REPORT

Meeting: **EFARO**
Parties: **EFARO, DG MARE, stakeholders**
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Location: **Zoom**
Chair: **Luc van Hoof**
Rapporteur: **NSAC Secretariat**

A large number of models have been developed to provide advice on fisheries management. There is a sense that the field has reached a crossroads: will improved management result from collecting more data and building increasingly complex models, or does progress depend instead on generating information that is actually useful, trustworthy, and capable of supporting effective decision-making in fisheries management?

Rapporteur's note: Chatham House Rule was observed during this meeting therefore the identity or affiliation of speakers and other participants is not revealed.

1 Scientific Perspective: how is increasing complexity influencing the quality of scientific advice for management

Fisheries advice is developed within ICES for around 170 European fish stocks, many of which are data-limited. To address this, ICES uses a structured framework that assigns stocks to categories based on data availability, with different assessment methods applied accordingly.

Data-rich stocks are assessed using complex models, which aim to account for uncertainty but are often opaque, error-prone, and difficult to interpret, sometimes undermining trust. Data-limited stocks rely on simpler, precautionary, data-based approaches.

Since 2012, ICES has developed and tested simpler methods through transparent, peer-reviewed, simulation-based processes to ensure their robustness before use. Case studies show that simple harvest control rules can match catches from complex models while substantially reducing risk and improving transparency.

Overall, more complexity does not guarantee better advice or greater trust. Effective fisheries management depends on methods that are tested, transparent, and fit for purpose, with simpler approaches often providing more robust and credible advice than complex models.

2 Trust Perspective: reflecting on the role of trust in decision-making and the use of scientific information

Trust in fisheries science is often invoked to explain why advice is not followed, but this view

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oversimplifies how trust and decision-making work. Non-compliance does not necessarily reflect a lack of trust, as scientific advice may be accepted as technical sound yet rejected due to social, economic, or political trade-offs.

Trust is relational and context-dependent, shaped by perceptions of competence, integrity, shared values, risk, and potential losses. It can be placed in people, institutions, procedures, or data, and is strongly influenced by uncertainty and stakes.

Research with Norwegian fishers shows that trust is linked to understanding, shared values, benevolence, and scientific expertise, and more to confidence in research than in management decisions. In high-risk contexts, however, perceived losses can override these factors.

Overall, trust should not be equated with compliance. Participation alone does not guarantee trust and may even undermine it if poorly implemented. Building trust requires genuine collaboration, recognition of multiple forms of expertise, transparency about uncertainty, and greater attention to risk and decision context.

Sources:

- 'It builds on trust': Exploring fishers' trust in management of fisheries in Norway: https://doi.org/10.3389/fmars.2025.1572697
- The effects of communicating uncertainty on public trust in facts and numbers: https://www.pnas.org/doi/epdf/10.1073/pnas.1913678117

3 Users Perspective: the industry perspective on Science, Policy and Trust

Legislative simplification has raised expectations of clearer and more transparent use of science, yet fisheries illustrate the opposite trend. Fisheries rely heavily on scientific advice that directly shapes daily practice and is based largely on fishers' data, making trust in science essential. However, an expanding set of marine policies has increased scientific and policy complexity, reducing clarity and eroding trust.

Misalignment between frameworks such as the Marine Strategy Framework Directive and the Common Fisheries Policy allows the same stock to be judged sustainable under one policy and degraded under another. More broadly, political targets are often set without workable indicators or credible impact assessments, as seen in initiatives like the Nature Restoration Law.

Trust is further undermined by gaps between high-level EU targets and their local implementation, late and uncertain information on impacts, unequal scientific requirements across marine sectors, and abrupt methodological changes in stock assessments with real economic consequences.

Science remains central to fisheries management, but complexity alone does not improve governance. Trust depends on proportionate, transparent, and coherent rules, realistic impact

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assessments, simpler methods, and close collaboration between scientists, policymakers, and stakeholders.

4 Management Perspective: decision-making processes, knowledge and policy

Scientific advice and data collection are central to EU fisheries governance, bridging science and policy under the Common Fisheries Policy (CFP), which deliberately prioritizes simplicity and reliance on the best available science. Fisheries decisions have therefore been closely aligned with advice from ICES and related bodies.

In recent years, however, rising complexity has strained this system without consistently improving robustness, relevance, or trust. Complexity now stems not only from scientific methods, but also from overlapping maritime policies and competing sea uses. The Baltic Sea illustrates these limits, where non-fisheries pressures such as pollution have undermined ecosystem outcomes despite adherence to fisheries advice.

Scientific advice is supported by extensive data collection and a broad advisory system involving ICES, STECF, the JRC, RFMOs, and research consortia, with growing stakeholder involvement earlier in the process. Yet key challenges persist: demand for faster advice, data gaps, resource and capacity constraints, and increasing methodological complexity have led to revisions that can undermine trust. Ecosystem-based management and cross-sector integration further dilute fisheries priorities, while assessment changes can trigger abrupt management shifts with significant socio-economic impacts.

Greater complexity does not automatically deliver better outcomes. Effective management depends on advice that is transparent, interpretable, and usable in practice. Trust is strengthened through predictability, transparency, and early co-design between scientists and managers, with simplification where possible and complexity applied only where it clearly improves decision-making and confidence in the system.

5 Q&A

1. Trust in science varies widely across societies. In Poland, institutional trust is low and academic experts are trusted more than government scientists, while in countries such as Norway baseline trust in science is higher, even if trust in decision-makers remains limited.

Trust is strongly shaped by prior attitudes, making it difficult to build where skepticism is entrenched. Transparency also poses challenges: while uncertainty must be discussed among experts, established model limits and data gaps can undermine trust among non-experts.

Growing reliance on complex, opaque models further weakens the ability to explain and defend scientific advice. Tools should therefore be chosen for fitness for purpose, with simpler and more transparent approaches often better supporting understanding and trust. Effective

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communication must balance honesty about uncertainty with clarity about what is known and reliable.

2. A perceived crisis of trust in science is often discussed and, while sometimes overstated, remains real and consequential. In some cases, trust is actively undermined by actors who benefit from weakening confidence in scientific advice.

A key challenge lies in how uncertainty is communicated. Research shows that numerical or probabilistic expressions of uncertainty tend to inspire more confidence than vague qualitative statements. Yet a tension persists: scientists are trained to highlight uncertainty, while decision-makers seek clear, actionable guidance.

The issue is not whether to communicate uncertainty, but how. Uncertainty should be framed in decision-relevant terms—such as likelihoods or confidence ranges—rather than emphasized in ways that obscure conclusions. Trust is more likely to be maintained when uncertainty is transparently acknowledged while still supporting clear and usable advice.

3. Participant rejected the idea that withholding information can build trust. Concerns were raised about reliance on complex models that are not always well understood, even by their users. Models should only be applied when outputs can be clearly explained and ecologically justified, not defended solely because they have been tested.

Greater attention was called for to the advisory process itself. Scientific work often begins with data and models, while managers focus on actionable advice, highlighting the need for closer alignment between these perspectives. Evidence suggests that increasing model complexity does not always produce more robust advice and can sometimes increase risk, making simpler, data-limited approaches potentially more precautionary and reliable.

Challenges were also noted in engaging managers on core concepts like sustainability. Scientific advice could be better tailored to management needs, but limited feedback and strict separation between advice and decision-making remain barriers to more effective, mutually informed approaches.

4. Improving scientific outreach and communication was highlighted as a key priority. New methods are sometimes misunderstood, requiring iterative explanation and transparency. Workshops and direct engagement were noted as effective, even when introduced later in the process.

Managers should help define the scope of advice to support decisions, while the independence of science must be safeguarded. This balance is increasingly challenging under ecosystem-based management, which calls for ongoing engagement with stakeholders.

The tension between openness and independence is both a challenge and an opportunity. Bilateral discussions can aid understanding, but interference with scientific processes must be avoided. Existing rules protecting advisory independence remain essential, and continued communication is the main way to navigate this dynamic.

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5. Public trust is often placed more in celebrities than in institutions, illustrated by a celebrity chef's influence on the EU landing obligation. While full transparency in the EU supports democratic debate, highly technical issues may require tailored communication beyond broad public messaging.

Scientists increasingly explain both technical results and the policy context, especially that advice contains uncertainty and represents recommendations, not decisions. Yet political messaging often frames decisions as "following the science," obscuring policy judgment and trade-offs between ecological, economic, and societal objectives, such as delayed MSY. Large quota changes further amplify scrutiny due to their economic impact.

Dialogue, clearer explanation of advice, and joint problem definition by scientists, managers, and policymakers are essential for improving public understanding and ensuring that scientific advice informs—but does not replace—policy decisions.

6. Trust and understanding must be built between managers, scientists, and the fishing community, especially around technical terms and explanations. One presentation highlighted the scientific perspective, emphatic uncertainties, variability, and caveats. Point estimates are often requested, even though wild stocks are complex, data-limited, and affected by past fishing and environmental changes, including climate change.

Honesty, clarity, and emotional engagement were stressed as key to communication. Scientists cannot control fish populations but can provide advice based on the best available data, explicitly accounting for uncertainty in catch recommendations. Political and societal pressures often push management to the limits of scientific guidance, making it essential to balance ecological sustainability with livelihoods and economic concerns. Improved understanding of scientific terms and context was seen as critical to strengthening trust and supporting better-informed policy decisions.

7. Attention was drawn to distinguishing what is known from what remains uncertain, linked to the broader trust crisis in science. Traditionally, experts were seen as separate holders of knowledge, but this model has shifted: scientists and science are now integral parts of society.

Previous explanation of uncertainty was highlighted as a model for responsibly communicating knowledge without undermining credibility. Despite having greater contextual knowledge, scientists cannot hand certainty to decision-makers; Instead, collaborative dialogue is needed to determine the best course of action. Integrating scientific expertise within societal understanding was seen as essential for building trust and supporting effective decisions.

Acknowledgements

Please note that ChatGPT was used as a tool to shorten the report's text and to meet native speaker standards. After using this tool, the Secretariat reviewed and edited the content as needed to ensure accuracy.

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