NUMBERS FOR GOOD

Feasibility study into new financial mechanisms for forestry

Report for the Forestry Commission
by Numbers for Good

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Trees and woodlands make a wide-ranging contribution to society and the economy. Extensive research and analysis has supported this contribution, including the value provided to communities, visitors and businesses. There is now increasing interest in how this value might drive the development of new mechanisms to attract further investment into woodlands. In recent years, wider investment markets have experienced significant changes as the importance of social and environmental objectives to investment outcomes has become apparent. Forestry in the UK faces a distinctive set of challenges and opportunities, and these will inevitably shape future investment possibilities in the sector. This report is a welcome attempt to explore where opportunities may lie for forestry in the UK, and we hope it will play a valuable role in stimulating progress where alignment between woodlands and investment markets is both practical and desirable.

The Forestry Commission

The work in this report represents the analysis and views of Numbers for Good and is not a statement of the views of the Forestry Commission.

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1. Executive Summary

In the last seven years the social investment market in the UK has become firmly established and grown to become a material financial contributor to social projects run by social enterprises and charities. This report looks to assess whether there are positive characteristics which might encourage environmental impact driven investing to become a material contributor to new woodland creation and management.

Whilst the social sector generates social impact for investors and forestry is able to generate environmental impact there are significant differences between the two sectors affecting their respective investibility for impact investors. Primary amongst these is that an increasing number of voluntary organisations which deliver social services, do so through contracts with central or local government, often through multi-year agreements which have the financial predictability to support financial investment whilst also generating social returns. In many ways, the key to unlocking material investment into UK forestry, if we set aside commercial timber business models, is to define the counter-party which is able to value the environmental outcomes of forestry and pay for them through contracts which have sufficient stability to repay investment.

This paper considers the framework which was utilised by the UK social investment sector to allow a finance market-place to launch, operate and grow on a sustainable basis. We review the relevance, adaptability and practicality of commonly used investment structures within mainstream finance, within the social investment market and within the nascent natural capital investment sector. Our favoured approaches to encouraging additional capital investment into new forestry which implicitly recognises environmental impact are to consider increased promotion of community owned forestry projects, explore the potential for environmental impact bonds and to encourage regional partnerships between environmental enterprises, commercial entities and civic groups.

In preparing this paper, we drew from opinions and views which were tested and developed in a forestry investment workshop undertaken as part of our project research. The workshop made a number of high level observations, and in particular noted that environmental impact bonds looked to be a promising area of growth particularly where they might be used to generate carbon credit and natural flood management and where combined with corporate partnership. Environmental outcomes were a key focus for the group but there was a recognition that benefits such as biodiversity would be challenging to secure large scale outcome payments for.

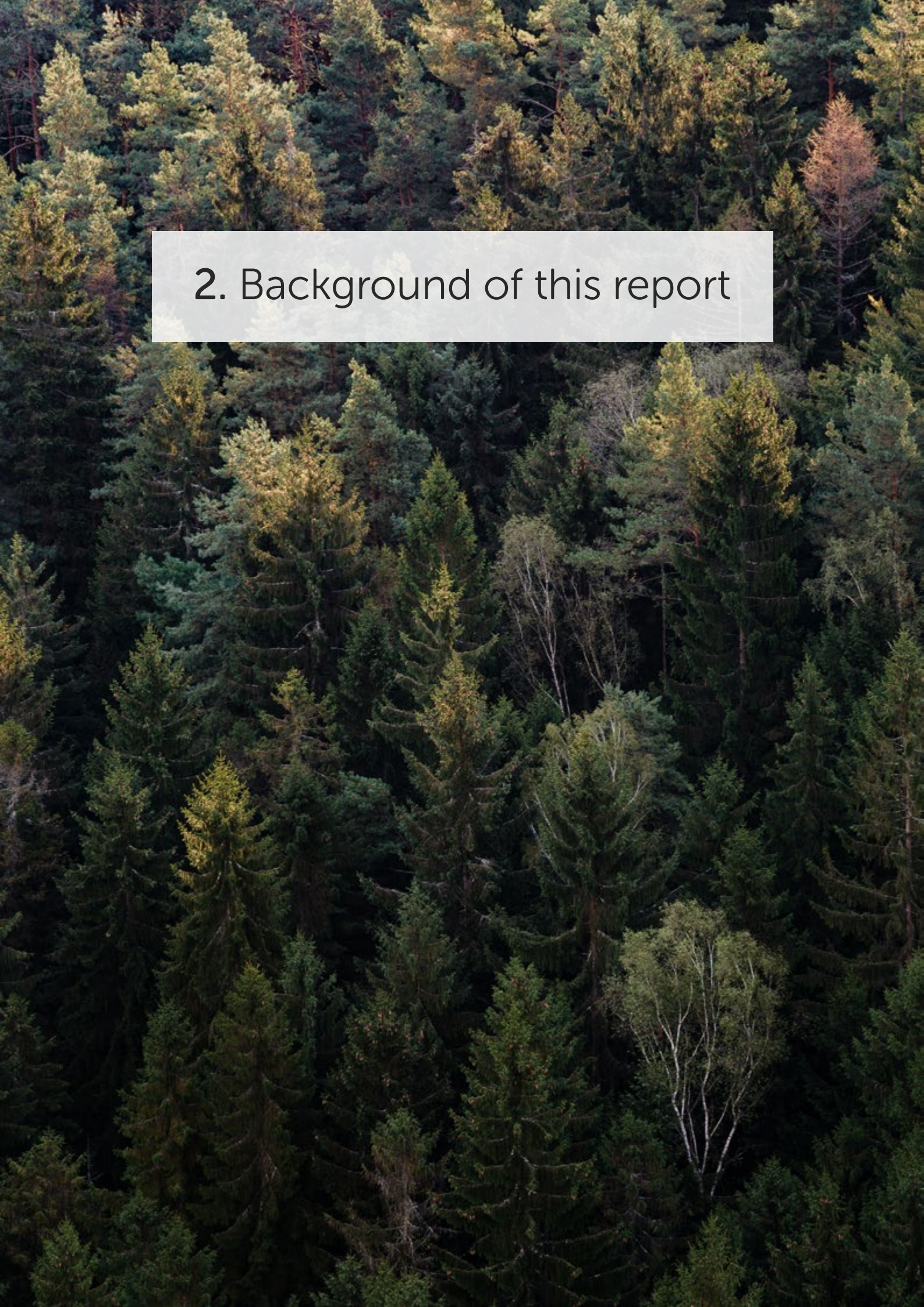
In any event, outcomes-based financing was believed to require Government involvement either as commissioner (as in the social sector) or as facilitator or policy maker. On a smaller scale, community owned enterprises were regarded as an underused opportunity for forest investment and participants felt that their use could be more widely encouraged. Green bonds were the focus of discussion given the size of their global market and the discrepancy that green bond proceeds do not seem to have been used for UK forestry to date.

Whilst the workshop covered a range of investment opportunities, we have supplemented those discussions with additional research of suitable investment products in this paper.

In undertaking this research we discovered a number of examples of forestry and environmental projects which have raised funding whilst generating environmental impact and sufficient income to repay the financing costs. Whilst small scale, we believe there is significant potential for investors to scale up the environmental impact of forestry projects but this will need communities, corporates and government to work in partnership similar to those seen across the social investment landscape.

The report concludes with a series of immediate recommendations which we consider are achievable in a 1-2 year timeframe and will help develop some of the ideas set out in this paper:

1. Develop small-scale community owned forestry pilots;
2. Develop UK forestry-linked Environmental Impact Bond showcase;
3. Develop environmental outcomes Unit Cost Database;
4. Commission a report to study natural capital components by asset value to determine which have the most potential for scalable business models.



2. Background of this report

2.1. OBJECTIVE OF THIS REPORT

The Forestry Commission would like to explore the use of innovative financial mechanisms to finance forestry projects and the associated natural capital benefits.

The report seeks to set out the *"offer"* that an innovative investment in forestry or woodland schemes could provide and provides potential investors with information that they would need to determine their interest in such structures.

2.2. NUMBERS FOR GOOD WORK TO DATE

Numbers for Good began our research in January 2017. This report was preceded by a desk based research phase, where existing information about UK forestry and UK forestry investment was gathered and assessed. As part of this work a preliminary list of UK forestry focussed investors was also drawn up. A series of investor interviews took place which guided the development of this report.

A workshop was undertaken with experts in land-use and forestry on the 20th March 2017 to discuss some preliminary alternative investment options and further develop potential investment structure ideas.

Numbers for Good has worked collaboratively and had frequent interaction with Pat Snowdon at the Forestry Commission throughout the project which has supplemented our research activities, provided guidance for the workshop discussion and outputs and assisted us in developing this report.

2.3. NUMBERS FOR GOOD

Numbers for Good bridges the world of finance to organisations dedicated to improving people's lives and helping the planet. It creates financial solutions that allow organisations to fund social and environmental projects and connects investors with opportunities for sustainable financial and social & environmental returns.

We broadly define the sector to be *"social finance"* where investments are made into projects or organisations which seek to repay the initial capital invested with an excess return whilst simultaneously generating a social or environmental impact, sometimes known as a *"social return"*. Whilst the term is not as commonly used in a domestic UK context, internationally, social finance is often known as *"impact investment"* which is defined investment made into companies, organisations, and funds with the intention to generate social and environmental impact alongside a financial return.[1] The targeted impact of these investments is typically defined as an improvement to a (usually adversely positioned) individual's quality of life through provision of services but also includes raising a community's future prospects or achieving environmental outcomes. Our work in the UK typically focusses on assisting client organisations become prepared

[1] https://thegiin.org/impact-investing/need-to-know/#s1

to take on investment and raise the finance itself. Client organisations for such work tend to be charities, social enterprises (such as co-operative groups), renewable energy projects and profit-for-purpose[2] companies. We also work with commissioners and Government related entities to advise them in respect of their interest in this sector.

Numbers for Good therefore prepares this report using our existing knowledge of what financial structures have worked in the context of social investment in the UK.

2.4. PRELIMINARY OBSERVATIONS

The scope for the report is to focus on innovative financing mechanisms that can be used to provide funding for forestry projects. Forestry can and does provide valuable economic benefit to society, which is not typically reflected in market sale values which are commercially driven. Putting a monetary value on natural capital assets and ecosystem services they provide is the value that can be referred to as Natural Capital[3] and is an incremental component of forestry value. Natural Capital may be sufficiently financially robust (due to commercial value accruing internally or externally, positive environmental outputs and/or financial dynamics such as non-correlation with commercial assets) for investors to use it as security for investment and lending.

Forestry investment for environmental impact faces multiple challenges. Given low cost financing for assets is available in the current market, commercial market failure is not evident. However, there are few, if any examples of financing being provided to projects set against the value of their Natural Capital in the UK. This may be considered a form of environmental financial market failure.

Additional structural issues also exist. Land ownership is condensed in the UK and the market is illiquid: with few sales of large areas of land. Furthermore, historic foresting activities in the twentieth century resulted in planting on much of the lower cost areas of agricultural land (when land itself traded at historically low values). Although significant areas of land may be suitable for woodland planting, it is important to note that in a densely populated country much land is either agricultural, used for industrial or urban land use or designated for particular landscape, cultural or biodiversity purposes. These points, together with a highly attractive Common Agricultural Policy payment scheme for agricultural land use, mean that bringing new as yet unforested land into forestry in scale has underlying project and strategic level issues before financing (particularly large scale financing) discussions can begin.

More details on land ownership in the UK are set out in Appendix 1. In summary, whilst it's possible to purchase relatively isolated pockets of land every year (of up to 800-1,200

[2] There is no standard definition of profit-with-purpose companies although they are widely recognised as for-profit companies which pledge to achieve social and/or environmental goals as well as business objectives.

[3] Natural Capital can be defined as the world's stocks of natural assets which include geology, soil, air, water and all living things. It is from this Natural Capital that humans derive a wide range of services, often called ecosystem services, which make human life possible.

hectares and typically a lot smaller) it is not usually possible to do this in large scale (approximately 4,000 hectares / 10,000 acres or more) in any one year. The lack of availability of large areas of investable land is prohibitive for large institutional investment funds which need to invest in deals with a minimum size of £50m - £100m, as they cannot purchase land needed to undertake significant new forestry planting[4]. In contrast, in the United States for instance, one website, landwatch.com currently has 13 areas of 20,000 hectares or more for sale priced between £8m and £80m which more closely resemble the scale required for efficient institutional purchase (and with the liquidity that institutions also require).

2.5. CURRENT FORESTRY REVENUE MODELS UNDERLYING EXISTING INVESTMENT IN THE SECTOR

In the table below we set out the key categories of revenue streams that underlie the main investment products that currently invest in the forestry sector.

The revenue stream column identifies the specific source of income. In some instances, this relates to well-established markets for example sales of timber and paper, in other instances there are nascent examples of revenue streams derived from monetary values being ascribed to natural capital (such as ecosystem revenue streams).

The illustrative investment models column highlights examples of investment mechanisms that have been used to fund each revenue stream category.

Table 1:

	CATEGORY	REVENUE STREAM	ILLUSTRATIVE INVESTMENT MODEL[1]

Well-established	Community Production	• Timber & paper
		• Wood fuel
		• Renewables
			• Asset management
			• Private equity
			• Direct investment in/ lending to:
			  • Paper companies
			  • Wood fuel companies
			  • Renewables initiatives

Not established	Ecosystem	• Carbon • Watershed • Soil stabilisation • Biodiversity	• Green bonds (note: revenue steam not necessarily eco-system related) • Environmental impact bonds
Mixed	Habitat	• Leisure & tourism • Education • Land value	• Community Shares • Commercial or social enterprise with equity, debt or quasi equality • Asset management

[4] We assume that the 2060 12% English forested area target needs an additional 5,000 hectares, 12,500 acres grown a year and that larger scale projects will achieve this more efficiently from a financing perspective.

Note:

[1] *Illustrative investment mechanisms from left to right are: Greenwood Resources (asset manager in forestry assets), Oregon State Treasury investment division (asset manager including forestry assets), Missouri Lagers (asset manager including forestry assets), Forest Fuels (biomass supply company), HWEnergy (biomass supply company, European Investment Bank (supra sovereign issuer of green bonds), Unilever (corporate issuer of green bonds), Belectric (corporate issuer of green bonds), DC Water (partner in environmental impact bond), Rainforest Foundation UK (service provider for development impact bond), Community Shares (body supporting issuance of community shares in UK), Forest Holidays (UK forest based leisure provider).*

What the above table (taken from the workshop we held to discuss forestry investment) illustrates is that there are a wide variety of ways in which revenue can be generated in order to repay investment in the sector. In the main part ecosystem and habitat (or secondary order) revenues have generated limited investment into forestry to date whilst the vast majority of investment has been made against more commercial revenue streams which forestry is able to support.

2.6. EXISTING INSTITUTIONAL INVESTMENT IN FORESTRY

As part of this project Numbers for Good drew up a list of potential investors in UK Forestry with the objective of interviewing them. Numbers for Good subsequently held various preliminary conversations with owners and managers of UK Forestry.

Amongst the more relevant feedback was that Esmee Fairbairn has developed a bridge financing product that allows pre-aggregated foundations to benefit from up to 2 years temporary financing while they source long term funding to buy land. Some other interesting insights were drawn from these conversations which informed the workshop design.

It is worth summarising why there is a lack of mainstream institutional investment in forestry assets today. Additional information related to this point is set out in Appendix 1 but we believe the primary reasons for this are as follows.

1. Institutional investors (particularly pension funds or life insurance funds) typically need to make investments of £20m or more, and often require total asset sizes of £50m or greater to ensure they do not have overall control of a given investment. The plots of forestry or land suitable for forestry that reach this size threshold are extremely rare in the UK. Furthermore, private landowners and forestry companies are likely to compete for land of those dimensions when they come up for sale and may be able to pay more given their alternative return projections (e.g. through tax advantages such as inheritance tax exemptions).
2. Highly predictable recurring revenue streams are a typically standard requirement for mainstream investment. Considering their minimum investment size, annual pre-financing cashflows or equivalent (after operating costs) of at least £0.5m per year (2.5% return on £20m of capital) would be needed to encourage mainstream investment. Often mainstream investors actually target equity market level returns which are typically between 5-20% every year. A large scale afforestation project is unlikely to be able to provide this level of absolute cashflow in the initial years of operations prior to peak timber harvest and revenue generation. An additional factor is

that (with exceptions) a significant proportion of investment structures used by financial investors today have return horizons of 10 years or less which doesn't typically match to a forestry plantation peak cashflow period (for example private equity funds look to generate returns over 4-8 years). The exceptions tend to be long term investors such as endowment funds, pension and life insurance funds but the consequence is that they tend to need more consistent or guaranteed annual cashflows which newly planted forestry projects would find challenging given the typical timber harvest cycle.

3. A large part of the UK land area is owned by significantly sized private land owners. Few of them could be described as institutional but most of them conduct significant agricultural operations and clearly take an active strategic decision to use land for this purpose rather than forestry. The Basic Payment Scheme and other grants under the Common Agricultural Policy generate attractive and stable cashflow streams which may encourage this form of land use over forestry.

4. Current lack of fiduciary responsibilities of asset managers towards objectives which are not financial is an issue. There is a movement amongst certain large investors which are moving beyond singular profits performance to understand how their fiduciary duties extend to social or environmental metrics. In its final report on the fiduciary duties of pension trustees, published in July 2014[5], The Law Commission helpfully confirmed that investors aren't required to focus solely on short term profits when making investment decisions, and that they're free to consider all factors which affect the financial performance of a fund, such as ESG (environmental, social and governance) issues. It also confirmed that non-financial factors, such as members' views and quality of life, may also be taken into account so long as this does not result in significant financial detriment. These changes are happening slowly and mostly focus on fossil fuel climate change, mostly coming from pressures of society and asset managers' clients on the climate change topic; however there is scope for such developments to go much further and include natural capital, which is not happening currently, beyond specific non-mainstream social and environmental driven investors. Another encouraging movement within the EU is the EU High Level Expert Group on Sustainable Finance (HLEG) says in its interim report to the Commission: "to deliver systemic change, ESG factors and long-term sustainability risks and opportunities will be needed in corporate governance, core indices, accounting standards and credit ratings. They will also need to be reflected in the role played by the European supervisory agencies." HLEG also call for the EU to incorporate the recommendations of the Financial Stability Board's (FSB) Task Force on Climate-related Financial Disclosures (TCFD)[6] and develop an EU-wide equivalent of France's Article 173[7] for reporting obligations by financial institutions. The group believes that this will advance EU leadership on transparency and ESG issues and ensure a level playing field globally.

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[5] http://www.lawcom.gov.uk/wp-content/uploads/2015/03/lc350_fiduciary_duties.pdf

[6] https://www.fsb-tcfd.org/

[7] https://www.environmental-finance.com/content/news/eu-is-considering-its-own-version-of-frances-energy-transition-law.html

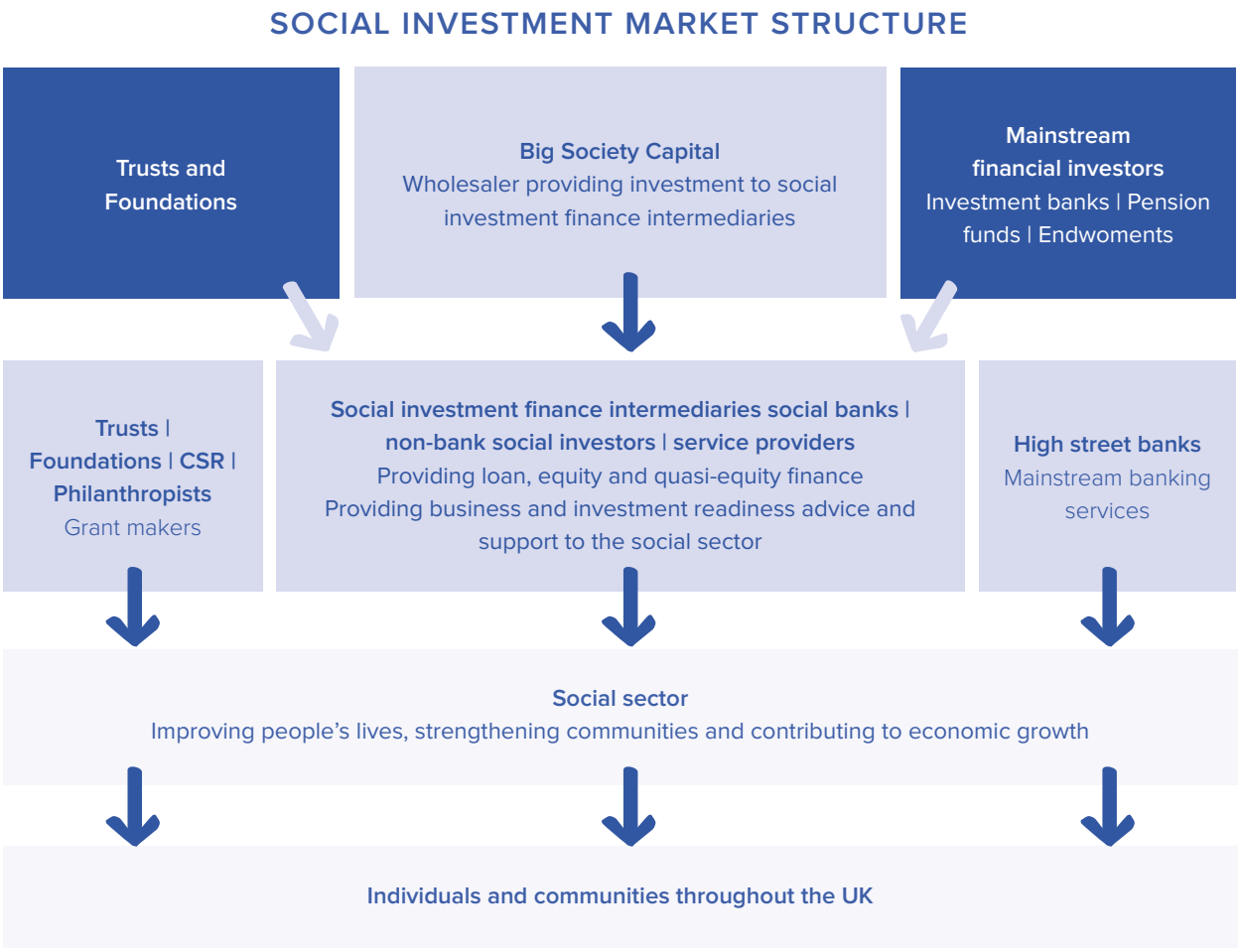
3. Developing alternative financing ideas for forestry investment

3.1 THE SOCIAL INVESTMENT MARKET AS AN ANALOGOUS INVESTMENT MARKET

A useful reference point when assessing the prospects for the environmental investment market in the UK would be to look at the developments of the social investment market since it's active sponsorship by the coalition Government elected in 2010. The "Big Society" policy of the coalition Government was a push to increase the role of voluntary, charitable and social enterprise organisations (VCSEs or social organisations) in the commercial market place and to increase the amount of financing available for these organisations, particularly if they had been refused financing from traditional investors or lenders.

The policy developed into a strategic framework to boost the number and activity of VCSEs and at its core is a wholesale bank, Big Society Capital (BSC). BSC was capitalised with £200m from 4 shareholding high street retail banks and £400m from dormant bank accounts. At the same time, Government policy became more favourable for social organisations, for example public procurement policy was adjusted to allow VCSE organisations to have improved access to contracts (at the expense of for-profit commercial concerns) and tax breaks were introduced for investors in VCSEs.

Figure 1: **Big Society Capital at the heart of UK social investment infrastructure**



(Source: SEUK UK Social Enterprise Report)

Big Society capital, in turn acted as a whole-sale finance partner which invested in funds and lenders which would then act as capital distributors to the end user base of social organisations. An array of products have become available in the social investment market, and are offered by investors seeking a social, as well as financial return. These range from equity or debt investments for social sector organisations for traditional revenue driven business models, through to 'social impact bond' investments in payment-by-result contracts[9] dedicated to the delivery of social outcomes (which are paid for by central and local government).

Between Big Society Capital's foundation in 2012 and the end of 2015 £1.5bn net investment through 3,500 investments were made into the social investment segment, comprising organisations aiming to deliver social impact and investors looking to scale additional social impact.[10] BSC itself invested £160m in this timeframe primarily into intermediary funds and lenders. Some of this £1.5bn net investment (primarily that lent by social banks) would likely have been invested even if the Government had not created Big Society Capital. However, 2015 social investment of approximately £427m vs 2011 social investment of approximately £165m suggests a net social investment increase of approximately £260m on an annual basis for which Big Society Capital and associated policies are likely to have been primary catalysts.[11]

When drawing insights from this successful deployment of capital into the social sector it's important to be cognisant that significant market infrastructure had to be developed and funded. This included a wholesale bank (BSC itself), intermediary funds, intermediary advisers, reliable long-term (grant) funding for social enterprises to raise investment and critically a government policy which encouraged state social expenditure to be prioritised towards VCSEs in meeting social objectives.[12]

3.2 SUMMARY OF TRADITIONAL FORMS OF FINANCE

There are a number of existing sources of financing which a forestry project might be able to access to provide start-up capital or project funding:

1. Secured bank loans (often known as mortgage financing). Typically offer the lowest interest rate for longer term funding often of 20 years or more. This type of funding is usually restricted to somewhere in the region of 70% or less of the vacant lease value of the property being financed.

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[9] In the case of payment by results contracts, the Government agrees a price for a social outcome (e.g. a homeless person being housed) and is only pay when outcomes are achieved. A form of Natural Capital outcomes could perhaps be designed in the same way, with payment-by-results contracts commissioned by Government agencies, Foundations or Corporates. See Chapter 5.

[10] http://www.bigsocietycapital.com/sites/default/files/attachments/The%20size%20of%20and%20composition%20of%20social%20investment%20in%20the%20the%20UK_3.pdf

[11] Ibid.

[12] There is ongoing work by Social Enterprise UK and others to encourage UK corporates to purchase products and services from social enterprises, and wide-scale adoption of this policy would mark a significant increase in revenue opportunities and capital available to VCSEs in the UK.

2. Unsecured loans. Usually incur a higher rate of interest than loans secured against property or assets and are reliant on recurring operating cashflows to limit lenders risk. Typically with shorter maturities than secured loans, most commonly between 1 – 5 years in duration. Usually offered by commercial banks but there are independent funds which offer unsecured loans.

3. Bonds and private placements. Unlike a loan, a bond is usually sold on the public markets and is normally tradeable on the secondary market. Wholesale bonds are sold to institutions and usually have a minimum viable size of approximately £100m in order to meet institutional investors' risk criteria (whilst smaller deals are achievable this is likely to affect the interest rate adversely). Smaller bonds such as retail bonds and mini-bonds are possible and are primarily sold to retail investors through specialised brokers though most often have shorter term durations of up to 10 years. Execution fees can be a challenge for smaller deals.

4. Alternative finance providers. Historically made up of funds and specialist lending vehicles who lend against non-property assets such as invoices and vehicles. A new feature of this market has been web based peer-to-peer lending (known commonly as crowdfunding) which is done via internet platforms adopting a wide range of financial structures and at widely varying rates and maturities.

5. Private ownership and investment: land has often been used by individuals as a form of long-term investment and wealth preservation or to sustain a profession usually linked to farming. Agricultural land has often been used as a tax-efficient method of passing down wealth from generation to generation and has sometimes been converted into woodlands. However, we observe that there are few incentives to convert agricultural land to forestry as agricultural land benefits from annual government subsidies, some of which are dependent on farmed area of land rather than environmental practices or approaches.

Whilst impact projects[13] are not prevented from accessing these types of traditional funding structures, in some cases there are valid concerns about either the underlying investors, levels of returns, deal structure or features which make impact investors more popular for impact projects. The widest definition of social and environmental impact finance would include both traditional finance sources (set out above) as well as the introduction of specialist impact investors using alternative approaches set out below.

3.3 SOCIAL / ENVIRONMENTAL VARIANTS OF TRADITIONAL FINANCING OPTIONS/ UNIQUE STRUCTURES

- Social banks look to generate social or environmental impact as well as lend but otherwise offer very similar loan products to commercial banks. They offer both secured and unsecured loans to organisations which generate impact and include banks such as Triodos bank, Charity Bank, CAF bank, Unity Trusty Bank and Ecology

[13] Projects which meet the impact criteria in order that they could be funded by impact investment (defined in section 2.3)

Building Society. Independent funds offer unsecured loans for projects with social impact and include investors such as Bridges Ventures, Social and Sustainable Capital, Big Issue Invest and CAF Venturesome.

- Bond issues have also been undertaken by social sector organisations. Only the very largest charities or trusts can issue a wholesale bond to institutional investors and reach the minimum size threshold (such as the Wellcome Trust or the larger Housing Associations which own many hundreds of residential properties). More common for smaller charities and social enterprises are bonds aimed at retail investors either listed on the London Stock Exchange retail bond platform (Order Book for Retail bonds) or sold as mini-bonds (non transferable bonds) typically through a peer-to-peer or crowdfunding website (such as Ethex, Abundance or Crowdfunder). As for mainstream retail bonds maturities tend to be 10 years or less given retail investor reluctance to tie up capital for periods of longer than this. However there has been innovation in the impact sector here where some platforms do now offer longer term environmental products such as Abundance which issues 20 year plus debentures.
- Community shares are unique to the social investment market and are issued by Community Benefit Societies (CBS) or Industrial and Provident Societies (IPS) (which are forms of legal incorporation based on the co-operative structure). Unlike a charity, a CBS can raise capital in the form of non-transferable withdrawable shares[14] which have no fixed maturity. This allows the organisation to invest in projects which have a degree of risk without breaching loan repayment terms in the event the project is unsuccessful. CBS structures have been used for all types of community asset ownership but were particularly popular for renewable energy funding where local communities could invest, benefit from tax breaks (such as Enterprise Investor Relief scheme) and also limit risk given renewable feed in tariff subsidies. Community shares structures are discussed further below in section 4.
- Social Impact Bonds (SIBs) were developed together with the Big Society policy and the first project, the Peterborough Prison SIB was put in place in 2010. SIBs were designed to allow social enterprises to participate in Government Payment by Results (PBR) contacts. These contracts only generate revenue for the social enterprise supplier in the event specific social outcomes are generated by their service. However, this creates a funding shortfall for a social enterprise whilst the service is delivered but before successful outcome payments are made. A SIB provides capital to a social enterprise during the contract delivery phase, and in the event of success is repaid by the outcome payments later in the project. SIBs are frequently structured very differently to standard bonds, for instance the annual investor return is often rolled up into one or several payments at the end of the contract period rather than during the initial contracting stages. SIBs are often structured as standalone investment

[14] Non-transferable withdrawable shares allow the owner to share in the profits of an enterprise in the same way that ordinary transferable shares do this for a company limited by shares. These shares cannot be sold to a third party but may be bought back by the issuing enterprise should the owner wish to realise their investment. The reason for the non-transferability is that through a regulatory exemption it avoids the necessity to comply with potentially onerous regulation related to the sale of new ordinary shares.

vehicles in order to limit the risk to the social enterprise in the event that the lender or government commissioner chooses to cease contract delivery given lack of results.

- Environmental variants. In the UK, the environmental impact finance sector is not as developed as that of social finance. Both social banks and social lending funds might consider environmental impact projects favourably but are more likely to make a lending offer if there is a simultaneous social impact for socially disadvantaged members of the organisation's user base. It is also possible to use a crowdfunding website to raise funds for an environmental project with or without an explicit social impact given retail investors are less specific in terms of degree or type of impact generated from an investment. Green bonds (discussed below in more detail) are most widely recognised as a form of wholesale bond issue covered in point 2. above. Environmental impact bonds would be a SIB variant (see point 4. and also section 5. of this report) although as yet there are no operational examples in the UK.

3.4 GREEN BONDS

Green bonds often feature in the financial and environmental media and are a very specific sub segment of the international bond market. At present, there is no widely recognised international standard of what a green bond is and most are "self-labelled" as green by the issuer (although many do ask an independent expert to review their credentials also known as a second review or second opinion). Most Green bonds typically reflect the characteristics of a large scale traditional bond structure referred to in 3.2. They tend to be over £100m in size (recent examples are set out on the table below) and listed on one of the major bond exchanges such as Luxembourg or London. By value the largest proportion of these bonds are issued by well capitalised national and multi-national corporations, development banks and state entities, many of whom will have other existing bonds trading which are not *"Green"*.

For example, China Communications Bank issued a US$4,000m Green bond in 2016. Some Governments such as France and Poland have also issued Green bonds directly. Most European green bonds have maturities of between 5 – 10 years (with some exceptions). Usually the stated use of proceeds of the funding is to introduce an environmentally focussed project within the organisation which has issued the bonds which might include, for example reducing carbon emissions. However, the capital raised is often fungible with an issuer's treasury cash position and it is therefore difficult to validate that the proceeds have been used exactly for the purpose stated when the bond was sold.

Whilst Green bonds aim to achieve environmental impact, their issuance and use has been dominated by large commercial and state sponsored organisations and they have been issued in relatively large sizes. It may be possible to do a smaller scale (e.g. £30m or less) self-labelled Green bond in the UK as a retail offer to the public. Further analysis would be required in order to confirm the likely appeal of any retail offer, for example to consider whether the terms available from a UK retail bond offer would achieve more favourable financing terms than from a bank or lending fund or indeed versus a non-Green retail bond.

Table 2: **Summary of characteristics of Green Bonds issued in Europe in 2017 Year to Date**

NAME	AMOUNT ISSUED	CURRENCY	DATE	MATURITY	YEARS	INDEPENDENT REVIEW
Senvion	400,000,000	EUR	May-17	Dec-22	5.6	None
Lyse AS	500,000,000	NOK	Apr-17	Apr-23	6.0	CICERO
TenneT Holdings	1,000,000,000	EUR	Apr-17			Oekom
NWB Bank	1,250,000,000	SEK	Apr-17	Apr-25	8.0	CICERO
SNCF	1,000,000,000	EUR	Mar-17	Mar-34	17.0	Oekom
Engie	700,000,000	EUR	Mar-17	Mar-24	7.0	Vigeo Eiris
Engie	800,000,000	EUR	Mar-17	Mar-28	11.0	Vigeo Eiris
Atrium Ljungberg	200,000,000	SEK	Mar-17	Mar-22	5.0	CICERO
Atrium Ljungberg	1,100,000,000	SEK	Mar-17	Mar-22	5.0	CICERO
Entra ASA	750,000,000	NOK	Mar-17	Mar-24	7.0	CICERO
Iberdrola	1,000,000,000	EUR	Mar-17	Mar-25	8.0	Vigeo Eiris
NAB	500,000,000	EUR	Mar-17	Sep-22	5.5	DNV GL
EIB	750,000,000	SEK	Mar-17	Mar-27	10.0	None
Gen-I Sonce	14,000,000	EUR	Mar-17	Mar-24	7.0	None
Caisse des Dépôts et Consignations	500,000,000	EUR	Mar-17	Mar-22	5.0	Vigeo Eiris
KfW	250,000,000	GBP	Feb-17	Jun-20	3.3	CICERO
SFF (Fabege)	300,000,000	SEK	Feb-17	Feb-22	5.0	CICERO
SEB	500,000,000	EUR	Feb-17	Feb-22	5.0	CICERO
Iberdrola (green loan)	500,000,000	EUR	Feb-17			Vigeo Eiris
Fabege AB	300,000,000	SEK	Feb-17	Sep-19	2.6	Sustainalytics
SFF (Fabege)	300,000,000	SEK	Feb-17	May-20	3.3	CICERO
Republic of France	7,000,000,000	EUR	Jan-17	Jun-39	22.4	Vigeo Eiris
EIB	300,000,000	EUR	Jan-17	Nov-26	9.8	None
NWB Bank	3,000,000,000	SEK	Jan-17	Jan-23	6.0	CICERO
Repower (Green Schuldschein)	50,000,000	EUR	Jan-17	Jan-25	8.0	Sustainalytics
EIB	3,000,000,000	SEK	Jan-17	Jul-22	5.5	None
Alpha Trains	250,000,000	EUR	Jan-17			Sustainalytics
Enel	1,250,000,000	EUR	Jan-17	Sep-24	7.7	Vigeo Eiris
Strasser Capital	30,000,000	EUR	Jan-17			Oekom

Source: Climatebonds.net

3.5 SUITABILITY OF TRADITIONAL FORMS OF FINANCE, SOCIAL FINANCE, GREEN BONDS FOR UK NATURAL CAPITAL FINANCING

Traditional forms of finance

Most traditional forms of financing are heavily focussed on commercial asset values exceeding financing requirements, or commercial cashflows exceeding loan repayment values in order to convince lenders to participate in a project. Where this is the case financing costs will often be lower where mainstream finance is used (though terms may be more onerous) instead of social/environmental impact focussed finance. In the commercial sector, the most financially robust projects generate significant competition

from many capital providers and thus the cost of finance that they can access will be the lowest in the market due to both competition and economies of scale achieved by the larger commercial lenders. Whilst commercial forestry may fit these criteria, most projects which have a core social or environmental impact attributes are unlikely to do so[15].

Social finance

Established forms of social finance are primarily designed to make sources of financing available to social enterprises where traditional sources of financing are unavailable due to lack of security or cashflows. These investors are likely to be available for environmental / forestry related projects to the extent that there is a simultaneous social impact. The creation of social impact is a necessary condition of any bank or fund that has received investment from Big Society Capital. One or two "social" lenders already include environmental impact in their lending criteria including lenders, for example Triodos bank and Ecology Building Society, both of whom offer traditional bank loan products, primarily on a secured basis.

Green bonds

Whilst a significant proportion of green bond issuers have ringfenced the proceeds to achieve genuine environmental objectives there are many issuers who have alternate issuing incentives. For instance, many mainstream institutional investors are now looking for "Green" investments if they offer similar risk/return prospectus but with explicit green credentials and a large utility company might be able to issue a Green bond at a slightly lower interest rate than for a non-Green bond given the additional investors it would attract. Most mainstream bond issuers seek to optimise their coupon costs to a very high tolerance and a decimal of a percentage point in interest cost reduction could reduce annual borrowing costs by $1m or more on a $1bn bond issue. This means that there are strong incentives to issue a Green bond if the finance team stands to hit their financial KPIs by doing so, whether or not the bond meets a third party review criteria or not (which is optional to an issuer when self-labelling a bond).

A second challenge with green bonds is that, by value at least, most green bonds are in effect mainstream "commercial" bonds from a financial stand-point. As with commercial bonds, investors demand cashflow and asset coverage ratios (ratios which reflect the riskiness of the bond or otherwise) which are similar to those for a non-Green bond limiting any advantage to be had of raising finance more easily. As far as we are aware there has not yet been a green bond issued where the security is natural capital economic value or environmental return rather than purely commercial asset value or commercial cashflow.

However, the main issue with large scale green bonds (from a private issuer) targeted at institutional investors for forestry or natural capital is still the lack of sizeable investment opportunities discussed in section 2.4. Smaller retail issues targeted at environmentally

[15] Whilst we recognise that commercial forestry in the UK must meet UK Forestry Standard requirements (e.g. mix of species, minimum of 15% open space etc) and will deliver wider social and environmental benefits, we anticipate that the degree of impact desired from projects using innovative financing methods considered here to be more substantive.

conscious smaller investors could be further investigated and have been proposed in the 2012 EnviroMarket report[16] discussing exploring bonds for woodland creation. As discussed in 3.3. point 2 UK platforms already exist for retail investors to invest in bonds which generate environmental impact although they usually do not promote the issues as green bonds explicitly.

Other structures

For the purposes of this report, we believe that there are social investment structures that merit further consideration and each are discussed further in the next three sections of the report:

A. Collaboration and partnership models which may allow organisations with interlocking aims and objectives to work together to develop large scale investible projects;

B. Community funded forestry could encourage closer community interaction with local woodland projects encouraging investment;

C. An environmental impact bond would use payment by results contracts and be the environmental equivalent of social impact bonds which are currently spearheading social investment in the UK.

3.6 COLLABORATION AND PARTNERSHIP MODELS

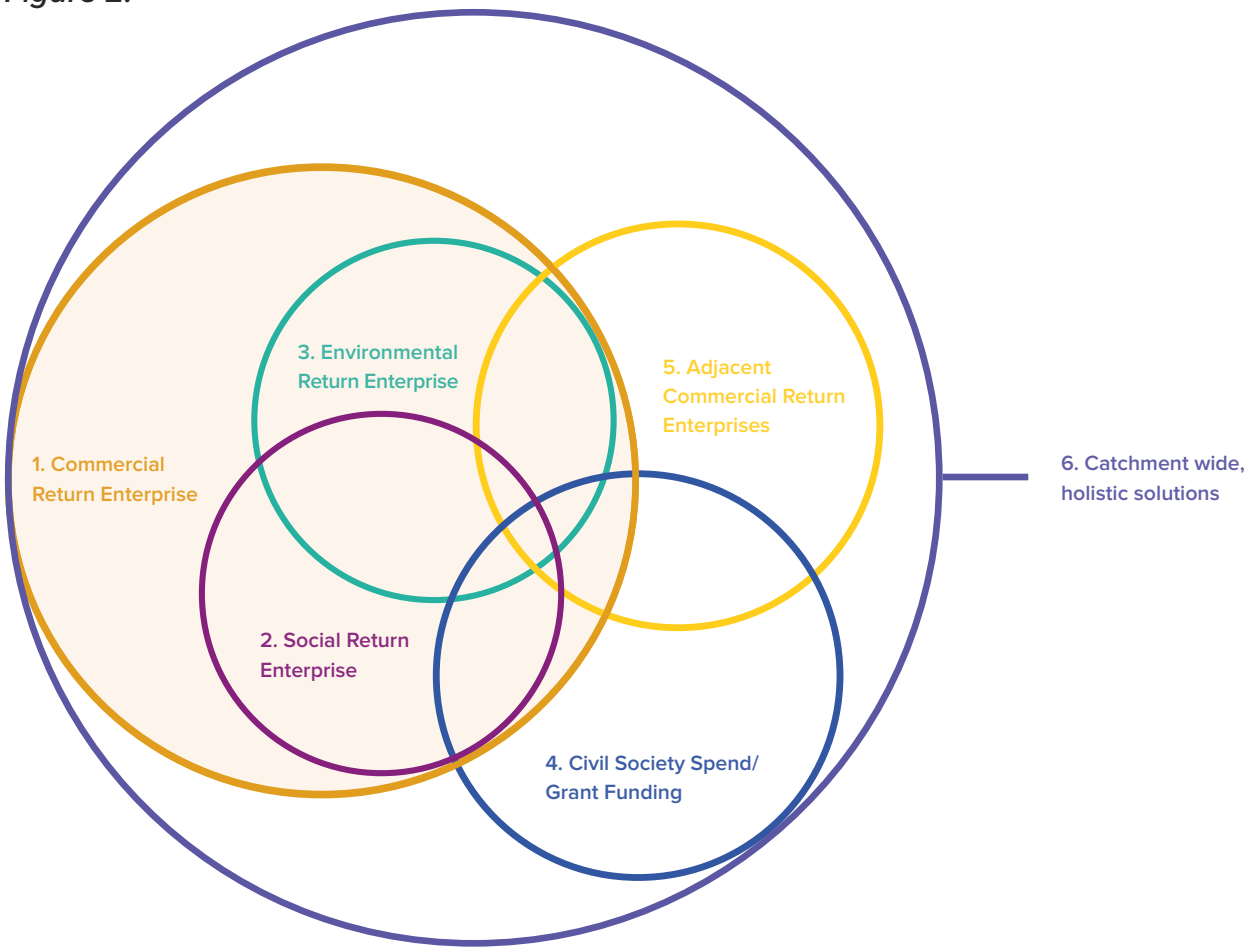
The UK social investment ecosystem has used collaboration extensively and this has been a significant contributor to its growth and success. For example, Government, local authorities, social enterprises and in some cases commercial entities have all worked together as partners in delivering much needed national and local services generating direct social impact.

There is significant potential with environmentally focused enterprises to either partner or collaborate with organisations that have complimentary aims and objectives or operate in the same geographic location. This could both increase the size and the feasibility of financing for environmental projects. Within social investment, a key way this has been enacted is through national and local government intervention funding being directed to social enterprises and similar approaches may be possible here.

Schematic of organisation types and ability to either collaborate with other organisation types or for a single organisation to operate with more than one primary objective / stakeholder mission.

[16] Exploring the Use of Bonds to Support Woodland Creation March 2012 by EnviroMarket

Figure 2:



In the above diagram the orange shaded area (type 1.) represents organisations which generate trading profit. By our definition both environmental return and social return enterprises will be a subset of commercial return enterprises as they must operate with an annual surplus to be in a position to repay investment capital. We assume that types 2. and 3. are social and environmental enterprises which have dual objectives of surplus generation and impact delivery. A significant overlap exists between 2. and 3. where an enterprise could deliver both social and environmental impact akin to Rhondda valley biomass in section 4.4. Equally two enterprises could partner and share resources to achieve both impact objectives. Civil society (4.) represented by local government, national government or centrally funded agencies is already a significant partner, purchaser and investor in social enterprises and perhaps has a role to play in environmental enterprises too. In many cases an independent commercial for-profit organisation (5.) would have reason to partner with an environmental enterprise to achieve shared objectives. Finally 6. represents occasions where a geographic area such as a water catchment area could formulate an arrangement for a number of enterprises, social organisations and civil groups could work together to achieve wider reaching change.

Collaboration can achieve many objectives but in the case of forestry it may well be the case that managers of forestry projects can work with other enterprises to increase the financial sustainability returns available to a level which would attract larger scale financial investment.

Some initial ideas of practical examples of where this might work are as follows:

A. Civil society partnering with environmental enterprises. This has already been done with social impact bonds and is discussed in section 6. There is considerable scope to partner with Government to explore whether it is possible to commission outcomes with both hard engineering response to environmental objectives, as well as natural capital related activities. Civil society may also encourage environmental impact service expenditure alongside other public service funding, for example through large civil infrastructure projects, by awarding them as contracts with explicit environmental objectives.

B. A large commercial forestry operation could be partnered with an environmentally focussed enterprise which could defray the costs of the latter and possibly improve either the marketability, sustainability or productivity of the commercial partner.

C. As in the case of the Rhonnda Community Biofuels project (more detail provided in section 4.4) a number of small enterprises could work together to achieve both environmental and social outcomes.

D. Examples of a forestry enterprise working alongside an adjacent profitable business would be where an agricultural business could be run next to a forestry concern or agro forestry could be undertaken at the same time as traditional woodland management. Similarly, activities such as leisure businesses (eg log cabins, sports) can be run on active forestry sites.

E. Holistic geographic area / water catchment focussed activity bears further examination as a potential investible impact option. If some of the large fiscally strong institutions within a catchment area (such as large corporates, local government, public service companies) see value in an environmental project they could be convinced to collaborate to fund project expenditure on an ongoing basis which would assist in defraying the costs of a forestry enterprise. This could enhance financial sustainability and enhance the ability for a natural capital financing. This is more likely to be possible in rural areas that can support significant woodland planting, such as in parts of central and northern England, parts of Wales and Scotland where water catchment for public water supply is an important land use. The Catchment Based approach project is a community led organisation which is pioneering and supports this framework.[17]

The concept of partnership and collaborative models is not new but is an obvious way of achieving twin objectives where the underlying activities involve more than one party. Whilst the specific project examples are not well developed here, additional work could examine more practical situations where this approach may work. The twin objective philosophy may also work within a single organisation, for instance a number of profit-with-purpose social enterprises run a cross-subsidy model where a commercial revenue stream is used to subsidise impact generation. In this instance, the dual objectives of financial sustainability and impact are enshrined within a single entity. A good example of this is One Water, a bottled water brand set up to wholesale bottled water but with an explicit mission to deliver clean water to deprived communities in developing countries with any profits generated.

[17] https://www.catchmentbasedapproach.org/about

4. Community funded forestry projects

Community ownership of land is often held through community land trusts (CLTs) which are non-profit legal entities set up to own community land. CLTs are a relatively well developed concept in the UK with established legal structures[18] [19] and a specific objective to be of benefit to the relevant local community.[20] Communities can also own land through different legal structures, for instance a company limited by shares, but only a non-profit structure prescribed by CLT regulation prevents shareholders from making an excess capital return which could be at the expense of the local community.

Most commonly, a CLT will use a legal structure that is a form of co-operative organisation, such structures contain an asset lock and therefore prevent shareholder members from benefiting from capital gains at the expense of the community. An asset lock is a constitutional device that prevents the distribution of residual assets to members. The purpose of an asset lock is to ensure that the public benefit or community benefit of any retained surplus or residual value cannot be appropriated for private benefit of members. Some forms of CLT can also issue loss absorbing capital in the form of (non-tradeable withdrawable) shares with an exemption from oversight by the Financial Services Authority or the Financial Services and Markets Act financial promotion regime (both costly processes for most equity issues). This allows a CLT to raise equity-like capital which can be used as a deposit to undertake borrowing in order to purchase large tangible assets, such as land. Given the presence of an asset lock in the structure, a CLT can often also still apply for and receive grants to assist with funding, for an example from the Power to Change scheme[21].

A CLT legal structure allows all members of the community to participate in the community share issue and have equal enfranchisement irrespective of investment as the governance is based on one vote per member independent of investment size. Whilst a CLT is able to generate a surplus on an annual basis, only a limited proportion of this can be shared with the financing members as interest. The majority of the surplus must be used for the benefit of the community.

4.1 COMMUNITY ASSET OWNERSHIP STRUCTURES

Community assets are defined as:

- Land or buildings that are owned and managed by community based organisations;
- Capable of generating a profit that can be reinvested into activities that benefit the community

Recent years have seen Government support for community ownership of assets, with specialist support made available through initiatives such as *'Power to Change'*

[18] http://www.communitylandtrusts.org.uk/_filecache/3d8/4e6/196-introduction-to-legal-formats--for-website.pdf

[19] usually incorporated as an Industrial Provident Society (IPS) or a Community Benefit Society (CBS) both forms of co-operative where a CBS also has a statutory asset lock

[20] http://www.communitylandtrusts.org.uk/what-is-a-clt/about-clts

[21] http://www.powertochange.org.uk/

Key features of CLTs

CLTs are not the only structure through which a community can operate a community asset, however they are a widely recognised concept in the sector. In legal form they can be structured as a Community Benefit Society, Charity or Company limited by Guarantee. However, CLTs themselves are defined in law so there are certain things that a CLT must be and do:

- A CLT must be set up to benefit a defined community;
- A CLT must be not-for-private-profit. This means that they can, and should, make a surplus as a business, but that surplus must be used to benefit the community;
- Local people living and working in the community must have the opportunity to join the CLT as members;
- Those members control the CLT (usually through a board being elected from the membership).

Key features of Community Benefit Societies (CBS) and community shares

CBS are a popular legal form for CLTs and provide an effective route to financing community assets through the sale of community shares. Community shares are a form of share capital that is only available to co-operatives or community benefit companies. Community shares have raised £100m since 2009[22]. Distinctive features[23] include:

- Members just have one vote, regardless of how much they invest
- Shares will never be worth more than investors pay, and may depreciate in value but members may receive some income (usually a rate of interest capped in the articles of association) and can, in theory, withdraw shares
- Shares are withdrawable to the extent that enough surplus has been generated that can be used to repurchase the shares at their issue value

4.2 EXAMPLES OF COMMUNITY-OWNED PROJECTS:

FC United – Manchester based cooperative football club

Raised investment to finance purchase of football ground

- Investment raised: £2m
- Members: 2,000
- Typical investment size of investment is £500 or less
- Up to 2% interest paid from year 4
- 30% tax relief available under EIS

[22] http://communityshares.org.uk/find-out-more/what-are-community-shares

[23] http://CommunityShares.org.uk

Cultivate – Oxford based food-growing social enterprise
Investment required to operate market garden and run mobile veg shop

- Investment raised: £80k
- Members: 62
- Investments are for a minimum term of 3 years with annual limits on withdrawals of 10% of share capital
- no interest payable for the first 3 years

Broom Power – renewable energy project based near Ullapool
Raised investment to build a hydro-electric scheme on Forestry Commission land

- Investment raised: £900k
- Seeks to pay an interest rate of 4% after the scheme has been built
- Investments are for a minimum of 5 years

The Ecological Land Cooperative
Seeking to raise funds to encourage residential small holdings for new entrants into farming and horticulture

- ELC buys land and then seeks planning permission to split it into small holdings which it then sells at sub market value on long leases
- First projects in North Devon and East Sussex
- Seeking to raise £340,000
- Shares are available in £500 units upwards
- ELC seeks to pay a 3% interest rate

4.3 WHY CONSIDER THIS MECHANISM?

A community usually has the strongest emotional and motivational tie to places near to where they live. They are therefore often best positioned to maintain a local asset most efficiently, will likely gain the most leisure utility from a plot of land, are well placed to act as customers for any service offering and provide workers / managers of any commercial activities on the site. They are incentivised to operate land under their ownership to the benefit, commercially, socially and environmentally of the local community which means they are more likely to ascribe social or environmental value to a site than a typical commercial shareholder would.

Many community organisations such as CLTs, have asset locks and therefore are better able to preserve the environmental and social benefits of a forestry related enterprise. This can come at the expense of commercial profitability of an enterprise but there are operating examples of community owned enterprises which generate attractive financial returns whilst operating under an asset-locked constitution (see section 4.2 above).

In theory most of the operational surplus generated by CLTs are reinvested in the primary asset strengthening the financial sustainability of the ownership organisation over time. However debt costs can be paid out of surplus, repurchasing exiting investors' shares and limited levels of interest on community shares are also paid from any surplus generated.

Of potential financing structures available to capitalise forestry enterprises, community owned enterprises probably offer the most flexibility in terms of scale. Whilst institutional investors require relatively large projects to actively invest, a community owned enterprise could operate with as little as several thousand pounds of capital. This means that they offer an effective structure to take over the operation of the smallest areas of land which might be suitable to generate a woodland based environmental and community return.

4.4 WHAT IT COULD LOOK LIKE IN UK FORESTRY CONTEXT?

Both the legal structure and business model can be flexible depending on the preference and objectives of the community concerned. Business models could be focused on leisure, renewables, biofuel or potentially agro forestry or a combination of a forestry related activity and more commercial enterprise.

In a paper on the subject, Landscapes for Life put forward four variations of both ownership structure and business model for community ownerships of AONB's (of which the first two utilise the common CBS / CLT structure, whereas structures 3 and 4 do not benefit from asset locks)[24]:

1. **Establishment of a new Community Benefit Society to purchase woodland freeholds.**

   For example:

   a) Stroud Woodland Community Benefit Society raised £32,000 to buy Folly Wood.

   b) The community forest farm raised £42,000 from members to develop a community-owned forest farm at Llwyn Ffranc near Abergavenny, with an emphasis on low-carbon food production and forestry.

2. **Establish a Community Benefit Society to establish social forestry enterprise.**

   For example:

   a) Woolhope Dome Community Woodfuel Co-operative Ltd will act as an energy services company selling low carbon heat and benefitting from the renewable heat incentive.

   b) They intend to raise £324,000.

NON-ASSET LOCKED EXAMPLES:

3. **Establish a private share company as vehicle for High Net Worth Individuals to invest in renewable energy scheme.**

---

[24] Transferable Models for Securing New Finances for Delivery of AONB Management Plans by Landscapes for Life, 12 June 2012.

For example:

a) Tamar Community Trust will be structured as a private share company and seeks to raise £200k from HNW investors

b) Investors will benefit from EIS tax relief

4. **Establish a public limited company to run a forest enterprise, there are only one or two examples of this in the social sector but;**

   a) The Ethical property company PLC has undertaken 4 share issues raising £12.5m

   b) The shareholders have one vote per share and can enjoy full capital uplift in the value of their shares.

More holistic visions have been created around a forestry focused social business both from a business model and community benefit perspective. One idea for a wood harvest specific models include that postulated by Rhondda Valley Community Biomass Fuels which proposes managing a piece of woodland on a coppice system, using 750 tonnes of fuel each year for a biomass boiler in a single community. The biomass generators provide revenue from paying customers together with a Government feed in tariff subsidy and are also used to heat poly tunnels which are used for market gardening. The coppice system potentially sequesters more carbon dioxide than older uncoppiced woodland[25] and could be positioned on sites which would benefit from afforestation for flood management.

Conservation needs could be incorporated on a small scale into community enterprise models typically as an advantage that the local community would directly benefit from – eg: flood water management

4.5. WHAT ARE THE POTENTIAL BARRIERS TO COMMUNITY OWNED PROJECTS WORKING?

Many areas suitable for forestry related enterprise are relatively remote from habitation and therefore local communities which makes popular involvement more challenging than for locations within or near to villages and towns. Furthermore some areas suitable for this form of enterprise will be large in scale which might exceed the financial capabilities of smaller community organisations.

Given that most community-owned-assets are capitalised by individuals investing less than £500 each and many have fewer than 100 members total financial resources are limited compared to more commercial organisations. Given the market value of land, this means that community organisations are likely to have limited ability to purchase land, at least on any meaningful scale. They will therefore need to look at alternative routes to become managers of forestry sites, for instance by asset transfer from local authorities, borrowing money from a larger scale charity or foundation for the purpose of land purchase or through leasing from existing land owners.

[25] https://www.rhonddacbf.org/, Chris Goodall, Partner at Oxford Climate Associates

4.6 HOW WOULD A COMMUNITY FUNDED FORESTRY PROJECT WORK?

Widely recognised best-practice for a community shares offer is for the process and marketing documentation to be peer reviewed via the Community Shares unit (Communityshares.org.uk). Several other organisations exist who are able to assist applicants with the process including for example Co-Operatives UK and the Plunkett Foundation, amongst many.

The key documented components of a community share offer are as follows:

1. A Governing document setting out the rules of the society
2. A community engagement programme to ensure the society represents the community
3. A business plan describing the business model and financing plan
4. Financial projections which are typically incorporated into the business plan
5. An offer document setting out the shape of the community shares offer to investors together the with society objectives and financial projections
6. An application form which would normally be enclosed together with the offer document

The Community Shares unit was set up to act as a voluntary self-regulation body for the community shares sector. In following best practice the above documents / components once developed would be reviewed by the Community Shares Unit peer-review practitioners with the objective of achieving a Community Shares Standard Mark which vouches for the clarity and due process of the offer.

It is important that the business model has a prospective source of revenue which will support the projected operating costs of the organisation. To the extent that interest is projected to be paid to community shareholders a surplus would need to be generated over and above operational costs. In the case of new forestry planting it's likely that near-term revenue streams would need to be sought to cover the gap between planting and woodland maturity to cover any interest requirement.

4.7 COMMUNITY FUNDED FORESTRY PROJECTS CONCLUSIONS:

Community owned assets benefit from harnessing a community's interest in a local asset which improves the chance that the asset is carefully managed meeting all stakeholders objectives rather than just the financial investor's objectives. The community typically provides the majority of risk capital to underwrite the success or failure of the project and the structure is flexible for business model, governance, social, environmental and financial returns.

The flexibility also allows relatively small projects to be operated which would be unviable for more mainstream funding approaches. However larger assets are less likely to have the same community feel and are therefore potentially less suitable for this model. Whilst the community members and users of a community asset are likely

to benefit and recognise the natural capital value of the site concerned, it is unproven as to whether community owned organisations have the ability to raise capital secured exclusively against natural capital, so a robust business model is still required. Many community share investors are altruistic but the lack of a prospective cash dividend (which natural capital cannot pay without an associated explicit cash revenue) is likely to dramatically diminish the amount of capital raised and/or the success of a fundraise in reaching the minimum viable start up funds

5. Environmental Impact Bonds (EIBs)

Environmental impact bonds are closely related to social impact bonds which have become a regular feature of the social intervention commissioning market since 2010 in the UK (see section 3.3). Social Impact bonds allow a commissioner (in the UK usually a Government department or local authority) to contract with a smaller charity or social enterprise for service delivery where conditional revenue payments are only made in arrears on the basis that pre-determine social outcomes have been created. These contracts are known as Payment by Results contracts and bear similarities to Payment for Environmental / Ecosystems Services (PES) projects that DEFRA has piloted in recent years.

Smaller social enterprises are typically under-capitalised versus commercial competitors and a social impact bond provides them with private finance that they are able to repay should their service delivery achieve successful outcomes. Should the intervention not achieve the outcomes, the structure is designed such that the private investor is at risk of not having their capital investment returned, but the social enterprise can continue operating given the financing is ring-fenced from assets and cashflow relating to other activities that the social enterprise undertakes. Despite being defined as bonds, SIBs in the UK take on many different types of financing structure and in many cases, bear little similarities with true bonds. After issue, a bond typically provides a number of purchasers with the right to a fixed rate of interest together with the return of their capital at the maturity date. Given that cashflows for payment by results contracts are unpredictable, annual coupons are often not affordable for SIBs, which may wrap up the annual return into a final redemption payment. In order to optimise returns, the capital may be drawn down and repaid in tranches unlike a bond which is usually both issued and redeemed as a singular tranche. Given the contract delivery risk involved many SIBs are likely to have a higher repayment risk than a bond and are therefore more similar to structured finance deals or equity investments.

There are currently no existing environmental impact bonds operating in the UK although there is one operating environmental impact bond in the United States there are at least two other full or part environmental impact international examples planned or completed.

The Peterborough Prisons SIB was the first Social Impact Bond which was set up in 2010[26]

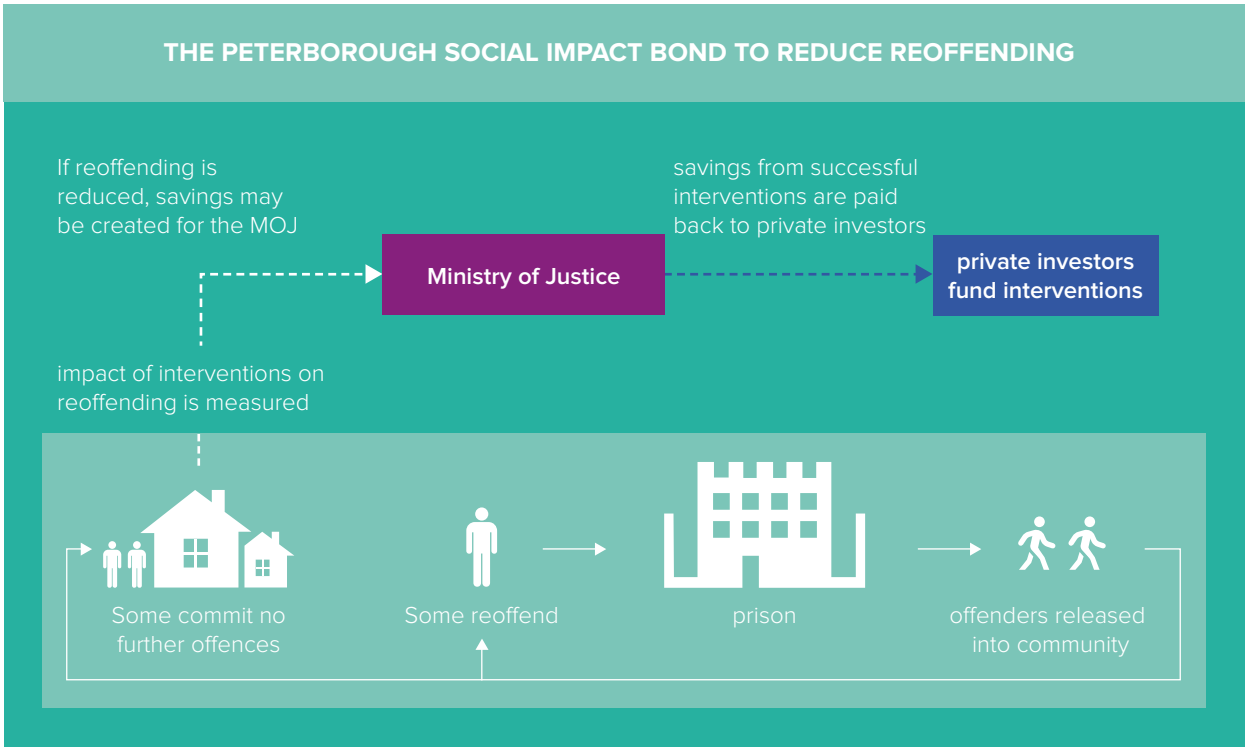
Peterborough Prisons SIB

- **Commissioner:** Ministry of Justice / Big Lottery Fund
- **Social Issue:** Reoffending rates for short term prisoners are high with approximately 60% going on to reoffend. The cost of incarcerating an offender is £40,000 with an annual £40,000 cost for future imprisonment.
- **Intervention:** A consortium of three charities provide support at and subsequent to prisoner release into the community designed to resolve their personal issues and ultimately reduce reoffending rates.

[26] https://data.gov.uk/sib_knowledge_box/ministry-justice-offenders-released-peterborough-prison

- **Outcomes:** Success payments are made where there is a 10% reduction in reconviction rates amongst the target population vs a control group or a 7.5% absolute reduction.
- **Contract size:** The maximum value of success payments would be £8m for 3,000 released prisoners from Peterborough Prison through 3 cohorts.
- **Size of investment:** £5m
- **Investment return:** If the project was a success maximum return to investors would be 13%
- **Investors:** 5 social investors and charitable foundations
- **Operational period:** 7 years
- **Results:** After 4 years of operation, the initial cohort experienced reductions in reconviction of 8.4% vs the control group which was below the target improvement level but positive vs the control group. In Summer 2014 the project was closed early as the Government introduced a new Transforming Rehabilitation programme which replaced the services used under the SIB, so further levels of success were not reported.

Figure 3: Diagram of Peterborough SIB structure



Source: www.Rand.org

5.1 KEY FEATURES OF ENVIRONMENTAL IMPACT BONDS

Environmental Impact Bonds

1. Environmental impact bonds leverage private investment to generate positive environmental impact which is remunerated by *'outcome payers'* (e.g. donors or government commissioners)
2. If environmental outcomes aren't delivered investors stand to lose their capital investment
3. There has been limited application of environmental impact bonds, however this follows the comparatively well-established *'social impact bond'* market for social outcomes (est. market size of c. US$280m through 74 deals globally[27])

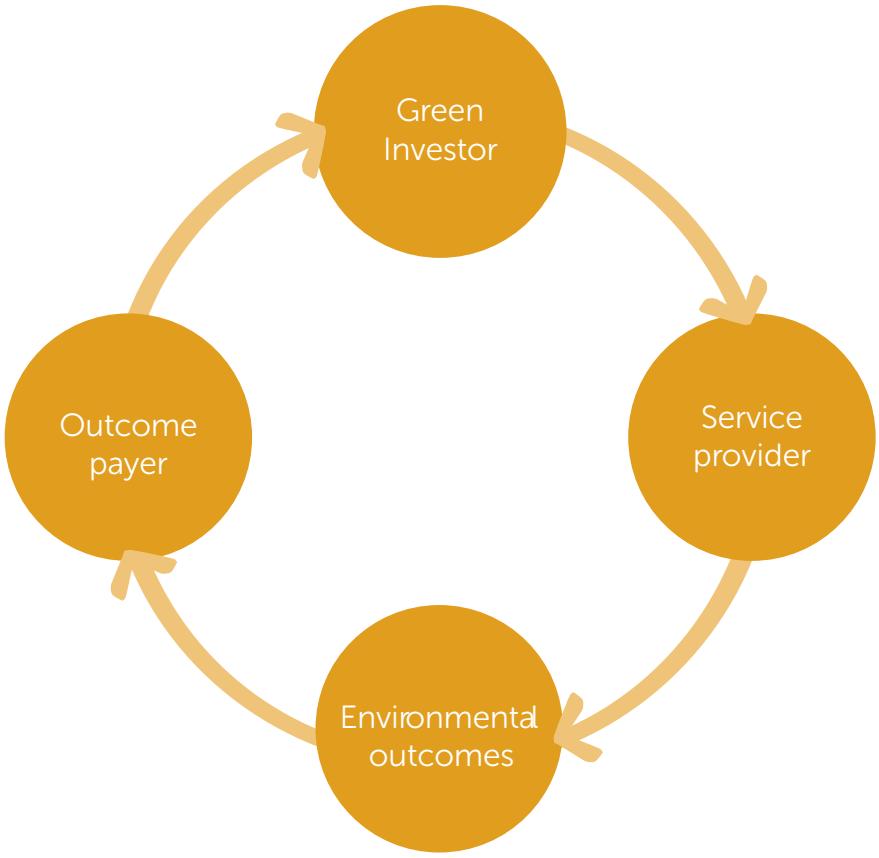


Figure 4: *Schematic of cashflow sequence for EIB, (clockwise) the green investor invests in a service provider, generating outcomes, when verified the outcome payer (a commissioner or donor) makes prescribed payments into the investment vehicle which are used to make repayments to the investor.*

5.2 ENVIRONMENTAL IMPACT BOND EXAMPLES

Set out below are overviews of three impact bond projects which are designed to improve the environment as either a primary or secondary objective. Only one environmental impact bond launched by DC water in the United States in September 2016, is in operation globally and as yet it has not been running long enough to determine the degree to which it has been successful. The other examples here are a

[25] https://data.gov.uk/sib_knowledge_box/ministry-justice-offenders-released-peterborough-prison

development impact bond focussed on sustainable farming in the Peruvian Amazon and a planned forestry fire resistance bond under development in California.

5.2.1. DC Water Environmental Impact Bond

DC Water Environmental Impact Bond summary

- **Size:** US$25m investment
- **Outcome payer & service provider:** DC Water and Sewer Authority
- **Structure:** Tax exempt municipal bond
- **Investors:** Goldman Sachs & Calvert Foundation
- **Interest:** 3.4% with additional outcome payments / penalties
- **Location:** Washington D.C.
- **Outcome payments:** linked to improvements in storm water run off (as this adversely affects water quality). For run off reduction of 41.3% or greater, an additional payment of US$3.3m is made for reduction of 18.6% - 41.3% no additional payment is paid, and for less than 18.6% reduction, investors lose US$3.3m of their capital investment at maturity
- **Proposed intervention:** to construct green infrastructure practices designed to mimic natural processes to absorb and slow surges of stormwater during periods of heavy rainfall, reducing the incidence and volume of combined sewer overflows
- **Other notes:** DC Water typically funds itself in the municipal bond market at rates of around 3.4%. So a project at target run off reduction of 18.6% - 41.3% allows them to finance the project at existing cost of finance and if the project is better than expected DC Water funds the project at a more expensive cost of funds, in the event of failure DC Water raise finance at a lower cost of funds.

[28] https://centers.fuqua.duke.edu/case/2017/01/13/environmental-impact-bonds/

Table 3: **Schematic of DC Water EIB cashflows[28]:**

<table>
<tr><th></th><th>YEAR 1</th><th>YEAR 2</th><th>YEAR 3</th><th>YEAR 4</th><th>YEAR 5</th><th></th></tr>
<tr><td rowspan="2">Financial flows</td><td>£25M principal issued</td><td></td><td></td><td></td><td>£25M principal repaid</td><td rowspan="2">If Green infrastructure Outperforms: Additional $3.3M payment
Performs as expected: No addtional payment
Underperforms: £3.3M claw back from investors</td></tr>
<tr><td colspan="5">Interest payments @ 3.43%</td></tr>
<tr><td>Core project work (DC Water)</td><td>Flow meters inserted to develop baseline</td><td colspan="2">Green infrastructure implemented (i.e., sites identified, interventions constructed)</td><td>Flow meters reinserted to measure impact</td><td>Evaluation validated to trigger payments</td><td>If Green infrastructure Outperforms: Accelerate scale/development
Performs as expected: Continue original plan with confidence
Underperforms: Scale back and deploy grey infrastructure instead</td></tr>
</table>

There is limited public information available on this project as the deal was placed privately to the participating investors. However, DC Water and Sewerage Authority are clear that this EIB is based on the social impact bond structures originally developed in the UK. As can be seen from the above diagram the bond is expected to return a cash interest payment of 3.4% annually if the project performs as planned at the point of the payment outcome report.

The performance is measured by flow meters which are installed at various points to measure the impact of the project on water flow. Before a risk share or outcome payment can be made, the opinion of an independent third party (the *"Independent Validator"*), selected by the transaction parties, must be provided that confirms the outcome payment report's findings. Should the project perform better or worse than expected (as set out in the above diagram), investors are expected to receive a $3.3m bonus or penalty respectively against their initial $25m investment after interest payments. The scheme was launched in September 2016 so to date it is not possible to state how successful the intervention has been. What this example shows, is that with a forward thinking commissioner in place it is possible to structure relatively large scale impact bonds within the environmental segment of the market.

5.2.2 Rainforest Development Impact Bond[29]

Rainforest Development Impact bond (RDIB) pilot summary
(sustainable coffee and cocoa farming):

- **Investment size:** US$110k
- **Total size of project:** US$650k
- **Type:** Development / Environment impact bond
- **Prevailing social issue:** The Asháninka people of the Ene River live in remote forest in the Peruvian Amazon. They rely on the forest for food but are impoverished due to extremely limited infrastructure and poor quality health and education services. Moreover, the leaf rust disease has attacked nearly 70% of the coffee production in this region.
- **Outcome payer:** Common Fund for Communities
- **Investors:** The Schmidt Family Foundation
- **Service provider:** The Rainforest Foundation UK
- **Location:** Peru
- **Outcome payments:** Amongst the target tribal community a) Increase of supply between 2013 – 2015 b) Increasing cocoa production to 600KG/Ha or more c) sale of more than 35 tons of cocoa d) collective installation of 0.5 ha of new coffee varieties
- **Intervention:** restoring failed crops, introducing new practices, provide improved disease management processes and post-harvest processes
- **Results:** Each outcome was rated at 0%, 50%, 75% or 100% achievement. Outcomes c) and d) reached 100% success. Outcome a) reached 75% success. Outcome b) was not achieved as productivity fell below the base line level. The investor qualified to receive 69% of their capital back.

The RDIB was not designed to fund an environmental project but was focussed on a community who operate in an environmentally sensitive environment where sustainable business is critical to the community's welfare. The RDIB was very much a pilot project to determine whether it is possible to encourage philanthropic funders to provide grant funding triggered by successful outcomes which could be used to repay investment. It proved that donors were willing to act as payors for this type of structure and that when provided with the appropriate incentives, service providers were able to meet rigorous target outcomes, for at least part of a set of strategic objectives. The fact that the investors

[29] http://common-fund.org/newprojects/project-overview/project-details/news/sustatinable-cocoa-and-coffee-production/?tx_news_pi1%5Bcontroller%5D=News&tx_news_pi1%5Baction%5D=detail&cHash=8187b417a993f1b4b6ac6efc021ea39a

only received 69% of their investment back illustrates the risk for investors in this space but also that for foundations (as investors) this is a more efficient use of capital than traditional philanthropic funding as partial repayment can leverage their financial impact.

5.2.3 Forest Resilience Environmental Impact[30] Bond

Planned Forest Resilience Impact Bond summary

- **Size:** TBC – not yet launched
- **Return:** Expected to provide a *"market rate return"*
- **Land area:** 4-10k acres of forestry
- Designed to bring restoration and better forest management to poorly managed woodland in order to decrease frequency and severity of forest fires.
- **Location:** United States, California, Stanislaus National Forest
- **Outcome Payer:** Rockefeller foundation ($1m funding committed to date)
- **Investors:** TBC
- **Service provider:** Blue Forest Conservation
- **Outcome payments:** generated by savings from United States Forest Service (USFS) and increased water flow boosting water utilities revenue.
- **Other points:** USFS spends more time fighting fires than preventing them and more than 50% of current expenditure is spent on forest fires. Several other agencies that depend on the health of the forests stand to benefit. Water suppliers and power utilities could both contribute to paying for the bonds. Major water users such as breweries and bottling plants could also participate. In addition to reducing the risk of fires, the scheme is intended to allow more rainwater and groundwater to flow downstream to reservoirs, businesses and local homes.

This EIB has not yet been launched and information on its operational structure and technical features are limited at this stage. It is interesting for the Forestry Commission as the focus is on forestry management. In this particular case the forestry management outputs are to generate lower forest fire frequency and improve the flow of water through the catchment area. The ambition is to bring up to 10,000 acres of forestry back under active management which is similar in scale to the type of project that might be started in the UK, if not a different focus to afforestation. However, this structure will need to secure a commissioner, secure funding and deliver on its stated objectives before its efficacy can be determined.

[30] http://www.blueforestconservation.com/#frb

5.3 WHY CONSIDER THIS MECHANISM?

Environmental impact bonds allow a commissioner or payor (typically a Government, NGO or foundation) to value an environmental or economic outcome for which they are willing to make a cash payment. One of the underlying issues that this paper seeks to consider is the degree to which the environmental or natural capital value of forestry can be monetised, possibly by social investment. This approach is likely to be one of the most realistic chances of doing so. However it does need a payor to provide a cash value to an outcome that they commit to pay against. Thus, whilst it shifts the issue from the ability of investors to value an outcome, to the payor having to value an outcome, it does then allow an investor to make a financially risk based decision as to whether to invest in a project which generates environmental outcomes (and hence delivers financial returns).

The payor might agree to value an outcome because it creates savings for that payor. Equally the financial revenue of the State or group of organisations might increase in the event outcomes are met. Alternatively the planned intervention might deliver outcomes more quickly or more effectively than the existing service provider. For instance more CO2 may be captured more quickly than otherwise, even though this does not generate a directly calculable cash saving or revenue increase. In which case, the paying party would have to put a value on this improvement without relying on the cash savings or cash return generated as a guide. The issue of outcomes of uncertain financial value would require the involvement of a payor who has financial wherewithal and strong opinions[31] about the future financial value of such improvements in, for instance CO2 capture – which is probably the most challenging issue for this type of financing structure.

A key advantage of the structure is that once the payment contract has been set up, there should be pure alignment between the investor and the paying counterparty. The investor only stands to make a return where the targeted environmental impact is achieved and vice versa with respect to a loss.

A further benefit of an impact bond structure, is that the risk of a project succeeding or failing with respect to impact is carried by the investor rather than the payor or service provider. This can encourage innovation amongst service providers and suppliers to generate the outcomes which the payor seeks.

Payors or commissioners are typically organisations who have to bear the cost of an intervention not occurring. For instance, the US Forest Service has sizeable expenditure on fire fighting. Whilst preventative activities may help reduce the cost associated with fire fighting, it may be impossible to increase expenditure of preventative activities without compromising necessary fire and rescue services. An impact bond allows a time transformation that overcomes this challenge: impact investors provide funds to finance

[31] Such a perspective may be provided where there is a policy objective to achieve a certain outcome or an existing or pending regulatory requirement.

preventative activities and only once pre-determined outcomes (such as a reduction in fires) and associated savings have been realised would the US Forest Service need to repay the investor.

Traditionally, much government commissioning (which is more commonly used in the social services sector) has used 'fee for service' contracts. In contrast to an impact bond, for which a commissioners payments are tied to outcomes, 'fee for service' contracts are based on input activities. The impact bond structure is uniquely focused on outcomes and therefore ensures that commissioner payments are made only in relation to successful delivery of outcomes transferring the project risk from the commissioner to the investor. Alternative models are available which do not involve full risk transfer from the commissioner to the investor. These might include a structure where the commissioner pays for approximately half of the service input costs directly but then only pays for the remaining part of the service on an outcome basis.

Finally, impact bonds also offer the opportunity for co-commissioning, i.e. where more than one organisation would recognise benefits from a particular service being successfully delivered. The impact bond structure allows a consortium of payors to pay for the same, or closely related, outcomes. Co-commissioning may be particularly useful when outcomes benefit multiple actors and when a single actor would be unable to provide enough revenue to fund an environmental impact bond. This particular structure, for example, would need to be considered where a holistic water-catchment scheme is planned with multiple outcome types and commissioning counter-parties.

5.4 WHAT COULD IT LOOK LIKE IN UK FORESTRY CONTEXT?

The first analysis would be to determine which areas of public or quasi public expenditure relate to outcomes that are affected by the natural capital of forestry. For instance, in relation to infrastructure expenditure, there may be significant funding used to prevent flooding. If traditional methods of achieving this outcome are input focused, for example, say construction of man-made waterways, and if afforestation could achieve similar flood alleviation at a lower cost, some of the savings could be used to pay revenue on payment by results contracts.

Other water course related outcomes might be related to clean rivers, reducing or increasing river volume, raising or lowering aquifer levels. There may be other environmental/social outcome segments for which contracts could be arranged such as altering atmospheric gasses / pollutant ratios, altering localised weather, reducing localised fossil fuel burning, limiting impact on global warming, or reducing healthcare expenditure by encouraging people to exercise in forests.

UK environmental impact bonds would most likely follow a similar operational structure to SIBs, where an investment vehicle is typically set up to take on investment. This vehicle contracts a service provider (for SIBs, usually a social enterprise) with a separate contract. To the extent that outcomes are met, the cashflow pass to the investment vehicle which

can then return capital to the investors. As for SIBs, the type of investment varies but a SIB is rarely akin to a bond in terms of risk profile. Most UK SIB investments for an investor provide what is more akin to equity risk in that if successful outcomes are not generated, the investor stands to lose a substantial part of their investment if not all of it.

An example of a relevant potential UK payment by results or payment for environmental services project[32]:

Flood reduction example at Pontbren in Wales:
Planting on former grazing land was shown to improve:

1. Infiltration rates by 67 times and
2. Surface runoff volumes reduced by 78%
3. This is an example of repurposing parts of existing farm land. Creating land that is partly still used for farming, and partly used for ecosystem services

5.5. WHAT ARE THE LIKELY POTENTIAL BARRIERS?

The most challenging component to setting up an environmental impact bond will be the same as for a social impact bond – which is securing the contract from the payor or commissioner. For social impact bonds, the Government has found it challenging to encourage non-central public bodies to fund payment by results contracts. Most operational SIBs have been either wholly funded by a central government body as commissioner or had a 10-20% central government subsidy to encourage local commissioners to commission through payment by results structures. In many cases the 10-20% subsidy has not been sufficient to encourage cash strapped commissioners to adopt a new commissioning approach. To encourage either public bodies or private entities to become environmental payors on outcomes based contracts, it may be necessary for a similar, or even larger subsidy to be secured from a central fund.

Once a commissioner is committed as a payor for environmental outcomes, extensive analysis will be required to understand the financial value that can be attributed to an environmental outcome. Accurate valuation of outcomes is often challenging. When a near-term cashable saving from deploying a preventative measure can be evidenced the process is somewhat easier. Often however there is no cashable saving during the life of the project and in which case typically economic value arguments are needed to determine appropriate values which can be a time consuming process. The next section discusses two methods of valuing outcomes where either the market already determines their value or the payor makes a self-determination of their value. Clearly a service provider is willing to provide the service at cost plus a margin of some degree but if the outcomes values are lower than this value proposition the business model won't work.

[32] http://www.reforestingscotland.org/wordpress1/wordpress1/wp-content/uploads/2016/09/Pontbren-the-Welsh-study.pdf

One consistent challenge around payment by results contracts is the degree to which outcomes can be attributed to the chosen intervention. There are several mechanisms to inform whether outcomes can be attributed. The most robust mechanism would be to undertake several randomised control trials, a less robust approach would be to compare outcomes of the intervention with a historical baseline (in which the selected intervention did not take place). When considering the optimal attribution mechanism for an impact bond it is important to consider the cost and complexity associated, for example randomised control trials are likely to be both more expensive and more complex than an historical baseline.

A further challenge of the use of impact bonds is the often expensive set-up costs. Given the often complex analysis required (outlined above), and need to engage multiple stakeholders, some UK social impact bonds are estimated to have incurred development costs of more than six digits, with investment sizes of little more than that. Given their complexities social impact bonds are comparatively expensive products and as yet there are not commoditised to the same degree as standard instruments in the mainstream financial market.

5.6 HOW WOULD AN EIB PROJECT WORK?

An emerging equivalent to payment by results projects in an environmental context are payment for environment or payment for ecosystem services projects (PES). Existing PES services projects and frameworks provide a useful guide for the practicalities of setting up an environmental impact bond. Potential EIB target segments could be:

1. Flooding
2. Water flow
3. Wind protection
4. Carbon capture
5. Pollution
6. Agro forestry
7. Biofuels
8. Healthcare
9. Soil Stabilisation
10. Biodiversity

In the first instance the specific outcome which is to generate a payment by result output needs to be isolated. The below framework sets out a sequence for isolating the relevant payment outcome[33].

[33] http://www.unep.org/pdf/PaymentsForEcosystemServices_en.pdf

Table 4: **Process to develop a payment for ecosystems services project that can be used as the framework for outcome payments for an environmental impact bond.**

STEPS TO DEVELOP A PES MODEL	
Step 1 – Identify ecosystem service prospects & potential buyers	Defining, measuring, and assessing the ecosystem services in a particular area
	Determining marketable value
	Identifying potential buyers who benefit from the service
	Considering whether to sell as individuals or as a group
Step 2 –Assessing institutional & technical capacity	Assessing legal, policy, and land ownership context
	Examining existing rules for PES markets and deals
	Surveying available PES support services and organisations
Step 3 – Structural agreements	Designing management and business plans to provide the ecosystem service that is the focus of the PES deal
	Reducing transaction costs
	Reviewing options for payment types
	Establishing the equity and fairness criteria for evaluating payment options
	Selecting a contract type
Step 4 – Implementing PES agreements	Finalizing the PES management plan
	Verifying PES service delivery and benefits
	Monitoring and evaluating the deal

This will often need to be done hand in hand with the payor or commissioner (defined by the UNEP as buyers) with whom a contract is required before any private capital can be raised. Typical payors include the following[34]:

Table 5: **Overview of main types of payor/commissioner for environmental impact bonds**

BUYER	MOTIVATION
Private company	*Regulatory markets* **Regulatory compliance** related to greenhouse gas or carbon markets
	Voluntary markets **Reduction of operating and maintenance costs** by investing in ecosystem services
	Hedging of risks (e.g., related to supply of key natural resource inputs, potential future regulation, etc.)
	Increasing investor confidence by proactively addressing environmental issues
	Enhancing brand and improve public image
	Maintaining license to operate by investing in good relationships with communities, non-government organisations and regulators

[34] http://www.unep.org/pdf/PaymentsForEcosystemServices_en.pdf

Private intermediary	Simplifying the supply chain for buyers
	Turning a profit
Government	Implementing international policy (e.g., United Nations Framework Convention on Climate Change)
	Adhering to national regulations to protect environment
	Investing in long-term natural resource supply
	Responding to public pressure
	Averting environmental cataclysmic events (e.g., floods due to degradation)
	Reducing costs (e.g., investing in natural filtration systems rather than building a water treatment plant)
Donor Agency	Act on environmental and/or development mission
	Increase sources of revenue for conservation
NGO	Acting on environmental and/or development mission (e.g., The Nature Conservancy (TNC) currently purchases easements from landowners; payments could become another mechanism to explore achievement of conservation goals)
	Reducing organisation's environmental footprint (e.g., move towards carbon neutrality, water neutrality, or biodiversity impact neutrality – though the latter two terms open to discussion in how they are defined)
Private Individuals	Acting on environmental and social concerns (e.g., purchasing offsets to reduce individual carbon, water, and/or biodiversity footprints)
	Investing in new business ventures (real-estate, etc.)

PES or payment by results schemes usually have an outcome payment framework created by a sponsoring Government entity, use an established service trading system or rely on a self-constructed market[35].

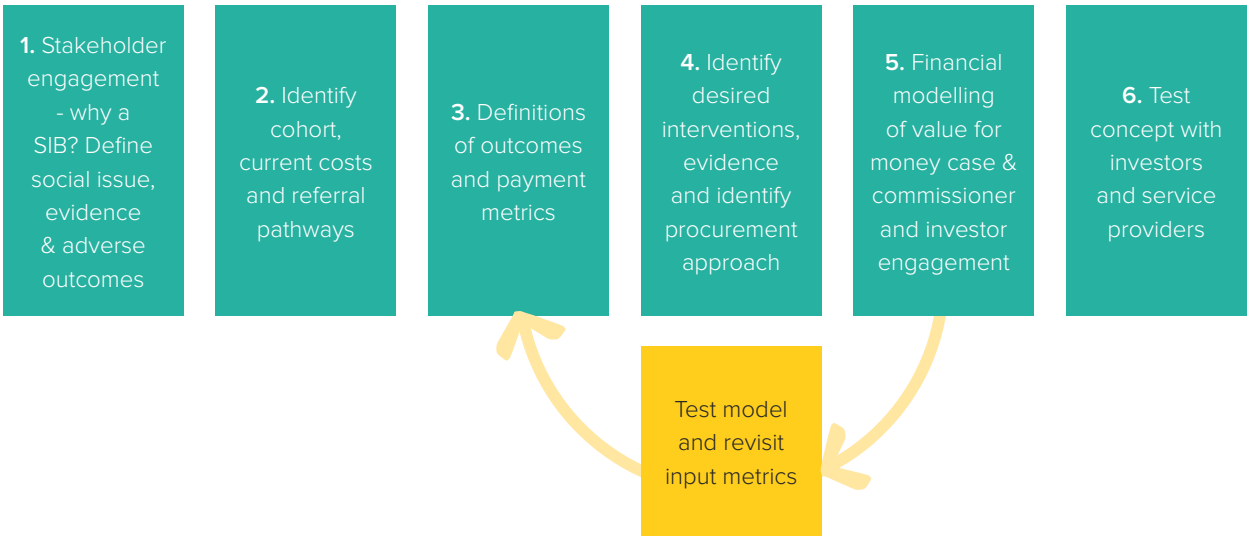
Table 6: Outcome payment systems and frameworks

TYPES OF MARKETS AND PAYMENTS FOR ECOSYSTEM SERVICES	
Public payment schemes for private land owners to maintain or enhance ecosystem services	These types of PES agreements are country-specific, where governments have established focused programs (as in Mexico and Costa Rica). While specifics vary by program focus and country, they commonly involve direct payments from a government agency, or another public institution, to landowners and/or managers.

[35] http://www.unep.org/pdf/PaymentsForEcosystemServices_en.pdf

Formal markets with open trading between buyers and sellers, either: (1) under a regulatory cap or floor on the level of ecosystem services to be provided, or (2) voluntarily	**Regulatory ecosystem service markets** are established through legislation that creates demand for a particular ecosystem service by setting a 'cap' on the damage to, or investment focused on, an ecosystem service. The users of the service, or at least the people who are responsible for diminishing that service, respond either by complying directly or by trading with other who are able to meet the regulation at lower cost. Buyers are defined by the legislation, but are usually private-sector companies or other institutions. Sellers may also be companies or other entities that the legislation allows to be sellers and who are going beyond regulatory requirements. **Voluntary markets** also exist, as in the case of most carbon emission trading in the United States. For example, companies or organisations seeking to reduce their carbon footprints are motivated to engage regulation, in response to stakeholder and/or shareholder pressure, or other motivations. Voluntary exchanges are also a category of private payments (see below)
Self-organised private deals in which individual beneficiaries of ecosystem services contract directly with providers of those services	Voluntary markets, as outlined above, are a category of private payments for ecosystem services. Other private PES deals also exist in contexts where there are no formal regulatory markets (or none are anticipated in the near term) and where there is little (if any) government involvement. In there instances, buyers of ecosystems services may be private companies or conservationists who pay landowners to change management practices in order to improve the quality of the services on which the buyer wishes to maintain or is dependant. The motivations for engaging in these transactions can be as diverse as the buyers, as is explored further in the step-by-step section that follows on finding buyers.

For social impact bonds, the most common buyer of services is either national or local



government using the first method set out in the above table. The formal market route is where legislation is developed to force, say polluters to purchase environmental credits at a certain price which can then be used to fund impact projects. Any of these systems may work for environmental impact bonds but a system where Government is either the direct underlying buyer or linked to the underlying purchasing system is likely to be the most straight forward development option.

Structuring a new impact bond can be a long and technically challenging process that,

for a bespoke project will usually take between 1 – 2 years, but the key stages can be summarised as follows:

Figure 5: **The typical feasibility study process:**

The commissioning contract:
1. Selecting a commissioner
2. Confirming the outcome which the commissioner is willing to pay for
3. Baselining the existing outcomes
4. Estimating the profile of outcomes and volumes after the new project is in place
5. Valuing the outcome changes
6. Agreeing the outcome payments with the commissioner
7. Undertaking financial modelling for the commissioner
8. Agreeing the legal terms for the contract

Governance:
1. Setting up the legal entity which will deliver the service
2. Arranging organisation partnerships and risk share
3. Agreeing governance arrangements

Business model:
1. Preparing project cost model
2. Modelling projected outcome payments and cashflows

Investor interaction:
1. Prepare investor marketing materials
2. Provide evidence that project delivers expected outcomes
3. Model cashflows available to investor versus risks
4. Agree price at which investor is willing to invest
5. Sign investment contract

Delivery:
1. Procure service provider
2. Investor undertakes due diligence of service provider
3. Begin delivering environmental impact project

External expertise is often required for feasibility study for the outcome value assessment and verification; define the outcomes metrics / savings / prices; for the financial modelling of cashflows and legal advice on structure of project owner / commercial contracts. Clearly these activities can be both time consuming and require significant external advice which can add up to a considerable cost.

5.7 ENVIRONMENTAL IMPACT BONDS CONCLUSION

EIBs primary advantage is their direct alignment between impact created and financial return or loss. EIBs are only possible with a motivated payor for outcomes. With outcomes-

based payments funding preventative interventions these projects are designed for longer term impact and therefore require the buying organisation – or payor – to be well capitalised and able to take strong views on the economic value of environmental outcomes. Where this is the case and where environmental outputs are priced, generally the (social or environmental) investment market is well positioned to capitalise innovative approaches to generating the desired change via EIB funded projects.

Compelling measurable outcomes for EIBs for which a buying agency may be able to ascribe value include water quality, health, carbon effects, and biodiversity or education. However their complexity means that the projects need to be relatively large in scale to be operated efficiently and minimum project investment size would likely be in excess of several million pounds in line with existing social impact bonds.
One example which could be further investigated is the possibility of a government carbon guarantee scheme providing a floor or pricing guarantee to carbon sequestering payments which would recognise the environmental benefit of planting new woodland and potentially improve the structural disadvantage new woodland has as an alternative land use currently.

6. Conclusions & recommendations

During the research for this project it became clear that from a purely financial perspective there seem to be two primary drivers for investors to put capital in UK forestry projects. They are likely to do so either because of the commercial value of harvested timber and / or because of the value of the land on which the timber is planted. There are a number of other business models used within a forestry context but our assessment is that the bulk of financial returns, and thus investments are paid for using one of these two propositions.

Impact investment is different from mainstream investment as it seeks to generate social or environmental impact whilst at the same time generating financial returns. The qualification that financial returns are needed is important as it means that a sustainable business model has to be identified in order to generate returns and repay investment capital. Given there is a ready market for mainstream investors in commercial forestry and land, attracting impact investors into the sector, who recognise the value of natural capital, also needs new business models to be developed. In this report we have assessed three models that could be used to engage with impact investors in order to capitalise new forestry projects and there are two models which have been operationally proven to some degree.

1. Environmental impact bonds are a solution to the challenge whereby it is assumed that a payor or commissioner which is typically a government entity or policy driven partner, drives a project forward. In this case the commissioner is willing to value an environmental outcome sufficiently to make a cash payment against successful delivery of that outcome.

2. Community projects are able to encompass lifestyle businesses, such as small scale agro forestry, horticulture, biomass boilers and recreational spend which may not generate large profits, but allow a startup budget to be balanced. The use of smaller scale, lower cost assets together with volunteer resources and small scale revenues allows the recovery of input costs and can thus attract limited investment.

The third model which is focussed on partnership and collaboration is more complex as it requires a general systemic change in how natural capital is valued and how commercial organisations allocate resources to and interact with the environment. There are a limited number of alternative business models available where a significant cashflow can be generated against a natural capital asset such as a forest and associated resources, other than the timber / land banking business models highlighted above. However, an alternative approach might be to look towards private sector corporates in forestry or other sectors who have activities within the same geography or water catchment as potential forestry projects. In such a scenario commercial, community focused, environmentally focused and government entities might be encouraged to work together to redirect part of a viable income stream towards positive sustainable forestry projects which improve community and environmental outcomes for the whole population of an area whether inhabitants, workers or employers.

Mainstream investment requires large scale projects with viable and consistent profit levels that can be used to repay the capital raised at the outset. Public-private partnership projects in local water catchment areas might achieve this scale where other

commercial activity can subsidise projects and environmental impact bonds also have the potential to be scaled to significant size particularly where aligned to infrastructure programme spend.

One final challenging yet intriguing prospect of generating significant revenue for natural resource development and management is for legislation to be developed that requires either Government or large corporates to make cash payments for certain environmental outcomes or services and perhaps the impending prospect of the United Kingdom leaving the European Union may provide the opportunity to consider this approach.

In order to test some of the research in this paper and look to develop a investment market of increased depth which recognises the value of natural capital, our recommendations in the short term would be:

1. Develop small-scale community pilots for forests to be owned and managed by local communities or plots of suitable land owned by local authorities to be transferred to the community. From these pilots, a community forestry programme could be developed to enable fast dissemination of the community model across all of the UK.
2. For the UK to develop an Environmental Impact Bonds showcase potentially focused on natural flooding control, carbon effects, water quality, health, biodiversity or education in partnership and with the support of government agencies, local stakeholders and corporates as commissioners and delivery providers; and social impact investors to provide risk transfer and the capital requirements. The showcase would consist of a first EIB set up in the UK to demonstrate how the model for a payment-by-result commissioning contract works for natural capital outcomes.
3. Over time, we would expect that environmental outcomes prices (developed in order to allow the environmental impact bond showcase to operate) to converge to agreed general unit costs and that the sector can build a Unit Cost Database[36], most of which are national costs derived from government reports and academic studies, as per the social impact sector.
4. Recognising, that surplus generating business models are key to engaging more investment, the larger scale – the better, for a further study potentially for the Forestry Commission in particular utilising a breakdown of the underlying components of the Forestry Commissions Natural Capital asset value. This would have the objective of determining what financially sustainable business models could be ascribed to each underlying natural capital segment in order to validate which component is most likely to be able to be the fulcrum for a business model which is able to generate a financial surplus in order to repay investment.[37]

[36] https://data.gov.uk/sib_knowledge_box/toolkit

[37] From the business model research we have done in this paper, we would anticipate that if a government legislated payment scheme were developed for environmental outcomes (as envisaged in parts 2 and 3 here) this would likely provide the lowest risk financial model to secure investment against Natural Capital value.