



**VALUING NATURE**

**Peatland Tipping Points**

# Peatland Tipping Points

## Social, economic and cultural aspects

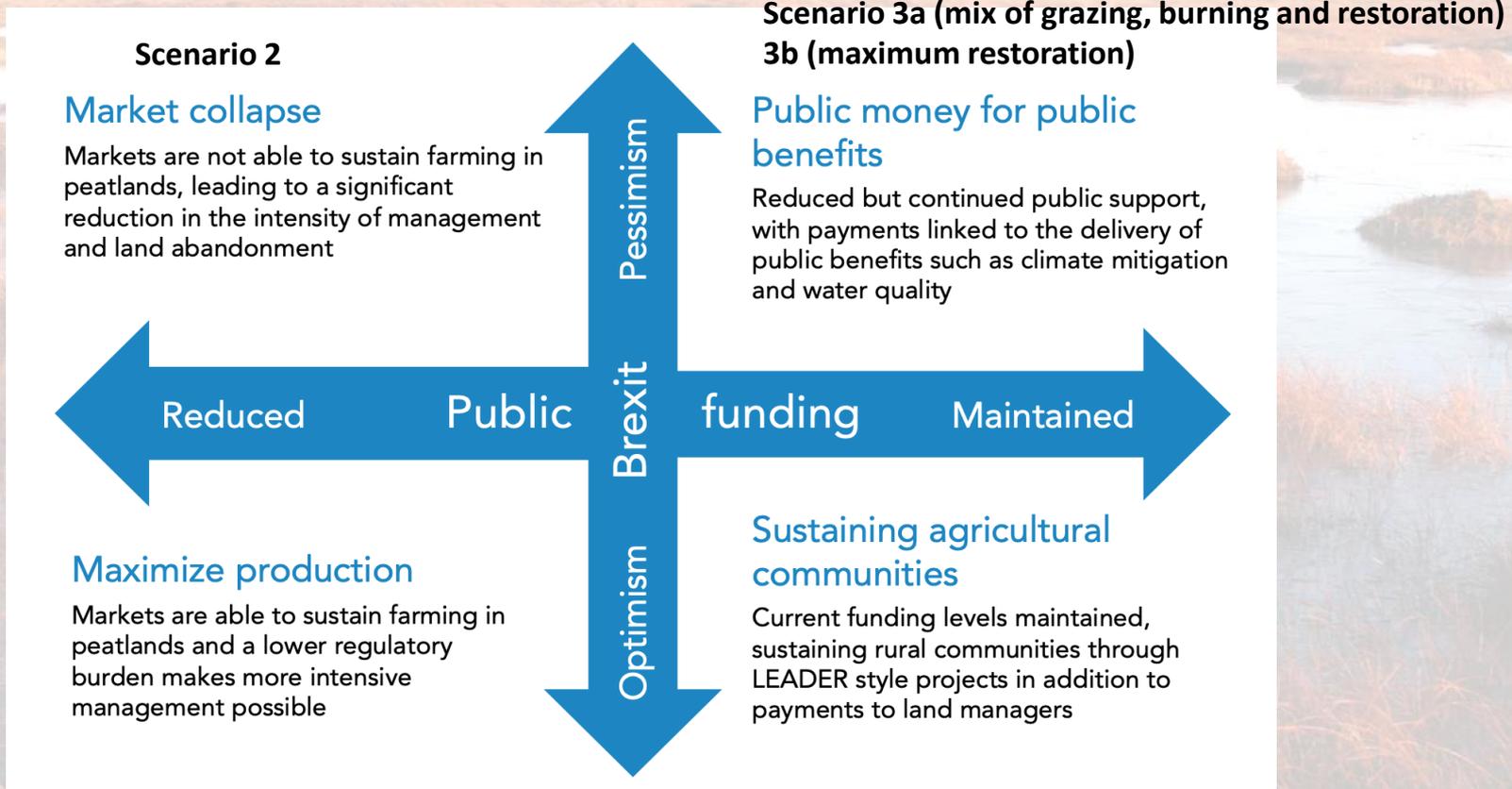
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# Project activities

- Monetary valuation:
  - Valuation of restoration benefits in Scotland (Martin-Ortega et al. 2017)
  - North Pennines AONB:
    - Review of restoration costs
    - Economic implications of scenarios for
      - Grazing
      - Carbon
      - Recreation
- Non-monetary valuation: interviews on shared and cultural values
  - North Pennines and Flow Country
- Deliberation
  - Stakeholder scenario development (North Pennines & Flow Country)
  - Policy options and fair price for AE payment options (North Pennines)



# First SH workshops: Scenarios



Scenario 1

Scenario 4

As Scenario 3 + additional funding to communities



## Livestock grazing results

	baseline@	Maximise production	Public goods
LFA grazing area (ha) in North Pennines	125,000	46,480	100,000
farm size (ha)	215	80*	172
ewes/holding	402.75	237.60	321.64
ewes/ha	1.87	2.97	1.87#
revenues per ha (£)	643	528	613
costs per ha (£)	505	455	501
profits per ha (£)	138	73	112

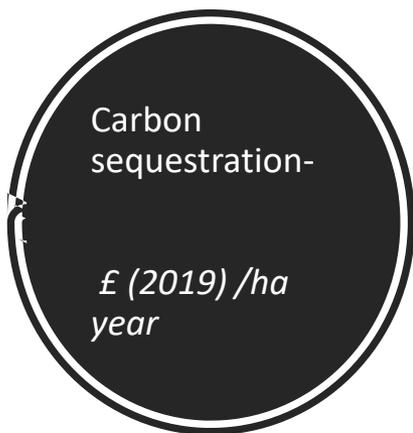
### Legend

@ farm business as assessed by DEFRA in 2017 for LFA

\* Farm size that maximises profits without subsidies and AEP, price as 2017.

# stock density as at baseline, no subsidies but AEP

Carbon sequestration simulated for each scenario (based on Marss et al 2019 confidence intervals) has been multiplied by the Low, Medium and High value of non traded carbon to get value (in 2019 GBP) per ha per year of carbon sequestration



Maximise production low	Maximise production mid	Maximise production high	Market collapse low	Market collapse mid	Market collapse high
£30.19	<b>£91.07</b>	£185.18	£46.4	<b>£110.41</b>	£195.41
Public goods 3a low	Public goods 3a mid	Public goods 3a high	Public goods 3b low	Public goods 3b mid	Public goods 3b high
£42.30	<b>£105.23</b>	£191.99	£52.60	<b>£119.47</b>	£204.40

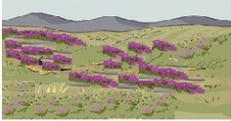
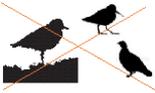
Low figures represent lower bound of 95% confidence interval for low value of non-traded carbon.

Medium figures represent mean values for medium value of non-traded carbon

High figures represent upper bound of 95% confidence interval for high value of non-traded carbon.

## Recreation - Methodology

- **Data:** 360 people interviewed
  - Cyclists;
  - Anglers;
  - Walkers
- **Method:** Choice Experiment
  - recreationists asked to allocated out of 5 trips between two hypothetical recreational scenarios or staying at home
  - Each recreationist faced 4 choice cards

	Activity A	Activity B	Stay at home (no cost)
<b>Vegetation and landscape</b>	moorland dominated by heather 	moorland dominated by mossy bogs, with visible surface water	
<b>Wildlife</b>	Very limited, almost unnoticeable presence of wading birds 	Limited, difficult to notice presence of wading birds, such as curlew, dunlin, golden plover and short-eared owls 	
<b>Water quality</b>	Poor quality water with dark brown colour	Good quality water with light brown colour	
<b>Facilities</b>	Car parks and toilets, sign posted trails and paved or graveled paths 	No facilities	
<b>Travel distance within local region</b>	10 miles (one way) more than current trip	20miles (one way) more than current trip	
<b>Number of opportunities out of 5:</b>			

**Willingness  
to Pay  
(£/trip)**

**Reference levels**

- Landscape – bare land
- Wildlife – very limited abundance
- Water – low quality
- Facilities – no facilities

	Walkers	Cyclists	Anglers
Levels	Mean WTP	Mean WTP	Mean WTP
Bog	-32.47***	-10.65***	10.72
Grass	6.47	-3.73*	22.23*
Heather	-4.76	-4.96**	31.79**
Medium Birds abundance	13.06*	1.27	2.165
High Birds abundance	10.87	2.74	-21.68
Water quality	19.82**	2.05	14.38
P + T	12.93**	6.16***	-20.95
P + T + S	11.96	.266	XXXXX
P + T + S + G	27.62***	10.66***	XXXXX
P + T + R	XXXXX	XXXXX	-17.89
P + T + R + L	XXXXX	XXXXX	-25.19*

Note: \*\*\*, \*\*, \* ==> Significant at 1%, 5%, 10% level;  
P = Car parks; T = Toilets; S = Sign posted trails; G = Paved or graveled paths; R = renting equipment; L=fishing lessons

Change in  
probability of  
recreation and  
benefits from  
the baseline -  
**Teesdale**

<b>Walking</b>	<b>baseline</b>	<b>Maximise product</b>	<b>Market collapse</b>	<b>Public goods 3a</b>	<b>Public goods 3b</b>
probability of recreation (%)	-	-2.9%	-	-2.9%	-6.1%
Consumer surplus (£/trip)	-	-11.08	0	-11.08	-21.42
<b>Cycling</b>	<b>baseline</b>	<b>Maximise product</b>	<b>Market collapse</b>	<b>Public goods 3a</b>	<b>Public goods 3b</b>
Probability of recreation (%)	-	+0.7%	-	-	-2.8%
Consumer surplus (£/trip)	-	0.02	0	0	-0.07
<b>Fishing</b>	<b>baseline</b>	<b>Maximise product</b>	<b>Market collapse</b>	<b>Public goods 3a</b>	<b>Public goods 3b</b>
Probability of recreation	-	-2.6%	-	-5.9%	-10.7%
Consumer surplus (£/trip)	-	-5.43	0	-11.97	-20.65

# Cultural values

## Interviews

- 15 semi-structured interviews in each study site (N-Pennines, Flow Country, May/ June 2018)
  - Interviewees background: art, farming, community council, tourism, conservation and land management
  - Objective: Understanding meanings and values in relation to peatlands
- 
- A local: *“The first thing that strikes me about the fells and the moorlands is that they are enormously colourful.”*



## Cultural goods

= Creation of goods of the moorland that can be exchanged, sometimes but not always, in monetary terms

- Need and right for communities to make a living out of their environment

*A farmer: "I think one of the really important things is keeping people earning a living in this. But in a way that helps the future of the area. But a really important thing for the future is that it should still be a place where people live and work. It's not a playground nor a museum."*

- Grouse shooting was the most mentioned 'cultural good'
- Awareness of the attractiveness of hay meadows, rare flora, birds and cycle routes for tourism



## Cultural practices, identities and benefits

- A high 'sense of place' → strong unique ecological identity of peatland
- A farmer: *"There is a word for this: 'hefting'. It is a shepherding term, but it means that the sheep are going to stay on the moor. They are not gonna wander. So, even if there is no fences the sheep would just stay there. And I am hefted to the north-east of England."*
- Physical characteristics of the peatland: vast openness, the silence  
→ tranquility and peace
- Interviews shared their knowledge on the importance that peatland habitats have for health, carbon sequestration, unique plants and wildlife

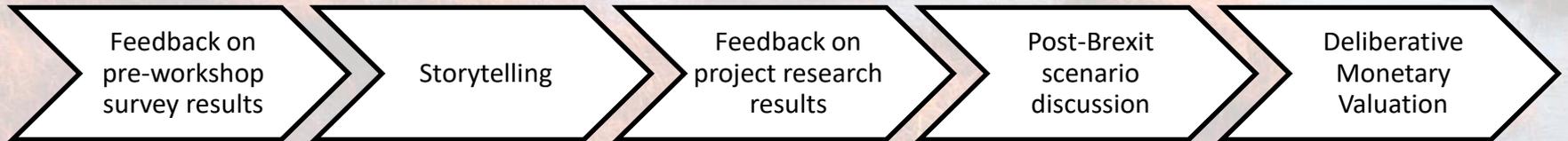


## Future

- Expressions related to the future were mostly negative
- All shared fears around Brexit
- Awareness of the right and need for local people to make a living out of the area but ...
  - ... what way?
  - ... who would benefit the most?
  - ... who should have the ultimate say?



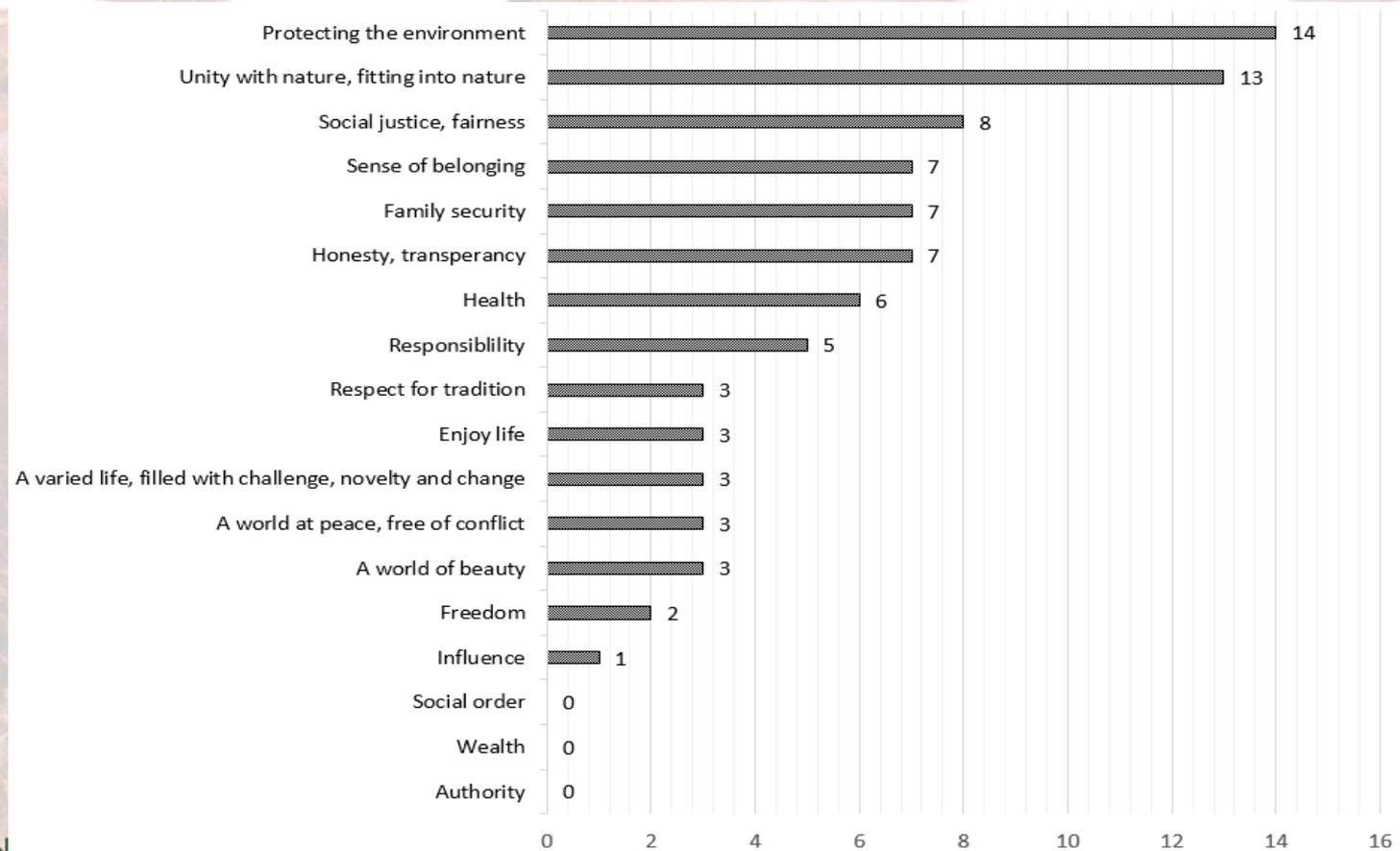
# N-Pennines workshop outline



# Transcendental values

Please pick 5 of the following values that you identify with most as guiding your life choices

→ 17 participants responded



# Storytelling

- Experiencing nature and wildlife with all the senses
- Seasons and mosaics
- Diverse values – benefits, intrinsic values; cultural, archaeological, historic values
- Common themes of personal appreciation independent of background: peace, freedom, tranquillity, being on one's own, grounding environment
- Uncertainty, fear, concerns about the future of the moorland, its management and communities



# Post-Brexit management

- Different public goods (carbon, biodiversity, landscape, cultural identity and heritage, water quality, food, timber, flood regulation, recreation) can be in conflict – need to balance
- Key other aims: Avoiding rural depopulation, sustaining communities, sustaining local knowledge and skills and protecting traditions
- New schemes need to be locally co-designed, and adaptive – e.g. there can be appropriate forms of forestry without repeating past mistakes
- Policy makers should set the ends but land managers should set the means – flexibility in options
- Challenges: scales, climate change



# AE payments and fair prices

- Participants considered current HLS options and prices and how to revise
- Payments linked to who delivers the benefits, not just land ownership
- Regional and temporal variation to encourage particular outcomes
- Base payment for options + premium for outcomes
- Higher prices for blanket bog than dry heath – fair price for blanket bog restoration £100/ha?
- Reservations about setting fair prices: need more analysis (of value of benefits and how benefits link to options) and piloting



# Examples of possible new payment options

- Water management on mineral soils around peat bogs
- Shepherding payments
- Educational access to land
- Training and monitoring
- Edge woodland
- Native breeds
- Other species than wading birds (e.g. raptors)
- Option for not proactively managing (rewilding option)
- Targeted predator control to protect bird life



# Conflicts, trade-offs and tipping points?

- Moorland management has focused on conflicts/synergies between conservation and shooting/burning
- Also trade-offs between restoration and recreation
- Social-economic tipping points can occur if subsidy regime is removed: large decrease in grazed area.
- Social concern & fear of such tipping points is clearly present
- Strong local support for targeted 'valuing nature' payments
- Local perceptions of fair prices for payments are close to social cost of carbon





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**Thank you for listening!**

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