



The economic case linking land-use management and water objectives:

Findings of the preliminary Cost Effectiveness Analysis

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Introduction to pCEA

- Key role of economics in the Water Framework Directive
- Preliminary Cost Effectiveness Analysis of WFD to:
 - Inform Guidance to the EA on River Basin Planning
 - Streamline RBMP by identifying cost effective national measures
- Conducted 2006-7
- 6 working groups identified measures and associated costs
- Synthesis of outputs focusing on different pressures on the water environment (chemical and physical)
- Most measures are specific to one pressure
- Some cross-cutting measures reduce multiple pressures at the same time

Analysis – Key Points

- Main cross-cutting measures:
 - Catchment Sensitive Farming (through Water Protection Zones)
 - Sustainable Urban Drainage Systems (+ other measures to reduce urban diffuse pollution addressing misconnections, misuse of drainage system etc.)
- Land-use measures potentially cost-effective
 - Uncertainties in measures of both costs and effectiveness
- Land-use also poses a major challenge to meeting WFD objectives for water resources and water quality

- Catchment Sensitive Farming
 - Primary purpose: address pressure from phosphates
 - Also reduces pressure from nitrates, ammonia, sediment, microbiology, morphology
 - Non-water benefits – soil quality, biodiversity
- SUDS
 - Addresses pressures from nutrients, hazardous substances, sediment
 - Contributes to reducing flood risk

Agricultural Measures – Estimated Costs

Agriculture Working Group

Measure	Cost	Benefits
Water Protection Zones (Measures relate to: land use, soil management, livestock management, fertiliser management, manure management, connectivity management)	£200mn EAV	Meet WFD objectives for P Reduce N <£32m Reduce sediment <£75m Reduce ammonia <£3m Carbon 'saving' <£19m Morphology benefits (prevention of bankside erosion)

Land-use related measures considered: convert arable land to grassland; buffer strips; reduce stocking density

Other working groups also considered: blocking grips and drains; purchase and leaseback of riparian land; impact on landuse of removal of redundant flood defences

- Non-agricultural diffuse pollution working group estimated a variety of unit costs (permeable surfaces, swales, ponds, infiltration devices etc.)
- But... SUDS is an *approach* so costs are site-specific
- Costs sensitive to assumptions about land prices as SUDS often require a large surface area
- Need to consider how costs of SUDS compare with traditional systems
- Evidence suggests that SUDS are *not* more costly than traditional systems
- Difficulties in measuring effectiveness
- Measure considered: SUDS in all new developments + SUDS considered as first option in areas where there are drainage problems

Land-use & the WFD: the Challenge

- Projections of high growth in population and number of households v. no deterioration objective
- Sustainable Communities Plan sets out high targets for development of housing in south-east England
- Potential to exacerbate existing water resources and water quality problems
- Can development take place without compromising environmental sustainability?

Water Resources Overall Costs

WFD Scenario – Meet all WR objectives by 2015

Annualised costs (EAV) £ million	England	Wales
Lower bound estimate	148	3
Higher bound estimate	1045	52

Water Resources Measures Cost Comparison

Measure	Range of costs £mn/MI/day	Demand management/	Range of costs £mn/MI/day
New reservoir	2-5	HH rainwater use	0.1-2
Desalination	2-5	HH greywater use	0.1-2
Wastewater reuse	>5	Water audits	0.1-2
Pipeline transfer	2-5	Appliance water efficiency	0.1-2
River transfer	0.1-2	Sustainable homes	0.1-2
Extension of metering	2-5	Building performance certification	2-5

Role of the Spatial Planning System

- How can the most cost effective measures be rolled out?
- What measures are needed to ensure that spatial planning is consistent with the WFD?
 - Water PPS + interim guidance (one-off costs + potential saving)
 - EA point of contact/training (point of contact £400k EAV + training workshops one-off £240k)
 - Representation of spatial planners in RBMP process
 - New requirements on developers (2-10% of construction costs)
- Issues to address: difficulty in measuring effectiveness; timing; coordination across boundaries
- Potentially cost effective measures
 - Savings for households

Next Steps

- Cost effectiveness analysis at the local level
- More information on specific schemes
- Potentially very high costs for particular groups
- Disproportionate costs tests