climate X change

Scotland's centre of expertise connecting climate change research and policy

Opportunities for financing a climate resilient Scotland – Event report

18 March 2025

DOI: http://dx.doi.org/10.7488/era/6113

1 Executive summary

The Scottish Government's third Scottish National Adaptation Plan (SNAP3) commits to establishing a short-life expert adaptation finance taskforce by 2026 to the support the development of Scottish adaptation investment strategies over the life time of SNAP3.

The Scottish Government and ClimateXChange co-hosted a collaborative "ignite" knowledge exchange workshop on 18 March 2025, bringing together academics, finance experts and practitioners. The event aimed to take the first steps in developing the terms of reference for the adaptation finance taskforce (henceforth referred to as the Taskforce).

The workshop addressed existing challenges in climate adaptation finance, opportunities for further action and examples of successful and innovatively financed adaptation projects from the UK and other countries. Discussions explored key insights highlighted in the Climate Adaptation Finance: Insights and Opportunities for Scotland (2023) paper, which identifies a range of options for Scotland to harness financial solutions for climate adaptation challenges.

There were three main sessions at the workshop:

- a panel session on the key challenges and emerging solutions
- a panel session exploring case studies for financing resilience
- an interactive session to design and prioritise the remit, membership and timeframe for the Taskforce

1.1 Key findings and discussion points

1.1.1 Scale of the challenge

Various figures were referenced on the scale of the shortfall between the financial resources needed to adapt to climate change and the amount of finance available (known as the adaptation gap) in Scotland, the UK and internationally. The United Nations Global Adaptation Gap report found that over two thirds of estimated costs/finance needs are in areas that are typically financed by the public sector.

The key message was that climate adaptation finance and investment is lacking and that innovative partnerships across multiple organisations, the private and public sector, are required to bridge the gap. With this challenge comes multiple opportunities for realising co-benefits across the economy and society and for investing in Scotland's infrastructure, nature and communities.

Workshop speakers and participants highlighted the global scale of the adaptation finance challenge, noting that no nation has fully effective interventions in place. However, there are valuable initiatives and examples of good practice in the international sphere, in the UK and in Scotland. There are opportunities to learn from these pockets of excellence, apply them to the Scottish context and scale them up into bankable frameworks and projects which can be replicated.

1.1.2 Remit of the Taskforce

Attendees supported the idea of a taskforce to advise the Scottish Government on financing adaptation.

A priority for the Taskforce would be to quantify the required adaptation spend and how to prioritise it on a sectoral basis within Scotland. A majority of participants thought that the taskforce should focus on quantifying the finance needed for increasing resilience in Scotland and indicating in which areas or sectors this spend should be prioritised. A possible output could form the basis of an adaptation investment plan.

Working to better integrate adaptation into existing market codes such as Woodland Carbon Code, Peatland Code and emerging biodiversity/natural capital/ecosystem restoration codes was another proposed workstream for the taskforce which had strong support from attendees.

Attendees questioned whether this work needs to be addressed specifically as an adaptation finance taskforce or whether it is part of good sustainable investment and business practices. It may be useful to frame the need for adaptation finance within wider societal challenges such as food security, health and wellbeing, child poverty etc. As an alternative to a taskforce, one participant suggested creating a climate finance platform, or independent broker, to help facilitate partnerships and unlock longer term bankable actions as per the OECD Climate Adaptation Investment Framework.

1.1.3 Taskforce membership

A range of organisations were suggested to form the taskforce membership. Attendees were keen to be involved in the taskforce. A key gap at the event was finance industry practitioner and expert representation. Participants reflected that, although representatives from these institutions were invited, a more effective method of engagement might be to dedicate time to a targeted event for financial institutions and insurance sector representatives.

The proposed members presented in Figure 1 cover four broad areas:

- Finance industry
- Public sector
- Research/academia
- Other

Finance industry	Public sector	Research/academia	Other
• Finance industry • Banks, asset managers, venture capitalists • Insurance industry • Scottish Financial Enterprise • UK Investment Bank • UK Sustainable Investment and Finance Association	• Chaired by appropriate minister • Cross-party representation • His Majesty's Revenue and Customs (HMRC) • Scottish Flood Forum • Congress of Scottish Local Authorities (COSLA) • Scottish Funding Forum • Scottish National Investment Bank • Scottish Fiscal Commission	• Finance experts • Chartered Financial Analysts • Environmental Economists • Risk experts	• Third sector • Philanthropy

Figure 1: Proposed taskforce membership

1.1.4 Timeframe

Due to the Scottish Parliament elections scheduled for May 2026, attendees queried whether a taskforce could be established and provide recommendations before the pre-election period. An alternative could be for it to be proposed as an early action of the new government.

There was general agreement that a taskforce should have start and end point, and the opportunity to reconvene or follow up after their recommendations are made in order to track delivery.

The example of the Net Zero Investor Panel was discussed as a potential format for replication. This took place over 9 months and all members participated either pro bono or had paid for time within their own institutions.

1.2 Next steps

The Scottish Government will look to engage further with industry bodies and other stakeholders, recognising the gaps discussed in this report.

ClimateXChange is offering a 7-8 month post-doctoral research opportunity to support the Scottish Government in developing an evidence base for the costs of ensuring a climate resilient Scotland.

Contents

2 Opportunities for financing a climate resilient Scotland – record of discussion

2.1 Session 1 – addressing barriers and maximising opportunities

The first morning session was a panel discussion and Q&A aimed at outlining the emerging opportunities and challenges in the adaptation finance space, how this fits into the Scottish fiscal landscape and lessons learned from net zero investment.

David Ulph, Scottish Fiscal Commissioner, provided useful context on the Scottish fiscal landscape including the relationship to Westminster and the overall spending agreement between reserved and devolved powers. He stressed that fiscal sustainability relies on considering include all aspects of mitigation, adaptation and inevitable damages arising from climate change. Emphasis was placed on the role of both private and public sector investment to deliver on all three aspects of climate change spending. More in depth work on mitigation spend has been carried out by SFC and they would be keen to consider adaptation fiscal analysis in future.

The audience heard from Anna Beswick, Policy Fellow at the Grantham Research Institute at LSE working on climate adaptation and resilience, who discussed the scale of the adaptation challenge across the UK and the rationale for increased investment in adaptation. Finance flows are comparatively much lower compared to mitigation though many adaptation actions can also have net benefits for society, the economy and the ability to reach net zero. Anna outlined the goals of the ATTENUATE project (Creating the enabling conditions for UK climate adaptation investment) which include the creation of an Adaptation Investment Framework processes to translate UK National Adaptation Plan ambitions into a range of outcomes. These include creating bankable adaptation projects, how to use public finance to leverage private investment and the understanding the impact of an improved enabling environment for greater investment.

Michael Mullan who leads the OECD’s programme on adaptation finance and investment outlined the context of the global adaptation finance gap and set out the OECD’s investment planning approach through the Climate Adaptation Investment Framework (CAIF). Michael explained that losses related to global climate-induced natural disasters are at an all-time high, but investment is insufficient. The principles for the CAIF could be used as a reference point for the expert task force. Michael also referenced a number of case studies (in Annex X). A key message from Michael’s intervention was that there is currently no global gold standard or “star pupil” for adaptation finance. There are, however, lots of pockets of excellence but they need to be brought together and standardised in order to address the scale of the challenge.

Looking forward to opportunities to try and overcome some of the challenges set out, Ben Connor from Verture presented the findings from the Climate Adaptation Finance: Insights and Opportunities for Scotland (2023) paper published as part of the Adaptation Scotland programme. The barriers to adaptation finance are summarised into six categories in this paper: market, information, technical, bankability, policy, and behavioural. The twelve opportunities to overcome these barriers were then presented in four categories:

- Policy

    - Ambition and vision for a well-adapted Scotland
    - Develop high integrity, values-led adaptation markets
    - Mainstreaming adaptation in existing market codes
- Data
    - Quantification of adaptation finance need
    - Open data platforms and common metrics
    - Knowledge management and information sharing
- Innovation
    - Grant funds for project development
    - Blended finance to facilitate private investment
    - Project delivery innovation
- Collaboration
    - Regional adaptation planning
    - Support for SMEs
    - Partnership brokering and collaboration support

These twelve opportunities were discussed as a rough framework for improving adaptation financing in Scotland as part of SNAP3 delivery and used as the basis for the afternoon's discussion on the remit of the taskforce.

Picture 1: Ben Connor from Verture presenting in Session 1

Recognising that investment in mitigation measures is comparatively more mature than adaptation investment, Dimitris Andriosopoulos Professor of Finance and Director of the Responsible Business Institute (ReBI) at the University of Strathclyde offered some reflections from supporting net zero investment and his experience as a member of the Scottish Government's Net Zero Investor Panel.

The discussion and Q&A focused on the need to deliver a financial return for private investment and the inherent difficulties in identifying and quantifying this return in the adaptation space. It was suggested that adaptation has a "marketing problem" in this regard. There may be a need to drop the term adaptation all together and just focus on social responsibility, business sustainability, managing climate risks, due diligence and good governance.

An additional barrier limiting adaptation investment was lack of clear signals to the market from government, including cases in the international sphere, resulting from misalignment or lack of join up between governments' budget/finance and adaptation teams. More collaboration would foster opportunities for larger scale impact.

Discussion reflected a need for balance between the public sector and regulatory levers to incentivise investment and the need to build on the private sector's understanding of risk and innovation which can sometimes be lacking in the public sector. There was agreement that private investment is needed (it is not an "if" but a "how") as the public purse will not cover the scale of finance needed.

2.2 Session 2 – what works? Case studies for financing resilience

The groundwork for the conversation including the national context was well set out in the first session which allowed for a deeper dive into some examples of examples of 'what is working' in Scotland and internationally in session 2. This took a similar format of short presentations and then a panel discussion.

Craig Love, Director of Impact Assessment and Environment at the Scottish National Investment Bank, discussed the regulatory conditions needed for sustainable adaptation investment, specifically the role of financial risk disclosures such as the Taskforce for Climate-related Financial Disclosures (TCFD) framework.

Lucy Jenner from Savills spoke about her work with the Pentland Land Managers Association to work at a landscape scale using a blended finance model to increase nature restoration and increased resilience in the Pentland Hills. The Scottish Government Facility for Investment Ready Nature in Scotland (FIRNS) grant helped employ a farmer as a project manager. She reflected that there can be both challenges and opportunities to these landscape scale models, particularly when benefits might be felt in other parts of a catchment (ie those not paying for the adaptation interventions). It is difficult to attribute benefit and to be clear on what is investible.

Ed Heather Hayes from Fife Coast and Countryside Trust and Jyoti Banerjee from North Start Transition presented on another blended finance project pilot at the Dreel Burn in Fife and the opportunities from collaboration on Nature Finance Fife and the Fife Transition Lab. Both projects look for innovative solutions to funding nature restoration and the speakers were advocates for good investment practice and collaboration across sectors. The private partners they have worked with might need more convincing about the need to invest in nature, and need to value ecosystem services, so there is further work required to demonstrate the financial case for investment.

Finally, offering perspectives from the Regions4 network, Melisa Cran highlighted that subnational governments across the world are key drivers of adaptation and that they can be instrumental in delivering innovative approaches to address adaptation finance challenges. She gave examples from Catalonia, Quebec, Lombardy and regions in Brazil which are investing in local-level adaptation, mobilising private capital and testing different climate-resilience financial approaches. Further case study details can be found in Appendix A.

2.3 Session 3 – Identifying the remit and membership of the Taskforce

The afternoon session involved facilitated groups of 6-8 people with the purpose of discussing the remit, timeframe and membership of the proposed Scottish Government taskforce on adaptation finance.

In terms of its remit, participants were reminded of the key opportunities for action outlined in the Adaptation Scotland Adaptation Finance Insights and Opportunities paper. These were proposed as potential workstreams for the taskforce. After discussing in groups, participants were encouraged to indicate a prioritisation of workstreams by placing red sticky dots on the various potential opportunities previously identified or offer new suggestions.

The results of this prioritisation exercise can be seen in Table 1 below.

Participants indicated a clear preference for the taskforce to be focused on the quantification of investment/finance needed and mainstreaming adaptation in existing market codes such as the peatland code, woodland carbon code and developing ecosystem restoration codes.

From further discussion, it was suggested the quantification of Scotland's adaptation finance need would need to go beyond a single high-level figure (as per those referenced in Session 1).

Quantification of investment needs for adaptation should involve the following actions:

- Identifying what spend should be included as delivering for adaptation
- Highlighting the key sectors which will require adaptation spend
- This could be prioritised in terms of levels of risk or sectors of the economy most likely to be impacted by climate change and/or areas where public finance is likely to be most lacking/insufficient
- This sequencing (finance gap + priority sectors = spend over next 5-10 years) could form the basis of an adaptation investment plan

There was recognition that we cannot wait until we have the "perfect" quantification of finance, but improved costings are required to help prioritisation of spend and to signal where investment is most needed.

2.3.1 Table 1: prioritisation of workstreams for the Taskforce

Intervention from AS finance insights and opportunities paper	Indication of preference (sticky dots)	Comments/post-its
Quantification of finance needed	12	For this clarification of definitions would be helpful: how does SG define adaptation and resilience? This would feed into data being used to quantify need – i.e. what "counts" as adaptation investment? Need to understand scale of challenge and where we should prioritise spend
Mainstreaming adaptation in existing market codes (such as peatland code, carbon code etc)	11	
Regional adaptation planning	8	(Provide governance of RAPs for investment – pivot to Regional Adaptation and Investment Plans)
Partnership brokering and collaboration support	6	
Open data platforms and common metrics	6	
Blended finance models	5	
PDI	4	(Suggestion to help get ideas to an investment ready stage or supporting sequencing of policies from short to long term), picking off any low hanging fruit
Grant funding for project innovation	2	
Vision for a well-adapted Scotland	2	A vision already exists through SNAP3. However, there is a need to get specific, go from how to finance adaptation to how do we finance these specific actions to deliver X vision)
Development of new, high integrity, values led markets	1	
Knowledge management and information sharing	0	
Targeted support for SMEs	0	Largely covered off by Adaptation Scotland engagement.

2.3.2 Other suggestions

- Prioritising policies that can be invested in from private sector perspective rather than where are the biggest gaps
- Upskilling and training
- Supporting projects to start and then scaling them up (possibly similar to a SG funded incubator/accelerator programme)
- Relationship building with the private sector
- Need to recognise that this is long-term work but a short-term taskforce may provide a catalyst

Appendix A – Case study resources

ATTENUATE project – three ongoing case studies on bridging the adaptation funding gap

- West Midlands Combined Authority on flooding and the risk to the built environment, transport network and social cohesion
- London Borough of Hackney on risks to health, welfare and productivity, with a focus on social housing, from high temperatures and heatwaves
- HM Treasury and Defra on risks to public and private assets, infrastructure, businesses, health, and to public finances (spending and income) from flooding and high temperatures

Case studies by theme

- Regulatory alignment / market mechanisms
    - Canada: Climate-resilient Infrastructure Standards Housing, Infrastructure and Communities Canada - Codes, standards and guidance for climate resilience
    - Grenada: Climate Resilient Water Sector project by the GCF and GIZ Making water management and use in Grenada climate-resilient - giz.de
    - Japan: National Agricultural Adaptation Plan Agricultural Adaptation Policy in Japan | SpringerLink
    - Québec, Canada: Operates a Carbon Market, raising $9.2B by pricing carbon and reinvesting the revenue into climate action The Carbon Market, a Green Economy Growth Tool!
- Insurance and risk transfer
    - UK: FloodRe Flood Re - A flood re-insurance scheme
    - Canada: Climate-risk sharing mechanisms in large-scale infrastructure projects Mobilizing private capital for climate adaptation infrastructure
    - Central & South America: Parametric insurance for restoration of coral reefs Insuring Nature to Ensure a Resilient Future
- Public finance and investment
    - EU: 2021-2027 Multiannual Financial Framework and NextGeneration budget Long term EU budget 2021-2027 and Next Generation EU - Consilium
    - World Bank Group: Climate Toolkits for PPPs in Infrastructure Climate Toolkits for Infrastructure PPPs
    - UNDP: Governance for Resilient Development in the Pacific (Gov4Res) Governance for Resilient Development in the Pacific Project Brief | United Nations Development Programme

- Catalonia, Spain: Creation of a Climate Fund funded by vehicle emissions taxes. Has generated 380 million EUR since 2021 to support adaptation and mitigation projects
- Paraná, Brazil: Uses an ecological tax, redistributing $570M last year to 270 municipalities to reward conservation efforts Ecological ICMS: Paraná State's Environmental Tax Revenue Sharing Program – Regions4
- Lombardy, Italy: Pioneering green budgeting, integrating climate priorities into public finance for better transparency, targeted investments, and increased access to climate funds.
- Basque Country, Spain: First region in Spain to integrate the socioeconomic perspective into climate risk assessment, assessing the financial impacts of sea level rise and flooding to losses from €450 million to €2 billion by 2100.
- England, UK: Partnership funding calculator for flood and coastal risk management grant-in-aid Partnership funding calculator 2020 for FCERM grant-in-aid (GIA) - GOV.UK

- Sustainable Finance
  - France: French Sovereign Green Bonds issued in 2017 ("OAT vertes") France_report_final_20_04_18.pdf
  - South Africa: Green Finance Taxonomy (GFT) released in 2022 SA Green Finance Taxonomy - 1st Edition.pdf
  - Scotland: Adaptation Scotland work on climate adaptation finance https://adaptation.scot/our-work/climate-adaptation-finance/
- Support for private investment
  - The Private Infrastructure Development Group (PIDG) PIDG (Private Infrastructure Development Group)
  - Lightsmith Climate Resilience Fund CRAFT - CLIMATE RESILIENCE SOLUTIONS FUND LCFP
- Blended finance
  - Scotland: The Dreel Burn Investment Readiness (DBIRP) partnership, funded by the Facility for Investment Ready Nature in Scotland (FIRNS) grant scheme, aims to restore the Dreel Burn, a river landscape in Fife. The Dreel Burn Investment Readiness Partnership - Fife Coast & Countryside Trust
  - Bilbao, Spain – Uses public-private partnerships to de-risk and co-finance adaptation projects, making them more attractive to investors. Public-private partnership for a new flood proof district in Bilbao, Spain
  - Scotland: Pentland Land Managers Association, restoration and biodiversity in the Pentland Hills Savills | Creating balance of a natural resource to suit all stakeholders

Appendix B – Agenda

9:30-10:00 Registration

10:00-10:30 Introductory session

Dr Kate Donovan, Co-Director of Edinburgh Climate Change Institute and Policy Director of ClimateXChange – Welcome

Sarah Chalmers, Scottish Government – Setting the Scottish Policy Context – adaptation finance in the Scottish National Adaptation Plan (2024-29)

10:30-11:30 Session 1 – Key challenges in mobilising adaptation finance and emerging solutions, Chair: Kate Donovan (ECCI and CXC)

Anna Beswick (Grantham Institute, LSE) – Addressing the adaptation finance challenge: rationale for increased investment and the need for the ATTENUATE project

Michael Mullan (OECD) – Global adaptation finance challenge and investment planning approaches (OECD CAIF framework)

Ben Connor (Adaptation Scotland) – Emerging solutions for Scotland

Dimitris Andriosopoulos (University of Strathclyde) – Lessons from Net Zero investment (SG investor panel)

David Ulph (University of St Andrews/Scottish Fiscal Commission) – Key fiscal risks from climate change

11:30-11:45 Coffee break

11:45-13:00 Session 2 – What works? Case studies of financing resilience, Chair: Anne-Marte Bergseng

Craig Love (SNIB) – The role of financial risk disclosures

Ed Heather Hayes (Fife Coast and Countryside Trust) and Jyoti Banerjee (North Start Transition) – Blended finance project pilot - Dreel Burn & Scottish Transition Lab

Lucy Jenner (Savills) – Blended finance project - Pentland Land Managers Association

Melisa Cran (Regions4) – Adaptation finance in other sub-national regions

13:00-14:00 Networking lunch

14:00-15:15 Session 3 – Remit of the SG expert Adaptation Finance Taskforce

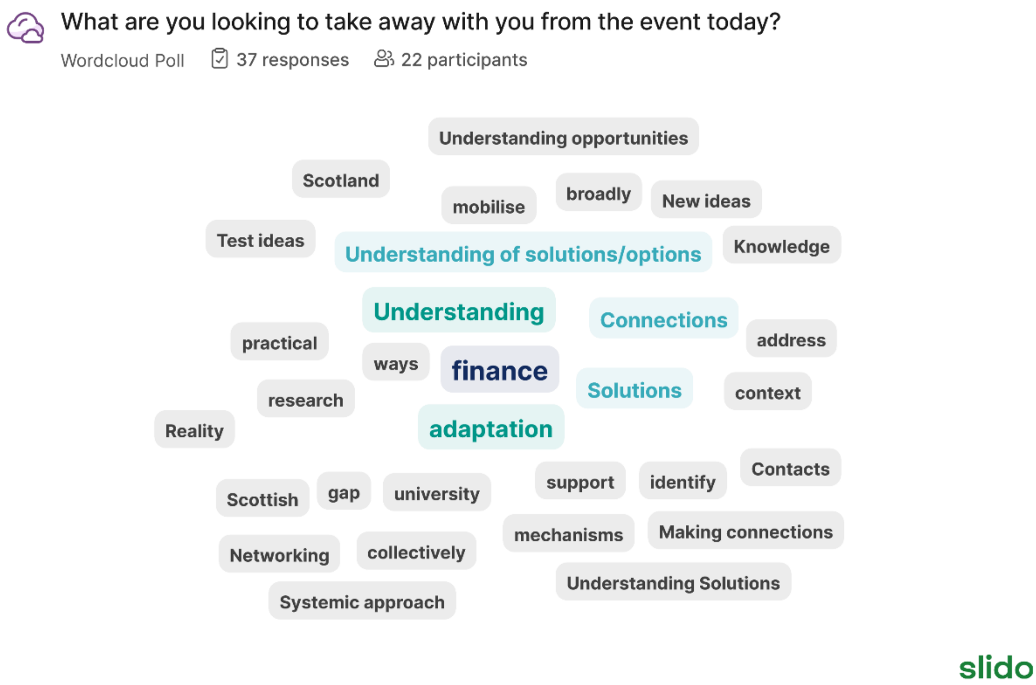
Sarah Chalmers, Scottish Government – context and remit

Table discussions

15:15-16:00 Closing discussion Kay White (CXC) and Ben Connor (Verture) and next steps (Sarah Chalmers)

16:00-17:00 Drinks reception

Appendix C – Input from participants (Slido)




What was your key highlight or takeaway from today's event?
Wordcloud Poll
21 responses
18 participants
Great discussions with wide range of interests
Collaboration
Trade offs trade offs
We need finance industy and policy in the same ...
Dialogue
range of voices on panel
Good facilitation
views
key
Multifaceted
Uncertainty
diverse
Thought provoking
Sequencing
challenge
Listening to collaboration
So much opportunity
Complex
Second panel insights on trying to implement this
slido

Appendix D – Attendee organisations

Adapt40
AECOM
Association of British Insurers
Aviva
Cadlas
Climate Emergency Response Group
ClimateXChange
CLIMPATH
Fife Coast and Countryside Trust
Forth Climate Forest
Government's Actuary Department
King's College London
London School of Economics
OECD
Rebalance Earth
Regions4
Scotland Beyond Net Zero
Scottish Government
Scottish Fiscal Commission
Scottish National Investment Bank
Savills
University of Aberdeen
University of Glasgow
University of Strathclyde
University of St Andrews
Verture

The Scottish Government and ClimateXChange wish to thank all participants and presenters for taking part in the workshop on 18 March 2025.

How to cite this publication:
'Opportunities for financing a climate resilient Scotland – Event report' (2025), ClimateXChange. http://dx.doi.org/10.7488/era/6113

This work was supported by the Rural and Environment Science and Analytical Services Division of the Scottish Government (CoE – CXC).

ClimateXChange
Edinburgh Climate Change Institute
High School Yards
Edinburgh EH1 1LZ
+44 (0) 131 651 4783

info@climatexchange.org.uk
www.climatexchange.org.uk

If you require the report in an alternative format such as a Word document, please contact info@climatexchange.org.uk or 0131 651 4783.