

Dr Laurence Couldrick

CEO
Westcountry Rivers Trust



the umbrella body of the rivers trust movement

where there's water, there's life

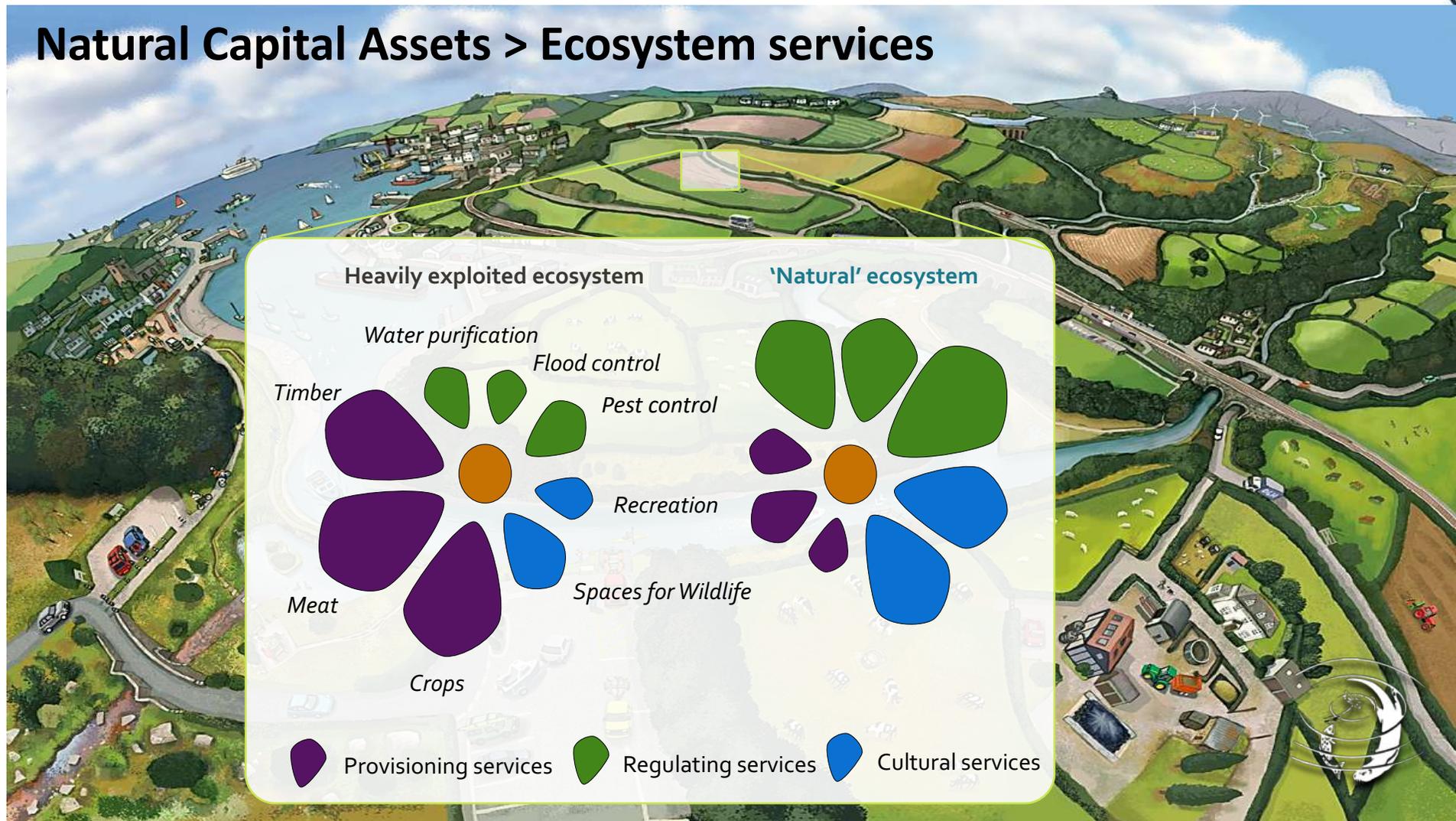
Translating the Government's 25-year ambition of Natural Capital into practical Catchment Management



By Dr Laurence Couldrick
Westcountry Rivers Trust



Natural Capital Assets > Ecosystem services



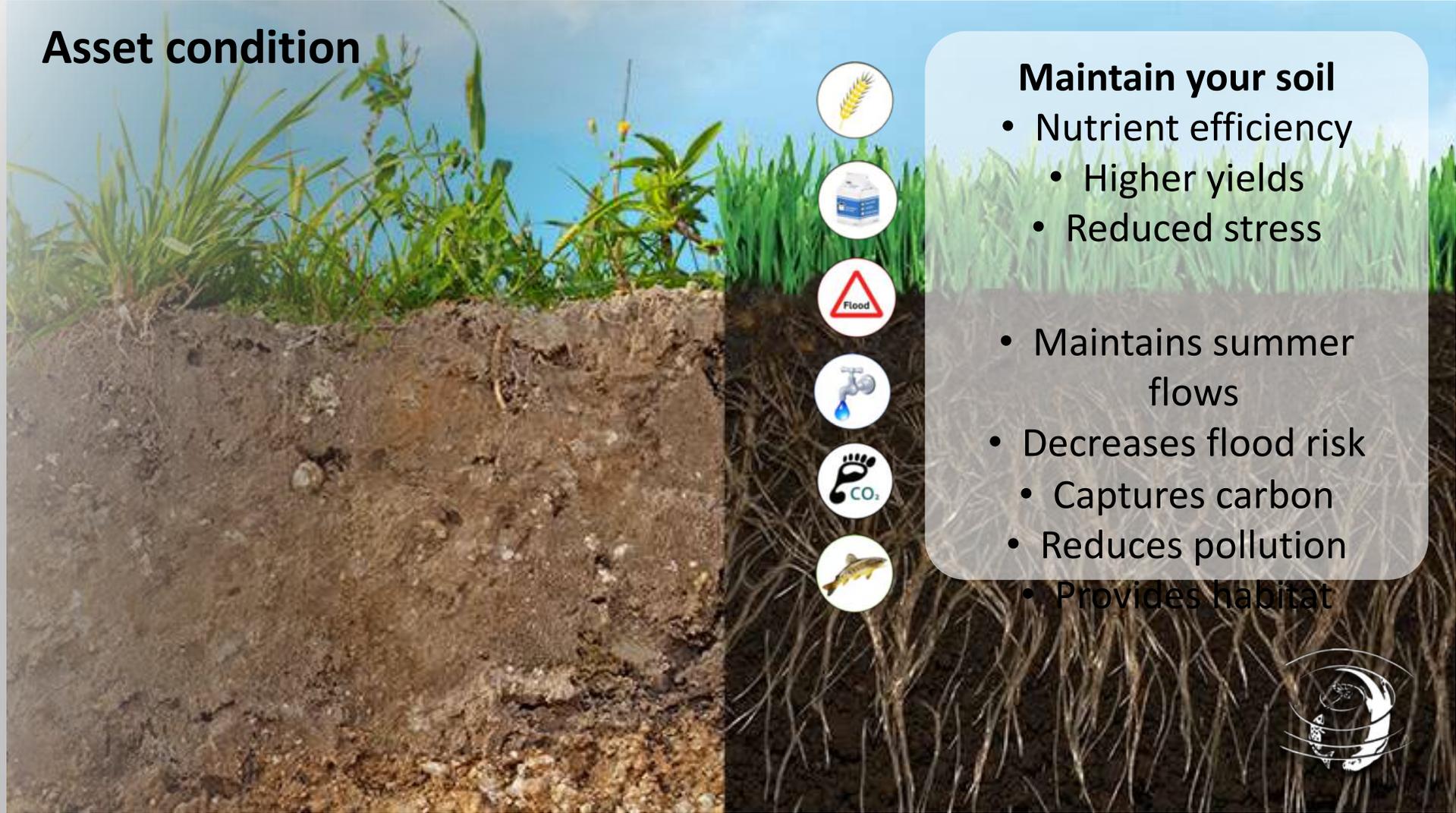
Asset condition

Maintain your car

- Increase fuel efficiency
- Gets you from A to B
 - Reduces stress
- Less emissions
- Reduced road debris
 - Reduced oil leaks
- Reduced risk to others



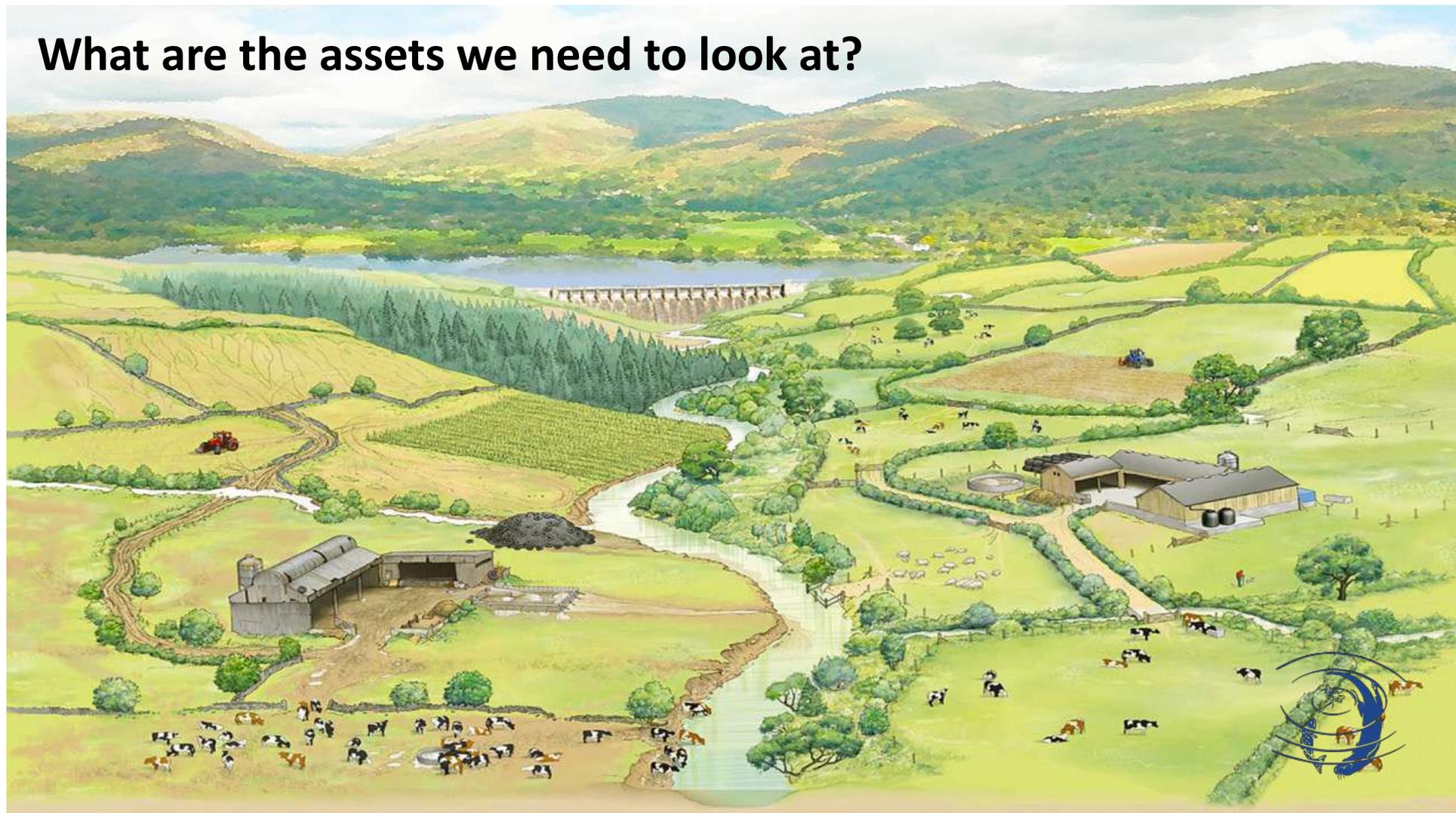
Asset condition



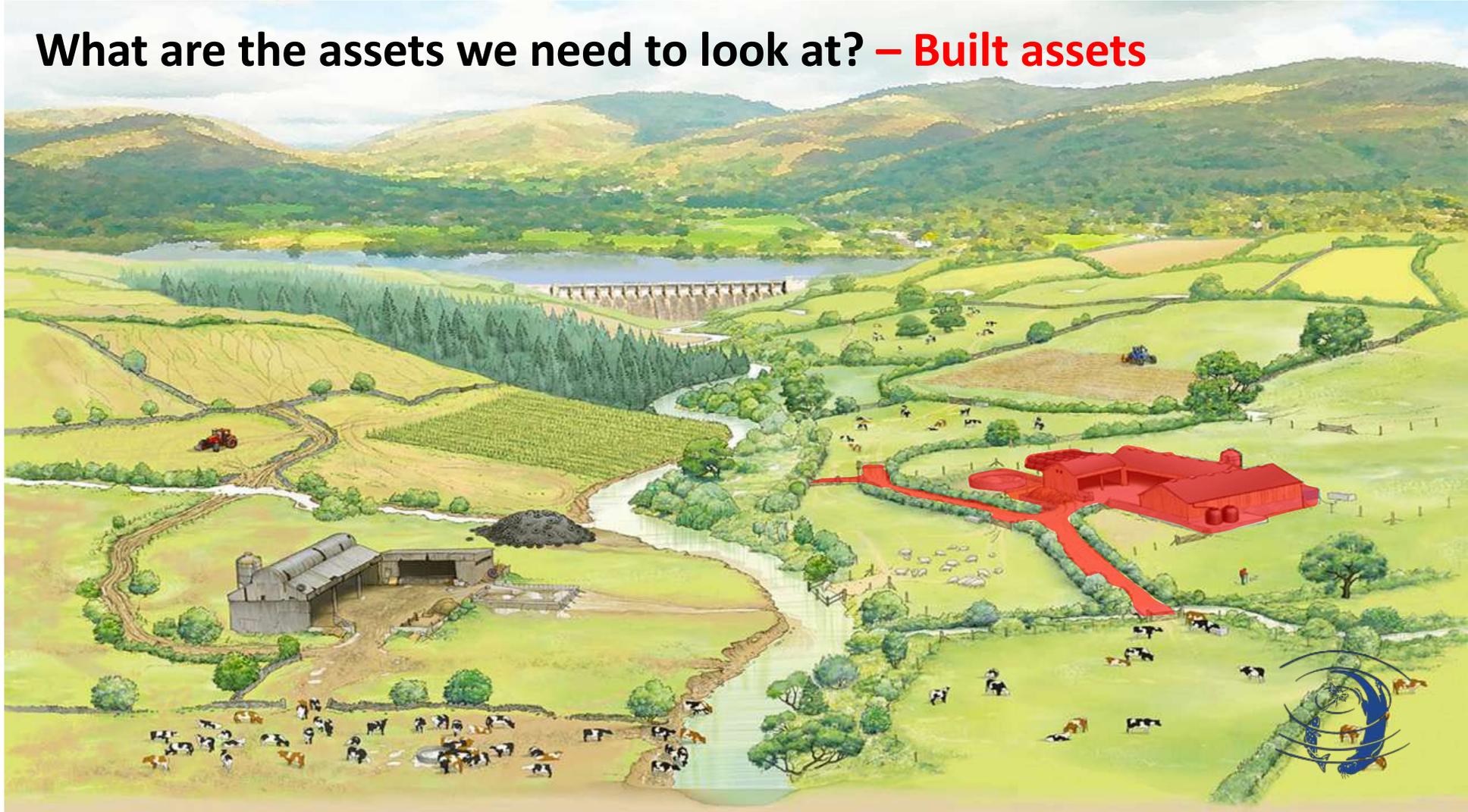
Maintain your soil

- Nutrient efficiency
 - Higher yields
 - Reduced stress
- Maintains summer flows
- Decreases flood risk
 - Captures carbon
 - Reduces pollution
 - Provides habitat

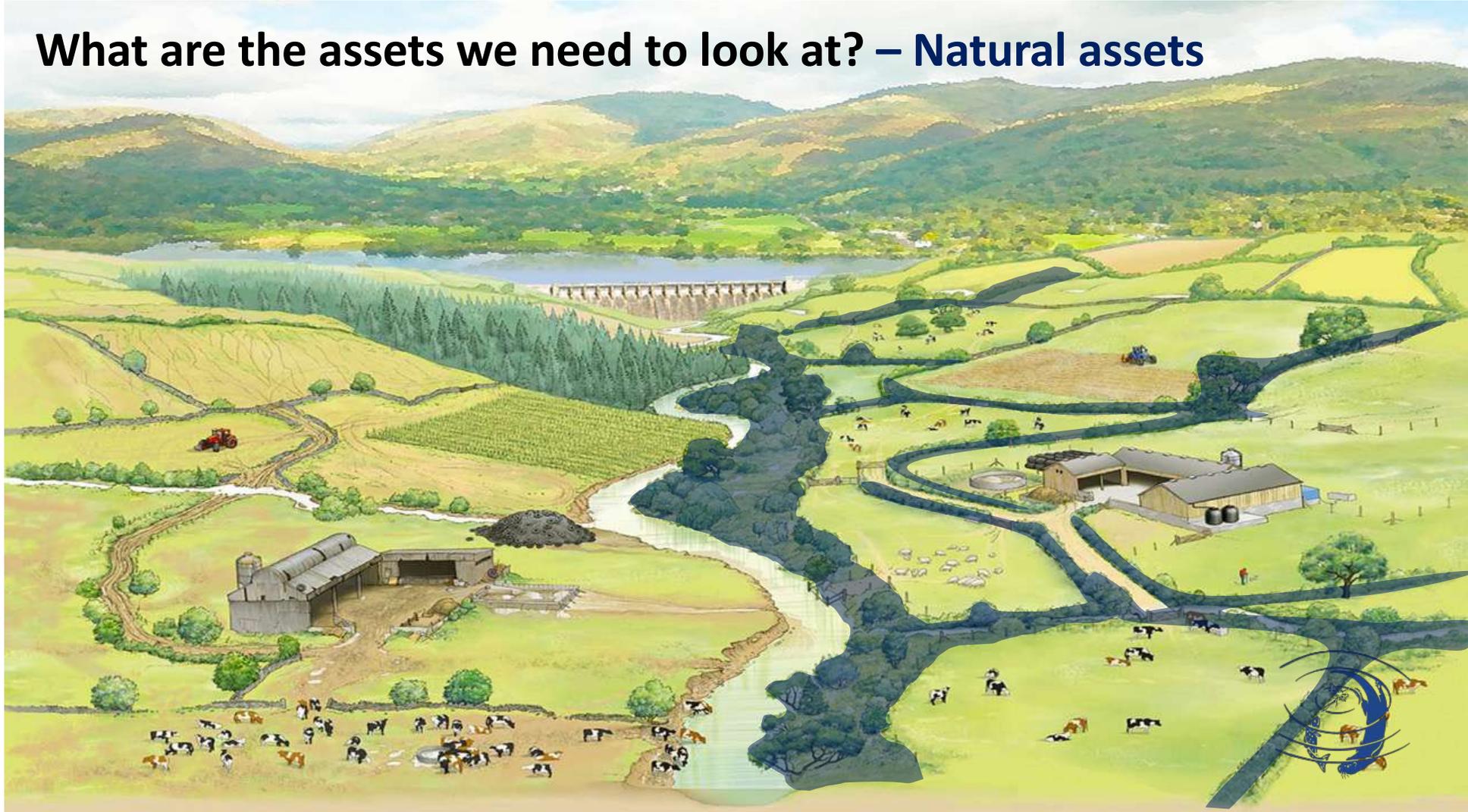
What are the assets we need to look at?



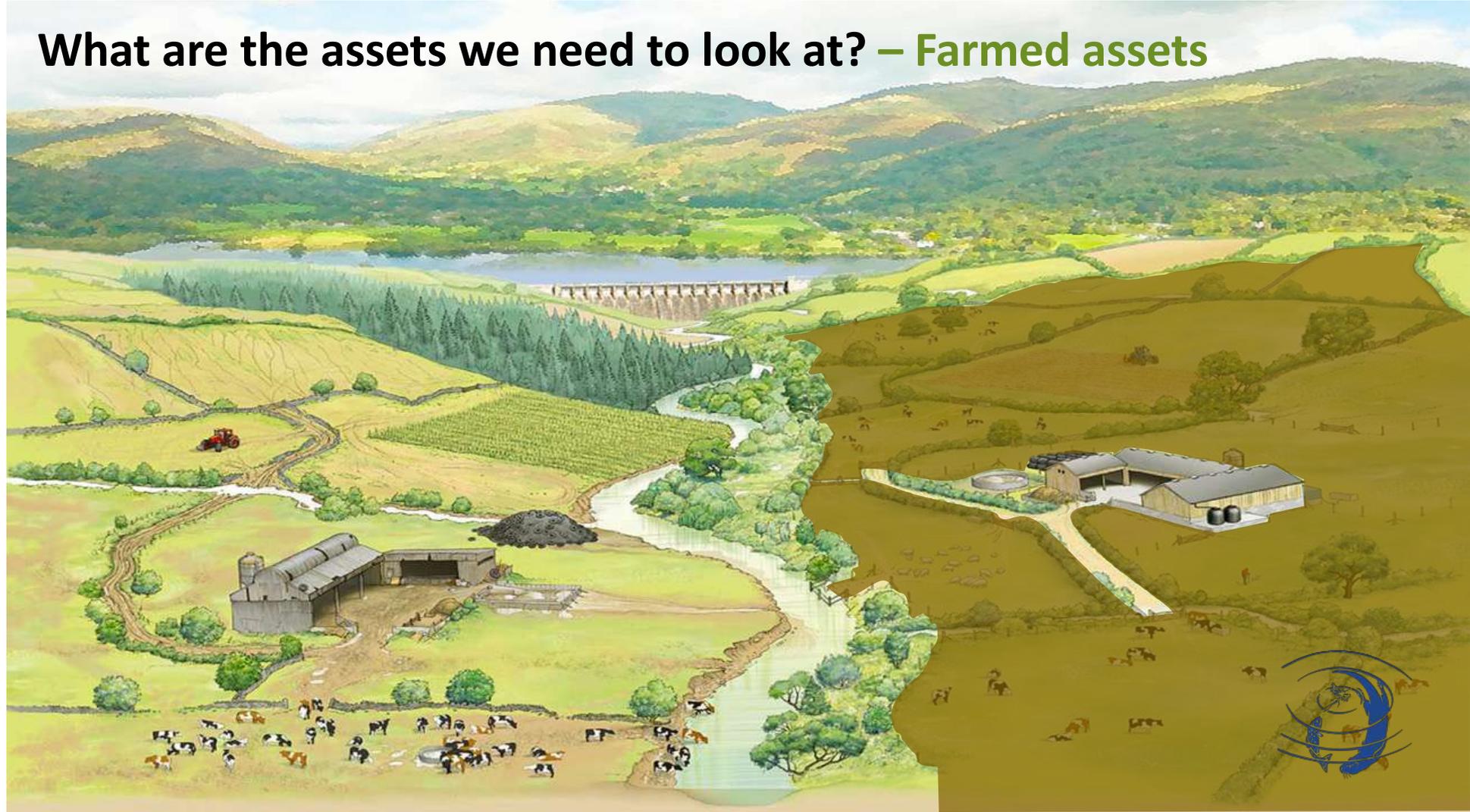
What are the assets we need to look at? – **Built assets**



What are the assets we need to look at? – Natural assets



What are the assets we need to look at? – **Farmed assets**



However, our built assets are failing...







...our natural assets are marginalised....







... and over 40% of farmed assets are severely degraded...





...reducing capacity to absorb rain and hold on to nutrients...





....leading to flooding and widespread pollution...

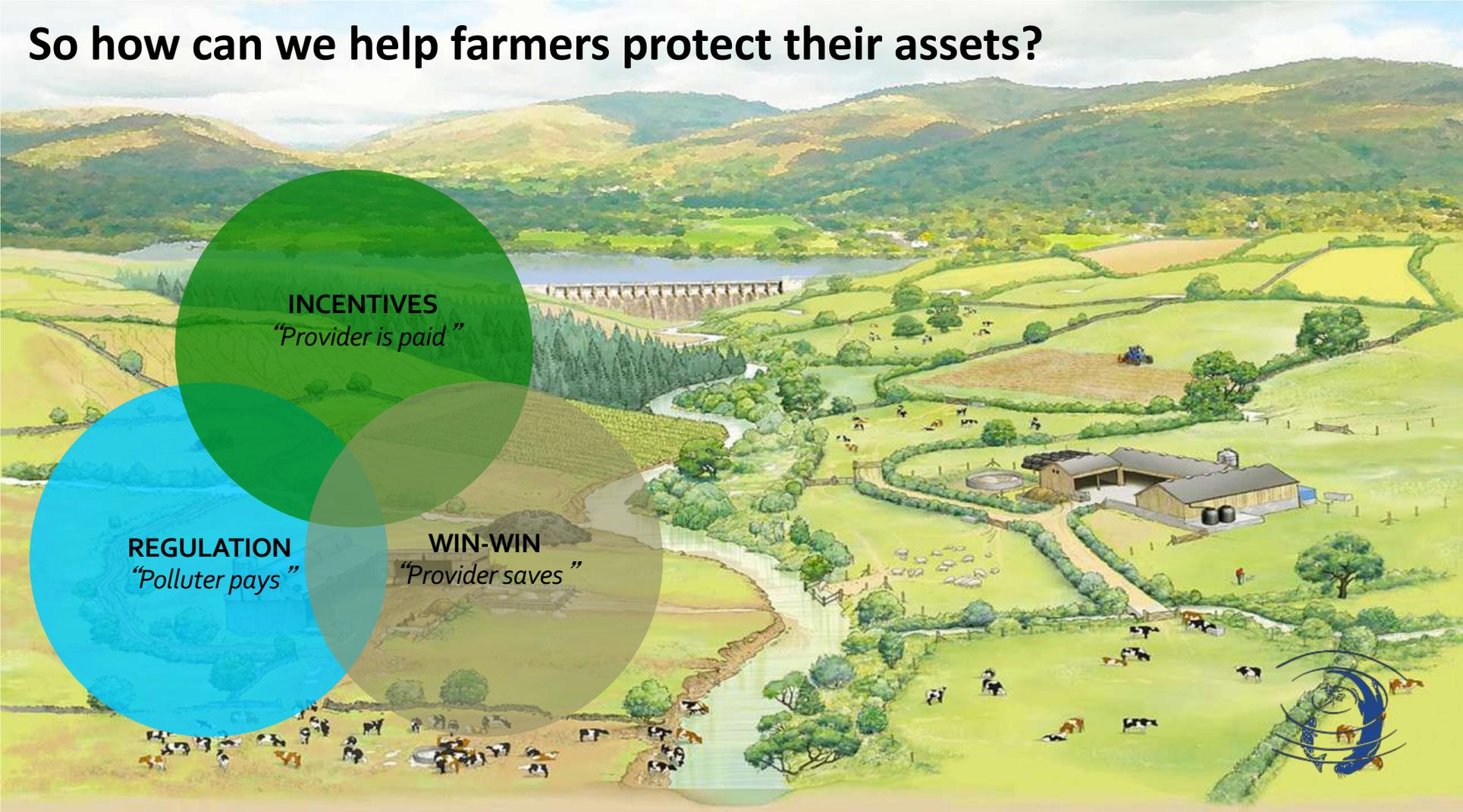




... as well as significant costs for the farmer.



So how can we help farmers protect their assets?



INCENTIVES
"Provider is paid"

REGULATION
"Polluter pays"

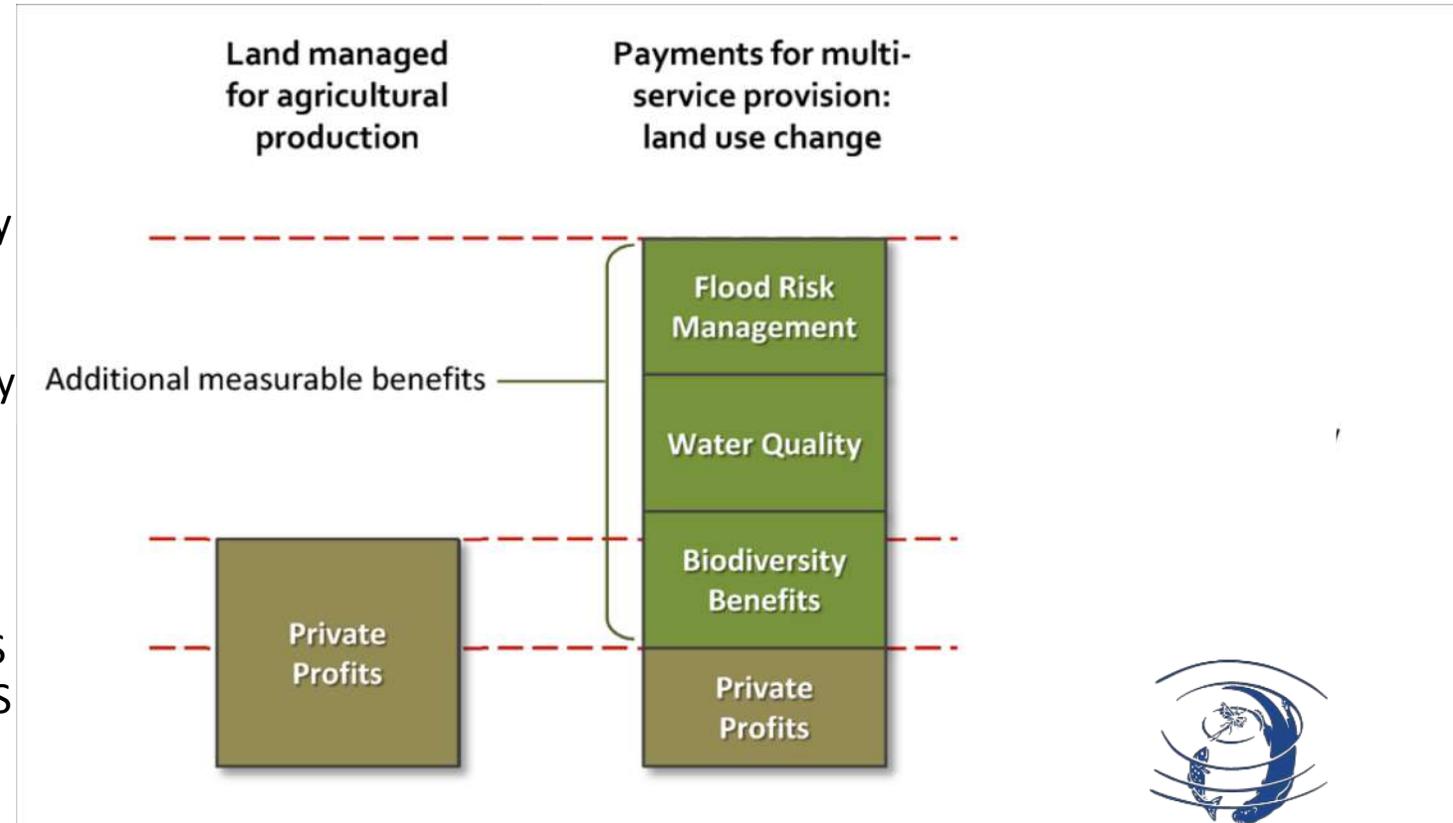
WIN-WIN
"Provider saves"



Paying for Ecosystem Services (PES)

A PES is:

1. a *voluntary* transaction where
2. a *well-defined* ES (or a land-use likely to secure that service)
3. is being 'bought' by an (minimum one) ES *buyer*
4. from a (minimum one) ES *seller*
5. if and only if the ES provider secures ES provision (*conditionality*)



How good are we at the conditionality bit?

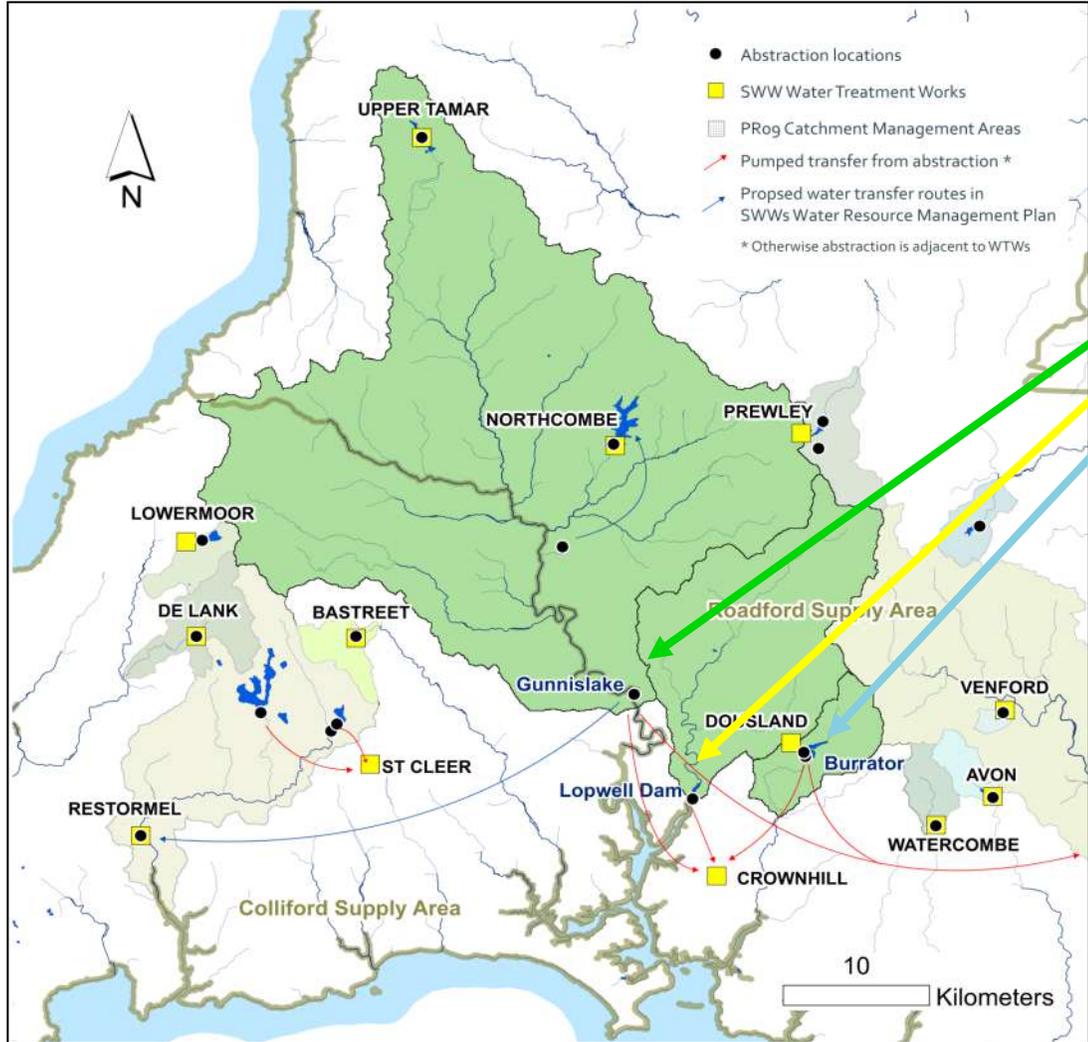


SECURITISATION OF BENEFITS





For SWW: ↑ Population + ↓ Water Supply + ↑ Pollution = ↑ Risk + ↑ Cost



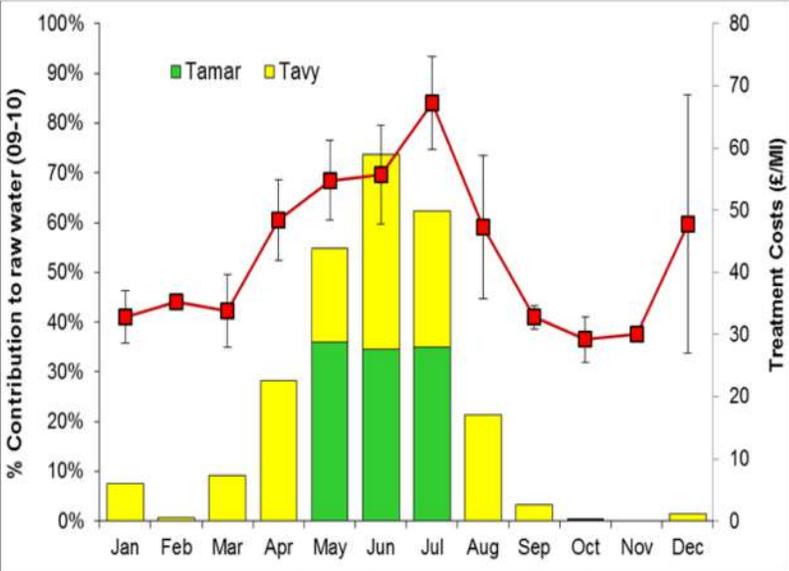
Crownhill WTWs

60 MI/day

80,000 households in Plymouth & South Hams

3 raw water sources

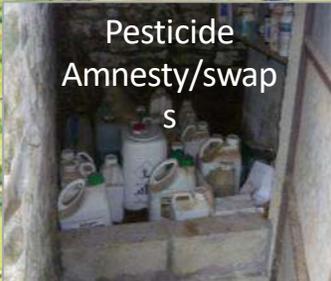
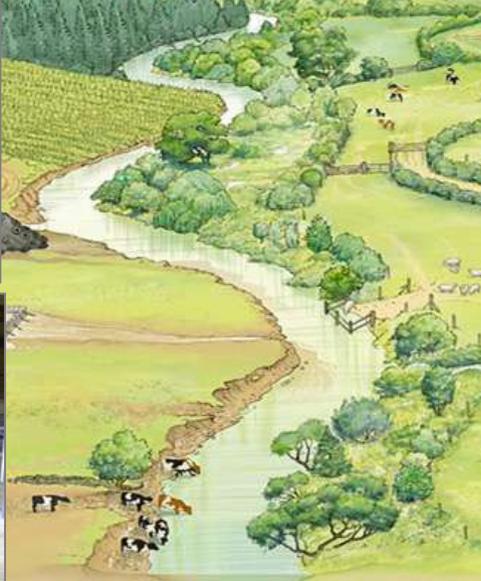
- - Tamar at Gunnislake
- - Tavy at Lopwell Dam
- - Burrator Reservoir



So what do we do? >£5m of infrastructure...



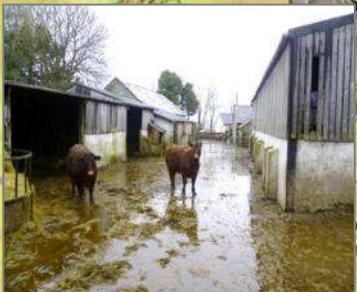
86km fencing & Reverse Auction



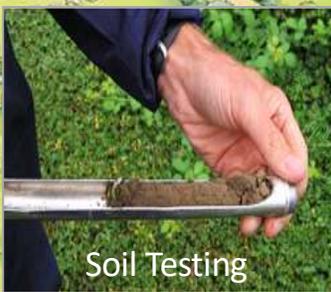
Pesticide Amnesty/swaps



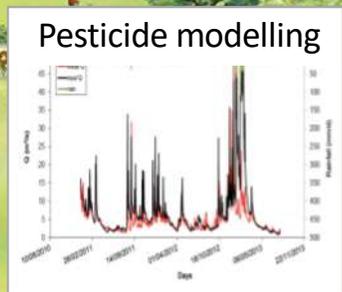
Workshops



184 projects & 25yr covenants



Soil Testing



...whilst minimising friction costs

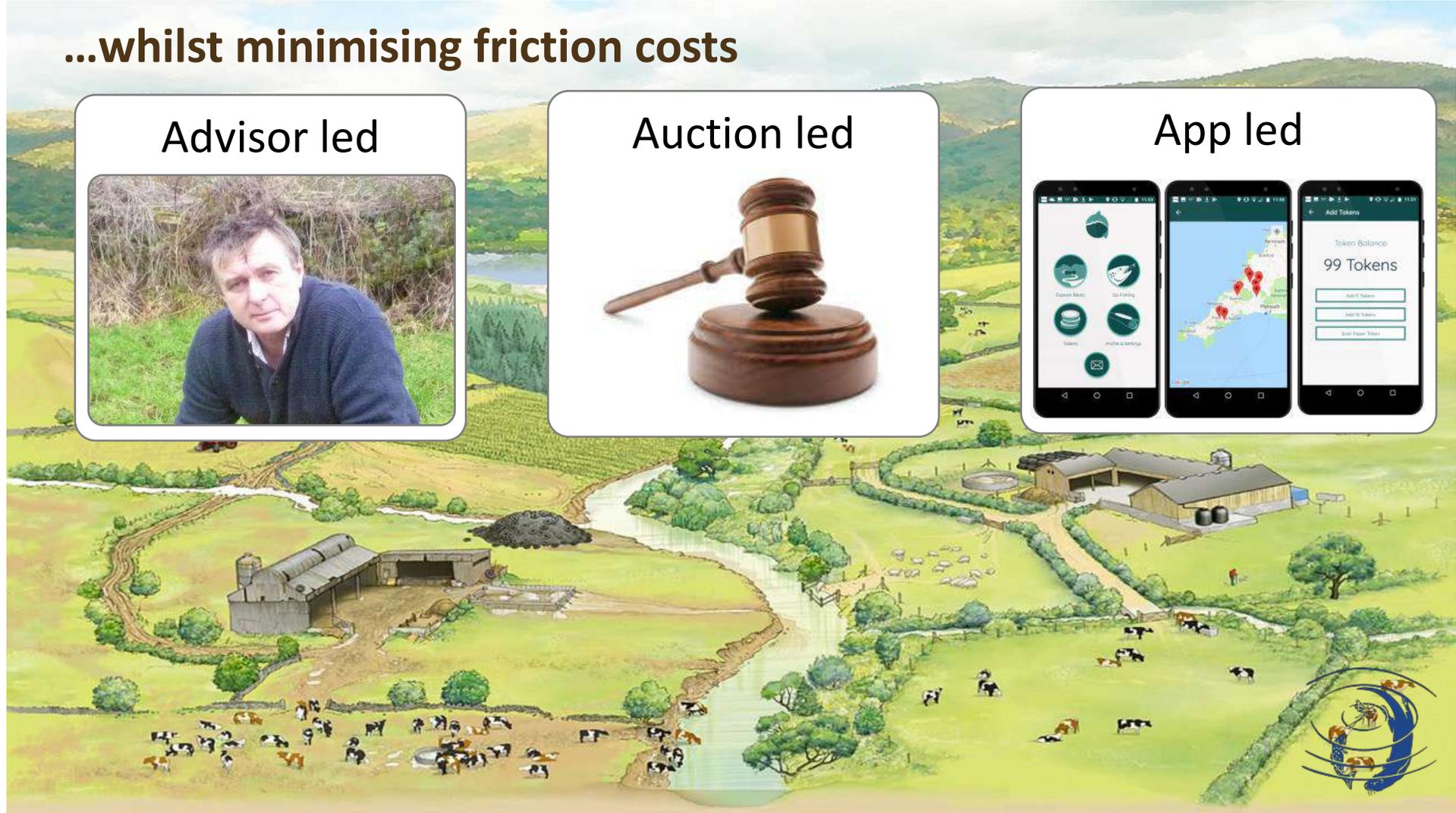
Advisor led



Auction led



App led



But what about securitising benefit

CAUDWORTHY – 26km²

2012-2013: Defra DTC monitored Caudworthy at high spatial/ temporal resolution – **soil, biology, chemistry & hydrology**

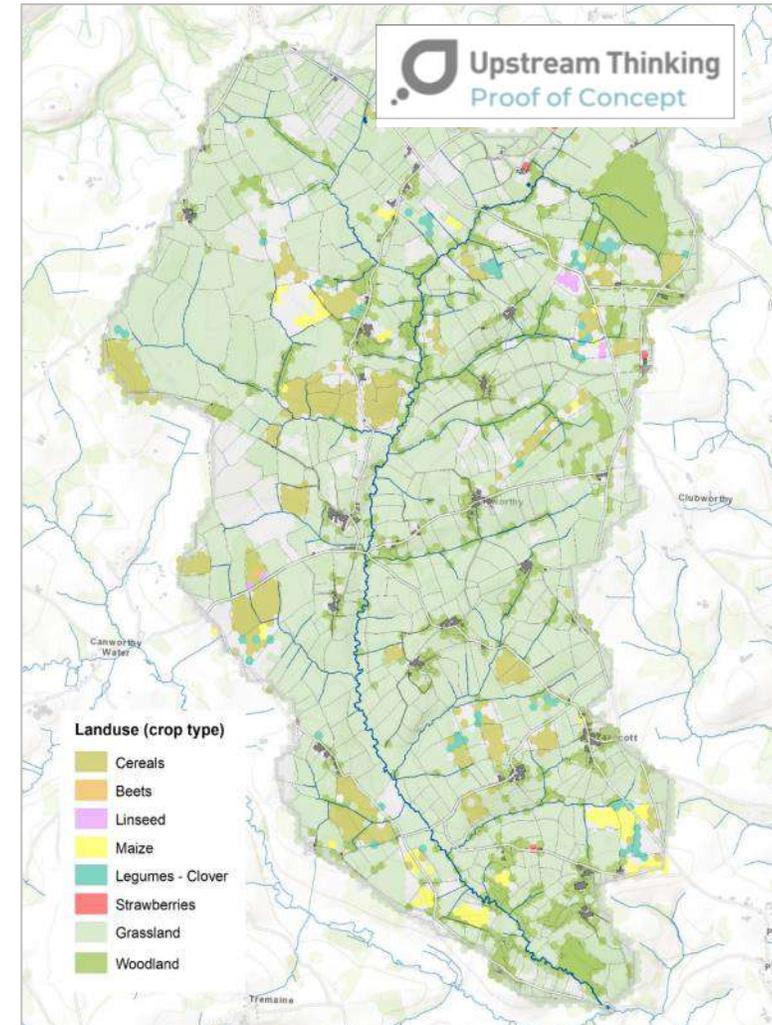
2013-2014: WRT engaged all **21 farms** delivering integrated farm advice (**19 farms**) and **£440,510** of investment (**11 farms**)

- Farmers contributed a further **£158,922** – total investment in the catchment = **£599,432**

Demonstration
Test
Catchments



River Tamar
Demonstration Test Catchment
Associate Partner



Securitising benefit

Demonstration
Test
Catchments



River Tamar
Demonstration Test Catchment
Associate Partner

Outcomes: monitoring & evaluation approach

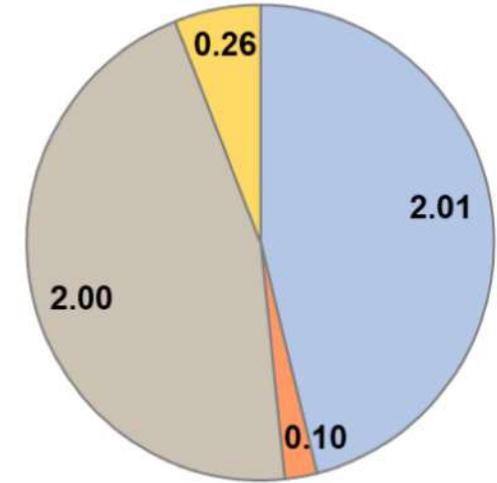
2015-2016: Defra DTC continued their WQ monitoring (post intervention)

>50% of N is inorganic nitrate-N, but dissolved organic N (slurry/manure) comprises 1/3rd total load – same source as for the total P.

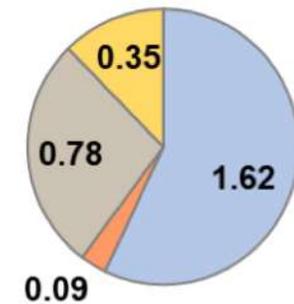
- Total Nitrogen reduced from 35.9 kg/ha (2012-2013) to 21.4 kg/ha (2015-2016)

NITROGEN SPECIATION

CFAS 2012 ave conc (mgN/l) TN = 4.39

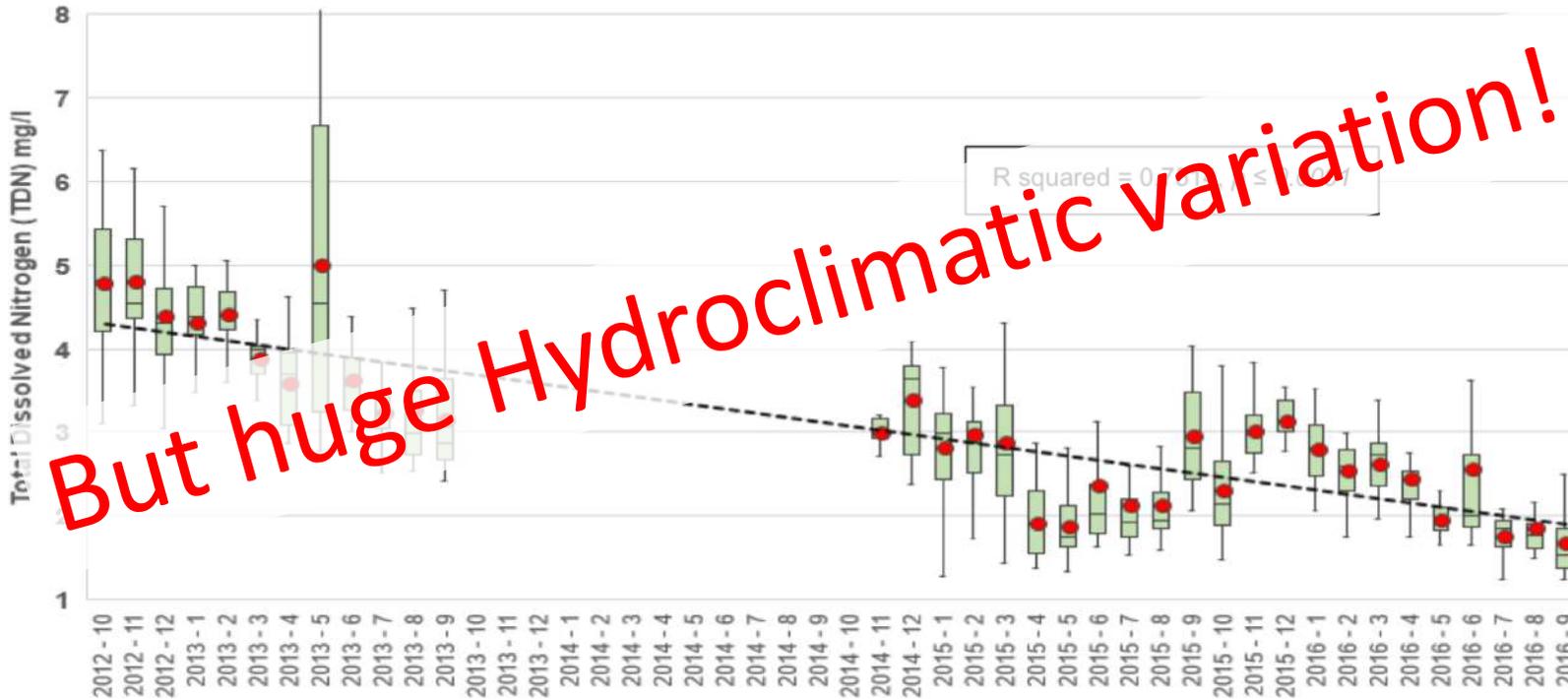


CFAS 2015 ave conc (mgN/l) TN = 2.70



■ TON - Fertilisers ■ NH4 - N - Fertilisers
■ DON - Slurry ■ PON - Erosion

NITROGEN CONCENTRATION



Securitising benefit

Outcomes: monitoring & evaluation approach

2015-2016: Biological monitoring (post intervention)

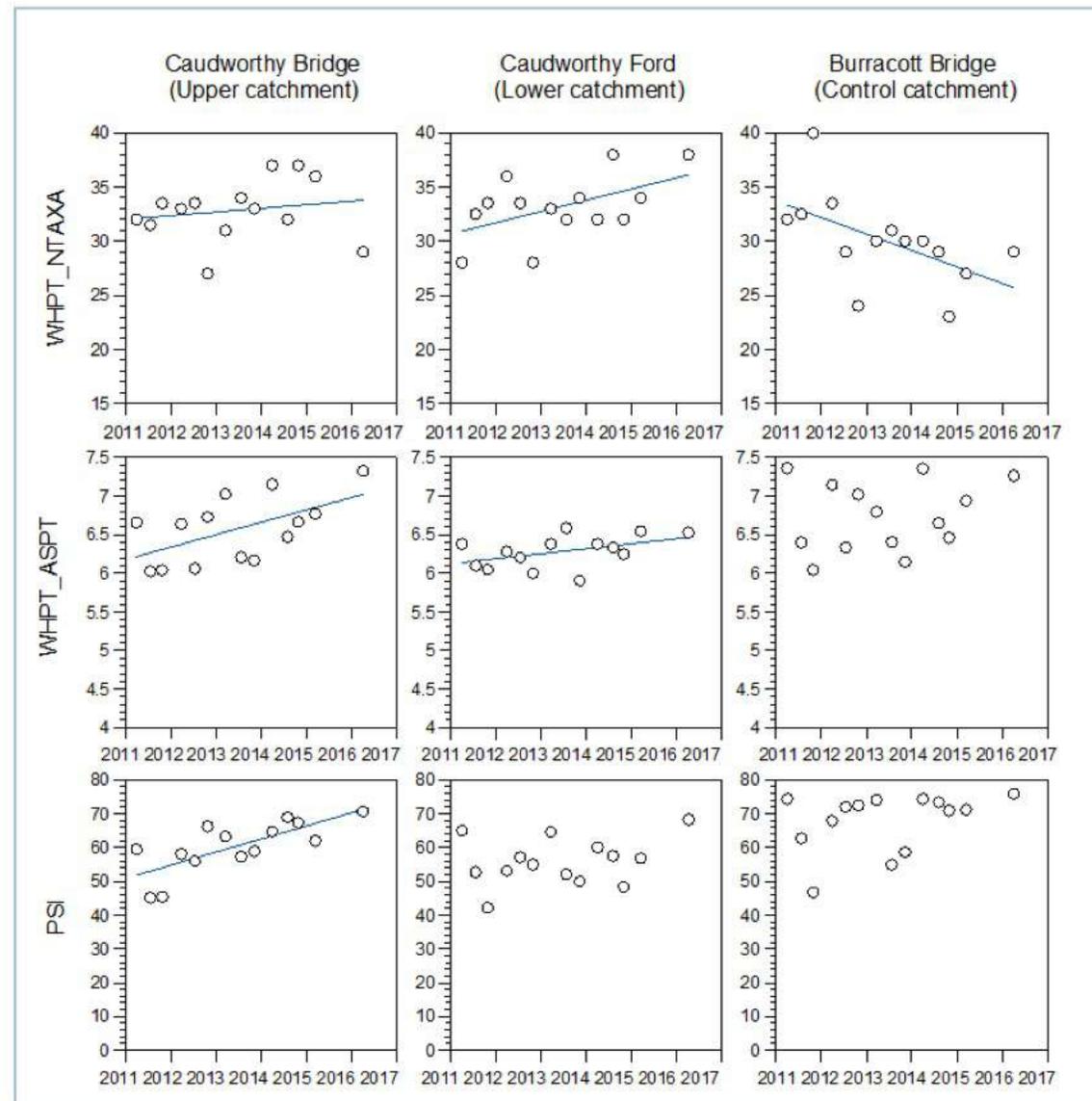
- Improvements in invertebrate indices (cp control sites)
- Some early indications of fish population improvements
- Changes in invert indices observed across the Tamar



River Tamar
Demonstration Test Catchment
Associate Partner

Demonstration
Test
Catchments

UPPER AND LOWER CAUDWORTHY TEST CATCHMENT NEET CONTROL CATCHMENT

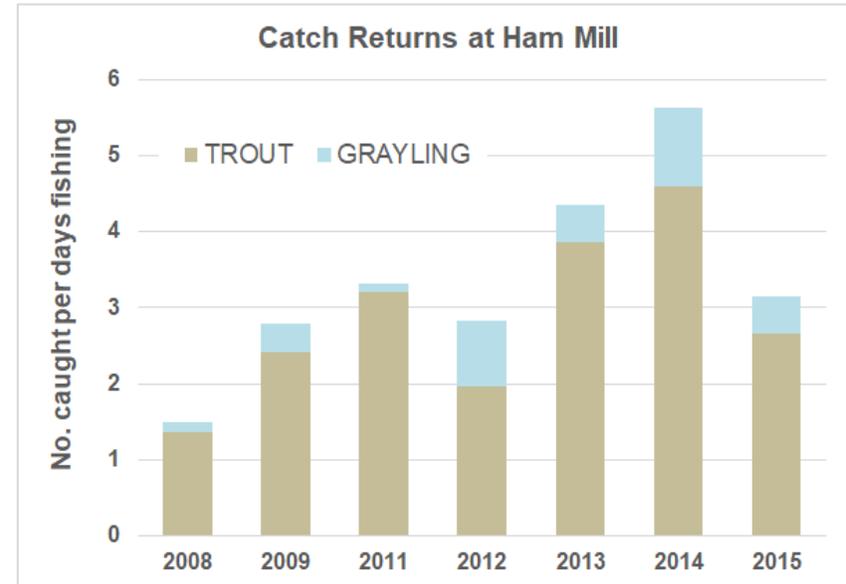


Securitising benefit

Outcomes: monitoring & evaluation approach

2016-2018: Numerous anecdotal reports of **ecological recovery** in the Ottery, Upper Tamar Lakes, etc

2017-2018: Undertaking **'Biodiversity Bi-products'** study to examine biodiversity changes realised – **Uni of Reading**



So we can see the benefit in the river but can SWW securitise the benefits?



RISK: treatment **failure** leaves pollutants in final water



COSTS: some costs are fixed – some are **variable**



Chemicals

Energy

Asset maintenance

Sludge disposal



In summary

1. Establish the condition of your assets
2. Understand the private benefits of healthy assets
3. Securitise the benefits that demonstrate conditionality
4. Where feasible minimise friction costs
5. Accept that the rest are public goods paid by public money

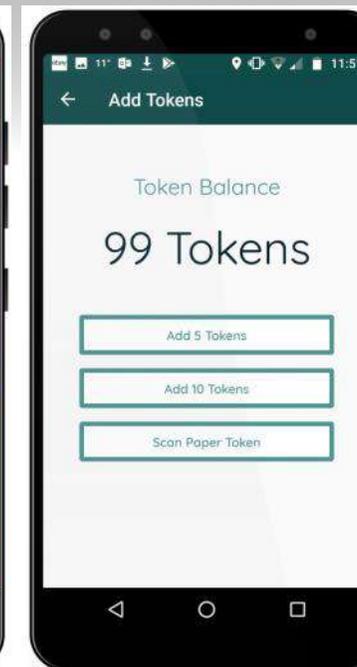
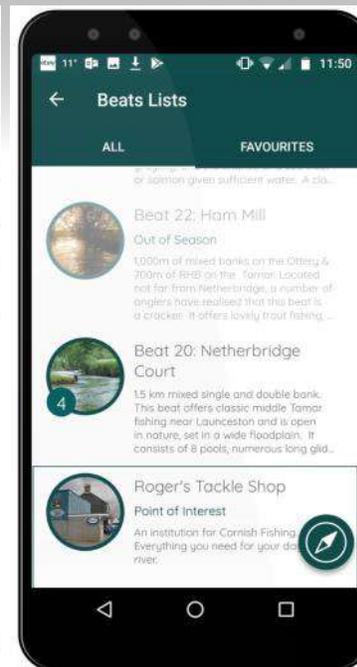
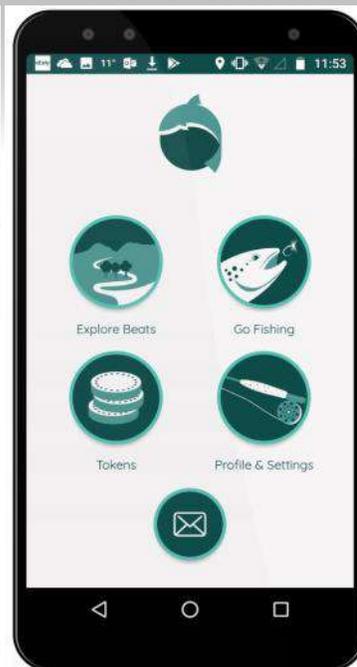
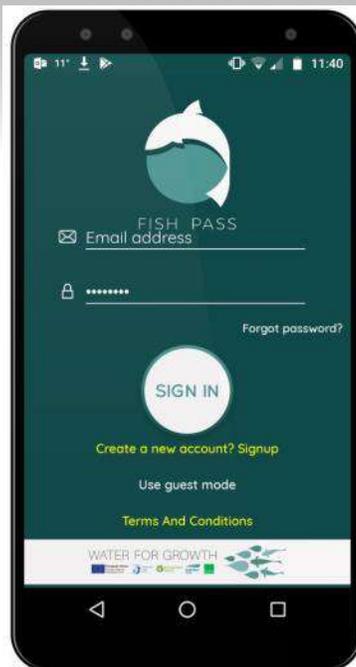


Rivers Trusts can enact the 25 year vision





Thank you for listening....



...and talk to us if you are interested in minimising your PES friction costs!