



Environomics

Profiting from the Environment

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Case study provided by David Featherstone , Staunton in the Vale



Environmental Assets?

- ▶ Natural Environment – does it exist in UK?
- ▶ We've produced a countryside or 'natural environment' of landscapes, habitats and species as a by-product of the confines of securing Food, Fuel and Shelter over millennia
- ▶ Conservation organisations often focus on the 'by product' not the process to produce it
- ▶ Through technological advances the majority of the population have lost the connections between meeting these basic needs and what they regard as the Natural Environment
- ▶ How can they become assets and not liabilities?



Benefitting from macro Environmental Assets

▶ Norfolk

- ▶ **41.0 million day** trips and **3.1million stay** visits
- ▶ **£237.82** spent per stay night and **£36.30** spent per day visit
- ▶ **£3 152 million** spent in the local area as result of tourism, taking into account multiplier effects.
- ▶ **47 518 FTE jobs** supported, both for local residents from those living nearby

▶ Suffolk

- ▶ **30.1 million** day trips and **1.68 million stay** trips
- ▶ **£219.71** spent per stay night and **£31.54** spent per day visit
- ▶ **£1 919 million** spent in the local area as result of tourism, taking into account multiplier effects.
- ▶ **29 703 FTE jobs** supported, both for local residents from those living nearby

Destination Research 2016

Environmental Assets on Farm

- ▶ Countryside/Landscape
- ▶ Arable land
- ▶ Grassland
- ▶ Woodland
- ▶ Static and moving water bodies
- ▶ Heathland
- ▶ Marsh/Fen
- ▶ Hedgerows and hedgerow trees
- ▶ Archaeology
- ▶ Farm buildings





Land use

▶ Norfolk (5507 kms²)

▶ Grassland	924	16.7%	(20 th)
▶ Arable	3429	62.3%	(2 nd)
▶ Deciduous Woodland	377	6.8%	(6 th)
▶ Coniferous Woodland	172	3.1%	(5 th)

▶ Suffolk (3850 kms²)

▶ Grassland	592	15.4%	(32 nd)
▶ Arable	2506	65.0%	(5 th)
▶ Deciduous Woodland	230	6.0%	(17 th)
▶ Coniferous Woodland	115	3.0%	(7 th)

Centre for Ecology and Hydrology

Food Production or Environmental Measures?

▶ Mid Tier Stewardship 2018

▶ Revenue Options	79	
▶ Capital Options	67	
▶ Prescriptions (average)	3-5	
▶ Autumn sown bumblebird mix		£550.00/ha
▶ Winter bird food		£640.00/ha

▶ Higher Tier Stewardship 2018

▶ Revenue Options	51	
▶ Capital Options	44	
▶ Prescriptions (average)	3-5	
▶ Making space for water £640 per ha (SSSI, grassland 20 year agreement)		
▶ Creation of heathland from arable or improved grassland £517 per ha		



Grange Farm Case Study

Farm 77 ha comprising 54ha arable + 6ha grass + 17ha woodland

- ▶ BPS – 60 ha
- ▶ Greening – 6.2 ha

Stewardship Options including Capital Options

- ▶ Arable reversion – 14ha
- ▶ Haymaking and Livestock Grazing supplements – 14ha
- ▶ Species Rich Grassland Margins 0.7ha - Grizzled Skipper Target
- ▶ Hedgerow Restoration and Management
- ▶ Veteran Tree Management
- ▶ Pond creation
- ▶ Woodland Management and Improvement

Agri-environment Support

Norfolk

- ▶ **702 schemes** **180 892 ha** **Total Payments £16 109 288**
- ▶ **Average** **£89.05/ha**
- ▶ **5 largest schemes**
 - ▶ **£5 044 334 (£1335.65/ha)** **£1 390 076** **£1 382 445** **£1 206 577** **£1 198 197**

Highest value options

- ▶ HK10 wet grassland for wintering waders £255/ha
- ▶ HK15 grassland for target species £130/ha
- ▶ HK9 wet grassland for breeding waders £335/ha
- ▶ HF12 enhanced wild bird seed mix £475/ha
- ▶ HK7 restoration species rich S/N grassland £200/ha

Agri-environment Support

Suffolk

- ▶ 500 schemes 103 487 ha Total payments £7 908 018
- ▶ Average £76.41/ha

▶ 5 largest schemes

- ▶ £1 474 623 £1 404 571 £930 761 £777 880 £774 475

Highest value options

- ▶ HK10 wet grassland for wintering waders £255/ha
- ▶ HK15 grassland for target species £130/ha
- ▶ HK9 wet grassland for breeding waders £335/ha
- ▶ HO1 lowland heath £200/ha
- ▶ HF12 enhanced wild bird seed mix £475/ha

Table E1: Average Farm Business Income 2015 and Public Payments as a % of FBI

	England	Wales	Scotland	Northern Ireland
FBI				
Cereals	£45,021	No data	£16,231	£23,657
Mixed	£21,595	No data	£11,506	£37,138
Lowland grazing livestock	£18,471	£20,815	£25,613	£15,726
LFA cattle and sheep	£26,788	£20,047	£26,185	£14,745
SFP & AES as % of FBI				
Cereals	102%	No data	204%	118%
Mixed	152%	No data	338%	64%
Lowland grazing livestock	120%	87%	143%	162%
LFA cattle and sheep	160%	164%	200%	193%

Source: Defra/RBR, WG/IBERS, SG, DAERA (2016) Farm Business Survey and own analysis



Average Farm Business Income 2015 and Public Payments as % of FBI

The potential impacts of Brexit for farmers and farmland wildlife in the UK RSPB Report October 2017

Cant see the wood for the trees?

▶ Oak	
▶ Planking	£152.50/m ³
▶ Beam/Fencing	£126.00/m ³
▶ Cordwood	£39.00/m ³
▶ Ash/Beech/Sycamore	£69.00/m ³
▶ Export Sycamore	£126.50/m ³
▶ Export Ash	£70.00/m ³
▶ Firewood Ash/Beech/Birch/Sycamore	£50.00/m ³
▶ Oak standing (6m ³)	£156.00/m ³
▶ Poplar (2m ³)	£11.00/m ³

Prices March 2018



If you go down to the woods today..

- ▶ Shooting
 - ▶ 600,000 shooters support 74,000 FTEs and contribute £2bn to UK economy (£180m in East)
- ▶ Deer
 - ▶ Red, Roe, Fallow, Sika, Muntjac, Chinese Water Deer
 - ▶ Estimated on-farm damage £15k - £60k per year – UK £4.3m mostly East/South East
 - ▶ South East Quality Deer leases £5.00/ha - Deer Management Plan
 - ▶ Trophy Red £5k/£6k per head
- ▶ Camping/Glamping/Tree Houses/Natural Emersion/Outdoor Pursuits?

Biomass options

	odt/ha/year	kW/m2/year
▶ Productive Broadleaf	0.38	0.18
▶ Productive Conifer	0.8	0.38
▶ Short Rotation Forestry	2.77	1.31
▶ Short Rotation Coppice	12.0	5.66
▶ Miscanthus	14.5	6.84
▶ Rotational Grasses	9.5	4.48
▶ Hemp	6.75	3.19
▶ Average household 7400kWh/year requires 1080m2 Miscanthus		
▶ Woodchip 35-40% produces 542 kWh/m ³		
▶ Woodchip 15-20% produces 833 kWh/m ³		

Learn/Open Energy Monitor



Opportunities to derive income from Aquatic Assets

- ▶ **Fishing Lakes**
 - ▶ £10k/£12k per acre to establish with 3 – 5 acres ideal – irrigation reservoirs?
 - ▶ £10k - £20k per year syndicate or £5 - £25 per day ticket
- ▶ **River beats**
 - ▶ Coarse fishing the most popular participative sport in UK
 - ▶ Tie in with accommodation, facilities and retail opportunities
- ▶ **Aquaculture**
 - ▶ 45 million tons fish, shellfish and plant life produced and consumed every year
 - ▶ The aquaculture industry has grown by around 9% a year since the 1970s
 - ▶ Tilapia (vegetarian) consumption in USA increased fourfold through 2000s
 - ▶ 'Super species' now finish twice as fast as original
 - ▶ Increased Environmental issues may bring marine aquaculture on land in coastal areas
 - ▶ Fish/crustaceans/algae/seaweed

British Sea Fishing



So what happens now?

A consortium of experienced independent consultants who specialise in supporting rural businesses

Agriculture to provide?

Natural Capital and Ecosystems Services – The New Food Fuel and Shelter?

- ▶ **Provisioning** food, fibre, medicines etc
- ▶ **Regulating** water purification, air quality, climate regulation
- ▶ **Cultural** education, wellbeing, attachment
- ▶ **Supporting** functions supporting other services e.g. soil formation, mineral recycling

The **Public Goods** concept is well established in economic theory which defines public goods by the following characteristics:

- ▶ **Non-excludable** – if the good is available to one person, others cannot be excluded from the benefits it confers.
- ▶ **Non-rival** – if the good is consumed by one person it does not reduce the amount available to others.
- ▶ Degree of public-ness is a continuum along which the goods can be assessed.
On the supply side, farmers have little incentive to provide public goods because they are not being paid to do so.



What's on the horizon - a personal view

- ▶ Environmental policies and issues will increasingly drive land use and production methods
 - ▶ Water companies/Government will look to support land use in catchments that lead to less adverse chemical, physical and biological impacts – e.g. Forestry, extensive grazing, woodland, heathland with low/no inputs
 - ▶ Carbon sequestration and climate control – extensive re-forestation in landscapes that can accommodate it
 - ▶ Soil quality and Soil health will be increasing consideration in any public support for food production
- ▶ Environmental bodies/organisation will have to derive economic outputs from environmental assets – recognise how we have got to where we are – work with landowners to recognise/reproduce processes that led to the by products that we value
- ▶ Intensification of all productive areas in tandem with greater environmental control on impacts. Support only provided through provision of public goods and ecosystems services
- ▶ Increased support provided for marginal areas, uplands to conserve landscapes and provide public goods
- ▶ Increase in alternative production methods – hydroponics, aquaponics, organoponics and other soil less systems
- ▶ Greater emphasis on truly sustainable development – development that considers the economic, environmental and social impacts with equal weight and at the same time.



Thank you for watching!

Neil Featherstone

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