

# Tracking progress in improving well-being from the natural environment – where do natural capital accounts fit in?



Department  
for Environment  
Food & Rural Affairs

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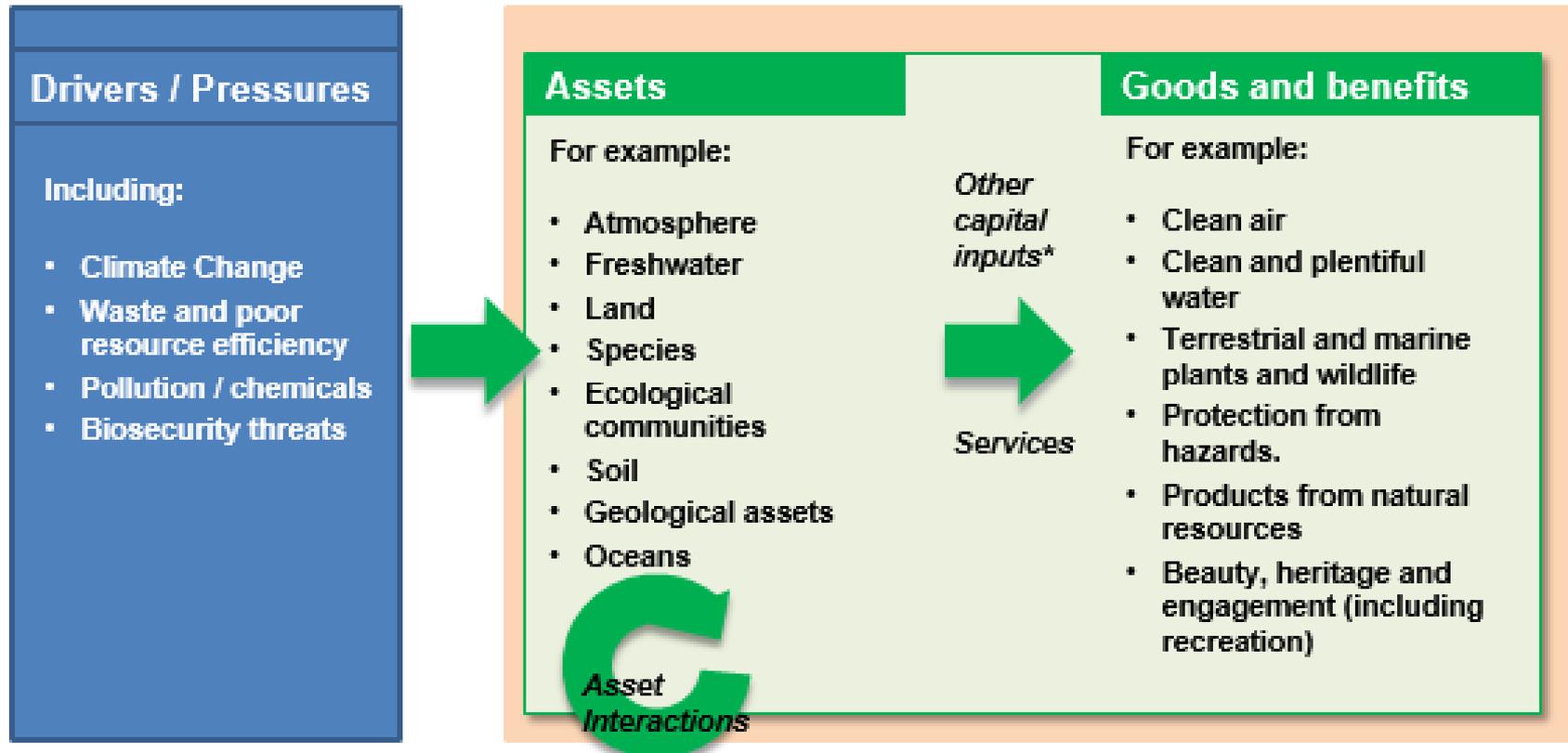
# The 25 Year Environment Plan - what's it all about?



“We hold our natural environment in trust for the next generation. By implementing the measures in this ambitious plan, ours can become the first generation to leave that environment in a better state than we found it and pass on to the next generation a natural environment protected and enhanced for the future.”

*Theresa May, 11 January 2018*

# A framework for improving the environment



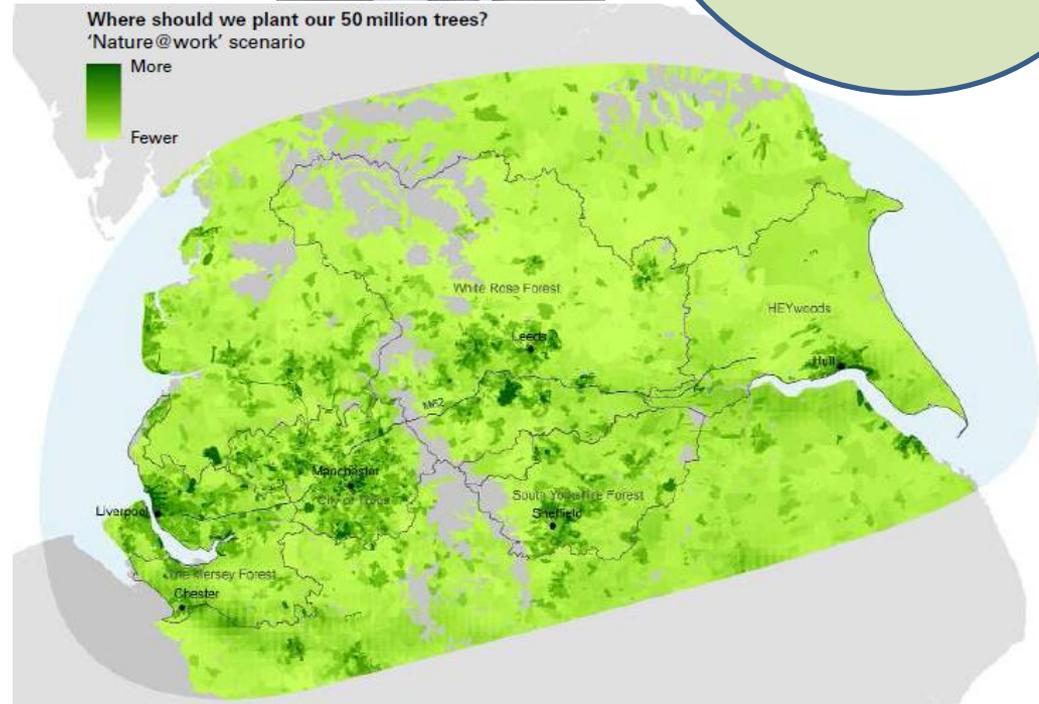
\*Other capital inputs include manufactured capital (e.g. buildings and machines), human capital (e.g. labour and education) and social capital (e.g. rules and procedures)

# It includes a number of high level goals and targets ...

- Using land sustainably
- Planting more trees
- Recovering nature
- Connecting people with the environment
- **Realising health and well-being benefits**
- Increasing resource efficiency
- Reducing pollution and waste
- Securing clean and biologically diverse seas and oceans
- Reducing our global environmental footprint



“Planting more trees provides not just new habitats for wildlife – it also helps reduce carbon dioxide levels and can reduce flood risk.”



## ... and a full range of 'metrics'



Outcome indicators – whether the policies and actions within the Plan are delivering on the goals and outcomes associated with them

Performance metrics – at a more detailed level, performance measures will be needed to monitor progress in delivering the individual actions and policies within the plan

Accounts – a more systematic approach to measuring change, with costs and values to inform relative importance and help understand trade-offs. A valued asset base provides a sense of what you are gaining or losing



# Draft indicators

- Consultation just finished
- Divided into 3 types: pressure indicators; asset indicators; service/benefit indicators
- Provisioning services (fish, water, agricultural biomass, timber) well represented
- Indicators of regulating services 'need more work'

Department for Environment, Food and Rural Affairs

**Measuring environmental change – draft indicators framework for the 25 Year Environment Plan**

**Draft for discussion**

**December 2018**

# Relationship to SEEA EEA accounts: four possible development areas

1. Comprehensive accounts of extent and condition
  - Good start but question mark over added value?
  - May not tell us much about how we benefit from services
2. Capacity accounts linking condition and potential services
  - Needs further conceptual development
  - Again may lack connection to actual delivery of services
3. Full suite of service accounts informing trade-offs between different services
  - May be difficult to interpret changes due to demand side factors
4. Monetary asset accounts based on projections of future flows
  - Challenging to predict the future!

# Lots of data, potentially ...

Illustrative urban ecosystem services account (UK, c2015)

Ecosystem service	Physical metric	Value £m	Type of valuation
Food – farms	1.1 mt	13	Exchange (resource rent)
Food - allotments	80 kt	11	Exchange (net of costs)
Public water supply	471 mm <sup>3</sup>	59	Exchange (resource rent)
Carbon sequestration	494 kt	78	~ Exchange (non-traded price)
Flood protection	138,000 mm <sup>3</sup>	213	Exchange (replacement cost)
Air filtration	2.78 kt PM2.5 -0.056 µg/m <sup>3</sup>	212	Between exchange and welfare
Local climate regulation - vegtn	-0.63 to -0.88 C	274	Exchange (damage and replacement costs)
Noise mitigation	167k bldgs (by -1 dBA)	>14	Welfare
Mental health	?	?	?
Recreation – travel costs	{ 1,981 m visits	{ 2,100	~Exchange
Recreation – free trips	{1,954 m hours	{ 3,700	Welfare
Education	12,000 visits	1	Exchange?
Physical health	2.1 m active visitors 362m visits	4,400	Welfare
Amenity	2.0% (implicit share of blue/green space in property value)	2,800	Exchange (net of the value of free recreation trips)

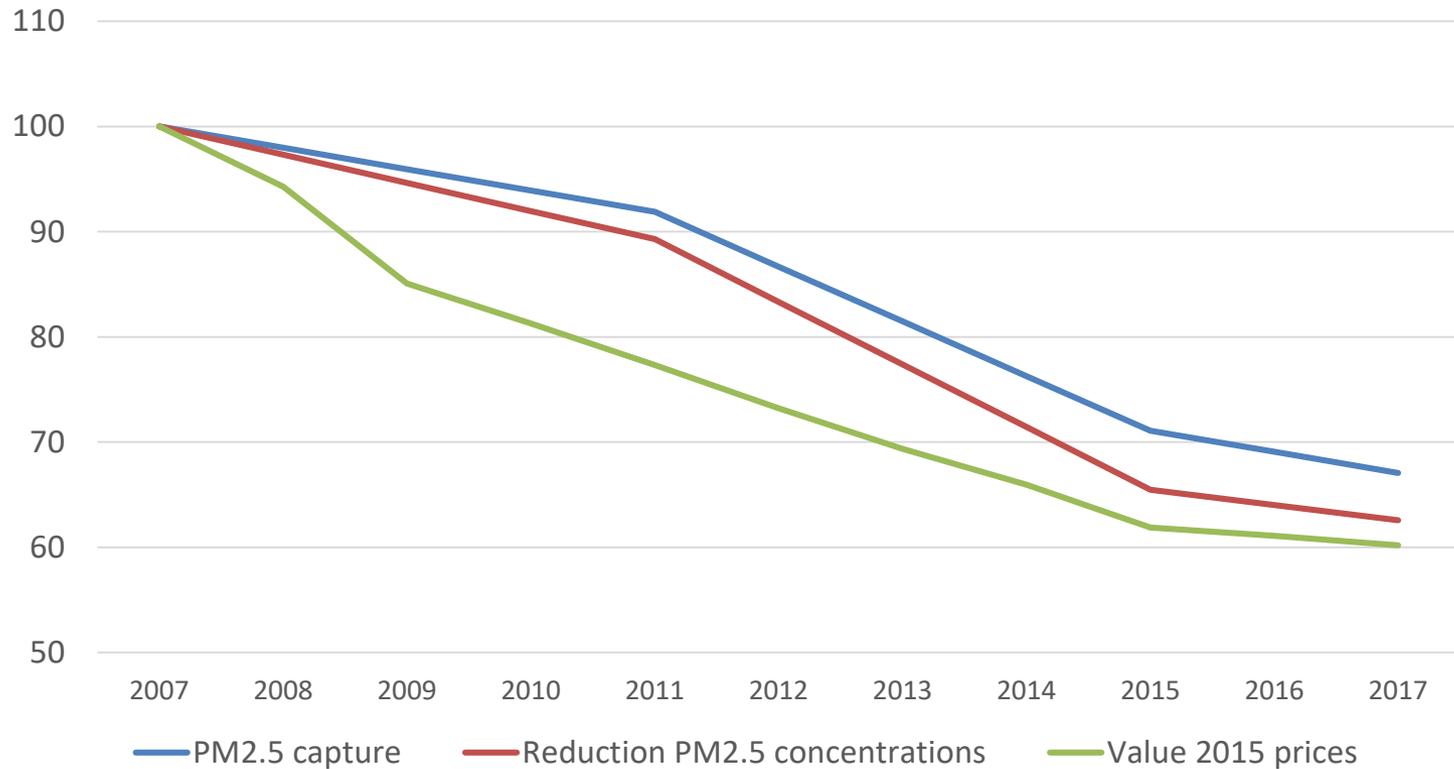
## ... but no easy way to interpret the changes recorded in ecosystem accounts

- Improvements in extent and condition may not provide increases in services: e.g. trees planted in the wrong place may actually increase pollution
- Optimal condition for one service may be sub-optimal for other services – trade-offs need to be understood
- Sudden increases in service values may actually be good indicators of unsustainable use
- However, the value of the service may well decrease due to demand side changes without any degradation or loss of habitat
- Values will also vary because of price changes which are not linked to supply or sustainability

# Regulating services are particularly important to well-being but especially problematic

- Air filtration services will go down if emissions of pollutants fall; ditto water purification services
- Flood protection services will be relatively unimportant if built infrastructure replaces the need for the service
- Noise mediation may be less important with electric cars
- Demand for the services can increase due to external factors such as
  - Climate change
  - Population growth
- Unit values can increase due to external factors such as
  - Income growth (or decrease during recession)
  - Market prices (e.g. carbon prices)

# UK air filtration service flows in urban areas (2007=100)



*Supply side changes not modelled as they make little difference to service flows: change is mainly driven by demand side factors and income growth*

# Can service change decomposition or asset valuation help?

- Can we decompose service value changes to identify what the service would have been if external demand factors hadn't changed?
  - Would this provide an 'accessible' indicator?
- Asset valuations. Only useful if it can tell us something different to the information about current flows, hence reliable/official projections are needed
  - How are the physical flows and unit prices expected to change?
  - How do the expected relativities between services or between value of ecosystem types change under different projections of service flows?
- Would a 'value-to-revenue' type ratio be informative?
  - If the ratio between the asset value and the service value goes down, is that a movement in the right direction?

# Are natural capital accounts just an analytical tool?

THE  TIMES

## On your bike: how nature is worth £761bn to economy



The Office for National Statistics has carried out a wide-ranging estimate of the value of the UK's natural resources that includes how much people spend on recreational use of the countryside  
CHRIS STRICKLAND / ALAMY

The Telegraph

Business

The UK is sitting on natural assets worth £761bn



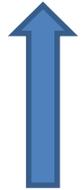
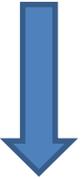
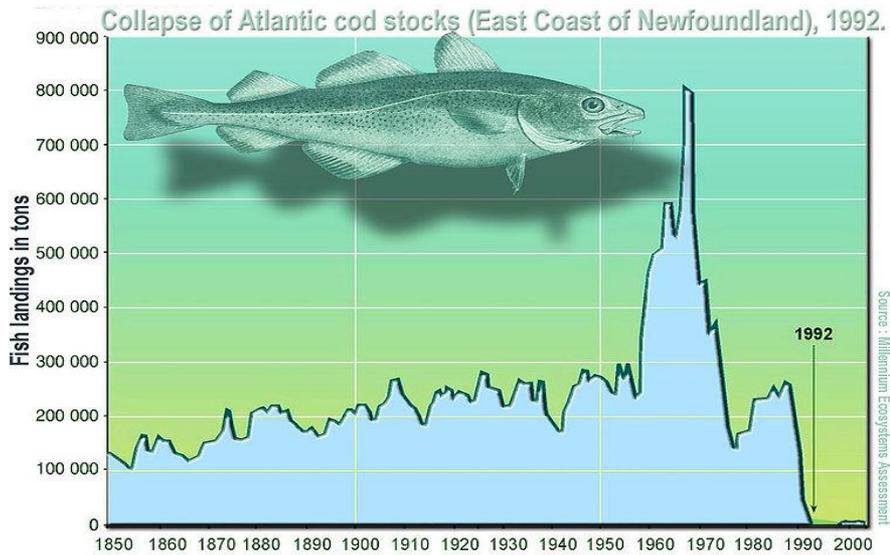
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**Can we/media/politicians tell at a glance if natural capital is being degraded or enhanced?**

# Can we pick out indicators which are unambiguous and easy to understand?

## The sniff test?



**Lots of challenges. Any suggestions,  
ideas, answers?**

