German Environment Agency

Environmental management systems and climate risks. Options for the further development of ISO 14001 and EMAS

Key results for decision-makers and ISO bodies

Imprint

Authors
Dr. Ludwig Glatzner, Büro für Umwelt, Qualität, Sicherheit, Münster
Thomas Loew, akzente kommunikation und beratung GmbH, München und Berlin

Commissioner and publisher
German Environment Agency, Wörlitzer Platz 1, 06844 Dessau-Roßlau
www.Umweltbundesamt.de

Project advisor
Laura Dalitz, Section I 1.6 KomPass - Climate Impacts and Adaptation
Christoph Töpfer, Section I 1.4 Economic and social environmental issues, sustainable consumption

Citation
Glatzner, L.; Loew, T. (2022) Environmental management systems and climate risks. Options for the further development of ISO 14001 and EMAS.

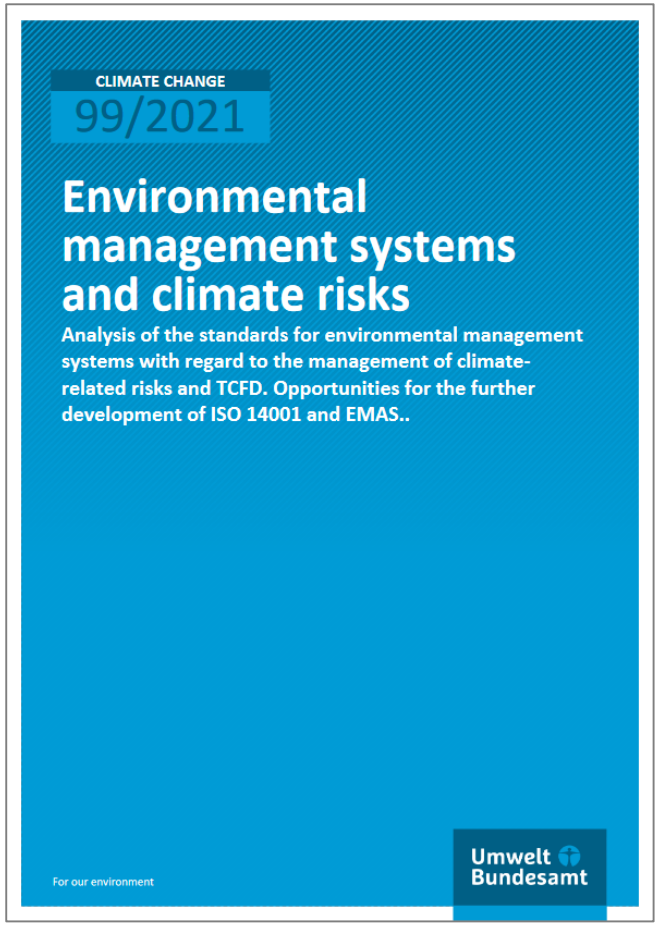
Basis of the summary
Glatzner, L. Loew, T. (2022) Environmental management systems and climate risks. Analysis of the standards for environmental management systems with regard to the management of climate-related risks and TCFD. Opportunities for the further development of ISO 14001 and EMAS. Climate Change XX/2022 German Environment Agency, Dessau. *(to be published)*
Download at www.umweltbundesamt.de/publikationen

Project details
Title: Economics of Climate Change: New Management Instruments to Reduce Climate Risks for the Public and Private Sector
Duration: August 2019 – December 2022
Research Plan of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
Research Code 3719 48 1030
FB000712/KURZ,ENG

About this summary

THIS SUMMARY PRESENTS OPTIONS FOR THE ADVANCEMENT OF ENVIRONMENTAL MANAGEMENT STANDARDS TO PROMOTE THE MANAGEMENT OF CLIMATE-RELATED RISKS.

The detailed results and methodological information are available in the study "Environmental Management Systems and Climate Risks. Analysis of Environmental Management Systems Standards regarding the Management of Climate-Related Risks and TCFD. Opportunities for further development of ISO 14001 and EMAS" (Glatzner and Loew, 2022). *(to be published)* Download at http://www.umweltbundesamt.de/publikationen.



Objective and approach

The overarching goal of the "Economics of Climate Change" research project is to promote the management of physical climate risks in companies.

International standards are an important lever to contribute to this goal because they reach companies worldwide, including small and medium-sized enterprises.

At the moment, there is a good opportunity to make progress in this regard, because the most widely used international framework for environmental management, ISO 14001, is undergoing a review process.

Therefore, this research paper investigates, among other things, the extent to which environmental management standards and comparable frameworks contribute to the systematic management of climate-related risks. Various options were examined, such as amendments of ISO 14001 or a climate-specific guidance standard within the ISO 14002 series, supplementing ISO 14001. In addition, 40 environmental statements from the European Eco-Management and Audit Scheme (EMAS) were analysed for retrieving exemplary information on how organizations address the management of climate-related risks.

Part 1

a) Analysis of ISO 14001, EMAS and other ISO standards for requirements to manage climate-related risks.

b) Options and recommendations in view of the amendment of ISO 14001.

Part 2

Analysis of 40 EMAS environmental statements for information on the management of climate-related risks.

Terms

Physical risks: direct and indirect risks resulting from climate change

Transition risks: risks due to the shift toward a decarbonized economy

Climate-related risks: physical and transition risks

Part 1a

Analysis of key environmental management standards regarding requirements to manage climate-related risks.

Analysed standards

Due to its worldwide distribution and prominent position, ISO 14001 was analysed in detail against the recommendations of the TCFD.

EMAS, the European Union Eco-Management and Audit Scheme, is based on ISO 14001. Therefore, only the EMAS-requirements that go beyond ISO 14001 were examined.

For ISO 14002 , ISO 14004 , ISO 14090 and ISO 26000, it was examined whether they address the management of physical and transitory climate risks, and if so, what recommendations or requirements are made.

ISO 14001:2015 Environmental management systems - Requirements with guidance for use.

European Eco-Management and Audit Scheme (EMAS) (Regulation (EC) No 1221/2009)

ISO 14002-1:2020 Environmental management systems - Guidelines for the use of ISO 14001 to address environmental aspects and conditions within an environmental topic area - Part 1: General

ISO 14004:2016 Environmental management systems - General guidelines for implementation

ISO 14090:2020 Adaptation to the consequences of climate change - Principles, requirements and guidelines

ISO 26000:2021 Guidance on social responsibility

Source: Glatzner und Loew (2021)

Results of the analysis of ISO 14001

GENERALLY, ISO 14001 PROVIDES A GOOD FRAMEWORK FOR ADDRESSING CLIMATE-RELATED RISKS AND OPPORTUNITIES.

However, it does not provide any specific requirements for addressing these risks and opportunities.

CONSEQUENCES OF THE LACK OF SPECIFIC REQUIREMENTS ON CLIMATE-RELATED RISKS AND OPPORTUNITIES

Because ISO 14001 does not contain any specific requirements for addressing climate-related risks, whether and to what extent the environmental management system is used to manage physical and/or transition risks depends very much on how the system is implemented in the organisation. In particular, "top management" plays a key role, because it determines the general orientation of the organisation and the characteristics of its management system. In companies and other organizations, the implemented management system therefore ranges between "good practice of environmental, climate and sustainability management" and the "minimum implementation of the requirements of the environmental management system standard".

TCFD recommendations		Requirements ISO 14001
Governance	Board's oversight of climate-related risks*	ISO 14001 provides generic requirements to identify and manage significant environmental aspects and impacts as well as risks and opportunities that need to be addressed. However, there are no explicit requirements for the management of climate-related risks and opportunities.
	Management's role in assessing and managing climate-related risks	
Strategy	Overview of climate-related risks	
	Impact of climate-related risks on businesses and strategies	No requirements in ISO 14001
	Resilience of strategy, use of scenarios	
Risk management	Process for identifying clim.-rel. risks	as above: ISO 14001 provides generic requirements […]. However, there are no explicit requirements for the management of climate-related risks and opportunities.
	Process for managing clim.-rel. risks	
	Integration in risk management	
metrics	GHG emissions	
	Key indicators	
	climate related targets, performance against targets	

* TCFD addresses risks and opportunities equally. Due to limited space in the table, the TCFD recommendations are named in abbreviated form.

Quelle: Glatzner und Loew (2021)

Results of the analysis of further standards

Standard	Focus	Character	Usage	Potential
EMAS	Requirements for environmental management systems, environmental reporting, environmental verifiers and their licensing and supervision	EU regulation to be applied voluntarily with binding requirements	Somewhat widespread in some European member states	Starting points for climate (risk) management which could be expanded; this includes the use of the sectoral reference documents.
ISO 14004	General guidelines for implementation of the environmental management system	Standard to be applied voluntarily with non-binding recommendations	Only guidelines, low practical relevance	Possibility of thematic assistance and examples
ISO 14002	Topic-specific guidelines to the environmental management system	Standard to be applied voluntarily with non-binding recommendations	Only guidelines, "young standard", not (yet) relevant in practice	Possibility of a climate-specific part; possibility of linking with ISO 14001 (and EMAS) and existing climate-related standards
ISO 14090	Guidelines and requirements for adaptation to the consequences of climate change	Standard to be applied voluntarily with recommendations and binding requirements	“Young standard", not (yet) relevant in practice	Could become a mosaic piece of climate (risk) management
ISO 26000	Guidance on social responsibility	Standard to be applied voluntarily with non-binding recommendations	Only guidelines, hardly any practical relevance	Possibility of deriving more authoritative thematic specifications.

Source: Glatzner und Loew (2021)

Part 1b

Options for promoting the management of climate-related risks via environmental management standards.

Recommendations regarding the review of ISO 14001.

General approaches

EFFECTIVENESS OF THE EXISTING ISO 14001:2015 WITH REGARD TO THE MANAGEMENT OF CLIMATE-RELATED RISKS.

The following developments, which may be supported by policy and the market, can contribute to more consistent identification and management of climate-related risks applying ISO 14001:2015.

More leadership: If the top management of an organization sees the need, is expected or required to put climate-related risks on its agenda and accordingly takes action with the help of the management system.

More obligation: If there is a compliance obligation for the organization (e.g., from legislation, from contractual agreements) to address its climate-related risks.

More relevance: If, based on its context and risk analysis, the organization cannot help but identify "climate change impacts on the organization" as relevant.

IMPROVING EFFECTIVENESS THROUGH FURTHER DEVELOPMENT OF ENVIRONMENTAL MANAGEMENT STANDARDS

ISO 14001:2015 could be further developed to explicitly include the management of climate-related risks by:

Additional requirements and normative formulations, regarding the consequences of climate change and climate-related risks, e.g. in the "environmental policy" or the requirements to understand the context in which the organization operates .

Additional instruction for better application of the standard in view of climate change and climate risks, e.g. through a dedicated annex on the subject of “climate management”.

Additional interfaces compelling users of ISO 14001 to consider further standards, guidelines or specifications on the subject of climate change and climate risks.

Generally, there would also be the possibility of developing a new, stand-alone management system standard for climate management.

See the following options A to D

Source: Glatzner und Loew (2021)

Option A:
Better combination and connection of existing standards and tools to ISO 14001

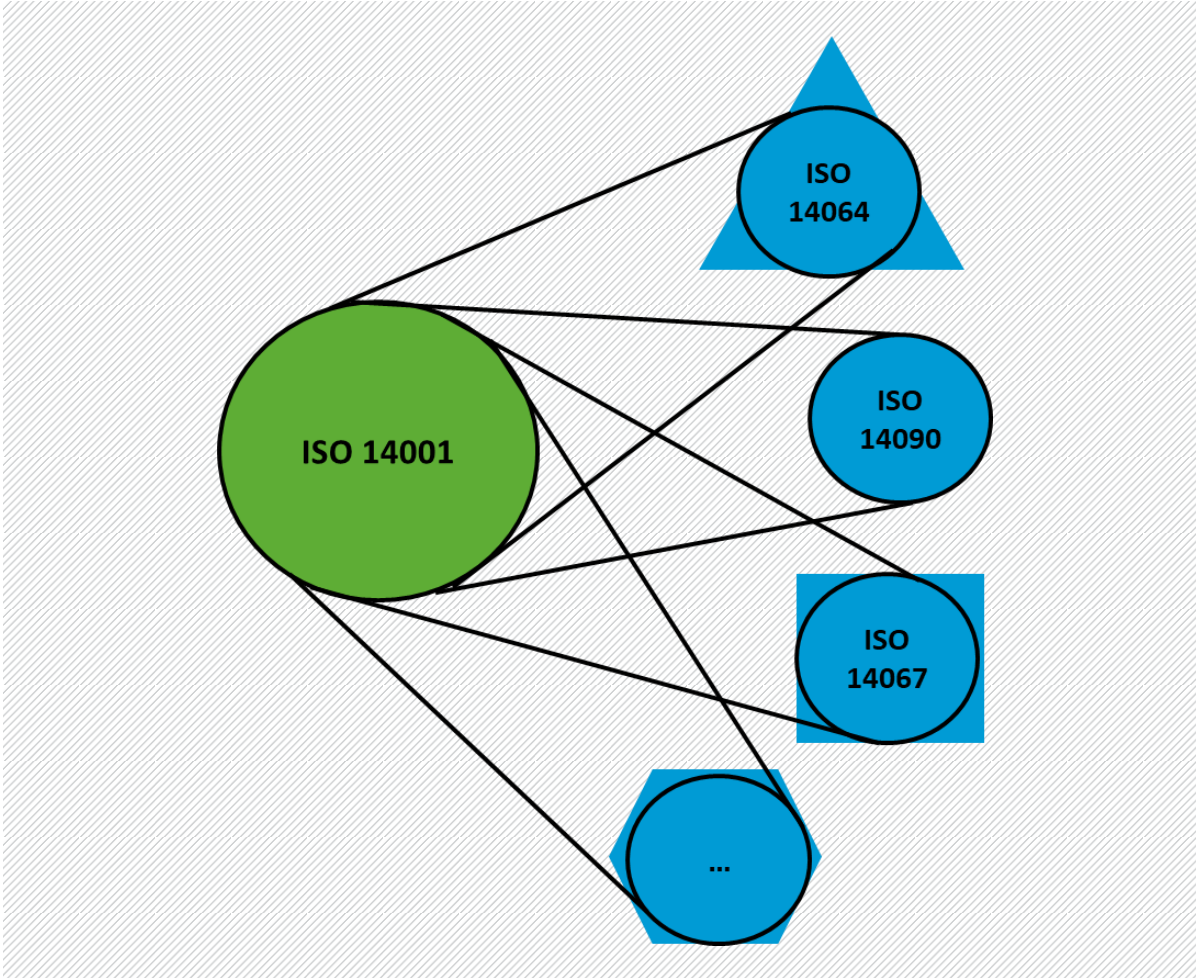
OPTION A leaves ISO 14001 unchanged and uses "bridging documents" or similar information to promote the use of existing standards and tools to address climate-related risks. An example for such a bridging document is the ISO "white paper" on the application of ISO 14090 and ISO 14001.*

ADVANTAGES

- Use of existing standards.
- High flexibility.
- Little effort, can be implemented quickly.

DISADVANTAGES

- No explicit requirement to manage climate risks.
- The key advantages of a certifiable standard are not exploited when using non-binding bridging documents.
- Standards and tools remain hardly aligned.



Source: Glatzner und Loew (2021)

*) https://committee.iso.org/files/live/sites/tc207sc1/files/Whitepaper%20How%20to%20use%20ISO%2014090%20to%20support%20ISO%2014001.pdf

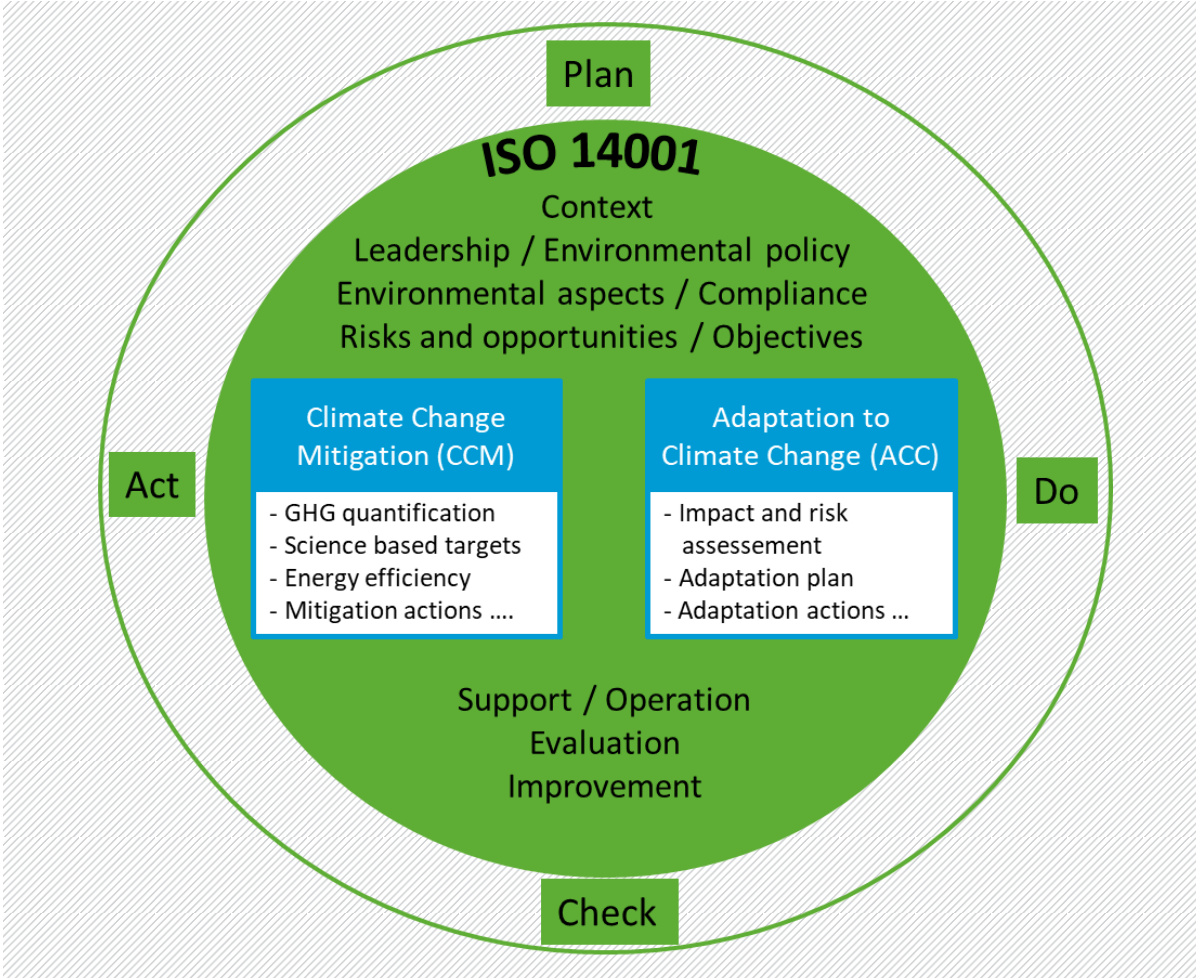
Option B: Climate-specific advancement of ISO 14001

OPTION B is based on making several changes in the normative text of ISO 14001. This could be done by

1. incorporating requirements to better address climate-related risks and opportunities into the normative text. This could be minimalist (specified risk term and specific "outside-in" risk analysis) or very extensive, up to a complete integrated environmental and climate management system.

2. adding normative or informative annexes for the identification and treatment of climate risks (e.g. in context of the organization, actions to address risks and opportunities).

3. including interface formulations, which require mandatory consideration or application of e.g. a standard on climate in the ISO 14002 series (cf. option c).



Source: Glatzner und Loew (2021)

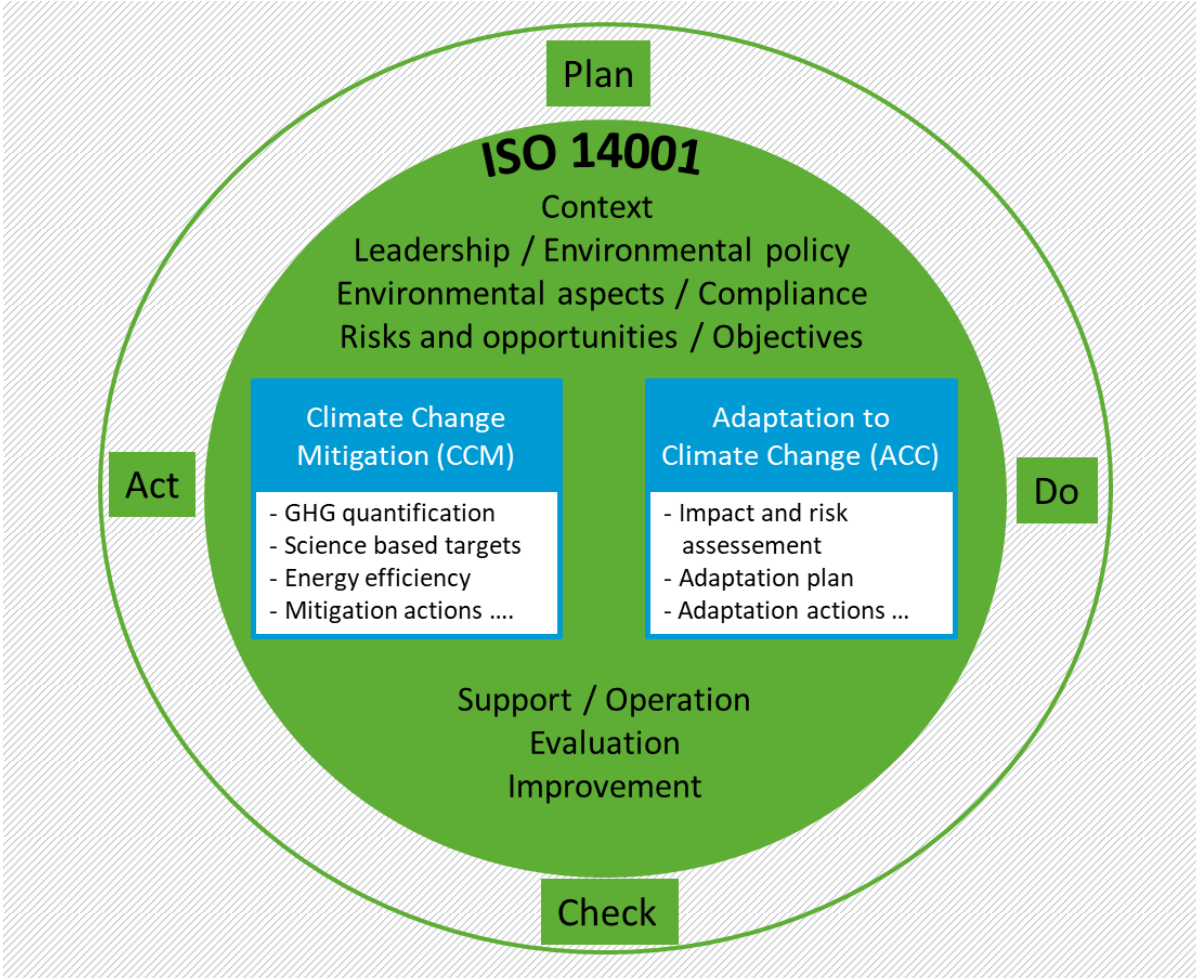
Option B: Climate-specific advancement of ISO 14001

ADVANTAGES

- Big impact. All ISO 14001 users are affected.
- Certification can be used to demonstrate compliance with requirements.
- Proven ISO 14001 system is also used for climate risks.
- Dealing with climate risks is embedded in the overall context of other environmental topics.

DISADVANTAGES

- Contradiction with the generic character and approach of ISO 14001. “Hybrid” between environmental management framework and a specific climate management standard.
- For a far-reaching thematic change of the standard, international acceptance and approval is required, but not foreseeable.



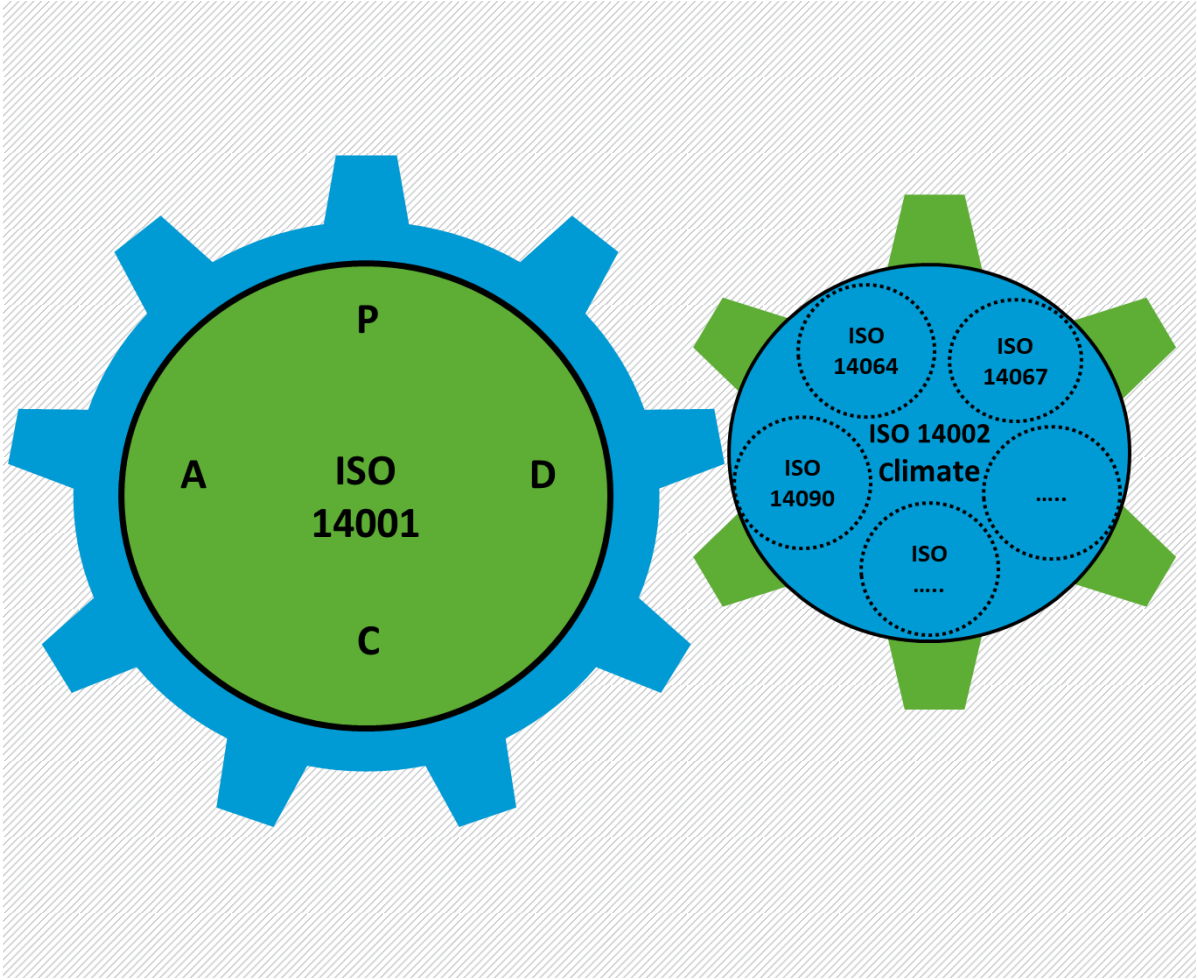
Source: Glatzner und Loew (2021)

Option C: Development of a complementary climate management guideline (ISO 14002-x)

OPTION C is the development of a dedicated part on climate management within the ISO 14002 series.

Instead of developing a separate management system standard for each environmental topic, the ISO 14002 series provides guidelines for important environmental topic areas that show how these can be managed with ISO 14001.

A future part “ISO 14002-x” on climate management would define all central components of a climate management system including the consideration of climate-related risks. In addition, essential non-ISO tools (such as TCFD recommendations) could and should be addressed.



Source: Glatzner und Loew (2021)

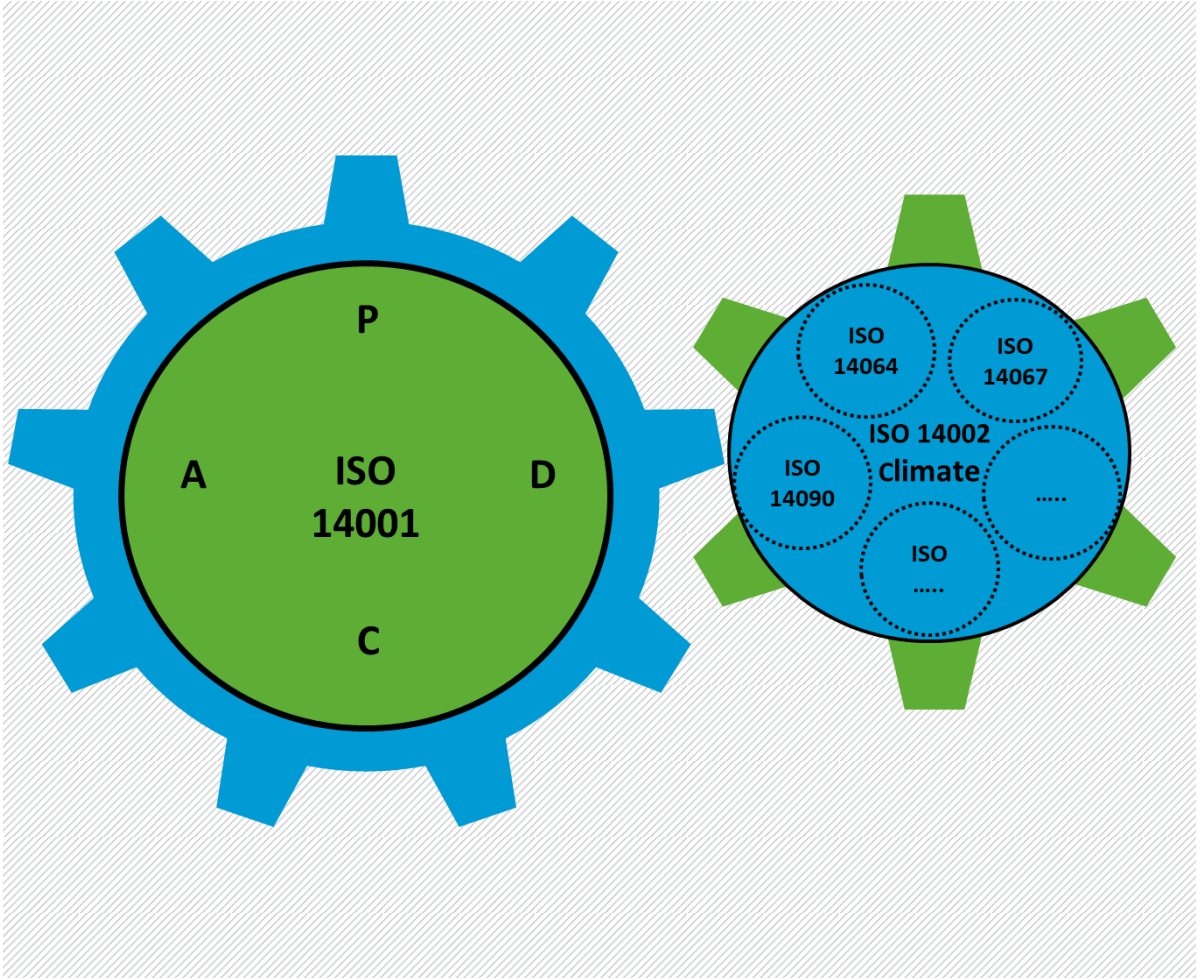
Option C: Development of a complementary climate management guideline (ISO 14002-x)

ADVANTAGES

- The role and function of ISO 14001 as a general framework would not be weakened.
- An ISO 14002-part would be a compatibility-creating link between ISO 14001 and other climate-specific tools and standards.
- With an ISO 14002-part climate, a comprehensive climate management system could be realised in combination with an environmental management system according to ISO 14001.
- An ISO 14002 part on climate would fit to the structure of ISO 14001 and allow greater user-friendliness.

DISADVANTAGES

- For ISO 14001 users, implementation of the recommendations of a guideline standard of the ISO 14002 series remains voluntary.
- Generally, no certifiability.
- A new standard first requires initiation and approval, then it needs to be developed (between 18-36 months).



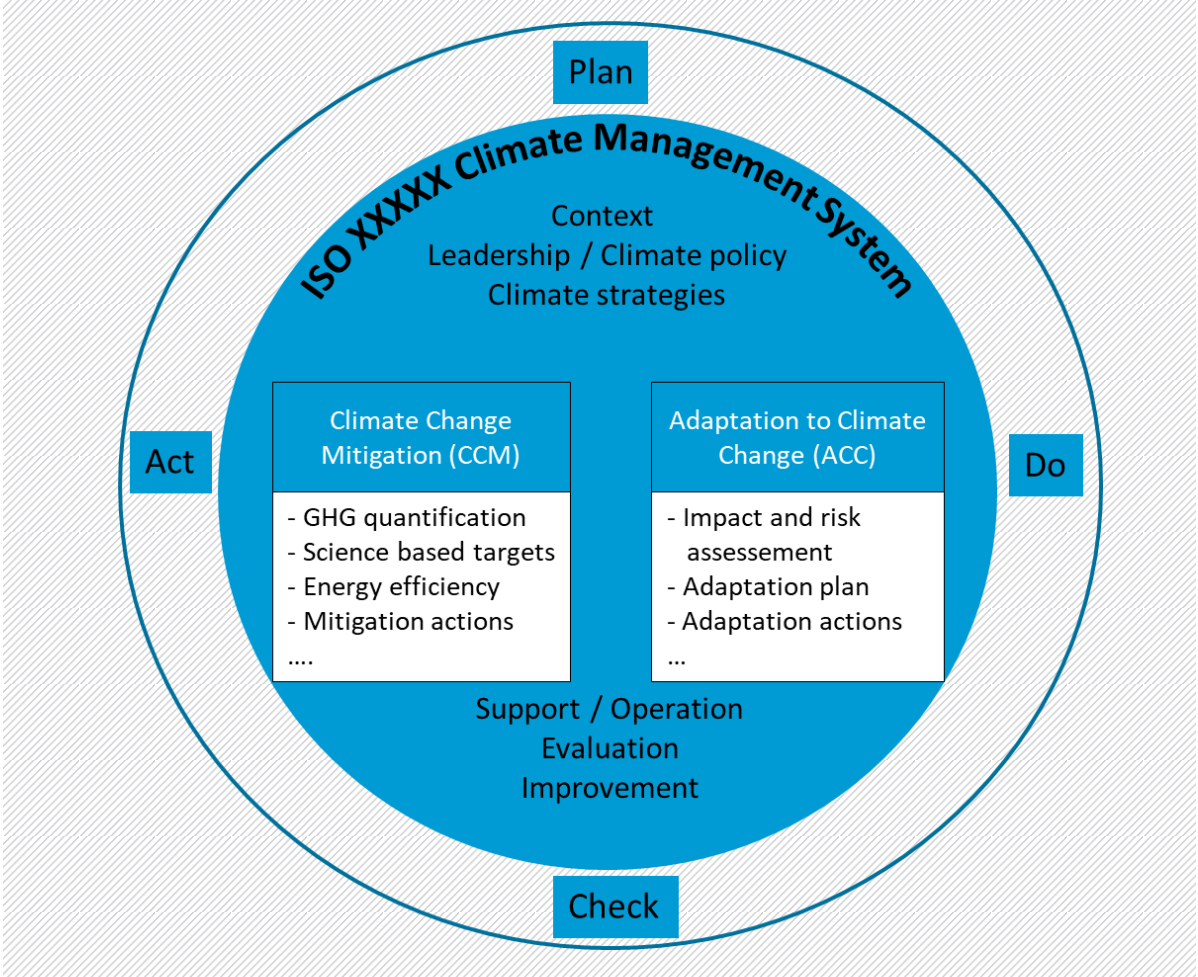
Source: Glatzner und Loew (2021)

Option D: Development of a new climate management system standard

Option D is the creation of a stand-alone standard for a "climate management system" with the standard structure for management systems specified by ISO (“harmonized structure”).

A new climate management system standard could be applied independently of or combined with ISO 14001 (environmental management system), ISO 50001 (energy management system) or other management systems.

Stand-alone certification could be made possible.



Source: Glatzner und Loew (2021)

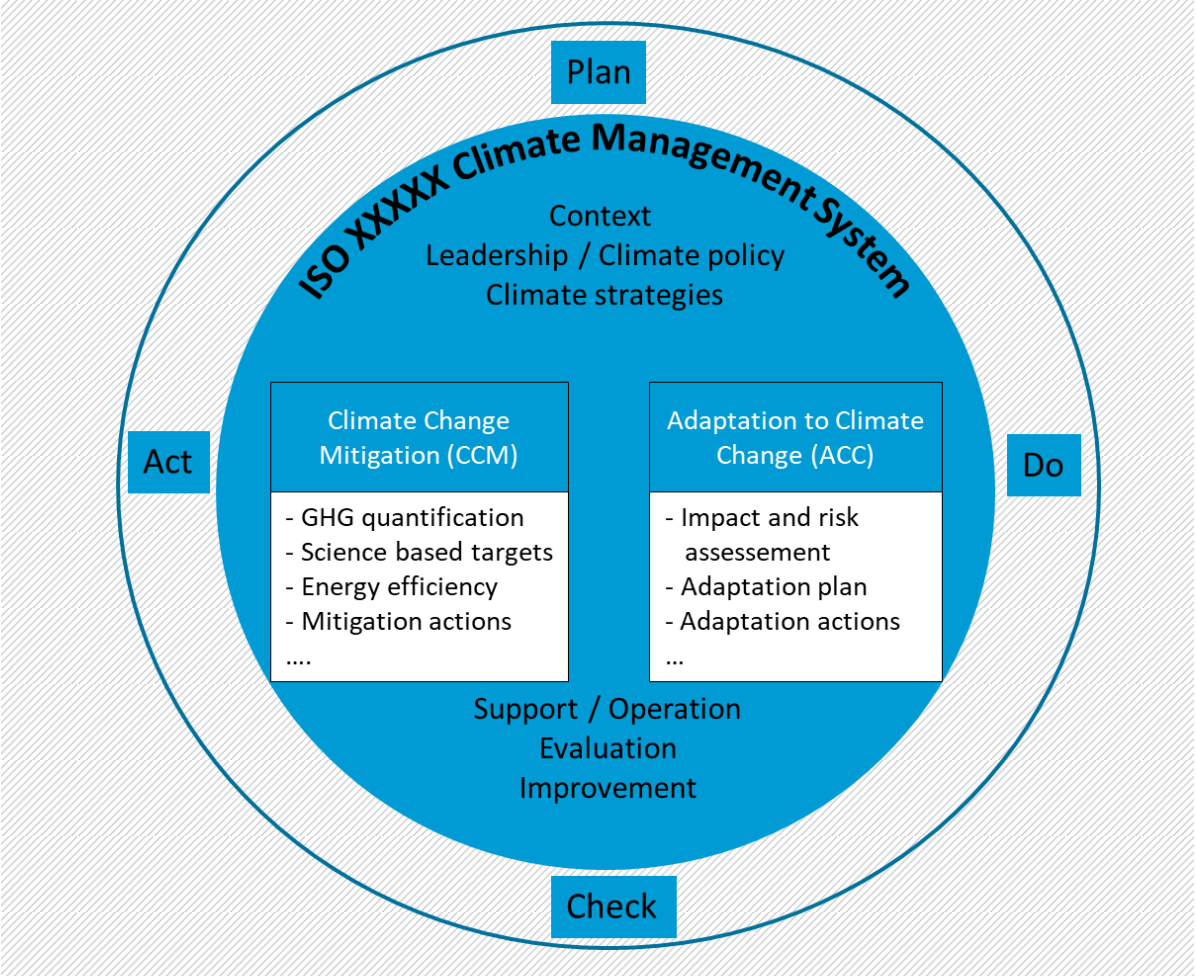
Option D: Development of a new climate management system standard

ADVANTAGES

- Topic-specific management system standards enable a focused approach; they are concrete and accurate.
- The existence of an independent climate or climate risk management can be proven (certified) and required.
- The climate management system can be an initial step towards a more comprehensive environmental and sustainability management.

DISADVANTAGES

- Management system standards for individual environmental topics tend to weaken the role and benefits of the ISO 14001 framework.
- Possible burdens on users due to possible additional certification.
- A new standard requires international acceptance and approval and then it needs to be developed (between 18-36 months).



Quelle: Glatzner und Loew (2021)

Conclusion and recommendation on ISO standards

IN VIEW OF THE CHALLENGE OF CLIMATE CHANGE AND THE VARIETY OF ORGANIZATIONS' STARTING POINTS, IT IS APPROPRIATE TO PURSUE AN OVERALL STRATEGY USING MULTIPLE APPROACHES.

The research shows that the relevant environmental management standards are not specific enough in terms of management of climate-related risks. Nor do they automatically lead to the use of climate-specific standards in a complementary or in-depth manner when applied. Opportunities and pathways would need to be identified and tools (bridging documents, white papers) offered to demonstrate how appropriate climate-specific standards can be used as part of environmental management.

Practice shows that a certifiable management system standard can support an organization's systematic approach to an issue and that its application can be disseminated, e.g., through customer demand or political programs. Therefore, the development of an independent climate (risk) management system standard seems logical. However, the decisive disadvantage of topic-specific sub-standards remains: the potential disintegration of environmental topics and undermining of a required holistic environmental management.

The appeal of an “ISO 14002-x: climate" would be that on the one hand "the wheel does not have to be reinvented", but existing proven tools can be referred to, not only from the ISO 14000 series, but possibly also from the energy management series (e.g. ISO 50006) and beyond (TCFD recommendations, SBTi methodology, GHG protocol or similar). **The development of an “ISO 14002-x: climate" in conjunction with an interface requirement in ISO 14001 would therefore be the central lever.** There are already respective proposals from the applicable German standardization body.

Source: Glatzner und Loew (2021)

Possible improvements of EMAS

FURTHER ADVANCEMENT OF ISO 14001 ALSO HAS AN IMPACT ON EMAS

ISO 14001 will certainly remain a core component of EMAS. Under this premise, the advancement approaches for ISO 14001 (cf. above) can be transferred directly to EMAS. Consequently, in order to promote better management of climate-related risks, EMAS stakeholders should (also) advocate for an advancement of ISO 14001.

ADDITIONAL LEVERS FOR THE CLIMATE-RELATED ADVANCEMENT OF EMAS

Independent of the further development of ISO 14001, there are several good opportunities to improve the effectiveness of EMAS with regard to the consideration of climate-related risks, e.g.

- through a revision of the article part of the EMAS regulation,
- through revisions of individual annexes,
- through the development or revision of sectoral reference documents,
- through other in-depth / supplementary documents (e.g. "EMAS User Manual").

Proposals for a "climate management module" based on EMAS where developed in a recent study on behalf of the German Environment Agency (Steyrer et al. 2020, with English summary). It is currently being clarified how such a module can be transferred into practice.

Source logo: European Commission
Source text: Glatzner und Loew (2021)

Part 2

Analysis of reporting on climate-related risks in EMAS environmental statements

Status of climate-related reporting by the 100 largest German companies

BACKGROUND

Prior to the analysis of EMAS environmental statements described below, the status of climate-related reporting by the 100 largest German companies was analysed in 2020. This involved an empirical investigation of sustainability reports, non-financial statements and the CDP climate database (hereinafter referred to as "CDP climate").

This analysis showed that most DAX-30-Companies report largely in line with the recommendations of the Task Force for Climate-related Financial Disclosures (TCFD) and that climate-related reporting in CDP climate is generally better than in sustainability reports or non-financial statements. For further results, see the figure on the right.

Relevance of climate-related risks	Governance and management of climate-related risks	Reporting according to TCFD
Physical risks are named, but often have a lower priority. Those companies that systematically address their climate-related risks usually see more and greater risks in the transition to a decarbonised economic system than in climate change. Companies use transition scenarios much more frequently than scenarios on the consequences of climate change.	Most DAX 30 companies already have a climate-related governance system. Companies with sustainability reports can build on existing relevant internal structures. For governance and management of climate-related risks, sustainability management is adapted.	Almost all DAX 30 companies report according to the recommendations of the TCFD - but not all of them publicly. Through sustainability reports, several TCFD recommendations are already fulfilled in part or in full. None of the reporting examined provided information on the resilience of the corporate strategy as recommended by TCFD.

Influencing factors and other aspects
Industry: Industry-specific differences can be identified, particularly in the relevant risks.
Size: The size of the company is an influencing factor in the question of whether and how explicitly climate-related risks are taken into account in the organisation.
Report type: The report type influences the reporting. Non-financial statements are least informative.
TCFD: The recommendations of the TCFD promote reporting on and management of physical climate risks.
CDP-Climate eases the identification of and access to climate-related information of companies.

Source: Loew et al. (2021) www.umweltbundesamt.de/publikationen/management-von-klimarisiken-in-unternehmen

Objective

OBJECTIVE OF THE ANALYSIS OF EMAS ENVIRONMENTAL STATEMENTS

With the analysis of 40 EMAS environmental statements, the empirical basis of the previous study (Loew et al. 2021) was expanded.

The aim was to gain insights into the situation of medium-sized companies and public authorities and to examine which of the findings obtained for large companies and their reporting can be transferred to medium-sized companies and public authorities and their reporting in environmental statements.

Source: Glatzner und Loew (2021)

Reporting compared to the TCFD recommendations

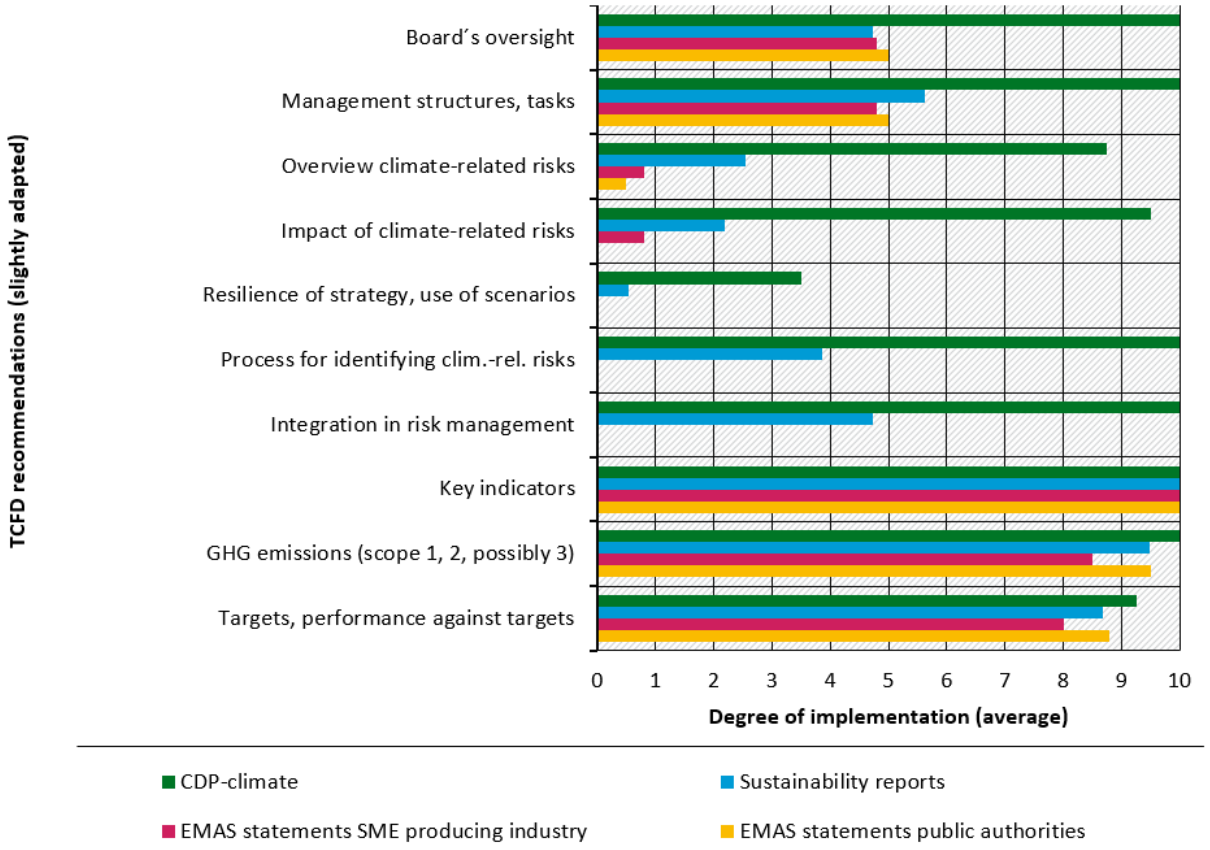
CLIMATE-RELATED REPORTING

The figure on the right shows the average degree of climate-related reporting measured against the TCFD recommendations. The reporting in the environmental statements of small and medium-sized companies and public authorities examined is compared with the information provided by large companies in sustainability reports and CDP climate.

In the analysis of the reporting of large companies it became clear that, among other things, company size and report type have an influence on climate-related reporting. Now it turns out that this is also the case for EMAS environmental statements.

In EMAS environmental statements, greenhouse gas emissions, other climate-related indicators and climate-related targets and measures are reported to an almost comparable extent.

However, climate-related risks are only reported on in exceptional cases in the environmental statements. This indicates that climate-related risks have not been identified in the respective environmental management system or have not been classified as material.



Quelle: Glatzner und Loew (2021)

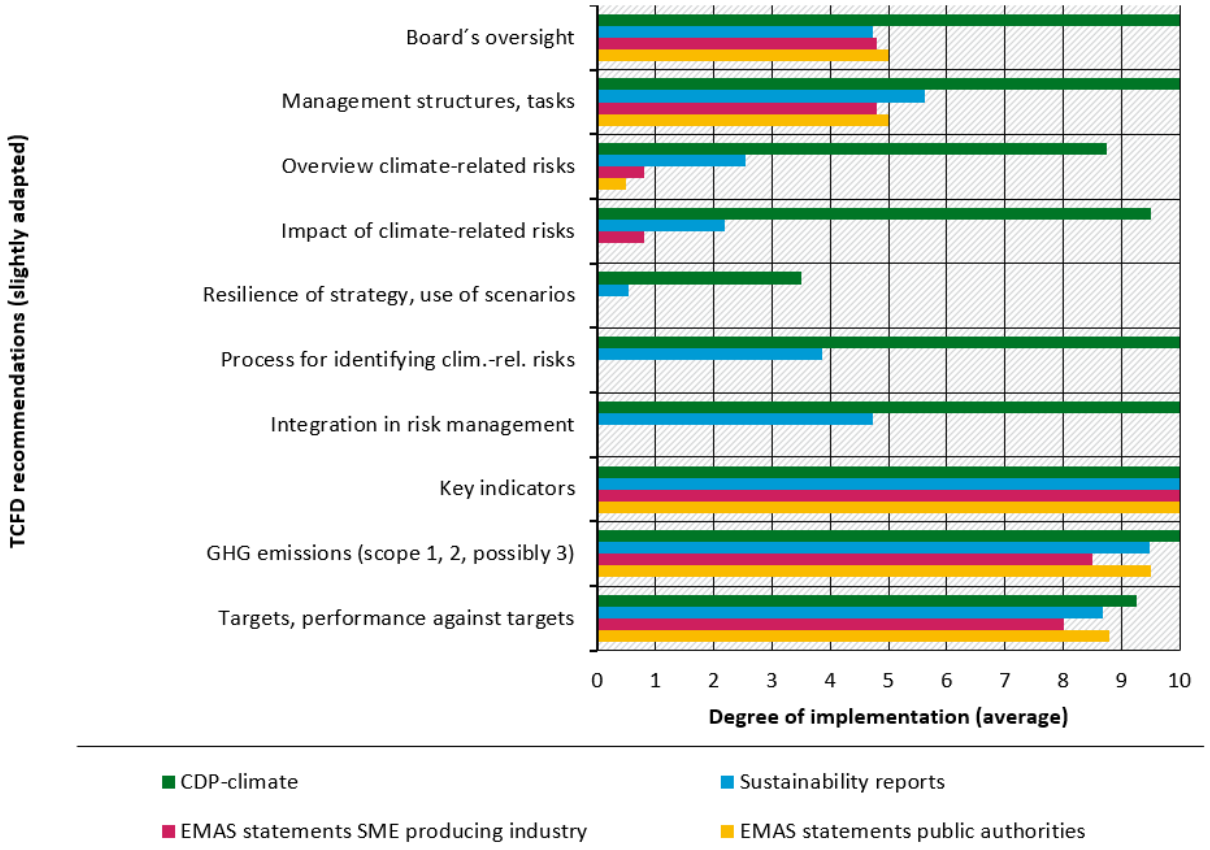
Level of reporting related to TCFD recommendations (II)

CLIMATE-RELATED REPORTING (CONTINUED)

Furthermore, it is evident that the EMAS environmental statements examined do not describe any procedure for identifying climate-related risks or any information on integrating the management of climate-related risks into risk management. Of course, both correspond to the fact that climate-related risks are reported only in exceptional cases.

In addition, neither SMEs nor public authorities have the kind of risk management systems that are common in large corporations and are also required by law in some cases.

As already mentioned above, the analysis of the reporting of large companies showed that, among other things, the size of the company and the type of report have an influence on climate-related reporting. This can also be seen here.



Source: Glatzner und Loew (2021)

Annex

Publications from the project Economics of Climate Change

Loew, T.; Braun, S.; Fleischmann, J.; Franz, M.; Klein, A.; Rink, S.; Hensel, L. (2021)
Management von Klimarisiken in Unternehmen: Politische Entwicklungen, Konzepte und Berichtspraxis
[Managing climate risks in companies: policy developments, concepts and reporting praxis.] Climate Change 05/2021 Umweltbundesamt, Dessau.
www.umweltbundesamt.de/publikationen/management-von-klimarisiken-in-unternehmen

Loew, T.; Braun, S.; Fleischmann, J.; Franz, M.; Klein, A.; Hensel, L.; Rink, S. (2021)
Corporate reporting on climate-related risks. Key findings of a German survey for decision-makers and multipliers Umweltbundesamt, Dessau.
www.umweltbundesamt.de/publikationen/management-von-klimarisiken-in-unternehmen

Glatzner, L. Loew, T. (2022)
Environmental management systems and climate risks. Analysis of the standards for environmental management systems with regard to the management of climate-related risks and TCFD. Opportunities for the further development of ISO 14001 and EMAS. Climate Change XX/2022 *(to be published)* Umweltbundesamt, Dessau

Under preparation

Jahns, H., Hensel, L., Wietschel, J., Stutzmann, T., Pilgrim, L., Rink, R. , Löffler, K. & Pauw, P.
Klimaangepasste Finanzwirtschaft - Management von physischen Klimarisiken in Unternehmen der Finanzwirtschaft
[Climate-adapted financial sector - Management of physical climate risks in companies in the financial sector] (To be published in Q1/Q2 2022)

Kreft, S.; Sandholz, S.; Bulut, S.S.; Mirwald, M.; Kohler, D.
Klimarisikoversicherung - Potenziale als strategisches Instrument zur Klimaanpassung in Deutschland
[Climate risk insurance - potentials as a strategic instrument for climate adaptation in Germany] (To be published in Q1 2022)

Loew, T.; Braun, S.; Glatzner L., Hensel, L. Müller, K.
Management von Klimarisiken in Unternehmen: Praxis, Informationsbedarf und idealtypisches Vorgehen (Arbeitstitel)
[**Management of climate risks in companies: Practice, information needed and an ideal approach (working title)]**(To be published in Q1/Q2 2022)

Project data

Title	Economics of Climate Change: New Management Instruments to Reduce Climate Risks for the Public and Private Sector
FKZ	3719 48 103 0
Duration	August 2019 – December 2022
Client	Federal Environment Agency
Team	Frankfurt School of Finance & Management gGmbH. Dr. Pieter Pauw, Laura Hensel, Karsten Löffler, Prof. Dr. Ulf Moslener, Henriette Jahns, Sebastian Rink, Frederic Bettini, Menglu Zhuang, Dr. Christine Grüning
	akzente kommunikation und Beratung GmbH. Thomas Loew, Sabine Braun, Katrin Müller, Elisabeth Senger, Philipp Dahl
	Munich Climate Insurance Initiative (MCII). Sönke Kreft, Dr. Simone Sandholz, Shaily Yvas, Dr. Maxime Souvignet, Dr. Armin Haas
	Büro für Umwelt, Qualität, Sicherheit. Dr. Ludwig Glatzner
Contact	Kirsten Sander, Umweltbundesamt, kirsten.sander@uba.de
for the project	Dr. Pieter Pauw, Frankfurt School of Finance & Management gGmbH, p.pauw@fs.de
Contact	Dr. Ludwig Glatzner, Büro für Umwelt, Qualität, Sicherheit, glatzner@muenster.de
for the study	Thomas Loew, akzente kommunikation und beratung GmbH, Thomas.Loew@akzente.de