The Water Framework Directive –
A Directive for the Twenty-first Century?

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The Present Flawed Legal Regime

- 'Typology'
- Biological 'quality elements'
- 'Reference conditions'
- 'good ecological status'
- 'One out – all out' principle

The 'One out – all out' principle is illustrated in the diagram, showing the relationship between the typology and the biological 'quality elements' as well as the reference conditions linked to the 'good ecological status'.
Flow – Conspicuous by its Absence

Vindelälven
Natural river
Good Ecological Status

Umeälven
Heavily Modified river
Moderate potential

Stornorrfors
Hydropower station/dam

The Baltic Sea

Umeälven
Heavily Modified lake
Moderate potential

Umeälven
Heavily Modified river
Moderate potential
Reforming the Water Framework Directive

High Ecological Status

- There are no, or only minor anthropogenic alterations to the values of the traits of the body of surface water, when compared to those normally associated with a body of water where management is not needed for maintaining the complete array of ecosystem services.
- The values of the traits for the body of surface water reflect those normally associated with a resilient ecosystem with a high level of adaptive capacity, and show no, or only minor evidence of distortion of the ecosystem services it provides.

Good Ecological Status

- The values of the traits for the body of surface water show low levels of distortion resulting from human activity but deviate only slightly from those normally associated with the bodies of surface water classified as achieving high status.

Moderate Ecological Status

- The values of the traits for the body of surface water deviate substantially from those normally associated with bodies of surface water classified as achieving high status. The values show substantially signs of distortion resulting from human activity, and are significantly more disturbed than those under conditions of good status.
Conclusions

Address the complexity we find in ecosystems

Compatible at the ecoregion level

Enforceable
Ecosystem service: recreation

Ecosystem process/service: fishery

Trait category: morphology and physiology

Trait type: morphological and life history

Trait description: maximal body size of immatures and development speed/pattern

Organisms: fish

Trait effect: body size and relative growth rate
Ecosystem service: water purification

Ecosystem process/service: water purification

Trait effect: bioturbation potential

Trait category: behaviour

Trait type: resource acquisition/preference

Organisms: benthic fauna (e.g., Marenzelleria neglecta)

Trait description: microhabitat preference (substrate) and food material consumed