IGB
Leibniz Institute of Freshwater Ecology
and Inland Fisheries

EU CONSULTATION

GreenData4All – A chance for better research, more predictive power and socio-ecological innovation

IGB Feedback

Introduction, background and focus

The Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB) is Germany's largest research centre for freshwaters. Our research findings help to tackle environmental changes and to develop strategies for sustainable water management – true to our guiding principle "Research for the future of our freshwaters". Based on our research and expertise in data collection, processing, and openness requirements, we comment within the EU public consultation on the GreenData4All initiative.

Europe's freshwaters are both important strategic resources for humans and valuable habitats for nature. They provide a wide variety of ecosystem services and play a major role in climate change adaptation and mitigation. However, these aquatic ecosystems are threatened by ongoing man-made climate change and other constantly increasing human pressures. To make water and water body management more sustainable, many interactions and conflicting objectives need to be considered. To tackle these wicked problems, science and research can and should make an important contribution – but this requires a significantly better access to environmental data in better quantity and quality.

Therefore, the EU's efforts and initiatives to make environmental data more accessible and usable are very important and explicitly welcomed. However, in addition to the technical hurdles that can be overcome in principle, there are also political-strategic considerations of actors that stand in the way of better data access.

1. Make data in Europe FAIR – and develop a new culture of exchange between public bodies and research

Important biological and environmental data sets are not shared by authorities and other public institutions. Years of experience show that data requests are often very cumbersome, thus delaying the research work, or are directly avoided by scientists due to this risk.

Additionally, many of the existing and accessible monitoring data is scattered and not harmonized. Often, the data use agreements are very restrictive, hindering the depth and transparency of the analytical research process. All public or publicly funded databases of EU or Member States bodies should be developed and provided according to the FAIR principles of Findability, Accessibility, Interoperability and Reusability.

However, one of the frequent reasons why data sets are not accessible is not of a technical or organisational nature, but lies in the political and strategic considerations of public bodies. It is known from background discussions that public authorities can fear the loss of sovereignty over the interpretation of data sets and are therefore sceptical about making them accessible. The feared scenario: External scientific analyses could show that, for example, the quality of water body, fisheries or biodiversity management to date is

inadequate or that objectives are not being achieved, which could put the authority, their management levels and political decision-makers under pressure to justify themselves, and take (other) action. However, these reservations should be overcome and a new culture of – also joint – analysis and exchange between public authorities and science and research should be established, as it is a matter of jointly tackling the major societal and ecological challenges. If necessary, further EU legislation could also advance this process in the Member States.

Additionally, it should be noted that there are also conflicting objectives in research itself with regard to the sharing of data. The system is characterised by an interplay of cooperation and competition. Many initiatives and activities in the field of Open Science are being launched at European and national level to increase the quantity and quality of Open Data. We suggest that these initiatives and activities could be analysed politically and practically across the different administrative levels to monitor the implementation of Open Science being in place, as well as regarding synergy effects.

2. European freshwaters: Better management needs better data provision

The availability, quantity and quality of datasets on European freshwaters have to increase significantly to allow more science-based contributions to a sustainable water and water body management. This concerns the entire range of physical, biogeochemical, hydrological, ecological and biological data packages in the most differentiated spatio-temporal resolution possible. Until now, data from e.g. biological and physico-chemical monitoring is not always linked and needs to be requested and aligned separately. Simply put: the sampling or observation of a given species can often not be related to the environmental conditions at the time of observation. This does not allow to assess the species-environment relationship which is however critical to assess e.g. natural and human-induced variation in species community structure.

Official jurisdictional boundaries are not only thematic, but also geographical: Data for one water body (river, lake) which is split among states, is not available in one coherent form but needs to be requested from separate agencies, federal states or countries. Even monitoring data resulting from EU legislation (e.g. Water Framework Directive and Habitats Directive) are not accessible centrally. What is more, high-resolution mapped and routed water bodies, including barriers, are missing EU-wide, despite important efforts given e.g. the Copernicus EU-Hydro initiative.

The basic principle should be an obligatory convention of persistent IDs for water bodies and monitoring sites. This would help to identify and exchange data at different administrative levels, e.g. between hydrological and biological management fields or between researchers. Until now, these codes and IDs change over time, regularly causing significant problems in large-scale and long-term studies that are also very important for freshwater management questions.

More harmonised freshwater data in a comprehensive collection could and should be made available centrally in EU open data spaces, such as the European Green Deal Data Space and the European Open Science Cloud (EOSC) framework, that could become the central go-to

places for all European environmental data. Besides data from authorities and research, also other qualified resources from e.g. national and regional monitoring agencies, museum collections, environmental NGOs, foundations or other stakeholders and right-holders could be mobilised and shared. It is clear that this coordination, harmonisation and integration of monitoring programmes and specific environmental data sets will not be feasible without corresponding additional resources. However, such efforts to achieve greater consistency and openness in the collection, processing and provision of data can also significantly increase the efficiency of existing monitoring activities and the quality of data processing results, what promises a clear return on investment.

3. Further reading

Maasri, A., Jähnig, S.C., Adamescu, M.C., Adrian, R., Baigun, C., Baird, D.J., et al. (2022) A global agenda for advancing freshwater biodiversity research. Ecology Letters, 25, 255–263. Available from: https://doi.org/10.1111/ele.13931

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