



Developing Peatland Carbon Metrics and Financial Modelling to inform the pilot phase UK Peatland Code

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Department
for Environment
Food & Rural Affairs

This Project



- Reviews the metrics; develops user-friendly methodologies and field protocols; tests and adjusts these tools with peatland projects across the UK

Team: Mary-Ann Smyth, Emily Taylor, Richard Birnie, Chris Evans, Rebekka Artz, Alan Gray

- Financial models project feasibility tools and market assessment for potential investors in the Peatland Code

Team: Stephen Prior, Andrew Moxey

Categorising peatland condition

- Reviewed and re-analysed the scientific literature
- Categorised the papers on greenhouse gas emissions from peatlands into the following condition categories:

Near natural



Actively eroding,
bare peat

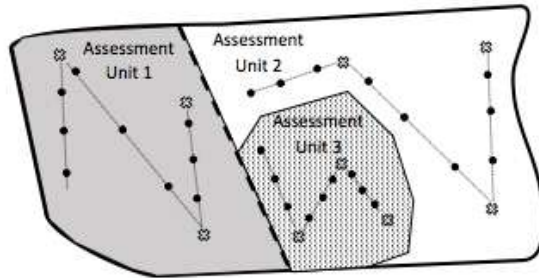


Modified

Drained



Designed a field protocol



6 Condition Assessments

(Tick appropriate box for each Condition Assessment following questions until Condition Category reached)

	CA1	CA2	CA3
Q1. Is the area severely eroded? Presence of actively eroding hags and gullies with no vegetation in gully bottom No actively eroding hags or gullies, vegetation in gully bottom	<input type="checkbox"/> Severely Eroded & do Q5 on veg on tops <input checked="" type="checkbox"/> Go to Q2	<input type="checkbox"/> Severely Eroded & do Q5 on veg on tops <input type="checkbox"/> Go to Q2	<input type="checkbox"/> Severely Eroded & do Q5 on veg on tops <input type="checkbox"/> Go to Q2
Q2. Is the area drained? Drains/old hags present within 30m No drains/old hags present within 30m	<input type="checkbox"/> Drained <input checked="" type="checkbox"/> Go to Q3	<input type="checkbox"/> Drained <input type="checkbox"/> Go to Q3	<input type="checkbox"/> Drained <input type="checkbox"/> Go to Q3
Q3. Extent of bare peat (walk 20 paces to assess) Extensive continuous bare peat (not gullies) Small discrete patches bare peat frequent None/Small discrete patches bare peat infrequent	<input type="checkbox"/> Severely Eroded <input type="checkbox"/> Highly Degraded <input checked="" type="checkbox"/> Go to Q4	<input type="checkbox"/> Severely Eroded <input type="checkbox"/> Highly Degraded <input type="checkbox"/> Go to Q4	<input type="checkbox"/> Severely Eroded <input type="checkbox"/> Highly Degraded <input type="checkbox"/> Go to Q4
Q4. Extent of Sphagnum Sphagnum dominated Sphagnum in parts No obvious Sphagnum layer	<input type="checkbox"/> Intact <input type="checkbox"/> Go to Q5 <input checked="" type="checkbox"/> Go to Q5**	<input type="checkbox"/> Intact <input type="checkbox"/> Go to Q5 <input type="checkbox"/> Go to Q5**	<input type="checkbox"/> Intact <input type="checkbox"/> Go to Q5 <input type="checkbox"/> Go to Q5**

Project Site Name	Assessment Unit ID		
Name of Surveyor	Date of Survey		
Grid Reference at Start of Route through Assessment Unit			
Assessment Unit Boundary confirmed by ground assessment? Yes / No			
If No please describe amendments			
Record grid reference and time on reaching each CA location			
Condition Assessment 1 (CA1)	Date Reference	Time (seconds)	Brief Description
Condition Assessment 2 (CA2)			
Condition Assessment 3 (CA3)			

Peat Depth Check

Tick appropriate box for each depth check measurement

	Location at which to take depth measurements											
	From Assessment Unit Boundary to CA1	CA1	On axis between CA1 and CA2	CA2	On axis between CA2 and CA3	CA3	On axis between CA3 and CA4	CA4	On axis between CA4 and CA5	CA5	On axis between CA5 and CA6	CA6
100cm												
50cm												
Depth (cm)**												

**Assess depth measurement only needed on drained sites with a peat depth return

Condition Assessments

Tick appropriate box for each Condition Assessment (1 to 6) following questions until Condition Category reached

	CA1	CA2	CA3	Condition Category
Q1. Is the area severely eroded? Presence of actively eroding hags and gullies No actively eroding hags or gullies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Severely Eroded
Q2. Is the area drained? Drains present within 30m No drains present within 30m	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Drained
Q3. Extent of bare peat (walk 20 paces to assess) Extensive continuous bare peat surfaces (not gullies) Small discrete patches bare peat frequent None/Small discrete patches bare peat infrequent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Severely Eroded Highly Degraded OK
Q4. Extent of Sphagnum Continuous and predominant Sphagnum dominated Sphagnum in parts No obvious Sphagnum layer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Intact OK OK**

Testing the protocol



The effect of restoration



By comparing the before-project emission factor with the expected after-project emission factor, you can easily work out the greenhouse gas savings expected for the project (draft figures illustrated here; final values expected Nov 201)

Table 3 Net effect on emissions resulting from restoration and changing Condition Categories calculated using the Emission Factors given in Table 2. Units are t CO₂ eq ha⁻¹ yr⁻¹.

Condition State Change	Net Effect
Restoring from Modified to Near Natural	Saves 0.85
Restoring from Drained to Near Natural	Saves 2.86
Restoring from Drained to Modified	Saves 2.01
Restoring Actively Eroding to Modified	Saves 16.81 to 26.08
Allowing Drained to develop into Actively Eroding	Loses 14.80 to 24.07

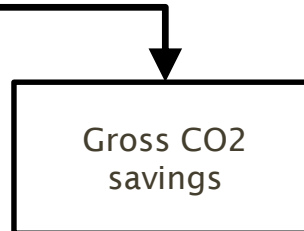
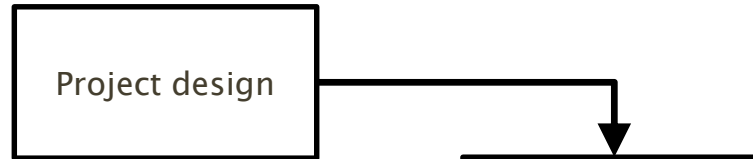
Financial models and feasibility tools for potential investors in the Peatland Code

Stephen Prior and Andrew Moxey

How the feasibility tool works



Input data such as site condition, work planned, current land use



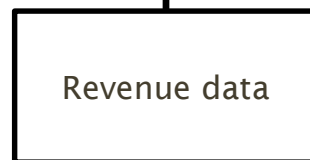
Gross CO2 savings derived from project design and GEST default values developed by Metrics team

Project risk assessed on factors such as location, management team and natural risks



Net value is Gross value less risk % derived from assessment

Costs and revenues depend on project design, with sample values supplied within the tool, that can be over-ridden by local values



Analysis should reveal the deliverability of the project, and if there is a financial shortfall whether the project would qualify under the Peatland Code

Cost categories



- Capital works (e.g. blocking grips, re-vegetating bare peat)
- Management costs (e.g. scrub clearance, repairs to dams and fencing).
- Opportunity costs (e.g. if sheep grazing is to be reduced).
- Monitoring, accreditation and administrative costs.

Revenue Categories



- Agri-environment schemes
- The Peatland Code
- Other (e.g. water payments, reduced grazing revenue)

- Output tests:
 - Is there a financial shortfall without PC funding?
 - If so, what is the unit carbon unit price for PC funding?
 - Does the shortfall qualify under PC additionality rules?
- Output also facilitates “what if?” changes to costs, revenues and other assumptions
- The tool is freely available, and is being tested across several restoration projects

Example of output



Analysis	
Total project size (ha)	20
Total project tCO ₂	3,000
Project risk %	20%
Net project tCO ₂	2,400
Project shortfall/surplus (£)	18,672
Required CO ₂ price £/t	7.78
Shortfall %	16%

Stopping carbon emissions

Bare peat emits more than ten times more carbon than vegetated peat
Stopping future erosion is very carbon-efficient.



This project...



... takes us several steps further towards having a working Peatland Code

- Develops good protocols and guidelines.
- Provides useful financial modelling
- Advises on carbon and wetland accounting as part of the UK's national statistics.

Thank You...

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