

SUMMARY OF REPORT

REFERENCES TO STANDARDS IN NORWEGIAN REGULATION

CURRENT PRACTICE AND ITS POTENTIAL IN REGULATORY POLICY



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Foreword

Menon has been commissioned by Standards Norway, the Norwegian Electrotechnical Committee (NEK) and the Norwegian Better Regulation Council to study how the use of standards can support the development of regulations. The study is the first systematic mapping of how standards are referred to in Norwegian legislation. The study also looks at what characterises areas where standards are particularly suitable as a tool for the development of effective regulation, the potential barriers to the use of standards in regulation, and how regulators can go about assessing the suitability of referencing standards in the regulation in their field.

Gjermund Grimsby has been the responsible partner for the project, with Øyvind Vennerød, Oddbjørn Grønvik and Live Nerdrum as project collaborators. Francisco Verdera from Knowence has been the consulting expert for the project team, while Leo Grünfeld from Menon has been the internal quality assurance manager.

Menon Economics is a research-based analysis and advisory firm at the intersection of economics and business and industry policy. We offer analysis and advisory services to businesses, organisations, municipalities, county authorities and ministries. Our main focus is on empirical analysis of economic policy, and our staff have economic expertise at a high scientific level. Knowence has extensive experience and knowledge of national, European and international standardisation, and offers frequent consultancy services in standards, regulations and related data management.

We thank Standards Norway, NEK and the Norwegian Better Regulation Council for an exciting assignment. We also thank Lovdata for access to data, and not least all interview subjects for good input during the process. The authors are responsible for all content in the report.

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Summary

There is an increasing focus on how to streamline and simplify regulation both in Norway and internationally, and how standards can contribute to this streamlining. To ensure that Europe recovers from the Covid-19 pandemic, and that it succeeds in the planned transition to a digital and ecologically sustainable society, it is more important than ever to regulate as effectively as possible.

A standard is defined as a “document, established by a consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context” (NS-EN 45020:2006, clause 3.2 and ISO/IEC Guide 2:2004). A key difference between standards and regulations is that standards are voluntary to apply and have emerged from a consensus process through which stakeholders can actively participate in their development. Regulations on the other hand are managed by public authorities, are mandatory to apply, and the development process is more top-down. The OECD points out that increased interaction between regulation and international standards can be an effective tool for developing improved regulation.

The first part of this report is a mapping of how eight government agencies in Norway use references to standards in their regulation. The primary focus is on the part of the regulation which the Norwegian regulators can affect, thus references to standards in EU regulations and directives are not part of the mapping. We supplement this mapping with insight from interviews with regulators, companies and other entities that are subject to regulation, and committee leaders from Norwegian standardisation bodies. We combine the insight from the mapping and the interviews to answer three central questions:

1. In which fields is using references to standards in the regulation particularly suitable?
2. What factors affect whether regulators use references to standards in regulation?
3. How can regulators assess whether they should use references to standards?

Finally, we provide specific recommendations for further strategic work on how both authorities and standardisation bodies can work to realise the potential for increasing efficiency that lies in the interaction between regulation and standards.

Practices across agencies

The eight agencies mapped have a broad scope and include the Norwegian Energy Regulatory Authority (NVE), the Petroleum Safety Authority Norway (Ptil), the Norwegian Communications Authority (NKOM), the Norwegian Building Authority (DiBK), the Norwegian Directorate for Civil Protection (DSB), the Norwegian Directorate of Fisheries (limited to regulation regarding aquaculture), the Norwegian Public Roads Administration, and the Norwegian Directorate for eHealth. The common characteristic of these agencies is that they all regulate activities affecting both the business sector and other public interests, where much of the regulation deals with the intersection between these two.

The analysis shows variation between agencies in terms of how standards are integrated into regulatory development, but also similarities. A key similarity across agencies is that reference to concrete standards is mainly made in the guidance to the regulation, and that references are normally made in the form of formulations such as "should" or "can". Such a practice is also in line with international best practice, in that it

allows for alternative ways to achieve the same objective if the company finds better solutions itself (CENELEC, (2015)¹ and ISO (2014)²).

However, there is wide variation between agencies in both the extent of references to standards used in regulation and how consistent the agency is in its practice. There is also wide variation in how actively the different agencies are informed about, and participate in, the development of standards relevant to their regulation. Several of these differences follow naturally from the characteristics of the regulatory area and the availability of relevant standards, while other differences stem from historical choices the agencies have made down the line.

Among the agencies included in the mapping, the Petroleum Safety Authority Norway, the Norwegian Directorate for Civil Protection, the Norwegian Communications Authority and the Norwegian Public Roads Administration have the highest proportion of regulations with references to standards. However, the mapping of the references to regulations shows that there is also a relatively high share of references to standards at the Norwegian Building Authority and the Directorate of Fisheries (limited to aquaculture only). Compared to the other agencies, the Norwegian Energy Regulatory Authority and the Directorate for eHealth have the lowest proportion of regulations with references to standards, but they also have examples of regulations, as well as documents providing guidance to regulations, with many references to standards.

There is no one-to-one relationship between the availability of standards and the extent to which the regulatory field uses references to standards in its regulation. For instance, the Directorate of Fisheries has relatively many references to standards in the regulations about aquaculture, even though there are relatively few standards related to aquaculture.

The Petroleum Safety Authority Norway (Ptil) stands out as the agency where references to standards and the development of standards is the most integrated with development of regulation. This practice follows from a choice made by Ptil some 20 years ago. It was decided then that the regulation should be function-based, and that it should be up to the industry to decide how to meet the requirements. Guidance on how these requirements can be met is provided largely through extensive reference to standards in Ptil's regulatory guidance documents. The Directorate for Civil Protection is also an example of an agency where the use of references to standards is an established part of regulatory development. The Directorate for eHealth is an example of an agency which is now in the process of establishing a systematic approach to referencing international standards when that is relevant. The Public Roads Administration has in recent times also worked closely with standardisation agencies on the link between standards and regulation.

Historically, the development of standards has been linked to the design and development of products. This means that there is a wide range of standards within the construction sector and the industry sector. The mapping we have performed shows that construction is an area where there are many references to standards. This applies of course to the Norwegian Building Authority, which has regulatory responsibility for construction quality, but also to the Norwegian Directorate for Civil Protection, the Directorate of Fisheries (aquaculture), the Norwegian Public Roads Administration, and the Norwegian Energy Regulatory Authority, which all have regulatory responsibility for construction quality within their fields.

¹ <https://www.cenelec.eu/media/Guides/CEN-CLC/cenclcguide30.pdf>

² <https://www.iso.org/files/live/sites/isoorg/files/store/en/PUB100358.pdf>

Over time, standards have increasingly been developed also for services, processes, management systems and qualifications. For both the Norwegian Directorate for Civil Protection, the Norwegian Energy Regulatory Authority, the Norwegian Building Authority, and the Petroleum Safety Authority Norway, standards for health, safety and environment (HSE) are among the top three categories of standards most referred to. Today, many new standards are being developed in for instance information technology and digitalisation, as well as in new fields such as the circular economy and the measurement of greenhouse gas emissions. The analysis shows that both the Directorate for eHealth and the Norwegian Energy Regulatory Authority have many references to standards related to information technology, and that it seems that this will be central in the future for several agencies.

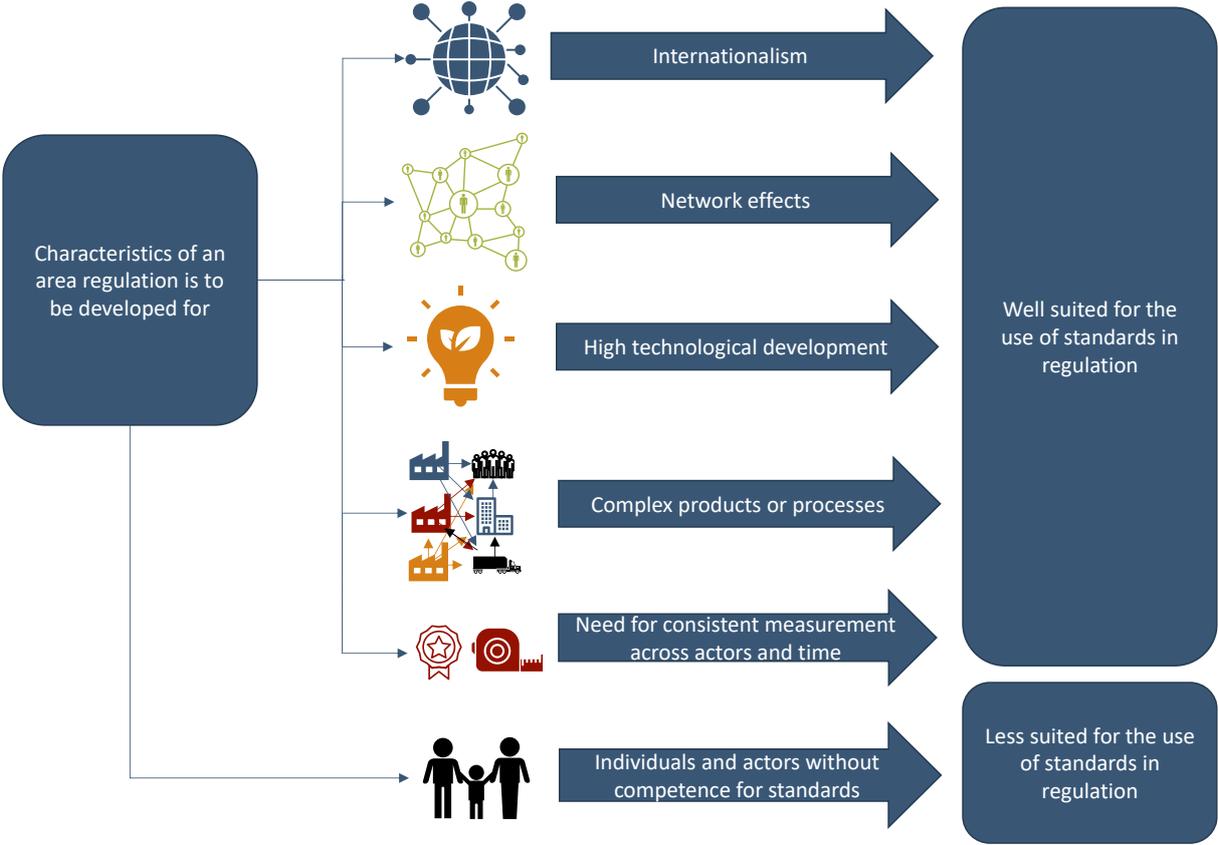
There is considerable variation between agencies as to whether the standards referred to in the regulations are national, European or international. The Directorate of Fisheries (aquaculture) and the Petroleum Safety Authority stand out with the highest proportion of national standards, which is closely linked to the fact that these regulate large national industries where Norway is also a leader in a European and international perspective. The other standards referred to in these agencies' regulations are mainly international standards, while there are few European standards. For the Building Authority, the Energy Regulatory Authority, the Directorate for Civil Protection, the Public Roads Administration and the Communications Authority, the references are dominated by European standards. The Directorate for eHealth on the other hand almost exclusively refers to international standards.

The Norwegian Public Roads Administration stands out as the agency with the widest participation in standardisation work, participating in over 75 standardisation committees nationally and internationally. However, the Petroleum Safety Authority, the Directorate for Civil Protection, the Norwegian Building Authority and the Norwegian Communications Authority are also widely involved in the development and revision of standards in their fields.

Characteristics of regulatory fields where reference to standards is particularly suitable

Across agencies, we find that standards have particularly high potential in regulatory development in areas that are characterised by much international activity, where there are large potential network effects, where processes are particularly complex, where there is a need for consistent measurement across time and actors, and where there is rapid technological development. Furthermore, we see that references to standards in regulations are more suitable when the entities being regulated are professional, large and homogeneous, and less suitable when the actors are private individuals or small, heterogeneous companies. The more of these characteristics are present in a regulatory area, the more likely it is that references to standards will be a good tool for ensuring effective regulation.

Figure A: Illustration of factors of a regulated field that make it particularly well-suited for the use of standards in regulation



The findings are based on a synthesis of in-depth interviews with a wide range of Norwegian regulators, regulation users and officials in standardisation committees, and also supported by literature in the field and economic theory.

Examples of areas that lend themselves well to the use of references to international standards in regulation are, for example, construction (with many foreign operators supplying goods and services to Norway) and power system services (with potential to supply services to other countries). Logistics, telecom, finance and power systems are examples of industries and fields with large potential network effects where standards can be a suitable tool to realise these. Network effects include reducing transaction costs between actors, but also helping to realise the positive externalities that arise from having as many actors as possible connected to the same network. In general, all services where exchange of information and digitalisation are of key importance are areas where coordination on concrete standards in regulation can bring major benefits. E-health and e-learning are good examples of this. For these, regulation is needed to ensure secure exchange of information that protects the interests of customers, while there are major benefits from a uniform system for information exchange between actors and between agencies. The regulation of hazardous waste under the Directorate for Civil Protection is a good example of a heterogeneous area with very complex processes, which makes it difficult for authorities to regulate in detail, and where international standards can be a helpful tool to which authorities can refer.

The observations suggest that references to standards are particularly well suited in new areas where there is substantial technological development but where there is also a need for regulation. A relevant example here is standards related to information exchange between networks in the power system. Here there is a need for market co-ordination on one solution, but at the same time it is a complex process in a field of rapid technological

development, which makes detailed regulation difficult. In this case there are both positive network effects, high technological development and complex processes. Another good example is the circular economy, where standards are being developed that could potentially be used in future regulation.

Conditions affecting whether standards are used in regulation

For regulators, standards are a tool that can potentially contribute to more effective protection of the interests the regulator is responsible for. However, even if a regulatory area in isolation has the potential to reap benefits from the use of references to standards, there are also other factors that influence whether standards are used in practice.

Through interviews with regulators from the eight different agencies, we have identified six key elements that are central for whether standards are used in the development of regulation. The six elements are illustrated in figure B.

Figure B: Factors affecting the use of references to standards in development of regulation



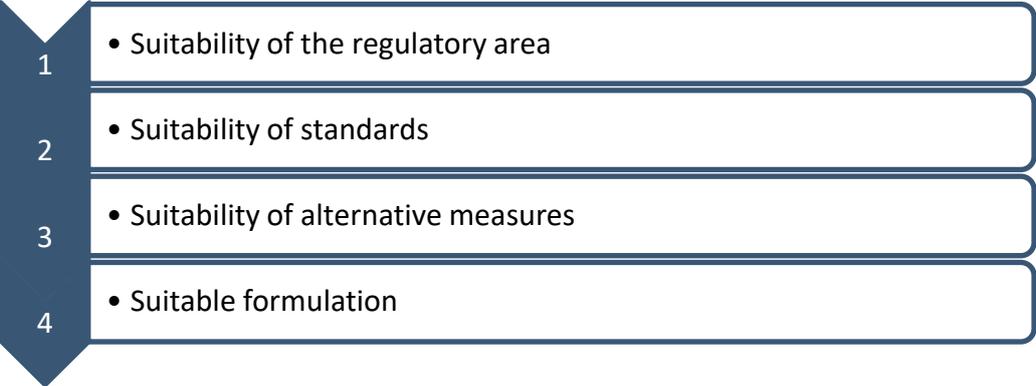
Firstly, it is essential that there are **relevant standards** to refer to. If no relevant standards exist, they must either be developed, or if that is not possible, standards cannot be used in the regulation. Secondly, the standards must be of sufficient quality for it to be relevant for regulators to refer to them. Regulators will need to be assured that the standards are both up to date and have high professional integrity. Thirdly, it is advantageous if the standards have **broad acceptance in the regulated sector**. When there is a high degree of consensus in the sector about which standards are relevant, the standards are a more interesting tool for regulators. Fourth, the **availability** of standards influences the decision of the regulator. The standards should be written in understandable language, and the cost of access to the standard plays a role in the regulator's assessment of whether to refer to the standard. Fifth, the regulator's **knowledge of, and involvement in the development of, standards** is important for whether the standard is referred to in the regulation. Regulators who are more

involved in working with standards will normally have more insight into how the standard can be used in regulation and have more confidence that the standard will maintain its functionality over time. Finally, many regulators are concerned that reference to standards in the regulation may result in a **relinquishment of control** to the standardisation committees. By linking the regulation to the standard, the regulation can in practice evolve independently of the regulator. When referring to standards in regulation, it is therefore essential that the regulator is both aware of, and preferably contributes to, the development of the standards.

How should regulators go about assessing whether a field is well suited for using references to standards?

Based on the Norwegian instructions for the assessment of public measures (utredningsinstruksen)³, we have identified four steps regulators are recommended to go through when assessing the use of references to standards in the regulation, illustrated in the figure below. The steps are successive, which means that if after one of the steps it is found that referencing standards is not suitable, then one does not need to proceed to the next step. Each of the steps is linked explicitly to the six questions of the Norwegian instructions for assessing public measures.

Figure C: Successive steps for the regulator’s assessment of the use of references to standards



Step 1 is about assessing whether the regulation to be developed addresses fields and themes where references to standards will contribute to a better regulation. We identify four key issues that the regulator should address in order to assess the suitability of using standards as a tool in the regulation:

- 1a. Do you regulate an area characterised by either high-paced technological development, potential for large network effects, or high complexity?
- 1b. Are you regulating an area where international compatibility is important, either for those who are regulated or for the regulation itself?
- 1c. Are you regulating an area where there is a need for consistent measurement methods over time, independently of who does the measuring?
- 2. Do the regulated subjects have the capacity to use and understand a regulation with references to standards?

If you answer yes to either 1a, 1b or 1c, and answer yes to question 2, then the area is well suited to the use of references to standards in the regulation, which means that reference to standards can potentially provide a

³ https://dfo.no/sites/default/files/faqomr%C3%A5der/Utdredningsinstruksen/Guidance_Notes_on_the_Instructions_for_Official_Studies.pdf

better regulation. To make this assessment, the regulator must have a clear *definition of the problem* they wish to address with the regulation, cf. the first question in the instructions for assessing public measures in Norway.

Step 2 involves an assessment of whether standards *in practice* are well suited for the regulation that is to be developed. This assessment depends especially on the characteristics of the regulator, the standardisation organisations, the existing standards, and the interaction between these. Here we point to three key questions the regulator must address to assess the appropriateness of using references to standards in the regulation:

1. Do you know whether there exist standards in the field you need to regulate?
2. Are any of the standards relevant to the regulations you are developing?
3. Do you have confidence in the future development of these standards?

If the answer to these three questions under step 2 is yes, then references to standards appear as a *relevant measure* that the rule developer should assess further, cf. question 2 in the instructions for assessing public measures in Norway.

Step 3. If the answer to steps 1 and 2 is positive, the regulator must decide how much value references to standards can bring, compared to other alternatives. This assessment includes *evaluating the fundamental questions raised by the measures* (the instruction’s question 3) and the positive and negative effects of the measures, their durability and who will be affected (the instruction’s question 4), and what measures are actually recommended (the instruction’s question 5).

Important questions that must be assessed are, for example, the accessibility of the standards for the regulation user, and to what extent the reference to standards implies a relinquishment of control.

The benefits and costs of using references to standards in regulation are summarised in the table below.

Figure D: Breakdown into impact categories when assessing the socio-economic impact of references to standards (brackets indicate stakeholder concerned)

Impact category (stakeholders concerned)	Use	Cost
Direct costs (regulator)	Division of resources linked to technical competence of the regulator More effective supervision	Resources used on orientation about the development of standards
Adaptation costs (regulation user)	Reduced compliance costs for regulation subjects	
Competitive effects (consumer)	Increased consumer surplus	Reduced producer surplus for Norwegian operators
Quantum effects (consumer + producer)	Increased consumer surplus Increased exports from Norwegian producers	
Quality effects (society + producers)	Better aligned market practices Increased target achievement	Reduced target achievement
Variation effects (consumer + producer)	Increased consumer surplus Positive network externalities	Reduced innovation Reduced consumer surplus

The relevance and magnitude of the potential benefits and costs will vary and must be assessed by the regulator in each case.

In terms of **direct costs**, the regulator may have significant cost savings linked to the reduced need for technical expertise. References to standards may also enable more effective supervision. At the same time, there will be increased costs for the regulator in keeping abreast of developments to the standards in the field. Standards can also provide benefits by avoiding the need for the regulation user to develop its own methods to **adapt to the regulation**.

Standards can also have **competition effects** in the Norwegian market by allowing foreign companies to fulfil regulation by following international standards they are already familiar with. This will give an increased consumer surplus for Norwegian consumers and reduced producer surplus for Norwegian competitors, but the net effect will be positive. To the extent that reference to standards provides positive productivity effects for service providers, for example through reduced compliance costs and reduced barriers to adaptation to international markets, there will be positive **quantum effects** in the market, benefiting both producers and consumers.

Quality effects can potentially go both ways. The use of references to standards is likely to make regulation more aligned with market practice, while potentially increasing or decreasing target achievement, depending on how well the standard is aligned with the authorities' overall regulatory objective. **Variation effects** are about the fact that references to standards can contribute to a general increase in the minimum quality of goods or services offered in the market, leading to increased consumer surplus, and that there can be positive network externalities in the market by several actors coordinating on the same solution. However, reduced variety may also potentially lead to reduced consumer surplus (if it directly affects the variety of goods or services available to the consumer), and it may lead to reduced innovation, in particular if alternative ways of solving the problem are not opened up beyond the standard.

As far as possible, the regulator should try to quantify and value the effects identified, so that they are easier to compare across agencies and with other alternative measures. However, a common feature of most of the identified socio-economic benefits and costs is that they are difficult to quantify. However, the regulator can go a long way in assessing the magnitude of the impact if he does a thorough job of mapping who is affected, how they are affected and what the key differences between the alternatives are. In addition to the net socio-economic effects, there will also be distributional effects associated with references to standards that the regulator will have to take into account, for example distributional effects associated with the purchase and sale of the referenced standard. To the extent that this can be seen in the context of key factors such as turnover and the number of service providers, it may be sufficient to establish rough estimates that make it possible to prioritise between the alternatives, without having to estimate the benefits of the different approaches in advance.

The assessments in step 3 form a basis for recommending measures, and the justification for those, as per question 5 of the instructions for assessing public measures in Norway.

Step 4. If the answer to steps 1 and 2 is positive, and the socio-economic benefit of referring to standards compared to the alternatives is positive (step 3), the last step is to assess how the standard should be used in the regulation. This is closely linked to the preconditions for successful implementation, as set out in question 6 of the instructions for assessing public measures in Norway.

In general, references to standards can be divided into two categories:

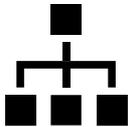
- 1) References to standards as *a possible way to* achieve the requirements of the regulation.
- 2) References to standards which *shall* be used.

These methods solve different problems and have their advantages and disadvantages. The rule of thumb for "best practice" is that the standard is suggested as a *possible way of* achieving being compliant with the law. Such a way of referencing opens up for the voluntary use of the standard and allows for innovation in best practice. However, there may be specific cases where the benefits of making the standard mandatory are greater than the loss of innovation. This can for instance be in the case of positive network externalities, where there are significant benefits from everyone coordinating on the exact same solution, for example related to digitalisation and information exchange.

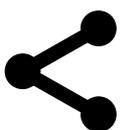
Standards as a tool for future development of regulation

Norway, along with other OECD countries, has in recent decades moved towards more function-based regulations. However, the introduction of function-based frameworks has some challenges. Among other things, NOU 2018: 14⁴ on ICT security highlights that many users of regulation state that function-based regulations can be difficult to comply with, as the regulation is often high-level and vague.

Guidance that points to voluntary standards that users can follow to meet the requirements of the regulation has been highlighted by several parties as a powerful tool that can provide the same benefits as function-based regulation but reduce the drawbacks. In this context, we have identified five overarching recommendations for authorities, regulators and standardisation organisations to strategically promote and use standards as a tool for more effective regulation:



Recommendation 1: Standards should be included as a key factor in strategic decisions about how regulation should be designed, and how regulators should organise their work. Both relevant government agencies and the responsible ministries should take responsibility for assessing the potential for the use of standards in regulation.



Recommendation 2: Norwegian authorities should coordinate their regulatory work when adjusting to broad societal trends. Major drivers such as digitalisation and the green transition make the use of standards more relevant in the regulation, at the same time as more standards are developed in these areas. These developments should be taken into account through coordinated adaptation across agencies and responsible ministries.

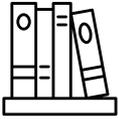


Recommendation 3: Standardisation bodies should make a systematic effort to steer authorities towards the relevant standards. One concrete measure is to make the content of a standard more accessible before purchase. Another approach is to make agreements between the standardisation organisations and the public authorities on procedures for updating the authorities on changes to standards referred to in the regulation.

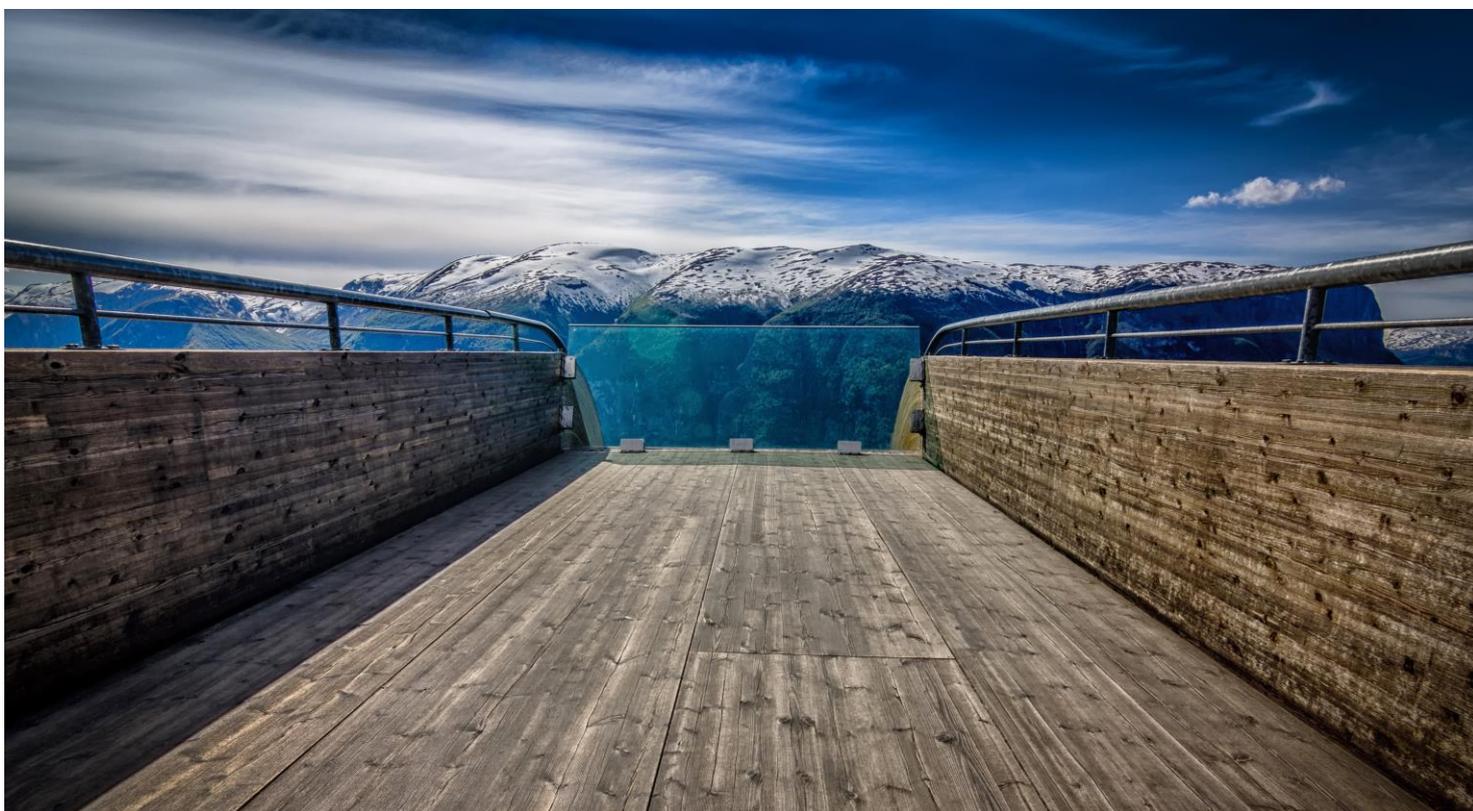
⁴ An NOU is a Norwegian official report, which is a report published by a committee appointed by the Norwegian government.



Recommendation 4: For regulation related to emerging technologies, early involvement in the standardisation process by the authorities is a key measure to ensure that the standards being developed are relevant for regulatory purposes. This is a responsibility that both standardisation organisations and authorities should take on.



Recommendation 5: The standardisation organisations and authorities should investigate the possibility of making standards available in public libraries, to ensure that private persons in Norway have the possibility to obtain full insight into the regulation that affects them, free of charge, even when the regulation refers to standards. The standardisation organisations should also explore the possibility of finding ways to ensure access to certain standards for certain user groups where access to the standard is particularly important.



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