

Climate Opportunity Ideas Factory

Land Use: Financing Nature Based Solutions at a Landscape Scale

30 March 2021

Chair

Francesca Osowska

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Edinburgh Science

Edinburgh Science Foundation is an educational charity, founded in 1989, which operates Edinburgh Science's Learning and Festival programmes. We are best known for organising Edinburgh's annual Science Festival – the world's first public celebration of science and technology and still one of Europe's largest – our science education outreach programmes, Generation Science and Careers Hive and our community engagement work.

Our mission is to inspire, encourage and challenge people of all ages and backgrounds to explore and understand the world around them. As leaders in our field of Science Communication, we work year-round to create and deliver dynamic hands-on workshops and exhibitions and inspirational shows, discussions, debates and performances that continually push the boundaries of public engagement with science. Communication and engagement is at the core of all our work and we strive to ensure that this is embedded in all aspects of our organisation.

Edinburgh Science also operates a large-scale international programme of work under our Worldwide arm. It regularly presents events overseas and has been the Major Programming Partner of the annual Abu Dhabi Science Festival since 2011, helping to curate, produce and deliver the event. For international partners, the team at Edinburgh Science provide engaging content, curatorial advice on programming and business planning support, along with expert staff and training for local science communicators.

Our UK and international projects reach a combined audience of over half a million people each year.

The Climate Opportunity Ideas Factory

Edinburgh Science coordinates and runs the Climate Opportunity Ideas Factory - a series of round table meetings for senior Scottish leaders to discuss ideas for action that will enable Scottish enterprises to respond to the climate emergency. The first meeting was in April 2019 when Edinburgh Science Festival awarded the Edinburgh Medal to Christiana Figueres, the Costa Rican Diplomat who was instrumental in bringing about the Paris Climate Agreement. We organised a round table on that day, with leaders of business, public sector, third sector and higher education present. They were challenged by Christiana to collaborate, to act, to not wait for anyone to give them permission, and to use the Climate Opportunity that presented itself for positive change.

Christiana was coming back to Edinburgh in two months and asked to meet again for an update on what this group had decided to do. Two months later, Baillie Gifford hosted a larger group of senior leaders who presented a number of ideas for discussion in this forum, with Christina Figueres and Roseanna Cunningham, Cabinet Secretary for Environment, Climate Change and Land Reform. Many of the ideas have been picked up by attending businesses and organisations to make an impact, and the attendees have told us that this group is of immense value to them, due to the diverse invite list and the facilitated discussions.

The Climate Opportunity Ideas Factory now meets regularly. The purpose of the meetings is to generate new ideas that are then acted upon by those present to achieve steps towards reduced carbon emissions and greater environmental sustainability.

Edinburgh Science is in an exceptional position to bring together cross-sectoral leaders from diverse groups to gather views to identify new ways to work collaboratively to unlock ideas and create opportunities. The Climate Opportunity Ideas Factory has already provided a unique safe space for collaboration, resulting in major ideas for example; a national carbon reserve for offsetting which we know excited many organisations. With connections across industries and many sectors, and no agenda other than to share the science and to see a solution to the climate emergency, Edinburgh Science strongly believes that the time is right to harness the collective power of organisations and minds in Scotland to put Scotland at the forefront of this Climate Opportunity.

Through the Climate Opportunity Ideas Factory we are encouraging, supporting and facilitating these leaders as they address the challenges and opportunities that the climate revolution will bring. The Climate Opportunity Ideas Factory will continue meet regularly and we are excited to work towards bringing innovative ideas into reality as we approach COP26 Glasgow in November 2021.

We would like to thank the many organisations involved in supporting this exciting and unique project, particularly our 2020 Programme Supporters and Founder Members.

Programme Supporters



Founding Members



Sectoral Sub-Group for Land Use

During the last Climate Opportunity Ideas Factory roundtable meeting on 5 November 2020, the need for sector specific focus groups was raised with the following industries/topics suggested:

- Agriculture, Land Use Change and Forestry
- Aviation and Shipping
- Construction and the Built Environment
- Finance
- Greenhouse Gas Removal
- Heat Decarbonisation
- Local Transport and Tourism
- Manufacturing
- Marine Environment
- Power and Hydrogen
- Resources and Circular Economy

The first of these sub-groups to be initiated was for Heat Decarbonisation which met on 17 November 2020, since then further discussions have taken place on heat decarbonisation, transport and the marine environment. Meeting notes can be viewed on our website: www.sciencefestival.co.uk/sustainability

Land Use: Financing Nature Based Solutions at a Landscape Scale

Aim:

We are seeking ideas for development that we plan to share around COP 26 that focus specifically on land use. We hope that these ideas will drive change, and help shape both the UK and Scottish Governments' approach to this important area. In this initial meeting, chaired by Francesca Osowska, Chief Executive of NatureScot (formerly Scottish Natural Heritage), we are aiming to discuss and unpick some barriers and opportunities to demonstrate the impact of nature-based solutions at a landscape scale and financing them.

Background:

From 2022, when peatlands and wetlands are included in Scotland's greenhouse gas inventory, almost a third of the inventory will be concerned with the land. That proportion will grow as other sectors decline. Land use is an essential part of the transition to net zero. From 2045 onward, maintaining a net zero economy will be almost all about how we use the land.

Around 50% of the role of the land in the transition to net zero lies in nature-based solutions (NbS) such as woodland creation, peatland, grassland, blue carbon and other habitat restoration, and the other 50% lies in making sure that other uses (farming forestry, estate management and developments) minimise associated greenhouse gas emissions. The role of healthy soils, in sequestering or storing greenhouse gases, is vital in all uses of the land.

When it comes to land use, mitigation, adaptation and state of nature are inseparable: we can't do one without affecting the others. The finer the scale of integration, the more diversity and the more resilient Scotland will be to the consequences of a changing climate. Resilience is also key to reducing losses from NbS arising from the impacts of a changing climate, including floods, fire, drought, pests, disease etc.

We have several examples of nature-based solutions in many settings, delivering a diverse range of benefits under initiatives such as Peatland Action, Our Dynamic Coast and the Green Infrastructure Strategic Intervention and Clive will provide some examples of these.

The next big challenge is to scale those up to the landscape-scale, integrate them with other land uses, demonstrate the multiple benefits, finance them and to coordinate activity so we deliver the most effective solutions in the right locations. Different interventions and approaches will be required in different parts of Scotland. How we identify the best approach and coordinate that activity is a key challenge that the roundtable can focus on.

The Green Finance Institute, DEFRA, EA and others are currently scoping out a potential Centre of Excellence for Financing NbS. Possible priorities include leadership, collaboration/confidence/trust building, evidence, demonstration, codes and 'standard operating models'.

Method and Purpose:

- To draw on the expertise in the "room" (broadly, nature-based solutions and green finance, land use and management, finance)
- To use the systems map to identify challenges and potential interventions – especially inertia in the land sector
- To use market trends to identify early investment opportunities
- To emphasise that landscape-scale nature-based solutions must be addressed systemically, with many points of entry
- Solutions must be co-produced and co-designed (and this takes time)
- To discuss how we move quickly, but in a coordinated way to deliver these solutions

Agenda

1. Welcome from Edinburgh Science: Dr Simon Gage OBE. 5 min
2. Introductions and scene setting: Francesca Osowska, NatureScot, Chair. 5 min
3. Inspiring examples of nature based solutions: Clive Mitchell, NatureScot. 15 min
4. Sense check what we understand about barriers to implementation (e.g. finance, culture, regulatory barriers, demonstrable benefits). 25 min
 - Systems Map: Professor Jaboury Ghazoul, University of Edinburgh Centre for Sustainable Forests and Landscapes.
 - Green Finance: Robin Parker, Scottish Government.
5. Identify the best opportunities in different locations: Group discussion led by Brendan Turvey, NatureScot. 30 min
6. Overcoming the barriers to realise these opportunities: Group discussion led by Francesca Osowska, NatureScot, Chair. 25 min
7. Outputs and next steps: Francesca Osowska, NatureScot, Chair. 10 min
8. Thanks: Hannah Schlesinger, Edinburgh Science. 5 min

Participant List

| Name | Position | Organisation |
|------------------------------------|--|--|
| <i>Diane Esson</i> | <i>Investment Analyst</i> | <i>Baillie Gifford</i> |
| <i>Iain Russell</i> | <i>Chairman</i> | <i>CKD Galbraith</i> |
| <i>Lucy Stanfield</i> | <i>Chair</i> | <i>Climate 2050 Group</i> |
| <i>Simon Gage (Dr.)</i> | <i>Director and CEO</i> | <i>Edinburgh Science</i> |
| <i>Adam Luto</i> | <i>Development Officer</i> | <i>Edinburgh Science</i> |
| <i>Jessica Monsen</i> | <i>Development Officer</i> | <i>Edinburgh Science</i> |
| <i>Hannah Schlesinger</i> | <i>Director of Development and External Relations</i> | <i>Edinburgh Science</i> |
| <i>James Oliver</i> | <i>Group Marketing Director</i> | <i>Hampden Holdings Ltd.</i> |
| <i>Anne Johnstone</i> | <i>Founder</i> | <i>Fair Futures Partnership</i> |
| <i>Richard Fitton</i> | <i>Associate Director</i> | <i>Finance Earth</i> |
| <i>Helen Avery</i> | <i>Editorial Director</i> | <i>Green Finance Institute</i> |
| <i>Rhian-Mari Thomas</i> | <i>Chief Executive</i> | <i>Green Finance Institute</i> |
| <i>Sandra Holmes</i> | <i>Head of Community Assets</i> | <i>Highlands and Islands Enterprises</i> |
| <i>Clifton Bain</i> | <i>Programme Advisor</i> | <i>ICUN UK Peatland Programme</i> |
| <i>Clive Mitchell</i> | <i>Outcome Manager – Nature and Climate Change</i> | <i>NatureScot</i> |
| <i>Francesca Osowska</i> | <i>Chief Executive</i> | <i>NatureScot</i> |
| <i>Brendan Turvey</i> | <i>Low Carbon Project Manager</i> | <i>NatureScot</i> |
| <i>Graham Esson</i> | <i>Head of Sustainability</i> | <i>Perth and Kinross Council</i> |
| <i>Mark Reed (Prof.)</i> | <i>Professor of Rural Entrepreneurship and Director, Thriving Natural Capital Challenge Centre</i> | <i>Scotland's Rural College (SRUC)</i> |
| <i>Hannah Rudman</i> | <i>Senior Challenge Research Fellow and Data Policy Lead</i> | <i>Scotland's Rural College (SRUC)</i> |
| <i>Robin Parker</i> | <i>Senior Policy Officer (Green Finance)</i> | <i>Scottish Government</i> |
| <i>Hamish Trench</i> | <i>Chief Executive</i> | <i>Scottish Land Commission</i> |
| <i>Malcolm MacLeod (Prof.)</i> | <i>Senior Deputy Principal</i> | <i>Stirling University</i> |
| <i>Jaboury Ghazoul (Prof. Dr.)</i> | <i>Centre Director</i> | <i>University of Edinburgh – Centre for Sustainable Forests and Landscapes</i> |

Meeting Summary

Introduction and scene setting:

- Seeking ideas from participants on how we can scale up and access new sources of finance and investment
- From next year (2022) wetlands and peatlands will be included in Scotland's greenhouse gas inventory – meaning that a third of the inventory will be concerned with the land. This illustrates that to reach net zero, what we do with land and land use is critical.
- Helpful to consider that approx. 50% of land in terms of tackling emissions is based on sequestering (i.e. woodland creation, peatland restoration, blue carbon, other habitat restoration) but the other 50% (farming, estate management, development) is about how we reduce emissions in these sectors. Underpinning a lot of this is the role of soil and healthy soils helping to restore greenhouse gases is going to be vital in the move to net zero and maintaining it.
- Mitigation/adaptation to climate change and the state of nature are inseparable. They all link together with fine degree of integration. One issue NatureScot have been looking at is resilience and importance of diversity in land use / land types.

- Lots of great landscape projects happening all over the country but we need to scale up to create nature, climate and economic benefits and meet Scottish Government targets and beyond. We need to consider how this can best be coordinated and driven forward.
- Who is going to pay for this? Scottish Government has made significant commitments to funding (e.g. £250m for peatland restoration over next 10 years) but it's not enough to achieve the scale of land use transformation that we're aiming for, even when combined with other charitable and stakeholder funding. How can we think about new financial models?

Inspiring examples of nature based solutions (presentation by Clive Mitchell)

- Slide 1: Overview of land use related emissions 'sources' vs nature-based solutions 'sinks' from 1990 to 2030.
- Slide 2: Triple challenge/opportunity of transition to net zero economy requiring major changes in use of land and sea with consequences for state of nature; adapt to climate changes already locked into the system also requiring major changes to use of land and sea; and improvements to state of nature by tackling the main drivers of biodiversity loss. All to happen over same period of time over same areas of land and sea – therefore integration is vital!
- Slide 3: Cutting emissions is not enough – 50% comes from protecting natural stocks and enhancing natural sinks, other 50% comes from other land use (i.e. farming, forestry and development). Additional challenge of ensuring any interventions are resilient to consequences of changing climate – disease, floods, fire, etc.
- Slide 4: Co-benefits of nature-based solutions when done well – human wellbeing, climate change mitigation, biodiversity, resilience, cost savings.
- Slide 5-8: Examples of nature-based solutions
 - Land:
 - Ambitious targets to restore 250,000 hectares of peatland by 2030 with £250m of Scottish Government investment over next 10 years. This will allow about a third of peatland to be restored. Carbon budget stated that we need 48% restored for the UK by 2030. This is not a linear investment and more is needed from private investment sources.
 - Restoration of Riparian woodland has multiple benefits for rivers and floodplains and associated ecosystems and economies.
 - Urban Areas:
 - Green spaces to benefit people and nature (e.g. mental and physical health benefits).
 - Early integration of green spaces and infrastructure maximises benefits.
 - Place Principal aligns resources around a common purpose – critical in meeting net zero targets. To date in Scotland, emission reductions have been achieved organisation by organisation, sector by sector, amounting to approx. 3% reduction a year but we need to increase to 10-15% to reach 2030 target. Hard to do this unless we combine efforts and work together across public and private sectors.
 - Green Infrastructure Fund – was a European fund targeted at areas of multiple deprivation. Aimed to provide multiple benefits to urban areas while addressing inequality and social inclusion. Strong community engagement resulted in positive change and interventions.
 - Sea and Coasts:
 - Sea level rise outpaces glacial rebound in Scotland and has done for the past 100 years. Our soft coastlines are at much at risk from erosion as SE of England.
 - Our Dynamic Coast – a Scottish Government funded project run by NatureScot – has worked with local authorities and expert organisations to measure rates of coastal change and quantifying risk to coastal infrastructure – amounts to approx. £30 billion worth. Most of this infrastructure is protected by natural habitats which must be protected as assets.
 - Important opportunities to restore kelp beds, oyster beds and similar to help water cleaning and sequester carbon with added benefits to local economies.

- *Big question around implications of managing the large stocks of carbon stored in the sediments around Scotland's coasts.*
- *Slide 9: All of these interventions need to be maintained over time so there is an exciting opportunity to create a new set of skills to inspire and support the next generation of people in rural communities*
- *Slide 10: Challenge for today is to take these examples and their varied settings and think about how to implement at a landscape scale and how to finance them to maximise benefits.*

Private finance for natural capital investment in Scotland [presentation by Professor Jaboury Ghazoul]

- *Background to project: Last year, the University of Edinburgh, working with a very wide range of partners right across Scotland explored a number of aspects relating to the delivery of net zero targets by 2045 in Scotland. Covered topics such as bio-economy; worked with Scottish Land Commission to consider examples of regional land use partnership type entities; and financing. Have created a high-level systems understanding of what might be some of the key barriers to private financing for natural capital and how those might be unlocked. Please note this is still very much a work in progress but wish to invite people to contribute to the ongoing discussion on this, firstly using the systems framework and then building and adding to that to help shape the dialogue and identify opportunities and overcome barriers.*
- *Please explore this website and play around with systems map [please see links to further reading on page 13].*
 - *Map nodes identifies particular items/actions/issues that affects other components across the landscape of finance in Scotland.*
 - *Arrows and + / - symbols explains relationship between nodes. E.g. high upfront capital costs reduces new entrants to land sector*
 - *Complex map – we will focus on only a few elements today*
- *Systems map can be summarized under three main issues:*
 - *Inertia in the land sector – explored in more detail below*
 - *Uncertain role for private finance – particularly in terms of land-based sustainability responding to net zero climate targets*
 - *Immature market mechanisms*
- *Inertia in the land sector: About cultural change we need to imbed and encourage across land owning communities and private sector to explore opportunities for investment, which we've broken down into these elements...*
 - *Financial fragility: Many land owners and tenants have limited profitability so they are very risk averse and reluctant to take new steps to explore opportunities for engaging in new ways of managing land or objectives that may respond to climate targets or natural capital targets. This is a major barrier (and cultural barrier to some extent). That coupled with very high upfront capital resource costs limits willingness of people to engage in such activities. Moreover, even those who do engage in investing in natural capital approaches, often do not realise the return on investment for a very long time. Government policy can play a role in this to help overcome risk aversion (e.g. providing subsidies) – however this is not yet the case with Scottish Government.*
 - *Concentration of land ownership: Concentration of land ownership in Scotland is a major issue – it limits access to new entrants simply because many of them [who may have great ideas] have limited or no access to land. This is a major barrier in limiting economic activities related to natural capital and financing of these activities. Much easier for large land owners to implement action on land in favour of natural capital as they often have diverse income streams and access to capital resources – and we see this taking place in many places. With this in mind, there is a risk in moving towards diversification of land ownership and community management of land (although the benefits are obvious) – there also the risk that this could undermine the opportunities for private investment by raising transaction costs and overcoming capital costs of doing so. In summary, concentration of land ownership is a complex area which has very great bearing on financing of natural capital both in terms of peoples interpretation of access to land, how that land may be used, associated risks and access to capital.*

- Cultural land management: This is people's perceptions of farming, forestry, etc. Many people coming into these industries do so through family connections so can draw on a long history of how land should be managed based on family/cultural history of doing so – breaking out of that “tradition” can be difficult, partly due to ageing workforce, risk aversion. New ideas and people coming into jobs can be limited. Opportunity to open up land to new people and new opportunities.
- Waiting for the right time: 2045 still feels very far away for some people in terms of investments and how they manage land. Agricultural policy usually done on short-term 5-year cycles and the return on investment taking a long time limits peoples willingness to set out long-term visions. Again, there is a role here for the public and private sectors to nurture longer term view of exploring and investing in opportunities, and managing the trade-offs over long time periods. This requires political pressure and political support in responding to long-term perspectives on climate and natural capital, and also recognition that land owners are really working on a 2-3 year plan [vs 30-40 years]. Also there is a lot of uncertainty of how this all might play out – i.e. returns on investments, future changes to policy, state of the economy, etc. This can lead to delay of action – something we cannot afford to do if we are to deliver on net zero targets.

How can we harness private investment to help deliver land use policy? (presentation by Robin Parker)

- Overall policy landscape for natural capital encompasses climate change, economic recovery, post EU land use policies and wider Scottish Government economic policy (please see links to further reading on page 13). In this meeting we will share the recent work on policy development work and welcome feedback and recommendations from participants.
- Scottish Government and environmental agencies (NatureScot, SEPA, Forestry and Land Scotland) have been doing some work to improve their understanding around what the opportunities and challenges are about bringing more private investment into land use, particularly around achieving objectives in addressing the nature and climate crisis. Informed by the work of Jaboury and others, have identified many barriers and outcomes in this area.

| Barrier | Outcomes |
|--|---|
| 1. Markets, revenue streams and validated products simply do not exist for key ecosystems and ecosystem services | <ul style="list-style-type: none"> • Private funding approaches never considered • Reliance on public and philanthropic funding |
| 2. Knowledge gap between environment focused project developers, and return/business focussed investors | <ul style="list-style-type: none"> • Investors understanding of realities of nature-based markets too limited • Project developers' understanding of business and investor needs too limited |
| 3. Lack of liquidity and sophisticated functioning in voluntary carbon markets | <ul style="list-style-type: none"> • Slows and complicates process for buyers • Time lags in changes between supply and demand |
| 4. Capacity gap for delivery | <ul style="list-style-type: none"> • Lack of understanding of opportunities amongst land managers (so do not design projects or look for new income sources) • Lack of skilled workers to take advantage of (and deliver) the opportunities available |
| 5. Lack of exemplars and significant demonstrators | <ul style="list-style-type: none"> • Increases risk and challenge for project developers • Stops proposals for new revenue streams coming forward • Increases uncertainty of risks for potential investors |
| 6. Structural and cultural barriers leading to inertia in the land management sector | <ul style="list-style-type: none"> • ? intermediaries offering alternative income streams • Low profitability leads to focus on maintaining subsidies rather than diversification |

- State of markets and key trends identified in driving forward change:
 - Fragmented and incomplete markets: There is no single market for natural capital. Aspects of natural capital are valued (or indeed not valued) across lots of different markets. Lots of ways in which the full value and full benefit of things that happen in natural capital in the land use sector are not reflected in market prices – gap between how things are costed in markets and the true benefits that they bring.
 - Woodland creation is the exception: A lot of private investment here driven by the sustainable production of timber and the woodland carbon code. If we are to bring more private investment in to achieve our land use objectives, there is a need to build and create more markets and repurpose existing flows of investment – public money will not be enough to achieve the ambitious goals for Scotland.
 - Growing demand for green investment in finance sector: Lots of demand for putting finance into nature and climate objectives partly driven by real commitment in sector to reach net zero, and partly driven by regulatory changes (e.g. government requirement for carbon impact disclosures to be submitted by large companies). There are other nature drivers in the background at EU level such as green taxonomy and UK government commitment to replicate that. A lot is happening in the finance sector but there is a notion that there is a lot of available green finance but there is not enough places for this finance to land – more emphasis need not on driving finance but on driving access to it.
 - Off-set demands increasing from large corporates: Big trend on desire to invest in nature.
- In assessing barriers and trends, emerging thinking is as follows for the role and impact of the Scottish Government (and public sector):
 - Expanding the existing voluntary carbon markets (e.g. woodland carbon code)
 - Perhaps facilitating more liquidity, and enabling more infrastructure?
 - Supporting delivery at project scale
 - i.e. initiating and funding trials and exemplars
 - Helping to build greater understanding of how private investment in land use might work – helping them to ‘speak the same language’ and build relationships across sectors
 - Create new revenue streams where there are none
 - Support creation of new market through more voluntary product standards - not just carbon but other biodiversity goals
 - Look at regulations, charges, and fees to help support the creation of flow of investment from other areas of the economy into the land use sector

Group discussion led by Brendan Turvey and Francesca Osowska

- How should we identify the **best locations** to start delivering these opportunities?
 - Use spatial analysis and ecosystem mapping to identify best locations (see the work of Dr Rebekka Artz at the James Hutton Institute – <https://www.hutton.a.uk/staff/rebekka-artz>)
 - Target at areas where we know there are suitable groups of organisations working
 - Build on existing initiatives and focus on areas where land managers are willing and can learn from / encourage each other. Look for quick wins!
 - e.g. Alyth in Perthshire – a community trying to explore ways in which to develop new small-scale business enterprises that draw upon a diverse array of land based capitals allowing for job creations opportunities, new innovations and helps change culture]. Great way to pilot new ideas.
 - e.g. Young People’s Forest <https://www.nature.scot/young-scots-plant-seed-scotlands-young-peoples-forest>
- How should we best **coordinate that activity** so that it is visible to organisations and partners around the country?
 - Use Conservation Finance Initiative to share information and intelligence on what’s happening where. Develop a map of projects to improve visibility and encourage sharing
 - Focussing on catchments makes sense, build on existing mechanisms and initiatives

- Use *Regional Land Use Partnerships* to test and demonstrate new approaches – this in turn will promote peer encouragement amongst land owners
- There are opportunities that are immediately available that are being undermined by basic policy failures that could be fixed now. E.g. as carbon industries reduce carbon, the incentive will not be to invest in carbon reduction projects, but we have a shortfall now in our funding for peatland restoration. So as we look at coordinating activity, we need to look at phase immediate wins and big policy wins and then look at long-term structures.
- **KEY POINT:** *Single Application Form* is the basis on which every land owner receives government subsidy – it is the biggest incentive to the largest number of land users in Scotland. Subsidy supports many carbon and methane producing activities and has very rudimentary terms required to qualify. If qualification terms were more aligned with net zero goals and objectives, then that could potentially be the single biggest coordinating action that any government could take.
- Need more science and data to make sure we are targeting the right interventions, e.g. peatland restoration techniques have relatively poor evidence base
- Need for clear national vision for land use that land managers and communities can buy into.
- What are your views on **emerging models for financing** these opportunities?
 - **KEY POINT:** Need to develop a natural capital asset approach which captures and reflects the uplift in asset value, which is not reflected in current market values
 - Important to work with communities to develop financial mechanisms which work for them and which they can buy into and support
 - Need to develop approach to subsidies and align this with aims of green finance
 - Best use of public funding to focus on areas which are important but less cost effective, and to allow market to pick up more cost effective opportunities, therefore avoiding outcompeting market, and the public only pay where the market is unable to deliver.
 - Identify stacked project opportunities and pool into single financing model for investors
 - Carbon market is the most advanced, but this is still fragile and depends on carbon price and alignment with subsidies and other mechanisms. *Environmental Impacts Bonds* and other approaches being developed and tested.
 - A carbon fund or guarantee is being proposed and several participants highlighted the importance of this
 - Creating new supply chains for many of the potential products that could be produced on land. E.g. native woodland can produce lots of products for which there are no supply chains at the moment – obvious one is the building sector and replacing steel and concrete with wood based products.
 - Need to look beyond carbon at other payments for eco systems
 - Learn from early pilots such as the *Facilitating Local Natural Capital Investment* project with the *Tweed Forum*
- How to **overcome barriers** to realise opportunities?
 - Already covered much on issues related to scale, coordination, immaturity of markets and asset values – anything else not yet considered?
 - Potential emerging cultural barrier... we're seeing a bit of push back on risks involved in new finance and investment models coming in which reflects a nervousness particularly at community level in Scotland. I.e. is this the next big thing that is being done to rural Scotland in terms of external influences determining land use choices? We can already see bodies advocating on behalf of rural communities, starting to get nervous about implications of green finance and new investment. There is a great window of opportunity now to turn it around and work together to shape a consensus around responsible approaches to green finance mechanisms and investment approaches, and tackle these risks head on. Scotland has good approach to resolving this – especially with its framework around land rights and responsibilities, balance around public and private interests – we have a great opportunity to build consensus to build confidence and support to make mechanisms genuinely carry local support as they are delivered and rolled out. Conversation to be had with green finance sector to see if we can frame responsible approaches to this that address risks upfront, rather than deal with them retrospectively.

Actions and next steps:

- Address market failure on land values and subsidies
- Scale up market and make sure that we keep it joined up so that projects can support each other and aggregate
- Align with Regional Land Use Partnerships and use to test and demonstrate, building on Tweed pilot example
- Create workshop for representatives with different perspectives from finance and land use sectors to create a framework of responsible approach to green finance and developing markets to get financial models right.

Links to Further Reading

The Economics of Biodiversity: The Dasgupta Review:

<https://www.gov.uk/government/publications/final-report-the-economics-of-biodiversity-the-dasgupta-review>

Private finance for natural capital investment in Scotland (Jaboury's presentation and systems map):

<https://centre-for-sustainable-forests-and-landscapes.kumu.io/private-finance-for-natural-capital-investment-in-scotland>

Scottish Government climate change plan 2018-2032 (referred to in Robin's presentation):

<https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/>

Scottish Government inward investment plan (referred to in Robin's presentation):

<https://www.gov.scot/publications/shaping-scotlands-economy-scotlands-inward-investment-plan/>

Need for coordinated finance models that pool different ecosystem benefits:

https://www.iucn-uk-peatlandprogramme.org/sites/www.iucn-uk-peatlandprogramme.org/files/Natural%20capital%20financing%20for%20peatland_eftec_final_311018.pdf

Example of bio-regioning:

<http://www.bioregioningtayside.scot>

£1.5m project evaluating and refining the Landscape Enterprise Networks approach:

<https://www.resilientdairylandscapes.com/publications>

Landscape Enterprise Networks:

<https://landscapeenterprisenetworks.com/>

Paper outlining three key types of financing models – green finance, regional ecosystem markets are funding multiple ecosystem services already, compared to national carbon markets which focus on climate mitigation:

<https://eartharxiv.org/repository/view/1929/>

Link to join the Scottish Conservation Pioneers Group:

<https://public.3.basecamp.com/p/qyv8Zkw6Fpi47CzynPVVF7gZ>

SRUC has a scientifically underpinned carbon foot printing tool for farmers:

<http://www.agrecalc.com>

Feedback on Peatland Carbon Guarantee concept note from IUCN UK Peatland Programme

See appendix 3

Integrating ecosystem markets to co-ordinate landscape-scale public benefits from nature:

See appendix 4