (business-to-business (B2B) communication) (Retail Forum for Sustainability, 2011). The goal of ecolabelling programmes is to create marketbased incentives for better management of the environment (Roheim et al., 2011). Overall, these three mechanisms both inform consumers, citizens, shareholders and other businesses of claims to sustainable or environmentally friendly practices, and illustrate how firms are held accountable for these claims (Ponte and Cheyns, 2013).

According to cataloguer ecolabelindex.com, approximately 432 labelling schemes are available in 246 countries, of which 147 include standards for food/beverage (Grunart et al., 2014). Examples of voluntary labelling schemes in use in the UK included: the EU Ecolabel, the FSC (Forest Stewardship Council) or PEFC (Programme for the Endorsement of Forest Certification) labels, the MSC (Marine Stewardship Council) label, the fair-trade label, and the EU organic label, all of which inform consumers whether the product has been produced with a concern to minimise environmental impacts, effort that might otherwise go unnoticed (Roheim et al., 2011).Once niche

markets "in several sectors (particularly agriculture and food) they have grown considerably to gain important market shares" (Ponte and Cheyns, 2013, p. 460). In Scotland, accreditation, certification and labelling applies to fisheries, forestry, tourism, food and drink, agriculture and other sectors such as construction, reflecting an international trend in which products certified according to their environmental and social sustainability are becoming more important.

Accreditation and certification are often used in conjunction with industry-based standards and best practice guidance. For example, construction processes must meet the Green Guide¹⁰ standards in order to achieve certified good practice, which allows the construction firm to market itself as environmentally responsible. The Green Guide is part of BREEAM (BRE Environmental Assessment Method) an accredited environmental rating scheme for buildings. The UK Woodland Assurance Standard (UKWAS) is an independent certification standard for verifying sustainable woodland management in the UK. The new fourth edition of the UKWAS was introduced on 1 April 2018 and subsequently adopted for use in the UK by both the Forest Stewardship Council and the Programme for the Endorsement of Forest Certification. A particularly important scheme for agriculture is the LEAF marque, which has been shown to increase sighting of farmland birds, invertebrates and mammals, whilst reducing costs, lowering emissions and improving market share and premiums (Reed et al., 2017).

These processes (accreditation, certification and labelling) are therefore collective endeavours involving primary producers, processors, distributors and consumers (Leat et al., 2011). These processes also require the work of intermediary bodies to uphold standards and implement the accreditation, certification and labelling processes. Sustainability networks are behind the emergence and growth of these new product forms, often evolving into multi-stakeholder initiatives including civil society organisations, the private sector and/or (inter-) governmental organisations that establish and manage base codes, standards, certifications and labels (Ponte and Cheyns, 2013; Foley and McCay, 2014; Schlegel and Kaphengst, 2007). However, these networks emerge and act within the context of complex systems of international and national regulation (Ponte and Cheyns, 2013); and are supported by enabling actions such as EU Sustainable Consumption and Production Action Plan (Dendler, 2014).

Multiple benefits (health, social, and environmental) can be achieved throughout the supply chain as a result of the behaviour change promoted by accreditation, certification, and labelling. Although these mechanisms are not designed to work directly on natural assets (such as soil, water, and biodiversity), they can help to build a robust process through which consumers can indirectly support sustainable management of natural resources. They can also act on more than one natural asset at a time – by influencing actions throughout a supply chain. These mechanisms are not new – a European-wide eco-labelling scheme was introduced by the European Commission in 1992 (Erskine and Collins, 1997) and most of the EU member states have introduced national eco-labelling programmes (Bratt et al., 2011). However, our focus here is on voluntary industry-initiated labelling schemes, rather than any statutory schemes designed and implemented by the State. Therefore, whilst not new, it might still be useful to explore their effectiveness in the Scottish context,

¹⁰ <u>https://www.bre.co.uk/greenguide/podpage.jsp?id=2126</u>

particularly as many well-known accreditation, certification, and labelling schemes are more global in nature.

However, as with standards (see section 3.2.6 above), there is little evidence that certification benefits the environment or producers (Blackman and Rivera, 2011) or that certification achieves impartiality, rigour and accountability (Boiral and Gendron, 2011). Although certification can promote collective action and protect common pool resources, it can also favour large corporations over small-scale and community-based natural resource management. Certification and ecolabeling create new institutions of private property rights and collective action, which can result in exclusionary practices, inclusionary collective action, or both (Foley and McCay, 2014). Research on consumer practices suggest that sustainability labels currently do not play a major role in consumers' food choices and the utility of the approach will depend on the extent to which consumers' general concern about sustainability can be turned into actual behaviour (Grunert et al., 2014), echoing concerns noted within the product premium section below. These conclusions are more pessimistic than the findings of Gadema and Oglethorpe (2011); whilst Spurling et al. (2013) illustrate how labelling and certification processes offer a way to influence social practices and therefore encourage more sustainable choices by consumers and citizens. Finally, Dendler (2014) believes that labelling organisations can actively influence the efficacy of schemes supporting ethical choices.

3.3.2. Information Mechanism: Ecological Footprinting

Ecological, or environmental, footprinting is the impact of human activities measured in terms of the area of biologically productive land and water required to produce the goods consumed and to assimilate the wastes generated (WWF, 2017). It is used to raise awareness of these impacts and encourage the adoption of more sustainable practices. It has been critiqued for several methodological issues including both complexity and the failure to capture all facets of a global socio-ecological system. The focus includes land and water, but the approach has been critiqued for being too focused on energy (Browne et al., 2012) – conversely the application to draw attention to the impact on biodiversity is much more recent (Fang et al., 2014). Whilst it is most often associated with use by NGOs to raise awareness of individuals, e.g. WWF's (2007) application to Scottish urban populations; or with the public sector e.g. Scottish Government publishing Scotland's Carbon footprint (Scottish Government, 2017); it can also be used to assess the impact of the private sector e.g. UK electricity industry (Alderson et al., 2012) or production of ceramic products in Galicia, Spain (Herva et al., 2012). It is not a new instrument as it has been in use since the early 1990s but has only recently been applied to the private sector and could be used to generate data to inform relevant stakeholders as well as underpin management decisions. Ecological foot-printing has been linked with methods to account for impacts on natural assets (Wackernagel et al., 1999) (see section 3.3.4).

3.3.3. Information Mechanism: Product Premiums

The product premium concept is about consumers paying extra for socially and/or environmentally responsible products. This is sometimes referred to as price premiums or green premium. This is important because innovative products and services can be more expensive to produce due to paying for the externalities the conventional supply chain management does not, impacting the profitability of a product or service (return on investment for sustainable practices) (Roheim et al., 2011). It is a traded economic mechanism and therefore it is voluntary, initiated by companies to

redress the cost of environmentally positive management actions. It is argued that this becomes a 'race to the top', inciting competition between businesses developing environmentally sustainable products or services; achieving market differentiation and larger consumer choice for products that are aligned with their values (Dangelico and Pujari, 2010). There are differences in opinion between people's stated willingness to pay for environmentally and socially superior products and what people buy. Luchs et al. (2010) suggest therefore it may be a risk to invest in protecting natural assets purely to leverage product premiums, but Whitmarsh and Palmieri (2011) showed that consumer concerns over the environmental effects led to decreased propensity to purchase, requiring not only mitigation but marketing campaigns to inform consumers of these mitigating actions. Whilst this is a partially a management mechanism, it has been included here as an information mechanism as the mechanism is predicated on the consumer recognising and being prepared to pay the product premium. Therefore, it is often implemented alongside certification and labelling mechanisms. Within Scotland, the approach is most associated with food and drink products, but is also used in fashion, forestry, energy and other sectors.

3.3.4. Information Mechanism: Sustainability, Triple Bottom Line or True Cost Accounting

Triple bottom line accounting is a voluntary accounting framework to measure performance that goes beyond measuring profits, return or investment, and shareholder value, to include environmental and social dimensions (Slaper and Hall, 2011). Although there are debates on how to implement Triple Bottom Line accounting (whether to monetise the economic, social and environmental aspects and aggregate to generate an index or report each category separately) it was influential in 1990s (Elkington (1997) coined the phrase 'triple bottom line') as it was perceived as useful to businesses as a way of improving their long term viability through identifying risks and reducing costs (Slaper and Hall, 2011). It can be used within an individual organisation or as a partnership between different organisations, including NGOs and the State. With the increased focus on SSCM, it can allow firms, particularly SMEs, to illustrate their credentials and become more attractive to larger corporations (NatWest, 2018). However, the concept of "sustainability accounting and reporting" which focuses on the integration and interaction of economic, environmental and social issues, is now? replacing "triple bottom line accounting" (Lodhia, 2013). Sustainability accounting approach is similar to full cost, full environmental cost, true-cost and totalcost accounting frameworks (Jasinski et al., 2015). True-cost is an approach to accounting that considers not only internal costs but also environmental externalities of a business operation. It is this focus on externalities, sometimes throughout the lifecycle, that differentiates it from TBL accounting described above. True, or Total-cost, accounting frameworks have also been in use since the mid-1990s and like ecological footprinting (see section 3.3.2), aims to illustrate the unsustainability of economic activities and indicates the source of that unsustainability. True-cost does not only focus on negative impacts, but can also illustrate the positive influence that a sector, such as food production, can have on the environment and society (Nierenberg, 2018). Note however, that whether to include both private and societal costs; and how far to account for interactions up and down the supply chain are at the discretion of the organisation, so accounts must be carefully interpreted (Jasinski et al., 2015). Although the State or NGOs are not directly involved, it can help corporations illustrate how the comply with legislation and how they are responding to societal expectations; and provide enabling guidance.

These approaches often include environmental external costs such as air, water and soil pollution including greenhouse gases (GHG), sulphur dioxide, volatile organic compounds (VOCs) and toxic

substances (Jasinski et al., 2015). This focus reflects the fact that they tend to be applied in the manufacturing and infrastructure sectors. However, there is also a history of total environmental cost accounting, and **natural capital accounting** approaches. The concept of accounting for natural capital is not new but has been invigorated by development and adoption of the UN Statistical Commission of the System for Environmental and Economic Accounts (SEEA, n.d.) in 2012. Natural capital accounting is the process of calculating the total stocks and flows of natural resources and services in a given ecosystem or region (The World Bank, 2016) and illustrates the 'true' extent of economic development nett of environmental damage (Bartelmus, 2009). Natural capital accounting is being implemented internationally, in countries as diverse as Guatemala and Botswana (TEEB, n.d.) and the European Commission has identified natural capital accounting as one way to achieve the objectives of the Biodiversity Strategy (European Commission, n.d.). The Office for National Statistics and Defra have developed guidance to assist the application of natural capital accounting in the UK (Office for National Statistics, n.d.), and currently national scale natural capital accounting are being developed in Scotland; as well as sector level Scottish accounts (McVittie and Faccioli, 2017). Much of the literature is focused on national level accounts but they can be used by businesses to understand their impact on those ecosystem stocks on which their supply chains and longer-term viability depend. Pritchard and van der Horst (2018) have explored the use of natural capital accounting and found that as well as informing management decisions, it is also part of the firm's wider reputational management strategies as it illustrates their commitment to environmentally positive practices. Natural capital accounting can be implemented as part of the Natural Capital Protocol (see best practice, section 3.2.5 above) but can, and is, implemented independently. It should be noted, that as with many other mechanisms reviewed, it is yet to be implemented by land-based industries or SMEs (Pritchard and van der Horst, 2018).

The argument is that these new forms of accounting help companies and consumers understand the impacts of producing a good (Nierenberg, 2018), and this can create incentives for change. Benefits of these new accounting approaches as compared to traditional (financial) accounting is that they allow an integrated reporting and communication strategy that reports positive stories as well as improving the ability of boards and executives to scrutinise performance and identify new opportunities or risks (Schaltegger and Burritt, 2010). However, any attempts to make them mandatory may be resisted as this might conflict with other aspects of corporation law, reduce the ability to adapt assessment and reporting for different needs and audiences; and increase compliance costs (ibid).

3.3.5. Summary of Information Mechanisms

The information mechanisms reviewed here are not new, but still powerful. With an increasing focus on ensuring that private sector companies retain their social licence to operate (Kish and Fairbairn, 2018), "it would be a brave organisation in the current climate to state that[sustainability] is not important" (Meehan and Bryde, 2011, p. 95). However, as this quote notes, the majority of the concepts reviewed tend to focus on sustainability or ethical aspects rather than an explicit focus on investing in natural assets directly. Notable exceptions to this are the mechanisms associated with agro-ecology and organic farming movements, where there is explicit focus on protecting soil, water and on-farm biodiversity as part of the farming practices. These approaches have been criticised for 'green washing' whose effectiveness is limited by a fragmented and haphazard approach where retailers are careful to try to achieve product premiums without disadvantaging other products which are not informing consumers of their environmental stance (Gadema and Oglethorpe, 2011).

Furthermore, if the motivation for these instruments include signalling difference to competitors, there remains a question of how this motivation can be maintained when protecting natural assets is mainstreamed and becomes normal practice. The counter argument is that as commitments to protecting natural assets, as part of a renewed focus on sustainability engendered by the Sustainable Development Goals (Schramade, 2017), it becomes part of normal business practices and is seen as a standard practice; required of them by increased scrutiny and pressure by consumers, citizens and regulators. Furthermore, as we discuss further below, these mechanisms act as enabling ingredients to support the investment mechanisms discussed above; as they help the process of 'Making of a market' (Ponte and Cheyns, 2013) required for PES or other investment approaches.

As table four below shows, the motivations for informing others of the work being done to restore or invest in natural assets are anticipating or conforming to state regulation and responding to NGO or public pressure to be responsible global citizens. Therefore, although these mechanisms are often initiated and delivered by the private sector (mainly companies or sector-based organisations rather than individual land managers) they require interaction with the wider 'ecosystem' for businesses that includes NGOs, citizens, consumers and the State. Whilst not new, there is perhaps more that could be done to focus on how natural assets could be targeted and whether consumers do respond to this information and reward these endeavours. Therefore, perhaps these mechanisms deserve further critical assessment of whether they can play an important role in the Scottish land management context.

Mechanism	Actors involved (Role of the State)	Motivation	Application to Natural Assets	Scale of application (in Scotland)
Accreditation, certification and labelling	Industry bodies and inter- governmental bodies; consumers; corporations and SMEs	Industry bodies to ensure social licence; corporations and SME for reputational capital but also competitive advantage; consumers for ethical motivations	Water, biodiversity, Soil	Not new, widely used in Scotland
Ecological Foot Printing	Mainly State and NGOs to date?	Awareness raising, but also where reduce impact for reputation and efficiencies	Often energy and water use, less focus on soil and biodiversity	Not new, but not widely used in land-based sector
Product Premiums	Corporations and SMEs; consumers	Revenue raising (recoup costs) and reputational capital;	Biodiversity mostly (?)	Not new, widely used?

Table four: Summary of Information Mechanisms reviewed

		consumer – ethical motivations		
Accounting approaches (including Natural Capital Accounting)	Corporations and SMEs	Awareness raising, but also where reduce impact for reputation and efficiencies	Water, Energy, soil and biodiversity less often	Not new but still developing and not widely used in land-based sector

4. Discussion

The review has illustrated that there are some new private-sector led mechanisms being discussed in the literature; and also some 'older' mechanisms that might have new application for natural assets. We have categorised them (not exhaustively) as investments (raising funds to allow action to take place); management (business practices promoting sustainable use of natural assets and reduced pollution) and information (publicising and broadcasting these efforts to consumers, citizens and shareholders). However, there is interplay between these approaches and they are mutually interdependent – such that an investor may use information such accreditation about management practices (adhering to best practice) to make their investment decision. There appears to be a lack of attention in the literature to how this interplay works in practice when dealing with natural assets.

The focus on 'market-based' instruments, categorised as investment, management or information mechanisms, might suggest individualised profit orientated motivations. However, as the review has shown, the results are more complex than this. More often though, there is considerable collective action within the private sector, to coordinate if not collaborate, for a range of motivations (see below). Whilst there can be individual transactions or action taken within firms, even this takes place within a wider governance context of competitor behaviour, State regulation, and social pressure. Our results also show that environmental regulations do nott just represent constraints or regulatory compliance, but can also offer opportunities for risk minimization, preservation of revenues and reputation, or for new business creation (Dangelico and Pujari, 2010).

As Scherr et al. (2017) conclude, we need public-private-civic partnerships for integrated landscape management as the Sustainable Development Goals, Paris Accord or Aichi targets cannot be delivered by regulation, supply chain management or civic action alone. However, they found that only a quarter of relevant multi-stakeholder partnerships for landscape restoration involved the private sector. Thus, whilst there is benefit in paying more attention to the role of the private sector in managing natural assets, these mechanisms do not replace the need for the State to act with regard to natural assets. However, these mechanisms may change the role of the State; and this requires more analysis. Furthermore, implicit in many of these mechanisms is the role of the legal system to help develop private contracts and enforce non-State codified standards. Finally, Wolf, (2014) draws attention to the role of NGOs and social movements in pressuring organisations to adopt sustainable supply chain management and encourage build a reputation as "good citizen". Therefore, even seemingly 'market-based' mechanisms are normally a hybrid approach involving multiple actors beyond the private sector (Muradian and Gómez-Baggethun, 2013). In conclusion,

even a focus on the private sector must also pay attention to the actions of the State and NGOs in influencing, enabling or constraining the non-State actors.

One of the main arguments which has been made in support of embedding the interlinking of economic, social and environmental considerations within private sector business decision-making, is that it would allow organizations to lay the foundations for effective corporate governance (Spence and Rinaldi, 2014). This review resonates with questions being rehearsed in the private governance literature (Mundle et al., 2017) regarding the complexity arising in private systems of regulation involving a network of private actors and multiple layers of oversight (Ponte and Cheyns, 2013). This raises questions about the power and authority of corporations, many of whom both adopt these delivery mechanisms and also increasingly act as global environmental governors (Dauvergne and Lister, 2012). The 'social licence to operate' becomes problematic if the complexity of governance makes it less transparent and harder to hold actors to account. These issues are things that require further analysis beyond the scope of this review.

As noted in the summaries above, the mechanisms may not always be new but are often new to the explicit focus on natural assets. Much of the literature discusses these mechanisms in terms of a more holistic approach on sustainability; or a more indirect approach to improve performance through limiting inputs or reducing waste. Many examples are taken from large multi-national organisations working in the manufacturing and construction sector, raising questions about how appropriate they might be for SMEs in the land-based sector, who may not have the capacity or capability to engage with the required transaction costs. Furthermore, the rationales on commercial returns, reducing costs or making products more competitive might focus attention on certain assets or ecosystem services provided by them, with the risk of neglecting others. Certainly, questions remain about how to capture private benefits (return on investment, cost-savings and competitive advantage; or product premiums) from public goods which are non-rivalrous and non-excludible, generating collective action challenges such as free-riding. Muradian et al. (2013) suggest that market-based instruments are only likely to work where natural assets are easily and reliably quantified and not of common pool character.

Some of the reviewed work argues that there are cases where private and society or public good motivations can align. Furthermore, even when actions are not necessarily motivated by environmental stewardship, they result in improved environmental management (Winn et al., 2008). On the other hand, some argue that claims to green practice do not necessarily mean improving private business practices, it can also be about raising business profile through media campaigns (Boisvert et al., 2013). Indeed, in some cases there are questions about whether these mechanisms can deliver improved environmental outcomes. For example, in Meehan and Bryde's (2011) example of sustainable procurement, there was a widespread failure to translate the drivers into sustainable procurement practices. Dauvergne and Lister (2012) argue that total environmental impacts of consumption are increasing as brand companies leverage corporate sustainability for competitive advantage, business growth, and increased sales. Iacona et al. (2017) argue that delays in restoring natural assets due to lack of public finance can be preferable to tying conservation to profit seeking activities; arguing that a lack of resources can guide smarter interventions in the longer term than using market instruments in the wrong situations. Therefore, it might be prudent to acknowledge that these mechanisms may not always suit all cases, nor will they automatically result in improvement for natural assets.

This raises the question of whether we can expect new mechanisms to work without changing the wider socio-political context in which they are implemented. As Meadows (1999) would say, we can try to use "constants, parameters, numbers (subsidies, taxes, standards)" to leverage change but these are the least effective points for leverage, compared to aspects like changing wider business goals or the paradigms underlying the system. There has been something of a fashion of 'market based instruments' due to neo-liberalisation in some contexts (USA, Australia, UK) and distrust of State intervention – so instruments are prone to fashion as much as to rigorous evaluation of evidence (see Boisvert et al., 2013 and others). We generally don't really know much about the effectiveness of market-based instruments, at least versus the effectiveness of other (more 'traditional') policy instruments (Miteva et al., 2012).

There are obvious drivers for private sector involvement, summarised as "sharing or saving costs, resource mobilization, market differentiation, joint policy advocacy, value creation, risk reduction, or strengthening of local relationships" (Scherr et al., 2017, p. 9). However, we must also acknowledge the challenges of timelines, lack of expertise on both sides, the need for new tools and new metrics to measure success. As with all instruments or approaches, the quality of implementation matters. As Nigmann et al. (2018, p. 5) note, enhancing provision of public goods through agriculture and forestry activities using private sector involvement is "more effectively delivered when the mechanisms driving the provision are more strongly rooted in the respective territories, landscapes, landscapes and supply chains". The preferences and values held by stakeholders may or may not align with the preferences and values held by investors, managers or communication teams involved in private sector led mechanisms.

Djenontin et al. (2018) note that there are three types of factors that affect investment in forest and landscape restoration – micro (about individual behaviour, practices and interactions); project (about intervention design and implementation) and institutional/policy/governance factors. The latter group of factors reiterates the important enabling (or constraining) role that the State might play in encouraging private sector involvement (see also Scherr et al., 2017). Thus, Dauvergne and Lister (2012, p. 36) prescribe "stronger state regulations, sustained advocacy, more responsible individual consumerism, and tougher international legal constraints to go beyond the business gains from big brand sustainability to achieve more transformational, 'absolute' global environmental progress." It will be interesting to discover to what extent these conditions can and will be implemented in the Scottish land-based industries.

Next Steps

This document corresponds to deliverable 1.4.2biD3 "Aligning existing and new delivery mechanisms: Research briefing on 'new' instruments"; which was always intended to be an intermediate stage in the overall focus on how to deliver multiple benefits from Scotland's natural assets of soil, water and biodiversity. The review is not exhaustive but provides an overview of some of the less well-known mechanisms that might be available to the Scottish land-based sector; as well as raising some of the cautions apparent from the international debates in these arenas. The next stage is to discuss these findings with stakeholders. Questions to discuss may include:

- Is the focus on the private sector (commercial companies) useful?
- Is the categorisation of instruments as Investment, Management or Information mechanisms helpful?

- Are there other delivery mechanisms that should be explored?
- Are there any of the above mechanisms that should be explored in more detail?
- What is the potential to transfer some of these mechanisms from other sectors or setting to Scottish land-based businesses?
 - To what extent do the cautions and criticisms highlighted in the review affect the transfer of mechanisms?
 - And the benefits or rationale for adopting these mechanisms in the land-based sector?
- How might these ideas support the restoration or protection of Scotland's natural assets?

The resulting discussion may elicit further mechanisms to review, in which case this deliverable will be updated. These discussions may also indicate where there is interest for more in-depth analysis of a specific mechanism, particularly in terms of whether it is appropriate to transfer concepts from other countries or other settings (e.g. construction) to the Scottish land-based sector. Finally, stakeholders may have views on the issues raised in the discussion or further ideas of the merits or challenges of working with such market- based instruments. These deliberations will be used to inform the choice of case(s) to investigate empirically from 2019 onwards.

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Annex 1: Template used to summarise each Mechanism

Type of formal mechanism

Goal or Objectives of the mechanism & Problem to resolve

What was it used to achieve?

Which natural asset (s) was it designed to work with/on?

Where is/was it applied?

When applied? [Assume fairly recently or why reviewed]

Who are the main actors involved? [Private/State/Civic] What are their roles?

Any reference to informal institutional arrangements (meaning, culture, values etc)

Involves collective action; coordinated action or just individual uptake?

What is new or novel about delivery mechanism or approach than using a more conventional mechanism?

Why is this approach seen as better or more effective than others in the past?

What are the barriers or enabling factors? Costs and benefits?

Is there any reference to other instruments acting alongside, as a precursor or as a postscript; or acting as a barrier?

Is the mechanism supported by public policy?

Any comments on the wider context (political, economic, social or ecological) that enabled this mechanism to be developed?

Any other interesting ideas arising?

Checklist:

These questions might help us with our review if you are losing sight of what to include or not.

- Is this a delivery mechanism (type 2 instrument) or parent policy/strategy/concept (type 1) that has to be translated somehow to be put into action?
- \circ ~ Is the delivery mechanism designed to protect etc natural assets [or environment etc?]
 - If not, is there potential for it to be applied in Scotland to natural assets?
- Is the delivery mechanism designed to act on single issue (one type of natural asset, or one benefit alone) or multiple benefits?
 - If single issue, is there potential to use it for delivery of multiple benefits?
- Does this reference talk about how to improve the efficiency or effectiveness of what we are already delivering or could deliver?