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# REFERENCE CONDITIONS



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WFD, annex II.3: : «The specific biological reference conditions shall be established – for that surface water body type at high ecological status»

The reference conditions shall be type specific.

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General definition of high status, Annex V:

There are no, or only very minor, anthropogenic alterations to the values of the physico-chemical and hydromorphological quality elements for the surface water body type from those normally associated with that type under undisturbed conditions. The values of the biological quality elements for the surface water body reflect those normally associated with that type under undisturbed conditions, and show no, or only very minor, evidence of distortion. These are the type-specific conditions and communities.

CIS guidance document no 5:

It is unrealistic to base reference conditions upon historic landscapes that no longer exist in Europe.

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Reference conditions  
are the starting point for  
acceptable deviation  
to reach good ecological  
status – target value.

*Reference conditions*



*Target value*



EQR=1



High quality



Good quality



Moderate quality



Poor quality



Bad quality

EQR=0

EQR: Ecological Quality Ratio

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Methods for setting reference conditions – a prioritized approach:

- ▶ An existing undisturbed site or a site with only minor disturbance
- ▶ Historical data and information
- ▶ Models
- ▶ Expert judgement

Possible to include undisturbed sites, data or information from other EU countries.  
Expert judgement is required for all possible methods.

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The decided reference conditions in DK regarding coastal waters:

Distribution of eelgrass.

Based on historical data from around 1900.

Good/moderate status = max. 26 % deviation from the reference condition.

Also established a reference condition for phytoplankton (as chlorophyll a) – based on EU intercalibrated values for high status.

and fauna – based on expert judgement.

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The Danish guideline:

It is assumed that the conditions around the year 1900 in general represent a reference situation and that these conditions reflect the nutrient load around 1900 as a result of the human impact and land use at that time.

That's why it is interesting to discuss the N-use, N-loss, N-concentration in the different parts of the N-cycle and in the end the N-load to coastal areas – around the year 1900.



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## Workshop questions:

- ▶ What are the key factors that influenced the nitrogen cycle back in time?
- ▶ How can the effect of the agricultural practices on the nitrogen loads back in time be estimated?
- ▶ How can the effects of landscape on nutrient retention back in time be estimated?
- ▶ How and to what extent have changes in meteorological conditions affected the nitrogen loads back in time?
- ▶ What can we learn from actual measurements from the time of the defined reference state?

