

Operationalising ecosystem condition assessment under SEEA EA requirements

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Abstract

In the SEEA EA, the concept of ecosystem condition is grounded in ecosystem integrity, understood as the capacity of ecosystems to sustain their natural composition, structure, function, and self-organisation over time. Accordingly, an ecosystem is considered in good condition when it presents good physical, chemical, and biological condition (or quality) with self-reproduction or self-restoration capability, in which species composition, ecosystem structure and ecological functions are not impaired (cf. definition of the Taxonomy Regulation (EU) 2020/8528).

A conceptual scheme was therefore proposed within the SEEA EA Ecosystem Condition Typology, to classify ecosystem condition indicators in a standard way. Such scheme classifies the variables into three categories and six classes:

- *abiotic characteristics—physical and chemical state;*
- *biotic characteristics—compositional, structural, and functional state;*
- *landscape-level characteristics—land and seascape.*

The SEEA EA condition account is grounded on a set of ecosystem descriptors: reference metrics (condition variables) and reference levels per each metric, reflecting a high and low condition score, and corresponding to “optimal” state and a degraded state, respectively. Then, reference levels are used to evaluate current state.

A first effort of moving towards the operationalization of such conceptual framework was presented in Vallecillo et al., 2022, identifying variables to assess the condition of six different ecosystem types, and the selection of methods for setting reference levels. This effort provided the basis for further elaborations, based on geospatial data, leading to mapping ecosystem condition at the EU scale. Two practical examples have been finalised: Maes et al. 2023 showing how the SEEA EA-compliant approach can be applied to forest ecosystems, and Paracchini et al., 2026 presenting an application for agroecosystems. In both cases, ecosystem condition is quantified through an aggregated dimensionless index; mapping and estimates of areas at different condition levels can be derived.

The presentation illustrates such developments and presents challenges laying ahead in terms of ecosystem requirements, data availability, replicability through time and identification of links between ecosystem condition and ecosystem services.

Keywords:

Ecosystem condition; reference level; condition indicator; ecosystem services

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