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Implementation of the Water Framework Directive: The Intercalibration Exercise in the Mediterranean and in Cyprus



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Legal Framework

- **WFD Art. 4:** “... achieving good surface water status at the latest 15 years after the date of entry into force of this Directive [*i.e. by 2015*], in accordance with the provisions laid down in Annex V”
- **WFD Annex V:**
 - Quality elements for the classification of ecological status
 - Normative definitions of ecological status classifications
 - Monitoring of ecological status and chemical status for surface waters
 - Classification and presentation of ecological status



Quality elements for the classification of ecological status

| Rivers | Lakes & Reservoirs | Transitional waters | Coastal waters |
|----------------------------|----------------------------|----------------------------|----------------------------|
| | phytoplankton | phytoplankton | phytoplankton |
| aquatic flora | other aquatic flora | other aquatic flora | other aquatic flora |
| benthic invertebrate fauna | benthic invertebrate fauna | benthic invertebrate fauna | benthic invertebrate fauna |
| fish fauna | fish fauna | fish fauna | |

For each BQE, composition and abundance are specified as parameters to be considered.

For phytoplankton, biomass is prescribed too.



Normative definitions of ecological status classifications

E.g., for benthic invertebrates in rivers:

| Element | High status | Good status | Moderate status |
|----------------------------|---|--|---|
| Benthic invertebrate fauna | <p>The taxonomic composition and abundance correspond totally or nearly totally to undisturbed conditions.</p> <p>The ratio of disturbance sensitive taxa to insensitive taxa shows no signs of alteration from undisturbed levels.</p> <p>The level of diversity of invertebrate taxa shows no sign of alteration from undisturbed levels.</p> | <p>There are slight changes in the composition and abundance of invertebrate taxa from the type-specific communities.</p> <p>The ratio of disturbance-sensitive taxa to insensitive taxa shows slight alteration from type-specific levels.</p> <p>The level of diversity of invertebrate taxa shows slight signs of alteration from type-specific levels.</p> | <p>The composition and abundance of invertebrate taxa differ moderately from the type-specific communities.</p> <p>Major taxonomic groups of the type-specific community are absent.</p> <p>The ratio of disturbance-sensitive taxa to insensitive taxa, and the level of diversity, are substantially lower than the type-specific level and significantly lower than for good status.</p> |

“... totally or nearly totally to the undisturbed conditions ...”

“... slight changes...”

“... differ moderately ...”

“... no signs of alteration from undisturbed levels...”

“... slight signs of alterations...”

“... are substantially lower than...”



Classification and presentation of ecological status (1)

- **Comparability of biological monitoring results**
 - Member States shall establish monitoring systems for the purpose of estimating the values of the biological quality elements
 - In order to ensure comparability of such monitoring systems, the results of the systems ... shall be expressed as ecological quality ratios (EQRs).
 - EQR scale with five classes high-good-moderate-poor-bad
 - Boundary values for high/good and good/moderate boundaries shall be established through the intercalibration exercise
 - Intercalibration network



Classification and presentation of ecological status (2)

- **Comparability of biological monitoring results**
 - “Each Member State monitoring system shall be applied to the sites ... which are both in the ecoregion and of a surface water body type to which the system will be applied. The results of this application shall be used to set the numerical values for the relevant class boundaries in each Member State monitoring system.”
 - The class boundaries must be:
 - consistent with the normative definitions and
 - Comparable between Member States



Organisation of the Intercalibration Exercise

- Intercalibration Exercise is facilitated by the European Commission
- Intercalibration Exercise is coordinated by the European Centre for Ecological Water Quality and Intercalibration (EEWAI), JRC, Ispra.
- The Member States are organized in Geographical Intercalibration Groups (GIGs). Cyprus is part of the Mediterranean GIG
- Intercalibration results are reviewed, discussed and approved by the Working Group A on “Ecological Status” (ECOSTAT)



The Intercalibration Exercise 2004-2011

A retrospect

- 2002-2004: Establishment of Intercalibration register (collection of Intercalibration sites)
- 2005-2007: Intercalibration Exercise Phase 1
- 2008: Publication of the Commission Decision 2008/915/EC “... establishing ... the values of the monitoring system classifications as a result of the Intercalibration exercise.”
- IC Exercise Phase 1 results showed a number of gaps and uncertainties regarding the comparability of the results
- 2008-2011: Intercalibration Exercise Phase 2
- Technical work to be finished & delivered by end-2011
- 2012: Publication of the new Commission Decision



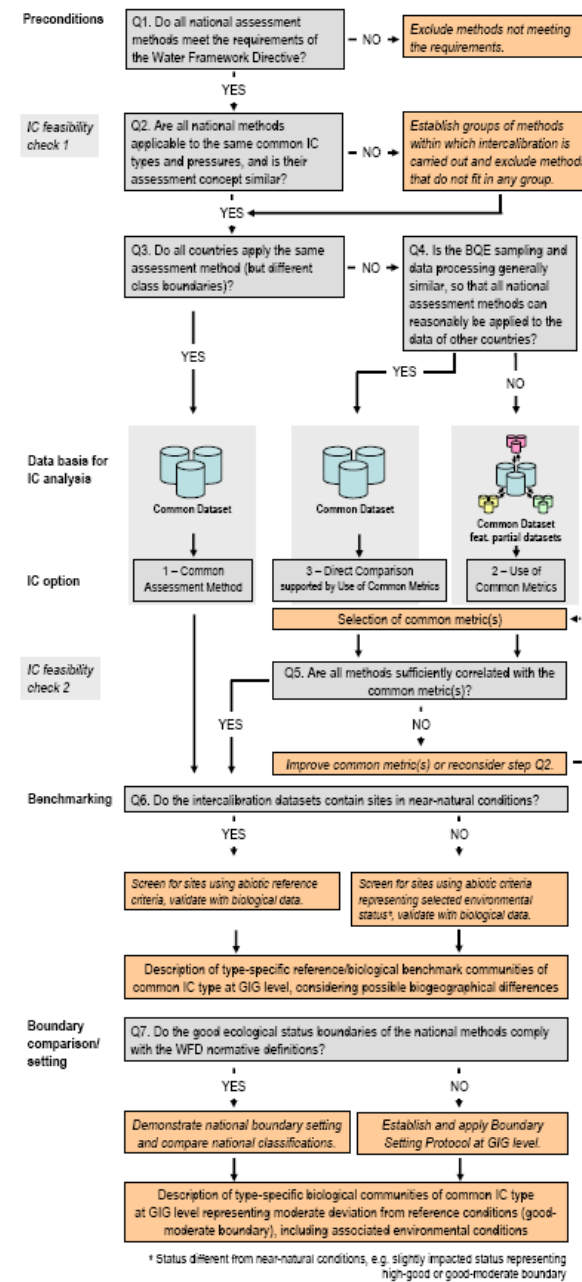
WFD-CIS Guidance Document No.14 on the Intercalibration Exercise

- 1st edition 2005 (“2004-2006”)
- 2nd revised edition 2011 (“2008-2011”)
- Detailed descriptions explaining how to undertake the comparison of assessment systems between Member States
 - Flowchart



WFD-CIS Guidance Document No.14

Flowchart: Steps of the intercalibration exercise



WFD-CIS Guidance Document No.14 on the Intercalibration Exercise

- 1st edition 2005 (“2004-2006”)
- 2nd revised edition 2011 (“2008-2011”)
- Detailed descriptions explaining how to undertake the comparison of assessment systems between Member States
- Guidelines on how to select the most suited Intercalibration option (three options)
- Detailed descriptions of the advanced statistical methods to be applied



The Mediterranean Geographical Intercalibration Group (Med-GIG)

- **Consists of a number of sub-groups:**
 - Med-Rivers GIG
 - Med-Lakes GIG (incl. Reservoirs)
 - Med-Transitional Waters GIG
 - Med-Sea GIG
- **Each GIG has BQE sub-groups, e.g. “Med-Transitional Waters Angiosperms GIG”, with a separate coordinator**
- **Participating Countries: PT, ES, FR, IT, SI, CRO, GR, CY**
 - Participation varies however between water categories and BQEs



Cyprus participation in the Med-GIG (1)

- **Med-Rivers GIG:**
 - Participation in IC for benthic invertebrates, phytobenthos & macrophytes
 - Fish: BQE is considered not applicable in Cyprus rivers, no participation. Project for substantiation of the Cyprus position is ongoing.
- **Med-Transitional Waters GIG: Cyprus has no TW, no participation**
- **Med-Coast GIG:**
 - Participation with all BQEs: Phytoplankton, other aquatic flora (macroalgae, angiosperms), benthic invertebrate fauna



Cyprus participation in the Med-GIG (2)

- **Med-Lakes GIG:**

- **Natural salt and brackish lakes:** No common type was found with other MSs, therefore IC is not possible.
- **Reservoirs (HMWB)**
 - Participation in the phytoplankton IC
 - Macrophytes and benthic invertebrates are not applicable in reservoirs due to specific conditions. No IC is undertaken for these BQEs in reservoirs
 - BQE fish is considered not applicable in Cyprus reservoirs, due to absence of indigenous species in Cyprus rivers and because of the use of the reservoirs for Drinking Water Supply. This position was brought forward to the European Commission by Cyprus, and was finally accepted by COMM.



Problems in the implementation of the Intercalibration Exercise (1)

- Lack of scientific knowledge on the functioning of aquatic ecosystems in semi-arid areas. This scientific knowledge has to address specifically the prescriptions of the WFD – sometimes knowledge & data is there, but is not sufficient for IC purposes
- Lack of Reference Sites for certain water body types (not a problem in Mediterranean, more in central Europe)
- Applicability in semi-arid areas: high inter-annual variability, monitoring frequency as specified in the WFD (e.g. once in three years) is too low to achieve reliable results



Problems in the implementation of the Intercalibration Exercise (2)

- Unclear pressure-impact relationships, multi-pressure situations
- Differences in data acquisition in the MSs. This is especially problematic for pressure data (land use, hydromorphology, physico-chemical parameters), which in turn hampers the establishment of pressure-response relationships.
- Issues involved in IC are more complex than it was initially anticipated. The procedure (statistics) has become quite complex and is therefore very difficult to communicate to people “outside the process”.
- Lack of funding -> not accepted as excuse by COMM



Benefits from the participation in the Intercalibration Exercise

- Scientific knowledge on aquatic ecology in EU MSs has improved largely.
- Several large scale research projects were initiated for Intercalibration purposes (e.g. WISER)
- A large network of experts is now existing, including literally all relevant experts across the EU.
- Through the close collaboration in the GIGs, very good relationships exist with many experts abroad



Intercalibration Exercise in Cyprus

Problems and Benefits

- In 2004, no data or knowledge on aquatic ecology was available in Cyprus
- Contracts with Research Institutes & Universities (all from abroad) to start participation in the IC and implement ecological monitoring
- Recruitment of biologists
- Establishment of a small hydrobiology laboratory at WDD
- Continuous and active participation in IC, meetings, etc.
- By 2011, a sound overview of ecological conditions in Cyprus waters has been established, for rivers, lakes and coastal waters



Thank you for your attention



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