

Managing the water environment in England



Ashley Holt: Defra Water Programme Date: 15 February 2016

Some historical context.....



1858 "Great Stink of London"

Disease and nuisance stimulated Action in UK to deal with untreated sewage



And we hope the Dirty Fellow will consult the learned Professor.

Some historical context.....

"Silent Spring" 1961

1858	1940 on:	1974	1987	2000	2016			
Great Stink and recognition of cholera and sanitation linkages force action to improve sewerage in urban areas	WWII Farmers encouraged to increase production – increased intensity	"Water Authorities". Regional scale charged with public water supply and sewage disposal, flood risk management and environmental protection	Water supply and sewage treatment privatised. The new companies are able to borrow from financial institutions in order to repair and improve deteriorating sewerage infrastructure	Water Framework Directive (WFD)	Economic pressure continues to drive farm intensification. Wider understanding of pressures. Globalisation - invasive species <i>Systemic</i> pressures clear: - Population - Climate Change			
weasures to target source/ emission Change								
Royal Com Sewage Di	mission on sposal 1896	Urba Treat	n Wastewater ment Directive 1991					
- 1915	Dang	erous substances Integrated		d pollution prevention				

Directive 1967

and control directive 1996

ambient

Measures to protect Surface Waters Directive 1975

Bathing Waters Directive 1976

Department for Environment, Food & Rural Affairs

Fisheries Directive 1978

Broad themes of targeting and control have evolved as our understanding has changed

of the **Emission Abatement** targeting cause changing ideas of Government Protecting uses and interests constraining effects **Balancing ecosystem impacts** (human pressure) with use And <u>0</u>6 managing the system

EU Water Framework aims at "Integrated River Basin Management"

And, specifically to;

- Prevent deterioration, enhance the status of aquatic ecosystems & associated wetlands
- Promote sustainable water use
- Reduce pollution from priority substances
- Prevent deterioration / reduce pollution of groundwater
- Contribute to mitigating effects of floods / droughts

Two Key Default Objectives

- To prevent deterioration in water status; and
- To aim to achieve 'good status' by 2015 in WFD water bodies.

Public participation and stakeholder engagement are intended to be part of the process



Water Framework Directive implementation

Year	
2004	River Basin districts identified and Characterisation/risk assessment Register of protected areas
2006	Monitoring programmes
2008	Publish first River Basin Management Plans for consultation
2009	Finalise and publish first River Basin Management Plans
2012	Measures fully operational
2013	Review characterisation, risk, economic analysis
2015	Achieve environmental objectives in first River Basin Plans Finalise and publish second River Basin Plans
2021	Finalise and publish third River Basin Plans
2027	End of three planning cycles

Water Framework Directive "in a nutshell" What

Management of <u>all</u> natural waters for sustainable use *How*

1. Assess status of waters



2. For any that show anything greater than slight impacts, develop a plan to ameliorate and, in all cases, ensure that current impacts do not get worse.

3. If it is technically unfeasible or economically unjustifiable to achieve only slight impacts for particular waters , other levels of ambition can be justified.

Who

(in England) Environment Agency measure impacts, develop plans; Defra take overview of economic assessments, and; Ministers decide ambitions.

Water body classification scheme



Elements we use to assess classification



Sequence of response



17 % of our rivers are Good for all elements, this chart shows the picture across all the measured elements for English rivers





Pressures that affect achievement of Good Status



Sectors that cause the pressures : Counts of numbers of reasons for not achieving Good Status

Confirmed and Probable combined										
	Sector responsible for the significant water management issue									
Significant water management issues	Agriculture &rural land management	Angling & conservation	Forestry	Industry	Mining & quarrying	Navigation	Urban & transport	Water industry	No Relevant Sector	
Pollution from rural areas	2737									
Pollution from towns, cities & transport	4				1		1024			
Changes to level and flows	128			44		8		371		
Invasive non- native species									20	
Pollution from mines					362					
Physical Modification	579	45		143	23	81	681	548		
Pollution from waste water	27			249		6	194	3040		

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Examples of progress: 40-70% Reductions in polluting load from water industry assets



Water Framework Directive's sophisticated tools and techniques confirm what we already knew: environments are most degraded where there are lots of people and/or intensive land use.....



Europe Summary



US equivalent

Macroinvertebrate O/E

National Lower 48) 16.6% 39.5% 1% 28.8% 14.1% Eastern Highlands 17.4% 35.1% 17.5% 29% 1% Plains and Lowlands 19.1% 26.7% 11.8% 41.4% West 7.5% 20.8% 13.3% 57.3% 1.1% 20 40 100 Percent of Stream Length 10% Taxa Loss 20-50% Taxa Loss 10-20% Taxa Loss 50% Taxa Loss No Data

These pressures are due to:

- Water supply and sewage disposal
- Farming and land use
- Physical changes

As well as (increasingly) some new ones:

- Population growth
- Climate change
- Alien species

But at least this clarifies the <u>real</u> issue:

So it poses a real challenge to aim for near natural conditions in the anthropocene



Map of percentage of heavily modified water bodies and artificial water bodies in River Basin Districts Version 29 October 2012





In the well-known race scene in Lewis Carroll's classic *Through the Looking-Glass*, the Red Queen tells Alice, "It takes all the running you can do, to keep in the same place."

Our dilemma: how to "have our cake and eat it"



- We need the resources the environment gives us and suffer from its risks
- Our activities threaten resources and often add to risks

<u>So</u>

 Goals set through approaches such as WFD are really about preserving restoring and managing environmental functions so they support us The more pressure we create, the harder we have to work to manage the system....



 We are both the problem and the solution...This is a challenge that needs both technology fixes and behavioural responses – it is about pursuing efficiency and reducing our impact

A wicked problem

All of this is consistent with understanding natural resource management as an example of a 'Wicked Problem'



There are a number of insights we can draw from this perspective but perhaps the main ones are:

- We can never solve wicked problems because they are complex we can only managed them within acceptable bounds
- What makes such problems "wicked" is that they are really problems about people and are linked to people's interests.

So the key to environmental management is social as much as it is technical

So, what should we do?

Develop a response that better fits the diagnosis:

For example (and taking an existing international perspective) work in a way that is consistent with -

Convention on Biological Diversity Malawi Principles: the Ecosystem Approach

The following 12 principles are complementary and interlinked:

Principle 1: objectives of management are a matter of societal choices

Principle 2: decentralize to the lowest appropriate level

Principle 3: consider the effects (actual or potential) on adjacent and other ecosystems.

Principle 4: understand and manage the ecosystem in an economic context

Principle 5: preserve ecosystem structure and functioning

So, what should we do (2)?

Principle 6: manage ecosystems within the limits of their functioning

Principle 7: use (all the) appropriate spatial and temporal scales

Principle 8: the varying temporal scales and lag-effects that characterize ecosystem processes mean that objectives for ecosystem management should be set for the long term. But also identify short term progress indicators

Principle 9: recognize that change is inevitable (eg new pressures)

Principle 10: seek the appropriate balance between, and integration of, conservation and use of biological diversity

Principle 11: consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices Those <u>in</u> the system have to be the ones who manage it

Principle 12: involve all relevant sectors of society and scientific disciplines





Adaptive management



and not a technical process!

From US EPA Watershed management programme

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A response to being flooded

HEBDENBRIDGEweb

HebWeb-the UK's fist community website

Home News Discussion Forum What's On Tourist Info Where to Stay Where to Eat

Skip Navidation



SMALL ADS Rooms, houses, flats offered/wanted; Services; For sale; Classes; Cars; Quirky Hebden Bridge stuff Jobs and much more

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Ban The Burn campaigners mop up

Sunday, 23 February 2014



Bepartment for Livionment, Tober & Ruar Anars

800 cars,

Low Priced

Used Cars. Range of

Finance Options

available

0 0

site

One 7 acre

Roe Catchment Community Group



Defra's Catchment Approach



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CABA OVERVIEW

The Catchment Based Approach (CaBA) embeds collaborative working at a river catchment scale to deliver cross cutting improvements to our water environments. Community partnerships, bringing local knowledge and expertise, are active in each of the 100+ Water Framework Directive catchments across England, including those cross border with Wales. More than 1500 organisations are engaged with CaBA nationwide including NGOs, Water Companies, Local Authorities, Government Agencies, Landowners, Angling Clubs, Farmer Representative Bodies, Academia and Local Businesses.



entbasedapproach.org

CABA NEWS

Urban Water Management Workshops In London And Manchester, March 2016

November CaBA Update Now Available

View Highlights Of The CaBALondon Citizen Science And Volunteer Monitoring Workshop

Citizen Science And Volunteer Monitoring Resource Pack

September CaBA Update

http://www.catchmentbasedapproach.org/

New Defra Strategy: 25 Year Plan

Systems based approach – integrated and holistic

Devolved Local decisions

Encouraging all with a stake in the assets to look after them – shared action and no longer Government's role alone



Strong focus on benefits of managing the environment as an asset to invest in – natural capital coupled to the ecosystem approach

self interest is a better persuader than altruism and more reliable one than regulation

Thinking about 'enablers':

- Use and exchange of data
- Application of technology
- New sources of funding eg stock market
- Engaging society: education