UNIVERSITY OF EXETER | LAND, ENVIRONMENT, ECONOMICS AND POLICY INSTITUTE

How to Make Decisions:

Contrasting Market, Expert Scenario and Natural Capital Approaches to Land Use Policy

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Presented at LEEPin2019

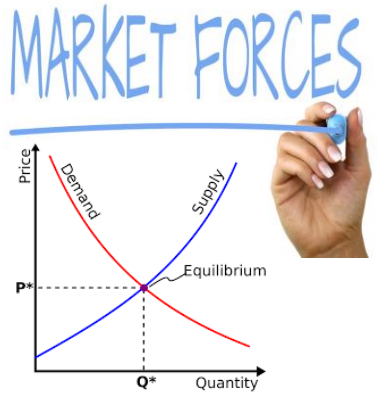
Parallel Session 2: *Spatially explicit valuation*
10:15-11:15 XFi Conference Room
Land, Environment, Economics & Policy Institute (LEEP)
University of Exeter Business School
Tuesday 25th June, 2019.

Land use policy: Agricultural subsidies

- Worldwide agricultural subsidies are massive at nearly $500billion per year (Worldwatch, 2014)
- This might double if input subsidies (e.g. cheap fuel) were added in.
- Within the EU the Common Agricultural Policy (CAP) has always been the largest single element of the EU budget, rising to 73% of all EU spending in 1985 and still representing 37% of that budget in 2017.
- Reform of the CAP is ongoing but slow. However, the UK Agriculture Bill 2019 proposes a radical *Public Money for Public Goods* approach with subsidies targeted to deliver environmental improvements (Bateman and Balmford, 2019)
- But spatial heterogeneity of land use, the natural environment and the distribution of population means that alternative targeting of subsidies will generate very different levels of positive and negative externalities
- So how subsidies be allocated?

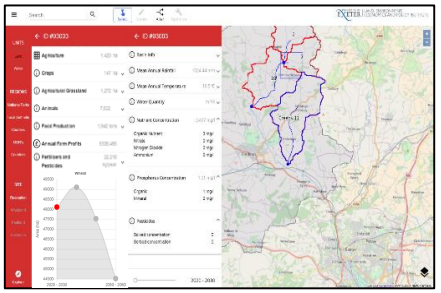
Comparing approaches to decision making

- Use the **MARKET** to allocate subsidies
  - Locations for land use change determined by value of subsidies relative to agricultural value.



- Use **EXPERT** determined scenarios to allocate subsidies
  - Locations for land use change determined by analysis of stakeholder responses.

- Use **VALUATIONS** of the benefits and costs of land use change to allocate subsidies
  - Locations for land use change determined by net benefits of change.
  - Natural and physical sciences combined with economic supply and demand to determine values
  - Consistent with Natural Capital Approach

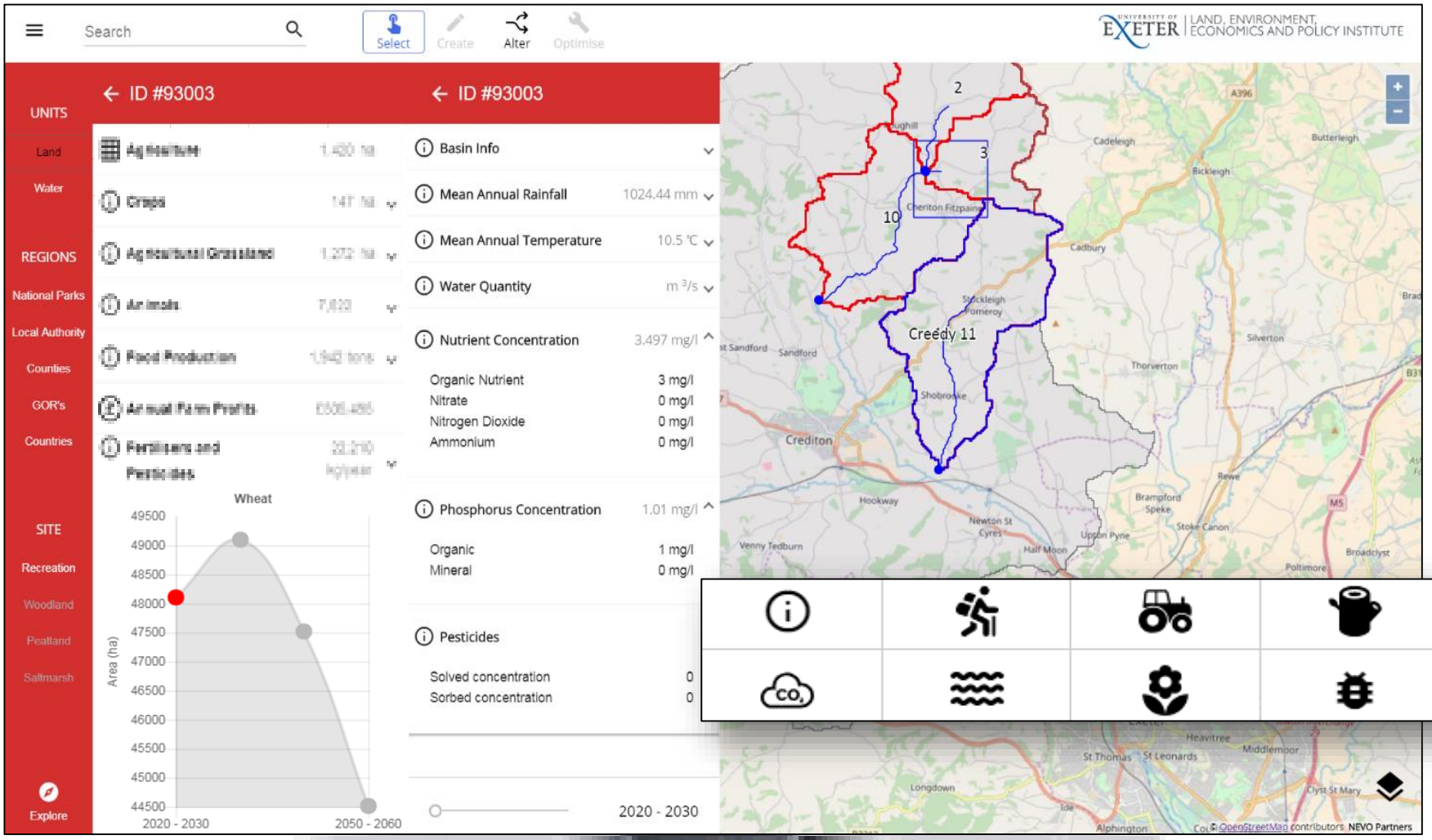


Case study: Planting 2 million ha of new UK woodlands

The Natural Environment Valuation Online (NEVO) Tool

Natural capital decision support tool

The Natural Environment Valuation Online (NEVO) Tool



Department for Environment Food & Rural Affairs

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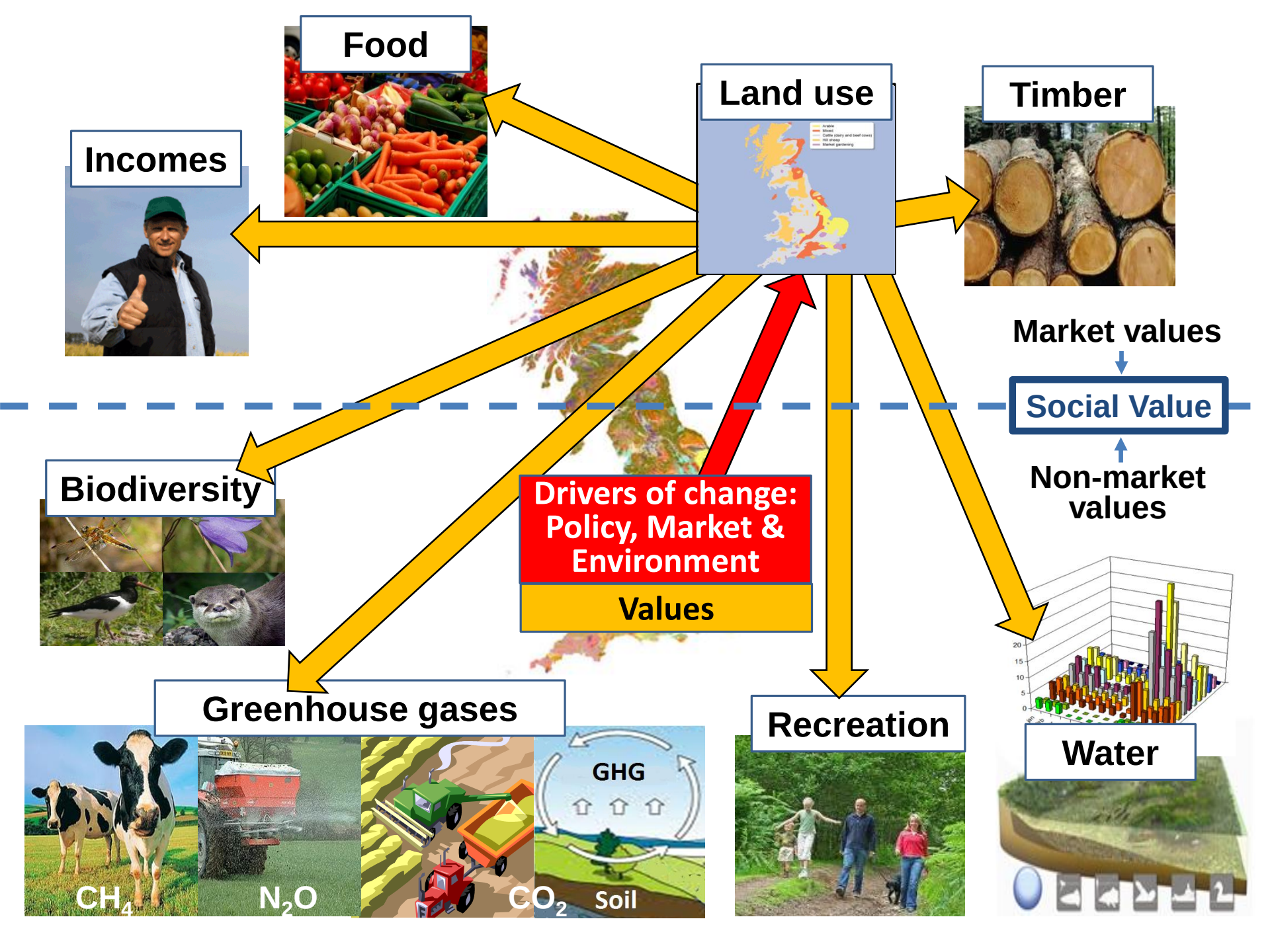
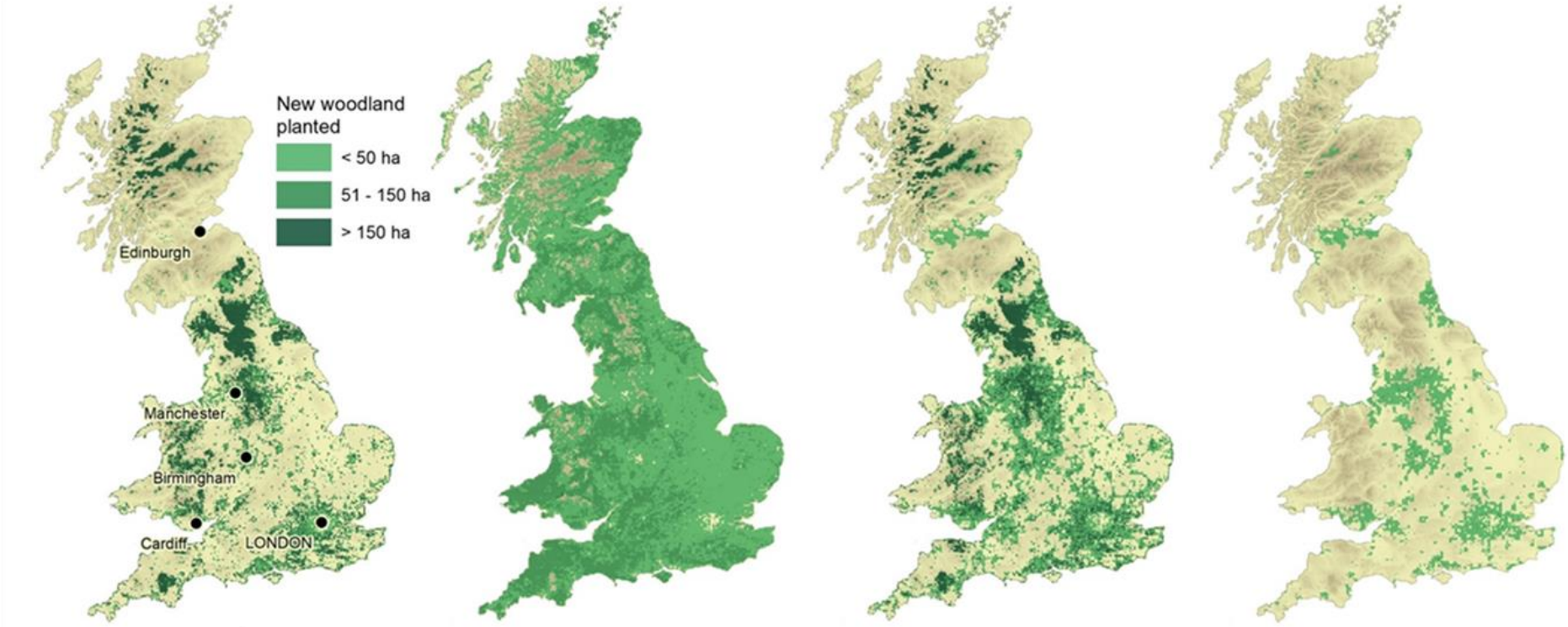

Food
Land use
Timber
Incomes
Market values
Social Value
Non-market values
Biodiversity
Drivers of change: Policy, Market & Environment
Values
Greenhouse gases
Recreation
Water
GHG
CH_4
N_2O
CO_2
Soil

Comparing approaches to decision making

MARKET	EXPERT	VALUATION	OPTIMISE
Area determined by policy:	Area determined by policy:	Area determined by policy:	Area also optimised:
2 million ha	2 million ha	2 million ha	105K ha



	MARKET	EXPERT	VALUATION	OPTIMISE
Market value = subsidy cost	- £432 m pa	- £818 m pa	- £627 m pa	- £62 m pa
Non-market value:	£1 331 m pa	£1 132 m pa	£1 994 m pa	£1 738 m pa
Social value (CBA):	£899 m pa	£314 m pa	£1 376 m pa	£1 676 m pa
% of market solution		35%	153%	%

Values in GBP (£) base year 2013
Assumes planting with pedunculate oak
Uses UK-NEA low emissions climate path