Natural Capital Monitoring in Wales

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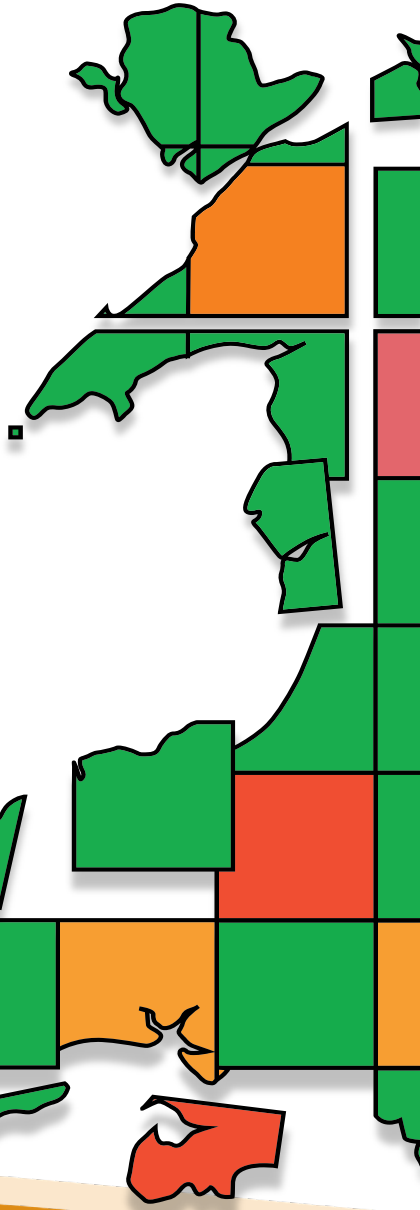

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Strategic Evidence Unit

Codi hyder yn sail tystiolaeth ni

Building confidence in our evidence base

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Policy context

Wales was the first nation in the world to legislate for the UN's Sustainable development Goals – Well Being of Future Generations Act 2015.

- The Well-Being of Future Generation Act 2015 has 7 goals and 46 clear measurable social, economic and environmental 'National Indicators' to track progress.
- Six directly relate to the environment.
- Other indicators are used for a wide range of other reporting requirements including State of Natural Resources Reporting and Glastir (land manager payment scheme / AES outcomes).

Welsh Government approach to Natural Capital

No official status

Rather it is one approach we use to package information to assess policy impacts and the status and change of our Natural Assets.

This includes a long term commitment to national scale monitoring through ERAMMP of the wider countryside with indicators developed with the wider community which contributes data and evidence to:

- State of Natural Resources Report (SoNaRR – every 5 years) delivered by Natural Resources Wales
- Natural Capital Accounting including a move for the inclusion of condition metrics exploiting the rich source of national data in Wales
- Tracking of resilience
- Development of a community integrated modelling platform (the IMP) to allow exploration of future possible policy actions

Natural Resources Wales and other organisations/programmes are responsible for evidence and reporting for other natural assets (i.e. designated land; large freshwater bodies and marine (WFD); air quality; GHG)

All work follows Welsh Government Policy Principles

Community approach

Long-term, integrated thinking to avoid unintended consequences

Use and re-use of data

Rapid deployment

Aquabook compliance

Monitoring is delivered through a 10 year community partnership (GMEP / ERAMMP: 2012 – 2022)

Objectives: To provide ongoing evidence and support for a wide range of evidence and modelling requirements

Who: Over 20 partners to ensure capability to cover agriculture, forestry, tourism, air, soil, water, climate, biodiversity, public health and well-being, economics and more….

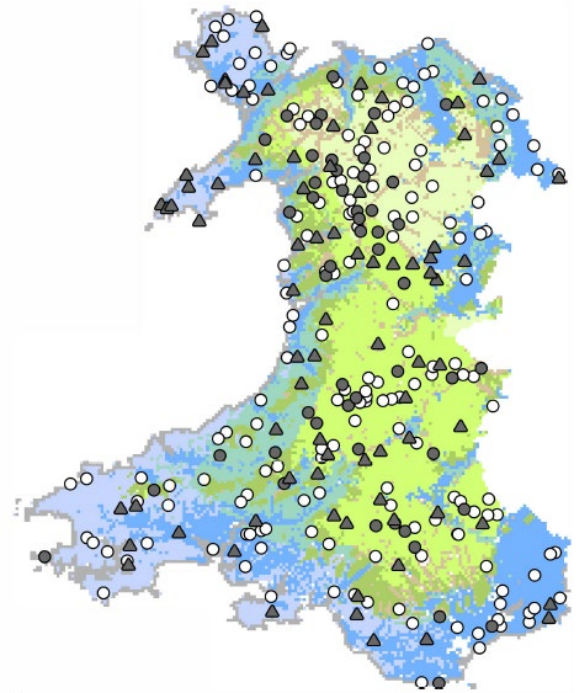
What: A 10 year programme (2012 – 2022) spanning two 5 year contracts

Funding: Welsh Gov, with UKCEH aligned and co-funding funded, in total worth £12m total over 10 years. New contract to be commissioned competitively in 2022.

Three key elements to the ERAMMP partnership….

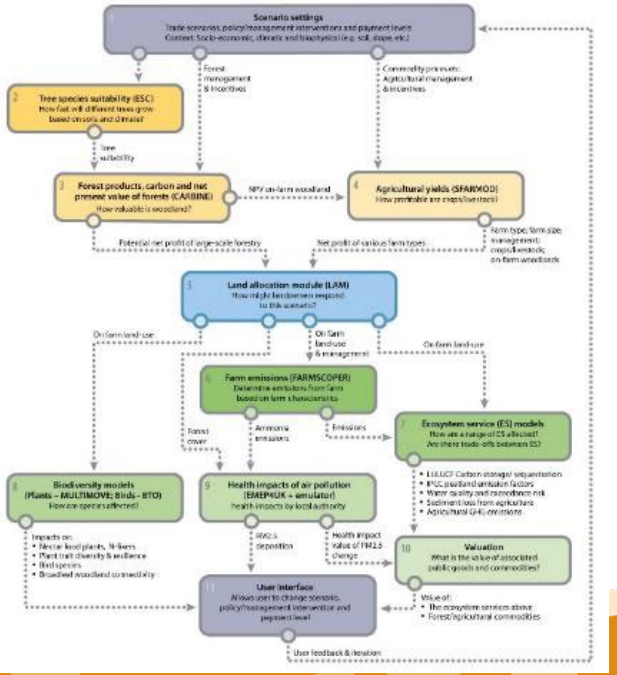
(1) Monitoring and surveys

The only integrated national monitoring programme in the UK



(2) Modelling

Exploring policy options and outcomes



(3) Rapid Evidence Provision, Integrated Assessments, Natural Capital Accounts & Analysis

What we do know; what we don't know; trade-offs and co-benefits

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ERAMMP Teams: Broad and Deep Expertise

National survey 21/22:

130 squares (1 x 1 km)

668 land-owners

13 coordinating & IT staff and 2 subcontractors

37 surveyors

11 laboratory analysts and subcontractors

6 data analysts from 3 organisations

Modellers:

26 staff from 7 organisations

Evidence report packs:

SFS:

18 staff from 9 organisations

National Forest:

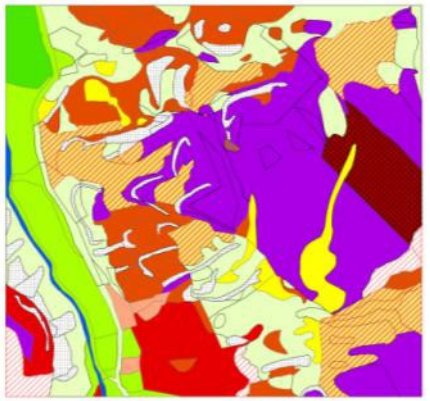
40 staff from 8 organisations

All reports:

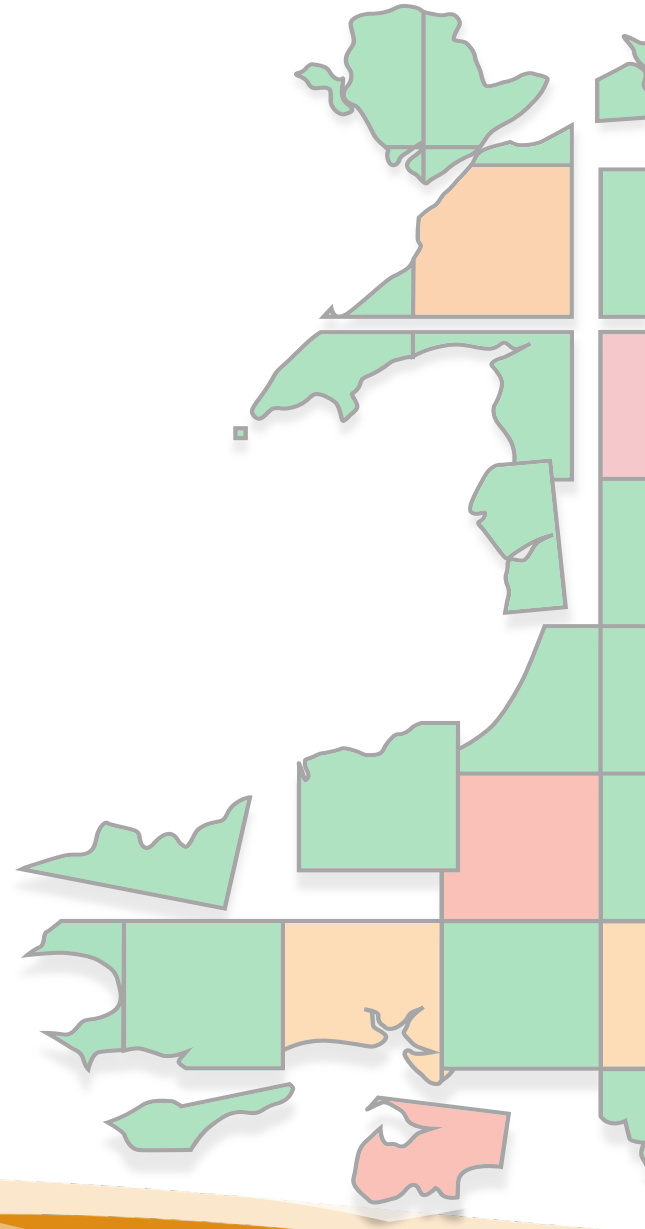
43 staff from 14 organisations

Evidence is captured through multiple approaches

- Field survey (asset condition and extent)
  - Only where not already covered e.g. WFD, Air quality
- Citizen science (BRC and LRCs)
- Earth Observation (including now high resolution Planet data)
- Modelling (emissions to water and air, upscaling and early insights)
- Carbon footprinting (including embedded emissions of GHG and efficiencies)
- Farmer Practice Surveys (behaviour, economics, resilience)
- Citizen surveys (landscape aesthetics)



Field Survey



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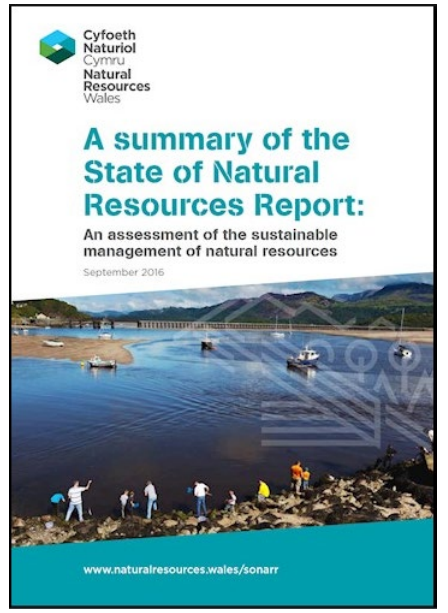
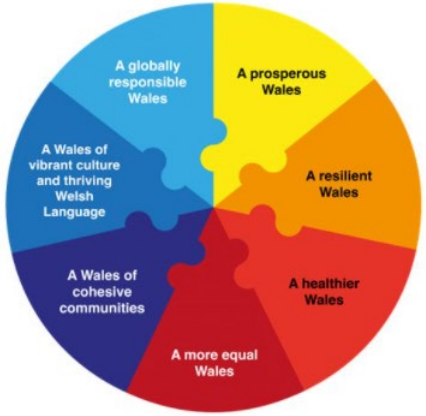
Field Survey purpose

1. To report on national trends of ongoing change in the wider countryside for:
    - Well Being of Future Generations National Indicators
    - State of Natural Resources Report (SoNaRR)

2. Quantify the outcomes of a range of different policy outcomes (the collect once, reuse often principle) e.g.
    - Glastir and the new CAP replacement - Sustainable Farm Scheme
    - National Forest outcomes
    - Net Zero
    - Resilience metrics
    - Natural Capital Accounts
    - Soil Biobank archive to explore the legacy and emerging impact of humans which soils store e.g. Antimicrobial Resistance; Pesticide residues
    - Ground-truthing for Earth Observation
    - Research questions about drivers or change
    - etc





Glastir

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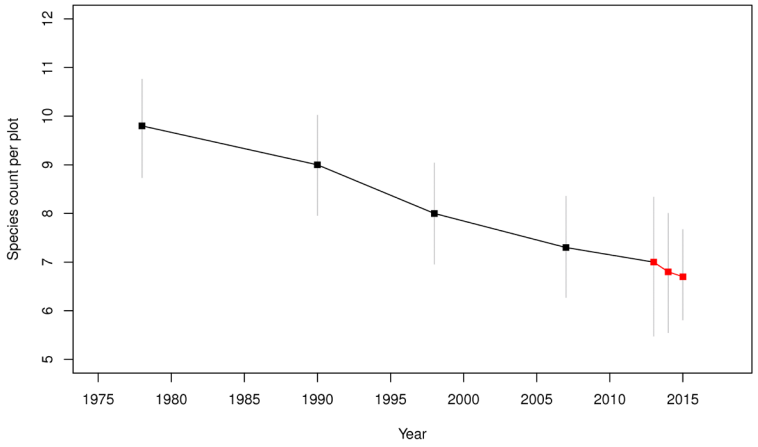
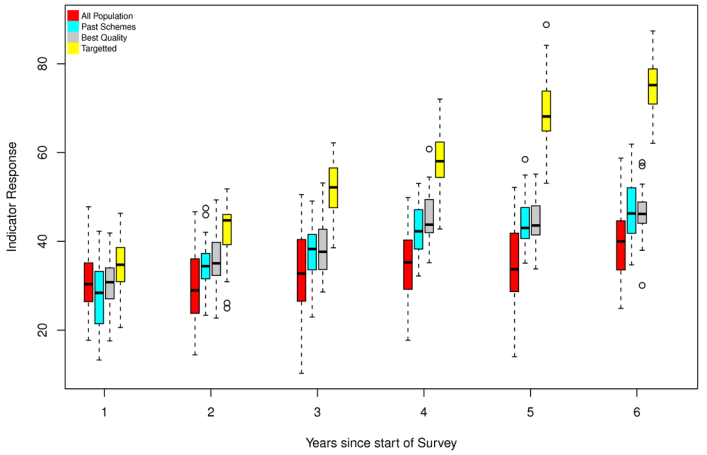
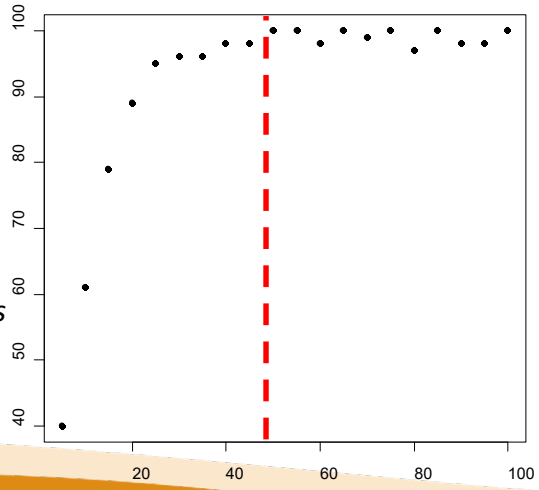
Key points that influence survey design

- Build on past surveys and methods (e.g. UKCEH's Countryside Survey, BBS)
- Efficient of sampling through stratification by ITE Land Class which gives robust national metrics from just 1% of land
- Population approach capturing displacement issues from land management schemes.
- Power analysis to identify number of sampling locations needed
- Avoidance of 'ambulance chasing' recognising our knowledge is imperfect and we need to capture both improvement due to policy action and unexpected degradation





Plant species richness



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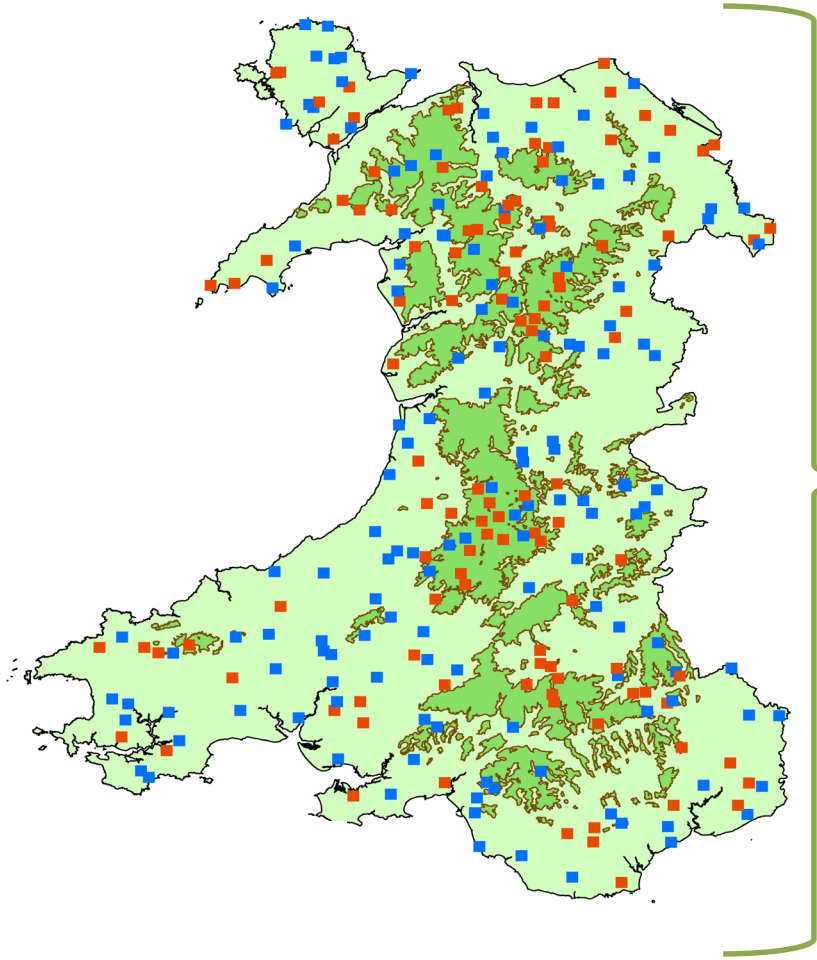
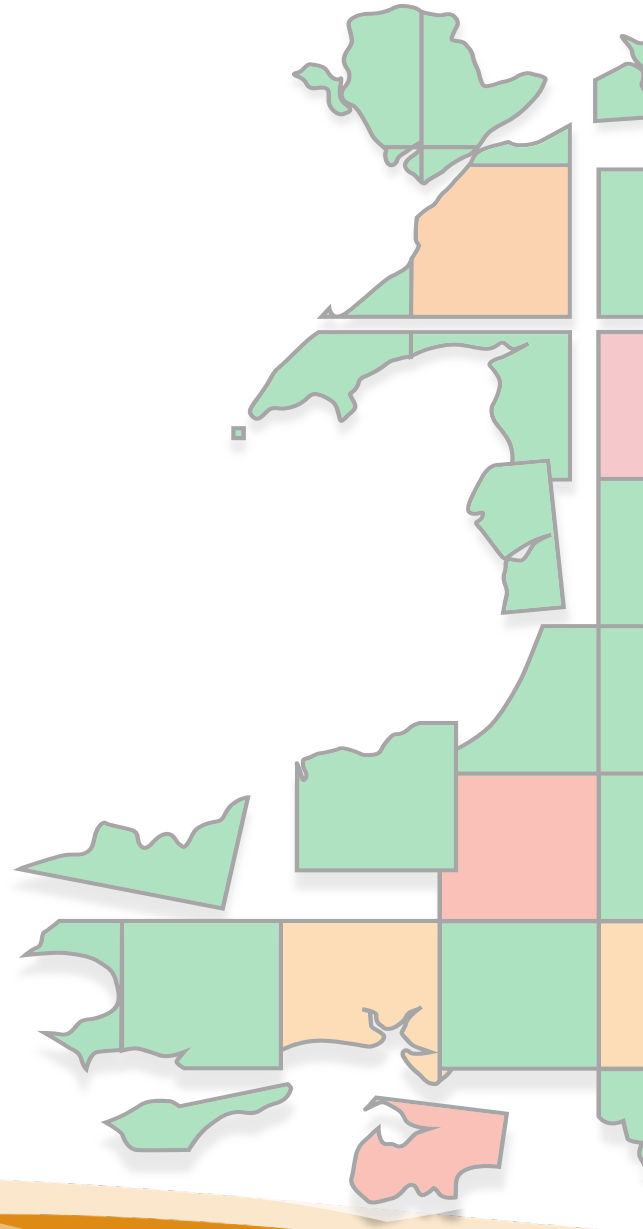
Survey activities in 300 1km squares

- Vegetation composition
- Pollinator surveys
- Bird surveys
- Woodland and woody linear feature mapping
- Soil sampling and peat depth
- Soil erosion
- Ponds
- Headwater streams
- Landscape photography
- Historic environment features
- Public footpaths

All co-located in 1km squares to capture inter-dependencies i.e. an ecosystem approach



Reporting indicators



We exploited well tested indicators and developed new ones where there was a gap or improvement needed.

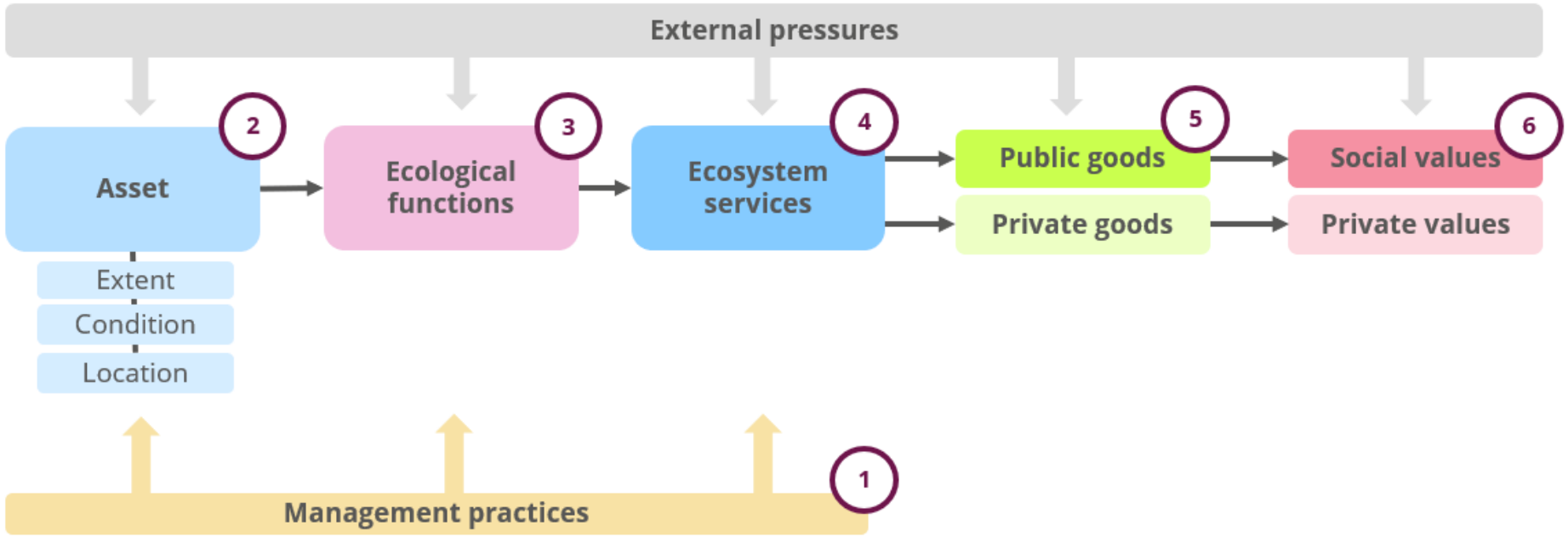
What makes a good indicator?

- Relevant
- Efficient
- Representative
- Can be linked to historic data
- Easily understood
- Reliable and reproducible.

Also can be:

- Individual indicator
- Aggregate indicator (if so – transparency needed how weighted)
- Proxy indicator

An indicator could be at any step in the Logic Chain Approach



1. *Management practices*
2. *Asset*
3. *Ecological functions*
4. *Ecosystem services*
5. *Public goods*
6. *Social values*

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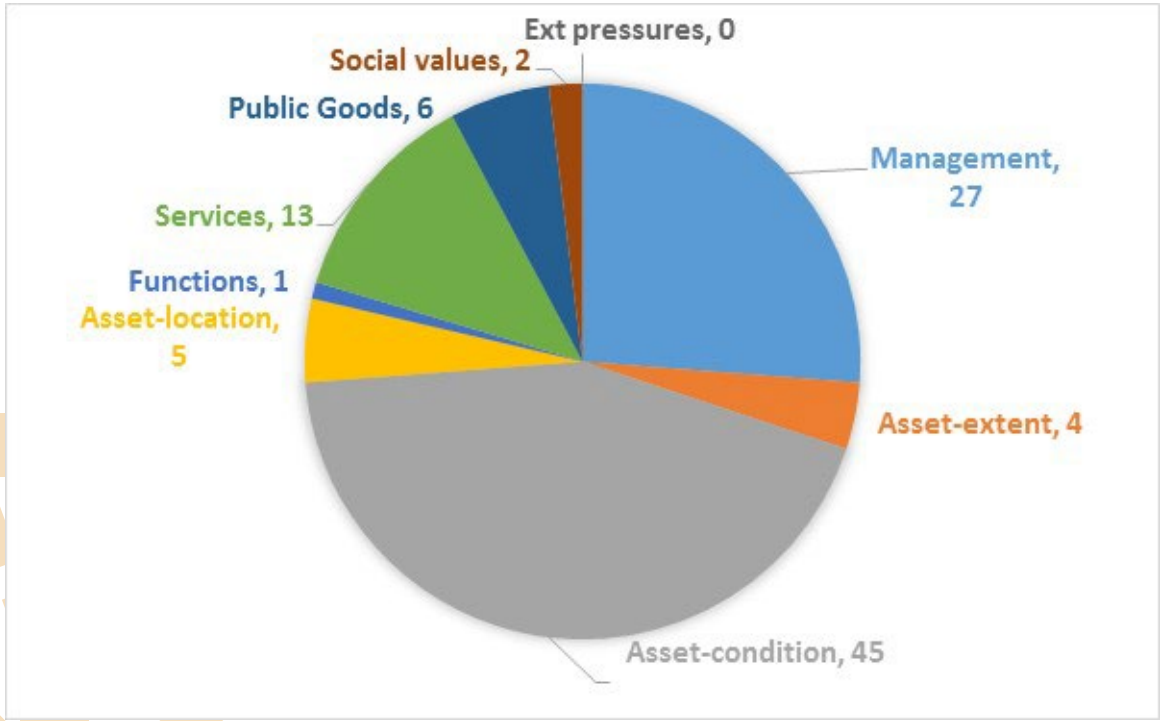
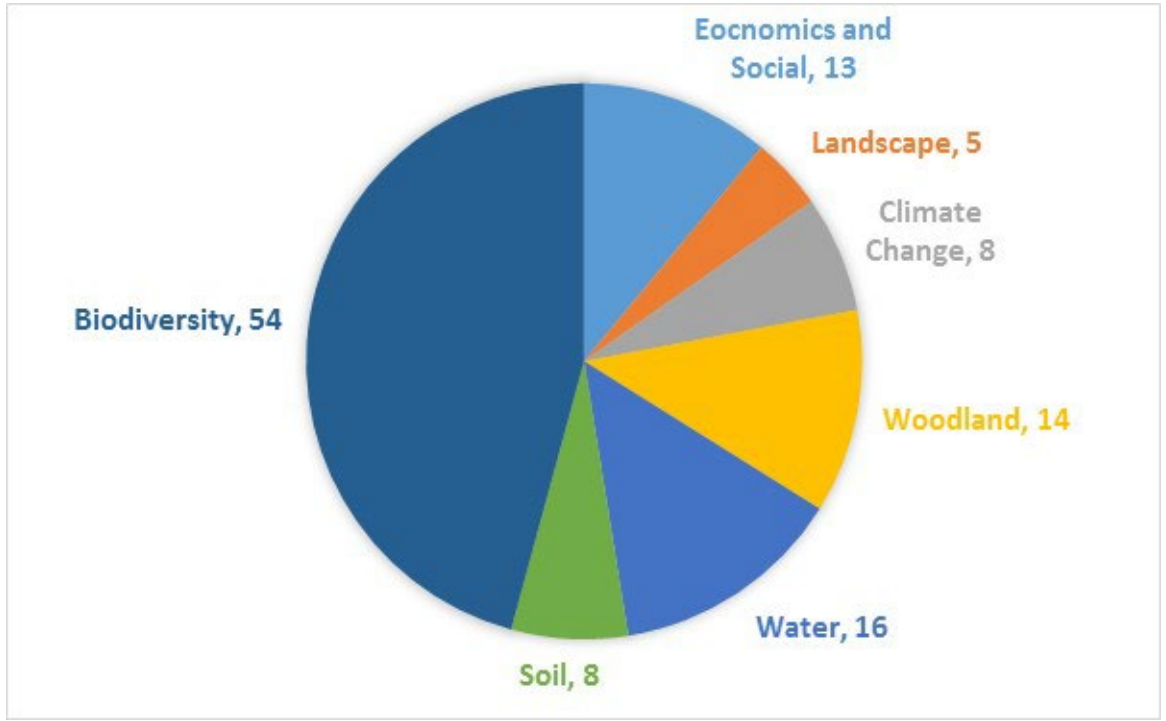
From a longer list - a total of 100+ indicators were selected by stakeholders (too many?)

(these are now being reviewed and updated with stakeholders)





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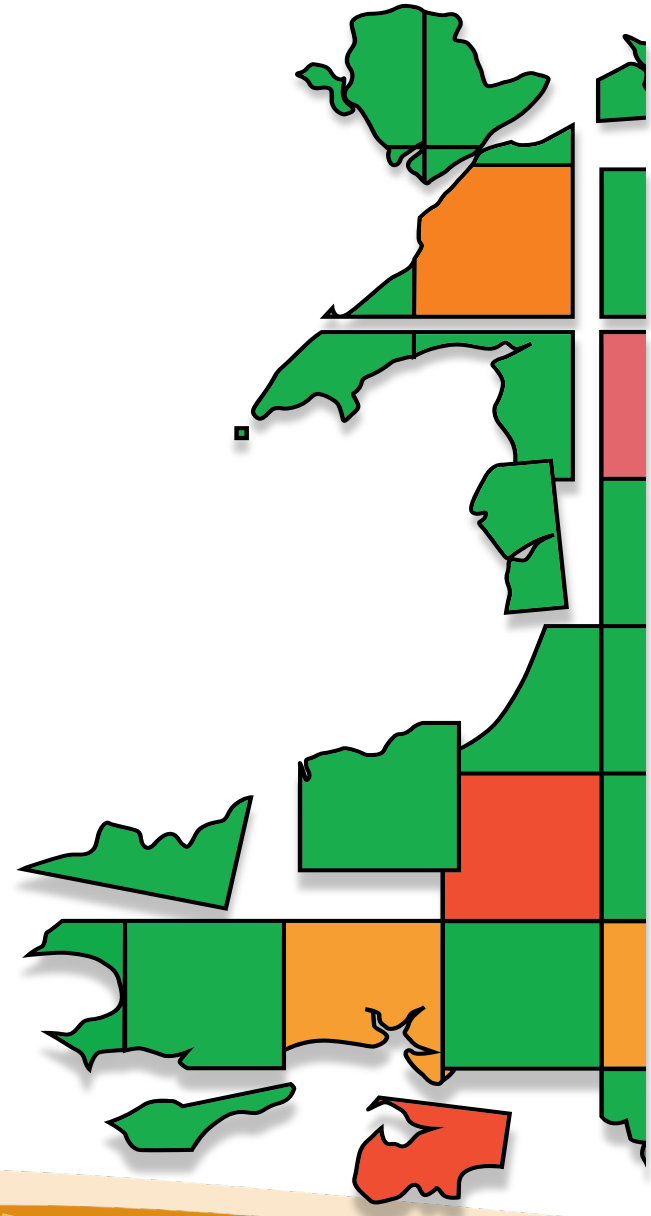
Examples of data use



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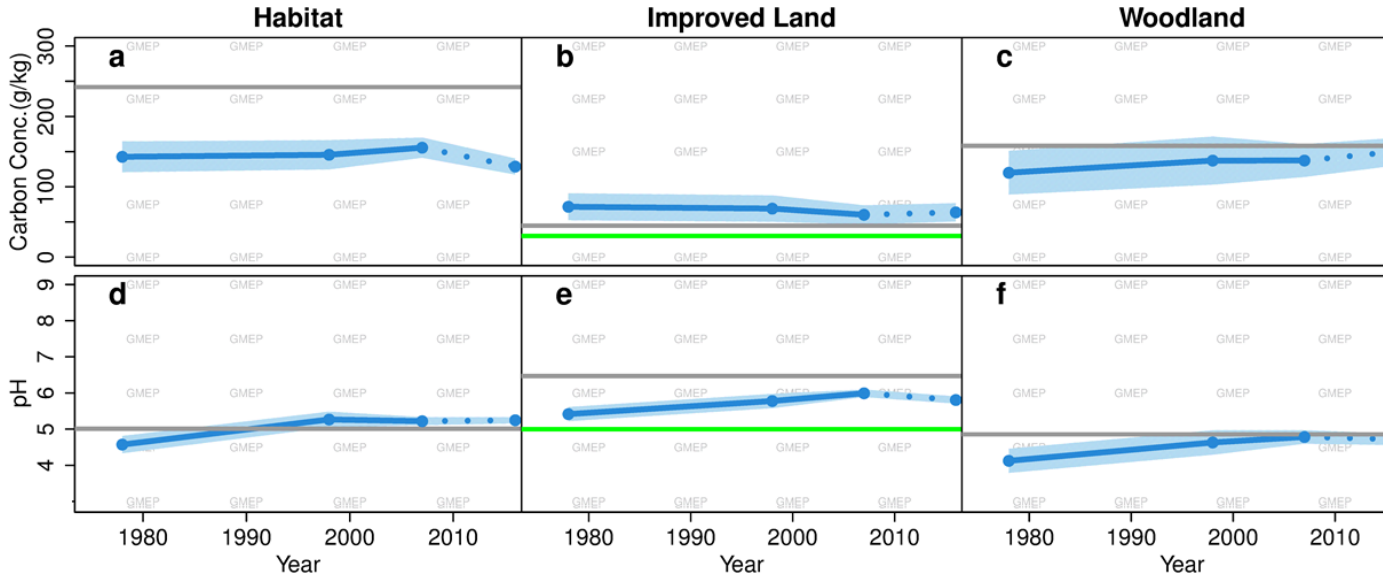
National data tables and trends (e.g. soil carbon)

Indicator	Countryside Survey[3]				GMEP	Significant differences		In scheme compared to national average
	1978	1990	1998	2007	2013-16	Overall	Latest period	
Improved land	71.6		69.0	60.2	63.7	=	=	=
Habitat land	142.6		145.5	155.6	128.8	=	-	=
Woodland	120.0		137.3	137.3	150.0	+	=	=



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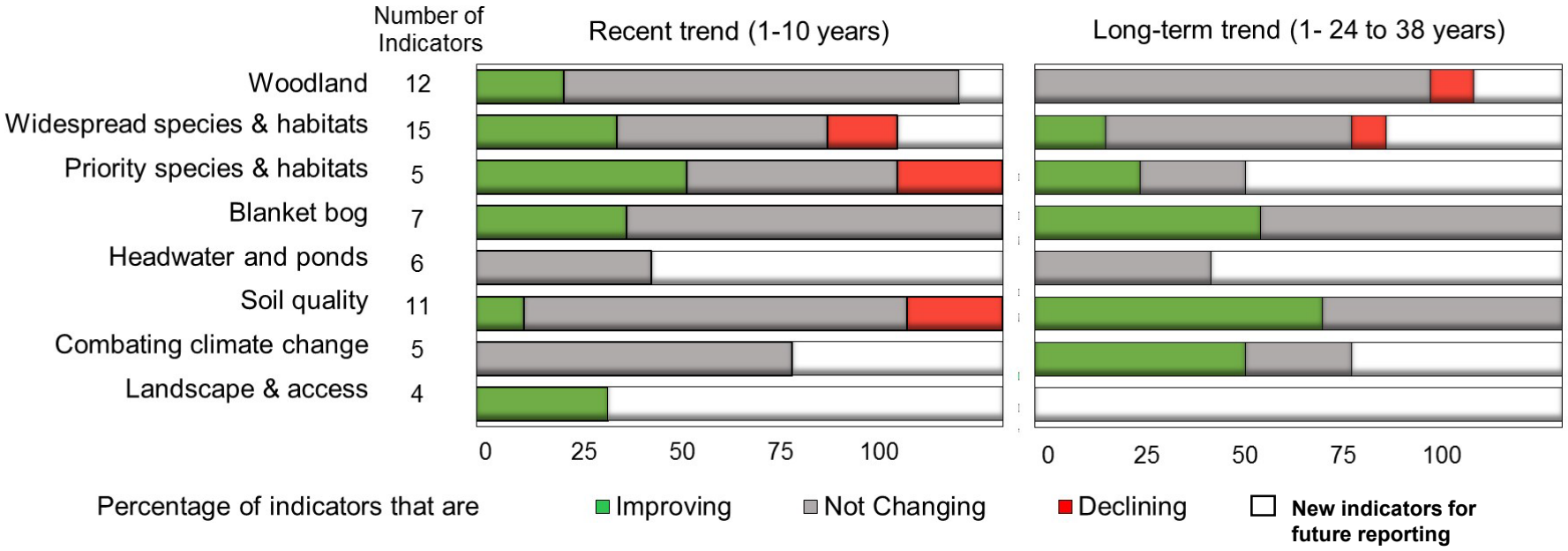
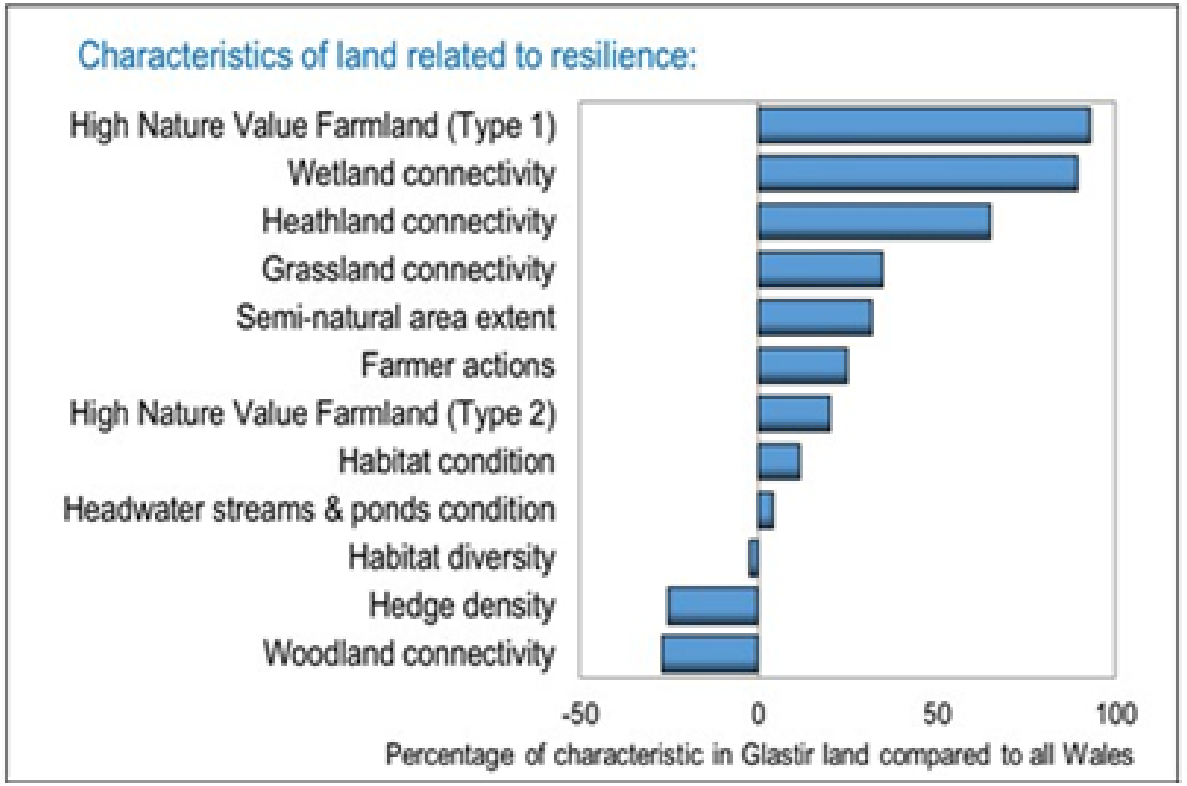
Easily accessible summaries of what is improving, declining and stable in short and long term



Conversion of data into elements linked to resilience

The DECCA concept of resilience:

- **D**iversity
- **E**xtent
- **C**ondition
- **C**onnectivity
- (**A**daptive capacity)



Natural Capital Accounts

Accounts and valuation (where that's possible) of the benefits we derive from our Natural Resources working with the Office of National Statistics

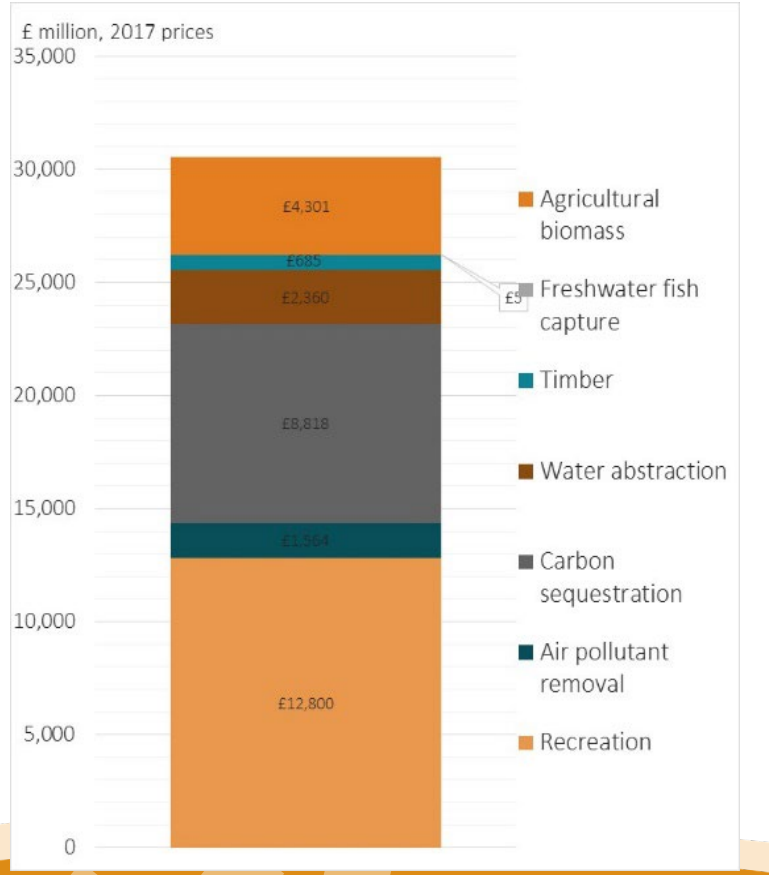
<u>Farmland, Forestry and Freshwater = £30.5 billion pa</u>

<u>76%</u> are not captured in standard GDP assessment

Recognition the accounts are incomplete as standardised methods are unavailable for all services Other sources of evidence need to be included in any policy decision.

Mountain, Moor and Heath now in progress

Natural Capital Accounts for Wales for Farmland, Forestry and Freshwater



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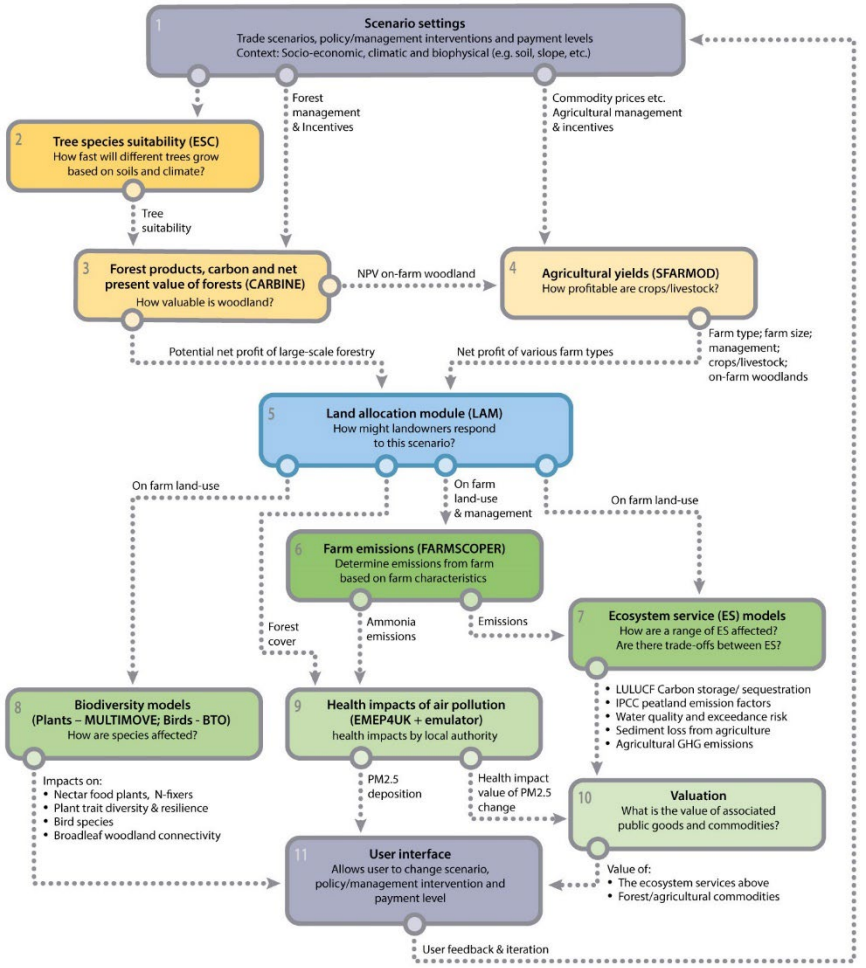
Data to inform and evaluate our Integrated Modelling Platform (IMP) outputs

- The IMP is a tool for rapid exploration of the effects of policy and management interventions on farm viability, land use and public goods in Wales.
- It comprises a chain of specialised, state-of-the-art models covering agriculture, forestry, land use allocation decisions, water, air, soils, biodiversity, ecosystem services and valuation.
- It takes an integrated approach, recognising that policy effects in one sector have indirect effects in other sectors.



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Challenges and opportunities going forward

- Simpler and fewer indicators?
- Better alignment of programmes and indicators across the UK whilst recognising devolved needs
- Monitoring of designated land is a gap
- Land to sea transfer and interface is poorly captured
- Soil health needs more focus in the round and to depth
- Citizen science versus citizen engagement – being clear which and when its appropriate
- Better exploitation of new technologies e.g. remote sensing but recognising it can't do everything
- Integration of monitoring and modelling / environmental and social data
- Data access whilst protecting personal data
- ……

Thank you
Diolch!

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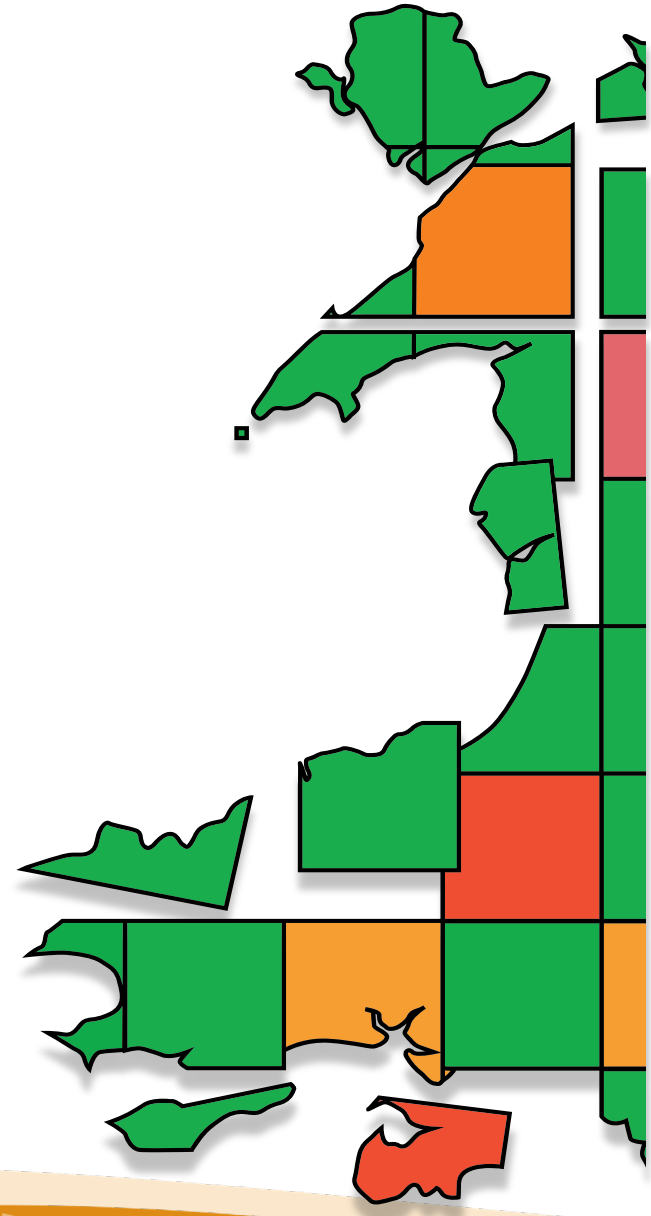

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