

EUROPEAN GUIDANCE STANDARDS FOR ASSESSING RIVER HYDROMORPHOLOGY

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WHY DO WE NEED HYDROMORPHOLOGY STANDARDS?

- EC Water Framework Directive
- Comparisons of hydromorphology within and between different countries in Europe

BUT.....

- There is life beyond the Water Framework Directive
- CEN standards not just for WFD
- There are other reasons for needing to study, describe and monitor hydromorphology:
 - EC Habitats Directive - SACs
 - Monitoring other waters of national importance for conservation (e.g. SSSIs)
 - Environmental management and restoration

FOUR BRIEF SECTIONS

- The work of CEN
- Key features of the first CEN standard on river hydromorphology
- Developing a second standard on hydromorphological modification
- Reflections on the process of standardization

THE WORK OF CEN

A HIERARCHY OF STANDARDS BODIES

- National bodies, e.g:
 - British Standards Institution (BSI)
 - Austrian Standards Institute (ON)
 - German Institute for Standardization (DIN)
- CEN (European Committee for Standardization) (National standards bodies of 27 EU countries, not just EU; central secretariat in Brussels)
- ISO (International Organization for Standardization - network of national standards bodies from 157 countries)

THE MISSION OF CEN

- “CEN's mission is to promote voluntary technical harmonization in Europe in conjunction with worldwide bodies and its partners in Europe.”

CEN AND THE WFD

- **Q:** What relevance does it have for the Water Framework Directive?
- **A:** CEN standards are explicitly referred to in Annex V of the WFD

ANNEX V AND CEN STANDARDS

- CEN standards are mentioned in Section 1.3.6 of the WFD - headed *Standards for monitoring of quality elements*
- “Methods used for the monitoring of type parameters shall conform to the international standards listed below or such other national or international standards which will ensure the provision of data of an equivalent scientific quality and comparability”

THE PROCESS OF STANDARDIZATION

- Standards production relies heavily on voluntary contributions
- Most of the technical work is carried out by specialists in industry, government agencies, academia, etc.
- The production of a standard usually takes several years as it has to follow a formal sequence of stages

STAGES IN THE DEVELOPMENT OF EUROPEAN STANDARDS

- **Drafting and consensus building** - successive drafts through Technical Groups/Working Group
⇒ Technical Committee
- **Public enquiry** - document translated and made available for public comment by national standards bodies
- **Approval** - Document revised, re-translated, voted on by national bodies
- **Publication** - final text issued by CEN, but published by national standards bodies

CEN/TC 230/WG 2/TG 5

- CEN TC 230 - Technical Committee on 'Water Analysis'
- WG 2 - Working Group on 'Biological and Ecological Assessment Methods', with six Task Groups:

TASK GROUPS

- TG 1: Invertebrates
- TG 3: Aquatic macrophytes and algae
- TG 4: Fish monitoring
- TG 5: Water body characteristics
- TG 6: Quality Assurance
- TG 7: Marine ecological methods

WORK OF TG 5

- EN 14614 “Water quality – Guidance standard for assessing the hydromorphological features of rivers” - published in 2004
- “Guidance standard on determining the degree of modification of river hydromorphology – formal vote stage concluded”
- “Water quality – Guidance standard for assessing the hydromorphological features of lakes” – public consultation stage
- Work also beginning on a second lake hydromorphology standard and on a first one for transitional and coastal waters

KEY FEATURES OF THE FIRST CEN STANDARD ON RIVER HYDROMORPHOLOGY

TIMESCALE

- Commenced in 1999
- Published in 2004 (EN 14614)

OVERALL APPROACH

- A 'guidance standard'
- Framework of general principles
- Does not compromise national methods
- Helps countries who have no methods for assessing river hydromorphology
- Comparisons of existing methods, sometimes involving field studies

FEATURES FOR SURVEY AND ASSESSMENT

- 10 assessment categories in three sections: 'Channel', 'River Banks/Riparian Zone', 'Floodplain'

ASSESSMENT CATEGORIES

CHANNEL

- Channel geometry
- Substrates
- Channel vegetation and organic debris
- Erosion/deposition character
- Flow
- Longitudinal continuity as affected by artificial structures

RIVER BANKS/ RIPARIAN ZONE

- Bank structure and modifications
- Vegetation type/structure on banks and adjacent land

FLOODPLAIN

- Adjacent land-use and associated features
- Degree of (a) lateral connectivity and floodplain; (b) lateral movement of river channel

ASSESSMENT CATEGORIES, FEATURES AND ATTRIBUTES

Assessment categories	Generic features	Examples of attributes assessed
CHANNEL		
Channel geometry	Planform Longitudinal section	Braiding Gradient
Substrates	Artificial Natural	Concrete Boulders, sand

REFERENCE CONDITIONS

- Reference conditions = high status (WFD)
- Controversial

BED AND BANK CHARACTER

- Lacking any artificial instream and bank structures that disrupt natural hydromorphological processes, and/or unaffected by any such structures outside the site; bed and banks composed of natural materials

PLANFORM AND RIVER PROFILE

- Planform and river profiles unmodified by human activities

LATERAL CONNECTIVITY AND FREEDOM OF LATERAL MOVEMENT

- Lacking any structural modifications that hinder the flow of water between the channel and the floodplain, or prevent the migration of a river channel across the floodplain

FREE FLOW OF WATER AND SEDIMENT IN THE CHANNEL

- Lacking any instream structural modifications that affect the natural movement of sediment, water and biota

VEGETATION IN THE RIPARIAN ZONE

- Having adjacent natural vegetation appropriate to the type and geographical location of the river

DEVELOPING A SECOND STANDARD ON HYDROMORPHOLOGICAL MODIFICATION

AIMS

- To complement the first standard
- By enabling consistent, broad-based characterization across a wide spectrum of hydromorphological modification
- To allow high-level reporting of river hydromorphology throughout Europe

CONTRIBUTING COUNTRIES

- UK
- Germany
- Austria
- France
- The Netherlands
- Italy
- Finland
- Norway
- Slovenia
- Spain
- Portugal

PRINCIPLE

- Uses same 10 categories of features as in EN 14614
- Scoring system for assessing degree of modification

STRUCTURE

- 'Core' features – not related to river type
- 'Subsidiary features' – type-specific

EXTRACT FROM SECOND RIVERS STANDARD

Features assessed	Score band A - quantitative	Score band B - qualitative
Extent of reach affected by artificial bank material (% of bank length) (both 'hard' and 'soft')	<p>1 = Banks affected by 0-5% hard, or -10% soft, artificial materials</p> <p>2 = Banks affected by >5-15% hard, or 10-15% soft, artificial materials</p> <p>3.....</p> <p>4.....</p> <p>5.....</p>	<p>1 = Banks not, or only minimally, affected by hard, artificial materials, or moderately affected by soft materials</p> <p>3 = Banks slightly or moderately affected by hard artificial materials, or greatly affected by soft materials</p> <p>5.....</p>

REFLECTIONS ON THE PROCESS OF STANDARDIZATION

POSITIVE FEATURES

- Encourages debate within Europe over matters of science, policy and philosophy (e.g. reference conditions)
- Provides a framework for other countries to develop their own methods
- Research collaboration

NEGATIVE FEATURES

- Lengthy timescales
- Lack of continuity
- Inaccuracies caused by mis-translation
- Published standards not freely available

A FINAL POINT

- Quote from Professor Brian Moss, University of Liverpool (in paper on ECOFRAME, published in *Aquatic Conservation*:
"During the workshop discussions of this project, one of us remarked that from a single visit to a lake, an overview of its catchment, knowledge of its pH and Secchi disc transparency, and a brief examination of its macrophytes, an experienced limnologist could easily distinguish high/good from moderate from poor/bad status. It is the tragedy of our time, perhaps of all times, that we must set up expensive and elaborate measures to do what, with experience, and consensus within society as to its environmental goals, could be done much more easily."
- A standard method is a tool – it is the means to an end, not an end in itself