



Tactical science to build strategies that last



*Professor Louise Heathwaite
Chief Scientific Adviser Rural Affairs and Environment*



1. DNA-based reference library
2. Develop best practice for movement of plants and animals for conservation
3. Training in biodiversity conservation
4. Unique global collections
5. Human impacts on biodiversity



The Age of Bioscience

Strategic Plan 2010-2015

Biotechnology and Biological Sciences Research Council



strategies

2020 Challenge for Scotland's Biodiversity



A Strategy for the conservation and
enhancement of biodiversity in Scotland



“The strategy is ambitious and heavy on principles and approaches, but it is light on new commitments or actions.”

ENDS 462 August 2013

biodiversity as key policy



Scotland is a land renowned worldwide for its clean air, clean water, wilderness areas and seascapes

Biodiversity has always been a source of wealth and a stimulus to culture and enterprise in Scotland



some biodiversity drivers

- Scotland's Biodiversity: Its in your hands (2004)
- SNH: comprehensive assessment of Scotlands performance against 2010 international targets
- Aichi Goals and Targets for 2020
- European Biodiversity Strategy and EU 2020 targets
- 2020 challenge for Scotland's Biodiversity





Government
Office for Science

the policy matrix



Investment in infrastructure



Household growth



Wellbeing



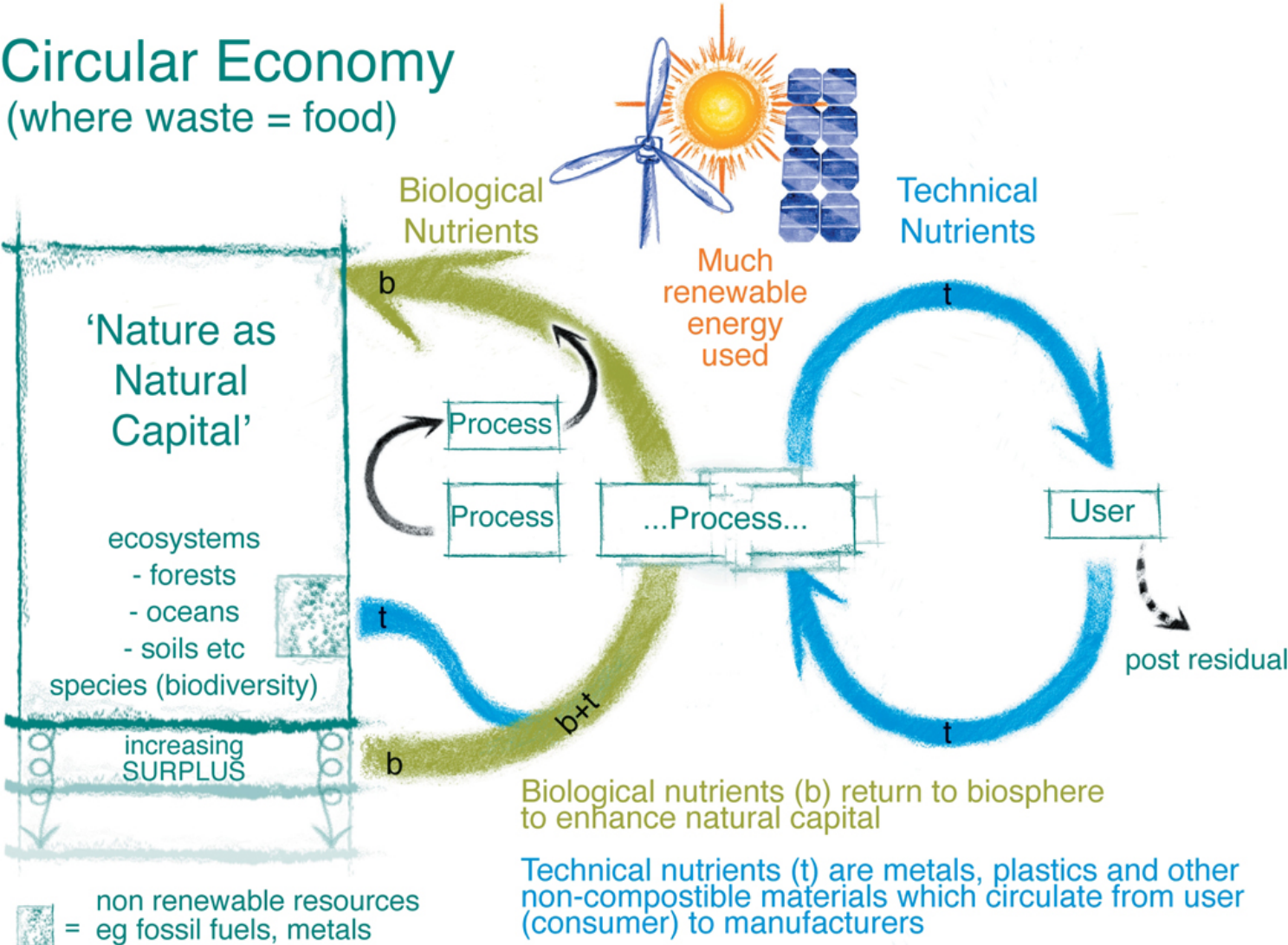
Land for energy production



multiple functions

- **Governance** – managing land and key actors to balance tensions in demand and supply
- **Resilience** – planning for uncertainties (e.g. for climate change, flooding, population)
- **Multifunctionality** – increasing the net benefit for society from finite resource
- **Valuation** – analysing approaches to valuing land services and understanding value of land for future generations
- **Use of space** – analysis of the impacts of changing physical land patterns
- **Market failures** – existing failures that are storing up long-term problems
- **Technology** – technological changes that could affect land use and/or help mediate tensions between demand/supply

A Circular Economy (where waste = food)



Biological nutrients (b) return to biosphere to enhance natural capital

Technical nutrients (t) are metals, plastics and other non-compostible materials which circulate from user (consumer) to manufacturers

after W. McDonough and M. Braungart

Scotland as a circular economy



The Scottish Government
Riaghaltas na h-Alba

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Regl
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Leading the way in circular economy

21/08/2013

Scotland Environment

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Collaboration announced with Ellen MacArthur Foundation.

Scotland's zero waste plans received a big boost after becoming the first nation to join the Ellen MacArthur Foundation's Circular Economy 100 programme (CE100).

This global network of 100 companies, innovators and administrations has set itself a three-year timeframe to accelerate the transition to a circular economy, helping businesses rethink the way they manage resources, whilst stimulating economic growth.

Scotland's involvement in the Ellen MacArthur Foundation's CE100 follows the recent launch of the Resource Efficient Scotland initiative, managed by Zero Waste Scotland, which helps Scottish businesses and organisations save money by helping them use resources more efficiently and cutting the costs of their energy, water and raw material overheads.

Environment Secretary Richard Lochhead, who made the announcement on a visit to Sweden to exchange insights and experiences of building a circular economy and the economic opportunities, said:

"Scotland's economy will benefit from moving to a more circular model of production and consumption. Our Zero Waste Plan is already delivering important actions to make better use of resources, and we can accelerate progress if we join together with others on a global level.

"Joining the Ellen MacArthur Foundation's CE100 gives Scotland an excellent opportunity to share its own successes with others, and to take a leadership role in a growing global movement."

Jamie Butterworth, CEO of the Ellen MacArthur Foundation, welcomed the move by the Scottish Government, commenting:

"We're excited to welcome the Scottish Government as one of the first governmental members of the Circular Economy 100 programme. Regions and governments will play an important enabling role within this initiative and in a transition towards a circular economy by supporting businesses in developing new markets and generating informed policy. We look forward to working with Scotland over the next three years."

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Moot points

“Even for those original research actions that were quite focussed, in some cases it is hard to know whether they have been addressed.”

“... lack of a process for targeting action and assessing success.”

some thoughts



- 1. future-proofing
biodiversity metrics:
iconic vs measurable
vs functional**
- 2. asking questions: the
science/policy
interface**
- 3. sharing knowledge**
- 4. quality of the evidence**

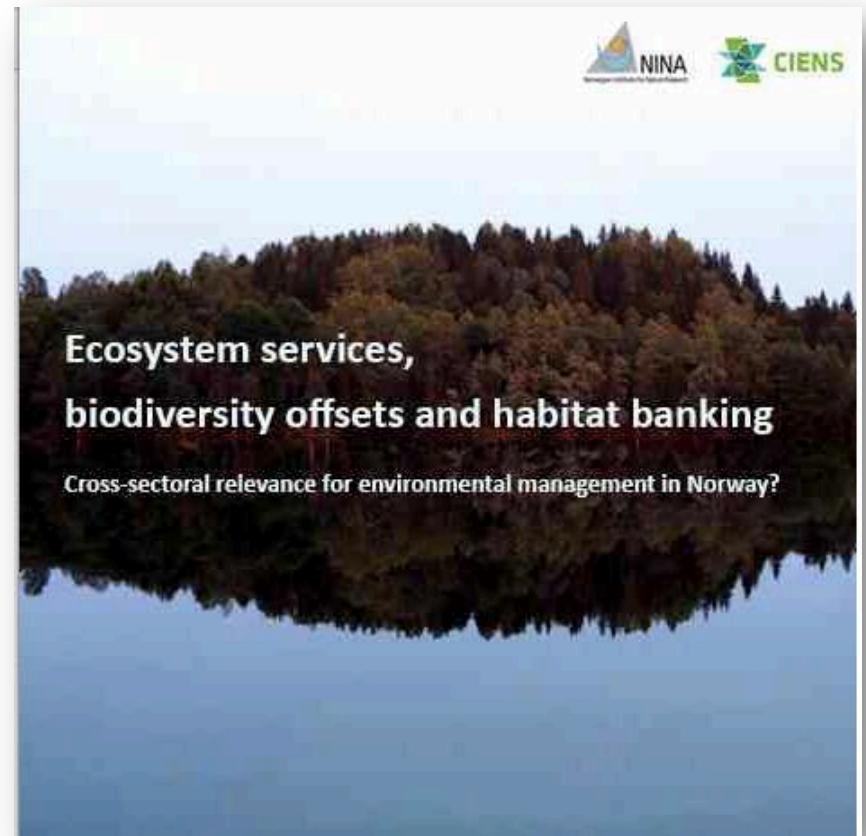
using what we know

	Summary of Target text	SG / RESAS funded research
Aichi Target 4	Governments have implemented plans for sustainable production and consumption	Study on the environmental sustainability of healthy diets, by integrating dietary requirements for health with a reduction in greenhouse gas emissions
Aichi Target 5	The rate of loss of natural habitats is reduced	Research project on new restoration programmes for freshwater ecosystems at local and catchment scales, taking into account future climate change impacts
Aichi Target 13	The genetic diversity of cultivated plants is maintained	Mapping the potato genome and development of new genetic markers which can facilitate global collaboration
Aichi Target 15	The contribution of biodiversity to carbon stocks has been enhanced	Studies across many ecosystems (eg peatland, moorland), incorporating soil carbon modelling, to improve the evidence base on carbon sequestration under different land use types



hot issues

- **Optimisation metrics**
 - biodiversity offsetting
 - sustainable intensification
- **Scale: catchment-based approach**
- **Multiple functions:**
 - tools and data
- **Growing natural capital**



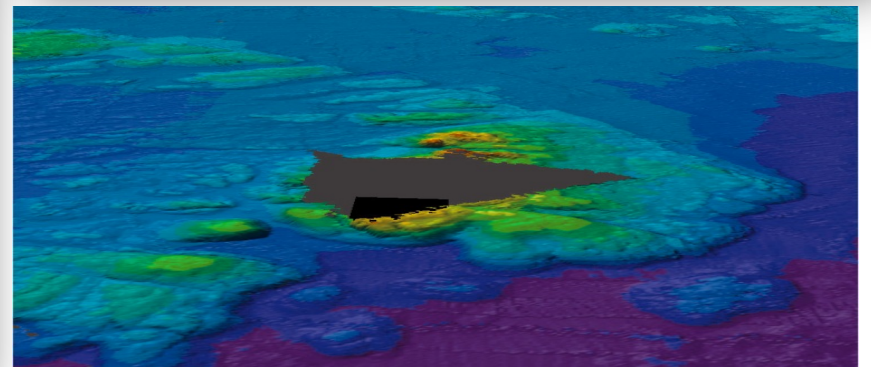
reintroductions



disease risk



measuring change and progress





Home > News > A New Soil Carbon App For Scottish Farmers

A new soil carbon app for Scottish farmers



This new app provides an alternative to expensive and time-consuming sampling and chemical analysis and can be used in the field without the need for soil science expertise or training.



A free, new soil carbon app has been launched to provide farmers with a quick, cost-effective source of information about the organic matter content of their soil.

the pointy end



- Ensuring that messages are tailored according to the audience
- Production of bullet-point briefings
- Ensuring that all communications are brief and digestible
- Checking with colleagues (including external) that the views presented are consistent with those that others might be presenting
- **Being prepared to form an opinion even when information is incomplete**