INTCATCH 2020

Creating a paradigm shift in water quality monitoring

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Celebrating 50 years

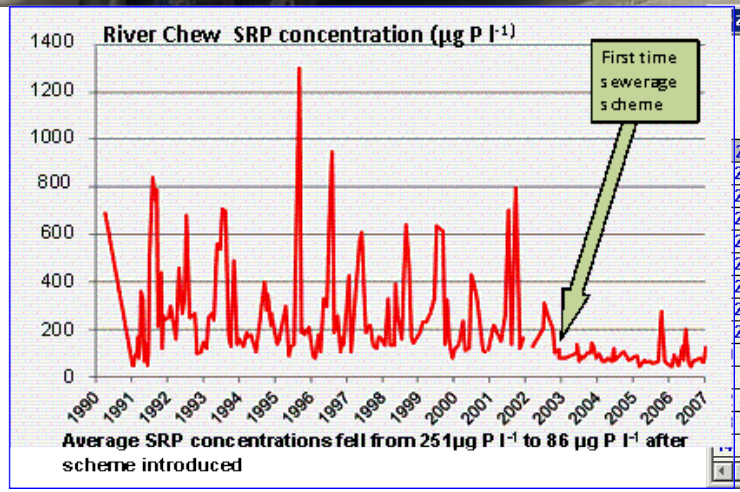
Safeguarding Water Quality

- **A key requirement for public and environmental health:**
  - safely drink water;
  - access rivers, lakes and coastal waters for recreation;
  - wildlife and river ecosystems function.

- **Investment costing €Bn 120+ (2009-15)**
  - Liquid, solid waste management;
  - Substantial WQ monitoring programmes.

Current ‘state of the art’

This graph shows the proportion of river in each class.



ZC14 : 20000101 to 20020430 : Selected 270 of 270

ZC14	A Al2O3 AL2O3 % PLS	B CaO CAO % PLS	C Cd CD % PLS	D Cu CU % PLS	E Ni NI % PLS
20020424 0924	< 0.01	0.20	45	9.4	0.10
20020423 0933	< 0.01	0.12	46	10.4	0.10
20020422 0922	< 0.01	0.15	41	10.4	< 0.01
20020421 0921	< 0.01	0.07	42	10.7	0.12
20020421 0920	< 0.01	0.08	43	11.3	0.14
20020419 0916	< 0.01	0.07	42	9.4	0.10
20020415 0910	0.11	0.11	47	8.8	0.11
20020415 0909	0.10	0.11	51	10.1	0.12
20020413 0908	<0.01	0.18	44	9.4	0.10
20020412 0907	<0.01	0.16	49	11.4	0.10
20020412 0906	<0.01	0.10	48	11.1	0.10
20020412 0905	<0.01	0.11	49	11.4	0.10
20020411 0904	<0.01	0.03	51	10.9	0.10
20020410 0902	<0.01	0.09	52	10.3	0.12

Data Sheet | Samples

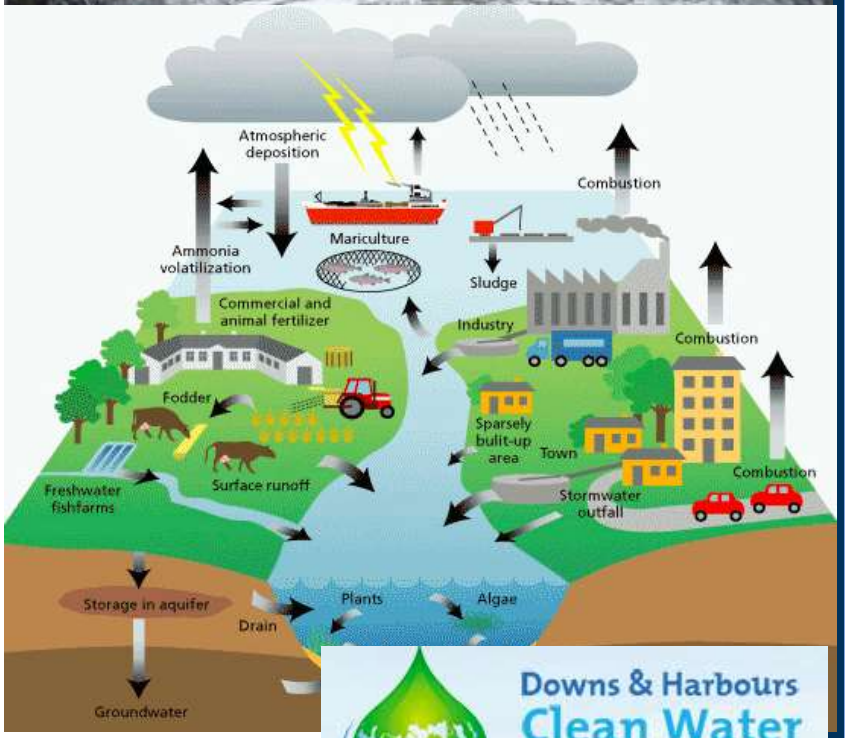
Current ‘state of WQ Monitoring’

- Assess chemical ‘Status’
  - compliance with Directives and their objectives
- Regulatory reporting
  - Pass/fail = compliance for regulated discharges
- Influences investment - ‘measures’
  - larger ‘point sources’ are characterised and managed
- *But – is this able to help us safeguard future water quality?*

Are we focusing on the wrong Problem?

- Monitoring regime is based on previous ‘paradigm’ where large, point source discharges were ***the*** significant influence on rivers and coasts.
- These have been largely addressed.

- **However, other polluting sources leading to water quality failures**
  - sewer overflows; agriculture; mis-connections.
  - many water bodies are still not meeting their environmental (Water Framework Directive) objectives.
  - Lack of ‘dynamic data’, spatial coverage
- ***Who should be monitoring?***



Downs & Harbours Clean Water Partnership

INTCATCH 2020

Overall objective

*To enable a **paradigm shift** in the approach to monitoring and management of river and lake water quality that is fit for European waters in the period 2020-2040:*

Efficient, responsive monitoring strategies

'Problem focused'

- *what are we aiming to understand?*
- *Maximise chemical signal, time, location*

User-friendly water monitoring tools for stakeholders, regulators & citizen scientists

Move 'laboratory' to the field:

- *chemical and biochemical sensors, deployed on mobile & portable 'platforms';*
- *instantaneous internet data sharing*

Demonstrating effective local treatments that improve quality

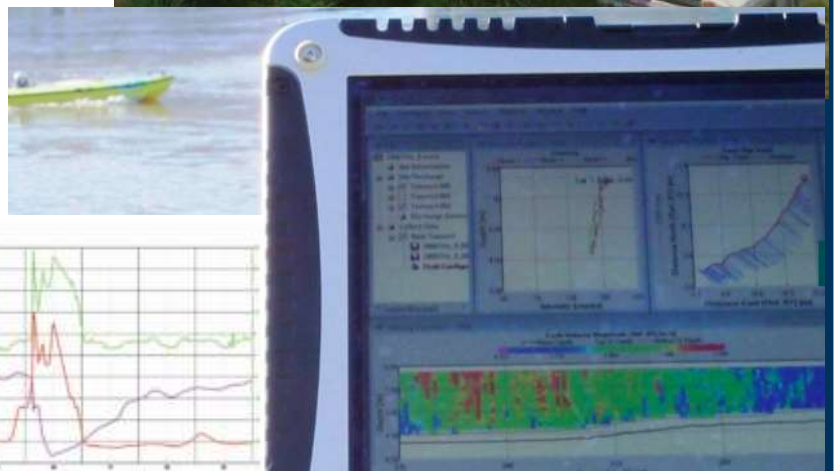
Alternative, passive, low-cost treatments for identified pollution sources – CSOs / farms

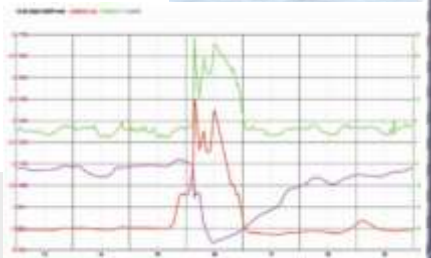
Empower communities to intervene

Franchisable business model for integrated catchment monitoring and management"

A paradigm shift towards a SMART water environment

- Combinations of water quality sensors on different ‘platforms’ - boats; fixed points.
- Sensors to be deployed – right place, right time, real time in surveillance and investigations monitoring strategies.
- Identify inputs, sources, loads, dynamics
- Data captured and shared with other stakeholders for analysis – *Community & Citizen Science*
- Enables effective decision making and management of local ‘diffuse’ pollution



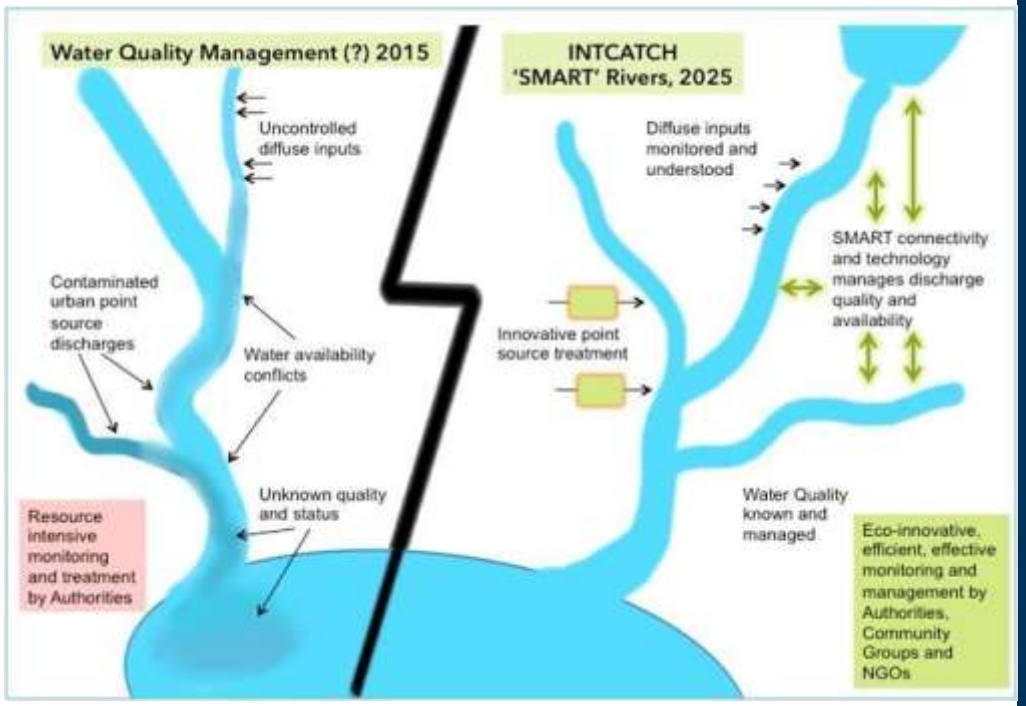


Outcomes delivered – how?

- Regulatory monitoring reduced to ‘reporting’ only

Monitoring programme focus

- low-cost; sensor-based investigations
- Mobile and fixed stations
- pollution incident; 24 hour; 30 days
- identifies the problem, and source
- enables management decisions
- Partly delivered by community organizations, lower operating costs and volunteers
- Empowered and engaged communities use these tools, share data and help drive improvements



INTCATCH 2020 Vision

Monitoring and managing the water environment for 2020 – 2050.

- We will deliver SMART water environments that use digital technologies, innovative low-cost tools and presents real-time information that:

- protects and enhances the quality and value of those environments by enabling effective management of pollution;
- reduces costs; and,
- engages more effectively and actively with citizens.