

How might we value & pay for public goods

DNPA Workshop, February 2019

Prof Brett Day



‘Public money for public goods!’

Scheme design

Types of 'goods'



Have to pay to acquire and benefits enjoyed only by owner.



Available to everyone and they don't have to pay for it.

Providing Public goods

Costly changes on farm



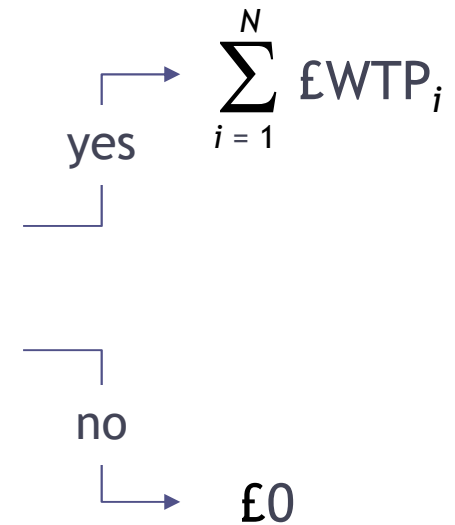
Public Good



Beneficiaries



Social Value

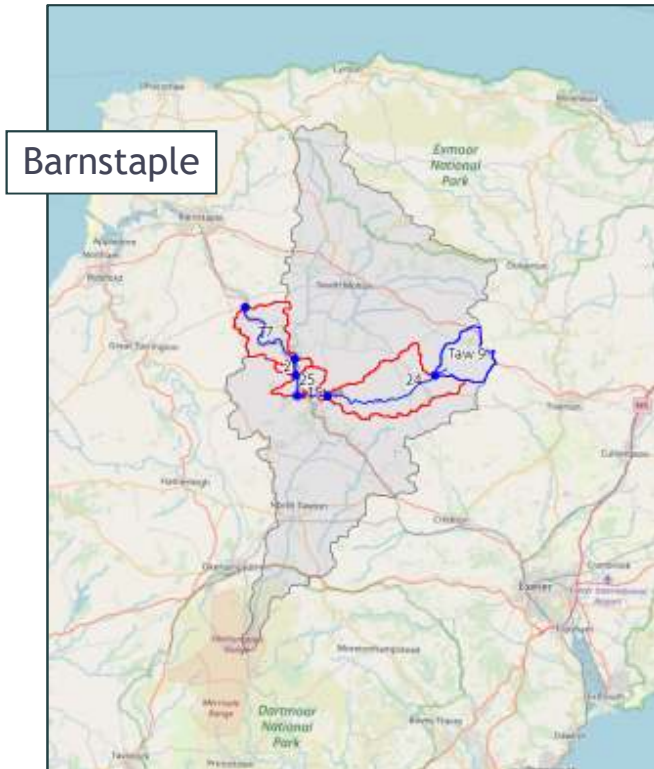


Is social value greater than cost?

What you do matters ...



Where you do it matters ...



Barnstaple

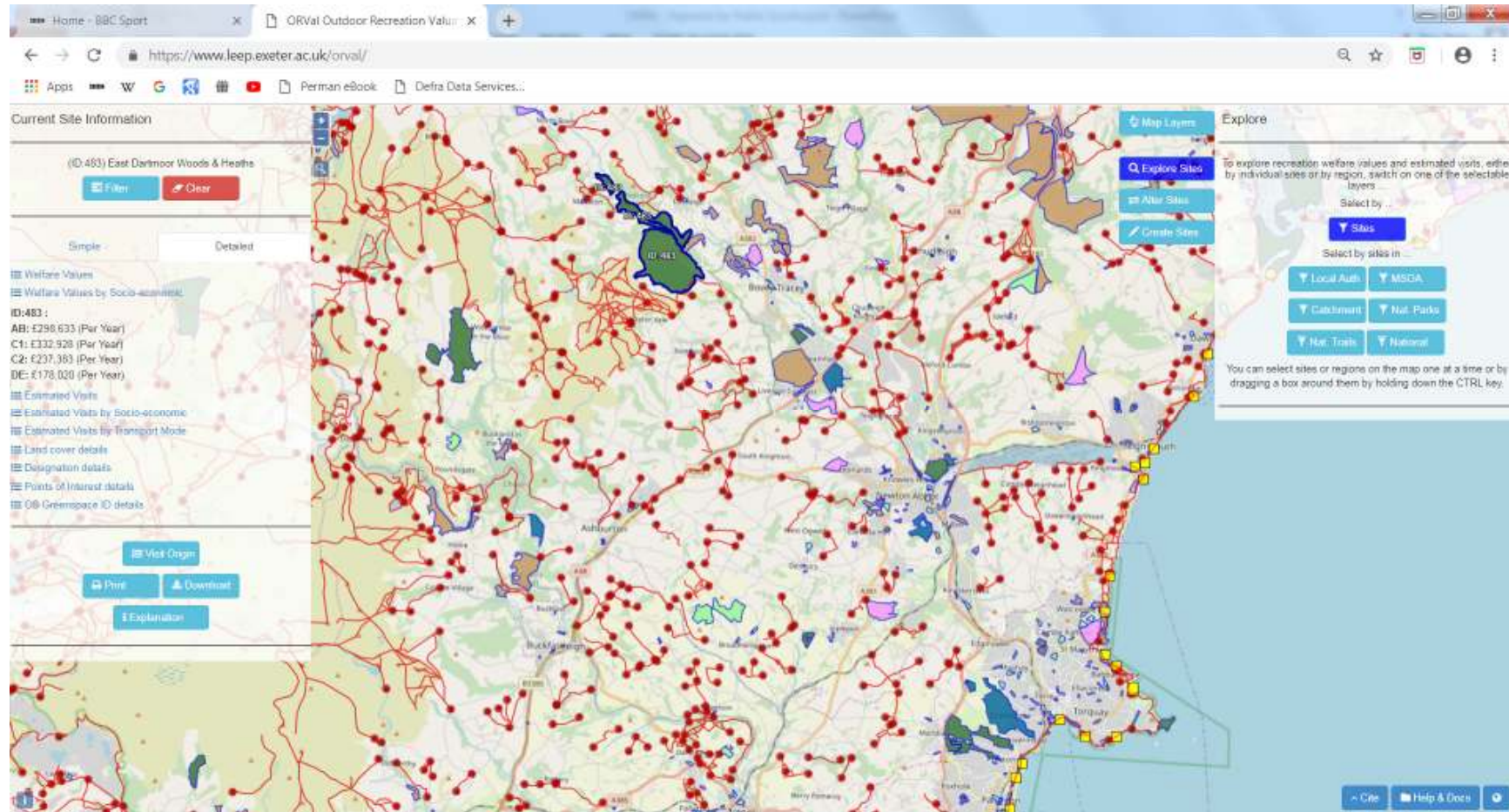


Exeter

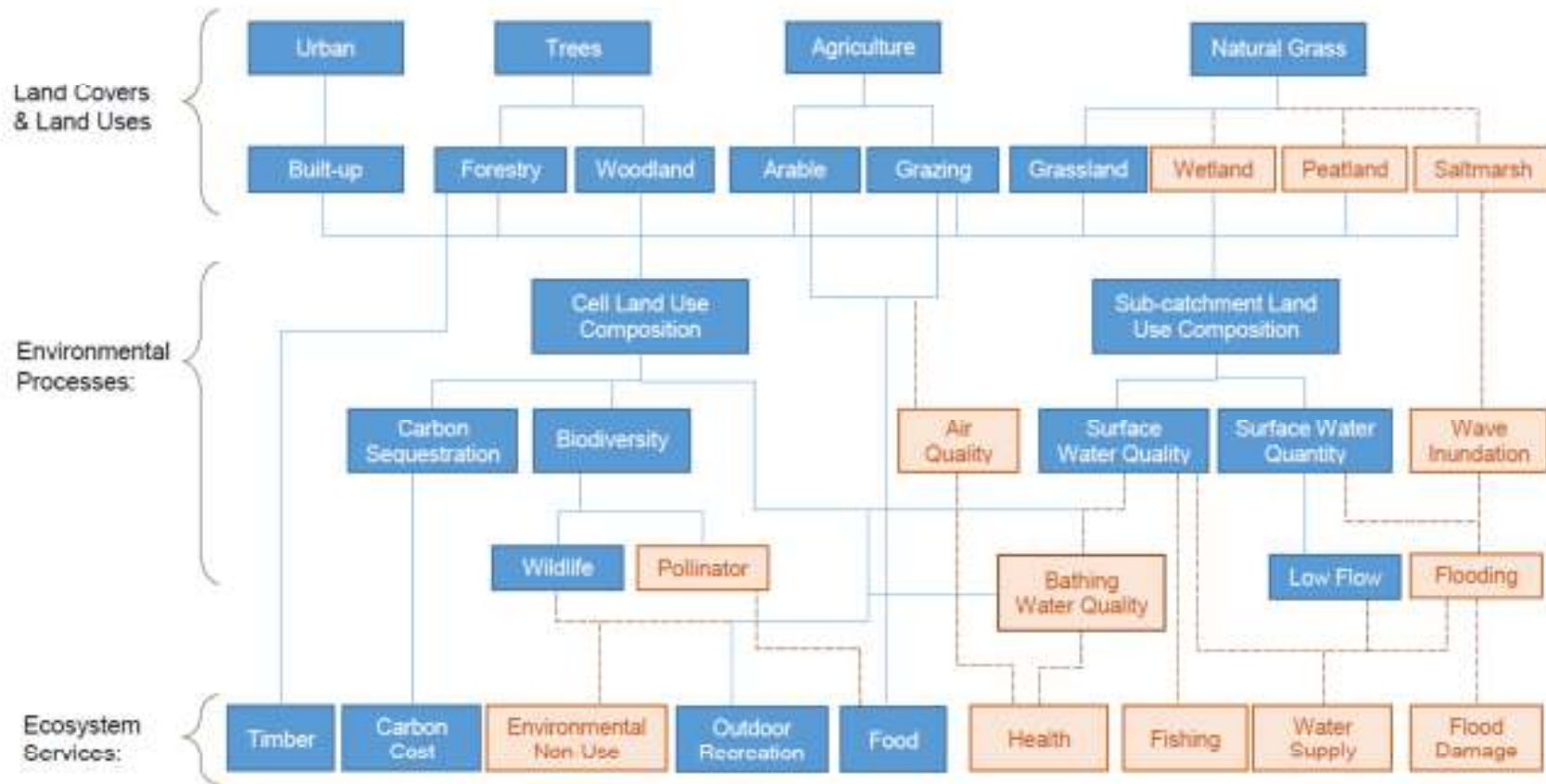
Calculating values ...



ORVal



NEV Model Suite



NEVO

The screenshot displays the NEVO web application interface. The browser address bar shows the URL: <https://www.leap.exeter.ac.uk/nevo/?x=261498&y=74658&z=6>. The interface includes a search bar, a 'Select' button, and a 'My Store' icon. The main content area features a map of a river basin with various sub-basins outlined in red and blue. A sidebar on the left contains a 'SCALES' section with a '2km Grid' and a 'Subcatchment' section with a 'Select a Basin' dropdown. Below this, there are sections for 'National Parks', 'Catchments', 'Local Authority', 'Counties', 'Counties', and 'Counties'. The 'Dart' section is expanded, showing a list of sub-basins: 'Dart 13', 'Dart 3', and 'Dart 9', each with a 'View Details' link and a 'Follow River' button. The 'Dart 3' sub-basin is highlighted in blue on the map. Below the list, there is a 'River List' section with a 'Dart 3' entry and a 'View Details' link. At the bottom of the sidebar, there are 'Next Subbasin' and 'Outlet' buttons.

Designing Schemes

Principal-Agent Problems



Principal



Incentives



Agents



Getting Incentives Right



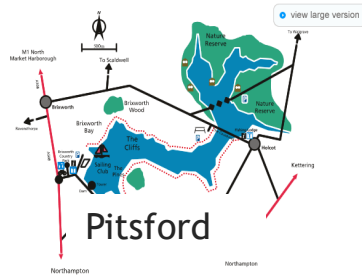
THE SUNDAY TIMES: UNIVERSITY GUIDE 2015 (ECONOMICS)

Economics	All subjects	University	Student satisfaction	Research quality	Entry points	Graduate prospects	Total score
1	8	University of Warwick	87.9	58.3	566	87.4	100
2=	1=	University of Oxford	84.6	58.3	589	81.2	97.3
2=	1=	University of Cambridge	80.8	45	637	95.2	97.3
4	5	LSE	78.5	71.7	576	86.5	97.1
5	9	University College London	79.5	68.3	556	84	95.9
6	7	University of Exeter	83.2	38.3	481	86.2	90.6
7	22=	University of Nottingham	78.8	48.3	506	84.3	90.2
8=	11	University of Surrey	90.5	31.7	418	76.4	89.4
8=	10	University of Bath	76	43.3	504	92.2	89.4
10	39	University of Strathclyde	88.4	38.3	502	64.7	89.2

anglianwater



anglianwater



Pitsford



Ravensthorpe



Ardleigh



Grafham

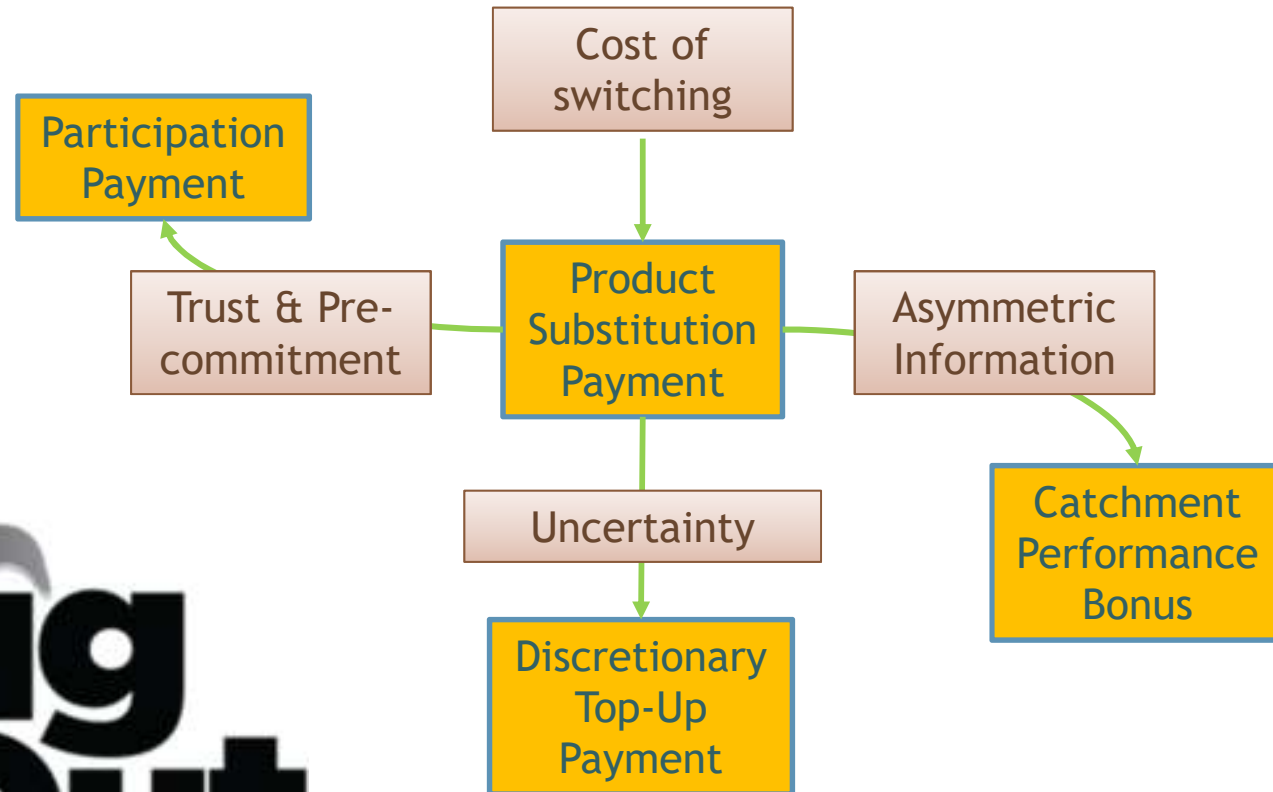


Alton

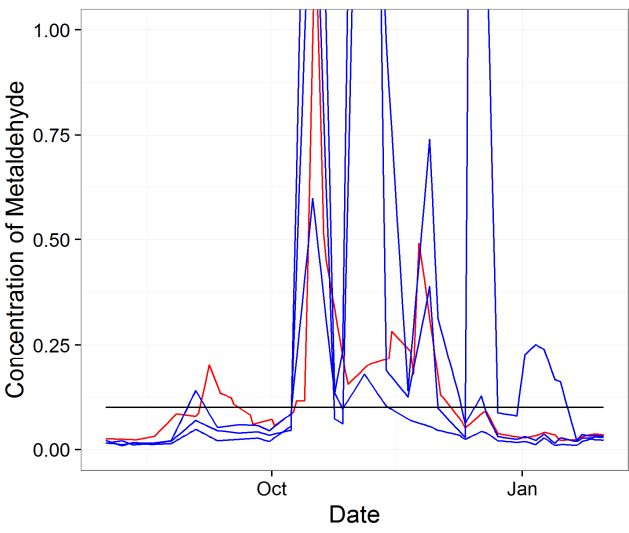
Design considerations:

- ... very small quantity breaks standard
- ... new substitute pesticide more costly
- ... uncertainty over substitute efficacy
- ... farmer access, trust, moral hazard
- ... actual pesticide use unobservable
- ... some farmers already organic

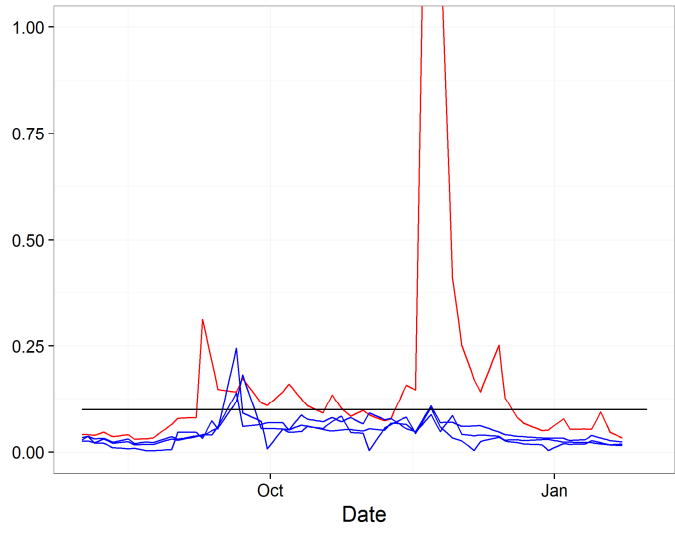
Scheme Design



Scheme Design



2014



2016

Things to think about

1. Defining the scheme:

Objectives and
constraints

3. Allocating the contracts:

Who to pay and how much

2. Designing the contracts:

What to pay for

4. Implementing the scheme:

Monitoring and enforcing

Designing Contracts: **What to pay for**



Activity



Outcome

Designing Contracts: Activity or Outcome?



Incentives

Activity:

- Do the activity ... and no more
- Low cost activity \neq high benefits
- Pay even if low actual benefits

Outcome:

- Encourages doing more
- Encourages innovation
- Only pay for actual benefits

Designing Contracts: **Activity** or **Outcome**?



Activity:

- When 'scientists' know best what delivers outcome

Outcome:

- When farmers know best what delivers outcome

Designing Contracts: **Activity** or **Outcome**?

Measurability



Activity:

- Assets or land use easy to verify
- Operational activity hard to measure

Outcome:

- When & where? Varies over space & time
- What Scale? Farm, catchment, landscape?
- Who is responsible?

Designing Contracts: **Activity** or **Outcome**?



Activity:

- Unexpected costs

Outcome:

- Unexpected costs
- Other farmers' activities
- Environmental factors

Designing Contracts: **Activity** or **Outcome**?

Activity:

- Poor outcome risk falls on purchaser



Outcome:

- Poor outcome risk falls on farmer

Risk-Sharing

- Reward effort and performance
- Activity fee and performance bonus

Allocating Contracts: **Who & how much?**



- Posted Prices
- Competitive Tender
- Negotiation

Allocating Contracts: **Negotiation**



- Targeting particular farms
- Special circumstances
- Strength of negotiating position

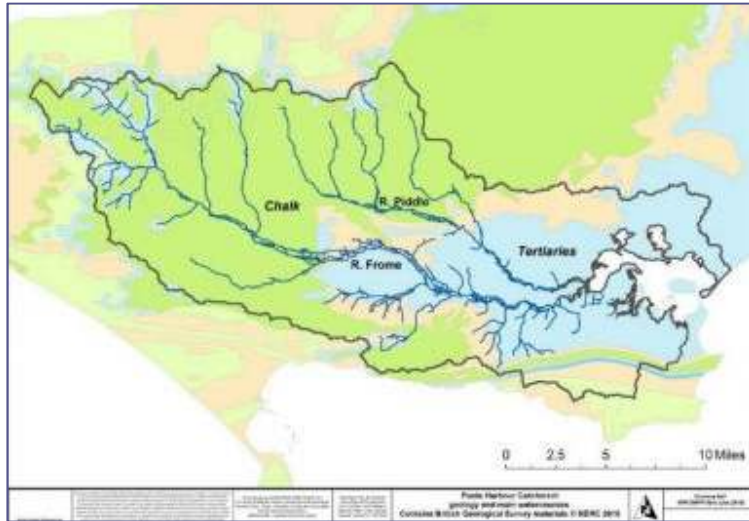
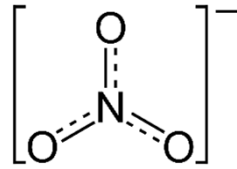
Allocating Contracts: **Posted Prices**



- Prescribe activities or performance
- Farmers choose whether to participate at posted price

Allocating Contracts: Auctions



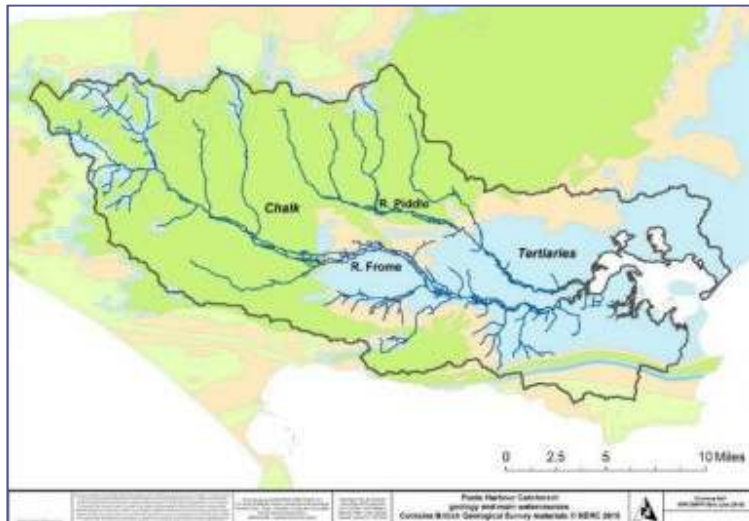
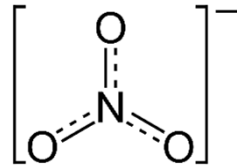


Need to offset 40 tonnes of N each year

Pay farmers to plant cover crops



- Online bidding platform
- Calculates N from each project
- Bids as £ per tonne of N
- Lowest cost bids win
- Can update bid



Need to offset 40 tonnes of N each year



- Different payments for same thing
- Cunning farmers sneak in last min bids

New Design:

- Open with a high price
- ‘Yes’ or ‘No’ or ‘Best bid’
- Too much demand ... drop price
- Everyone paid the same
- No opportunity for sneaky bidding

Dartmoor



DARTMOOR COMMONERS' COUNCIL



Code of Guidance for Prevention of Winter Damage to the Commons of Dartmoor

1. Carrying of foodstuffs on to the commons should be reduced to a minimum.
2. Silage should NOT be carried on to the commons nor anything conserved in plastic. If any damage is caused by winter feeding of stock on the commons then such stock will be required to be removed from the commons.
3. Feeding sites should be varied throughout the winter and no site should be used more than one day in any week.
4. Access points and routes should be similarly varied.
5. Feeding should NOT take place near moor gates, rights of way nor at places popular with the public.
6. Stock should be fed in as small groups as possible.
7. Feeding should avoid wetland and bog.
8. Feeding should avoid heather.
9. Feed delivery should be in the smallest, highest vehicles, and wide tyres used where larger vehicles have to be used.
10. Concentrates should NOT be fed alone and in any area where there is evidence of damage or overgrazing the feeding of concentrates may be banned periodically at the discretion of the Council.

- Daily operational decisions make a difference
- Contribution of each farmer unobservable

One size
does **NOT**
fit all.



Dartmoor

- Objectives:
 - Clear and measurable outcomes by which to judge success
 - Consider potential perverse incentives
 - Outcomes should relate to public good delivery
 - Measure of outcome agreed across all parties ... and verifiable

Dartmoor

- Incentives:

Participation Payment:

- Align interests of farmers

Outcome Payment:

- Bonus on group achievement payable to each individual
- Everyone gains/loses bonus for exceedance/short fall

Activity Payment:

- Payment for measurable activities correlated with positive outcome
- Perverse-incentives

Individual Monitoring:

- Guarantee bonus if agree to individual monitoring

Risk-Sharing:

- Activity payment with outcome bonus



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