ENERGY TRANSITION

Practical Guide for Supreme Audit Institutions

INTOSAI

WGEI Working Group on Audit of Extractive Industries

FEDERAL COURT OF ACCOUNTS TCU

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FEDERAL COURT OF ACCOUNTS

Brasília, 2025

http://www.tcu.gov.br

LIST OF ACRONYMS

COP28	28th Conference of the Parties
G20	Group of 20
GHG	Greenhouse Gases
IEA	International Energy Agency
INTOSAI	The International Organization of Supreme Audit Institutions
IPCC	Intergovernmental Panel on Climate Change
SAI	Supreme Audit Institutions
NDC	Nationally Determined Contribution
SDGs	Sustainable Development Goals
UN	The United Nations
SAI20	G20 Supreme Audit Institutions Engagement Group
SecexEnergia	TCU's Department of External Control for Energy and Communications
TCU	Brazilian Federal Court of Accounts
WGEI	Working Group on Audit of Extractive Industries

FOREWORD BY THE PRESIDENT OF TCU AND INTOSAI

The energy transition has moved beyond technical debate to become a cornerstone of sustainable development and climate justice in our time. Confronting the climate crisis requires not only the adoption of new technologies but also the construction of public policies that are robust, transparent, and, above all, humane. It is with this profound sense of purpose that Supreme Audit Institutions (SAIs) take on an indispensable role, ensuring that this journey toward a low-carbon future is effective and leaves no one behind.

It is with great pride that I present this updated edition of the Practical Guide on Audit of Energy Transition. This document, born from the practical experience of the Federal Court of Accounts of Brazil (TCU), now evolves into an even more global and collaborative reference. Through a dedicated task force within the INTOSAI Working Group on Audit of Extractive Industries (WGEI), this new edition has been enriched with the diverse perspectives and realities of SAIs from different continents. The result is a more adaptable and representative tool, ready to empower auditors worldwide to oversee one of the most complex issues of our era.

This initiative embodies the central pillar of our leadership: placing citizens at the heart of government action. The success of the energy transition should not be measured merely by decarbonization targets, but by how it concretely transforms people's lives. This Guide brings that dimension to the center of public audit by including a pillar on "Just and Inclusive Transition." With it, SAIs gain tools to verify whether the benefits of the new green economy are truly reaching everyone, especially the most vulnerable communities, and whether the promise of clean, affordable, and equitable energy is becoming a reality.

This commitment to placing the human dimension at the core of our audits is a guiding principle for the work of the TCU and INTOSAI under our leadership, whether in overseeing the climate agenda or in evaluating other public policies essential to social well-being. Our goal is to develop and share global methodologies that move beyond simply verifying the proper use of funds to, more fundamentally, assess whether those resources are delivering the value and transformation that citizens expect and deserve.

By using this Guide, SAIs will be better prepared to audit energy transition policies, ensuring they promote environmental sustainability, social justice, and inclusive economic development. I am confident that through continuous collaboration, we can strengthen the collective role of SAIs and ensure an energy future that is prosperous, secure, and equitable for all the citizens we serve.

Vital do Rêgo
President
Federal Court of Accounts of Brazil (TCU)
International Organization of Supreme Audit Institutions (INTOSAI)

MESSAGE FROM TCU

Energy Transition Audit Guide

It is with great satisfaction that I present the Energy Transition Audit Guide, developed by the Brazilian Federal Court of Accounts (TCU) in partnership with the Working Group on Extractive Industries (WGEI) of the International Organization of Supreme Audit Institutions (INTOSAI). Designed to support Supreme Audit Institutions (SAIs) with tools that enable a deeper look into the impacts of energy transition policies, this Guide complements other SAIs' initiatives in support of global efforts for climate change mitigation and adaptation.

Modern energy transition represents one of the greatest challenges humanities must face. Although traditional energy sources are still available, climate change imposes the inevitable need for transformation. In this scenario, SAIs plays a crucial role, not only in evaluating public policies but also in encouraging reflections on the absence of necessary actions. The work of SAIs is fundamental to ensuring the effectiveness of the energy transitions and the efficient use of public resources, guaranteeing that the gradual shift from traditional to renewable energy promotes sustainable development.

In this context, the exchange of experiences and collaboration among SAIs are essential to improve the required tools to address the global challenges of energy transition and climate change. This audit Guide focuses on four main pillars — Governance, Just and Inclusive Transition, Financing, and Public Policies.

The Guide is a contribution, drawing from the concrete experience of TCU and several SAIs that voluntarily participated in an international benchmarking, to strengthen external oversight of energy transition policies. I am confident that, by using this Guide, SAIs will be able to audit public policies in their countries, ensuring that these policies meet the objectives of social justice, sustainability, and climate change mitigation, contributing to a better future for the current generation — leaving no one behind — and for generations to come.

Bruno Dantas
Minister
Federal Court of Accounts of Brazil (TCU)

INTRODUCTORY MESSAGE BY THE WGEI CHAIR

The energy transition is a crucial response to one of the most pressing challenges of our time—climate change. Worldwide, the adverse impacts of climate change on health, food and water security, infrastructure, human settlements and life itself continue to intensify. As part of the international strategy to combat these effects, many governments have committed to transition from reliance on fossil fuels to clean, renewable energy sources. This demands substantial policy shifts and actions.

Supreme Audit Institutions (SAIs) play a pivotal role in ensuring transparency, accountability, and good governance during this critical transition. By auditing governments' energy transition policies, SAIs help ensure that these strategies are effectively implemented and aligned with national and global climate commitments. Given the urgency of climate change, it is essential for SAIs to rapidly develop the capacity to audit these complex policies—through cooperation and knowledge sharing.

In this spirit, we present the Energy Transition: Practical Guide for Supreme Audit Institutions. This guide outlines the approach adopted by SAI Brazil in auditing the energy transition, offering insights into this emerging area. We invite SAIs worldwide to document their experiences as they too embark on the journey of auditing the energy transition. This knowledge will help enrich and refine the guide in future revisions. By learning together, we can strengthen the collective contribution of SAIs to the transition towards a just and equitable low-carbon future.

Edward Akol
Auditor General of Uganda and Chair of the Intosai Working Group
on Audit of Extractive Industries

INTERNATIONAL ENERGY AGENCY - IEA

I would like to commend the Brazilian Federal Court of Accounts (TCU) and the International Organization of Supreme Audit Institutions (INTOSAI) on designing this guide. At the IEA, we believe that you can only manage what you can measure. By regularly evaluating progress in the implementation of energy transition policies and identifying policy gaps, Supreme Audit Institutions can effectively support policymakers in fulfilling their energy and climate goals. At the IEA, we were very pleased to have the opportunity to peer-review this second edition of the Guide, and we wish TCU and INTOSAI the best of success with its implementation.

Dr. Fatih Birol
Executive Director
International Energy Agency

Acknowledgment

This Guide was peer-reviewed by the International Energy Agency (IEA). The review helped ensure its technical consistency and alignment with international best practices.

CONTENT

INTRODUCTION AND CONTEXT

Energy transition in the global context

Although fossil energy sources still dominate global consumption, there is widespread consensus in major international forums on the urgency of shifting to clean and sustainable energy sources. In this context, the energy transition — which aims at the gradual replacement of these energy sources — has ceased to be merely a goal and has become the main response to the climate crisis, being crucial to reducing greenhouse gas (GHG) emissions and mitigating the impacts of climate change. The starting point of this journey was established in 2015 with the **Global Agenda for the Sustainable Development Goals (SDGs)** and, in 2016, with the **Paris Agreement**.

The Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) confirmed the severity of the challenge, highlighting that **the energy sector remains the main contributor to GHG emissions** and pointing out that human-induced climate change is causing significant disruptions in nature and affecting the lives of billions of people[1]. Fossil fuels, which account for 78% of global final energy consumption, are the primary contributors.

In response to the climate crisis, the **28th Conference of the Parties (COP28)**, held at the end of 2023, reinforced the global commitment to energy transition by establishing the "1.5°C Mission Roadmap." This action plan calls for tripling renewable energy capacity and improving energy efficiency by 2030[2].

In this context, the **Group of Twenty (G20)** plays a crucial role[3]. Brazil, as a global reference in renewable energy, left an important legacy during its 2024 presidency by focusing on a just, inclusive, and economically viable energy transition.

While this landscape shows significant progress in climate commitments, considerable challenges remain to accelerate the global energy transition. Coherent and sustainable public policies are essential to overcome these challenges, as they shape an economy that benefits society while using environmental resources efficiently.

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1 Climate Change 2022: Impacts, Adaptation and Vulnerability. Working Group II Contribution to the IPCC Sixth Assessment Report. https://www.ipcc.ch/report/ar6/wg2/.

2 SDG Knowledge Hub. 2024 UN Climate Change Conference (UNFCCC COP 29). https://sdg.iisd.org/events/2024-un-climate-change-conference-unfccc-cop-29/.

3 G20. Transições Energéticas. https://www.gov.br/g20/pt-br/trilhas/trilha-de-sherpas/transicoes-energeticas.

Supreme Audit Institutions (SAIs) play a fundamental role in evaluating and guiding public policies. These bodies promote transparency, accountability, and good governance, helping ensure that public policies reduce inequality, poverty, hunger, and the effects of climate change.

The strategic Role of Supreme Audit Institutions (SAIs)

SAIs are public bodies that audit governments independently and impartially. One of the objectives of these audits is to ensure that governments operate effectively, efficiently, ethically, and in compliance with the law (ISSAI 100[4]). Beyond overseeing public finances, SAIs are responsible for verifying legal compliance by public entities, aiming to ensure efficient use of public resources and reporting findings directly to the responsible authorities[5].

The **United Nations General Assembly** has recognized the critical role of SAIs in improving efficiency, transparency, and accountability in public administration, contributing to the achievement of development goals both nationally and internationally (Resolutions 66/209 of 2011 and 69/228 of 2014[6]).

In the energy transition, these institutions are strategic actors. By auditing areas such as energy security, financing, renewable integration, and the social impacts of the transition, they strengthen investment confidence and policy coherence. The **International Organization of Supreme Audit Institutions (INTOSAI)** emphasizes the importance of energy for economic growth and social development. The Brazilian Federal Court of Accounts (TCU), leading INTOSAI, has reinforced the need for decisive actions to limit global warming and promote transitions toward low-carbon economies[7].

4 International Organization of Supreme Audit Institutions (INTOSAI). (2019). ISSAI 100: Fundamental Principles of Public Sector Auditing. https://www.issai.org/wp-content/uploads/2019/08/ISSAI-100-EN.pdf.

5 Moonen, Gaston. Auditing energy transition issues – reconciling commitments and facts. Medium, 5 april. 2023. https://euauditors.medium.com/auditing-energy-transition-issues-reconciling-commitments-and-facts-1d637c39ce63.

6 United Nations General Assembly. (2014). Promoting and fostering the efficiency, accountability, effectiveness and transparency of public administration by strengthening supreme audit institutions (A/RES/69/228). United Nations. https://documents.un.org/doc/undoc/gen/n14/713/64/pdf/n1471364.pdf.

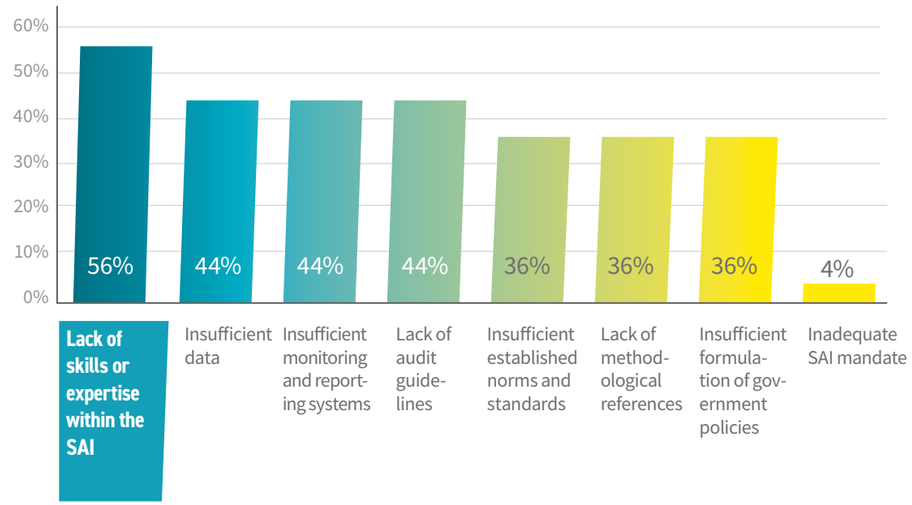
7 Dantas, Bruno. Energy Transition in the Context of the Climate Crisis. INTOSAI Journal, 19 Jun. 2024. https://intosaijournal.org/energy-transition-in-the-context-of-the-climate-crisis/.

Faced with this challenge, groups formed by SAIs from various countries have been discussing, in international forums, ways to remove obstacles and accelerate the energy transition process in different contexts.

Reflecting this joint effort, the **INTOSAI Working Group on Audit of Extractive Industries (WGEI)** is one of the main initiatives supporting the audit community on energy transition topics. It focuses on auditing sectors such as oil, natural gas, and solid minerals, promoting governance and sustainability[8].

A 2023 WGEI survey conducted by the TCU with participation from 25 countries identified that the main challenges SAIs face in auditing energy transition are the lack of specific methodologies and the need for capacity building and training (see Graph 1).

Graph 1: Main challenges faced by SAIs in energy transition audits



Point your mobile device camera and access the research

Source: QR code to survey's results

In addition to WGEI, the international audit community has other relevant initiatives. The **INTOSAI Working Group on Environmental Auditing[9] (WGEA)**, aims to expand experience in environmental

8 INTOSAI WGEI. INTOSAI Working Group on Audit of Extractive Industries. https://wgei.intosaicommunity.net/.

9 International Organization of Supreme Audit Institutions Working Group on Environmental Auditing (INTOSAI WGEA). (n.d.). Environmental Auditing. Retrieved from https://environmental-auditing.org/.

auditing, focusing on areas such as governance and climate oversight. Within this group, the TCU leads the development and application of the **Climate Scanner** [10], a global assessment tool that will provide valuable input to guide public energy transition policies.

In this cooperative context, the **G20 Supreme Audit Institutions Engagement Group (SAI20** [11]**)**, under TCU's 2024 presidency, focused its efforts on sustainable energy transitions and economic, social, and environmental development. At the SAI20 summit, the group presented recommendations that included measurable strategies, proper use of resources, and promotion of transparent investments [12].

Despite this collaborative effort, recent studies show that SAIs still face challenges in the energy transition, particularly regarding technical capacity, qualified staff, and specific working methodologies.

In this regard, in partnership with the United Nations Development Programme (UNDP), the TCU conducted a survey on the work of SAIs in the context of energy transition. The international benchmarking [13], conducted in 2024, evaluated over sixty audit reports from dozens of countries.

The study revealed that several SAIs are adopting innovative methods in their audits, such as big data, statistical modeling, and energy projections, as well as leveraging expert knowledge in areas related to energy transition.

TCU´s experience and performance (Brazil)

Committed to the UN 2030 Agenda, the Brazilian Federal Court of Accounts (TCU) has developed methodologies and audits aligned with the Sustainable Development Goals (SDGs), with a special focus on integrating renewable sources into the energy matrix [14].

Although Brazil's electricity matrix is already low carbon, according to the 2023 National Energy Balance [15], the country still faces challenges in the transport and industrial sectors due to high GHG emissions. Thus, Brazil's energy transition is also seen as an opportunity for economic wealth creation and social inclusion.

10 Federal Court of Accounts - Brazil (TCU). ClimateScanner. https://sites.tcu.gov.br/climatescanner/ingles.html.

11 G20 (2024). https://g20.org/.

12 Federal Court of Accounts - Brazil (TCU). Energy Transition and the Role of the Federal Court of Accounts. https://sai20.org/storage/app/uploads/public/679/de0/e39/679de0e39f12f033766608.pdf.

13 https://sites.tcu.gov.br/recursos/transicao-energetica/media/Benchmarking_Energy_Transition_English.pdf.

14 Federal Court of Accounts (2023). Energy Transition. https://portal.tcu.gov.br/data/files/B2/F4/60/D4/3366A810F80985A8E18818A8/Energy_transition_.pdf.

15 Brazilian Energy Research Office (EPE). Brazilian Energy Balance - Synthesis Report 2023. https://www.epe.gov.br/sites-en/publicacoes-dados-abertos/publicacoes/PublicacoesArquivos/publicacao-253/BEN_S%C3%ADntese_2023_EN.pdf.

In response to the urgency of the topic, the TCU conducted, in 2024, a **Performance Audit on the Energy Transition in Brazil** [16]. This audit, which served as the basis for this guide, aimed to assess the **maturity level of public policies and government initiatives aimed at the energy transition toward a low-carbon economy**, as well as to analyze the coherence among various government interventions.

The audit combined a risk-based approach with a **maturity assessment framework** that analyzed four key dimensions of the transition: **governance and management, financing, justice and inclusion, and the progress of policies in specific technological areas**. The scope covered government actions and policies across economic, industrial, and environmental sectors, focusing on providing a comprehensive view of the country's preparedness for a low-carbon economy.

To access the audit results:

Expected benefits

In response to the demand for knowledge and experience-sharing identified in the WGEI-INTOSAI survey, this guide was developed to share the methodology and practical experience of the TCU. This work involved a broad process of international cooperation, including discussions within the WGEI, contributions from SAIs across different regions, and validation by international experts. The objective is to support other SAIs in evaluating their own energy transitions and strengthen audits as catalysts for change, helping ensure that international agreements are met.

In addition, by providing a structured approach to assess the maturity of public policies and government initiatives related to the energy transition, this enriched version of the guide offers a practical, tested, and adapted framework for different national contexts.

16 https://sites.tcu.gov.br/recursos/transicao-energetica/media/Maturity_of_public_policies_energy_transition_brazil.pdf.

The guide is a useful tool to enhance these public policies and promote a more effective and sustainable transition process, as it:

Provides a comprehensive and flexible approach to auditing public policies, drawing on the Brazilian experience and of other institutions.

Facilitates the auditing of the energy transition by promoting the integration of these policies.

Delivers social, economic, and climate benefits by strengthening public policies and making them more balanced and sustainable.

Enhances transparency on government maturity, highlighting areas for improvement.

Encourages governments to improve their energy transition processes.

TCU headquarters
Source: institutional collection

How was the guide developed?

The framework of this guide results from a methodological approach combining theoretical research with practical audit experience:

Theoretical Foundation: The structure was developed based on specialized literature and repositories from global reference organizations.

Practical Experience of the TCU: Planning matrices and findings from the Brazilian audit (2024) were used as technical support for developing the approach.

Collaboration and Benchmarking: The guide was inspired by similar guides developed by TCU and other SAIs. It also incorporates results from an international benchmarking (2024) that consolidated global best auditing practices.

Experts' contributions: To ensure the relevance and applicability of the methodology, input from high-level experts was considered, and contributions are referenced in the document.

This guide was prepared by TCU's Department of External Control for Energy and Communications team (SecexEnergia), with the ambition of being a valuable tool for the global audit community.

How to use this Guide (intended audience)

The guide's **approach** is comprehensive and flexible, organized into three topics: **Scope Selection; Execution; Analysis and outcomes presentation**. Each step can be applied modularly, either together as part of a broader assessment or separately, according to the focus of each audit.

Additionally, the document includes sections on **best practices** identified during the audit, promoting continuous improvement of results.

This guide is a versatile resource designed to support various audiences:

Supreme Audit Institutions (SAIs): The primary target audience. The document provides a step-by-step approach to plan and execute performance audits on energy transition in their respective countries.

Policymakers: Professionals involved in the design, planning, implementation, and monitoring of public policies can use the guide as a reference to strengthen the governance of the energy transition.

Civil Society Organizations: National or international NGOs working on the topic can use the guide to improve their analysis and advocacy of public policy.

General Public: Any citizen can benefit from knowledge about the role of oversight and the elements that constitute good public policies for the energy transition.

Users can apply this guide to:

Assess government preparedness: analyze the coherence of national policies, the strength of institutional capacities, and whether adequate structures exist to oversee and implement the energy transition.

Verify equity and inclusion: evaluate whether transition policies are designed to be equitable, delivering fair benefits to all segments of society while protecting the most vulnerable communities.

Examine the monitoring of financing needs: analyze if the government has quantified the financial resources required to meet investment needs in the energy transition, if funding sources are clearly mapped, and if robust mechanisms for monitoring and transparency are established.

Analyze maturity of government actions: assess the stage of development and implementation for policies in specific areas, such as solar and wind energy, energy storage, carbon credits, smart grids, among others.

AUDIT APPROACH

This section outlines an audit approach based on the methodology originally applied in the performance audit on energy transition conducted by the TCU, which has been refined through collaborative discussions with SAIs and expert organizations.

The following step-by-step offers a comprehensive view of the government's readiness and maturity in managing the energy transition, highlighting both strengths and areas for improvement. Therefore, the steps and procedures outlined in this guide can be fully replicated or tailored to the unique circumstances of each country.

The audit **approach** is divided into **3 topics**:

Audit Scope Selection

Audit Execution

Analysis and outcomes presentation

Click on the panel below, to access your topic of interest.

Captions (by symbols)

	Recommendation / Explanation / Highlight / Tip
	Example
	Working papers
	Exploring international experiences (International Benchmarking)
	Experts' Contributions

AUDIT SCOPE SELECTION

Audit Subject Matter

The first step for the audit team is to conduct a comprehensive analysis of the object to be audited — in this case, **the government actions and structures involved in the energy transition**.

In this phase, the primary goal is to understand the national context by gathering preliminary information that will serve as the basis for defining the audit's scope and approach.

Understanding the audit subject allows the identification of existing risks and critical points and is essential for defining the audit objective, scope, and approach. Therefore, the information gathered in this phase should be recorded in a dedicated document that describes the key aspects identified, in line with the audit's purpose.

This phase is crucial for:

Mapping the ecosystem: Identifying the key stakeholders (government bodies, ministries, regulatory agencies, the private sector, and civil society).

Analyzing the political and regulatory context: Understanding the legal framework, public policies, and national and international commitments.

Assessing data availability: Confirming that information (documents, reports, databases) and audit criteria (laws, targets, best practices) are accessible for the audit.

Audit Canvas

To structure and synthesize knowledge about energy transition, it is recommended to prepare an **Audit Canvas**. This collaborative tool – used by the TCU in its audits – functions as an **initial diagnostic**, transforming the research into a visual map of the audit subject. By filling out the Canvas, the team:

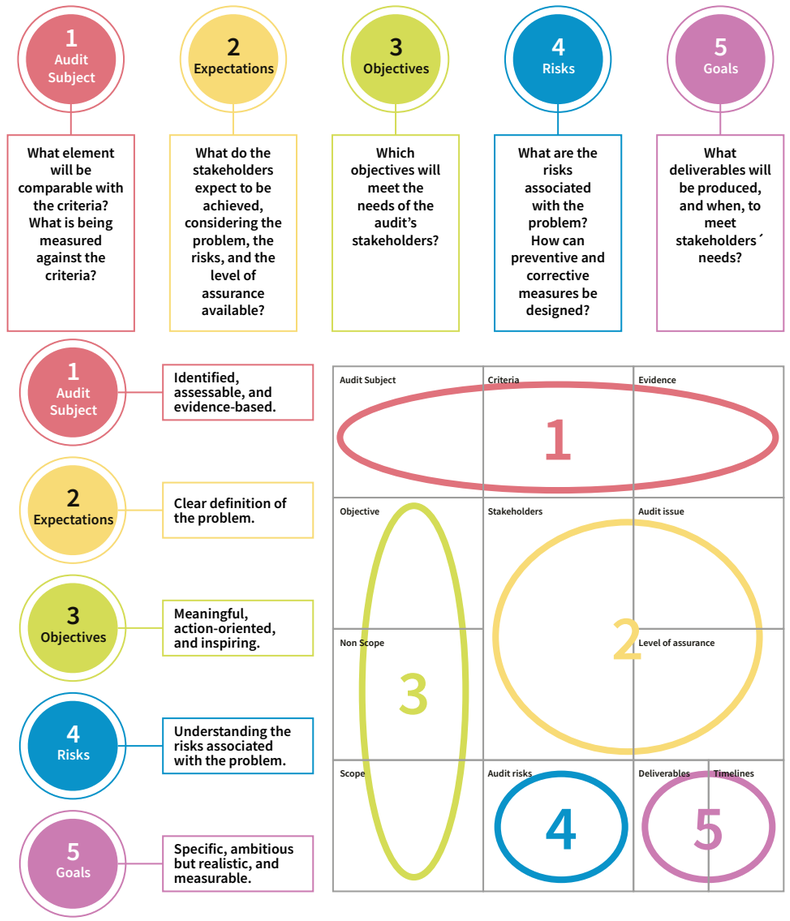
Organizes information: Compiles data and insights logically.

Identifies knowledge gaps: Detects what still needs to be investigated.

Highlights critical points: Helps focus audit efforts on the areas of greatest relevance and risk.

The proposed model is designed to organize the information into five main groups: Object, Expectations, Objectives, Risks, and Targets, which are further divided into twelve charts to be completed by the audit team, as shown in the illustrative images below.

Key questions of the Audit Canvas Framework



Illustrative image

Check out the Audit Canvas tutorial.

Recommendation: The Audit Canvas should be completed based on the team's prior knowledge of the topic and the information gathered through research. Information sources may include:

- Relevant legislation on energy transition
- Documents from entities and programs related to the theme
- Prior audits and academic studies
- Specialized literature and news
- Interviews with experts and involved managers

Tip: The Canvas consolidates information that can be used to draft the initial chapters of the audit report and provides a thorough overview of the audit subject.

Once the Canvas is developed, the next step is to identify the primary risks associated with the theme

SWOT Matrix - Risk analysis

From the information compiled in the Audit Canvas, the next step is to deepen the risk analysis using a SWOT Matrix. This tool translates Canvas information into an assessment of Strengths, Weaknesses, Opportunities, and Threats to the energy transition.

The Matrix can be developed in two complementary stages: internal and external analysis.

Internal Stage: The matrix is developed based on the information gathered in the previous phases and compiled in the Audit Canvas. This stage relies on professional judgment to formulate initial hypotheses about critical factors of the topic.

External Stage: Aims to validate and enrich the internal matrix. Through interviews and consultations with experts, government agencies, civil society, and academia, the team collects perceptions and information that confirm or adjust the initial analysis. In the TCU audit, this stage focused **exclusively** on gathering perceptions regarding weaknesses and threats to the energy transition.

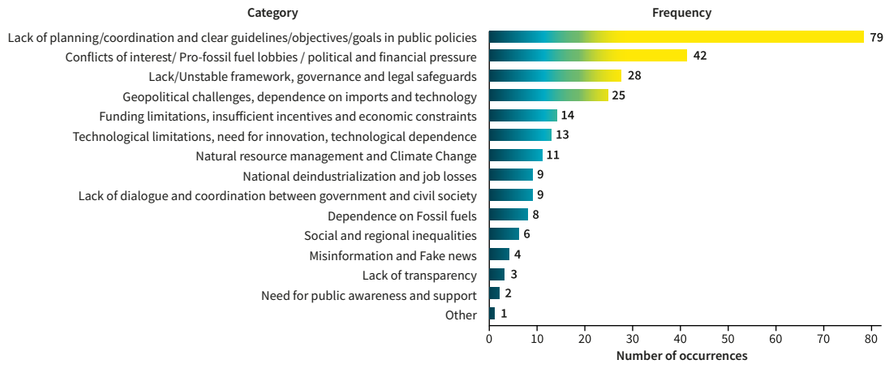
Working papers: Using a form or other available tools can help obtain these contributions. The main stakeholders identified while developing the overview of the audit subject are good indicators of who should be consulted at this stage.

Recommendation: The team should ensure a high response rate on the form to obtain a more accurate representation of opinions. This may require contacting the most relevant participants in advance.

Responses should be grouped by category to facilitate analysis. If the number of responses is large, it may be useful to use an artificial intelligence system.

Example: In the audit conducted by TCU, the questionnaire was sent to 29 institutions. In total 18 responded, providing 254 contributions on threats or weaknesses related to energy transition. The results were organized into 15 distinct categories (see Figure 1).

Figure 1: Example of results raised for weaknesses or threats by Category



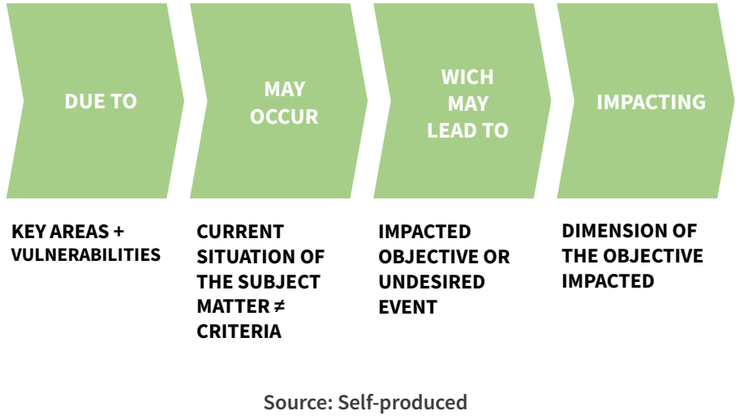
Source: Self-produced

After integrating external contributions into the initial SWOT Matrix, the team finalizes the analysis and obtains key elements for the next step: **building the risk inventory**.

Risk inventory

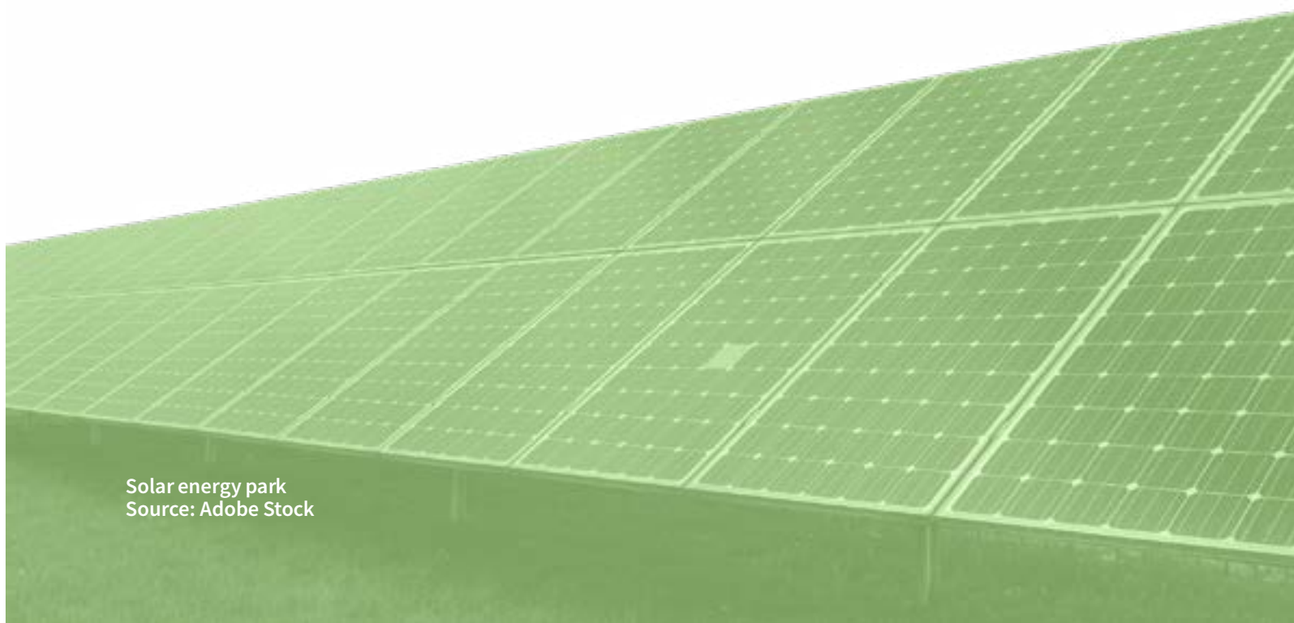
The next step in defining the audit scope is to develop a risk inventory using the finalized SWOT Matrix and other information collected so far. It is recommended to follow the structure outlined below, which provides a clear description of the risks (see Figure 2).

Figure 2: Structure for describing risks



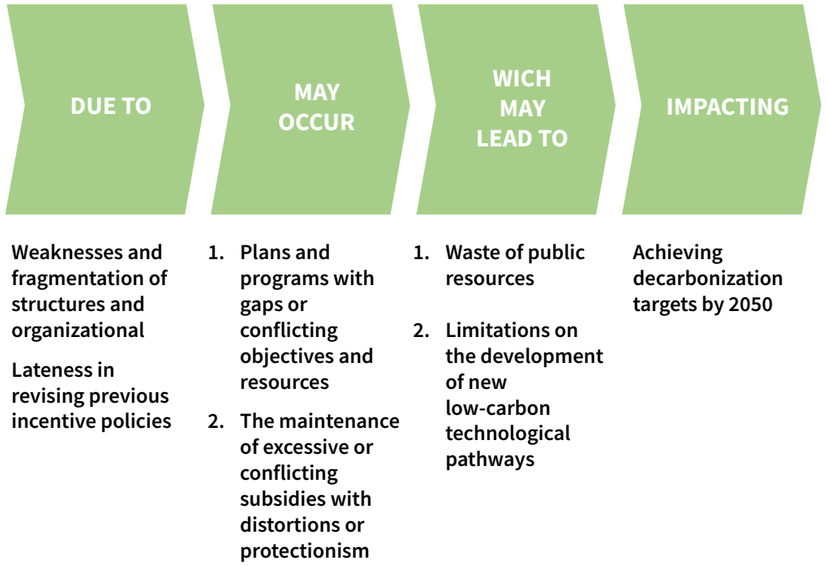
Source: Self-produced

This process identifies the **key areas** and **vulnerabilities** that could hinder or prevent the project from functioning, thus affecting the achievement of its objectives. These key areas may include **people, processes, products, and technologies**. Together, the key areas and their vulnerabilities define the causes of risks (see Figure 3).



Solar energy park
Source: Adobe Stock

Figure 3: Risks identified in the Brazilian audit



Source: Self-produced

Working papers: To access the models for the Audit Canvas, Expert Consultation Form, SWOT Matrix, and Risk Inventory, visit the TCU´s page dedicated to Energy Transition.

Scope Selection

This next phase is essential for the audit´s progress, as it transforms the risk inventory analysis into a defined **scope plan**. The effectiveness of the subsequent steps depends directly on the proper execution of the previous steps, which provide the necessary knowledge for each local context.

Recommendation: Use the approach suggested in this guide to be applied directly or adapted to the reality identified in earlier steps, according to the judgment and experience of the audit team.

By applying the previous steps, the team is expected to identify the risks related to energy transition. However, the number of risks may vary significantly between countries. In the TCU audit, **29 different risks** were identified. Given the number of risks, the team opted for a broad-scope approach, focusing on structural aspects rather than deep-diving into each specific risk in depth.

The mapped risks were grouped into **4 main Axes**:

1. Governance
2. Just and Inclusive Transition
3. Financing
4. Energy Transition Areas

In the Audit Execution section, each axis will be examined in detail. General aspects related to good public policy formulation and implementation will be analyzed, following best practices in public management.

The questions and analyses proposed below can be adapted to other Axes, considering the results of the Risk Inventory.

Explanation: The “Energy Transition Areas” Axis was established to include the analysis of various policy issues related to the energy transition agenda. These topics are part of the energy transition, but they do not define it entirely on their own. The audit conducted in Brazil identified **11 distinct topics, which are not exhaustive**. In this axis, the approach will be applied separately to each of them. If multiple government policies or actions are identified for the same topic, the approach should be applied to each of them individually.

The list of energy transition topics may vary and can include additional subjects depending on the specific context.

Recommendation: After selecting the topics, it may be challenging to identify the policies and government actions associated with each of them, due to information being scattered or responsibilities not clearly defined. To address this, additional procedures may be necessary, such as:

- Conducting interviews with managers.
- Formal requests for agencies or entities to provide information on policies or actions related to the selected topics.

Audit questions

Once the risk analysis is completed and the scope is defined, the next step is to formulate the **audit questions.** They are the main output of the planning phase and guide the entire work, translating the audit objective into clear, investigative questions.

To achieve the audit's objective – **to evaluate the maturity level of public policies and government initiatives for the energy transition toward a low-carbon economy** - and considering the four defined Axes, the following audit questions were formulated:

1. How prepared are the public **governance structures** to implement the energy transition?
2. Are government actions directed towards promoting a **just and inclusive** energy transition?
3. Are the **financing** resources available or planned by the Federal Government sufficient to meet the investment needs of the energy transition?
4. How advanced are the government´s actions in the following **areas related to the energy transition agenda?**

Topics of the Energy Transition agenda assessed in Brazil:

- ↘ Renewables in the Power Sector
- ↘ New Technologies in the Power Sector
- ↘ Energy Efficiency
- ↘ Carbon Capture, Use, and Storage
- ↘ Critical Minerals
- ↘ Low-emission Hydrogen
- ↘ Electric Mobility
- ↘ Biofuels
- ↘ Carbon Pricing
- ↘ Natural gas in the Energy Mix
- ↘ Nuclear Power

Highlight: It is important to note that the scope selection, especially the number of thematic areas defined (Axis 4) and their associated public policies and/or government actions, will directly impact on the resources required for the proper execution of the audit procedures.

AUDIT EXECUTION

This section details the approach applied to addressing the audit questions across the four selected Axes:

1. Governance
2. Just and Inclusive Transition
3. Financing
4. Energy Transition Areas

In this step, the team gathers and organizes information and evidence, following the suggested tables and tools to enable a **consistent analysis of each axis**. To achieve this, each axis is subdivided into smaller components, which are analyzed in detail. SAIs should individually define the most appropriate procedures for this collection and verification

Explanation: For Axis 4 of "Energy Transition Areas," the components should be analyzed separately for each public policy or government action identified within each area. For example, if the "carbon market" area is selected and the audit team identified three distinct policies or actions, the recommended components should be analyzed for each policy.

1. GOVERNANCE

The Governance Axis (G) will be analyzed based on the following components:

G1	Legal and regulatory framework
G2	Government structure
G3	Planning
G4	Risk management
G5	Coordination
G6	Monitoring and transparency

Experts' Contributions

Coordinating across different levels of government is crucial for aligning public policies and preventing fragmentation and inefficiencies that could compromise their implementation. By monitoring policy developments and auditing the effectiveness of these actions, SAIs can recommend new approaches to ensure that public policies remain consistent and sustainable over the long term. This also involves promoting the development of policies that go beyond short-term cycles and respond to the technological and social changes brought about by the energy transition.

"The energy transition requires solid governance, capable of connecting different levels of government and guiding public policies that are not limited by short-term cycles, but that look to the future, focusing on sustainability."

Electric Sector Study Group - GESEL

G1 – Legal and regulatory framework

This section addresses the set of laws and regulations governing the transition to renewable and sustainable energy sources. It includes sector-specific standards, such as those for energy, transportation, and industry, as well as documents and strategies that guide the implementation and management of the energy transition at both the national level and within specific sectors.

REQUIRED INFORMATION	EXPECTED OUTCOMES
Regulatory framework (e.g., laws, decrees, official regulations, binding national strategies) regarding Energy Transition (ET). **Regulatory framework** for main sector policies related to ET. **National planning instruments** and the key sectoral plans related to ET.	Verify if there is a regulatory framework for ET and for the main sectoral policies. Evaluate the alignment between regulations and planning instruments.

The audit team should verify whether there are legal, secondary (subordinate) legislation and regulatory instruments in place that support the energy transition and ensure their alignment with the country's key planning documents. A clear and solid regulatory framework is essential to ensure coordinated and effective government actions.

Highlight: In cases where there are no regulatory instruments for the Energy Transition (resulting in a '0' score), the audit should shift focus: instead of assessing the non-existent regulatory framework, concentrate on a problem-oriented analysis, particularly in areas such as environmental management, investment security, and project feasibility, identifying and reporting the risks and impacts arising from this legal gap.

G2 – Government structure

It is the structure that organizes the institutions responsible for managing and implementing energy transition policies, with clearly defined responsibilities among public organizations. Ideally, a dedicated body should lead, coordinate, and mobilize other government agencies to ensure a cohesive and effective approach.

REQUIRED INFORMATION	EXPECTED OUTCOMES
Government structure to address energy transition (ET) issues. **Responsibilities** for formulation and implementation of energy transition actions clearly defined among public organizations. **Government body** with **leadership, direction, coordination** responsibilities, and authority to mobilize other government bodies.	Verify whether there are a governmental structure and clarity in the definition of responsibilities for the formulation and implementation of energy transition actions.

For energy transition actions to be effectively implemented, the roles and responsibilities of the bodies involved must be clearly defined. It is also crucial to have a dedicated body responsible for coordination, particularly given the involvement of multiple sectors. The audit team should assess whether these requirements are met.

G3 – Planning

It is essential to assess the planning efforts of a country or region aimed at transitioning to more sustainable energy sources over time. This process involves analyzing trends, consulting experts, and setting goals and actions to be carried out over the years.

REQUIRED INFORMATION	EXPECTED OUTCOMES
Long-term strategy for the energy transition and the methodology used to develop it. Nationally Determined Contribution (**NDC**) under the Paris Agreement (**if applicable**). Planning instruments. Actions related to **SDG 7** (if applicable) (Ensure reliable, sustainable, modern, and affordable access to energy for all).	Verify if the cost-effectiveness of governmental actions was assessed, including analysis of alternative interventions. Identify whether a long-term strategy for the energy transition is in place. Verify the alignment of this strategy and planning instruments with NDC and SDG 7 goals.

The audit team should verify whether there is a long-term energy transition strategy in place and analyze the methodology used to define it - its absence indicates an opportunity for improvement. Additionally, it is important to check the alignment of this strategy with the NDC targets and SDG 7, if applicable.

Exemple: Some questions can guide the analysis of the long-term strategy:

- Was the strategy based on evidence?
- Were alternative approaches considered?
- Are there cost-effectiveness estimates?

G4 – Risk management

Effective risk management is crucial for a successful energy transition. It involves identifying and analyzing potential challenges using data and studies. This includes not only operational and project-level risks but also strategic, fiscal and macroeconomic risks, particularly for economies dependent on fossil fuel revenues.

It's essential to verify if the country's key planning tools and sector policies account for risks that could derail the transition to a more sustainable energy system and outline actions for addressing or mitigating these risks.

REQUIRED INFORMATION	EXPECTED OUTCOMES
Risk mapping for the energy transition. **Evidence** used to identify these risks. Key **planning** tools and sector policies related to the energy transition.	Verify if there is evidence-based risk assessment for the energy transition and whether these risks have been incorporated into the key planning instruments and sector policies related to the transition.

The absence of evidence-based risk mapping for the energy transition presents an opportunity for improvement. It is also crucial to verify whether sector plans and policies consider these risks or propose actions for their mitigation.

Tip: The analysis of fiscal risks under the Governance Axis (G4) should be aligned with the investment needs and funding sources in the Financing Axis (F1). Auditors should, therefore, ensure the consistency of these analyses.

G5 – Coordination

Achieving a successful energy transition requires mechanisms that foster collaboration across public agencies. This includes facilitating both horizontal and vertical coordination to align federal, state, and municipal government actions with the implementation of energy transition policies.

Risk management
Source: Adobe Stock

REQUIRED INFORMATION	EXPECTED OUTCOMES
Institutional mechanisms for **horizontal coordination** among relevant governmental bodies involved in the energy transition. Institutional arrangements for **vertical coordination** (intergovernmental).	Verify if there are institutional mechanisms that enable both horizontal and vertical coordination of energy transition actions.

Horizontal coordination occurs within the same governmental level, while vertical coordination involves different levels of government (federal, state, municipal).

G6 - Monitoring and transparency

Monitoring mechanisms tracks the progress of energy transition actions, assessing their efficiency, effectiveness, and impact. The data collected helps to verify whether goals are being met. In parallel, transparency mechanisms allow the public to access and follow information about these actions and outcomes, ensuring greater clarity and public engagement.

REQUIRED INFORMATION	EXPECTED OUTCOMES
Existing **monitoring mechanisms**. Monitoring **data**. **Transparency** mechanisms that enable the public to track energy transition actions.	Verify if there are reliable monitoring and transparency mechanisms that allow the public to track energy transition actions.

Indicators for energy transition progress should be defined, with responsibility for their measurement and updating established by laws, regulations, or guidelines. There should also be mechanisms for sharing this information with the public through easily accessible channels.

Experts' Contributions

Ensuring Data Reliability and Quality

High-quality, reliable, and timely data are essential for auditing the energy transition. To strengthen audit findings, SAIs should assess whether the national information system provides trustworthy data, rather than taking reported figures at face value.

How to apply this approach:

- Review the design and governance of the national energy statistics system.
- Check institutional arrangements, including mandates and coordination among entities responsible for data collection.
- Verify that the legal framework allows comprehensive data collection across the economy.
- Assess whether resources and funding are sufficient for timely and accurate reporting.
- Focus on the reliability, completeness, and timeliness of data used in the audit.

Key Resource:

- IEA's Designing an Energy Statistics Roadmap – provides guidance on establishing robust energy information systems.

Auditing the data system helps ensure that the information underpinning policy assessments is solid, which strengthens the credibility and robustness of audit findings while supporting evidence-based decision-making.

International Energy Agency – IEA

2. JUST AND INCLUSIVE TRANSITION

The just and inclusive transition Axis (J) will be analyzed through the following components:

J1	Inclusion
J2	Tackling energy poverty
J3	Socio-economic development

Experts' Contributions

Social justice must be a central aspect at all stages of the energy transition, from planning to implementation. A fair transition cannot be treated merely as an afterthought but as a cross-cutting goal in all identified actions. To achieve this, it is essential to first recognize and map the main inequalities operating within the energy system to plan an energy transition that leaves no one behind and is premised on eradicating poverty and energy exclusion, considering access, cost, and quality dimensions.

Additionally, energy transition planning should aim to distribute costs and impacts fairly, ensuring that those already disadvantaged are not further penalized. For the identified impacts, it is crucial to develop appropriate and fair restorative and compensatory measures. Finally, inclusion must go beyond symbolism: it must be procedural, with these populations being heard and having real influence in decision-making.

"Social justice is a fundamental principle of the energy transition, ensuring that vulnerable communities have meaningful participation in all stages of public policy. The success of these policies depends on how these voices are truly incorporated into the decision-making process."

Tip: To analyze this component, the team can consider the following sub-questions:

- Do the policies ensure universal access to energy and address energy poverty?
- Are they aligned with sustainable development principles and the Sustainable Development Goals (SDGs)?
- Were the affected parties included in the process, respecting the International Labour Organization's Convention No. 169 and the right to free, prior, and informed consultation?
- Do they access the socio-environmental and socioeconomic impacts?
- Do they provide fair compensatory and restorative measures?

Brazil Climate Center - CBC

J1 – Inclusion

Ensuring a just energy transition requires identifying the most vulnerable groups and actively involving them in decision-making processes when developing and implementing strategies and policies. It is equally important to adopt measures that guarantee equitable benefits for all groups while minimizing any negative impacts, thus promoting justice and inclusion at every stage.

In this regard, when assessing inclusion, auditors should look beyond the formal participation of vulnerable groups in the decision-making process and check whether there are concrete support programs that ensure real access to clean energy.

These programs can take various forms, such as subsidized loans for the purchase of more energy-efficient appliances, installation of solar panels on the rooftops of low-income communities, or other financial instruments designed to mitigate the upfront costs of adopting cleaner energy.

REQUIRED INFORMATION	EXPECTED OUTCOMES
Actions aimed at identifying **vulnerable groups**. Mechanisms for **including affected communities and vulnerable populations** in decision-making processes during the design and implementation of strategies, policies, and plans. Mechanisms that incorporate an **equitable perspective**, including measures to mitigate harm and ensure fair benefits for vulnerable groups.	Evaluate if vulnerable groups affected by the energy transition have been identified and if they are involved in the decision-making process; Indicate whether the strategies, policies, and plans related to the energy transition incorporate equitable measures and concrete mechanisms that help vulnerable groups bear the costs of adopting cleaner energy.

The first step is to check whether there are actions in place to identify vulnerable groups – the absence of such actions represents an improvement opportunity to be highlighted in the audit. Next, it is important to verify whether mechanisms exist to ensure the participation of these groups in decision-making processes regarding strategies, plans, and actions related to the energy transition. It is also necessary to assess whether measures and programs have been implemented to mitigate negative impacts and provide equitable benefits, including initiatives that reduce the upfront costs of adopting cleaner energy. Sectoral plans and long-term strategies are excellent sources of information for this analysis.

Experts' Contributions

A Data-Driven Approach to Inclusion and Affordability

Data-driven analysis allows auditors to verify whether energy transition policies effectively protect vulnerable populations and maintain affordability. To improve the assessment of fairness and inclusiveness, complement the Guide's qualitative review with quantitative data.

How to Apply This Approach:

- Analyze household income and expenditure data to calculate the energy burden (percentage of income spent on energy).
- Assess how this burden is distributed across income segments and regions.
- Evaluate whether energy transition policies alleviate or exacerbate energy poverty among the most vulnerable groups.

Key Resources:

- IEA's Strategies for Affordable and Fair Clean Energy Transitions – provides insights and methodologies for assessing social and economic impacts.

Auditing inclusion and affordability with quantitative metrics strengthens the objectivity and credibility of findings, supports evidence-based conclusions for policymakers and the public, and allows SAIs to move from policy verification to performance evaluation.

International Energy Agency – IEA

J2 – Tackling energy poverty

It is crucial to ensure that vulnerable communities have access to clean electricity and sustainable fuels. Mechanisms must be established to provide affordable clean energy that these groups can use in their everyday lives. These actions are key to improving quality of life and effectively combating energy poverty, in alignment with SDG 7.

In addition to verifying direct access and pricing mechanisms, the audit team should also examine enabling policies that make clean energy more affordable. This includes assessing whether the government has implemented measures to lower the cost of key technologies, for example, by offering incentives for local manufacturing of components such as solar panels or by reducing or exempting these technologies from import tariffs and duties.

REQUIRED INFORMATION	EXPECTED OUTCOMES
Actions promoting access to **clean electricity**. Actions promoting access to **clean fuels** for the most vulnerable communities. Mechanisms ensuring **affordable access** to clean energy for cooking, heating, and lighting (e.g., cooking gas).	Verify that clean energy policies and development plans include actions promoting access to clean electricity and clean fuels for vulnerable communities; Identify whether there are legal and regulatory mechanisms that ensure affordable energy prices, aiming to guarantee access and use by the most vulnerable communities.

The audit team should examine whether sectoral plans and programs include specific actions for this purpose.

J3 – Socioeconomic development

It is important to have policies and plans that promote the socioeconomic development of workers and communities, including specific strategies to generate jobs and income, such as promoting the development of new clean energy industrial sectors or implementing targeted workforce training programs.

These policies should include guidelines that are aimed at reducing social and regional inequalities, ensuring that all areas benefit from economic growth and available opportunities.

REQUIRED INFORMATION	EXPECTED OUTCOMES
Policies and plans addressing the **socioeconomic development of regions, workers, and communities**. Policies and plans that include **employment and income generation strategies**. Guidelines focused on **reducing regional inequalities**.	Verify if policies and plans address the socioeconomic development of regions, workers, and communities reliant on fossil fuels; Highlight whether policies and plans related to new technologies development and energy sources include strategies for generating employment and income; Verify if policies related to energy transition actions contain guidelines aimed at reducing regional and social inequalities.

Highlight: Socioeconomic development is one of the key objectives of the energy transition, as it promotes social well-being. The audit team should ensure that plans, policies, and strategies set clear goals for generating income, increasing and maintaining jobs, and reducing both regional and social inequalities.

3. FINANCING

The Financing Axis (F) can be analyzed based on three components:

F1	Investment needs assessment
F2	Follow-up
F3	Transparency

Experts' Contributions

Subsidies should address market failures, not regulatory failures. For this to happen, it is essential to improve the regulatory framework, allowing investments to flow without excessive reliance on subsidies. By auditing and recommending corrections to regulatory policies, SAIs help reduce investment risks, promoting a stable and transparent environment that attracts private capital. Furthermore, the integrated use of environmental economy instruments -such as regulation, taxes, and market mechanisms- should ensure the efficient allocation of public and private resources, while meeting environmental, social, and economic criteria.

"The challenge of the energy transition goes beyond technical and financial issues; it requires an efficient regulatory framework. Before thinking about subsidies, it is crucial that this framework is effective in attracting investments and developing a green and sustainable economy, leveraging the natural resources and strengths of each country."

E+ Institute for Energy Transition

F1 – Investment needs assessment

The government must map out investment needs across different areas and identify key funding sources to ensure an effective energy transition. These resources may come from public, private, national, or international sources.

REQUIRED INFORMATION	EXPECTED OUTCOMES
Mapping of **investment needs for the energy transition**. Mapping of **key funding sources** necessary for ET.	Verify whether the government has quantified the investment needs and mapped the main sources of funding required to achieve the energy transition goals.

Tip: Budget laws and sectoral strategic plans are valuable sources of information for analyzing this component.

F2 – Follow-Up

The government should have tools to monitor existing funding systems. This helps to identify opportunities for improvement, update trading methods and identify areas where investments are lacking.

REQUIRED INFORMATION	EXPECTED OUTCOMES
Government **monitoring mechanisms** for financing.	Identify whether the government monitors the financing system for energy transition spending.

Tip:Government budget monitoring systems are valuable tools to assess the oversight of public financing for the energy transition.

F3 – Transparency

Transparency in spending related to energy transition financing ensures that society can track where resources are coming from and how much is being invested, thus strengthening social oversight over government actions.

REQUIRED INFORMATION	EXPECTED OUTCOMES
Transparency mechanisms for ET funding.	Assess whether the government has transparency mechanisms in place regarding energy transition financing.

Highlight: The audit team may face challenges in gathering information related to government monitoring and transparency of private financing (components F2 and F3). To overcome these difficulties, consulting with specialized entities may be necessary.

Refer to the "**Good practices and lessons learned**" chapter, at the end of this guide, for relevant insights from TCU's experience in analyzing energy transition financing.

4. ENERGY TRANSITION AREAS

For the Energy Transition Areas Axis (T), it is proposed to organize the analysis into four key components:

T1	Government Agenda development
T2	Institutionalization
T3	Implementation
T4	Assessment and transparency

It is worth noting that each area may encompass more than one associated policy. In such cases, it is recommended to carry out an analysis using the four components **separately for each policy**.

Example: When examining the theme "Renewable Energy," if we identify policies for Solar Energy (SE) and Wind Energy (WE), we will assess four components for Solar Energy ($T1_{(SE)}$, $T2_{(SE)}$, $T3_{(SE)}$ and $T4_{(SE)}$) and four for Wind Energy ($T1_{(WE)}$, $T2_{(WE)}$, $T3_{(WE)}$ and $T4_{(WE)}$).

The section "Analysis and outcomes presentation" will provide concrete examples of how to implement these components across various government policies or actions within the same theme. Additionally, it offers a strategy for consolidating outcomes by area, regardless of the number of policies or actions involved.

Experts' Contributions

Emerging technologies, such as electrification, hydrogen, batteries, and pumped hydroelectric plants can accelerate the energy transition. However, continuous monitoring of technological innovations is crucial to ensure that these solutions are adopted sustainably and remain aligned with long-term climate goals. By auditing these technologies, SAIs can assess if the government is conducting adequate analyses, including public consultations and impact studies. They can also help ensure that the adoption of these technologies delivers tangible benefits to society.

"The auditing of emerging technologies is essential to ensure their adoption is sustainable and aligned with long-term commitments. The role of SAIs is to monitor and question the government, ensuring that these innovations bring real benefits to society."

Electric Sector Study Group - GESEL

T1 – Government Agenda development

This component focuses on identifying priority issues in political discussions and how they are selected and prioritized by governments. It involves understanding which topics resonate with the public and policymakers, influenced by factors like public opinion and media influence.

REQUIRED INFORMATION	EXPECTED OUTCOMES
Public policy agenda and its **development process.**	Identify whether the issue is a government priority and is currently under discussion. Assess the level of public participation in formulating and selecting government actions.

To evaluate this component, it's essential to analyze the government agenda related to the policy and how it was established. Sources like multiannual budget plans, management strategies, and consultations with central and sectoral bodies can be useful. It is essential to ensure that public participation is a key part of the agenda-setting process.

T2 – Institutionalization

Public policy is institutionalized when legal or regulatory documents are created to formalize it and define how it should be implemented. It's also important that clear objectives and goals are defined, as well as indicators to track progress. This helps ensure that the policy is well implemented, and that its results can be measured and adjusted.

REQUIRED INFORMATION	EXPECTED OUTCOMES
Normative instruments that officialize public policy. **Objectives and goals** established for the policy with their respective **monitoring indicators**.	Confirm that the public policy is established through a normative instrument. Verify that the objectives are specific, measurable, achievable, realistic, and timely (SMART) for implementation and expected outcomes. Identify whether clear targets have been set for each indicator

Exemple: To guide the analysis of this component, the audit team may consider the following questions:

- Is the policy formalized through a normative instrument?
- Are the objectives and goals clearly defined?
- Are the goals realistic?
- Are the objectives supported by evidence or a clear framework?
- Are indicators established for each goal?

Experts' Contributions

The energy transition depends on the ongoing development of technologies for generating and using renewable resources, as well as the electrification of transport and industries. Biomass, already used as an energy source, can replace fossil inputs in chemical and metallurgical industries, opening new pathways for carbon management and sequestration. It is essential that SAIs audit public policies affecting these production chains to ensure coherent incentives, avoiding disruptions and discontinuity in investments. This helps promote economic growth, job creation, and the competitiveness of economies.

"The energy transition is a process of creative destruction with great benefits for society. However, its success depends on an environment conducive to innovation and the expansion of new solutions, and SAIs must ensure that public policies facilitate this process."

E+ Institute for Energy Transition

T3 – Implementation

Successful policy implementation requires a clear definition of responsibilities for execution and an associated risks map. Reports demonstrating how the policy is being implemented are essential for ensuring alignment with intended outcomes and facilitating necessary adjustments.

INFORMAÇÕES NECESSÁRIAS	RESULTADO ESPERADO DA ANÁLISE
Responsibilities and risks related to implementation. Data on policy application **(implementation reports)**. Results from **effectiveness evaluations**.	Identify whether implementation responsibilities are well defined. Identify and address key risks to implementation. Assess whether short-term goals and objectives are being met (effectiveness).

The audit team should verify whether responsibilities for implementation are clearly defined, preferably in regulatory acts, and whether the main risks that could compromise the process have been identified, along with proposals to address or mitigate the most significant ones. This definition also includes establishing roles and obligations for private sector actors involved in delivering the policy. Additionally, verify whether the policy's short-term objectives are being achieved

Experts' Contributions

Technological innovations have the potential to make energy transition more accessible and inclusive, but their positive impact depends on how they are implemented. It is essential to ensure that access to renewable technologies -such as solar energy and hybrid battery systems- is guaranteed for vulnerable communities. To avoid increasing inequalities, SAIs and other stakeholders must closely monitor the adoption of these technologies, ensuring they are distributed fairly and adapted to local needs.

"Although technological innovations are powerful tools for the transition, unequal access continues to place the poorest groups at disadvantage. Continuously monitoring the impact of these public policies on the most vulnerable communities is essential to ensure that they effectively reach these groups, promoting a fair distribution of the benefits and costs of the transition."

Brazil Climate Center - CBC

T4 – Assessment and transparency

Promoting transparency and effectiveness requires detailed information on the policy's performance, including evaluation reports and monitoring plans that demonstrate operational effectiveness. Public reports allow citizens to engage and assess the impact of implemented actions.

INFORMAÇÕES NECESSÁRIAS	RESULTADO ESPERADO DA ANÁLISE
Data on **policy performance** (performance indicators, evaluation reports, monitoring plans). **Publicizing** policy outcomes.	Verify if clear and measurable performance indicators have been developed for the public policy, and whether they are consistently measured and monitored. Assess whether the policy has produced the desired effects (effectiveness). Ensure performance information is publicly available and accessible to citizens.

The audit team should ensure that the policy undergoes regular evaluation through indicator monitoring and analysis of expected effects. Control groups can be used for assessing if the policy implementation is changing the reality.

Additionally, it is important to make sure that the evaluation outcomes are accessible to the public.

ANALYSIS AND OUTCOMES PRESENTATION

The analysis and outcomes presentation are the final stage of the audit, where the evidence collected is transformed into clear conclusions.

This section details the approach used to analyze, interpret and present the evaluation results. In this context, it is proposed to divide each component into descriptively assessed items.

Scoring Methodology

The evaluation of each component is carried out through the items which are analyzed descriptively. This analysis will result in a **score from 0 to 3 for each item**, according to the maturity scale below.

Assessment score variation

0 – Not implemented – Absence of government action.

1 – Low implementation – Only the initial stages of the public policy cycle have been completed.

2 – Partial implementation – Several stages of the public policy cycle have been completed, but further progress is still needed.

3 – High implementation – Most stages of the public policy cycle have been completed, with room for only minor improvements.

Tip: In the audit report, highlight the main results using the suggested graphs, tables, and charts. Include the detailed evaluation of each item in the report's appendices, especially since the results related to the Energy Transition issues contain a large volume of information.

Highlight: The process of scoring the items of each component involves **significant skepticism and professional judgment (ISSAI 3000[17])**. Therefore, it is essential that this analysis is based on solid evidence, collected during the information-gathering phase, as described in the Audit Execution section of this guide.

17 International Organisation of Supreme Audit Institutions (INTOSAI) (2019). ISSAI 3000 – Performance Audit Standard. Available at: https://www.issai.org/pronouncements/issai-3000-performance-audit-standard/ issai.org+1

Score calculation by Axis

Once the **scores for each item** have been assigned, it is possible to calculate the aggregate value for each **component** and, finally, the **overall score for the axis**.

To interpret the aggregate values, it is necessary to follow a specific classification, since we are dealing with continuous variables. The interpretation suggested in Table 1 below is recommended.

Chart 1: Overall Scores

OVERALL SCORE RANGE	CLASSIFICATION
From 0 to 0.4	Not implemented
From 0.5 to 1.4	Low implementation
From 1.5 to 2.4	Partial implementation
From 2.5 to 3	High implementation

Source: Self-produced

Governance, Just and inclusive transition and Financing (Axes 1, 2, and 3)

To determine the overall score for each component on Axes 1, 2, or 3, calculate the **simple average** of the scores assigned to each item related to that component, rounding to one decimal place.

Finally, obtain the final score for each axis by calculating the average of the scores of all its components.

Refer to Chart 2 below for a **hypothetical assessment** of Axes 1, 2 and 3.

Chart 2: Example assessment for Axes 1, 2 and 3

COMPONENT	ITEM	ASSESSMENT SCORE	Assessment score aggregated by **component**
1	1.1	3	2.5
	1.2	2	
2	2.1	2	2
3	3.1	3	1.7
	3.2	1	
	3.3	1	
AXIS SCORE			2.1

Source: Self-produced

Energy transition areas (Axis 4)

For the Energy Transition areas (Axis 4), it is likely that each area identified will include one or more government policies or actions.

In this case, **each item** must be evaluated separately, for **each policy or government action**.

To aggregate the results and calculate the **final score** for each policy, component, item, and ultimately for the entire area, follow these steps:

1. **Aggregated Score by Item:** Calculate the simple average of the scores assigned to the same item across all related policies and actions. This score provides an overview of the overall performance of a specific item.
2. **Aggregated Score by Component:** Calculate the simple average of all item scores within the same component. This consolidated score reflects the maturity of the component.
3. **Aggregated Score by Policy or Action:** Calculate the simple average of all items scores within a specific policy or action. The aggregated score by Policy or Action serves as the basis for the final calculation of the Area under analysis.

4. **Final Score of the Area:** The final score of the analyzed area is the **simple average of the scores of all policies** or actions obtained in step 3.

The example below illustrates a **hypothetical evaluation for Axis 4**, considering a specific area with three distinct government policies or actions. This chart illustrates how the scores are calculated and aggregated for each **item, component, policy, and the overall area**.

Chart 3: Example assessment for Axis 4

COMPONENT	ITEM	Assessment score of **policy or action A**	Assessment score of **policy or action B**	Assessment score of **policy or action C**	Assessment score aggregated by **item**	Assessment score aggregated by **component**
1	1.1	2	2	3	2.3	2.7
	1.2	3	3	3	3	
2	2.1	2	1	3	2	2
3	3.1	0	1	3	1.3	0.9
	3.2	0	2	0	0.7	
	3.3	1	1	0	0.7	
Assessment score aggregated by **policy or action** **Area score**		1.3	1.7	2	**1.7**	

Source: Self-produced

Highlight: The aggregated scores of items and components are essential tools for in-depth analysis, allowing the identification of strengths and weaknesses in each part of the assessment. However, to **obtain the final score for the area, the calculation is based exclusively on the simple average of the scores of all policies or actions**.

Experts' Contributions

Strengthening Audit Findings with Quantitative Benchmarking

To increase objectivity, complement the Guide's qualitative assessment with quantitative data. Using data-driven benchmarks helps auditors strengthen their findings and provide more convincing conclusions.

How to apply this approach:

- Evaluate progress on key indicators, such as renewable energy deployment, energy efficiency improvements, and emissions reductions.
- Benchmark national progress against internationally recognized targets, for example, the IEA Net Zero Emissions (NZE) by 2050 scenario.

Key Resources:

- IEA's Tracking Clean Energy Progress – provides annual, data-driven assessments of technologies and sectors.
- Energy Efficiency Policy Level index – offers a framework to benchmark specific policies against NZE requirements.

Auditing with quantitative benchmarks enhances the objectivity and credibility of findings, supports evidence-based conclusions for policymakers and the public, and offers an advanced practice option without adding complexity for auditors new to energy transition audits.

International Energy Agency – IEA

Analysis by Axis

The following step describes the **proposed analysis items for each axis**. This guide offers a practical approach to assessing the energy transition in a transversal manner, and the proposed items can be adapted as needed.

Highlight: During the audit execution, it may be identified that an item or an entire component is not relevant to the context of a particular country or due to unforeseen circumstances, they no longer fit into the audit planning. In such cases, it is the responsibility of the audit team to make the necessary adjustments.

1. Governance

In this Axis, the audit aims to ensure that government commitments on climate are translated into **concrete actions** related to energy transition and in line with international best practices, promoting the **transparency and accountability** needed to meet global challenges (see Chart 4).

Chart 4: Governance

COMPONENT	ITEM
G1. Legal and regulatory framework	G1.1 **Existence of legal framework** There is a legal framework (including laws, decrees, official regulations, binding national strategies) for the Energy Transition (ET).
	G1.2 **Existence of a sectoral legal framework** There is a legal framework for the main sectoral policies that involve ET.
	G1.3 **Integration** ET legislation provides for the integration of sectoral policies and government planning instruments.
G2. Government structure	G2.1 **Existence of a government structure** A government structure is in place to deal with the ET.
	G2.2 **Well-defined responsibilities** The responsibilities for the formulation and implementation of ET actions are clearly defined among public organizations.
	G2.3 **Leadership** There is a central government body with leadership, clear guidelines, coordination and, authority responsibilities to mobilize other government bodies.
G3. Planning	G3.1 **Cost-Effectiveness** The selection of government actions considered cost-effectiveness and analyzed viable alternatives for intervention.
	G3.2 **Long-term strategy** There is a long-term strategy for the ET.
	G3.3 **Alignment with NDC** The long-term strategy is aligned with NDC.
	G3.4 **Synergies with the SDGs** The planning instruments are aligned with SDG 7 (ensuring reliable, sustainable, modern and affordable access to energy for all).

COMPONENT	ITEM
G4. Risk management	G4.1 **Risk mapping** There is a risk mapping for the ET.
	G4.2 **Evidence of risks** The risk identification is largely evidence-based.
	G4.3 **Risks in key planning instruments and sectoral policies** The planning instruments and the national ET policies incorporate the identified risks
G5. Coordination	G5.1 **Horizontal coordination mechanisms** There are institutional mechanisms (commissions, councils, committees, systems, processes and protocols between sectors, etc.), to allow horizontal coordination among intergovernmental bodies related to ET.
	G5.2 **Dynamics of interaction** Institutional mechanisms of horizontal coordination have a working dynamic that allows regular interaction of members.
	G5.3 **Vertical coordination mechanisms** There are institutional mechanisms (commissions, councils, committees, systems, mechanisms for joint formulation and implementation of policies at all levels of government – federal, state, municipal, etc.) that allow vertical coordination.
G6. Monitoring and transparency	G6.1 **Monitoring** There are monitoring mechanisms in place.
	G6.2 **Regularity** Data is provided, and monitoring is carried out regularly.
	G6.3 **Transparency** There are transparent mechanisms that allow society to monitor actions related to ET in accessible formats and language.

Source: Self-produced

Exploring international experiences (international benchmarking)

UNITED KINGDOM: Risks in the Net Zero Emissions Target

SAI United Kingdom, in its report "Achieving Net Zero," highlighted that the goal of reaching zero emissions by 2050 requires coordinated efforts among government agencies. However, the audit identified a lack of prioritization by some departments and a deficiency in specialized skills, posing significant risks to the success of the strategy. The work of SAIs can monitor these risks to ensure the effective implementation of public policy goals.

INDIA: Energy Governance and Sectoral Audits

India's Supreme Audit Institution conducted key audits in the energy sector, including energy management in railways and the operations of the state energy efficiency agency. These audits highlighted opportunities for improvement in the energy sector governance and underscored the importance of energy efficiency as a critical component of the transition to renewable sources.

SOUTH AFRICA: Governance Challenges in the Energy Sector

SAI South Africa identified critical challenges in the energy sector, including the lack of an approved energy transition plan and limited governance. The audits focused on compliance by independent power producers with regulatory requirements, assessing adherence to minimum regulatory standards. This emphasis on regulatory compliance is vital for strengthening governance in the sector and enabling the transition to renewable energies.

COSTA RICA: Regulatory Fragmentation in the Energy Sector

SAI Costa Rica, in its report "Challenges of the Transition from the Perspective of Public Finances," highlighted that regulatory fragmentation in the Energy Subsector has been an obstacle to effective energy transition. The absence of systemic design and the complexity of the legal framework hinder the implementation of consistent policies. The audit recommends improving regulatory governance to ensure efficient coordination among key players in the energy sector.

COLOMBIA: Scope Selection with a Broader Focus

In the scope selection phase, Colombia's Supreme Audit Institution (CGR) emphasized the need for a broader approach in its report, "Evaluation of the Public Policy on Energy Transition (2012-2022)." Focusing exclusively on greenhouse gas (GHG) mitigation may limit the analysis, reducing the transition to merely a tool for combating climate change. To avoid this, it is essential to include other important dimensions, such as energy security and reliability, which directly impact economic development. This comprehensive approach allows the audit to provide a balanced perspective between environmental goals and economic growth.

2. Just and inclusive transition

SAIs have a key role to play in ensuring that energy transition policies and strategies are aligned with principles of equity and social justice, promoting **reduction of regional and social inequalities**. The items assessed in this axis seek to identify the presence of these aspects in government actions (see. Chart 5).

Chart 5: Just and inclusive transition

COMPONENT	ITEM
J1. Inclusion	J1.1 **Identifying the most vulnerable groups** There are strategies for identifying the groups most vulnerable to the impacts of changes related to Energy Transition (ET).
	J1.2 **Inclusion in decision-making** There are mechanisms to include affected communities and vulnerable populations in the decision-making process on strategies, policies and plans related to ET.
	J1.3 **Equitable Support Mechanisms** Mechanisms are in place that incorporate an equity perspective, with measures and provisions to reduce harm and ensure fair benefits from energy transition solutions.

COMPONENT	ITEM
J2. Tackling energy poverty	J2.1 **Access to clean energy** ET policies and plans include actions that promote access to clean energy to the most vulnerable communities.
	J2.2 **Primary access to clean fuels** ET policies and plans contain actions that promote access to clean fuels for the most vulnerable communities.
	J2.3 **Affordable prices** There are legal or regulatory mechanisms that enable access to clean energy at affordable prices.
J3. Socioeconomic development	J3.1 **Concern for workers and communities dependent on fossil fuels** There are policies and plans that address the socioeconomic development of workers and communities that depend on fossil fuels.
	J3.2 **Employment and income** Policies and development plans for new technologies and energy sources include guidelines and strategies directly aimed at generating employment opportunities and boosting income.
	J3.3 **Reduction of regional inequalities** The policies related to ET actions include guidelines aimed at reducing regional and social inequalities.

Source: Self-produced

Exploring international experiences (international benchmarking)

COLOMBIA: Socioeconomic Impacts of Decreased Coal Exports

In Colombia, the Supreme Audit Institution identified a lack of objectivity in the gradual reduction plan for coal exports in its audit "Evaluation of the Public Policy on Energy Transition (2012-2022)". This policy may generate adverse socioeconomic effects on communities dependent on coal mining. The audit emphasized the importance of ensuring that the government mitigates these impacts and implements appropriate support mechanisms, ensuring that policies do not harm the most vulnerable populations.

INDONESIA: Assessment of Social Impacts of the Energy Transition

In its audits, SAI Indonesia used the "energy trilemma"—security, equity, and sustainability—to assess the social and economic impacts of transitioning from traditional energy sources. It was observed that the transition could lead to increased electricity costs, negatively impacting vulnerable communities. Additionally, the audit analyzed infrastructure policies for electric vehicles and their impact on low-income populations, seeking to ensure that public policies are designed to protect these communities.

3. Financing

By verifying whether governments correctly identify **investment needs and financing sources** to achieve climate goals, SAIs strengthen public confidence in these resources management. The items listed below aim to respond to this challenge (see Chart 6).

Chart 6: Financing

COMPONENT	ITEM
F1. Investment needs assessment	F1.1 **Assessment needs** The government has identified the investment needs necessary for the objectives of the Energy Transition (ET).
	F1.2 **Resource Identification** The government has identified the financing sources needed to achieve the ET objectives.
F2. Follow-up	F2.1 **Monitoring mechanisms** The government has established monitoring mechanisms with clearly defined responsibilities and the adequate technical capacity to follow up on the ET financing system.
F3. Transparency	F3.1 **Transparency mechanisms** The government has mechanisms to ensure transparency in financing related to ET, including clear requirements for private entities that receive public funds or participate in government programs.

Source: Self-produced

Exploring international experiences (international benchmarking)

GERMANY: Efficiency of Funding Programs

SAI Germany identified that several funding programs related to the energy transition exhibit low efficiency, resulting in high costs without proportional benefits. The audit on “Measures to Implement the Energy Transition by the Federal Ministry of Economic Affairs and Energy” emphasized the importance of consolidating and quantifying government expenditures, assessing whether resources are being used effectively and aligned with expected outcomes to ensure that programs are financially sustainable.

UNITED STATES: Audit of Energy Transition Financing Laws

The U.S. Government Accountability Office (GAO) is auditing three key laws for energy transition financing: the CHIPS Act (or the Semiconductor Production Incentives Act), the Infrastructure Investment and Jobs Act, and the Inflation Reduction Act. These audits focus on evaluating the efficiency and cost-effectiveness of these programs, ensuring that resources are applied effectively to promote carbon reduction and economic sustainability.

COSTA RICA: Renewable Energy Financing

SAI Costa Rica conducted audits of hydropower and wind power projects financed by trust funds, assessing whether the financing options minimize costs and avoid creating “stranded assets”, such as fossil fuel infrastructure that could become obsolete. The audit on the “Challenges of the Energy Transition from the Perspective of Public Finances” reinforced the need to ensure that resources are optimized and that funding decisions align with the objectives of the energy transition.

EUROPEAN UNION: Gaps in National Energy and Climate Plans

The European Court of Auditors (ECA) highlighted that many of the European Union’s National Energy and Climate Plans lack detailed information on investment needs and funding sources, making it difficult to assess their feasibility. Therefore, audits must critically evaluate the quality and comprehensiveness of these plans, ensuring they are well-structured to facilitate the energy transition and achieve climate goals.

4. Energy transition areas

SAIs plays a crucial role in **evaluating public energy transition policies** by verifying their development, the effectiveness of their implementation, and the transparency of their results. In this axis, the assessment items are intended to support this analysis (see Chart 7).

Chart 7: Energy transition areas

COMPONENT	ITEM
T1. Government agenda development	T1.1 **Public agenda** The energy transition policy or action has a clear and formally established public agenda.
	T1.2 **Participatory process** The formulation process of the policy or action included the participation of relevant stakeholders, such as civil society and the private sector.
T2. Institutionalization	T2.1 **Formalization in a normative instrument.** Public policy or action was formalized through a normative instrument (law, decree, regulation, etc.).
	T2.2 **Objectives and targets** The policy or action has clearly defined objectives and outcome targets.
	T2.3 **Measurable objectives** The objectives and targets of the policy or action are measurable, realistic, and have defined timelines and deadlines.
T3. Implementation	T3.1 **Definition of responsibilities** There is a clear definition of implementation responsibilities
	T3.2 **Risk management** The main risks associated with the implementation of the policy or action have been identified and appropriately managed.
	T3.3 **Short-term results** The expected results and short-term objectives of the policy or action are being effectively achieved.
T4. Assessment and transparency	T4.1 **Performance indicators** Clear and measurable performance indicators have been developed for policy or action, and they are consistently measured and monitored.
	T4.2 **Impact assessment** The expected effect or impact of the policy or action has been consistently assessed and verified.
	T4.3 **Transparency and accessibility** Information on the performance of the policy or action is publicly accessible and disclosed in formats and language that facilitate understanding.

Source: Self-produced

Exploring international experiences (international benchmarking)

EUROPEAN UNION: Review of Climate and Energy Targets

The European Court of Auditors (ECA) adopted a forward-looking approach in auditing the EU's climate and energy targets. Through modeling and projections, the report "EU Climate and Energy Targets" assessed whether current policies are sufficient to achieve the 2030 objectives. This prospective method goes beyond traditional audits, focusing on future commitments and providing a model for other SAIs that wish to monitor long-term targets.

INDONESIA: Evaluation of Energy Policy

SAI Indonesia is auditing the national energy transition plan, which aims to gradually replace fossil fuels with renewable sources. The "Performance Audit Summary of the Energy Transition" evaluates the security and sustainability of energy access, using both quantitative data and energy projections, along with big data analysis to forecast the impact of policies. The focus includes reviewing the efficiency of the energy mix and the governance readiness to support a long-term transition.

To assess the experiences of other SAIs on energy transition, refer to the International Benchmarking, which provides a detailed comparative overview of the practices and outcomes of audits conducted by various institutions around the world. Access the results here: https://sites.tcu.gov.br/recursos/transicao-energetica/media/Benchmarking_Energy_Transition_English.pdf

Click or scan it

Outcomes presentation

The audit team developed an approach focused on clarity and accessibility of the results. Throughout the process, best practices were analyzed to ensure that the information could be easily understood.

Tables, charts and graphs were chosen as the main forms of presentation, allowing data to be visualized intuitively. The use of color-coded scores in the tables also facilitates performance visualization and simplifies results interpretation, ensuring that the audit conclusions are communicated clearly and accessibly.

Tip: By using conditional formatting in a spreadsheet, it is possible to assign colors to scores represented integers. Intermediate colors are then automatically applied to aggregated values. This color representation is important because it provides the reader with a quick and intuitive view of the audit results.

In Chart 8, below, **each score is assigned a color**, according to the classification presented:

Chart 8: Assessment items definition

ITEMS		
SCORE	**IMPLEMENTATION STAGE**	**COLOR**
0	Not implemented	red
1	Low implementation	orange
2	Partial implementation	yellow
3	High implementation	green

Source: Self-produced.

The color-based presentation approach can be applied to any of the evaluated axes, making it easier to understand both the progress and the areas that require greater attention.

Highlight: While the 0-3 scale provides a quantitative overview, a score of '0 – Not implemented' in foundational components, such as - G1 'Legal and regulatory framework' or F1 'Investment needs assessment' - represents more than a numerical value and should be interpreted as a significant audit finding. In such cases, it is recommended to complement the numerical evaluation with a qualitative analysis in the report, explicitly detailing causes, effects, and associated risks. This approach ensures that the audit results go beyond scoring and provides elements that highlight the urgency and importance of corrective actions by the government.

Practical Application

The practical examples presented in this guide consist of fictitious evaluations created to simulate possible scenarios. They were designed to illustrate the suggested approach, making it easier to understand how the evaluation processes were applied.

These simulations do not represent actual audit results but serve as a reference to guide the implementation of evaluative practices in the context of the energy transition.

The following example, related to the **Governance Axis** (see Chart 9), can also be applied to other axes of analysis, such as Just and Inclusive Transition and Financing, providing a clear and structured way of presenting audit results for each of these axes.

Wind farm
Source: Adobe Stock

Governance

Chart 9: Assessment items of the Governance Axis

COMPONENT	ITEM	SCORE	AGGREGATE SCORE BY COMPONENT
G1. Legal and regulatory framework	G1.1 Existence of legal framework	3	2.7
	G1.2 Existence of sectoral legal framework	3	
	G1.3 Integration	2	
G2. Government structure	G2.1 Existence of governmental structure	3	2
	G2.2 Well-defined responsibilities	2	
	G2.3 Leadership	1	
G3. Planning	G3.1 Cost-Effectiveness	0	0.8
	G3.2 Long-term strategy	1	
	G3.3 Alignment with NDC	1	
	G3.4 Synergies with the SDGs	1	

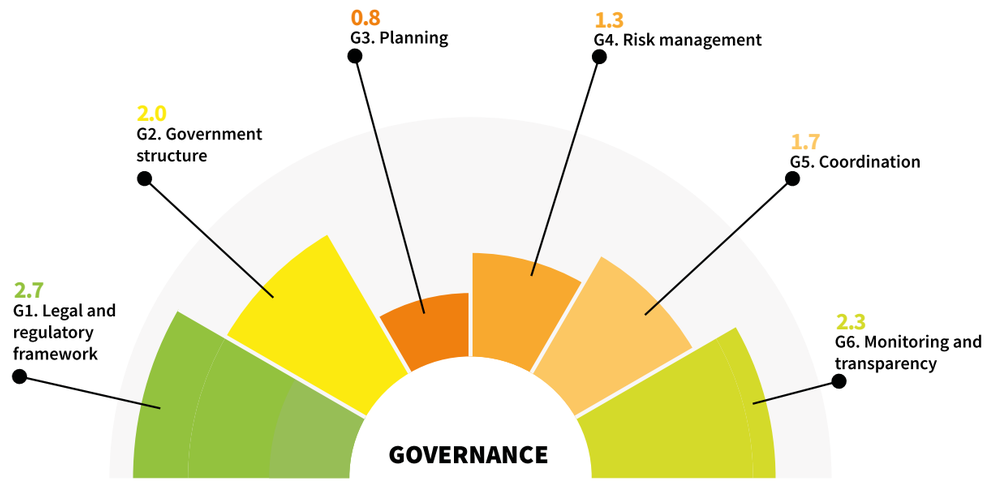
G4. Risk management	G4.1 Risk mapping	2	1.3
	G4.2 Risks evidence	1	
	G4.3 Risks in key planning instruments and sectoral policies	1	
G5. Coordination	G5.1 Horizontal coordination mechanisms	3	1.7
	G5.2 Interaction Dynamics	2	
	G5.3 Vertical coordination mechanisms	0	
G6. Monitoring and transparency	G6.1 Monitoring	3	2.3
	G6.2 Regularity	2	
	G6.3 Transparency	2	
Governance Axis aggregate score			1.8

Source: Self-produced

Tip: Through graphs (see Graph 2), it is possible to quickly visualize aggregate scores, highlighting the most relevant results without overloading the presentation with excessive visual information.

This approach makes it easy to understand the overall performance on the Axis, providing a clear and objective view of the critical aspects.

Graph 2: Components of Governance Axis with scores from previous example



Source: Self-produced

In the Energy Transition thematic areas Axis, we suggest the same approach; however, as already mentioned, the items are scored in each analyzed policy.

Energy Transition Areas

Below is an example of the results from a fictitious assessment on the topic **of renewable energy integration in the Power Sector**, with six distinct government policies or actions linked to it (see Chart 10).

Chart 10: Integration of renewables in the Power Sector

COMPONENT	ITEM	Energy auctions	Microgeneration and Mnigeneration Distributed Systems	Offshore wind power	Incentives for renewable sources	Transmission tariff discount	Import tax	Aggregate by item	Aggregate by component
1. Government Agenda development	1.1 Public agenda	3	3	3	3	3	3	3	2.3
	1.2 Participatory process	1	1	2	1	2	2	1.5	
2. Institutionalization	2.1 Formalization in a normative instrument	3	3	1	3	2	3	2.5	2.1
	2.2 Objectives and targets.	3	2	2	2	2	3	2.3	
	2.3 Measurable objectives	3	2	0	3	1	0	1.5	
3. Implementation	3.1 Definition of responsibilities	3	3	0	3	2	3	2.3	1.9
	3.2 Risk management	3	3	0	0	1	2	1.5	
	3.3 Short-term results	3	2	0	3	1	2	1.8	
4. Assessment and transparency	4.1 Performance indicators.	2	0	0	1	2	1	1	1.1
	4.2 Impact assessment	1	0	0	2	2	0	0.8	
	4.3 Transparency and accessibility	3	2	1	0	0	3	1.5	
AGGREGATE SCORE BY POLICY OR ACTION		2.6	2.1	0.8	2.5	2.1	2.1	2.1	
								AGGREGATE SCORE BY THEMATIC AREA	

CAPTION

From 2.5 to 3 = high implementation

From 1.5 to 2.4 = partial implementation

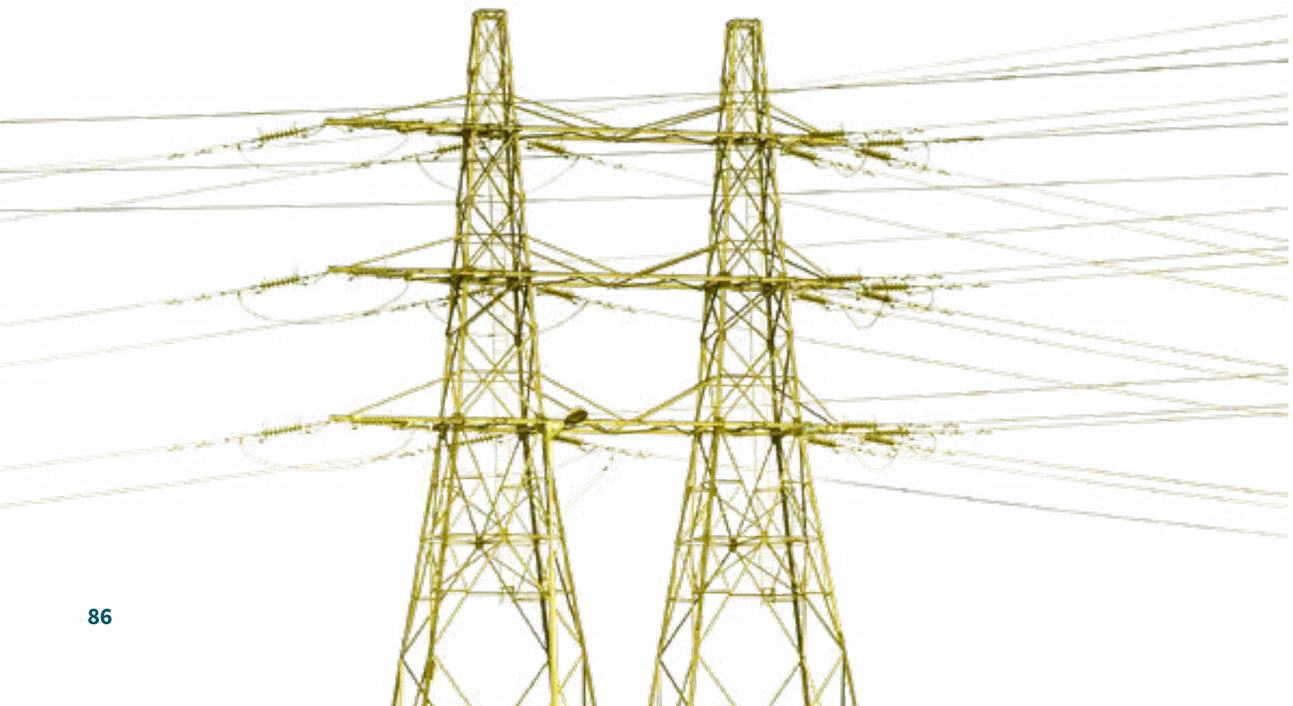
From 0.5 to 1.4 = low implementation

From 0 to 0.4 = not implemented

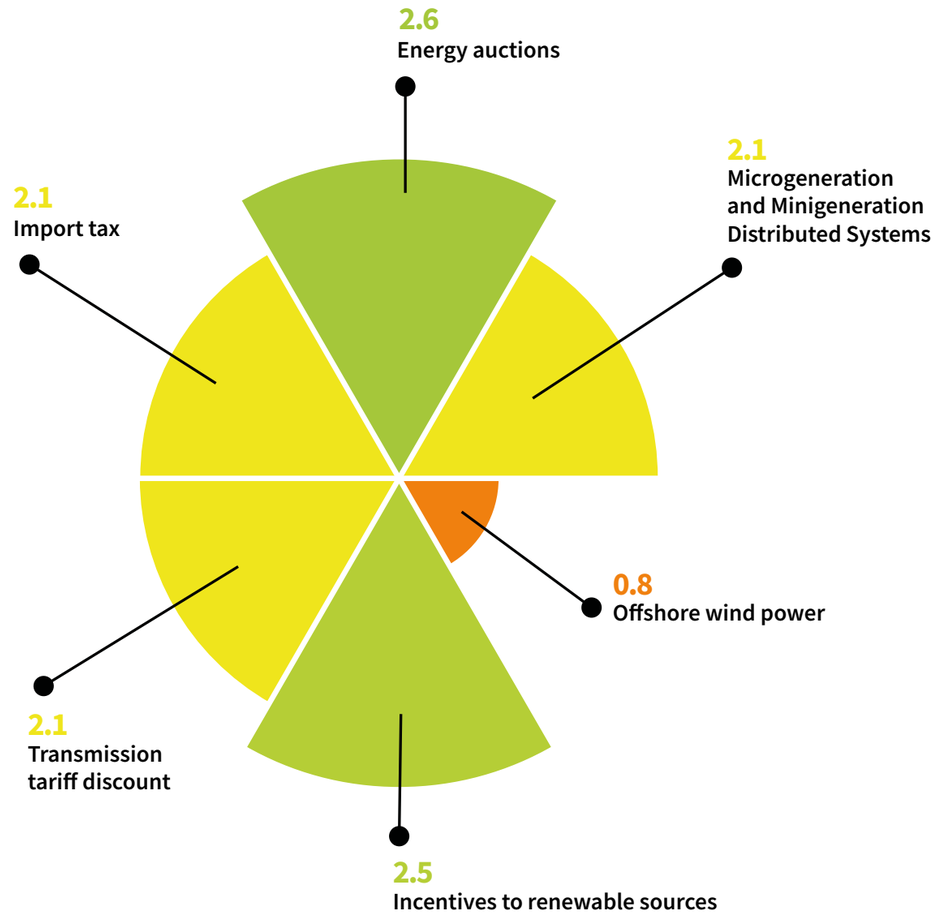
Highlight: In the examples, it is easy to quickly identify which items and components are at more advanced or delayed stages of implementation, as well as to visualize the maturity level of the different areas. For instance, the public agenda-setting process (item 1.1) is fully implemented across all evaluated policies and actions, while the establishment of measurable indicators (item 4.1) and the assessment of policy or action effects (item 4.2) show low implementation and represent areas requiring special attention.

For the Energy Transition areas axis, radar graphs are particularly useful for displaying aggregated values by component and by policy or government action, providing a clear and concise overview of policy performance and facilitating the identification of areas that need greater focus.

The following two graphs (see Graphs 3 and 4) illustrate the example developed for the **renewable energy area**, using the scores from the previous example.



Graph 3: Renewable energy policies



CAPTION

From 2.5 to 3 = high implementation

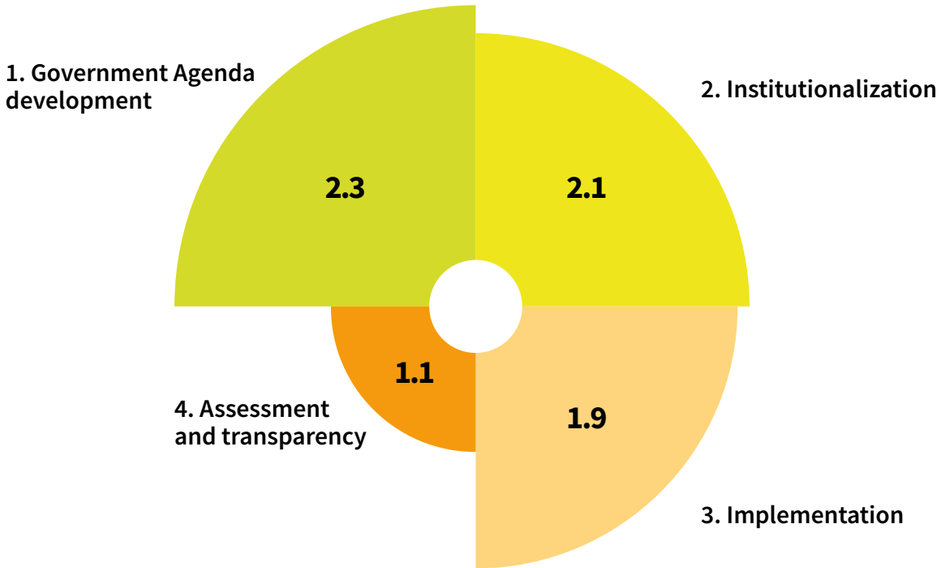
From 1.5 to 2.4 = partial implementation

From 0.5 to 1.4 = low implementation

From 0 to 0.4 = not implemented

Source: Self-produced

Graph 4: Result by Components of the Renewable Energy thematic area

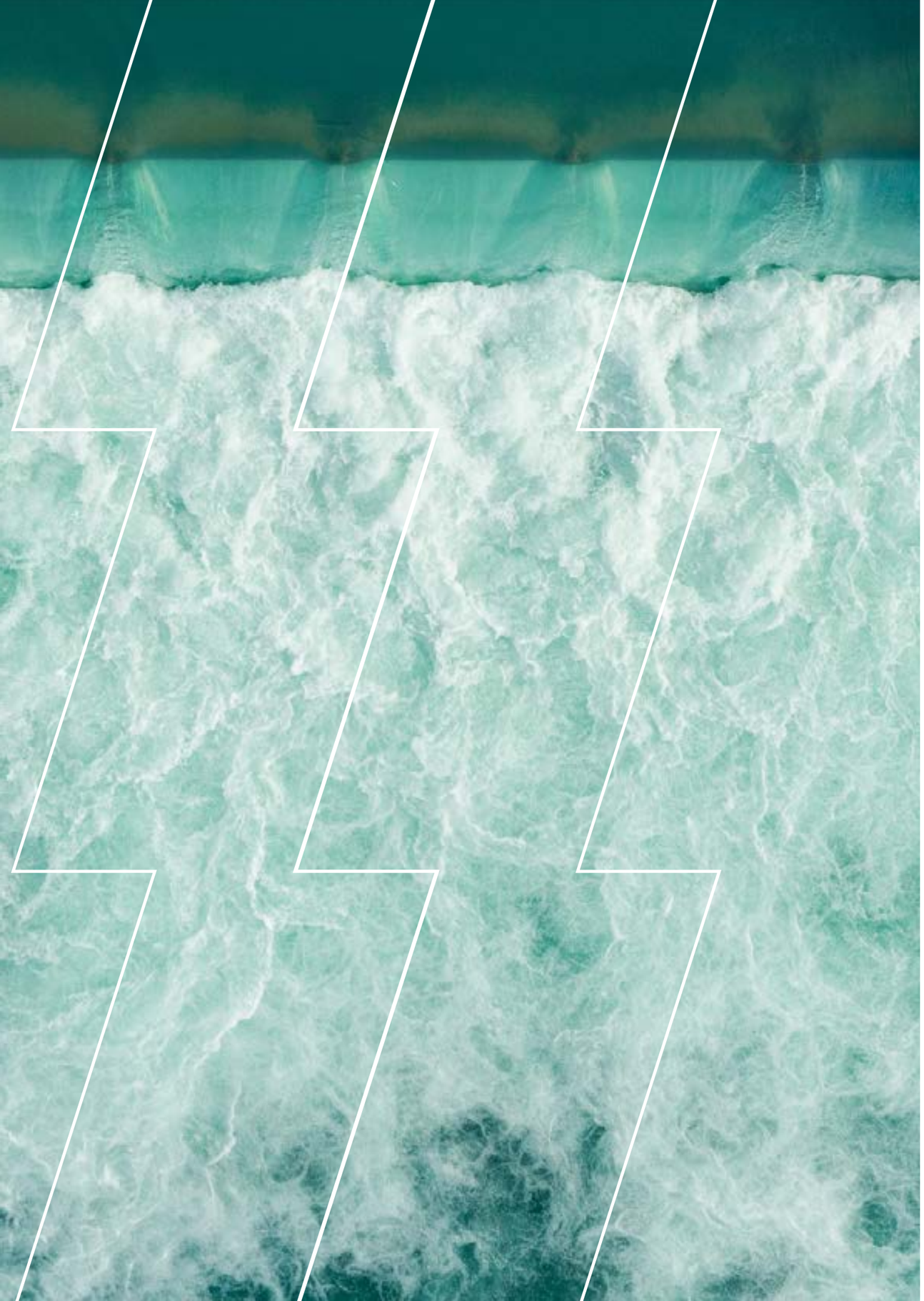


CAPTION

From 0 to 0.4 = not implemented
From 0.5 to 1.4 = low implementation
From 1.5 to 2.4 = partial implementation
From 2.5 to 3 = high implementation

Source: Self-produced

Highlight: For the energy transition areas axis, it is recommended to avoid creating graphs with scores aggregated by item for each area. Instead, results should be presented by component, as the amount of information can make the graph difficult to interpret. To highlight specific items, the use of charts (above) is more appropriate.



BEST PRACTICES AND LESSONS LEARNED

Auditing should be viewed as a dynamic and continuous process, one that evolves and adapts as needed, rather than remaining static or fixed. Planning the initial stage of the audit must be flexible to accommodate different realities and limitations that may arise during execution.

The TCU audit team encountered different challenges that required adjustments to the initial plan. These adaptations were essential to maintain the effectiveness of the audit and to ensure that the results remained relevant and applicable. By adapting to circumstances, the team ensured both the technical rigor and the practical utility of the audit's conclusions.

With this perspective, this section compiles good practices and lessons learned, based on contributions from the Brazilian Federal Court of Accounts (TCU), other Supreme Audit Institutions (SAIs), and stakeholders involved in the development of the guidelines presented in this Guide. The experiences demonstrate how, even in the face of challenges, audits can drive concrete actions for the energy transition and for addressing climate change.

Governance

When examining **item G3.1** (Governance Axis; Planning component), related to the **cost-effectiveness** of energy transition actions the Brazilian audit identified significant challenges. The complexity lay not only in verifying whether resources were being used but also determining whether they were being applied efficiently and with a measurable impact on the energy transition.

The cost-effectiveness analysis falls within the policy formulation stage and initially seemed appropriate to evaluate spending efficiency. However, the Brazilian energy planning model - which is more indicative than determinative - relies on creating regulatory conditions and market incentives, which reduced the direct applicability of this criterion.

The assessment of this item prompted reflections on the need for a more detailed analysis of government decisions, weighing the costs and benefits of each choice, which requires additional time and resources. It was recognized that in some cases, it is not the government's role to determine the most cost-effective option, as markets and technological development often play a central role in identifying the most efficient solutions for the energy transition. On the other hand, in certain situations, a cost-effective analysis is indispensable.

This experience underscored the importance of flexibility in auditing complex policies and suggested that, in future audits, it may be useful to pre-define criteria for deciding when to deepen the analysis and when to prioritize other aspects, balancing depth with time constraints.

Just and inclusive transition

The Brazilian audit assessed all three components for the Just and inclusive transition Axis, with particular emphasis on the addressing energy poverty. One of the main challenges was measuring the real impact of the energy transition on vulnerable households.

The audit revealed that, even in a country with abundant energy resources, vulnerable families may still face high electricity costs. This finding highlights the need to improve analytical tools to better understand the complex relationship between energy costs and social impacts, ensuring that the energy transition benefits everyone equally.

Another crucial issue was the identification and analysis of cross-subsidies in the power sector. The audit emphasized the importance of evaluating how these policies affect different social groups and whether they are aligned with the principles of justice and inclusion.

The experience also revealed that, although legal criteria related to energy justice exist, many lack clarity or measurable goals, which limit the ability to assess progress. These lessons reinforce the need to continuously improve auditing methodologies to ensure that public policies are truly fair and inclusive.

Suggested deepening questions:

- Are there clear indicators and measurable targets for a just energy transition?
- Are cross-subsidies properly mapped, with beneficiaries and funders clearly identified?
- Is there an evaluation of the effects of cross-subsidies on vulnerable populations?
- Has an end date or mitigation measures for cross-subsidies been defined?

Financing

The audit demonstrated that the effectiveness of transition policies depends not only on the investments but also on the regulatory framework and institutional coordination.

For this reason, the Brazilian audit team **expanded the original Audit Scope** for the Energy Transition Financing Axis, to obtain a broader understanding of the national financial scenario. This adjustment was influenced by discussions within the SAI20, which highlighted perspectives on energy financing not originally included in the audit design. The analysis sought to align audit efforts with global concerns and maximize contributions to Brazil's energy transition.

Given the complexity of the energy transition, the audit acknowledged the importance of gaining deeper knowledge of Brazil´s financing profile. The team therefore focused on identifying the **key financiers and the financial structures that support or constrain** the development of clean technologies.

Drawing on international studies, the audit team examined the flow of capital available to meet the estimated investment needs, covering a variety of funding sources public (national and international) and private, also technologies (hydropower, wind, solar, biomass, energy efficiency, natural gas, biofuels, low-emission hydrogen, critical minerals, and CCUS), as well as financing instruments (subsidies, debt issuance, equity investments, credit lines).

This effort revealed both strengths and areas for improvement in the governance of Brazil´s energy financing system, offering valuable insights to advance the energy transition.

The audit team also sought international references to map the most relevant barriers to clean technology financing. A critical takeaway was that, to promote an effective transition, it is crucial to understand and overcome these barriers. This requires creating robust economic incentives, facilitating access to credit for sustainable projects, and developing public policies that ensure continuous financial support.

This perspective reinforces the need for an approach that considers both the financial challenges and the solutions required to create an environment conducive to the advancement of clean technologies. By deepening its analysis, the Brazilian audit provided a more detailed view of the financial challenges the country faces, and the essential measures needed to overcome them.

Table 1 below outlines an example used by the audit team to identify the most significant **barriers** to financing clean technologies.

Table 1: Main barriers to investment in clean technologies

POLITICAL	MARKET	TRANSFORMATION
Lack of clear strategic political direction; Lack of regulatory framework; Lack of transparency and integrity.	Missing markets; Micro-level (off-taker, technology risk…) Macro-level risk (country risk, inflation…)	Lack of infrastructure; Unskilled labor; Stranded assets.

Source: Data adapted from Deloitte, 2023, p. 21.

In addition to identifying barriers, the team also mapped key solutions capable of directing investments more effectively toward sustainable projects. This effort included the analysis of financial instruments and public policies to attract capital to clean technologies, as well as the identification of incentive mechanisms to reduce risks for investors.

The experience highlighted the importance of creating a more favorable regulatory environment and of strengthening partnerships between the public and private sectors. Such measures are essential to guarantee a continuous flow of resources and to accelerate energy transition.

Table 2 below provides an example of the main **key solutions** identified by the audit team to guide investments in sustainable projects

Table 2: Key solutions to turn green projects more bankable

<table>
<tr><th>De-risk green projects</th><th>Bridge the green-fossil cost gap</th><th>Cutting fossil fuels</th></tr>
<tr><td colspan="2">Develop local green financial markets</td><td>End public support for fossil assets</td></tr>
<tr><td>Dilute risk via portfolio diversification</td><td colspan="2">Set up greenhouse gas emission pricing</td></tr>
<tr><td>Create a low-risk project environment</td><td>Reduce green tech costs</td><td>Deal with stranded assets</td></tr>
<tr><td>Provide loss reserves and guarantees</td><td>Reduce green project upfront costs</td><td>Deal with stranded people</td></tr>
<tr><td>Reduce revenue risk</td><td></td><td></td></tr>
<tr><td colspan="2">Make green projects investable</td><td></td></tr>
<tr><td colspan="3">Channel private funds into the green transition</td></tr>
</table>

Source: Data translated and adapted from Deloitte, 2023, p. 21.

It is recommended to deepen the analysis of energy transition financing by considering the following questions:

- Are the main barriers to clean technology financing mapped?
- Are the key solutions to unlock clean technology financing identified?

The audit also analyzed the stage of implementation of the energy transition financing system, considering different types of financing: **public, private, national, and international**. The analysis identified significant progress in some areas but also highlighted important challenges.

The Financing Axis presents considerable complexity in energy transition audits, requiring a detailed and in-depth analysis. To address this challenge, it is advisable to foster the exchange of experiences among Supreme Audit Institutions (SAI). Such collaboration would enable the development of more effective and comprehensive approaches capable of capturing the complexity of the financial aspects involved. This joint effort could strengthen the capacity of audits to assess the effectiveness of investments and financing policies, ensuring a more efficient and successful energy transition.

Specifically, in audits on transparency in public-private financing, teams may face significant challenges in gathering information related to private financing. Feedback from other SAIs indicate that limited disclosure by private sector partners is one of the main obstacles, especially when SAI´s mandate is restricted to public entities. In such cases, auditors generally cannot demand information directly from private companies

To overcome this limitation, teams may examine:

- **Contractual and regulatory clauses:** Do contracts, licenses, and grant agreements with private partners include requirements for disclosing relevant data on project costs, financing, and performance?
- **Government Monitoring:** Is there effective monitoring of compliance with these clauses and of the consequences in cases of non-compliance?

This approach enables SAIs to conduct relevant accountability analyses while fully operating within their mandate.

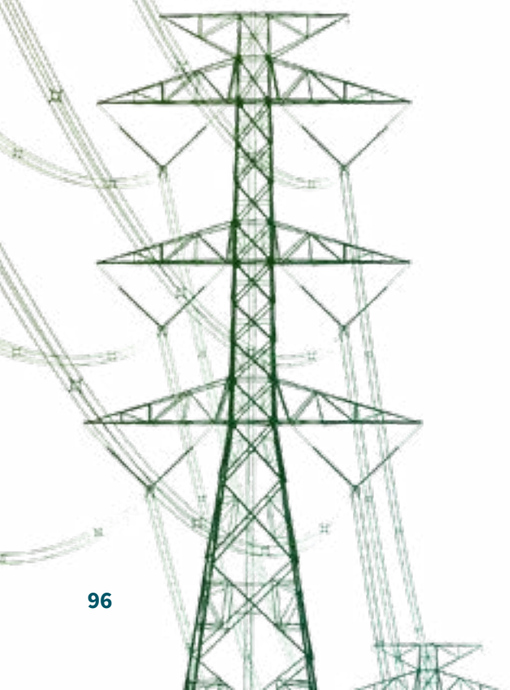
Energy transition areas

Reflecting the idea that auditing should be a dynamic and adaptable process, the approach proposed in this guide provides additional elements compared to what was carried out by the audit in Brazil, within the Energy Transition Areas axis.

For component **T3** (Implementation), this guide includes the items “definition of responsibilities” and “risk management,” broadening the scope of the approach needed for effective implementation. These items aim to ensure that responsibilities are clearly defined and that the risks associated with public policies and actions are properly managed.

Component **T4**, originally defined in the audit as “Assessment and stability,” was updated in this Guide to “Assessment and transparency” to better reflect the analysis. In this component, new items were included regarding the monitoring of indicators and the expected effects of policies and actions, along with a reformulation of the section dedicated to transparency. The analysis of the stability of public policy was removed, as the team considered it unfeasible to evaluate the resilience of policies to future political cycles, limiting the review to their resilience to past changes.

These adjustments demonstrate how the audit, by adapting to the realities encountered, maintains its rigor and relevance, aligning with the expectations and needs of both managers and society at large.



CLOSING REMARKS

The purpose of this guide has been to draw on the Brazilian experience to offer an approach that enables the assessment of the maturity of energy transition policies and actions. The suggestions presented here are intended as flexible tools – designed to guide a broad initial analysis and adaptable to diverse contexts. Parameters, methods, items, and perspectives may, and indeed should, be tailored as needed. Partial application of the guide is also recommended for audits with a narrower scope, limited resources, or shorter timeframes.

The use of this guide plays a vital role in advancing international commitments on climate change. By providing a robust and adaptable framework for analyzing the energy transition, it empowers SAIs to assess and monitor progress toward the global targets set out in international agreements (Governance Axis: G3. Planning; items: Alignment with the NDC and Synergies with the SDGs).

This guide directs SAIs in examining key energy transition indicators, steering audits to verify whether public policies are aligned with emission reduction goals and the promotion of sustainable energy practices. Adopting these guidelines enables more effective audits of policies and actions aimed at cutting emissions and advancing sustainable energy solutions.

International experiences from other SAIs, along with insights from experts and stakeholders, provide valuable resources to refine and expand the proposed approach. The guide seeks to open new pathways and foster reflection, paving the way for oversight that is fairer, more transparent, and more effective in addressing energy transition policies and actions.

Ultimately, this guide is expected to support Supreme Audit Institutions in strengthening more effective local policies while contributing to global efforts to mitigate climate change – ensuring a sustainable, equitable, and impactful energy transition for all.

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