Assessing the Greening Government Strategy Against ISO 14001: A Gap Analysis and Recommendations

Final Project Report

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Prepared by: Nelly Ineza, Maria Schriemer, Jessica Winton, University of Ottawa

For: Treasury Board of Canada Secretariat – Centre for Greening Government

Table of Contents

List of Tables and Figures

List of abbreviations

Abbreviation	Term
EMS	Environmental Management System
GC	Government of Canada
GGS	Greening Government Strategy
ISO	International Standards Organization
TBS-CGG	Treasury Board of Canada Secretariat – Centre for Greening Government

Overview

This project is a capstone study conducted by Master of Environmental Sustainability students at the University of Ottawa in partnership with the Treasury Board of Canada Secretariat's Centre for Greening Government (TBS-CGG). The analysis and recommendations that have been developed through this work are intended to support applied research and experiential learning, and to provide TBS-CGG insights for program decision-making.

The objective of this project is to assess the Greening Government Strategy (GGS), including its implementation, against the ISO 14001 standard on Environmental Management Systems (EMS) to determine alignment, identify gaps, and develop recommendations for continuous improvement. As discussed with the project partner, the primary focus of the work and potential certification is TBS-CGG and its leadership and support activities related to the GGS.

Background

The Greening Government Strategy (GGS) establishes the Government of Canada's targets and commitments to get to net-zero, green and climate-resilient operations by 2050. The Centre for Greening Government, within the Treasury Board of Canada Secretariat, provides leadership towards implementing these commitments. It works closely with technical departments to provide expert advice and develop guidance to support departments implementing the Strategy.

International Standards Organization (ISO) ISO 14001 is an internationally recognized standard for Environmental Management Systems. This standard provides a structured framework for establishing and continually improving an Environmental Management System (EMS) using the plan-do-check-act cycle. It helps organizations systematically manage environmental responsibilities, ensure regulatory compliance, and improve environmental performance.

Certification under ISO 14001 is associated with several key benefits, including increased credibility, improved risk management, stronger compliance processes, and a formal mechanism for continuous improvement (Maze, 2024). In the public sector and in large organizations, ISO 14001 has been used to support consistent environmental governance, strengthen accountability, and translate high-level sustainability strategies into operational practice (Maze, 2024).

TBS-CGG is considering whether certification under this standard would add value to the GGS. Formal certification can be costly, time-consuming, and difficult to apply across a large, decentralized government system. In addition, many elements of the GGS already reflect ISO 14001 principles without requiring certification. Assessing the Greening Government Strategy against this standard can help identify gaps, best practices, and opportunities to strengthen its design and implementation, and determine whether certification would be a worthwhile process.

Objectives

The objective of this project was to assess the Greening Government Strategy, including its implementation, against the ISO 14001 standard. The analysis determined the level of alignment, identified key gaps, and developed recommendations to support continuous improvement and to inform the decision on whether ISO 14001 certification should be pursued.

To guide this assessment, the project was based on the following key research questions:

- To what extent does the GGS align with the requirements of ISO 14001?
- What gaps exist between the GGS and ISO 14001 requirements?
- Which areas of the GGS are strongest, and which require improvement?
- What changes would be needed to support ISO 14001 certification?
- Would pursuing ISO 14001 certification provide value for TBS-CGG?

Methodology

This project uses a qualitative research approach to assess the alignment between the Greening Government Strategy (GGS) and the ISO 14001 standard. The analysis is structured into five phases: document review, ISO standard review, gap analysis, questionnaire design, and results synthesis. Each phase builds on the previous one to ensure a clear and consistent assessment.

Phase 1: Document Review (GGS Analysis)

A review of the Greening Government Strategy and related public documents was conducted to understand how the Strategy is designed and implemented in practice. This included analysis of targets, governance structures, reporting mechanisms, and implementation tools.

This step provided a clear understanding of existing processes and practices within the GGS.

Phase 2: ISO 14001 and Supporting Standards Review

The ISO 14001 standard was reviewed to identify its key requirements. Each requirement was translated into simple terms and organized into an evidence table.

Supporting standards, including ISO 14004, ISO 19011, and ISO 14031, were also reviewed to provide additional guidance on implementation, auditing, and performance evaluation.

Phase 3: ISO–GGS Mapping and Gap Analysis

A structured evidence table was used as the main analytical tool to compare ISO 14001 requirements with the GGS. Each ISO requirement was compared against GGS commitments, policies, and publicly available information. Each column serves a specific purpose:

- ISO clause: identifies the specific section of the ISO 14001 standard being assessed.
- ISO Requirements: explains the requirement in clear and accessible language.
- How the requirement is addressed; presents how the requirement is currently addressed within the Greening Government Strategy, based on available documents and information.

- Gap with TBS-CGG Scope: shows gaps based on what TBS-CGG is responsible for.
- Gap with GC wide Scope: shows gaps across all government departments.
- General gaps: highlights areas where the GGS does not fully meet ISO 14001 expectations or where information is unclear or missing.
- Strength of alignment (1 = no alignment, 5 = full alignment): provides a rating of how closely the GGS aligns with each ISO requirement. Alignment was assessed on a five-point scale, where 1 indicates no alignment (major gaps, requirement not addressed), 2 indicates weak alignment (large gaps, partially addressed), 3 indicates moderate alignment (some gaps, generally addressed), 4 indicates strong alignment (minor gaps, mostly aligned), and 5 indicates full alignment (no gap, fully meets the ISO requirement).
- Potential actions to strengthen alignment: outlines practical steps that could be taken to improve alignment with ISO 14001 requirements and address identified gaps.

As part of the analysis, the scope of the project was considered, with TBS-CGG defined as the organization under review. This creates a limitation, as the Greening Government Strategy is implemented across the Government of Canada, including many departments. As a result, some ISO 14001 requirements may appear as gaps within this analysis, even though they may be addressed at the broader Government of Canada level.

Phase 4: Questionnaire Design

A questionnaire was developed to gather feedback on the implementation of the GGS across government departments. Two versions were created: one based on ISO 14001 sections and another based on gaps identified in the analysis.

Simple formats such as Likert scale, multiple-choice, and short-answer questions were used. The questionnaire was designed for greening government leads across departments.

No responses were collected within the project timeline. As a result, no primary data analysis was conducted. The finalized questionnaire is included as a tool that can be used by TBS-CGG to gather feedback and support ongoing improvement.

Phase 5: Certification Costing and Results Synthesis

To understand the feasibility of ISO 14001 certification, a certification cost estimate was obtained by contacting several accredited certification bodies.

ACS Canada was an agency that provided a response after receiving information on organizational size and scope of activities related to the GGS. Our team also met to discuss the finer details of the accreditation process.

The final phase combines findings from the gap analysis, supporting research, and costing information to develop conclusions and recommendations presented in the report. It takes into account comments provided by the project partner.

Research Results

Related international standards

In addition to ISO 14001, ISO 14004, ISO 19011, and ISO 14031 were reviewed to assess their relevance to the Greening Government Strategy. These standards provide guidance on implementation, auditing, and environmental performance evaluation. While they are not the focus of the analysis, they support the development of recommendations by identifying best practices that could strengthen the design and implementation of the GGS.

ISO 14004 (Environmental management systems — General guidelines on implementation) appears relevant but is more general in scope than ISO 14001 because it provides practical guidance on how to establish, implement, maintain, and improve an environmental management system (ISO, 2016). In the context of the GGS, this is useful because it goes beyond simply stating what should exist and instead helps show how environmental management practices can be organized and carried out in practice. More specifically, ISO 14004 is relevant to TBS-CGG because it can help support clearer internal structure, stronger role definition, better integration of environmental objectives into planning and operations, and a more systematic approach to continuous improvement over time. This makes it particularly useful for thinking about how the GGS could be strengthened as a management system in practice, especially in areas such as implementation, documentation, coordination, and long-term improvement.

ISO 19011 (Guidelines for auditing management systems) appears the most directly relevant of the three because it provides guidance on how to plan, manage, and carry out management system audits, including audit principles, audit programs, and auditor competence (ISO, 2018). The review of related international standards also supports the key research question of how the GGS can be strengthened to better align with recognized environmental management system practices. In practice, ISO 19011 is relevant because it helps clarify what an audit process should include, such as clear scope, frequency, roles, methods, evidence collection, and reporting. This makes it helpful when assessing areas such as internal audit and management review, where the GGS may need stronger or more formalized processes to align with recognized international practice.

ISO 14031 (Environmental management — Environmental performance evaluation — Guidelines) appears to also be highly relevant because it gives guidance on the design and use of environmental performance evaluation within an organization (ISO, 2021). This is important for the GGS because the Strategy already depends heavily on tracking and reporting environmental results, especially in areas such as emissions reduction and

broader greening commitments. More specifically, ISO 14031 is useful because it supports a more systematic approach to selecting indicators, monitoring results, assessing progress, and using performance information to support decision-making and improvement. In the context of TBS-CGG, this standard is therefore relevant for thinking about how environmental performance could be measured more consistently across different priority areas of the GGS.

Certification process and costing

The cost of ISO 14001 Certification was quoted at $12,000 by ACS Canada, a certified accreditation agency. There are additional annual audits to maintain certification which cost approximately $9,000 annually. This quote was received under the context of organizational size (30 employees) and the scope of the program: "*Environmental management for the development, coordination, and oversight of the Greening Government Strategy, including environmental policy support related to federal real property, green procurement, and sustainable material management within the Treasury Board Secretariat – Centre for Greening Government.*"

The process for the GGS becoming ISO 14001 certified includes 2 stages which may take approximately ~6 months in its entirety:

Stage 1 - Documentation Review
Review of EMS documentation, policies, environmental aspects, and readiness for certification.

Stage 2 **-** Certification Audit (On-site)
Evaluation of the implementation and effectiveness of the Environmental Management System.

Certification of the GGS with the broader scope of the GC is expected to be significantly more expensive, as cost varies according to complexity and number of employees in the organization examined.

ISO 14001 upcoming amendments

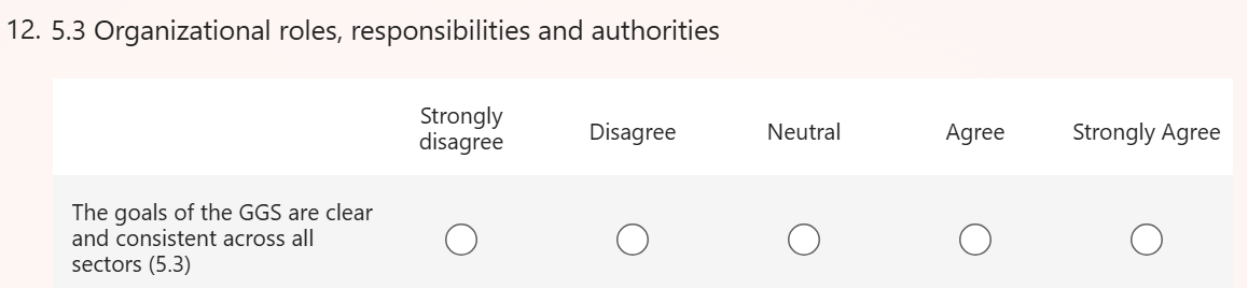
The 2026 update to ISO 14001 to the 6th edition would not affect the overall process of accreditation, as the upgrades to the new version standard can be completed during the same surveillance cycle according to ACS Canada. Each edition also includes a correspondence table within the annex to demonstrate the revisions and corresponding updates.

Questionnaire

The prepared questionnaires are intended to support the findings of the research and gap analysis, by gathering feedback on the experiences and perspectives of the government departments supported by TBS-CGG who work to implement the GGS. The survey will take approximately 10-15 minutes to complete once finalized.

The structure of the first questionnaire [Appendix 2] mirrors that of the 3e ISO 14001 standard, and it focuses on actionable areas for TBS-CGG to further strengthen the implementation of the GGS. A second version with questions based on the identified gaps also exists in the same format.

Figure 1: Sample question



The majority of the ISO Section based survey questions are on a 'Likert scale' [Figure 1] and will be circulated to other departments of the government (outside of TBS-CGG) to inform the areas of improvement of the GGS based on their own interactions with implementing the strategy. Other questions include short answer feedback and multiple-choice questions.

A second version of the survey was created [Appendix 3], with the identified gaps used as the basis for the questions.

Gaps and options

Gap analysis summary

The comparison of the Greening Government Strategy against the ISO 14001 standard identified several key gaps that would need to be addressed before potential certification. Table 1 presents a summary of the ISO–GGS gap analysis results (Appendix 1). It provides a condensed overview of the main findings and highlights key gaps and strengths. The table uses three categories of gap levels—minor, moderate, and major gaps, derived from the detailed five-point "strength of alignment" scale used in the full analysis (Appendix 1). Specifically, scores of 4–5 are classified as minor gaps, 3 as moderate gaps, and 1–2 as major gaps. This approach simplifies the results while remaining consistent with the detailed analysis.

- Minor gap: The requirement is mostly met, with small improvements needed
- Moderate gap: Some elements exist, but they are incomplete or unclear
- Major gap: The requirement is missing or not clearly demonstrated

Table 1: Summary of ISO-GGS Gap Analysis Results

Area	**Summary of Finding**
Context, scope, and objectives	Minor gap: The GGS clearly defines key commitments, scope, and environmental objectives, which aligns reasonably well with ISO 14001 requirements.
Leadership and governance accountability	Moderate gap: Governance structures exist, but accountability for EMS conformity, top-management review, and formal senior oversight are not clearly documented in ISO-style terms.
Planning and documented processes	Moderate gap: The GGS reflects planning in practice, but formal documentation of opportunities, aspects, compliance obligations, and action planning is not always clearly shown
Communication, competence, and awareness	Moderate gap: Communication and support mechanisms exist across government, particularly through TBS-CGG's guidance, working groups, and

Area	Summary of Finding
	communication with departments. However, the structure of internal and external communication processes and awareness expectations is not always formally defined or consistently applied across all departments.
Monitoring and review support	Minor gap: Performance monitoring, environmental evaluation, and compliance review appear to be supported by formal internal processes, in addition to public reporting and disclosure. This provides a strong foundation for governance and continual improvement
Internal audit, corrective action, and management review	Moderate gap: TBS-CGG has indicated that the GGS follows a 3-year review cycle, but the available evidence doesn't clearly show whether this review process fully meets ISO 14001 expectations for formal management review with defined inputs, outputs, responsibilities, and documented follow up. While TBS has an internal audit function, it is not internal to TBS-CGG and has not reviewed the Greening Government Strategy recently.

Gap analysis discussion

Table 1 presents a summary of the ISO–GGS gap analysis results (Appendix 1) and shows that the Greening Government Strategy demonstrates strong alignment with ISO 14001 in several areas such as context, environmental policy, objectives, and performance monitoring. These areas represent minor gaps and indicate that the GGS has a solid foundation in terms of environmental governance and reporting.

However, several moderate gaps remain, particularly in areas related to planning, documentation, communication, and roles and responsibilities. These gaps suggest that while processes exist in practice, they are not always formally structured or documented in a way that aligns with ISO 14001 requirements.

The most significant gaps are found in internal audit, management review, and corrective action processes. These areas are critical components of an environmental management system and are required for certification. The absence of clearly defined and documented processes in these areas represents a key barrier to ISO 14001 alignment.

Gap analysis by scope

One limitation of this gap analysis is the scope of the project. The analysis focuses on TBS-CGG, while the Greening Government Strategy is carried out across the whole Government of Canada. Because of this, some ISO 14001 requirements, such as internal audits (Clause 9.2) and corrective action processes (Clause 10.2), appear as gaps in this analysis, even though these activities may be done by other departments. More information on the differences in the gaps by scope is shown in Table 2.

Table 2: Key Gaps by Scope

Gap Area	Gap under TBS-CGG scope	Gap under GC-wide scope
Internal audit	Major gap: TBS-CGG does not have its own internal audit function	Minor gap: The Office of the Auditor General, which is part of the GC, performs regular audits of the GGS.
Scope	Moderate gap: The scope of the GGS is much broader than the scope of GGS control	N/A: scope is appropriate for the GC
Management	N/A: Top management of TBS-CGG is fully involved	Moderate gap: Top management of the GC are not as closely involved
Continual improvement *(see Figure 2)*	Slight gap: Opportunity to enhance TBS-CGG's improvement of GGS guidance and processes	Moderate gap: Greater opportunity to enhance how departments implement the GGS

Figure 2: Continual improvement

Continual improvement: recurring activity to enhance performance. Note that in the ISO 14001 standard "continual" indicates duration that occurs over a period of time, but with intervals of interruption (unlike "continuous" which indicates duration without interruption). "Continual" is therefore the appropriate word to use when referring to improvement.

Potential actions to strengthen alignment

The gap analysis identified potential actions for improving the GGS and for strengthening its alignment with ISO 14001. A summary of potential recommendations to consider is shown in Table 3.

Table 3: Potential actions to strengthen alignment

Theme	Actions
Documentation	Maintain documentation as necessary, which could include information on: • stakeholder mapping processes • planning and environmental risk analysis • criteria for environmental aspects under control and influence • compliance obligations • departmental planning related to GGS • environmental training and competencies • procedures for creating, reviewing, and updating GGS guidance and policy materials
Scoping	Consider the tension in scoping and discuss with potential certifying agency if seeking certification
Continual improvement *(see Figure 2)*	Strengthen continual improvement processes, including guidance materials and reporting processes, and consider more frequent or off-cycle updates. Maintain an improvement log or action tracker that records improvement opportunities, owners, timelines, and status, and links them to reporting and review findings. Engage with relevant departments about the improvement opportunities. TBS-CGG should formally state a continual improvement cycle for the GGS and show how monitoring, review, corrective action, and policy updates feed into future strategy revisions.
Department involvement	Strengthen participation of other government organizations in the improvement process,
ISO responsibility and documentation	If ISO 14001 certification is sought, assign responsibility and add ISO-specific documentation
Alignment with GC policy	Continue maintaining measurable environmental objectives and review regularly to ensure alignment with overall GC policy

Theme	Actions
Resources and training	Review and update resources provided to departments and strengthen training and guidance available
Communication	Consider engaging with Communications teams across departments to expand employee awareness of the GGS and their role achieving its goals. Continue to maintain clear communication channels between departments to ensure consistent information sharing regarding GGS implementation. Review internal communication processes to ensure that employees across the GC have sufficient opportunity to contribute to continual improvement of the GGS.
Risk	Encourage departments to integrate climate risk assessments and adaptation planning into operational emergency preparedness processes and to strengthen training.
Compliance	Assess and, if necessary, enhance, formality and documentation of compliance evaluation. Examine how a corrective action process and tracker for the GGS could be established.
Internal review	If required for certification, establish internal review process and audit program. More information is needed on internal audit requirements.

Options analysis

We have examined three key options for strengthening the GGS related to ISO 14001.

- Option 1: Seek ISO 14001 certification for TBS-CGG (narrow scope)
- Option 2: Seek ISO 14001 certification for the Government of Canada (broad scope)
- Option 3: Status quo (no certification or alignment)
- Option 4: Align the GGS with ISO 14001 without official certification

Table 2 compares benefits, drawbacks, and resource requirements of the three options.

Table 4: Options analysis

	Option 1: Certification with narrow scope	**Option 2: Certification with broad scope**	**Option 3: No certification**	**Option 4: ISO alignment without certification**
Benefits	Impetus to TBS-CGG to examine and strengthen GGS processes and support to departments Alignment with international standards	Broad push to examine and strengthen greening actions government-wide, potentially improving environmental performance	Leaves TBS-CGG and departments the freedom to make and prioritize improvements as desired rather than following ISO requirements	Supports GGS improvement and alignment with international standards, while avoiding some administrative burden
Drawbacks	Narrow scope introduces gaps which may be hard to address and limits benefits	Expensive Complex Increases planning and reporting burden for departments	Comparatively less external structure and pressure to support the process. Less explicit alignment with international standards	Comparatively less external structure and pressure to support the process.
Resources	Moderate level of time and money required	Significant time and money required	Some internal time and resources are still needed for improvements	Moderate level of time and money required

Recommendations

Based on the gap analysis and options assessment, Option 1 is recommended, pursuing ISO 14001 certification for TBS-CGG, using a phased and practical approach.

The analysis shows that the GGS already aligns with many ISO 14001 principles, particularly in areas such as objectives, reporting, and performance monitoring. However, gaps remain in formal documentation, internal audit processes, and management review. These gaps are structural rather than fundamental, so they can be addressed without major redesign.

Pursuing certification would provide clear benefits. It would introduce external accountability, ensure consistent application of environmental management practices, and strengthen credibility. Without certification, similar improvements could still be made, but there would be no formal mechanism to ensure consistency or long-term follow-through.

A phased approach is recommended to support this process:

- Step 1: Send the finalized questionnaire (Appendix 2 or 3) to gather feedback from departments and better understand implementation challenges
- Step 2: Review the revised ISO 14001 standard and its edition correspondence table, when it is officially released, for implications to this analysis.
- Step 3: Strengthen key gaps identified in the analysis (Appendix 1), including documentation, internal audit processes, management review, and integration of continual improvement into GGS processes. Gather more information on ISO requirements, such as for internal audit, to address the questions identified in the gap analysis.
- Step 4: Proceed with ISO 14001 certification for TBS-CGG once key gaps identified in the analysis have been addressed, as this would demonstrate readiness for certification.
- Step 5: Continue to strengthen the GGS and continual improvement processes beyond certification

Risks to consider and mitigate as necessary in this process may include:

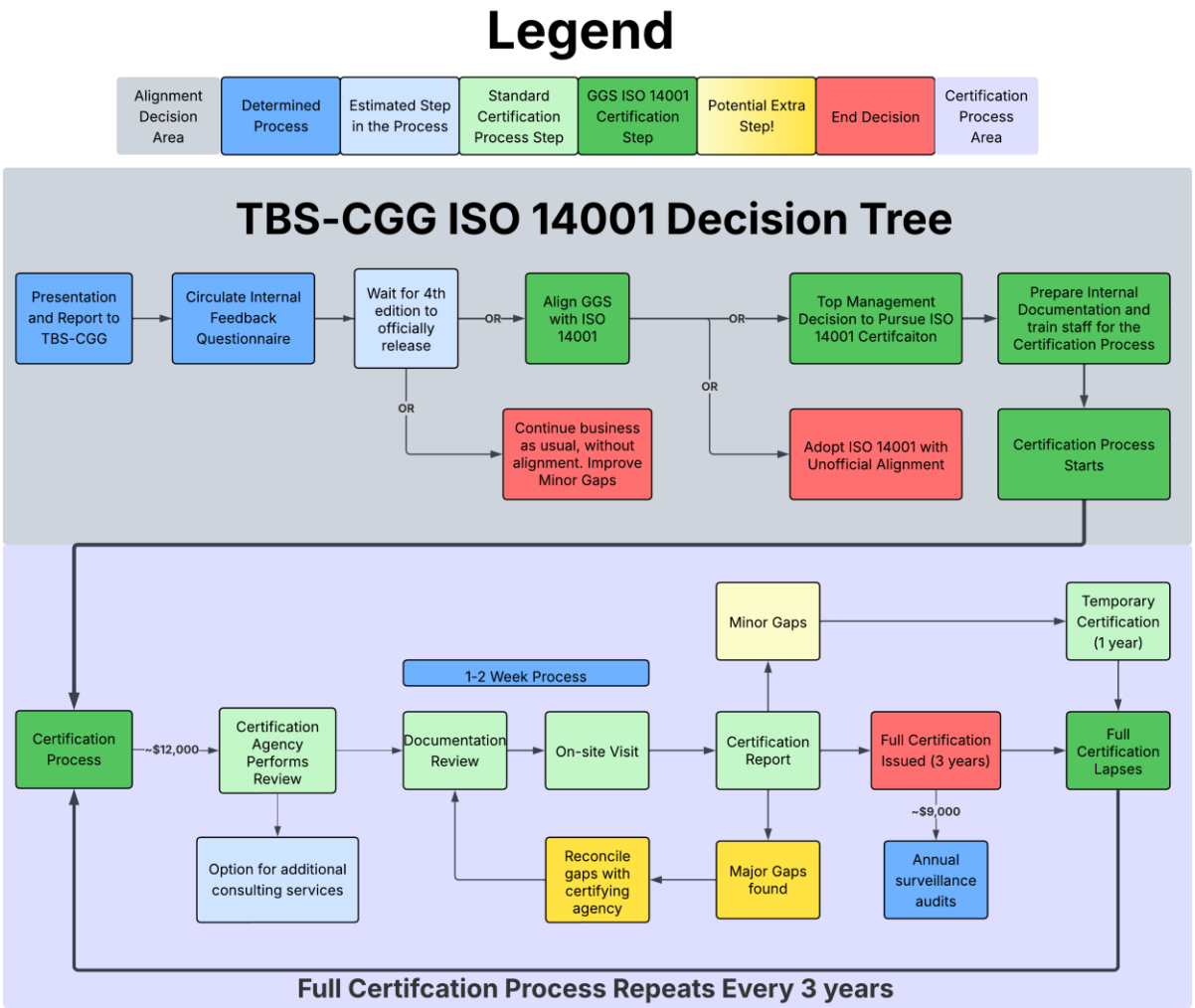
- Level of alignment may change in the upcoming edition
- Other accredited certification agencies may charge more for certification
- Scoping complexity remains and should be discussed with the certifying agency

- Not all opportunities for improvement will be addressed by certification

Recommendations Decision Tree

The recommendation decision tree (Figure 3) outlines the possible pathways for aligning the Greening Government Strategy with ISO 14001 and progressing toward certification. It shows the sequence of key steps, including gathering internal feedback through the questionnaire, reviewing updates to the ISO 14001 standard, and strengthening identified gaps in alignment. Based on these steps, decision points guide whether to proceed with certification, maintain the current approach, or pursue alignment without certification. The tree highlights that certification follows a structured process requiring preparation, documentation, and review, and that it is best pursued once sufficient readiness has been achieved.

Figure 3: Recommendations decision tree



Conclusion

ISO 14001 certification can be valuable to support consistent environmental governance, strengthen accountability, and incentivize continual improvement. While the GGS already has strong governance, planning, reporting, and evaluation mechanisms in place, it could be strengthened by increased documentation, leadership, and continual improvement. The process of seeking ISO 14001 certification can provide structure and impetus to support this work but is not essential for achieving the desired strengthening of the GGS and its processes.

Without certification, there is a risk that improvements may be applied inconsistently or not maintained over time. Certification provides a formal mechanism for oversight and helps ensure that improvements are sustained in practice.

Based on the findings of this analysis, Option 1, seeking ISO 14001 certification for TBS-CGG (narrow scope), is recommended as the most effective and feasible path forward. This approach strengthens accountability within a manageable scope while maintaining the potential for broader application in the future.

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Appendices

Appendix 1: Full ISO-GGS Gap Analysis Comparison Table

The file titled 'ISO–GGS Gap Analysis Table' compares the Greening Government Strategy with the requirements for environmental management systems of ISO 14001. It identifies gaps, in general and under two different scopes, and rates the overall level of alignment from 1 to 5. It also presents potential actions which could strengthen alignment between the GGS and ISO 14001. This document is provided under separate cover.

Appendix 2: ISO Based Questionnaire

The file titled 'Questionnaire Draft - ISO Sections - Word Format' presents the contents of the recommended questionnaire in a word document format for ease of review. Its structure mirrors that of the 3e ISO 14001 standard, and it focuses on actionable areas for TBS-CGG to further strengthen the implementation of the GGS. The additional links present the questionnaire in alternate formats, the first to duplicate the questionnaire in Microsoft Forms for ease of use, and the second to view the questionnaire as a respondent might see it. This document is provided under separate cover.

Link to duplicate in MS Forms:

Greening Government Strategy Questionnaire - ISO 14001 Sections – Copy form

Link to fill out form: Greening Government Strategy Questionnaire - ISO 14001 Sections – Fill out form

Appendix 3: Gap Based Questionnaire

The file titled 'Questionnaire Draft - Gaps - Word Format' presents the contents of the alternate questionnaire in a word document format for ease of review. Unlike the questionnaire in Appendix 1, its questions are focused specifically on the gaps identified. The additional links present the questionnaire in alternate formats, the first to duplicate the questionnaire in Microsoft Forms for ease of use, and the second to view the questionnaire as a respondent might see it. This document is provided under separate cover.

Link to duplicate form: Greening Government Strategy ISO 14001 Gap-Based Questionnaire – Copy form

Link to fill out form: Greening Government Strategy ISO 14001 Gap-Based Questionnaire – Fill out form