

1.1 Guide to ICES advisory framework and principles

Introduction

[ICES Advisory Plan](#) establishes the ecosystem approach as the central tenet that governs how ICES provides independent advice on the management of human activities in our seas and oceans. Through its advice, ICES strives to advance and share scientific understanding of marine ecosystems and the services they provide to meet conservation, management, and sustainability goals.

In implementing [ICES Science Plan](#), ICES scientific community seeks to produce ecosystem and sustainability science that has a high and beneficial impact on society. One way these benefits are realized is through the translation of science into advice. Another way is through collaborations with scientists from outside ICES [Member Countries](#) and with [intergovernmental organizations](#) from across the world. Our understanding and knowledge is constantly evolving through ongoing exploration and discovery, spanning topics from genetics and the biology of unicellular organisms to large-scale oceanographic and climate processes.

ICES advisory process is open and transparent and generates independent, credible, and peer-reviewed advice based on the work of ICES scientific community. All experts are called on to declare any conflicts of interest. The diversity of scientific topics addressed allows ICES to provide advice on issues ranging from the effects of contaminants on individual animals to the status of fish stocks and the effects of multiple human pressures and climate at the scale of ICES ecoregions.

ICES advice is based on the best science and data available at the time of its preparation. Advisory products frequently provide recommendations and suggestions on how the science and data flows can be further utilized, developed, and improved. This feedback stimulates work within ICES scientific community and, at a national level, helps coordinate and improve the monitoring of marine ecosystems and how we use their services.

The [Advisory Committee](#) (ACOM) approves all ICES advice and has overall responsibility for all advisory products and for the ongoing development and improvement of the advisory process. It consists of representatives appointed by each ICES Member Country, and decisions are made by consensus. The ACOM Leadership consists of the Chair of ACOM, its Vice-Chairs, and the Head of Advice Support from ICES Secretariat. All [advice is published](#) on ICES website.

Any ICES Member Country or intergovernmental organization that has an agreement with ICES can make an advice request to ICES. The majority of requests are in support of the development or implementation of policies and legislation to meet conservation, management, and sustainability goals and objectives. A list of current policies and legislation considered by ICES for the management of human activities in the marine ecosystem is presented in Annex 1. Where advice requests relate to issues governed by well-defined policy and legislative goals and objectives, the advisory responses are generally clearer and guided by documented predetermined methods. In these cases, the advice is usually based on results that utilize the most up-to-date data and analysis and is delivered after checking the performance of the methods/models. However, requests may relate to issues governed by normative, ambiguous, or even incompatible policy or legislative goals and objectives. In responding to these more complex requests, it is not ICES role to reconcile objectives; rather the organization strives to provide evidence-based advice that takes account of the ambiguity and complexity in societal objectives, illustrating the consequences of policy choices. This requires an iterative approach with a high degree of transparency and consultation with advice requesters.

Consistent with its [Strategic Plan](#) and the ecosystem approach, ICES strives to maximize the utility of the data, science, and advice supplied by ICES Member Countries.

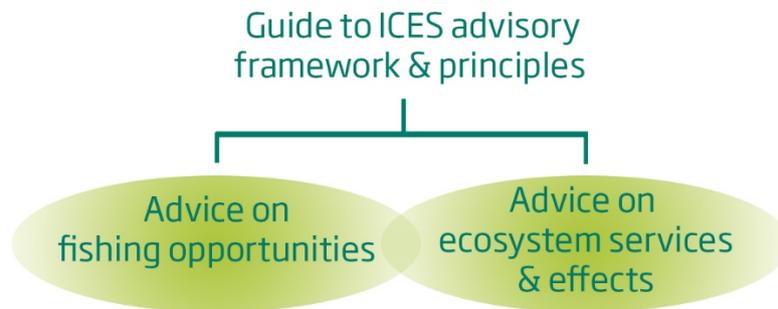
Transparency of the advisory process and the delivery and publication of clear and unambiguous advice is fundamental for an effective ecosystem approach. The nature of advice requests is broad and each individual advisory product is tailored so that it is accessible and understandable to all interested and informed non-experts.

ICES provides a range of advice products relating to marine ecosystems, from advice on fishing opportunities to advice on ecosystem and environmental issues. Based on needs identified by ICES scientific community and requesters of advice, ICES produces and regularly updates [Ecosystem](#) and [Fisheries](#) Overviews; Aquaculture Overviews are also in production. Overviews are geographically based and developed at the level of [ICES ecoregions](#). In addition, ICES produces [Viewpoints](#)

on emerging topics related to the state and sustainable use of marine ecosystems. Overviews and Viewpoints are formally approved for publication by [ICES Advisory Committee \(ACOM\)](#) as ICES advice.

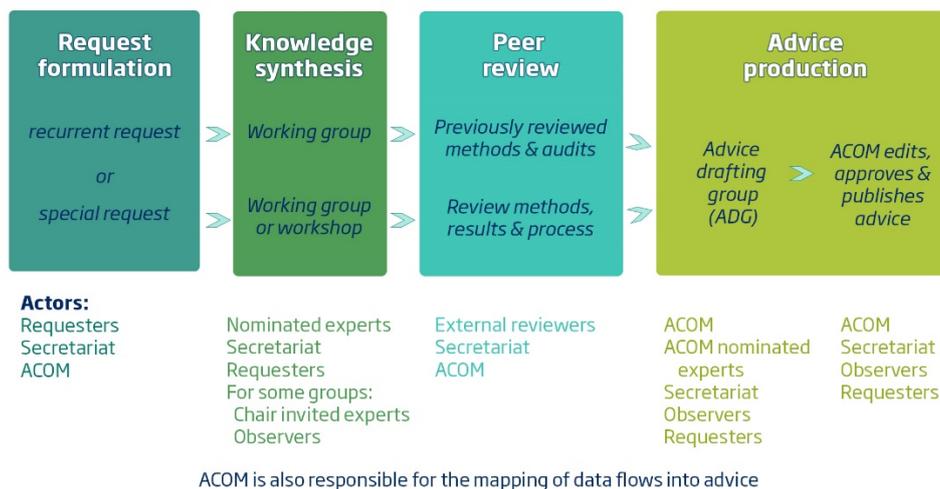
On request, ICES also provides scientific, technical, and review services to its Member Countries and to intergovernmental organizations. These services are not ICES advice, although they are produced using the same framework and principles.

The Guide to ICES advisory framework and principles provides the overarching framework to ICES advice. Further details are provided in modules for advice on fishing opportunities and advice on ecosystem services and effects*.



ICES advisory framework and principles

Framework for ICES provision of advice



The advisory framework and principles apply to the production of all ICES advisory products:

- ICES advice, consisting of recurrent and one-off special requests, Ecosystem and Fisheries Overviews, and Viewpoints; and
- Requests for services.

* Version 2: 'impacts' changed to 'effects' in text and figure

ICES advice is produced through a four-stage framework of request formulation, knowledge synthesis, peer review, and advice production (Figure 1). There are ten principles applied across these four stages, which vary slightly based on the advice type or product.

Guidelines for advice

Principle 1. *The guidelines and procedures to produce ICES advice are documented, openly accessible, and up-to-date.*

The current guidelines include [guidelines for ICES groups](#) (including a [Code of Conduct](#) which incorporates the Conflict of Interest statement), the [meeting etiquette](#), the [Data Policy](#) and [best practice guidelines for Data Management](#), the guidelines for peer review groups and [guidelines for advice drafting groups \(ADGs\)](#). Various [technical guidelines](#) also exist that explain the methods used and how advice was established.

Request formulation

Principle 2. *Final request formulation is agreed through dialogue to clarify the requester's needs and expectations, the ICES process, likely resource implications, timelines, format of advice, and roles and responsibilities of the engaged parties.*

Principle 3. *Where possible, existing policy goals, objectives, and the level of acceptable risk relevant to the advice request are identified. Where these objectives and descriptions of risk are unclear, ICES will identify these in the advice, and, where possible, provide options for management action and the consequences of the options and their trade-offs.*

Recurrent requests

These requests generally relate to issues where the science and management frameworks are well-established. They involve updating existing ICES advice based on predetermined methods/models and using new data submitted by Member Countries through established [data calls](#) and flows. Incremental improvements in data acquisition, quality, and flows (in terms of both temporal and spatial data coverage), as well as in the presentation of graphs and maps used in advice are the norm. Stepwise improvements in methods are made through peer-reviewed "benchmarks". These improvements are incorporated into the advisory processes and may change the results in a time-series. Request formulation is relatively constant over time and usually described in agreements that run over a number of years. Many responses to recurrent requests provide information on the consequences and risks of management options, even when the management objectives are defined (e.g. mixed fisheries).

Special requests

Due to the more *ad hoc*, complex, or ambiguous nature of some special requests, unforeseen challenges and uncertainties may arise during the advice generation process. These challenges often relate to the absence of well-established science and management frameworks; a lack of documented and peer-reviewed knowledge and data; and vague or complex management objectives. Special requests often require greater dialogue with the requester to ensure expectations for the advisory product are clear and transparent to all. The further application of ecosystem-based management (EBM) will increase the frequency of such requests.

Clarity and a shared understanding of the issues is particularly important. Value-laden or normative objectives are often associated with qualitative knowledge sources and pose challenges for quantitative analysis and the production of evidence-based scientific advice. To the extent possible, normative management objectives must be clarified and management strategies for dealing with them agreed at the request formulation stage. Such strategies are often iterative throughout the advisory process but must be transparent and must not compromise the independence of the advice or advisory process. ICES Advisory Plan and associated guidance, codes, and policies ensure the independence of the advisory process from inappropriate influence by requesters and stakeholders.

The decision to accept a special request lies with ACOM. All special requests are evaluated by ACOM using agreed criteria, with the support of the Secretariat. The criteria include whether (a) the request is within the scope of ICES competencies, (b) advice can be provided using best available scientific knowledge, (c) resources and knowledge are available in the network, and (d) data can be gathered and checked in a timely manner. ACOM also considers the urgency to the requester and the potential impact of the advice to support management decisions.

Ecosystem, Fisheries, and Aquaculture Overviews and Viewpoints

Ecosystem and Fisheries Overviews are synthesized regional advice products developed to provide clear evidence to managers about the trends in an [ICES ecoregion](#). They complement recurrent and special requests and increase the capacity to provide integrated ecosystem advice. Requests for Ecosystem and Fisheries Overviews are included in most grant agreements and memorandums of understanding (MoUs). Scoping exercises with managers and stakeholders took place during the initial stages of development of the Overviews.

Viewpoints are one-off advisory products prepared by ICES. Through its expert groups, the ICES community proactively identifies the need for Viewpoints; their nature and scope is then established through internal consultation before their production as advice is agreed by ACOM. Viewpoints are created through a synopsis of available knowledge in response to a selection of societal-related questions compiled by ACOM and ICES Science Committee (SCICOM). Viewpoints summarize available scientific information and are intended to stimulate or inform environmental policy and management practices.

Requests for services

Requests for services are developed in the same way as special requests for advice. Upon receipt of request from policy-makers, ICES can provide scientific information or propose a process that produces scientific information. Service requests cover a wider range of issues, including the provision of data and research results, clarification of existing ICES advice, synopsis of scientific knowledge, and the review of research and monitoring proposals and programmes. They are not considered ICES advice.

Knowledge synthesis

Principle 4. *The deliberations of all relevant expert groups are published by the time the associated advice is published.*

Principle 5. *The best-available science and quality-assured data are used. ICES selects and applies relevant methods for any analysis, including the development of new methods. The methods are peer reviewed by independent experts and clearly and openly documented.*

Principle 6. *Data are findable, attributable, researchable, reusable, and conform to ICES data policy. Data flows are documented.*

Recurrent requests

The network of expert groups meets annually to synthesize knowledge for recurrent requests. Their annual terms of reference (ToRs) are adapted by ACOM. The expert groups compile and assess the new data, diagnose the fit of new data to the existing methods/models, and update the existing knowledge base to provide input to the recurrent advice. For recurrent advice, the selection or modification of methods requires a [benchmarking process](#) and principles; these are governed by ACOM. All analyses that underpin ICES advice are published in the ICES Science Reports series.

Special requests

The knowledge for special requests is synthesized either through one-off workshops or by the network of expert groups that meet annually. Their ToRs are adapted by ACOM. Workshops are likely to engage in a broader range of activities than the expert groups. Their activities may include stakeholder engagement, scoping for management objectives, compilation and analysis of data, exploration of new methods, ways to communicate results, and the testing and diagnosis of current methods/models to update the existing knowledge base. The nature of special requests means that benchmarking of methods is conducted through other forms of peer review, such as independent peer review of output from workshops. All analyses that underpin ICES advice are published in the ICES Science Reports series.

Ecosystem, Fisheries, and Aquaculture Overviews and Viewpoints

Overviews are continuously evolving advisory documents, addressing issues relevant to regional managers and incorporating new knowledge on regional trends in the ecosystem, fisheries, and aquaculture.

The knowledge in Ecosystem Overviews is synthesized by expert groups and/or workshops. Central to these overviews is the prioritization of regional human pressures on the ecosystem, and the highlighting of ecosystem components impacted by these pressures. Ecosystem Overviews are currently more qualitative in nature, but are evolving to incorporate more quantitative methods.

The knowledge in Fisheries Overviews is synthesized by ACOM using data from expert groups and the [STECF database](#) of catches and effort. Much of the production and documentation of this knowledge is automated. Apart from standard fisheries and stock status information, mixed-fisheries advice and bycatch advice are provided in these overviews. Spatial information on fishing and pressures on the seabed is also included.

The knowledge in Aquaculture Overviews is synthesized by ACOM, using data and evidence from expert groups and other sources. These overviews describe aquaculture activities and practices, provide information on production over time, and consider the environmental interactions of aquaculture. Whenever possible, Aquaculture Overviews also provide socio-economic information and deal with cross-sectorial interactions and trade-offs.

Viewpoints are based on knowledge synthesized in a background document prepared and published by ICES. Viewpoints are prepared by a group of experts from within the ICES network. These experts may be drawn from one or more expert groups.

Evolving quality control and assurance processes within ICES provide end-to-end quality assurance that encompasses best practice in data management, data integration, and translation of analyses into advice. ICES [Transparent Assessment Framework](#) (TAF) has been established to facilitate this. The TAF also makes the data and methods behind and results from ICES assessments easy to find and explore, and the assessments themselves easy to re-run.

Requests for services

ICES uses its networks to select independent experts or groups of experts to undertake services requests. Data compilation and mapping services are undertaken or supervised by ICES [Data Centre](#). Delivery of the service is overseen by the ACOM Leadership and supported by the Secretariat.

Peer review

Principle 7. *To ensure that the best available, credible science has been used and to confirm that the analysis provides a sound basis for advice, all analyses and methods are peer reviewed by at least two independent reviewers. For recurrent advice, the review is conducted through a benchmark process; for special requests through one-off reviews.*

Recurrent requests

The methods/models used by the expert groups are independently peer reviewed by recognized experts as part of a [benchmarking process](#). New methods cannot be applied without a review and must conform to the quality assurance processes outlined below. The ACOM Leadership, supported by the Secretariat, selects the reviewers. Data and computations are audited by each expert group.

Special requests

All knowledge (data, methods, and conclusions) that is used to answer special requests is independently peer reviewed by experts. The ACOM Leadership, supported by the Secretariat, selects the reviewers to ensure that best available, credible science has been used and to confirm that the analysis provides a sound basis for advice.

Ecosystem, Fisheries, and Aquaculture Overviews and Viewpoints

The scientific information and documents prepared by ICES expert groups (including background documents for Viewpoints) are independently peer reviewed following the same approaches as the special requests.

Requests for services

An ICES-sanctioned peer review can be requested as a service. Some other services may be peer reviewed at the discretion of the ACOM Leadership.

Advice production

Principle 8. *Advice is comprehensive, unambiguous, and consistent with the synthesized knowledge, while taking the peer review into account. All advice follows existing advice frameworks and any deviation from the frameworks or related, previous advice is identified and justified.*

Principle 9. All ICES advice is adopted by the ICES Advisory Committee (ACOM), through consensus, prior to being made available to the requester and simultaneously published on ICES website.

Principle 10. ICES provides advice as an impartial response to a request, and does not lobby the requester or any other party to implement its advice.

Recurrent request

The advice is prepared by an ADG. ADGs are made up of representatives from the expert groups and ACOM. Where applicable, a representative from the reviewers and experts identified by the ADG chair may be invited to join the ADG. ACOM consists of nationally nominated members and includes alternates to ensure the range of expertise from each ICES Member Country can be represented. ACOM completes the final review, modifies if appropriate, and adopts the advice by consensus. In the absence of consensus, the advice will not be published. Substantial modifications or questions related to the underlying knowledge are referred back to the expert groups. All advice is copy-edited and formatted, before being released to the requester and simultaneously published on ICES website. ACOM leadership is responsible for presenting ICES advice to international organizations; if requested national ACOM members present the advice in their own respective countries.

Special requests

The process of advice production for special requests – using ADGs and with final adoption by ACOM – is the same as that used for recurrent advice. A representative of the independent peer reviewers also joins the ADG.

Ecosystem, Fisheries, and Aquaculture Overviews and Viewpoints

The process of advice production for Overviews and Viewpoints – using ADGs and with final adoption by ACOM – is similar to that used for recurrent advice.

Request for services

Services are not considered ICES advice and therefore do not go through the formal advisory process. However, the Secretariat informs ACOM of a request for a service and suggests a production plan. Approval for the release of a response to a service is the responsibility of ACOM. Responses to service requests are published in the ICES Advice series.

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Annex 1 International and national management objectives for human activities in the marine ecosystem

Annually, ICES considers the policy and legislation under which it provides advice. The current legislation that impacts the advice is:

- The United Nations Convention on the Law of the Sea (UNCLOS; UN, 1982), which includes a call for a maximum sustainable yield (MSY) approach to managing fisheries;
- The United Nations Conference on Environment and Development (UNCED; UN, 1992a), including Chapter 17 of Agenda 21, which highlights a precautionary approach;
- The United Nations Straddling Fish Stocks Agreement of 1995 (UN Fish Stocks Agreement [UNFSA]; UN, 1995) and the FAO Code of Conduct for Responsible Fisheries (Food and Agriculture Organization of the United Nations [FAO]; FAO, 1995), both of which call for a precautionary approach;
- The Convention on Biological Diversity (CBD; UN, 1992b), which calls for conservation of biological diversity through an ecosystem approach and includes biodiversity goals and targets;
- The Johannesburg Declaration of the World Summit on Sustainable Development (WSSD; UN, 2002), which calls for an ecosystem approach and rebuilding fisheries to maximum sustainable yield;
- The International Union for Conservation of Nature (IUCN), which influences, encourages, and assists societies in conserving the integrity and diversity of nature and ensures that any use of natural resources is equitable and ecologically sustainable.

In addition, ICES advice responds to the policy and legal needs of ICES Member Countries as well as to multinational and intergovernmental organizations that use the advice. Some applicable policy and legal instruments include:

- The OSPAR Atlantic Strategy;
- The HELCOM Baltic Sea Action Plan;
- The Common Fisheries Policy of the European Union (CFP; EU, 2013);
- The Marine Strategy Framework Directive (MSFD; EU, 2008);
- The Norwegian Marine Living Resources Act (Anon., 2008);
- The Russian Federal Law on Fisheries and conservation of aquatic biological resources (Anon., 2004);
- The Icelandic Fisheries Management Act (Anon., 1990);
- The Norwegian Act on the Management of Marine Resources (Anon., 2017);
- The UK Fisheries Act (Anon., 2020).