



ASIAN JOURNAL

OF GOVERNMENT AUDIT

Asian Organisation of Supreme
Audit Institutions



ASIAN JOURNAL

of Government Audit - April 2022

The Asian Journal of Government Audit is a popular resource for the SAI community for promotion of sound and effective audit systems. This bi-annual Journal has been in circulation since 1983 and has provided a forum to ASOSAI members for discussion and dissemination of good practices. The Journal accepts articles, special reports, news items and other materials from member SAIs of ASOSAI.

The material for the Journal may be sent to the editorial office, O/o the Comptroller & Auditor General of India, 9 Deen Dayal Upadhyay Marg, New Delhi-110124.

Fax No.:91-11-23236818

Emails: ir@cag.gov.in,
asosai.journal@gmail.com

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From the desk of the Chairman of ASOSAI

SAI Thailand being the ASOSAI Chairman from 2021-2024, appreciates SAI India as the Editor of ASOSAI, for proactively contributing towards ASOSAI knowledge sharing through ASOSAI Journal. In these uncertain and ambiguous times of pandemic, there are several issues for which SAIs have to prepare themselves to respond to the challenges, like adapting innovative working style for the next normal, learning about new knowledge areas, upskill in digital era and also work towards the betterment of this world for the next generation.

Certainly, SAIs have to always prepare themselves for the future by developing the capacities of the auditors.

The key issues that the SAI community has to prepare for while auditing climate change.

Even though our community has given importance to the topic of climate change in the last ten years, the auditing techniques seem to have improved. From the knowledge dataset of INTOSAI WGEA, we found more than four hundred articles and news, which mentioned the role of SAIs and climate change. Definitely, auditing climate change is the global trend of our community.

Last year, SAI Thailand as the host of 15th ASOSAI Assembly, presented the Bangkok Declaration 2021 which was approved by our ASOSAI members. The Bangkok Declaration indicates the preparation of SAIs for the next normal era. The Chapter two of Bangkok Declaration 2021 also recognizes the Hanoi Declaration 2018, which promoted the SAIs to support SDGs audit and environmental audit. For this year, SAI Thailand has been the project leader of cooperative research of ASOSAI WGEA, which has been studying the role of SAIs in auditing climate finance.

As the project leader, SAI Thailand set up the main research question which is How can SAI promote the transparency and accountability in the climate finance? We attempt to develop the conceptual framework for auditing climate finance for both mitigation and adaptation. Likewise, we try to implement the Sustainable Finance Index (SFI) as the initiative tool for SAIs to monitor the situation of climate finance. We believe that the contribution of this study could suggest a new conceptual framework for auditing climate finance. Meanwhile, we could implement SFI as the new tool for assessing the situation of climate finance.



General Chanathap Indamra
President of State Audit Office of
the Kingdom of Thailand and
Chairman of ASOSAI

Finally, SAI Thailand always supports SAI India and ASOSAI e-journal as the main mechanism to share the audit knowledge and experience in our ASOSAI community.

From the desk of the Secretary General of ASOSAI

At present, the impacts of human activities on climate and the global environment are becoming ever more pronounced. With regions witnessing more frequent weather extremes including high temperatures, heavy precipitation and protracted drought, the world is facing increasing challenges to our food and water security. Yet history has proved time and again that crises can serve as important opportunities for the international community to embrace change and reform. Today, the relationship between humankind and nature has been given greater importance than ever before.



Mr. HOU Kai

Secretary General Of ASOSAI
And Auditor General Of The
National Audit Office Of the
People's Republic Of China

As long as all countries across the globe pool their efforts together, humankind can stem the tide. By taking measures such as mapping out goals and targets, cutting carbon emissions and promoting climate finance, we can minimize the negative impacts of climate change in respect of weather extremes, famine and health issues. Under the auspices of the Paris Agreement which entered into force in 2016, all contracting parties have committed themselves to deepening consensus and formulating specific rules. Successive Conferences of the Parties (COP) of the UNFCCC have placed greater emphasis on the international consensus to address global climate change and, in doing so, have preserved the trust of the international community in multilateral mechanisms. In particular, COP 26 held in November 2021 in Glasgow, UK achieved important milestones in implementing the Paris Agreement and dealing with global climate change, resulting in further recognition of carbon neutrality and temperature goals.

SAls have an irreplaceable role to play in urging governments around the world to fulfil their responsibilities in dealing with climate change. As pointed out by the resolution on Promoting the Efficiency, Accountability, Effectiveness and Transparency of Public Administration by Strengthening Supreme Audit Institutions (A/RES/66/209), the United Nations "recognizes the important role of Supreme Audit Institutions ..., which is conducive to the achievement of ... the internationally agreed development goals."

In the past decades, the rolling out of INCOSAI outcome documents such as the Cairo Declaration, the Johannesburg Accords, the Beijing Declaration and the Abu Dhabi Declaration as well as ASOSAI documents including the Hanoi Declaration and the Bangkok Declaration have placed higher and higher requirements for SAIs to carry out environmental audits in respect of promoting the sustainable development of economy, society and environment. It has already become a consensus among public sector auditors in Asia and from around the world that SAIs can demonstrate higher relevance in promoting the SDGs and must play a greater part.

To clinch an early victory against COVID-19 and restore economic growth remains the top priority for the international community. In the critical moment, the unity, synergy and energy demonstrated by ASOSAI encourages us all. As a regional organization of SAIs, our community has dedicated itself to promoting resource sharing, experience exchanging and capacity building through careful plans and dynamic actions. It has thus made significant contributions to various engagements carried out by SAIs against the backdrop of striving for carbon neutrality, and achieved remarkable results. I firmly believe that under the guidance of the common goals, our concerted efforts will surely shape our shared future.

From the desk of the Editor

The need for reducing global greenhouse gas emissions to prevent devastating impact of climate change cannot be overemphasized.

The global transition to a low carbon economy would involve extensive changes in policy and governance architecture. SAIs through their audits can help national governments to design strategies to achieve the emission targets and commitments. SAIs can guide the executive to consider potential risks related to climate change while designing public policies to avoid the need for costlier interventions in future.

In the absence of a clear definition of carbon finance and the fact that governments across the world are increasing budgetary allocations to decarbonise the economy, SAIs can assess and evaluate whether these investments are actually focussed towards a cleaner future.

The Supreme Audit Institutions have a crucial role to play, in helping the Governments to carefully implement the mitigation and adaption measures related to climate change, as well effectively manage the ever increasing funds allocated to minimize the impact of climate change by ensuring transparency in the use of public funds.

In line with the theme of the April, 2022 issue- 'Auditing Climate Change: Carbon Emission and Carbon Finance', SAIs have shared their diverse experiences in auditing climate change along with the associated risks and emerging areas. The articles provide new insights into some of the burning issues that require our immediate attention viz. an urgent need to achieve sustainability in environment and forest management, transport and energy mix by increasing the share of the renewables.

I am sure that sharing of challenges and approaches would enable development of tools to help SAIs track progress of climate change mitigation measures.



Mr. Amitabh Prasad

Principal Director (International Relations)
Office of the Comptroller and Auditor
General of India

I am grateful to General Chanathap Indamra, Chairman of ASOSAI and Mr Hou Kai, Secretary-General of ASOSAI, for their motivational messages. I thank SAls of China, Finland, Hungary, India, Indonesia and Pakistan, for contributing articles for this issue of the journal. I thank the authors for enhancing the visibility and impact of our journal in the audit and accountability fraternity. I would also urge everyone to follow our Twitter handle- @AsosaiJournal for accessing the articles published in the journal.



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ASOSAI NEWS

E-Learning course of ASOSAI Capacity Development Program on “Audit on Implementation of SDGs” (August to October, 2021)

ASOSAI has successfully concluded the e-learning course of ASOSAI Capacity Development Program on “Audit on Implementation of SDGs” that was held from August 23 to September 3 and September 13 to October 22, 2021. As many as 43 participants from 17 SAI joined in the e-learning course which was the first activity of the ASOSAI Capacity Development Program from 2021 to 2022. The course required participants to work for at least 10 hours every week to complete all reading materials, quizzes, discussion forum assignments and exercises on the ASOSAI Learning Management System (LMS).

During the eight weeks of the course, six Resource Persons from SAI of Bhutan, India, Malaysia, Nepal, Pakistan and Thailand provided the online support together with the Program Manager and LMS Administrators from SAI Philippines and the Subject Matter Expert from SAI Indonesia.

Those who successfully completed the necessary activities proceeded to the next stage, “Development of draft Audit Plan”.

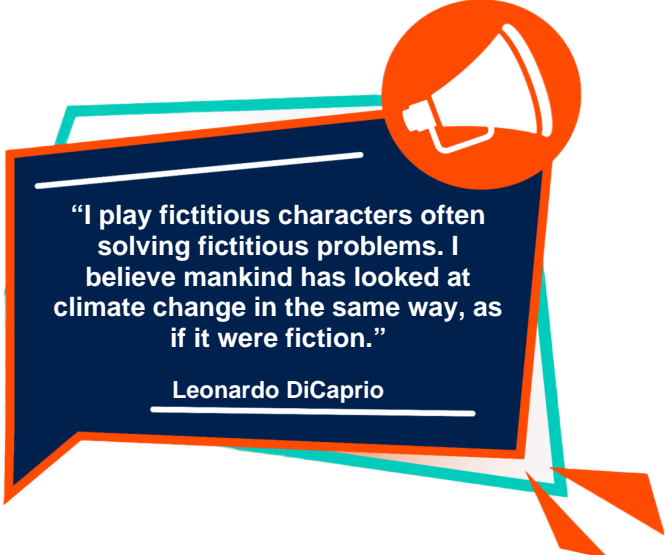


Seminar for Knowledge Sharing- ASOSAI Seminar on “Improvement of Audit Process for More Effective Audit” (Online, in December 2021)



An ASOSAI Knowledge Sharing Seminar on “Improvement of Audit Process for More Effective Audit” was held online, from December 6 to 8, 2021. 33 participants from 29 ASOSAI member SAs and 2 ARABOSAI member SAs attended the Seminar, with facilitation and technical guidance provided by Subject Matter Experts (SMEs) from the SAs of Bhutan and Nepal. A representative of the Capacity Development Administrator of ASOSAI (SAI Japan) also participated in the Seminar for the management of the Seminar.

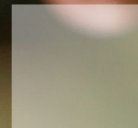
The purpose of the Seminar was to share experience and knowledge on Improvement of Audit Process for More Effective Audit. During the Seminar, participants made sub-groups to have discussions based on their country reports on the above theme, which were followed by presentation sessions. Although the time was limited due to the online format, participants were able to share their experiences on Improvement of Audit Process for More Effective Audit, and the Seminar was successfully concluded on December 8, 2021.



“I play fictitious characters often solving fictitious problems. I believe mankind has looked at climate change in the same way, as if it were fiction.”

Leonardo DiCaprio

Theme Articles



Auditing Climate Change – Carbon Emission and Carbon Finance

-SAI Pakistan

About the Author

Mr. Sammer Ahmed, Additional Director Program, Civil Service Academy, Lahore, Pakistan, is an officer of the Pakistan Audit and Accounts Service (PA&AS) and possesses multidisciplinary academic and professional qualifications from world renowned institutions - CISM, CISA, SAP-FI, CRISC, PIPFA, BSC in Chemical Engineering UET Lahore and Master in Public Policy from National Graduate Institute of Policy Studies, Tokyo. He has conducted and supervised various audits and trainings.

Introduction

All member countries of United Nations (UN), in 2015, devised a master plan for striving towards peace and prosperity of the people and the planet and this plan resulted in 17 Sustainable Development Goals (SDGs)¹. These SDGs are urgently required to be followed by all the member countries in a global partnership irrespective of whether those are developed or developing countries. Among the 17 SDGs, 13th goal pertains to climate change and it is stated as 'take urgent action to combat climate change and its impacts'. More or less, every country is facing the negative effects of climate change. Estimated globally, the annual loss due to tsunamis, earthquakes, flooding, and tropical cyclones is about hundreds of billions of dollars. By political will and by using technological measures, it is still possible to limit the rise in average temperature of the world at pre-industrial level to avoid the future catastrophic consequences of climate change.



Mr. Sammer Ahmed,
Additional Director



¹ <https://sdgs.un.org/goals>

Environment is degraded for different reasons, mainly due to increasing spread towards social and economic development which fosters urbanization, dumping of wastes, cutting down of forests, and over-cultivation of crops etc. One outcome of decadence of the environment is global warming and climate change. According to the Intergovernmental Panel on Climate Change (IPCC)², the term 'climate change' refers to a change in the climatic state that can be associated by the changes that persist for an extended period of time, usually decades or longer. Climate change also relates to any change in climate over time, whether it is the result of human activity or by virtue of natural variability.

Greenhouse gases, for instance carbon dioxide (CO₂), absorb heat in the form of infrared radiations released from the earth's surface. Accumulation of these gases in the atmosphere causes it to warm by trapping the heat. Human activities such as burning fossil fuels since the industrial revolution have increased the concentration of CO₂ in the atmosphere by around 40% and half of this 40% concentration of CO₂ has increased since 1970. In this way, global average surface temperature of earth has increased by about 1°C which has resulted in warming of oceans, rise in the sea level, decrease in arctic sea ice, increase in intensity and frequency of heat waves and many other climatic impacts. Much of this global warming has occurred in the last 50 years and the basic reason for this warming is the increase in the concentration of CO₂ and related greenhouse gases (GHGs). Continued emission of greenhouse gases will further increase the global temperature and climatic changes will also be on the rise. Long term climatic changes, however, will depend upon the concentration of CO₂ and other greenhouse gases in the air emitted by human activities.³

Composition of GHGs

The usual composition of GHG emissions consists of following percentages:⁴ Carbon dioxide (CO₂): 80%; Methane (CH₄): 10%; Nitrous Oxide (N₂O): 7%; and Fluorinated gases: 3%. The major sources of emission of these GHGs are very briefly mentioned in the following lines. Majorly, CO₂ is released by the burning of fossil fuels e.g. oil, natural gas and coal. Moreover, it is also emitted if certain chemical reactions occur e.g. CO₂ is emitted during the production of cement. CH₄ is emitted during the process of production and transport of oil, natural gas and coal. N₂O is emitted during land use, agricultural and industrial activities, during the combustion of solid waste and treatment of wastewater. And fluorinated gases are emitted during various industrial processes.⁵

² IPCC was established in 1988 by 'United Nations Environment Program' (UNEP) & 'World Meteorological Organization' (WMO) to provide fair information of climate change to various stakeholders. There are thousands of scientists and experts forming IPCC and has submitted a lot of assessment reports on climate change so far.

³ https://royalsociety.org/~media/royal_society_content/policy/projects/climate-evidence-causes/climate-change-evidence-causes.pdf

⁴ <https://www.epa.gov/ghgemissions/overview-greenhouse-gases>
(Overview of U.S. Greenhouse gas emissions in 2019)

⁵ <https://www.epa.gov/ghgemissions/overview-greenhouse-gases>

Carbon Financing

Companies use carbon credits to offset their carbon emissions, either by sticking to emission allowances or by contributing to some sustainable projects. This process is performed through an exchange (or carbon financing) and it is in the form of annual fee to a project partner. This partner may be from private, public, or from any NGO sector for the emission reductions arising once the project is working. The measurement of emission reductions is done by CO₂ equivalent and it is written as 'tCO₂e'. In other words, '1 carbon credit = 1 ton of CO₂ not emitted'.⁶

Audit of climate change

For performing any audit (financial, compliance or performance audit) 'audit criteria' is necessary and it helps an auditor to assess the performance of the auditee/entity/project/program/process/function with reference to some standards and performance benchmarks. Audit criteria for climate change can be national if there are some laws or policies in the country and these criteria can also be international if a country has signed some international accords e.g. United Nations Framework Convention on Climate Change (UNFCCC)/Kyoto Protocol. Moreover, audit criteria can also be in the domain of governance as climate change policies, activities need to be undertaken by central, provincial and local governments and lack of coordination and transparency can be damaging to the implementation of policies and activities in the field of climate change.

Some international agreements like UNFCCC is the major international response to confront the climate change issues. UNFCCC and its Kyoto Protocol (KP) clarify some commitments to various Parties⁷ and it is where the audit criteria can be looked for. UNFCCC is primarily based on the principle of 'common but differentiated responsibilities'. Developed/industrialized nations should 'take the lead' in modifying the anthropogenic discharge in the course of time. In other words, Annex-I parties have to be more responsible than that of Non-Annex-I. Firstly, Annex-I parties will help in fulfilling the commitments of developing countries and secondly they shall take practical steps in reducing the emission of GHGs.

⁶ <https://www.unhcr.org/55005b069.pdf>

⁷ <https://unfccc.int/gcse?q=Annex%20I%20parties>

Annex-I Parties consist of industrialized countries that were members of the OECD in 1992, plus those countries with economies in transition (the EIT Parties).

Annex II Parties consist of the OECD members of Annex I, but not the EIT Parties. They are necessarily to provide financial resources to facilitate the developing countries to commence emissions reduction actions under the Convention & to help them adapt to negative consequences of climate change. Moreover, they have to "take all practicable steps" to encourage the development & transfer of environmentally friendly technologies to EIT Parties and developing countries. Add to this, funding given by Annex II Parties is routed largely by means of the Convention's financial mechanism.

Non-Annex-I Parties are mainly the developing countries. The 49 Parties categorized as 'least developed countries' (LDCs) by UN are provided special consideration by the Convention because of their restricted capacity to reciprocate to climate change and accustom to its injurious effects.

Mitigation commitments

UNFCCC asked all parties to make such measures to reduce the GHG emissions and improve and maintain sinks. The developed countries have made commitments to lead proactively in modifying trends of GHG emissions. The objective of UNFCCC is focused on long-term goals while the target of Kyoto Protocol is short term and measureable. For instance, in the Kyoto Protocol (KP) there are legally binding emission targets for industrialized nations. For Annex-I Parties, the Protocol established mandatory and computable reduction targets. For the sake of achieving the desired reduced targets, KP carries out Annexure-I Parties to rely on various national policies including enhanced energy efficiency, advancement of viable forms of agriculture, preservation and improvement of sinks of GHGs, advancement of new technologies, weeding out market imperfections in GHG emitting sectors and bar of such emissions from transport sector. There are usually flexible mechanisms and include 'Joint Implementation' (JI), 'Clean Development Mechanism' (CDM), and 'Emission Trading System' (ETS).⁸

The flexible mechanisms convey that GHG emissions have economic value and usually this economic value is measured as value of tons of CO₂ or its equivalents. Market determines the cost of one ton of CO₂. These mechanisms are used voluntarily but if a country chooses to use them, then there will be certain rules and procedures and those can be used as audit criteria. The CDM is a system in which the Annex-I parties invest in such projects in the developing country parties that reduce the GHG emissions. As a return for these investments, Annex-I parties get credits in the shape of 'Certified Emission Reductions' (CERs)⁹. The recipient and financing parties decide how to share these credits from such projects. They can utilize these credits to compensate for their own GHG emissions, or save them for future utilization or sell them. As far as the recipient party is concerned, the purpose is that it should also benefit from such investments in sustainable development.

Emission Trading System

The 'Emission Trading System' (ETS)¹⁰ is a market based mechanism for trading GHG emission credits. The unit of this trade is actually one ton of CO₂-equivalents, i.e. ton(s) of CO₂ emission right is tradable. This trading can take place among the counties, companies, or among the companies and countries. Companies receive, free or through auction, emission allowances based in such manner of a ceiling on emissions. Companies can then sell or buy these emission allowances. The companies that release lesser GHGs than their ceilings can sell the remaining/saved allowances. In the same way, the companies that release more than their limit of GHG emissions can buy such allowances.

So, in a nutshell, the audit criteria for any country while performing the review could be:

1. CO₂ emission (or emission of GHGs in general) reduction targets in that country.
2. Any program, project or plan made by the Government of that country in the area of climate change

⁸ <https://unfccc.int/gcse?q=clean%20development%20mechanism>

⁹ <https://unfccc.int/news/new-market-listing-broadens-access-to-certified-emission-reduction-credits>

¹⁰ <https://unfccc.int/process/the-kyoto-protocol/mechanisms/emissions-trading>

Conducting the climate change audit

At the start of performing the audit, a walk-through procedure may be helpful for the auditor. Walk-through consists of inquiry, observation, inspection of documents and reperformance of controls. Walk-through procedures are actually used to get an understanding of the entity, process, function or a system as a whole. While performing walk-through procedures, auditors check each and every risk points/locations in the process or procedure and check whether some controls are present to counter that particular risk or not. If the control is not present, it shows risk more than the tolerable risk; and if the control is present, then effectiveness of control is checked whether the control is keeping the risk within the level of controllable risk (i.e. within the risk appetite).

While performing the audit it is a well-known fact that there are two major steps in conducting any audit whether it is financial, compliance or performance audit. These two major steps are done in a sequence. First step is compliance testing and the second is substantive testing. The result of compliance testing will determine the extent and nature of substantive testing. In compliance testing, various attributes or characteristics are checked in the way whether such and such attribute is present or not. In other words, compliance testing will result in either 'yes' or 'no' with respect to the existence of specific attributes or characteristics during audit. For example, if an auditor wants to know the compliance of specific law, policy, rule or regulation he will perform the attribute sampling of the population and will check whether that specific law, policy, rule or regulation has been complied with or not by the auditee.

If (s)he finds non-compliance of that particular instruction (law, policy, rule or regulation) in that sample, he will check the details of all such instances of non-compliance and this process is called substantive testing (test of details to substantiate the detection of non-compliance). If (s)he finds very few instances (or no such instances) of non-compliance, then he will reduce the substantive testing and the chance of finding major errors/irregularities/frauds becomes minimum. However, (s)he will always use professional judgment and act with due diligence in finding out the major error, irregularities or fraud. But if (s)he finds some instances of non-compliance from that sample, then (s)he will increase the sample size on one hand and increase the substantive testing too. In this way many irregularities or fraud can be found out. The result of compliance testing will determine the extent and nature of substantive testing and this is the broader picture of audit testing.

Similarly, for auditing climate change, the above mentioned two steps will be employed. In other words, if a Government administration or an entity has done some actions to counter the negative effects of climate change, the first step is to check whether that administration has performed those steps or not. For this purpose, a general questionnaire is used or it can be tailor made as well keeping in view the objective or scope of audit. These questions will be answered in the form of 'yes' or 'no' and this is the compliance testing. If the answer is 'no' then it will be the audit observation (audit para) or point of concern in itself. And if the answer is 'yes' ('Yes' means the presence of the specific control mechanism) then it is checked in detail to find out the effectiveness (i.e. integrity and accuracy of control mechanism).

Below are some thematic areas (taken from the audit universe - it is all possible audit areas) and the relevant audit objectives and corresponding questions are also drafted for understanding purposes.

Theme-I: Presence of data of climate change and identification of related risk

Possible audit objective: To review and evaluate whether the Government administration identified the sources of CO₂ emissions and assessed its effect on climate change.

Possible questions to cater for the above audit objective:

1. Has the Government administration identified the sources of CO₂ emissions in the country?
2. Has the administration assessed or calculated CO₂ emissions from sources of transport, energy production, or industry etc.?
3. Has the administration appraised the major vulnerabilities (i.e. localities or sectors most likely to be affected) to climate change?
4. Has the administration appraised the risks to public health due to climate change?

Theme-II: Government administration's response to climate change

Possible audit objective: To evaluate whether the Government administration responded essentially to the challenges brought about by climate change.

Possible questions to cater for the above audit objective:

1. If the Government administration does not have any transnational mitigation commitments? or has it set any national level commitment?
2. Has the Government administration formulated any policy for climate change on one hand and for controlling CO₂ emissions on the other?
3. Have any national targets for emission reduction been set? And are they practical, realistic, and effective?
4. Has the Government administration formulated policy instruments or tools for CO₂ emissions reduction?
5. Has responsibility and accountability been assigned to different ministries/agencies of the Government in the climate change process?

Theme-III: Implementation of plans for mitigation

Possible audit objective: To appraise the effectiveness of the Government administration's mitigation programs in the area of climate change.

Possible questions to cater for the above audit objective:

1. Has comprehensive consultation with all the stakeholders and agencies in the climate change completed before introduction of the mitigation plan?
2. Have the sectors that contribute most to climate change been identified and have these been added in the national plan?
3. Have distinctly defined targets and schedule for implementation been written in the plan?
4. Whether CO₂ emission trends and extensions are in agreement with targets set for the plan?
5. Whether coordination of the ministries concerned being done as conceived?
6. Have research activities appeared as considered in the plan?
7. Whether sufficient financial resources are brought about for the implementation of the plan and are those resources being spent judiciously?
8. Whether the mitigation plan has caused the achievement of targets and objectives?

Theme-IV: Monitoring of national plans

Possible audit objective: To evaluate whether effective monitoring was taking place.

Possible audit questions to cater for the above audit objective:

1. Whether assignment of responsibility for the overall monitoring of the plan was done?
2. Was monitoring taking place as considered?
3. Were global commitments on reporting the results met by the Government?

Theme-V: Impact analysis

Possible audit objective: To evaluate whether the Government's plans actually led to CO₂ emissions reduction.

Possible audit questions to cater for the above audit objective:

1. Did the plan of emissions reduction meet the mitigation commitments of the country?
2. Did the plan of emissions reduction actually lead to reduction of CO₂ emissions?

Substantive testing

All of the discussion mentioned above under thematic areas are called compliance testing. The other name of compliance testing is called control testing. If the answers to the questions (all or few) mentioned above are 'no' then it is the audit observation (non-compliance) in itself and these observations will be reported to the concerned authorities for proper action against the auditee. However, if the answers to the question are 'yes', it means controls are in place. Now the next step is to check the audit evidence on the completeness, accuracy or existence of activities or controls during the audit period and that is done through test of details i.e. substantive testing procedure. After substantive testing all the ins and outs of control mechanisms will appear and it will be easy to check any gaps.

Final words

In the journey towards attaining the 13th goal of SDGs regarding climate change through guidance of UNFCCC and Kyoto protocols, climate change audit can be conducted with reference to the emission of CO₂ and its financing. Criteria for such audits can be international and/or national commitments. However, if a criteria does not exist then the auditor will discuss with the auditee and arrive at the agreed upon criteria. Such criteria are used in compliance and substantive testing of climate change audit. For compliance testing, various questions are drafted usually with the help of brain storming of auditors. After getting the results of compliance testing, substantive procedures are conducted. Finally, audit report is communicated to the relevant authorities with the recommendations on how to cope with the issue of CO₂ emissions and these recommendations will be aligned with the audit evidence.



About the authors

Audit of Sustainable Urban Transport (Linked to SDG 11.2 and 3.9): Case of Indonesia

-SAI Indonesia



Dr. Hendra Susanto is a Board Member of the Audit Board of the Republic of Indonesia (BPK). Prior to this, he was an auditor in BPK for 20 years. He holds a Bachelor Degree in Civil Engineering (Sriwijaya University), a Master of Engineering in Integrated Urban Infrastructure (Delft University of Technology, Netherlands), a Master of Business Law (Gadjah Mada University), and a Ph.D in Accounting (Padjajaran University). He is also a Certified Fraud Auditor and a Certified State Finance Auditor. Investigative and forensic audits are among his specializations.



Mr. Novy Gregory Antonius Pelenkahu is the Director General of Audit I in BPK. Having been an auditor since 1989, he has held various positions at BPK and has contributed significantly to several audits receiving public attention. He holds an MBA from the George Washington University, USA.



Dr. Eko Yulianto is a Principal Expert Auditor, who joined BPK in 1995. He holds a Bachelor Degree in Accounting (Gadjah Mada University), a Master's Degree in IT, Management and Organizational Change (Lancaster, UK), and a Ph.D in Accounting (Gadjah Mada University).

About the authors

Audit of Sustainable Urban Transport (Linked to SDG 11.2 and 3.9): Case of Indonesia

-SAI Indonesia



Dr. Iman Sufrian is a senior auditor in BPK, since 1996. He holds a Bachelor Degree in Economics with a major in Management (University of Indonesia), a Master's Degree in International Finance (Leeds University Business School, UK), and a Doctoral Degree in Economics (University of Indonesia).

Introduction

Sustainable Development Goals (SDGs) are a global action plan agreed upon by world leaders, including Indonesia, to end poverty, reduce inequality, and protect the environment. The SDGs comprise of 17 Goals and 169 targets to be achieved by 2030. The SDGs aim to achieve sustainable improvement of community economic welfare. These development targets also aim to maintain the sustainability of community social life. Furthermore, these development goals aim to maintain a quality environment and development that ensures equity and governance implementation to improve the quality of life across generations.

Sustainable urban transportation is one of the sustainable development goals. Sustainable urban transportation is reflective of a transportation system that seeks to reduce carbon emissions from the transportation sector, reduce congestion, and improve transportation security to better the environment and the social and economic life of the community.

The government is a central actor that develops reliable strategies and measures to achieve this target of sustainable urban transport. In order to realize sustainable transportation, the government optimizes the development of transportation facilities to strengthen connectivity, stimulate economic integration, increase social equality, and improve relations between urban and rural areas.

The Ministry of Transportation is one of the stakeholders that regulates the transportation sector within Indonesia. The Ministry of Transportation has a particular role in transportation to achieve government targets related to sustainable urban transport. In achieving the target of these objectives, the Ministry of Transportation has a role in reducing the transportation GHG sector (greenhouse gas).

One particular unit within the Ministry of Transportation that provides guidance related to environmental policy is that of the Center for Sustainable Transportation Management (Pusat Pengelolaan Transportasi Berkelanjutan/PPTB). This unit is under the Secretariat General of the Ministry of Transportation. The PPTB was formed on 2 December 2015, through PM 189 of 2015. The main tasks and functions of the PPTB in the Strategic Plan of the Secretariat General of the Ministry of Transportation for 2020-2024 are implementing environmental policy management, system improvement, and innovation of sustainable transportation services.

In carrying out these tasks, the PPTB organizes plans and programs, monitoring and evaluation, formulating, and reporting on policy management in the environmental governance sector of the transportation sector, governance of transportation facilities, and infrastructure service systems. As a result, the PPTB can recommend solutions, innovations in the governance of sustainable transportation facilities, and infrastructure service systems that accommodate community needs for good quality transportation from the aspects of safety, security, service, and support government policies in increasing the use of urban mass public transportation.

Audit Problem

The problem of climate change has become one of the most prominent public policy problems faced by stakeholders. Climate change is already impacting ecosystems and people in all parts of the world's continents and oceans. Climate change can pose significant risks to human health, global food security, and economic development.

Actions taken to reduce emissions are critical and urgent to avoid the dangers of climate change. Significantly reducing greenhouse gas emissions is essential to limiting the impact of climate change. In Indonesia, emissions from the transportation sector account for almost 30% of total CO₂ emissions, where the highest emissions come mainly from land transportation, which contributes to 88% of total emissions in the sector (IEA, 2015). Therefore, efforts to reduce emissions in the transportation sector will contribute to efforts to mitigate the effects of climate change in Indonesia.

The Indonesian government is committed to reducing greenhouse gas emissions through various policy initiatives, including those targeted towards the transportation sector. Therefore, performance audits that aim to evaluate the effectiveness of the Ministry of Transportation, in particular, the PPTB efforts to reduce greenhouse gas emissions, can also contribute to reducing greenhouse gas emissions through the identification of audit recommendations that will improve the performance of PPTB programs to ensure the government achieves its goal to reduce greenhouse gas emissions.

Audit Motivation, Audit Objective, and Audit Scope

Indonesia's Supreme Audit Institution (BPK RI) conducted this particular performance audit to support the achievement of the SDGs, especially Goal 11: Sustainable Cities and Communities and particularly in relation to Goal 11.2 on sustainable transportation. In addition, this particular audit also supports Goal 3.9 on reducing air pollution, especially air pollution from the transportation sector.

The objective of this performance audit was to evaluate the effectiveness of the efforts made by the Ministry of Transportation, in this case, the PPTB, in reducing greenhouse gas emissions in the transportation sector; on the aspects of regulation, planning, implementation, and monitoring and evaluation.

Audit Criteria

The development of the criteria framework used to assess the effectiveness of the Government's efforts in achieving sustainable urban transportation in this audit was outlined in a matrix model called the Audit Design Matrix. The matrix identified one main criterion and five sub-criteria, as follows:

Ministry of Transportation, in this case, the PPTB, has contributed effectively to reducing greenhouse gas emissions in the transportation sector:

1. The Ministry of Transportation has established regulations related to reducing greenhouse gas emissions in the transportation sector;
2. The Ministry of Transportation has set a target for reducing greenhouse gas emissions in the transportation sector;
3. The Ministry of Transportation has established an agency responsible for reducing greenhouse gas emissions from the transportation sector;

4. The Ministry of Transportation has prepared an action plan/road map related to the reduction of greenhouse gas emissions in the transportation sector; and
5. The Ministry of Transportation has monitored and evaluated the achievement of the target for reducing greenhouse gas emissions in the transportation sector in Greater Jakarta.

The source criteria formulated in this audit were statutory provisions/regulations and good management practices (good practice).

Audit Result and Recommendations

The Indonesian Government is committed to reducing greenhouse gas emissions. The Government of Indonesia has issued Presidential Regulation No. 61 of 2011 concerning the National Action Plan to reduce greenhouse gas emissions. Furthermore, the Indonesian Government strengthened its commitment to reducing greenhouse gases by ratifying the Paris Agreement and adopting it in the Indonesian legal system.

With the ratification of the Paris Agreement, the Indonesian Government set a target of reducing greenhouse gas emissions by 29% without international assistance and 41% with international assistance by 2030. This target is in line with the goals of the SDGs.

The Indonesian government has also set a road map for achieving greenhouse gas reductions for the 2020-2024 period through Presidential Regulation no. 18 of 2020 concerning the 2020-2024 Mid-Term National Development Plan. Reducing greenhouse gas emissions is one of the government's national priority goals.

In the transportation sector, the Minister of Transportation has also established the PPTB work unit, responsible for setting and managing environmental policies, system improvements, and innovations to achieve a sustainable transportation system where reducing greenhouse gas emissions in the transportation sector is one of the targets to be achieved. This work unit, comprising officers at the level of echelon 2.

With regards to the target for reducing greenhouse gas emissions in the transportation sector, the Minister of Transportation has also issued a Decree of the Minister of Transportation No. KP 201 of 2013 concerning the National Action Plan for the reduction of greenhouse gases in the transportation sector for the period 2010-2020. This is a derivative regulation of the Presidential Regulation no. 61 of 2011. In this decree, the Minister of Transportation has determined programs/activities in the transportation sector to reduce greenhouse gas emissions for the 2010-2020 period.

However, for the earlier period of 2020-2024, the Minister of Transportation has not yet identified those programs/activities that will reduce greenhouse gas emissions in the transportation sector, nor indicated the magnitude of the contribution to greenhouse gas reduction from programs/activities in the 2020-2024 period.

This problem contributes to the risk of not achieving the plan to reduce greenhouse gas emissions in the transportation sector and will not support achievement of the SDG agenda and NDC targets set for the transportation sector.

In addition, the absence of a road map for achieving the target of reducing greenhouse gas emissions in the transportation sector for the period of 2020 – 2024 also contributes to the ineffectiveness of monitoring and evaluation activities for these programs/activities in order to be able to assess their contribution to those targets.

For this problem, BPK recommended the Minister of Transportation to:

- a. Prepare a road map for the National Action Plan for Reducing Greenhouse Gas Emissions in the Transportation Sector starting for 2021 to 2024;
- b. Prepare Standard Operating Procedures related to the formulation of the calculation of targets and achievements, and the conduct of planning, monitoring, and evaluation of GHG emission reduction activities in the transportation sector; and
- c. Carry out regular and measurable monitoring and evaluation activities.

Conclusion

The Indonesian government has demonstrated a commitment to reducing greenhouse gas emissions. The government has made regulations that contain targets for reducing greenhouse gases, including for the transportation sector. However, the government, in this case, the Ministry of Transportation, in particular the PPTB, needs to continue to strive for continuous improvement, among others, by setting a roadmap for efforts to reduce greenhouse gas emissions in the transportation sector. This includes the identification of programs and activities, as well as indicators for the contribution to the reduction of greenhouse gas emissions from each identified program and activity. In addition, the Ministry needs to monitor and evaluate the program's implementation.

References

BPK Performance Audit Report No.163/HP/XIV/12/2021 December 31, 2021, on Government Effectiveness in Implementing Sustainable Transportation at the Ministry of Transportation and Other Agencies.

Medium Term Government Plan 2015-2019.

Law No. 32 of 2009 concerning Environmental Protection and Management.

Government Regulation No. 41 of 1999 concerning Air Pollution Control.

Presidential Regulation No. 61 of 2011 concerning the National Action Plan for Reducing Greenhouse Gas Emissions.

Presidential Regulation No. 59 of 2017 concerning the Implementation of the Achievement of the Sustainable Development Goals.

Presidential Regulation No. 22 of 2017 concerning the General National Energy Plan;.

Decree of Minister of Transportation No. 117 of 2017 concerning the Third Amendment to the Decree of the Minister of Transportation No. 189 of 2015 concerning Organization and Work Procedures of the Ministry of Transportation.

Decree of the Minister No. 67 of 2021 concerning the Organization and Work Procedure of the Ministry of Transportation.

Minister of Transportation Regulation No. 80 of 2020 concerning the Strategic Plan of the Ministry of Transportation for 2020-2024.

Decree of the Minister of Transportation No. KP 201 of 2013 concerning the Determination of the National Action Plan for Reducing Greenhouse Gas Emissions in the Transportation Sector and the Transportation Sector GHG Inventory from 2010 to 2020.

Audit on policies for implementation of RE generation

-SAI India

About the Author

Ms. Nameeta Prasad, Principal Director (Autonomous Bodies), Office of the Comptroller and Auditor General of India, has a Master of Arts degree (Psychology) from Lady Shri Ram College, Delhi University. Ms. Prasad also possesses PG Diploma in Environmental Law (National Law School of India, Bangalore) and Masters of Science degree (Environment) from University of Washington, Seattle, USA. Ms. Nameeta Prasad has also been a Fulbright scholar. She joined the Indian Audit and Accounts Department in 1999.

Renewable Energy (RE) resources include energy of wind, solar, geothermal energy of water, biomass, waste etc. These energy resources contribute to better air quality, reduce reliance on fossil fuels and help curb global warming. Harnessing renewable energy sources entails cleaner environment, energy independence and a stronger economy.

National Action Plan for Climate Change (NAPCC)¹ was the first response of Government of India (GoI) to rising greenhouse gas emissions and climate change. It envisaged RE to constitute 15 per cent of the energy mix of India by 2020. All states had to draw up State Action Plans on Climate Change (SAPCC), to meet the targets envisaged in NAPCC. In August 2009, GoI made a commitment to UNFCCC² to reduce its carbon emission intensity by 20 to 25 %. Further, in order to meet the commitments to the Paris Accord³ ratified in 2016, GoI planned to accelerate the development and deployment of RE in the country, by up scaling of targets for RE capacity addition from 30 GW⁴ by 2016-17 to 175 GW by 2021-22. This would have resulted in abatement of 326.22 million tons of CO₂ per year. Further, India is also committed to the Sustainable Development Goals evolved by United Nations. Specifically, Goal 7 requires the governments to “ensure access to affordable, reliable, sustainable and modern energy for all”.



Ms. Nameeta Prasad,
Principal Director
(Autonomous Bodies)



A state of India, introduced 'Policy on Co-generation and Generation of Electricity from Renewable Sources of Energy' to encourage the growth of RE in the State. The State Government also introduced the State Action Plan on Climate Change which also focused on the growth of RE sector to combat the deleterious effects of climate change.

Audit assessed whether the planning process and policy framework in the state were focused on increasing the generation of renewable energy and achieving the Sustainable Development Goals. Further, audit evaluated whether the implementation of the planned schemes was effective to meet the targets envisaged in the RE Policy. Fund allocation was analyzed to check whether funding was adequate and financial resources were managed efficiently to harness the RE sources. Audit also examined whether tariff and other regulatory mechanisms relating to purchase and sale of RE were conducive to development of RE and were adhered to by the agencies. The Performance Audit was conducted between February and June 2017.

Planning process and policy framework

Audit observed that State Government assessed the RE potential arbitrarily and incorporated these in the RE Policy without actual on-ground verification/study. It also failed to assess the potential of solar energy -one of the most important source of RE- in the State and to incorporate the same in the RE Policy. The State Government also did not reset the targets in its RE Policy in accordance with the revised targets given by GoI to achieve its commitments under the Paris Accord. GoI assessed that the state, had a potential of 7,222 MW of RE. However, the State Government's objective was to achieve 1040 MW of installed capacity by March 2017. Neither the SAPCC nor the RE Policy of the State were revised to contribute to India's increased commitments under the Paris Accords.

One of the goals (SDG-7) 'Affordable and Clean Energy' was to ensure access to affordable, reliable, sustainable and modern energy for all. Two of the five targets set to be achieved under SDG-7 were to ensure universal access to affordable, reliable and modern energy services; and increase substantially the share of RE in the global energy mix. The SAPCC and RE Policy of the State were not reformulated to achieve the objectives set out in the SDGs. In its absence, the generation of energy through RE sources did not get the attention and focus required as mandated by the SDGs.

Achieving ambitious renewable energy targets requires the presence of enabling infrastructure like laws and codes to support the change from non-renewable to the RE sector. Audit observed that building codes were to be framed to make it mandatory for the buildings of government establishments, business entities, schools, colleges, hospitals, housing societies, etc., to install roof-top Photo Voltaic (PV) devices for generation of solar energy, as enumerated in the RE policy. However, this was not done. Further, incentives and single window clearances to RE projects was not framed. As a result, 11 private developers proposed⁵ setting up Grid Connected Solar PV Power Plants at different places in the State with the projected capacity of 233.30 MW. However, only one developer was able to commission a five MW Solar PV Power Plant in March 2013.

¹ India's first response to climate change issues, issued in 2008 by Government of India to deal with rising emissions and its effect on development.

Funding

Against the estimated requirement of 4610 crore in the State Action Plan for Climate Change during 2012-17, only 9.10 % was allocated by the State Government for implementation of RE projects. Of this meagre allocation, only 18% of the funds could be actually spent. According to the RE Policy, a Green Energy Fund (GEF) in order to finance various initiatives for development of RE in the State was to be created by means of equity contribution by the State Government and contributions from international donor agencies. GEF was to be tapped from the charges collected from private developers to provide administrative support for obtaining statutory clearances and charges for project assessment etc. Audit, however, observed that no action was taken for the creation of the fund.

Further, State Government could avail only 7.89 crore (0.16 per cent of the total approved grant for all the States) as incentive grant by Gol due to poor achievement in capacity addition of RE.

Implementation of projects

Only 35.18 MW (4.15 %) capacity of RE was added, against the target. The RE policy identified 450 MW of wind power potential in the State with a target of installation of 73 MW during 2012-17. There were no achievements against this target as the existing 2.5 MW wind projects had also stopped functioning and 3 approved projects could not be taken up due to non-availability of land.

The RE policy stipulated installation of 123 MW during 2012-17 in hydropower sector. However, no hydropower capacity was created during the period, mainly due to land disputes which could not be resolved by the State Government.

Only three biomass projects and one 'waste to energy' project was planned during 2012-17. Thus, only 2% of targeted capacity was achieved from these three RE sources.

RE policy had set the target of additional installation of 98 MW of solar energy during the period of 2012-2017. However, only 37.20 MW of solar energy was installed as of December 2017 as the Solar Park could not be set up due to failure to acquire land required by the project. Solar Cities Programme for developing seven solar city projects was not implemented as the Municipalities in these urban areas did not approve these projects. Another project for installation of Rooftop Solar Photo Voltaic plants on the rooftops of government buildings could not take off due to delays in tendering for the project. Mega Solar PV Projects at could not be implemented due to failure to acquire the requisite land. Another project for the Electrification of remote villages areas by solar energy was scrapped due to delays in selecting the project executor.

² United Nations Framework Convention on Climate Change

³ The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels. India ratified the Paris Agreement (on Climate Change) on 2nd October 2016.

⁴ Giga Watt

⁵ between August 2011 and July 2014

Tariff and other regulatory mechanisms relating to purchase and sale of RE

To increase the share of electricity from non-conventional sources in the total electricity consumption, NAPCC (June 2008) set the Renewable Purchase Obligation (RPO)⁶ target to purchase RE of at least five per cent of total consumption of electricity in the area of supply by the distribution companies for the year 2009-10. This was to be increased by one per cent each year for next 10 years, till the target of 15 per cent was reached by 2020. However, RPO targets fixed by the Regulatory were lower than that fixed in the NAPCC. None of the distribution companies could even achieve this lower target. The Regulator did not initiate any proceedings against the power/distribution companies and did not impose any penalty on the defaulters, as per the provision of the Act.

Conclusion

Despite huge potential of renewable energy in the State, the achievement in harnessing RE was very poor. This was due to (i) deficiency in the policy and absence of suitable strategy to implement the policy objective; (ii) poor implementation; (iii) non-conducive tariff and regulatory mechanisms relating to purchase and sale of RE. During 2012-17, only 35.18 MW (4.15 per cent) of RE was installed against the target of 847 MW envisaged in the RE Policy.

⁶ RPO means obligation to purchase electricity from renewable & co-generation sources by a distribution company.

Public Sector Climate Change Audit in Pakistan Analysis and Way Forward

- SAI Pakistan



Ms. Ammara Hassan

About the Author

Ms. Ammara Hassan has done B.Sc. (Hons) Allied Health Sciences and has been currently serving in the office of DG Audit (federal government) Islamabad as Deputy Director Audit. She has previously also served as Assistant Chief Accounts Officer in the Chief Accounts Office, Ministry of Foreign Affairs, Islamabad for three years. She has five years of experience in Pakistan Audit and Accounts service. Her areas of professional interest include the public sector accounting and auditing and public sector financial management.

Introduction

Climate change has become a harrowing reality in the modern era. The level of carbon dioxide has been rising constantly and is the most critical challenge in the current century. There has been an evident impact of this phenomenon on human societies' overall economic and social health. Pakistan has not been an exception in this regard, and the country has been facing enhanced carbon emissions, which is recorded to rise to 123% from 1994 to 2015 according to the Intended Nationally Determined Contribution (INDC) (Ahmed, 2018). It has been speculated that this figure would rise to 300 percent, keeping in view the thriving emission from the energy and agricultural sector. However, to nip this evil in the bud, Pakistan has been a party to the Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC).





As far as the vulnerability of Pakistan to the drastic climate changes is concerned, it ranks as the 5th most top vulnerable country (Abubakar, 2019) and has sustained an economic loss of around four billion USD between 1994 to 2013. The federal expenditure to manage the negative impact of this climate change has also been rising proportionally and is recorded to rise from 5.8% to 7.6% of the entire allocations (Asian Development Bank, 2017). Another threat to the climate sustainability in Pakistan is the constant rise in the Green House Gas emission, which currently stands at the level of 405 Mt CO₂ and is expected to rise at the rate of 6 % annually. In the light of this factual and figurative position, this paper destines to study the role of the Supreme Audit Institution of Pakistan to keep a check on the expenditure about the climate change and to devise the evolving audit techniques in line with the international practices to monitor the carbon emission and its reduction effectively.

The primary function of SAI lies in catering to the risk of accountability and identifying the avenues specifically prone to corruption in the financial management of climate change. Moreover, SAI Pakistan also plays the role of observing the activities of all the public sector organizations dealing with the disposal of carbon emission reduction strategies. It is essential to elaborate brief description of the overall process of climate change budgeting which is part of public financial management in Pakistan. The formation of an active climate change council and climate change authority took place after the climate change act of 2012 and was revised in 2016 by the country. The mandate of this body includes the formulation of the annual plan of climate change, chalking out the diversely agreed benchmarks for climate change management for each province and analysis of the yearly financial statements on climate change.

Existing Climate Change Spending and Accounting Arrangement in Pakistan

Currently, the highest financial governing institution of the monetary transactions on behalf of the federal government in Pakistan is the office of The Controller General of Accounts. This office performs the country-wide pre-audits and disburses the payments, records the transactions, and prepares the consolidated financial statements. To streamline the entire process ranging from budget allocation to the disbursement of payments, the fully automated system under the flagship of Project to Improve Financial Reporting and Auditing (PIFRA) has been implemented in 2009. The comprehensive information regarding the budgetary allocation and spending is reflected through the digitally generated fiscal reports via the Financial Management Information System (FMIS) every month. Later on, these reports are compiled in the form of Annual Financial Statements of the federal government based on the format of IPSAS, along with the statement of appropriation of the object-wise grants for the whole fiscal year.

Role of Climate Change Audit in Strategizing the Carbon Reduction Mechanism

There is a significantly crucial role of the Audit as it directly influences the public opinion through the disclosure of the performance of the government to ensure transparency. The formulation of future goals and policies also significantly depends on the feedback provided by the Audit institution of the country as well as the status of carbon emission from various public sector domains of the country. The statistical analysis of the sector wise carbon emission in Pakistan is depicted in the following chart. This figure depicts high level of carbon emission from the agricultural and manufacturing sectors of the country.

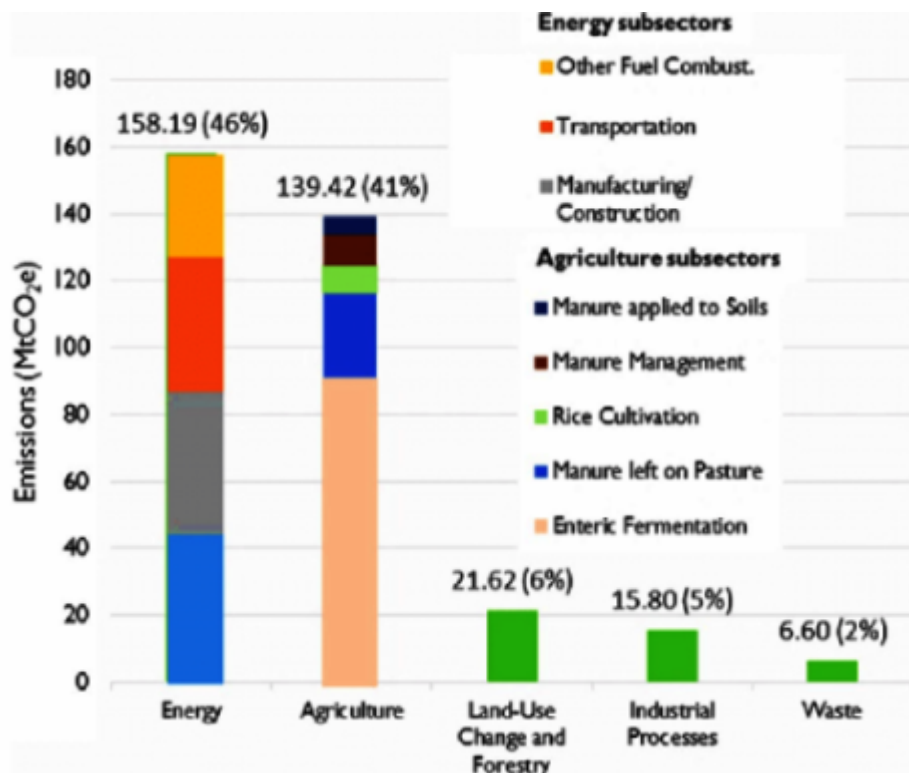


Figure: Sectoral breakthrough of GHG emission in Pakistan (Rehman, et al., 2021)

Keeping in view the recent upheaval of climate change phenomenon, there is an even bigger responsibility of the Audit to carry out the Audit and present the report to the legislature. The reason lies in the constantly rising share of carbon emission from the public sector. In Pakistan's context, the office of the Auditor General of Pakistan (AGP) has the responsibility to evaluate the functions of accounts offices and treasuries, provinces, districts and, acquire the entire record as required to make final observations of significant materiality and risk. SAI Pakistan adheres to the international standards of Audit, which INTOSAI has communicated.

Audited financial reports of the country are afterward presented to the National Assembly's Public Accounts Committee, which evaluates and inspects the accounts and reports of the AGP for onward presentation to the National Assembly. As far as the climate change audit is concerned, initially, the audit's focus remained on the financial Audit of the expenditure. This financial Audit of climate change includes the assessment of the transactions about the climate and how the disbarment occurs to achieve the ultimate objectives of climate policy. The disclosure or the opinion regarding the accurate and fair reflection of the Annual Financial Statements for the entire fiscal year is then made in the financial audit report of the office of AGP. As for now, this process can further augment the capacity building of the auditors to conduct the performance audit of the climate change in line with the international practices.

Constraining Factors Hindering Effective Climate Change Audit in Pakistan

There is a need to develop state-of-the-art audit techniques and constant professional development of human resources to cater to the emerging threat of climate change and carbon emission. SAI Pakistan still needs to work on this avenue as it is the main constraining factor. The major constraining factor, which the international SAI has pointed out, also pertains to the want of a deep and insightful understanding of the technical aspects of climate change audit methodology and technique. The main problem which arises during the conduction of such audits pertains to the limited capacity and expertise of the auditors during the formulation of materiality, risks identification and the benchmarks about climate change. It is also no denying the fact that the leading techniques and approaches used in the climatic change and carbon emission audit are the same as those used in the financial performance audit. Yet, there is a distinct skill set for correctly identifying the factors leading to the enhanced emission at the public sector level. This aspect of the climate change audit is still in its nascent stages, and only a few countries like Sweden, New Zealand, and the USA have employed accurate carbon audit techniques. However, SAI Pakistan, having limited resources has also conducted a few very comprehensive audits on the climate change such as Audit of "Earthquake Emergency Assistance Project (EEAP)". The project was executed by Earthquake Reconstruction and Rehabilitation Authority (ERRA). The Project Audit Report covers both Performance and Financial aspects regarding the climate change. However, there is a need to put more emphasis on highlighting the technical observations pertaining to the carbon emission, the expenditure being incurred on its management and the overall output of the entire effort in the reduction of carbon emission.

Having said that, the plausible approach for the office of AGP would be to collaborate through the forum of ASOSAI for the continuous capacity building of the human resources for the effective accomplishment of the carbon audit. The main benefit of this approach would occur in the form of collaboration regarding the audit programming within the ambit of regional SAIs and the generation of guidelines and sharing of innovative audit techniques in the domain of climate change audit.

Role of Stakeholders in Enhancing the Efficacy of Climate Change Audit in Pakistan

Various stakeholders in Pakistan can collectively make the entire process of climate change audit successful. First and foremost is the role of the PAC before whom the audit reports are presented. The audit report would be helpful only if the PAC holds the professional acumen to discuss and analyze the technical nature of such reports. Currently, the major drawback occurs in the form of excessive focus of the PAC on the matters related to corruption and misappropriation rather than the actual performance and achievement of the milestones in the public sector. Hence, there is a limited and relatively meagre emphasis on climate change policies in the country's political arena.

Role of External Audit

The SAI of Pakistan has the sacred command to lead a review of all administration substances. The studies are conducted utilizing INTOSAI Auditing Standards. Review reports have been reliably introduced to the lawmaking body somewhere around eight months after the end of the fiscal year. Nonetheless, there is a vast deferral in the survey of the external review reports by the lawmaking body and an excess remaining part on consistence with directions. While the extent of the lawmaking body's survey of the yearly financial plan is somewhat solid, the adequacy of this is discredited by time limitations under which the governing body needs to work while investigating the yearly financial plan, and by the protected arrangement that caters for broad redistributions and development, without a necessity for earlier response to the assembly. The shortcoming of administrative examination of external review reports has been a critical issue in the responsibility interaction for a long time. The PACs are overburdened with the errand of managing a comprehensive reports overabundance.

Strategies to Strengthen Climate Change Auditing in Pakistan

Primarily, there is a need to shift the climate change auditing techniques to the measured approach by introducing a carbon emission evaluation index system. It is foreseen that the upcoming climate change audit policy would be directed more towards the performance evaluation, proposal formulation system for the problem-solving, high-end integrative approach of the Audit, and the development of a macro-management system to reduce carbon emissions.

Secondly, the need of the hour is to facilitate the disclosure of information about the climate change audit. This step would help transmit the results of such Audit to the agencies and organizations concerned so that the strategies for the carbon emission reduction may be regularized. This aspect of the proposed method is in line with the Theory of Public Governance and the Stakeholder Theory, whereby the idea of supervision of the carbon emission reduction by the general public, office bearers and the taxpayers has been coined (Miles, 2017). This collaboration would ultimately help flourish the adaptability and learning among the stakeholders.

Another recommendation pertains to adopting a holistic approach toward climate change auditing. There is a need to embrace the cross-border environmental compensation system based on the information collected through the climate change audit. This type of all-inclusive carbon emission reduction approach is a helpful tool in alluding to the information disclosure to various subjects of Audit and afterwards enhancing the pertinence of audit information.

Another strategy would be the promotion of the updated and highly accurate environmental auditing accountability mechanism, which can have a long-term impact on reducing carbon emissions. The purpose of accountability and feedback is to constantly keep the prime carbon emission-related issues under consideration and rectify and reform the policies regarding the carbon emission audit.

Conclusion

Conclusively speaking, the overhauling of the climate change audit practice would be a multipronged tool for promoting the commitment to laws and environmental protocols and improving the legal and personal accountability in this regard. Only the collaborative and all-inclusive approach with the constant participation from all the stakeholders in the climate change audit can ensure the ultimate reduction of carbon emissions in the public sector domain.

References

- Abubakar, S. M. (2019, December 4). Pakistan 5th most vulnerable country to climate change, reveals German watch report. Dawn. <https://www.dawn.com/news/1520402>
- Ahmed, V. (2018, December 30). Carbon emissions in Pakistan likely to rise about 300% by 2030. The Express Tribune. <https://tribune.com.pk/story/1877884/carbon-emissions-pakistan-likely-rise-300-2030>
- Asian Development Bank. (2017). Climate Change Profile of Pakistan. <https://www.adb.org/sites/default/files/publication/357876/climate-change-profile-pakistan.pdf>
- Miles, S. (2017). Stakeholder theory classification: A theoretical and empirical evaluation of definitions. *Journal of Business Ethics*, 142(3), 437-459.
- Rehman, E., Ikram, M., Rehman, S., & Feng, M. T. (2021). Growing green? Sectoral-based prediction of GHG emission in Pakistan: a novel NDGM and doubling time model approach. *Environment, Development and Sustainability*, 23(8), 12169-12191.

About the authors

Sustainability Fraud: Greenwashing

-SAI Indonesia



Ms. Oktarika Ayoe Sandha is the Head of Compliance Audit Section II at Research and Development Directorate, the Audit Board of the Republic of Indonesia (BPK). She completed her Master's degree at Gadjah Mada University, majoring in Accounting. She has been involved in several ASOSAI projects related to fraud audits and research projects on remote audits. E-mail: oktarika.sandha@bpk.go.id.



Ms. Chandra Puspita Kurniawati is a Policy Analyst in BPK. She is currently pursuing her Master's degree at Padjadjaran University, majoring in public policy. She has been involved in several INTOSAI projects related to developing audit guidance on auditing disasters. E-mail: chandra.kurniawati@bpk.go.id.

Abstract

For years, consumers' requests for green products and limited oversight have together contributed to the rise of greenwashing. Although some believe that it is just corporate cheap talk about environmental performance, in the long term, greenwashing may hamper the achievement of SDGs and thus push governments as well as SAs to respond accordingly. This study tries to elaborate on the issue of greenwashing, the policy framework around this issue, and how it affects the audit assignment using a study literature review.

The study finds that external, organizational, and individual factors may contribute to creating pressure, opportunity, and possible rationalization for corporates having good communication skills and bad environmental performance to bring about greenwashing. Unintegrated as well as segmented policies also exacerbate the possibility of greenwashing. And thus, this study recommends auditors be able to recognize the red flags of greenwashing and treat them sufficiently in the audit they carry out.

Keywords: audit; auditors; fraud; greenwashing; policy

Introduction

The pursuit of economic growth and the desire to gain the maximum business profit has put shareholder interest to be the main focus of industries for years which then leads to the rising issues of environmental degradation. This phenomenon, later, has shifted the global risk landscape from economic to planetary devastation and made environmental risks dominate the risk profile today.

Responding to the aforementioned issue, people's interest in green products and activities starting to grow from time to time (Kollmuss & Agyeman, 2002). Consequently, corporates should begin to find methods to deal with this issue while at the same time trying to meet the stakeholders' interests and responding to stakeholder dynamics. Hence, environmental issues have been on the corporate radar screen for years (Lyon & Maxwell, 2006).

Subsequently, corporates' value creation comes into existence which necessitates a drastic rethink. On one side, corporates are pushed to pay more attention to the adoption of the 2030 Agenda on Sustainable Development to stay competitive. On the other side, in its way to accomplish the Sustainable Development Goals (SDGs), the government also pushes corporates to comply with their environmental claims as governed by the available policy framework.

Unfortunately, the pattern of green demand as well as pressure from government and shareholders have likely created more pressure on the corporates, and thus, inevitably drive them more vulnerable to sustainability fraud which is widely known as greenwashing (Lockard & Becker, 2009). Moreover, the upward trend of litigation emerging from greenwashing has also been interesting, indicating that the public has started to question and put special attention to the validity and correctness of the "environmental label" given to certain products and activities. This awareness, later, is deployed on how the policy framework responds to greenwashing and protects the public from this misconduct in addition to the government's roles, performance, and compliance in ensuring the green or environmental label appropriateness.

Considering the importance of greenwashing to the achievement of SDGs, this study tries to provide information about greenwashing, its drivers from the fraud triangle perspective, its red flags, Indonesian policies related to greenwashing, and how auditors respond to such issues within audit assignments. And thus, this study is expected to serve a new perspective on the current discourse related to SDGs audits.

Research Method

Study literature review of reports, books, articles from reputable journals, and other relevant resources is used in this study. The policy framework is also critically reviewed. Then, the gathered data is analyzed and interpreted to portray the interesting issues surrounding greenwashing and the related policy framework as well as to design auditors' responses to it.

Result and Discussion

Greenwashing: definition, drivers, and red flags

Since the establishment of the policy framework pursuing environmentally friendly labels, green has become the new black in marketing. The rising demand for green products has led to further problems, that is, not only the products should be green; but the processes related to the products should also be clean and green. Environmental, social, and governance (ESG) issues, then, are transformed beyond corporate social responsibility and believed to lie along the value chain, from raw material production to transporting, processing, packaging, delivery to customers, consumption, and even disposal (Murti, 2022).

Subsequently, corporates are in the flock labeling their products, services, and business processes as green using the words carbon-neutral, energy-efficient, environmentally friendly, bio-degradable, organic, sustainable, and so on. In this case, the more aggressive a company is with its environmental claim, the more likely it is to become the target of greenwashing (Lockard & Becker, 2009). And, consequently, the heavier the responsibility for the government to ensure whether the corporates are truly compliant with the available provisions which make them really green or is it just a greenwashing practice.

Historically, greenwashing is derived from the words green and whitewash which means making false or inaccurate environmental claims about certain products or services (TerraChoice Environmental Marketing, 2007). There are six identified sins of greenwashing, namely (1) sin of the hidden trade-off or advertising a product as green based on one attribute without considering other important environmental issues related to the product, (2) sin of no proof when a claim cannot be substantiated by easily accessible information, (3) sin of vagueness when a claim is so poorly defined or overly broad that an intended customer is likely to misunderstand it, (4) sin of irrelevance when an environmental claim is made that may be truthful but is unimportant or unhelpful to the environmentally-conscious consumer, (5) sin of lesser of two evils when a claim may be true, but it risks distracting the consumers from the greater adverse environmental impacts of the product's entire category, and (6) sin of fibbing when a claim is false (TerraChoice Environmental Marketing, 2007).

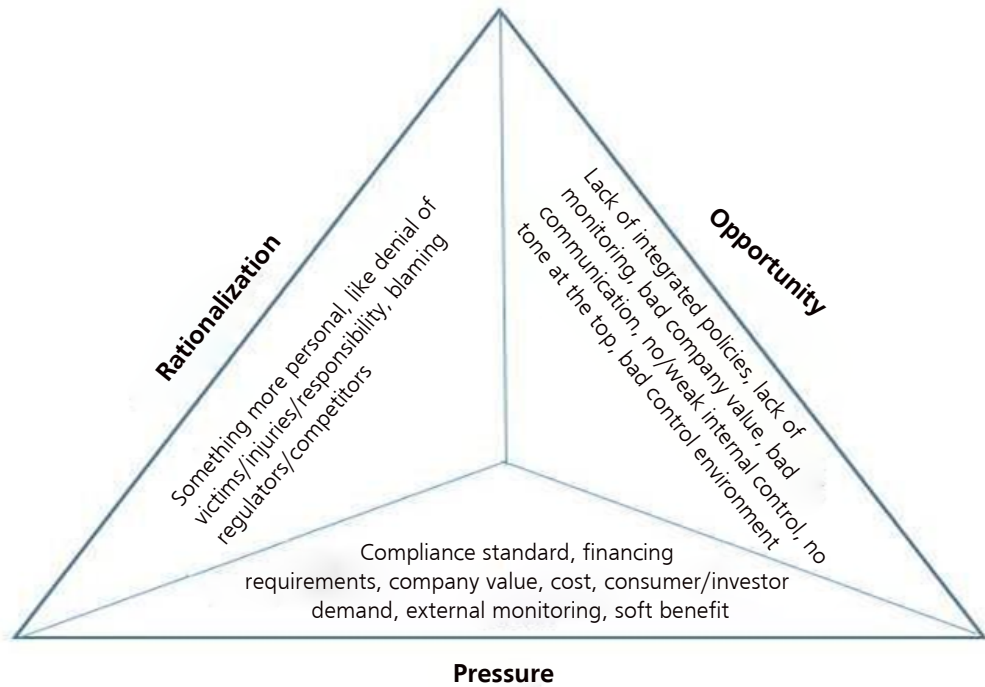
In other words, greenwashing is simply defined as manipulating public opinion using a green brand image (Wongkar & Apsari, 2021). There are two types of greenwashing, namely: (1) the act of misleading consumers regarding the environmental practices of a company (firm-level greenwashing) and (2) the environmental benefits of a product or service (product-level greenwashing) (Delmas & Burbano, 2011).

Greenwashing is also about disinformation strategies. Lyon & Maxwell (2006) elucidate greenwashing as an organization that intentionally publicizes disinformation so as to deliver an image as environmentally responsible. This implies a fraudulent message where the public only has little information on the organization's environmental performance and that the organization can drive the distribution of information to deceive the public (Lyon & Maxwell, 2006). In other words, greenwashing needs positive communication skills or a good ability to communicate environmental issues when at the same time a corporate has bad environmental performance.

From the aforementioned definition and condition, it can be seen that there are several factors contributing to the driver of greenwashing. Delmas & Burbano (2011) specifies that there are three drivers of greenwashing, namely external, organizational, and individual factors. External drivers deal with available policies, external monitoring (for example from Non-Government Organizations/NGOs, media, public, or government), consumer demand, investor demand, and competitive pressure. Organizational drivers relate to the organization's general ethical climate (i.e. tone at the top), value, communication, control environment, internal control, and reporting policies. Meanwhile, individual drivers relate to something that is more a psychological condition (for example denial and blaming regulators/competitors).

When discussing greenwashing within the fraud context, it is easier to contextualize the drivers in the fraud triangle. It is simply because the fraud triangle shows the conditions that produce fraud on three clusters, namely pressure, opportunities, and rationalization as figured out in Figure 1 below.

Figure 1. Greenwashing Triangle



Source: Adapted from Delmas & Burbano (2011), KPMG (2020)

As greenwashing is a specific form of fraud, red flags can emerge as warning signs. Inconsistencies of the public disclosed ESG stories (i.e. inconsistency of Chief Security Officer's public statement versus what is published in corporate's sustainability reporting versus corporate's a web/social media publication versus news publicized by mass media) is one important red flag that is relatively easy to find. Other possible red flags are the corporate's negative publication which is directly accompanied by its counteraction, bad ratings/publications on the corporate, unreliable and not credible disclosure, the revisited/redesign corporate's purpose to accommodate the raising challenges it has, no available ESG policy in the organization, no supporting/insufficient system/structure on ESG, no corporate's ESG key performance indicators, troubled relevant stakeholders with which the corporate cooperate, and unaddressed issues/activities on corporate's operations although they have widely known for their impact to environment carrying capacity.

Policy framework and related in charge parties

As implied, greenwashing is not only harmful to consumers but also violates their rights. Unfortunately, in many countries, including Indonesia, a greenwashing-related policy framework is tremendously limited, segmented for certain sectors, as well as less integrated and thus, its implementation, monitoring, and enforcement seem unsettled. To date, the Consumer Protection Law (i.e. Law No. 8 of 1999 on Consumer Protection) can be considered as a policy umbrella to fortify consumers against greenwashing practices. In this case, Article 4 point 3 describes consumers' fundamental rights to correct, clear, and honest information about goods and services conditions and guarantees. Further, Article 8 prohibits business people from misleading their consumers. The only sanction is stipulated in Article 62 which states that producers who violate the law will be imprisoned for a maximum of five years or fined IDR 2 billion.

Further, related to the environmental issue, Article 68 Law No. 32 of 2009 on the Protection and the Management of the Environment has mandated business people to provide correct, accurate, open, and timely information regarding environment protection and management. It means that greenwashing violates people's right to a good and healthy living environment as mandated by the law.

In the lower level of statutory provisions, although some policies have been established, the problems of unintegrated policies rise. Some ministries and institutions are authorized to deal with greenwashing-related issues and accordingly establish some policies as shown in Table 1 below.



Table 1. Policy Framework Related to Greenwashing in Indonesia

Ministries/ Institutions	Policies/ Regulation	Policy Target	Policy Subject	Linkages to Greenwashing
Ministry of National Planning	Medium-term national development plan 2020 - 2024	Encouraging resources efficiency, circular economy, low carbon development strategy	All line Ministries/ institutions	- Closely related - Regulating the right to a good and clean environment
	Medium-term national development plan 2025 - 2029	Encouraging sustainable development and investment	All line Ministries/ institutions	
Ministry of Environment and Forestry	Ecolabel (Minister of Environment and Forestry Regulation No. 5 of 2019)	Providing accurate, verified, and not misleading information on environmental aspects of the products (goods/ services)	Corporates	- Closely related - Ensuring accurate and not misleading information on offered goods/ services
	Company performance appraisal – PROPER (Minister of Environment and Forestry Regulation No. 1 of 2021)	Evaluating companies/ corporates' environmental performance	Corporates	- Closely related - Providing consumers with information on certain companies' environmental performance
Ministry of Industry	Green Industry Standard (Minister of Industry Regulation No. 51/M- IND/PER/6/2015)	Providing references for the green industry	Corporates	- Closely related - Ensuring the Fulfillment of the environmental rights

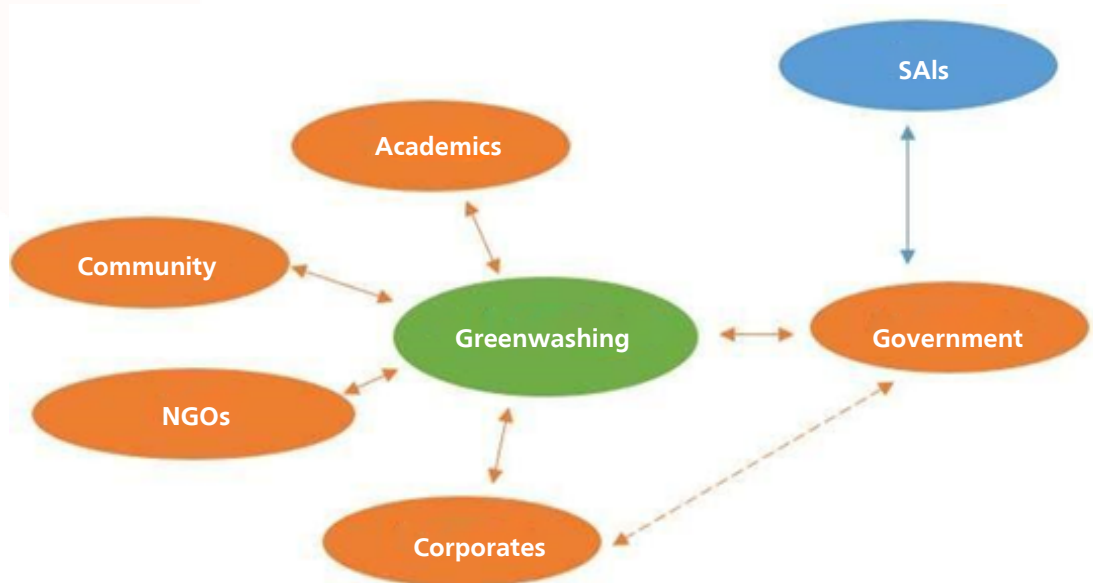
Ministries/ Institutions	Policies/ Regulation	Policy Target	Policy Subject	Linkages to Greenwashing
	Low-cost green car (Minister of Industry Regulation No. 33/M-IND/PER/7/2013)	Providing cheap and environmental friendly four-wheeled vehicles	Four-wheeled vehicle users	<ul style="list-style-type: none"> - Closely related - Ensuring the environmental claim on four-wheeled vehicles
Ministry of Agriculture	Indonesian sustainable palm oil system (Minister of Agriculture Regulation No. 38 of 2020)	Ensuring sustainability issues for palm oil industries	Palm oil actors	<ul style="list-style-type: none"> - Closely related - Managing sustainable production and consumption
Ministry of Finance	Green Sukuk Ritel referring to Government	Green investment instrument	Investment actors	<ul style="list-style-type: none"> - Closely related
	Regulation No. 73 of 2012)		Corporates	<ul style="list-style-type: none"> - Offering sustainable finance
Financial Service Authority	Sustainable Finance (Financial Service Authority Regulation No. 51 of 2017)	Promoting sustainable finance	Financial service institutions, Issuers, and Public companies	<ul style="list-style-type: none"> - Closely related - Maintaining finance sustainably
	Green bond (Financial Service Authority Regulation No. 60 of 2017)	Promoting green financing	Corporates, environment experts	<ul style="list-style-type: none"> - Closely related - Providing examples of eligible green project

The analysis of the available policies also shows that there is an absence of several important issues related to greenwashing in the available policies, such as (1) unclear greenwashing parameters including their information dissemination, (2) government monitoring of green labels, (3) integration of consumer protection, right for a good and clean environment and green products, (4) mainstreaming education on anti-greenwashing to encourage people's critical thinking toward greenwashing practices, as well as (5) strict sanctions on corporates or any relevant parties who violate the laws and available provisions or carrying greenwashing practices.

Auditors and Greenwashing: How Are They Interconnected?

If greenwashing deals more with the corporate, why should auditors be aware of this issue? Environmental problems, including greenwashing, and efforts to achieve SDGs are a shared responsibility among stakeholders. Besides, to date, environmental crime has been rising which brings more threats to the people and the planet. On one hand, government, perhaps, will encounter many obstacles in its efforts to monitor and evaluate the policy implementation. On the other hand, INTOSAI P-12 has expected SAI's existence to make a difference in the lives of citizens. Auditors have indispensable roles to play in nurturing people's trust by translating some information of an accountancy nature to meet public interest exercise. In this case, auditors should respond accordingly to the evolving issues and reporting requirements related to ESG, including greenwashing. The possible relationship between SAs and the government can be illustrated in Figure 2 below.

Figure 2. The SAs – Government Relationship Regarding Greenwashing



When possible and/or mandated by the available provisions, auditors can carry out audits to examine the discrepancies between available policy frameworks and their implementation of greenwashing. Besides, since fraud is considered to have significant risks, it is also important for auditors to obtain a sufficient understanding of the government's control on greenwashing when auditing relevant issues. The possible audit design for greenwashing is provided in Table 2.

Table 2. Audit Design on Greenwashing

Types of audits	Performance/compliance audit
Responsible party	Ministers of respective sampled ministries
Subject matter	<ul style="list-style-type: none"> - Anti-greenwashing regulation; - Anti-green washing disclosure' - Greenwashing mitigation, prevention, detection, investigation
Audit objectives	<ul style="list-style-type: none"> - To examine audited entities' compliance toward the available policy framework related to anti-greenwashing regulation, mitigation, prevention, detection, investigation; - To examine the effectiveness of green labeling; - To examine the sufficiency of policy design to mitigate, prevent, detect, and investigate greenwashing; - To examine the effectiveness of anti-greenwashing mitigation/prevention/detection/investigation programs/activities
Audited entities	<ul style="list-style-type: none"> - Ministries/institutions that provide anti-greenwashing regulations/policies - Ministries/institutions implementing anti-greenwashing regulations/policies - Ministries/institutions evaluating anti-greenwashing regulations/policies - Institutions investigating greenwashing practices
Audit criteria	Available policy framework: laws, lower level statutory provisions, technical guidance, best practices

Conclusion

The consensus among the government and business community on moving the UN 2030 Agenda further has been clear. Nevertheless, putting SDGs at the core of the policy framework which enables the government to monitor and control the corporates' design and implementation strategies for anti-greenwashing remains a challenge. Although the number of corporations that provide sustainability reporting continues to grow today, poor disclosure practices can be linked to negligence of the compliance function. In this case, when compliance has no understanding of the underlying factors of ESG-related strategies, the establishment of adequate control and their enforcement remains a challenge. And where effective controls, adequate policies, and sufficient procedures to examine them are lacking, the risk of greenwashing will in the end threaten the country's SDGs' target achievement.

The government only has less than ten years to achieve SDGs. Accordingly, SAls support is indeed urgently needed to support the government to ensure that its roadmap is back on its right track. SAls should commit not only to becoming problems finder but also to creating value for the people and the planet. This can be done, among others, by ensuring that their audit programs have taken into account SDGs related issues and considering their red flags, including ones related to greenwashing. Through audits, SAls may recommend the enforcement of policy framework, as well as segregation of duties among ministries/institutions on the greenwashing regulation, mitigation, prevention, detection, and investigation.

Reference

- Delmas, M. A., & Burbano, V. C. (2011). The Drivers of Greenwashing. *California Management Review*, 54(1), 64–87.
<http://journals.sagepub.com/doi/abs/10.1525/cmr.2011.54.1.64%0A>
https://www0.gsb.columbia.edu/mygsb/faculty/research/pubfiles/14016/cmr5401_04_printversion_delmasburbano.pdf
- Kollmuss, A., & Agyeman, J. (2002). Mind the Gap: Why do People Act Environmentally and What are the Barriers to Pro-environmental Behavior? *Environmental Education Research*, 8(3), 239–260. <https://doi.org/10.1080/13504620220145401>
- KPMG. (2020). *The Rising Challenge of Sustainability Fraud*. KPMG Accountants N.V. <https://home.kpmg/nl/nl/home/insights/2020/06/the-rising-challenge-of-sustainability-fraud.html>
- Lockard, V. D., & Becker, J. (2009). Greenwashing Claims: How to Avoid Becoming an Eco-fraud Target. *Australian Product Liability Reporter*, May, 7–14.

Lyon, T. P., & Maxwell, J. W. (2006). Greenwash Corporate Environmental Disclosure Under Threat of Audit. *Journal of Economics & Management Strategy*, January 2006, 1–37. <https://doi.org/10.1111/j.1530-9134.2010.00282.x>

Murti, P. (2022). *Defending Against the Risk of Greenwashing: Navigating the Fraud Risk Profile of ESG*. PwC Indonesia.

TerraChoice Environmental Marketing. (2007). *The Six Sins of Greenwashing: A Study of Environmental Claims in North American Consumer Markets* (Issue November).

Wongkar, E. E. L. ., & Apsari, P. K. (2021). *Telaah Kebijakan Sustainable Consumption and Production (SCP) dalam Merespons Fenomena Greenwashing di Indonesia Pada Era E-Commerce* (R. G. Sembiring & G. A. Widyaningsih (eds.)). Indonesia Center for Environmental Law.





New HEADS

On April 21, 2022, the Board Members of the Audit Board of the Republic of Indonesia (BPK) appointed Dr. Isma Yatun for the succession of leadership in BPK, making a history for being the first female to sit on the highest leadership role in BPK.

Dr. Yatun was born in Palembang on October 12, 1965. She holds a Bachelor degree in Chemical Engineering (Sriwijaya University), a Master's degree in Chemical Engineering with a major in Gas Management (Indonesia University), and a Ph.D in Accounting (Padjajaran University).

Prior to this, she was a BPK Board Member since 2017, after serving as a member of the Parliament for 13 years.



Dr. Isma Yatun, CSFA, CFrA.

Chairperson of the Audit Board of the Republic of Indonesia



Theme Articles



Deforestation in Khyber Pakhtunkhwa Province and Government Response – An Auditorial Analysis

- SAI Pakistan

Deforestation has become a social challenge and policy conundrum in Pakistan. While the country is globally ranked 135th in the greenhouse gases emission, it is ranked the 16th most vulnerable and 7th most affected country by climate change. Although the province of Khyber Pakhtunkhwa houses 38 percent of forests in the country; it has the fastest rate of deforestation in the country, too, with the forecasted annual deforestation rate of 1.5 percent. Thus, this draws the province into limelight for assessing the policy response of the government. The flagship Billion Tree Afforestation Project (BTAP), under the Green Growth Initiative of the Government of Khyber Pakhtunkhwa (GoKP), is dubbed as a revolutionary step towards sustainable environment and forest management in the province and has captivated the attention of both the public and researchers alike. The success of BTAP's plantation, its socio-economic impact, the selection of species, and its overall effectiveness as the driver of green revolution has been researched by many with very few casting any significant doubts on the success and progress the project has made in rehabilitating the forests, duly acknowledged by independent sources, yet the underlying causes of deforestation have seldom been addressed, thus, it fell considerably short of spurring a green revolution. The causes of deforestation are multifaceted ranging from individual acts to state patronage, with economic dependence on these forests being the primary reason.



Mr. Israr ul Haq
Director General Audit
Khyber Pakhtunkhwa



This Auditorial analysis concludes that without forest sector reforms, alternative energy, creating economic opportunities, adopting participatory approach, and having people's ownership, any initiative taken by the government will fail to take off. The forest sector, the life line of the rural economy, needs government's attention both at policy formulation and implementation levels. The study also recommends prioritizing environment management and ecology through primary legislation, mass awareness, and policy implementation. In order to treat the underlying causes of deforestation, the government needs to provide and incentivize alternative means of energy along with other economic opportunities to stop reliance on forests. Furthermore, eco-tourism and due recognition of people's input in forest management are imperative for sustainable forest management in the province.

Introduction

Forests are part of important natural resources of any country. In Pakistan, forests are important on two counts: firstly, they have their due role in keeping environment of the country clean, and secondly, they directly support the country's rural economy. Pakistan is ranked as the 7th most affected country by climate change despite the fact that the country ranks 135th on the Global Greenhouse Gases (GHS) index (Aslam, Gul and Asghar, 2021). Therefore, the issue of deforestation poses an existential threat to the forest-starved country where the area under forests is only 5.1 percent (4.478 million hectares) of its total land mass with availability of only 0.0021 hectares forest area per person against one hectare per person globally.

The Khyber Pakhtunkhwa province has a total forest coverage of around 1.70 million hectares, which accounts for almost 38 percent of the total forests of Pakistan (Asalam et al., 2021). However, the rate of deforestation in the province is also quite rapid as, according to Global Forest Watch, Khyber Pakhtunkhwa lost 0.83 percent of its total forest area from 2000 to 2020 alone. Against this backdrop, the policy response of the Government of Khyber Pakhtunkhwa (GoKP) needs detailed assessment because the problem of deforestation is no more a local issue rather it now has international implications. The vulnerability of the country to the hazards of climate change puts it on the knife edge. It is, therefore, imperative that government measures are targeted towards long-term sustainability of forests in the province.

Successive governments have undertaken several measures to stem the deforestation. However, lack of long-term planning and an approach to treat the symptoms rather than causes has left much to be desired. Nevertheless, the incumbent government has taken certain measures to tackle the issue of deforestation coupled with endeavours for afforestation, regeneration of forests, and curbing of commercial logging of timber (Mehmood, Yaseen, Ud-Din, Basdsah, Khan and Haroon, 2017). The initiatives of the incumbent government, springing from its proposed 'Green Growth Initiative', envision bequeathing a more liveable future to the next generation (Khan and Aslam, 2015).

The 'Green Growth Initiative (GGI)' envisages providing long-term sustainable development, green growth, and social uplift of the community. The litmus test of these initiatives was the flagship Billion Tree Afforestation Project (BTAP), which has been dubbed as an overall success by the GoKP (Mehmood et al., 2017). Thus, an in-depth auditorial analysis of the implementation of Billion Tree Afforestation Project (BTAP) and the ensuing Ten-Billion Tsunami Afforestation Project (10-BTAP) to gauge the efficacy of these projects towards controlling deforestation and providing opportunities for sustainable development is imperative. In addition to that, based on analysis of the measures taken by the government, this paper will provide recommendations regarding policy intervention and what needs to be done to make forests part of drivers of green growth in the province.

Analysis of Issues and Challenges

1.1. Forest Management in Khyber Pakhtunkhwa

The Khyber Pakhtunkhwa province has a total forest coverage of around 1.70 million hectares, which accounts for almost 38 percent of the total forests of Pakistan (Asalam et al., 2021). Moreover, around 66 percent of the total coniferous trees of the country are located in Khyber Pakhtunkhwa. However, deforestation poses imminent threat to the ecosystem and environmental balance of the Khyber Pakhtunkhwa province. In the last two decades alone, the province lost 0.83 percent of its forest cover to deforestation, which primarily is caused by human activities (Mallick and Masood, 2011). Still alarming is the fact that the forest management has been hardly prioritized by the successive governments. It is, thus, imperative that both the causes and remedial measures are assessed diametrically to provide policy recommendations to the issue. Majority of the forest cover is in the northern part of the province, which, incidentally happens to be among the most impoverished districts of the province.

1.1.1. Legal Framework of Forest Management

The primary legislation that governed the management and administration of forests in the Khyber Pakhtunkhwa (previously called North-West Frontier Province) province was the colonial era's Pakistan Forest Act of 1927, followed by a plethora of other laws enacted from time to time. As per the Constitution of Pakistan 1973, forest management is a provincial subject, and the provincial legislature is empowered to enact laws for its management and administration. The chronology of legal instruments enacted from time to time is given as tabled below (Table-1). The latest among these laws has been the NWFP Forest Ordinance 2002, now named as the Khyber Pakhtunkhwa Forest Ordinance 2002. As highlighted in the Table-1, there are a myriad of laws with overlapping jurisdictions and conflicts of interest. Although the latest legislation i.e., the Khyber Pakhtunkhwa Forest Ordinance 2002 has filled the void somewhat, community ownership and complex organizational setup of forest department make the forest management a difficult task.

Table-1: Showing Laws / Legal Instruments of Khyber Pakhtunkhwa on Forest

Sr #	Laws/ Legal Instruments
1	NWFP Forest Ordinance 2002
2	NWFP Forestry Commission Act 1999
3	Hazara Forest (Amendment) Ordinance 1997
4	Cutting of Tree (Prohibition) Act 1992
5	NWFP (Forests Conservation & Exploitation in Hazara) Ordinance 1980
6	NWFP Forest Development Corporation Ordinance 1980
7	Hazara Forest and Local Government Laws (Amendment) Ordinance 1978
8	NWFP Establishment of Sale Depots and Sawing Units Rules 1975
9	NWFP Forest Produce Transport Rules 1975
10	NWFP Management of Protected Forest Rules 1975
11	Hazara District Protected Forest Rules 1973
12	NWFP Forest Officers Powers, Duties and Rewards Rules 1973
13	NWFP Timber Market (Peshawar) Ordinance 1972
14	West Pakistan Firewood and Charcoal Restriction Act 1964
15	Forest Transport Rules 1952
16	River Rules 1952
17	Hazara Management of Waste Land (Guzaras) Rules 1950
18	NWFP Protection of Trees and Brushwood Act 1949
19	Pakistan Forest Act 1927

1.1.2. Institutional Framework of Forest Management

In Khyber Pakhtunkhwa, the management of forest has also been made difficult by the community ownership of forests, namely the Gozara Forests. In the erstwhile princely states, such as Swat and Dir districts, the Gozara Forests are under ownership of the community, who claim their inalienable rights over these forests. Although logging, cutting, harvesting, and transportation have been forbidden in these forests, due to community ownership, illicit cutting for domestic use and firewood continues unabated (Hasan, 2007). Likewise, the provincial forest department is viewed as a revenue generation department, and every year revenue target is set for the department to achieve (Ali, Ahmad, Shahbaz and Suleri, 2007). Herein lies the rub, as the major source of revenue generation for the forest department is harvesting of trees, be as it may, only windfall trees are harvested, still it amounts to deforestation and disturbance of the ecosystem.

Furthermore, the provincial wildlife department, which is also under the administrative control of the Secretary Forest Department, is against the harvesting of trees of any kind as it is viewed as a measure of deforestation. This conflict in interpretation of forest management is further accentuated by the presence of Forest Development Corporation (FDC). The FDC is a corporation tasked with harvesting, transporting, and auctioning of windfall and other damaged trees in the forest. Thus, there is overlapping jurisdiction among various departments and the issue is perceived and approached in a different manner by these bodies (Ali et al., 2007). Another less attended aspect in forest management is environment and ecology. The Khyber Pakhtunkhwa Forest Ordinance 2002 has only defined environment and ecology, in the definition clauses, but there are no explicit provisions in the Ordinance regarding environment and ecology that has left a considerable void in the primary legislation.

1.1.3. Forest Offences and Prosecution

The Khyber Pakhtunkhwa Forest Ordinance 2002 and the Cutting of Tree (Prohibition) Act 1992 give powers of arrest, search, and confiscation of the property in forest offences through a special forest magistrate to prosecute. Forest officers are also empowered to dispose of the forest offences through a summary trial. Accordingly, section 96 of the Forest Ordinance 2002 enshrines that if an accused does not request or the forest officer refuses to compound a case, he may refer the same for prosecution. It, thus, provides the forest officer with the discretion to refer the cases to prosecution without compounding them, which ultimately results in lengthy trials and damage to the forest property (Hasan, 2007). Moreover, besides creating deterrence, offences that are compounded through summary trial are also a source of revenue to the government. These discretionary powers of the forest officers have neither been abolished nor reviewed towards a transparent and effective case disposal and improved forest management (Hasan, 2007).

1.2. Environment and Ecology

Having ranked 7th most affected country by the global climate change, the United Nations has made Pakistan part of Reducing Emissions from Deforestation and Forest Degradation (REDD) compensatory program that provides for conservation of environment, ecosystem and biodiversity and encourages undertaking initiatives regarding conservation of environment, eco-system, and biodiversity (Zahid, 2018). Keeping in view the pivotal position of Khyber Pakhtunkhwa province, hosting the biggest forest cover in the country, it is of utmost importance that efforts are afoot on behalf of the GoKP to meet the standards set forth by UN-REDD. In this context, BTAP has again been put forth to kick start moving the province towards achieving REDD targets (Zahid, 2018). The Green Growth vision of the GoKP is also touted as a step towards achieving the REDD targets. Moreover, a targeted project to gauge the quantum of carbon stocks for REDD in the province with a budgetary outlay of Rs 40 million has been started since 2013. Likewise, the Pakistan Forest Institute (PFI), Peshawar has been entrusted with the responsibility to conduct a thorough study to assess the carbon stocks in the province. The proposed study is part of a two-year initiative to meet the preparedness and readiness requirements of UN-REDD.

Having said that, these measures alone do not suffice the requirement of UN-REDD, if the deforestation continues the way it has been in the past as no matter how much plantation, afforestation, and reforestation are done, the carbon stocks will keep on rising in the province. Moreover, in the absence of statutory provisions and explicit mention of environment management, acquiring the requisite target of carbon stocks seems a far-fetched cry (Hasan, 2007).

1.3. Major Causes of Deforestation in Khyber Pakhtunkhwa

The causes of deforestation across Khyber Pakhtunkhwa province vary from district to district; however, the socio-economic causes are consistent among all the districts of Khyber Pakhtunkhwa. The factors that lead to deforestation are driven by the reliance of rural economy on the forests. Forests are mainly located in the hilly areas of Khyber Pakhtunkhwa, thus, the people residing in close proximity have very few economic opportunities (Rabbi, Ali, Hayat and Zia Ullah, 2017). People living in the area have limited access to the mainland and have little resources available for exploiting off-farm economic opportunities. Putting this into context, the people of the area are primarily reliant on forests for their very basic needs. Moreover, majority of the population living in these districts is poor, having very few resources to make ends meet. Livestock rearing is one of the basic sources of livelihood of the people of the area, which is ultimately dependent on forests for their grazing and fodder (Rabbi et al., 2017). Although the forest department is striving hard to preserve forests and pastures from unbridled grazing, the local population has no other viable option to sustain their livelihood. Likewise, the animal fodder available in forests, when grazed freely by livestock, results in diminishing of precious flora of forests. It has also been observed that many important floras have become extinct in these forests due to free animal grazing (Rabbi et al., 2017).

On the flip side, the locals complain of harvesting of forests produced by timber mafia in garb of windfall and other natural calamities, which has adversely affected their own source of livelihood (Ali et al., 2007). Dietary use of forest produce is yet another factor putting a strain on forests of the province. Poor population of the area harvests fruits and other produce for their dietary requirements, which is also a cause of concern and contributes to upsetting the natural flora and fauna of forests. Moreover, the quest for harvesting medicinal plants and herbs for domestic as well as commercial purposes has disturbed the ecosystem of these forests. The harvesting of plants for medicinal use has been in practice in these areas for ages so much so that it is considered by the local people as their inherent right and duty to preserve their ancestral business (Rabbi et al., 2017).

Moreover, the longing for the business and its passage as an heirloom to the next generation is a matter of pride among these families. Thus, it becomes very difficult for the forest department to control the harvest of these plants despite the fact that these people have been apprehended and punished time and again (Hasan, 2007).

1.3.1. Illegal Logging

Illegal logging is perhaps the biggest cause of deforestation in Khyber Pakhtunkhwa province. Although there is no definitive explanation of the term 'illegal logging' as various scholars have defined it differently; however, the simplest explanation of the term in the literature is any activity which is against the provision of forest laws (Usman, 2017). There are various causes of illegal logging in the forests of Khyber Pakhtunkhwa. The most common cause referred to is the illegal cutting of trees by the timber mafia for commercial activities. The notorious term "timber mafia" is quite often forwarded as the main cause of deforestation, with each side accusing the other of harbouring, aiding, and abetting this mafia. Although both the government and the people of the area accept the presence of the mafia, both pass on the buck to each other for its illegal activities (Hasan, 2007). It is pertinent to mention here that it is not only the forest department which is to be blamed for the illegal activities of the timber mafia; it is also a testament to the weak institutional framework of the entire governmental machinery that these elements operate even in this day and age.

1.3.2. Inadequacy of Forest Laws and their Enforcement

Since the forest department is primarily tasked to put their activities on the leash, it gets the blame for any error, omission, and commission (Ashraf and Usman, 2017). It is, therefore, imperative to look into the factors that are responsible for the unfettered logging of timber in these forests. The first question that naturally arises among the minds of the researchers is whether the laws enacted and enforced are adequate or not? The answer to the question is not that straightforward; in fact, one can criticise the GoKP for having so many laws with regard to the protection and conservation of forests (Khan and Nadeem, 2017). Thus, the presence of this plethora of laws has led to overlapping jurisdiction among various departments, which is often exploited by these elements. Another question that begs discussion is whether forest offenders are adequately punished, if punished at all? Forest offenders, particularly those involved in illegal logging are dealt with in either of the ways; their offences are either compounded with a summary trial on the spot or they are sent for prosecution as PCs (Prosecution Cases) (Khan and Nadeem, 2017). The compounded cases are punished based on nature of the offence, its currency by the offenders, and the nature of the timber.

1.3.3. Connivance of Forest Department with Timber Mafia

Connivance of the forest department with the timber mafia is another accusation that needs proper investigation to weed out the root causes of deforestation across the province. There are three main theories put forth with regards to the notorious timber mafia and forest department connivance. Firstly, it is often stated that a weak institutional framework is responsible for laying the foundation of mafia and forest department alliance. Secondly, since forests are in peripheral areas which are difficult for poor countries to develop, otherwise that creates an overall economic vacuum which in turn is exploited by these elements. Lastly, it is argued that due to weak penal laws, economic benefits for both the parties are so enormous that it is difficult for the governments to break this alliance (Robbins, 2000). Still further, is the stereotypical theory of "rent-seeking" put forth by many researchers as the main cause of spread of the timber mafia reinforced by a syndicate of rent-seeking bureaucrats, government officials, and local politicians who share their own portion of the pie in the illegal logging of forests due to which they turn a blind eye to the illegal activities happening under their noses (Robbins, 2000).

Deeply intertwined with economic benefits theory for illegal logging, the rent-seeking approach provides to all stakeholders a win-win situation to share the accruing economic benefits, albeit at the expense of environmental degradation; hence, every stakeholder conveniently gets maximum out of it (Ali, Furad, Ibrar and Shah, 2020). This intrusion is so permeated that even the legal tendering process of cutting trees for harvesting was taken over by the Forest Development Corporation (FDC) due to the vanished faith of the people. However, it was not long before when FDC became controversial as it was accused of illegal extra harvesting in the same manner as the private contractors were doing (Ali et al., 2020). Thus, there is a general mistrust among the people regarding the role of the forest department in controlling the timber mafia. Although, there is a handsome reward under the Forest Act to apprehend those involved in the illicit cutting of forests, it does not pay rich dividends in terms of controlling the illegal activities of the timber mafia.

1.3.4. Image of Forest Department – Public Trust Deficit

As obscure as it may sound, there is a general scepticism with respect to the commitment of the forest department towards curbing deforestation. It has often been asked as to how it is even possible that a forest is subjected to illegal cutting when it is manned by the forest force? Afterwards, this illicit cutting is intended for commercial purposes, and can hardly be consumed in the local area, thus, how is it possible for it to leave the vicinity when every crossing point has a forest check-post which is manned by the forest force? These are questions which challenge the very existence of the forest department. Although, it is almost impossible to stop all levels of deforestation in such a difficult terrain, the general perception about the role of the government is a major cause for concern (Hasan, 2007). The recent green growth initiative of the incumbent government also emphasizes on community engagement so as to bring back a sense of ownership among the local population with respect to forests and improve public perception about the government and its institutions (Usman, 2017).

1.4. Pressure of the Growing Population

Pakistan is ranked as the 2nd most populated country among the Muslim countries and the 3rd largest in the region, which is also home to the two most populated countries of the world (Kabasakal and Bodur, 2002). Thus, it doesn't come as a surprise that the natural resources of the country are under the population siege. The Khyber Pakhtunkhwa province is no different as its population has also been increasing at a steady pace. Resultantly, the human intrusion into the forest reserves is a foregone conclusion. The biggest proponent of the human impact on forest degradation is the Theory of Himalayan Environmental Degradation (THED), which states that forest intrusion through human activities is the major cause of deforestation. These include agricultural expansion into forest lands, use of forest for combustion, livestock rearing, and other allied human activities. All these factors are attributed to the population explosion in the country (Ali et al., 2007). Although the theory has been vehemently criticised for its over-simplistic approach, as population growth and management have different contours altogether, its impact on highlighting the challenges faced in the way of proper forest management cannot be denied.

Another issue deeply linked with population explosion is the strain on forests for firewood. The use of forest for firewood is one of the basic sources of livelihood of these people. There are three factors primarily responsible for the use of forests for combustion purposes. Firstly, people residing in forests are extremely poor who find forests to be an easy source of livelihood to meet their basic needs. Secondly, people of forest area experience extreme winters with constant snowing and below zero-degree Celsius temperatures, particularly in the forest districts of Kalam, Upper Dir, Shangla, Chitral, Maneshra, and Kohistan Hasan (2007), thus, these people consume many fold more firewood in winters. Lastly, the absence of alternative sources of energy makes the matter worse. Very few areas of the aforementioned districts are entirely connected to the national electricity grid whereas access to natural gas is almost entirely missing (Hasan, 2007). Resultantly, people of the area are left with no other alternative but to burn forest trees as a source of energy.

Small run of the river dams and renewable solar energy initiatives have so far been unable to ease out the pressure on forests, however, providing solar energy is not only capital intensive but also requires patronage from the private sector, which is practically non-existent in these areas due to extreme poverty (Usman, 2017). Moreover, the excessive use of wood in cultural ceremonies such as marriages etc, which are part and parcel of lifestyle of these areas, is another factor that is responsible for unbridled use of firewood. The cultural outlook and lifestyle of these dwellers has certain traits that form inevitable causes of deforestation in the province, for instance, the construction style of housing in the area is heavily reliant on the use of wood (Ali et al., 2007). The general structural design of houses and other buildings is such that an excessive use of wood is the basic requirement of the design. Here again, it would be naïve to expect that people are going to change their lifestyle or the way they construct houses overnight, reasons being that wood is readily available in the area and that too at cheaper rates. Furthermore, the cost of transportation of alternative material for construction is far too high (Hasan, 2017).

1.5. Natural Calamities and other Factors

Natural disasters and other calamities have also not spared the forests of Khyber Pakhtunkhwa. The repeated floods, earthquakes, wildfires, and other disasters have contributed to the degradation of the forests in the province. Although these natural disasters cannot be averted entirely, preparedness on the part of the government and the community can certainly help in mitigating the impact of these disasters. Another incident of its kind was reported in 2008-09, during militancy in the district Swat, despite the fact that majority of the people fled the area; it was found through satellite imaging that 58 hectares of forest was directly reduced during the period (Ali et al., 2020). On top of it, Swat has been the site of frequent wildfires, which has adversely affected the flora and fauna of the area. It has often been alleged that these incidents of forest fires are deliberate arson attacks on wild forests by the local population. During the period between 1993 to 2000, 20 incidents of forest fires were reported (Ali et al., 2020). These have been categorically characterized as deliberate fire-bombing by local population. There are two reasons put forth for these deliberate slash fires, firstly, the local community intends to clear forest area for agriculture purposes. Secondly, the intended fire is used as a tool to provide inlet to main forest and pastures for free grazing of livestock (Rabbi et al., 2017).

Over the years, the areas hosting forests in Khyber Pakhtunkhwa province have become a major tourist attraction for both local and foreign tourists. This has led to road link expansion and population influx to these areas. Moreover, tourism has become one of the major sources of living for the local people, with many other small businesses and entrepreneurship been anchored by this industry. Hoteling business has seen enormous expansion, with mushroom growth of small cottages, resorts, and restaurants along with major hotels in these areas (Rabbi et al., 2017). This has resulted in a massive strain on the forest resources as the people have lavishly used wood in the construction of these hotels. Tourism in itself is not a bad phenomenon; in fact, it has provided a lifeline to an otherwise economically deprived area of the province. However, due to a lack of governmental oversight and vision, it has become a cause of concern. It may sound a cliché that one must not kill the goose that lays golden eggs, but a similar thing is happening in the forests' rich districts of Khyber Pakhtunkhwa, where the very source of livelihood has been under siege from the local population. Furthermore, due to lack of awareness and governmental patronage, the concept of eco-tourism has not been recognized by the people of the area (Rabbi et al., 2017).

Government response to forest management

Response of the GoKP towards tackling the problem has received little attention among researchers, with still fewer appreciating efficacy of the projects targeted at curbing deforestation. Perhaps the biggest reason behind the dearth of quality and detailed research about the endeavours of the government with respect to deforestation is the lack of patronage by the government. Moreover, the Pakistan Forest Institute (PFI), Peshawar has done little to highlight the measures taken by the government and their efficacy thereof. Against this backdrop, it is difficult to provide a conclusive research opinion about the past endeavours of the government. Another aspect of forest management that has grabbed little attention is the campaign for social awareness and inculcating a sense of ownership among the people of the area about the forests. The focus of policy makers and researchers alike has been on the monetary side of the forest management measures, with a focus on the impact of forest management projects in increasing and controlling illicit cutting. However, the social aspect of these measures hardly gets any attention; participatory approach and community engagement, key tools of forest management, are disregarded in these measures (Cadman, Sarkar, Muttaqin, Nurfatriani, Sliminah and Maraseni, 2019).

1.1 Forest Management Interventions in Khyber Pakhtunkhwa

The most effective project that has gathered much attention in recent history in terms of forest management is the Forestry Sector Management Project (FSMP) in Khyber Pakhtunkhwa from 1995 to 2004. The project was a joint-donor-funded project executed by the Government of Khyber Pakhtunkhwa Forest Department. The project envisaged to increase productivity of high hill forests in Khyber Pakhtunkhwa, intensifying forest management, and improving capacity of the provincial forest department. The project was jointly financed by the Asian Development Bank (ADB) and the Dutch Government providing \$28 million and \$14 million, respectively for the planned activities (Aslam et al, 2021). The project was dubbed as a resounding success with achieving all its proposed targets. The project managed to rehabilitate 175,000 hectares of wasteland, besides improving 79,000 of rangeland and supporting farming of trees over an area of 3,000 hectares. The most important aspect of the project was capacity building of the forest department, wherein the forest department was enabled to introduce new forest rules for better forest management. On top of it, multi-level forest planning was introduced, which empowered specialized forest agencies to have their respective inputs into the future plans for forest management. To cite an instance, it was considered mandatory that any scheme or proposed project relating to watershed forest management is to be initiated only after getting thorough feedback from watershed forest divisions.

Likewise, the Forest Act of 1927 was replaced with the Forest Ordinance 2002, wherein for first time, the terms “environment” and “ecology” were added to the basic law of forest management, albeit, in the definition clauses; nonetheless, it was the first ever step in the history of the forest department that environment and ecology were given due recognition as part and parcel of forest management (Aslam et al., 2021). Moreover, other structural reforms such as putting into gear specialized research and development directorate in the department, coupled with human resource management, and community and gender development were effective steps towards better forest management. However, it was highlighted that the forest department was not fully equipped in terms of its professional capacity to effectively translate these structural reforms into meaningful forest management (Hasan, 2007). There is no quick fix available for bringing change in the thinking and approach of operational staff of the forest department to get it in sync with modern participatory approach of foresting along with accepting community engagement and ownership in the forest management. The fact was realized at the time of the execution of FSMP; however, it could not be pushed further at that stage as it would have jeopardized the smooth working of the project (Aslam et al., 2021).

In terms of area specific measures, the Kalam Integrated Development Project (KIDP) was the biggest project executed in the Kalam Valley of Malakand Division. Since becoming a major tourist attraction for both local and foreign tourists, the Kalam valley forests were under consistent pressure of human intrusion. It again was a donor-assisted project with Swiss Development Cooperation providing 41.510 million Swiss Francs. The project had two main objectives: firstly, it focused on better management through better harvesting techniques; secondly, it envisioned providing alternative economic opportunities to the people of the area by promoting the plantation of off-season vegetables and improving access roads through community engagement. The project had a huge impact in terms of community outreach as it advocated a participatory approach. Moreover, the people of the area who were previously starved of alternative economic opportunities, made good of the opportunity (Hasan, 2007). The project spanned over 17 years from 1981 to 1988 and had considerable success in promoting the participatory development model in the area. However, the project did not fare well on account of better forest management. The people of the area were well sensitized on the role of sustainable forest management for their livelihood, however, as soon as the project was wound up, the pressure on forests started relentlessly due to a boom in tourism in the valley. The demand for hotels and restaurants meant that forests were under siege again (Nazir and Ahmad, 2018).

Malakand Dir Social Forestry Project (MDSFP) was yet another significant project in the Malakand Division focusing on district Swat and Dir. The project lasted a decade from 1987 to 1997 and aimed at the afforestation of barren patches of protected forests in the targeted districts. Although there is little literature available to assess the success of the afforestation drive, much has been stated about the success of the project in engaging local communities in the afforestation drive (Nazir and Ahmad, 2018). Siran-Kaghan Forestry Development Project (SKFDP) was yet another project aimed at artificial restocking of coniferous forests of Kaghan and Siran valleys. The project was assisted by GIZ, aimed at quick restocking of coniferous trees harvested due to windfall as the natural regeneration took more time and was also vulnerable to animal grazing. The project also put to test the concept of Joint Forest Management Committee (JFMC) for forest management. Through JFMC, the harvesting of windfall trees and afforestation were executed, which paved the way for the incorporation of the role of JFMC in future legislations. However, in the instant project, the JFMC could not meet the targets of the project in its entirety (Aslam et al., 2021).

1.2. Green Growth Initiative of Government of Khyber Pakhtunkhwa

The Green Growth Initiative (GGI) was launched by the incumbent GoKP, which promised a green revolution with a vision to bequeath a more liveable environment to provincial posterity. The GGI was envisioned as a comprehensive program that would bring structural changes at both governmental and societal level for a better environment and forest management in the province. Furthermore, the GGI also envisaged providing long-term sustainable development, green growth, and social uplift of the community. In order to put GGI into gear, an Inter-Ministerial Committee on Green Growth (ICGG) under the supervision of Chief Minister was constituted along with a task force to provide technical support to fast-track the proposed “Green Growth” (Khan, 2015). The ICGG was tasked with quantifiable targets to identify areas for governmental intervention in forests, national parks, and other areas showing climate resilience and vulnerability, which has been a significant step in signalling government’s seriousness towards achieving its objectives. Under the umbrella of GGI, the incumbent government is also conducting studies to assess the overall carbon stocks of the province in order to get maximum benefits of compensatory program of the United Nations, Reducing Emissions from Deforestation and Forest Degradation (REDD) (Khan and Nadeem, 2016).

Moreover, assessing the total carbon stocks of the province will pave the way for comparing and contrasting the before and after impact of future projects targeting reduction of carbon emission in the province. Keeping fore going in the context, the flagship Billion Tree Afforestation Project (BTAP) of the incumbent government has a much wider connotation than just being an afforestation project. The proposed objectives of the project include the following:

- ❖ Development and conservation of forests for sustainable future availability of timber, fodder, and firewood.
- ❖ Mitigating and lowering carbon emission for reducing the impact of climate change.
- ❖ Providing income-generating opportunities for forest dwellers along with improving the quality of environment.
- ❖ Community participation for production of seedlings and nursery raising.
- ❖ Ejection of encroachers from forest land and plantation, sowing, and diddling of indigenous species thereof.
- ❖ Establishment of closures to curb free grazing and inducing natural regeneration of forests, accounting for 60 percent of the afforestation target.
- ❖ Carrying block plantation over community as well as government land to increase forest cover.
- ❖ Raising 10 percent plants through private entrepreneurship i.e., youth, women, senior citizens, and progressive farmers.

As the name of the project suggests, the project envisaged to carry out one billion afforestation with 40 percent plantation and 60 percent natural regeneration of forests (Aslam et al., 2021). The project covers an area of 593,293 hectares with a total investment of Rs. 11 billion. It has been estimated that the project would bring 6.1 percent of additional area into forest cover (Aslam et al., 2021). It has also been asserted by the department that against the target of 1,000 million, 1,018 million seedlings have been planted and regenerated along with creation of 0.5 million additional jobs in the forestry sector. The project has been dubbed as an overall success by the government and forest department alike. It has also been claimed that the success of the project is substantiated by independent sources, such as third-party monitoring by the World Wide Fund for Nature-Pakistan (WWF-Pakistan) (Khan, Hussain, Saad, Rukh and Ahmed, 2017). The final report of the three-series report states that against the target of 2,850 closures, the department established 4,007 closures which indicates an over-achievement of 21.2 percent. The establishment of closures was one aspect of the project however the important aspect of these closures was maintenance and watch and ward to stop free grazing of livestock so as to ensure natural regeneration of forests. To ascertain this fact, the WWF-Pakistan team directly monitored 406 closures, covering an area of 25,009 hectares and collected data from 253 sites. The WWF-Pakistan report observed that the average density of seedlings in these closures was 2,412 seedlings per hectares, which was in sync with the targets of the project.

Moreover, the report also asserts that the forest department carried out plantation on 103,973 hectares of land. In the closures selected for monitoring, the WWF-Pakistan observed that the survival of block plantation was 84.8 percent in forests while it stood at 83.5 percent at roads and canal side catchment area (Khan et al., 2017). Likewise, the survival rate of plantation in the woodlots was 75.8 percent. The aforementioned statistics suggest that the project had achieved the majority of its targets. Interestingly, the over-achievement in establishment of closures also paved the way for housing majority of the jobs conceived in the project. In a bid to reclaim and rehabilitate the waterlogged and saline areas in various parts of the province, a total area of 9,884 hectares was treated against the target of 1,000 hectares by planting suitable species to reclaim the waterlogged and saline areas. The results were very encouraging as the success rate of the plantation at these sites was 83.4percent (Khan et al., 2017). Similarly, for the reclamation of bad sites a total area of 962 hectares was treated against the target of 950 hectares through various bioengineering methods. These sites were treated with small check dams, gabion walls, stone soling, gabion spurs, loose vegetative stone wall, brushwood check dams, brush wood layering, and vegetation, etc. However, the success rate of the vegetation and other measures varied ranging from 35 to 85 percent depending on the level of human intrusion in the sites.

Similarly, the project had also envisaged treating 10 degraded watersheds, out of which 6 watersheds were treated in which the measures proved to be very effective however the department fell short of achieving the proposed target for the activity (Khan et al., 2017). For afforestation, the department had set targets of raising departmental nurseries, including 35 hectares of potted and 136 hectares of bare rooted nurseries respectively. Against these targets, the forest department was able to raise 182 hectares of nurseries and transferred 60 million seedlings. The overall average success rate, based on the sites monitored, of seedlings for plantation was 91 percent, while the success of planted seedlings was 85.8 percent. Thus, it was a resounding success, which contributed a lot in achieving the afforestation targets of the project. Likewise, the report also asserts that 8,990 units of private nurseries which were raised by involving the youth, senior citizens and women from the local community also contributed in providing plants in the afforestation drive. In the private nurseries the rate of survival of potted was 91.7 percent, and that of bare rooted was 89.1 percent. However, the participation of women in private nurseries was few and far between due to a male-dominant industry and overall social fabric in the province which seldom gives women the chance to take lead in the said field (Khan et al., 2017).

The overall success of the plantation as assessed by the WWF-Pakistan is 88.6 percent; the proposed afforestation of one billion trees was targeted to be achieved through 60 percent natural reforestation and 40 percent plantation, against which 59 percent of the proposed targets from closures and 37.2 percent from plantation were achieved, respectively. Thus, it can safely be concluded that the project was an overall success. Considering that it was the first of its kind since the inception of Pakistan, the Khyber Pakhtunkhwa Forest Department has rightly been commended for its successful execution and completion.

Having said that, there have been some lessons learnt, which need due consideration in the future projects. The species selected for plantation need due care as 19 percent of the plantation across the province consists of eucalyptus, which is a water intensive plant (Khan et al., 2017). At a time when the underground water table has already reached an alarmingly low level, excessive plantation could prove detrimental for the water starved country. Likewise, the low participation of women in the private nurseries is a major cause of concern as the project was meant for providing economic opportunities to people across the board regardless of gender. Furthermore, the selection of negihbans i.e., community watch guards for the protection of closures through Village Development Councils (VDCs) irked many people for lack of proportionate representation. It was often alleged that due to nexus between local elders and the representatives of forest department, nepotism and favouritism was done while employing the forest watch guards and deserving people were deprived of this opportunity (Rauf, Khan, Shah, Malik, Yukun and Sadique, 2019).

1.3. From Billion to Ten-Billion Tree Afforestation Project

Upon successful completion of the Billion Tree Afforestation Project (BTAP), the federal government of Pakistan launched Ten-Billion Tree Afforestation Project (10-BTAP) in 2019. The planned provision for the GoKP is Rs 27 billion, spanning over a period of four years, thus, making it the biggest afforestation project in the history of the province. The activities envisaged in the 10-BTAP are almost similar to the BTAP as far as afforestation is concerned. However, much to the surprise of everyone, the activity of private nursery raising and involving private nursery farmers for afforestation has been shelved in the 10-BTAP. Despite the success of BTAP due to active community participation in it, shelving the involvement of community is a no brainer. Although there has been no official clarification tendered for the activity, it has been surmised that the forest department was not satisfied with the role of private nursery owners. The activities of the project are yet to be reviewed, and it remains to be seen how far the 10-BTAP will be successful in achieving its targets.

Conclusion and Recommendations

Conclusion

The importance of forests in the present-day world has increased manifold, owing to its role in stabilizing the overall environment and ecosystem of a country. As the Khyber Pakhtunkhwa province is blessed with forests and houses a majority of the forests in Pakistan, the pressure on its forests is also immense. Khyber Pakhtunkhwa, more importantly, the area which hosts these forests is among the most economically impoverished areas of the country accordingly the forests of Khyber Pakhtunkhwa are extremely vulnerable; as people grapple to make ends meet, forests provide them a key source of livelihood. It is, thus, no surprise that 70 percent of the forests of the province are categorized as degraded and not in their natural state. The rot does not stop here; the rate of deforestation in Khyber Pakhtunkhwa is also the highest in the country with various factors contributing to this deforestation. Realizing the severity of the issue, the measures taken by the government through the Grown Growth Initiative signify determination and commitment of the government to tackle the issue head on. In fact, the measures taken by the provincial government have been replicated by the federal government. The contribution of foreign donors has also been significant in providing alternative means of livelihood; however, the impact on minimizing deforestation fell considerably short of its perceived targets.

The most effective project in the history of the province, undoubtedly, has been the BTAP. Notwithstanding, its failure to spur the green economic revolution in the province, the project has been able to achieve the targets set forth. Moreover, the failure of project authorities in mobilizing the private farmers to participate fully in the project has jeopardized the proposed objective of the project to instil a sense of ownership for the project in the community. In projects like this, where community participation is of prime importance, effective participation of the community is the sine qua non for the sustainability of the project. No matter how many trees are planted, as long as the people of the area do not own them, the plantation will always be at risk of human intrusion. Furthermore, despite framing new rules and introducing the Khyber Pakhtunkhwa Forest Ordinance 2002, a lot remains to be done in terms of making forests part of the larger scheme of things and better environment management. The transition from billion to ten billion was rapid and certainly commendable, however, the aim of this project is not afforestation alone; it is part of the proposed green revolution in the country, thus, measuring its success only in terms of afforestation would be undesirable. It should, therefore, be viewed as drivers of green revolution both in environmental and social sense.

Recommendations

After a thorough analysis of the literature on the subject matter whereby the phenomenon of deforestation along with measures of the government was dissected, the study offers the following recommendations:

- ❖ Environment management and ecology should be made part of the substantive law so as to prioritize the subject matter as, presently, these subjects hardly ever get mentioned in the substantive law of the province, let alone being practised.
- ❖ Community engagement in every afforestation and environment project as it is the only way through which the onus can be shared, which is absolutely imperative for sustainable environment management.
- ❖ Providing incentives to the local community to participate in forest management activities will not only ensure smooth functioning of the projects but also provide economic opportunities to the people of the area.
- ❖ After the success of Billion Tree Afforestation Project (BTAP), the Ten-Billion Tree Afforestation Project (10-BTAP) is also expected to meet the expectations of the people; however, doing away with private nurseries for raising of plants is tantamount to rolling back the success of the project.
- ❖ The people of the area need to be provided alternative sources of energy, so as to minimize their reliance on forests as their primary source of energy. Incentivizing the use of alternative energy sources, building small dams, subsidizing the appliances of solar energy and extending the facility of natural gas to these areas are some of the ways in which pressure on forests can be eased.
- ❖ Since the forests of Khyber Pakhtunkhwa are also the tourism hubs, it would not take much for the government to introduce eco-tourism in these areas. This will not only help in providing alternative economic opportunities to the people of the area but also preserve the flora and fauna of the province.

- ❖ Involving youth and women in the growth of local industries and promoting micro businesses to anchor tourism. Infrastructure and road access has already improved by leaps and bounds in these areas; all it needs is a small trigger for local businesses to grow, which the government needs to provide through micro financing or other such means. Only this way pressure on forests can be minimized in the area.
- ❖ Finally, the forest department needs to take the local leaders on board in important policy decisions in connection to forests as majority of the forests are located in erstwhile princely states that willingly acceded to Pakistan, and the people of the area still feel their rightful ownership to these forests. Thus, these people need to be placated so as to make the management of forests a smooth-sailing affair.

References

- Ali, F., Ibrar, M., & Shah, S. A. A. (2020). Forests Under Siege: Indigenous Causes of Deforestation in Dir Valley, Pakistan. *Progressive*, 2(2).
- Ali, T., Shahbaz, B., & Suleri, A. (2006). Analysis of myths and realities of deforestation in Northwest Pakistan: implications for forestry extension. *International Journal of Agriculture and Biology*, 8(1), 107-110.
- Ali, T., Ahmad, M., Shahbaz, B., & Suleri, A. (2007). Impact of participatory forest management on vulnerability and livelihood assets of forest-dependent communities in northern Pakistan. *The International Journal of Sustainable Development & World Ecology*, 14(2), 211-223.
- Ashraf, U. (2017). State, Society and Timber Mafia in Forest Conservation.
- Aslam, B., Gul, S., & Asghar, M. F. (2021). Evaluation of environmental degradation as an unprecedented threat to human security in Pakistan. *Liberal Arts and Social Sciences International Journal (LASSIJ)*, 5(1), 197-211.
- Cadman, T., Sarker, T., Muttaqin, Z., Nurfatriani, F., Salminah, M., & Maraseni, T. (2019). The role of fiscal instruments in encouraging the private sector and smallholders to reduce emissions from deforestation and forest degradation: Evidence from Indonesia. *Forest policy and economics*, 108, 101913.
- Hasan, L. (2007). An anatomy of state failures in forest management in Pakistan. *The Pakistan Development Review*, 1189-1203.
- Kabasakal, H., & Bodur, M. (2002). Arabic cluster: a bridge between East and West. *Journal of World Business*, 37(1), 40-54.
- Khan, M. I., Hussain, S. K., Saad, H., Rukh, G., Ahmed, M. M., & Ahmad, I. (2017). Third party monitoring of billion trees afforestation project in Khyber Pakhtunkhwa phase-II. *World Wide Fund for Nature Pakistan (WWF-Pakistan)*: Lahore, Pakistan.
- Khan, I. U., & Nadeem, M. (2016). Forest Laws of Khyber Pakhtunkhwa and the Environment. *JL & Soc'y*, 47, 1.
- Khan, M. A. A. (2015). Green Growth Initiative of Khyber Pakhtunkhwa Province, Pakistan. *Int. J. Green Growth Dev*, 1(2), 125-132.
- Mallick, S., & Masood, A. (2011). Environment, energy and climate change in Pakistan: Challenges, implications and required responses. *MahbubulHaq Human Development Centre Working Paper Series*.

Mehmood, M., Yaseen, M., Ud-Din, I., Badshah, A., & Khan, M. J. (2017). Causes of deforestation and its geological impacts in Swat District, Khyber Pakhtunkhwa, Pakistan. *Asian J Environ Eco*, 5(4), 1-9.

Nazir, N., & Olabisi, L. S. (2015). Forest area and land use change in Pakistan: A system dynamics approach. In *Proceedings of the 33rd International Conference of the System Dynamics Society*.

Nazir, N., & Ahmad, S. (2018). Forest land conversion dynamics: a case of Pakistan. *Environment, development and sustainability*, 20(1), 389-405.

Rabbi, F., Ali, S., & Hayat, U. (2017). Why Local Residents Harvest Natural Forest? Determinants Factors In The Mountains Of Khyber Pakhtunkhwa. *IBT Journal of Business Studies (JBS)*, 1(1).

Rauf, T., Khan, N., Shah, S. J., Zada, M., Malik, S. Y., Yukun, C., & Sadique, A. (2019). Poverty and Prosperity: Impact on Livelihood Assets of Billion Trees Afforestation Program in Khyber Pakhtunkhwa (KPK), Pakistan. *Forests*, 10(10), 916.

Robbins, P. (2000). The rotten institution: corruption in natural resource management. *Political Geography*, 19(4), 423-443.

Sabir, M., Ali, Y., Khan, I., & Salman, A. (2020). Plants species selection for afforestation: a case study of the billion tree tsunami project of Pakistan. *Journal of Sustainable Forestry*, 1-13.

Steimann, B. (2004). Decentralization and participation in the forestry sector of NWFP, Pakistan—the role of the state. *NCCR North-South Dialogue*, 7.

Ullah, A., Sam, A. S., Sathyan, A. R., Mahmood, N., Zeb, A., & Kächele, H. (2021). Role of local communities in forest landscape restoration: Key lessons from the Billion Trees Afforestation Project, Pakistan. *Science of The Total Environment*, 772, 145613.

Zahid, J. (2018). Deforestation to Reforestation REDD+ in Pakistan.

About the authors

Audit of Sustainable Urban Transport: The Effectiveness of Integrating an Urban Transportation System in the Greater Jakarta Area

-SAI Indonesia



Dr. Hendra Susanto is a Board Member of the Audit Board of the Republic of Indonesia (BPK). Prior to this, he was an auditor in BPK for 20 years. He holds a Bachelor Degree in Civil Engineering (Sriwijaya University), a Master of Engineering in Integrated Urban Infrastructure (Delft University of Technology, Netherlands), a Master of Business Law (Gadjah Mada University), and a Ph.D in Accounting (Padjajaran University). He is also a Certified Fraud Auditor and a Certified State Finance Auditor. Investigative and forensic audits are among his specializations.



Mr. Novy Gregory Antonius Pelenkahu is the Director General of Audit I in BPK. Having been an auditor since 1989, he has held various positions at BPK and has contributed significantly to several audits receiving public attention. He holds an MBA from the George Washington University, USA.



Dr. Eko Yulianto is a Principal Expert Auditor, who joined BPK in 1995. He holds a Bachelor Degree in Accounting (Gadjah Mada University), a Master's Degree in IT, Management and Organizational Change (Lancaster, UK), and a Ph.D in Accounting (Gadjah Mada University).

About the authors

Audit of Sustainable Urban Transport: The Effectiveness of Integrating an Urban Transportation System in the Greater Jakarta Area

-SAI Indonesia



Dr. Iman Sufrian is a Senior Auditor in BPK, since 1996. He holds a Bachelor Degree in Economics with a major in Management (University of Indonesia), a Master's Degree in International Finance (Leeds University Business School, UK), and a Doctoral Degree in Economics (University of Indonesia).

Introduction

Greater Jakarta is an agglomeration area¹ where Jakarta is at the center of movement and is the nation's capital. The Greater Jakarta population is approximately 32 million people based on Central Bureau of Statistics data. Considering the large population and mobility of the people of the Greater Jakarta area, a daily commute is concentrated in (and around) Jakarta. Accordingly, transportation services must be integrated and continuous, and not fragmented or limited by the administrative area of the Government.

The Greater Jakarta area urgently needs integrated mass transportation services between modes of transportation and between regions. The population growth and the increasing number of motorized vehicle movements make the roads in the Greater Jakarta area congested and a key contributor to an increase in air pollution in the Greater Jakarta area. To make matters worse, the transportation sector's governance in the Greater Jakarta area is complex, partly due to the regulation of the transportation sector involving multiple layers of governments, including: the central Government; provincial governments; and district/city governments in this region given the transportation sector is a concurrent government apparatus that involves all levels of governments. As a result, over time, a fragmented and overlapping regulation system is among one of the significant issues impacting the Greater Jakarta area's transportation sector.

The Government is aware of this urgent problem. Therefore, in a response to the urgent need to improve the governance of the transportation system in the Greater Jakarta area, the President of the Republic of Indonesia issued Presidential Regulation No. 103 of 2015 concerning the establishment of the Greater Jakarta Transportation Management Agency (Badan Pengelola Transportasi Jakarta, Bogor, Depok, Tangerang/BPTJ). Furthermore, later in 2018, the Government enacted the Presidential Regulation No. 55 of 2018 concerning the Greater Jakarta Transportation Master Plan (Rencana Induk Transportasi Jakarta, Bogor, Tangerang, Bekasi/RITJ).

The Ministry of Transportation is one of the critical stakeholders that regulates the transportation sector. Therefore, the role of the Ministry of Transportation in regulating the transportation sector in the Greater Jakarta area is essential and strategic in nature with the BPTJ a work unit comprising officers at the level of echelon I at the Ministry of Transportation. In addition, one of the crucial roles of the BPTJ is to oversee the implementation of the RITJ.

Audit Problem

Problems in the transportation sector in the Greater Jakarta area are one of the main problems that must be immediately parsed and resolved jointly by the central Government and local governments in the Greater Jakarta area. From the public's standpoint, and particularly that of transportation users, the main problems felt are those of congestion and air pollution. These problems are complex with economic, social, and environmental dimensions.

The Government's initiative to unravel this problem has been to establish the BPTJ in 2015 and later enact the RITJ in 2018. The RITJ is a comprehensive plan with a long-term implementation timeframe with transportation system development in the Greater Jakarta area out until 2029.

The next challenge is how the BPTJ effectively oversees the implementation of the RITJ . Therefore, it is essential to identify the obstacles in implementing the RITJ and identify the root cause of associated problems.

¹ The Greater Jakarta area consists of consists of the Special Capital Region of Jakarta, Bogor City, Bogor Regency, Tangerang City, South Tangerang City, Tangerang Regency, Bekasi City, Bekasi Regency, which are located in three provinces, namely the Province of the Special Capital Region of Jakarta, West Java Province and Banten Province.

Audit Motivation, Audit Objective, and Audit Scope

The Republic of Indonesia's Supreme Audit Institution - BPK RI - conducted a performance audit to assess the implementation of the Greater Jakarta Transportation Master Plan. Implementing this master plan also supports Indonesia's achievement of Sustainable Development Goals achievement, especially Goal 11: Sustainable Cities and Communities and particularly Goal 11.2 in relation to sustainable urban transportation in the Greater Jakarta area.

The objective of the performance audit was to evaluate the effectiveness of the BPTJ in overseeing the implementation of The Greater Jakarta Transportation Master Plan on the aspects of regulation, planning, implementation, and monitoring and evaluation.

Audit Criteria

The development of the criteria framework used to assess the effectiveness of the Ministry of Transportation, in this case, the BPTJ, in overseeing the implementation of the RITJ, was outlined in a matrix model called the Audit Design Matrix. The matrix identified one main criterion and four sub-criteria, as follows:

1. Ministry of Transportation, in this case, the BPTJ, has effectively overseen the implementation of the RITJ:
 - a. The Ministry of Transportation, in this case, the BPTJ, has effectively coordinated with related stakeholders in implementing the RITJ;
 - b. The Ministry of Transportation, in this case, the BPTJ, has prepared an action plan related to the integration of public transportation modes in the Greater Jakarta area;
 - c. The Ministry of Transportation, in this case the BPTJ, has effectively overseen the preparation of the action plan of the related stakeholders required in RITJ; and
 - d. The Ministry of Transportation, in this case, the BPTJ, has effectively monitored and evaluated the implementation of the RITJ.

The source criteria formulated in this audit were statutory provisions/regulations and good management practices (good practice).

Audit Result

The Indonesian Government has demonstrated a solid commitment to improving the transportation system in the Greater Jakarta area. Accordingly, the Government has stipulated Presidential Regulation no. 103 of 2015 concerning the establishment of the BPTJ and Presidential Regulation No. 55 of 2018 concerning the RITJ.

The RITJ is a comprehensive planning document for the transportation sector in the Greater Jakarta area. This document contains the detailed strategies, programs, activities, and the parties responsible for implementing specific programs/activities. In addition, this document has set targets for implementing each program/activity. This document also contains performance indicators for the relevant output and outcome dimensions and the targets to achieve by 2029. The implementation of the RITJ is divided into three stages of the implementation period, namely the first stage of 2018-2019, the second stage of 2020-2024, and the third stage of 2025-2029.

The implementation of the RITJ involves multi-stakeholders of both Central Government and local government institutions. At the central government level, the institutions involved in the implementation of the RITJ includes the Ministry of Transportation, Ministry of Public Works and Public Housing (Ministry of PUPR), Indonesian National Police (Polri), Ministry of Agrarian and Spatial Planning/National Land Agency (Ministry of ATR/BPN), Ministry of Finance (Kemenkeu), Ministry of Health (Kemenkes) and the Ministry of Home Affairs (Kemendagri). At Regional Government (Pemda) includes three provinces and eight regencies/cities, namely the Province of the Special Capital Region of Jakarta, West Java Province, Banten Province, Bogor City, Bogor Regency, Depok City, Tangerang City, South Tangerang City, Tangerang Regency, Bekasi City, and Bekasi Regency.

The evaluation result regarding the phase I of RITJ implementation highlighted the problem of weak coordination, synergy, and commitment among the relevant stakeholders to implement the RITJ. The absence of an action plan prepared by each stakeholder stipulated in the RITJ indicates the existing problem. As stipulated in the RITJ, the action plan must at least contain information on each activity's implementation timeframe, funding, and implementation mechanism. The problem also revealed the ineffective role of the BPTJ in overseeing the RITJ's implementation. The absence of an action plan of stakeholders has contributed to the failure to achieve the RITJ phase I implementation target.

The BPTJ sought to strengthen its supervisory role in the RITJ implementation by issuing the Decree of the Head of BPTJ No. KP- 116 of 2021, dated June 9, 2021, regarding the Formation of a Steering Team and a Work Assistance Team for the RITJ Action Plan 2020-2024. An Action Plan Work Steering and Assistance Team was formed to assist stakeholders in preparing their RITJ action plan. However, the audit results showed that of all the RITJ stakeholders, at the time of audit only two regions had signed the action plan, namely the Depok City Government and the Bogor Regency Government, while for other regional governments, the action plan was still in the form of a concept and had not been completed. Further investigation showed that the BPTJ, Ministry of PUPR, Police, Ministry of ATR/BPN, Ministry of Finance, Ministry of Health, and others related to the RITJ did not yet have an action plan, either set or in the form of a concept. The absence of an action plan also makes it challenging to monitor and evaluate the implementation of the RITJ. If this problem continues unresolved, there is a risk that the phase 2 and phase 3 RITJ implementation targets will not be achieved.

Regarding these problems, BPK recommended that the Minister of Transportation:

- a. Conduct staffing and organizational analysis and complete the needs of work units related to the implementation of the main tasks and coordinating functions for the preparation of action plans, implementation, monitoring, and evaluation of the RITJ;
- b. Optimize the role of the BPTJ in the implementation of the coordinating function for the preparation of action plans, monitoring, and evaluation of the RITJ;
- c. Develop a RITJ action plan and coordinate with other stakeholders to prepare an action plan following the Presidential Decree no. 55 of 2018 concerning the RITJ;
- d. Formulate policies with the competent Ministries/Agencies regarding the imposition of sanctions;
- e. Formulate and use appropriate methods to measure and assess the RITJ's KPI achievements; and
- f. Develop necessary standard operating procedures related to monitoring and evaluation of the implementation of the RITJ program.

Conclusion and Recommendation

The Indonesian Government has demonstrated a commitment to improving transportation system performance in the Greater Jakarta area. Accordingly, the Government has made regulations to establish the BPTJ and enact the RITJ. However, the Ministry of Transportation needs to continue to strive for continuous improvement, among others, by strengthening the institution of the BPTJ and prioritizing the preparation of the RITJ action plan from each of the stakeholders. In addition, the BPTJ needs to monitor and evaluate the RITJ's implementation.

References

BPK Performance Audit Report No.163/HP/XIV/12/2021 31 December 2021, on Government Effectiveness in Implementing Sustainable Transportation at the Ministry of Transportation and Other Agencies.

Medium Term Government Plan 2015-2019.

Presidential Regulation No. 103 of 2015 concerning Transportation Management for Jakarta, Bogor, Depok, Tangerang and Bekasi.

Presidential Regulation No. 59 of 2017 concerning the Implementation of the Achievement of the Sustainable Development Goals.

Presidential Regulation No. 55 of 2018 concerning the Greater Jakarta Transportation Master Plan.

Minister of Transportation Regulation No. 117 of 2017 concerning the Third Amendment of the Transportation Minister Regulation No. PM 189 of 2015 concerning Organization and Work Procedures of the Ministry of Transportation.

Decree of the Minister and PM No. 67 of 2021 concerning the Organization and Work Procedure of the Ministry of Transportation.

Minister of Transportation Decree No. 80 of 2020 concerning the Strategic Plan of the Ministry of Transportation for 2020-2024 (Key Performance Indicators (IKU) Part 3 Internal Process Perspective c, 4) Concrete Steps to Achieve the President's Vision in the Transportation Sector, Goals, Targets and Target Indicators of the Ministry of Transportation for 2020-2024, 5) and Strategic Targets, IKSS, and Meta Indicators of the Ministry of Transportation 2020 - 2024).

About the author

Audit experiences of the State Audit Office of Hungary in the field of air quality, climate protection and supporting sustainable climate neutral economy

-SAI Hungary



Mr. László Domokos PhD, economist, honorary university professor, president of the State Audit Office of Hungary, member of the Fiscal Council, chairman of the Public Benefit Association of Hungarian Financial and Economic Auditors. His main research area is maintenance of good governance, with particular attention given to the tools of good governance in which the audit institutions appear as guarantor organisations. His publications cover the areas related to the audit of public finances. email: international@asz.hu State Audit Office of Hungary

Introduction

One of the key environmental, economic and social challenges of our age is keeping the climate balance of the Earth on a sustainable course. With its effect on water cycle, atmosphere, biodiversity, and the complex ecological systems of the land, water and ice surfaces, the balance of the climate system is a fundamental condition for ensuring a liveable environment. Climate balance, therefore, is a key to the health of our planet and the future of humankind. Human activity has interfered with this natural system to a critical degree, therefore its regeneration must be fostered with progressive changes in order to protect our life, health and the natural values.

Aligned with the international climate agreements and the UN Sustainable Development Goals, most countries, including the member states of the European Union with Hungary set the implementation of a sustainable climate neutral economy as their strategic goal. One of the major policy objectives is to radically reduce the emission of greenhouse gases, such as CO₂ mostly responsible for climate change by 2050. The implementation of the zero emission goal necessitates fundamental economic and social transformation in Europe and in Hungary as well, which must be performed in a cost-effective, just and socially balanced way. In this the operation and appropriate management of the state systems play a significant role and have significant responsibility. It means that well governed, well-functioning states are also necessary for implementing our goals.

One of the major tasks of the supreme audit institutions is to support the well-governed operation of the state. In addition to this, the strategic documents of the audit institutions almost always declare support for establishing sustainability as an outstanding goal. The mission of our institutions is therefore to contribute to improving the efficiency and effectiveness of the measures taken to build climate neutral economies through our audit, analysis and advisory activity and feedback. We must contribute to the successful implementation of the climate policy goals of our countries, thus reducing the negative effects of climate change not only in the territory of our own country but our geographical region as well, supporting the restoration of global climate balance this way.

Audit goals and experiences in Hungary

The supreme audit institution of Hungary is also committed to the implementation of the sustainability, environment protection and climate policy goals. Aligning with the interests and principles declared in the Fundamental law by the Parliament and in the national strategy documents by the Government, it particularly focuses on the assessment of measures supporting the implementation of a sustainable, natural and healthy environment in its audits.

In the past decade the SAO assessed the systems, infrastructures and developments critical from the point of view of environment protection and climate change within the framework of targeted audits. The SAO examined the effect of the measures taken in respect of air pollution and climate policy in the course of audits and follow-up audits, and audited the management of carbon dioxide quotas, the measures serving the protection of air quality, as well as ragweed control and waste management.

For Europe, including Hungary, to become one of the first climate neutral territories of the world by 2050 it must transform its energy system that is responsible for 75% of greenhouse gas emission in the EU. For this reason the SAO audits targeting the use of funds spent on environmental protection, the protection of air quality and climate policy also covered areas such as, for example, the energy efficiency or electricity supply system of public buildings.

In addition to managing organisations, our audits also covered the operation of state partner organisations and institutions, public enterprises, and organisations and schemes supported from public funds that are involved in the implementation of these goals.

For example, within the framework of international audits we assessed the use of funds spent on cycle path network development supporting air quality together with the Supreme Audit Office of the Slovak Republic.



”
SAO’s fulfilment to the
contribution to climate
policy goals.”

László Domokos
President of the SAO

AIR QUALITY, CLIMATE PROTECTION AND CLIMATE-NEUTRAL ECONOMY

AUDIT ON GREENHOUSE GAS EMISSIONS



Emissions are decreasing overall
in accordance
with international obligations.



Emissions of the transport sector
increased by **32%**.



30% of the emissions was related
to household activities.

AUDIT ON CARBON EMISSION TRADE



Regulations of auditees complied
with the law.



CO₂ emissions have been
reduced.



CO₂ quota revenues were used
for climate policy purposes.

AUDIT ON AIR POLLUTION



Emissions of air pollutants is in a
decline.



Emission values remained below
limits.



Pollutants from municipal waste
incineration were an exception.



Residential gas price reduction
has helped reduce air pollution.



Afforestation programs
contributed to reducing airborne
dust.

The measures covered



transport



agriculture



industry



residential

PLANNED AUDIT ON CLIMATE PROTECTION

Assessing the measures taken to address the risks of climate change.

Why it matters?

Gas emission reduction and the adaptation to
climate change will account 2.5% of GDP annually
for the next 30 years.

What is the scope?

Evaluation of the measures, indicators and the
monitoring system.

Infographic poster

One of the principles of the State Audit Office of Hungary is that a good state may not be implemented without systems monitoring, measuring and assessing state performance. Similarly, the definition of concrete indicators and target values with the relevant objectives are essential for assessing the impact of the measures. For this reason one outstanding focal area of the audits performed by the SAO was the assessment of the implementation of national strategies, and the progress and monitoring of the performance targets (National Clean Development Strategy, National Climate Change Strategy, National Sustainability Framework). Depending on their type, the audits naturally covered the assessment of the operation, regulation and financial management of the concerned institutions and systems, and the task performance of the governing authorities (strategy development, principles, authorities, indicators, etc.)

Our audit experiences in the areas directly related to climate balance, air quality and CO₂ emission are the following.

According to the findings of the audit concerning the measures serving the protection of air quality, the average annual concentration and total emission of air polluting materials decreased in a trend-like way. The surveys and analyses of air quality were taken into account during the elaboration of the goals and the planned and implemented measures (see Figure 1) and indicators, which largely contributed to this reduction. With the exception of one, the limit values for air polluting materials targeted for 2020 were implemented on a pro rata temporis basis. The emission of volatile organic compounds exceeded the limit value especially in the winter months. The concentration of materials particularly dangerous for health is related to the burning of household waste therefore its reduction may largely be supported by the environmentally conscious behaviour of the population. Several factors must have contributed to the reduction of fine particulate matter pollution, especially significant from the public health aspect. Among them the effect of the implemented measures specified in the air quality plans, the reduction of retail gas prices (utility cost reduction), the more frequent cleaning of public roads and afforestation programmes must be emphasised.

Table 1 Measures to improve air quality in Hungary

Transport sector
Tightening the restriction of heavy goods vehicle traffic.
Implementation of electronic road toll for heavy goods vehicle.
Installation of particulate filters on heavy goods vehicles and other machines.
Development of nypass roads in the national public road network.
Reduction of traffic on main and minor roads.
Transformation of the parking systems (establishment of P+R and B+R parking areas.)
Cleaning of public roads, tightening of the penalty items for leaving mud on the road.
Introduction of electric vehicles.
Promotion of non-motorised transport methods.
Development of workplace transport plans.
In the field of railway line modernisation: building double electrified tracks, construction of underpass and overpass
interchanges, modernisation of railway station and stops, installation of view electronic signalling equipment and safety devices.
Development of electric networks.

Industrial Sector

Control requirement of dust separating systems.
Revealing the PM10 pollution of mining and involving the activity in the mandatory data service system.
Review of industrial emission regulations with particular attention given to large emission source (e.g. power plants, cement and lime factories, furnaces, incinerators).
Verifying the use of best technologies and meeting the limit values

Agricultural Sector

Examining the spread of PM10 load in agriculture.
Supporting afforestation, forest structure transformation and tree plantation works.

Residential Sector

Ban on burning garden waste, building compost systems.
Strict action against illegal burning.
Improving the competitiveness of district heating, reducing the emission of residential heating equipment.
Improving the energy efficiency of buildings.
Reducing the number of heating equipment below 140 KW input capacity.

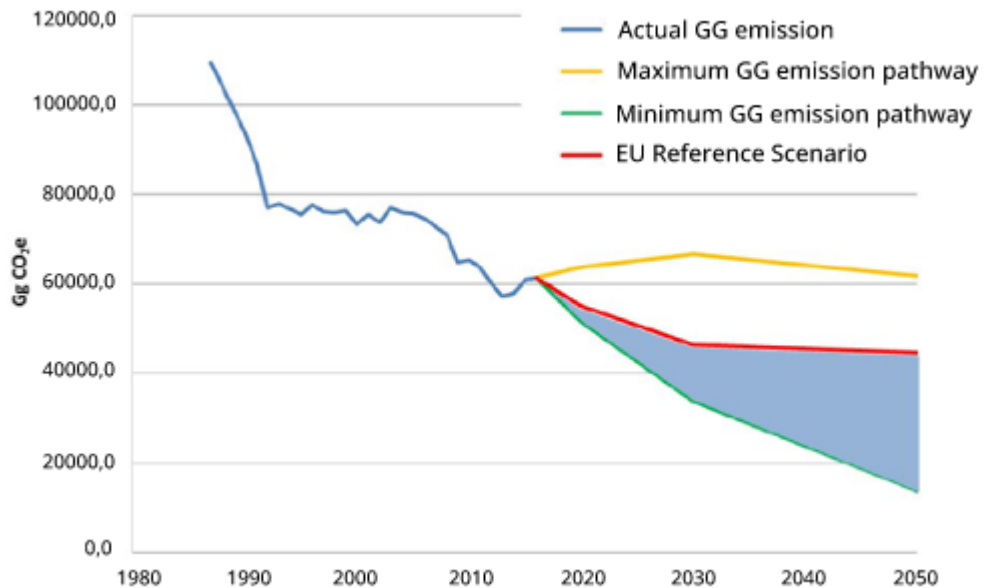
Horizontal Measures

- Modelling cross-border air pollution.
- Strengthening informative attitude-shaping activities, transferring environmental knowledge to young people.
- Review of the clean air regulation.

Source: edited by SAO based on strategic documents and reports on their implementation

Based on the findings of auditing the effect of the measures taken against air pollution and in the field of climate policy, our country fundamentally complied with its international obligations undertaken in the period between 2004-2010 within the framework of air pollution reduction and climate protection. The professional, legal and organisational tools were in line with the international and domestic requirements. In Hungary transport and industrial, and to an increasing degree, residential emissions are typically responsible for air pollution. Within the emission figures, the share of road transport emission is decisive. Resulting from the increased volume and share of transportation, within the total greenhouse gas emission (GG) only the emission indicator of the transportation sector increased significantly, by 32% in the audited period. According to KSH (Hungarian Central Statistical Office) data, in 2018 over 70% of GG emissions was related to the national economy, while nearly 30 % concerned the activities of the households (heating, cooling and vehicle use). The measures targeting the reduction of air pollution and climate protection were all in all supported by over HUF 500 billion worth domestic and EU funds. Figure 1 presents the changes in greenhouse gas emission at national economy level in Hungary.

Figure 1 Expected minimum and maximum GG emission at national economy level



Hungary, as one of the countries signing the Kyoto Protocol, performs international emission trading. Trading in carbon dioxide quotas has been covered by a number of SAO audits. The audit aimed at the above-mentioned air pollution and climate policy measures found that Hungary spent the revenues originating from the sale of emission units at its disposal (from the sale of 12 million units under four contracts between 2008-2010) on energy saving developments. During the audit of managing carbon dioxide quotas the SAO also found that in the period between 1 January 2013 and 30 September 2015 the regulation of the audited organisations concerned with management complied with the legal provisions. The regular management of the approved emission units achieved its goal as carbon dioxide emissions decreased, and the revenues from the sold quotas were also used for climate policy goals. Changes in the revenues for special use resulting from the sale of quotas are presented in Table 2.

Table 2 Revenues for special use resulting from the sale of quotas³

Year	Residue from the sale of Kyoto quota HUF M	MND EH ETS9 quota revenue from capitalisation HUF M	Revenue from MNE EU ETS quota sale HUF M.	Total available source HUF M.	Amount used within the framework of GIS HUF M	Amount used within the framework of GEDS HUF M	Total amount used within the framework of GIS and GEDS HUF M
Year 2013	25956,50	7280,7	—	33237,20	12054,10	7275,70	19329,80
Year 2014	13908,20	6766,6	2017,6	22692,40	2699,40	6600,30	9299,7
Year 2015							
Months 1-IX	11213,40	4468,6	4468,6	20150,60	6452,60	711,80	7164,4

Source: Own edition based on the data service of the audited organisations

Future audits in the field of climate protection

The State Audit Office of Hungary will continue the assessment of the field in the future.

The approved audit proposals include the theme titled 'Assessment of the measures taken to manage the risks of climate change'. The objective of the audit is to assess whether the measures necessary for managing the risks related to climate protection were specified in the strategic documents, and whether measurable goals were assigned to the measures, and the indicators necessary for measuring the implementation of goals were set up; whether an appropriate system monitoring the implementation of objectives was established; whether the impact of measures and the results thus achieved were assessed; and whether the synergy effects and the results achieved by the measures were assessed; how the performance of the data collection, statistical and registration tasks of the minister of agriculture contributed to the operation of the monitoring system. The findings of the audit may support the success of this process, highlighting the potentials in the harmonised implementation of measures, the achievement of objectives and the development of the system monitoring the achieved results.

The justification for the subject is that in its Decision No. OGY 18/2020 (VI. 4.) on urgent tasks due to the extent of climate change, the Parliament declared the reduction of global warming and adjustment to climate change to be a matter of national strategic significance. The significant reduction of greenhouse gas (GG) emissions, the main reasons for the accelerating climate change and adjustment to climate change require developments of extraordinary volume, which can be implemented with the use of budgetary resources. The estimated total cost of implementing the National Clean Development Strategy (2050) is 2-2.5% of GDP annually over a period of 30 years. The suitable, effective, efficient and economical use of public funds spent on government measures and state developments related to climate change and support for the economic operators and the population to improve energy efficiency and renewable energy production is also a requirement.



Auditing Climate Change- An Overview and Experience from SAI India

-Team at International Centre for Environment Audit and Sustainable Development (iCED), Jaipur

- SAI India

Introduction

Climate change refers to long-term shifts in temperatures and weather patterns. Since the 1800s, human activities have been the main driver of climate change. Burning of fossil fuels like coal, oil and gas generates greenhouse gases that act like a blanket wrapped around the earth, trapping the sun's heat and raising temperatures. It has been reported that the earth is now about 1.1°C warmer than it was in the late 1800s with the last decade (2011-2020) being the warmest on record.¹

Climate change presents serious consequences to human society and many of the physical and ecological systems upon which it depends. There has been a growing number of extreme global events with record global temperatures, loss of ice volume, rising sea levels and changes in global precipitation patterns; which have further jeopardized the existence of ecosystems around the world. Other externalities of climate change include reduced water and food security; increased damage to infrastructure; additional mortality and morbidity; human migration and displacement; damaged livelihoods; increased mental health issues; and increased inequality.²

2. Climate Action and Sustainable Development Goals (SDGs)-

SDG 13 (Climate Action) aims to encourage countries to take collective action in combating climate change. Many other SDGs influence climate change – and vice versa. It has been emphasized that only incremental progress can be made on climate action without accelerating achievement of Goal 7 on affordable and clean energy or Goal 12 on responsible consumption and production. Climate solutions can also support Goal 3, Goal 8, Goal 9 and Goal 12³. It would thus be clear that SDG's are vital to provide a paradigm for assessment of climate change.

¹ United Nations – Climate Action

² IPCC- Climate Change 2022- Impacts, Adaptation and Vulnerability

³ United Nations Climate Action- UN and Climate Change

3. Commitments towards Climate Change

3.1 Global commitments

The first effort towards Climate Change was in the form of the 1st United Nation's Conference on Environment held in 1972 (also known as the Stockholm Conference). It was the UN's first major conference on international environmental issues, and marked a turning point in the development of international environmental conservation efforts. Major landmarks towards climate change are shown below:



Figure 1- Road map of Climate Action commitments

After the Earth Summit held in 1992 at Rio de Janeiro, a number of international conventions confirmed the phenomenon of climate change and the urgency of intervention to save the planet. Under the Paris Agreement adopted in 2015, countries pledged to halt the increase in the global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial⁴ levels. At COP 26 held at Glasgow in 2021, the countries announced bold collective commitments to curb methane emissions, to halt and reverse forest loss, align the finance sector with net-zero by 2050, ditch the internal combustion engine, accelerate the phase-out of coal, and end international financing for fossil fuels.

⁴ United Nations Climate Change- Process and Meetings- The Paris Agreement

3.2. Commitments by India

India is a party to the United Nations Framework Convention on Climate Change (UNFCCC). In its Nationally Determined Contributions (NDC), India has committed to reduce its emission intensity of GDP by 33 to 35 per cent below 2005 levels by the year 2030; 40 per cent of cumulative electric power installed capacity would be from non-fossil fuel sources by 2030 and create an additional carbon sink of 2.5 to 3 billion tonnes of CO₂ equivalent through additional forest and tree cover by 2030.⁵ In the recently held COP 26 at Glasgow, five targets called 'Panchamrit' were identified with following components⁶-

1. Take India's non-fossil energy capacity to 500 GW by 2030.
2. Meet 50 percent of energy requirements from renewable energy by 2030.
3. Reduce the total projected carbon emissions by one billion tonnes from now till 2030.
4. Reduce the carbon intensity of its economy by more than 45 percent by 2030.
5. Achieve the target of Net Zero by 2070.

4. Why Audit Climate Change?

Climate change is a field of urgent importance, where a large and growing amount of money will be spent globally on reducing emissions, enhancing sinks and adapting to climate change. Climate change involves a wide range of risks that make it particularly relevant to auditors. These include risks related to goal attainment, policy instruments and transparency. Hence, by auditing Climate Change responses of Governments, SAs can play an important role in helping governments improve their performance and management.⁷ As per the 10th INTOSAI WGEA survey on environmental auditing, adaptation to Climate Change is the most popular topic for audit in 2021-2023. Also, Climate Change mitigation is among the top ten audits planned for 2021-2023.

5. Global initiatives in Auditing Climate Change

5.1 INTOSAI Working Group on Environmental Auditing (WGEA) work⁸

Since 2010, WGEA has worked increasingly with climate topics to support the economic, efficient and effective implementation of climate policies and the accountability of public administration. The WGEA paper on resilience and adaptive capacity (2019) provides audit guidance for SAs assessing the national preparedness to achieve SDG 13.1. WGEA research (2016) on climate change in marine environments and ocean acidification (SDG 14 on life below water) addresses the role of SAs in supporting government efforts to respond to climate change and acidification issues in marine environments. It describes the effects of climate change on marine environment, previous SAI audits and challenges SAs have experienced in auditing these issues.

⁵ MoEFCC. (2021). India: Third Biennial Update Report to the United Nations Framework Convention on Climate Change. Ministry of Environment, Forest and Climate Change, Government of India

⁶ National Statement by Prime Minister Shri Narendra Modi at COP26 2020 Summit in Glasgow

⁷ Auditing the Government Response to Climate Change Guidance for Supreme Audit Institutions

5.2 Mitigation related global audits

SAIs have audited the economy, efficiency and effectiveness of climate mitigation policies for instance regarding the energy, transport and housing sector, and assessed the central coordination of mitigation measures. SAIs have found principally:

- ineffective measures and subsidy systems
- poorly planned taxation systems
- lacking data and monitoring systems
- missing innovations for new technologies

In 2021, the European Court of Auditors reported that €100 billion of common agricultural policy funds attributed during 2014-2020 to climate action had not contributed to reducing greenhouse gas emissions from farming. Supported measures have only low climate-mitigation potential and the system does not incentivise the use of effective climate-friendly practices. (Source: <https://www.environmental-auditing.org/media/117578/wgea-cop26-bulletin-18-11-2021.pdf>)

In 2017 and again in 2019, Canada's SAI audited progress towards fulfilling the G20 commitment to phase out inefficient fossil fuel subsidies. Overall, the audits found that there was no clear definition of what could be considered an inefficient fossil fuel subsidy, and that there was no consideration of economic, social, and environmental sustainability in subsidizing the fossil fuel sector over the long term. (Source: <https://www.environmental-auditing.org/media/117578/wgea-cop26-bulletin-18-11-2021.pdf>)

5.3 Adaptation related global audits

In 2019–2021, SAIs have audited overall risk management and resilience systems, as well as targeted audits on adaptation in sectors such as water infrastructure

SAIs have found for instance:

- poor strategic planning
- inadequate risk management
- lack of concrete measures
- inefficient measures

In 2019, SAI USA found that the federal government does not strategically identify and prioritize projects to ensure they address the nation's most significant climate risks. (Source: <https://www.environmental-auditing.org/media/117578/wgea-cop26-bulletin-18-11-2021.pdf>)

5.4 Finance related global audits

SAIs are increasingly auditing the financial and fiscal tools related to climate. In their audits, SAIs found in 2019-2021 for example:

- finance and investment risks arising from climate change risks
- slow progress and poor monitoring of international climate finance
- missing information on cost-effectiveness

In 2021, SAI Finland reported that despite the government's intention to scale up climate finance and direct half of it to climate change adaptation, there was no published plan for how these policies will be implemented nor strategic objectives for climate finance. The audit recommended that the Ministry for Foreign Affairs should draw up a public plan as to how it will increase and allocate Finland's international climate finance, justifying the choices and priorities. (Source link: <https://www.environmental-auditing.org/media/117578/wgea-cop26-bulletin-18-11-2021.pdf>)

5.5 Collaboration

In recent years, SAIs have evolved reports sharing their climate-related audit experiences globally and regionally and engaged in bilateral audits on cross-border issues. As per INTOSAI WGEA, climate change requires a whole-of-society response and SAIs can explore how collaboration between all levels of government and the rest of society can be most effective and efficient.

- Ten Pacific area SAIs concluded in a cooperative audit (2015) that the Pacific Island states are not well placed to respond effectively to the threats and challenges arising from climate change. Short-term and long-term activities and cross-sectoral management of climate risks are needed.
- In 2019, SAI Egypt conducted an audit on desertification. It points out that it is important to assess the performance of national environmental programmes and the environmental impacts of other national programmes, which may have direct or indirect impact on desertification.
- According to the WGEA Work Plan, SAI Indonesia is developing a training package on auditing climate action and finance in the context of the SDGs. SAI India hosts an International Training Centre (iCED) and provides training and knowledge-building networks on various environmental topics, including the climate and sustainable development.
- (Source link: <https://www.environmental-auditing.org/media/117578/wgea-cop26-bulletin-18-11-2021.pdf>)

6. Initiatives by SAI India in Auditing Climate Change

SAI India's efforts for audit on climate change can be broadly categorized as –

1. Audits that cover the sources of GHG emissions such as Air Pollution, Vehicular Pollution, Industrial Pollution and audits focussed on the deficiencies relating to control of vehicular emissions and air polluting industries such as Performance Audit on Pollution by industries in West Bengal, Report No 5 of 2018, Compliance audit on Vehicular Emission by State Transport Undertakings in West Bengal, Report No. 2 of 2018, etc. During such audits, SAI India examined the Environment Plan and Policy outlined by the Government for mitigation of emissions, adequacy and effectiveness of Environment Management Systems for reduction of emissions, role of regulators, functioning of the Emission Testing Centre's and significant risks towards degradation of environment.

2. Audits covering the mitigation measures are related to use of renewable energy and forestry. Through such audits SAI India examined adequacy and appropriateness of steps taken for exploitation of renewable energy components like solar and wind energy, reasons of varied development of these sectors, transmission infrastructure, problems in maintaining grid stability, Renewable Purchase Obligation (RPO) mechanisms as in All India Performance Audit of Renewable Energy Sector in India, Report No. 34 of 2015. SAI India has conducted audit of forest ecology, environment and wildlife department to reveal areas of concern in planning, financial management, Scheme/programme management, internal controls and monitoring, measures taken by the forest departments to protect forest and wildlife in and outside the protected areas and the effectiveness of utilization of funds for protection of forest and wildlife (Performance Audit on Protection of forest and wildlife in Rajasthan, Report No 5 of 2019). In Performance Audit on Administration of National Parks and Wildlife Sanctuaries in Karnataka, Report No. 6 of 2016, land use cover and land use changes were examined using remote sensing technique.

3. Audits covering the adaptation measures such as schemes for water sector like Performance Audit of Ground Water Management and Regulation, Report No. 9 of 2021, Performance Audit of Rejuvenation of River Ganga (Namami Gange), Report No.39 of 2017, Performance Audit of National Rural Drinking Water Programme, Report No. 15 of 2018, Flood Forecasting and Management, Report No. 10 of 2017, etc. were conducted to examine issues of water quality and quantity, rejuvenation of aquatic ecology, human health, sustainable water use and creating climate resilient infrastructure, monitoring and surveillance.

4. SAI India's audits also covered measures and safeguards for environmental management such as Performance Audit on Environmental Clearance and Post Clearance Monitoring, Report No. 39 of 2016.

7. Challenges

- Due to the dynamic, evolving and cross-cutting nature of the subject, involvement of multiple agencies and a number of schemes/programmes/initiatives, availability of criteria in audit is a challenge.
- Records/data – Non production of records and production of incomplete records acts as a significant constraint in audit scrutiny. Lack of information on main sources and sinks of GHG emissions is a challenge for audits.
- Lack of training and capacity development to auditors in the field of Climate change acts as a constraint in understanding the issue.

8. The way forward

- Promotion of integrated audits of climate change to report that the expenditure incurred actually benefits the intended beneficiaries
- Encouraging maintenance of baseline/ source data for evaluating performance of Government activities and programmes.
- Promoting research and co-operation through involvement of academicians/ domain experts/ Non-Government Organisations (NGOs)/ Enterprise/ Industry working in associated areas at different stages of audit.
- Adoption of technology (Remote sensing and GIS techniques) as an integral tool in our audits.
- Ensuring access to records/ documents in a timely manner

There is a growing focus on the areas of environment audit and leveraging of emerging technologies. The Comptroller and Auditor General of India has also underlined the importance of working towards developing a comprehensive framework with environment audit specific definitions and parameters for natural resource accounting dovetailing with the overall framework of sustainable development and checking whether the expenditure is creating a negative environmental return. It will facilitate inclusion of the concept of environmental return per unit of money spent in the project assessment framework. This would also complement the efforts taken towards mitigation and adaptation efforts towards climate change and carbon emissions.

To conclude, we may state, that in a global environment of pandemic related risks leading to economic crises, the only way to mitigate the dangers of climate action failure are to continue to raise awareness on this issue. As auditors, the conduct of audits in this area, thus will go a long way in achieving the objective of red-flagging the issue of climate action failures.

Selected Bibliography:

1. United Nations Climate Action; What Is Climate Change? available at <https://www.un.org/en/climatechange/what-is-climate-change>
2. IPCC- Climate Change 2022- Impacts, Adaptation and Vulnerability, available at: <https://www.ipcc.ch/report/sixth-assessment-report-working-group-ii/>
3. Auditing the Government Response to Climate Change Guidance for Supreme Audit Institutions, available at : https://www.environmental-auditing.org/media/113740/2010_wgea_climate_change_guide_a4_web.pdf
4. United Nations Climate Action- UN and Climate Change, available at: <https://www.un.org/en/climatechange/17-goals-to-transform-our-world>
5. United Nations Climate Change- Process and Meetings- The Paris Agreement, available at: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>
6. MoEFCC. (2021). India: Third Biennial Update Report to the United Nations Framework Convention on Climate Change. Ministry of Environment, Forest and Climate Change, Government of India, available at: https://unfccc.int/sites/default/files/resource/INDIA_%20BUR-3_20.02.2021_High.pdf
7. National Statement by Prime Minister Shri Narendra Modi at COP26 2020 Summit in Glasgow, available at: <https://www.mea.gov.in/Speeches-Statements.htm?dtl/34466/National+Statement+by+Prime+Minister+Shri+Narendra+Modi+at+COP26+Summit+in+Glasgow><https://www.thequint.com/climate-change/india-cop26-climate-conundrum-everyone-should-care-about#read-more>
8. United Nations Climate Action- What is Climate Change, available at: <https://www.un.org/en/climatechange/what-is-climate-change>
9. Ministry of Environment Forest and Climate Change- Government of India, available at: <https://moef.gov.in/en/>
10. Performance of NAPCC Committee on Estimates 2018-19 (Thirtieth Report), available at: https://eparlib.nic.in/bitstream/123456789/783946/1/16_Estimates_30.pdf
11. Ministry of Environment Forest and Climate Change- Climate Change Knowledge Portal, available at: <https://moef.gov.in/en/>
12. The Global Risk Report 2022, available at: https://www3.weforum.org/docs/WEF_The_Global_Risks_Report_2022.pdf
13. Business Standard.com April 6, 2022, available at: https://www.business-standard.com/article/current-affairs/india-needs-12-4-trillion-for-net-zero-transition-says-report-122040600019_1.html

14. INTOSAI WGEA For a common sustainable future – Innovative environmental auditing, available at:
<https://www.environmental-auditing.org/media/117578/wgea-cop26-bulletin-18-11-2021.pdf>
15. SAI India (Oct 2021), country paper on Audit on Climate Change for the 8th ASOSAI WGEA Seminar on Environmental Auditing, available at
<http://www.asosaiwgea.org/activities/ASOSAIWGEAMeetingsSeminars/MeetingthSeminar8/>
16. The 15th ASOSAI Assembly on 7th September 2021- Speech of Comptroller and Auditor General of India, available at
https://cag.gov.in/uploads/cag_speeches/speeches-06151b7d73297f5-97349437.pdf



The Carbon Profile of Pakistan and Global Trends in the Audit of Climate Change

SAI Pakistan

Mr. Attique ur Rahman, Deputy Director (Federal Government Audit), is an officer of the Pakistan Audit and Accounts Service (PA&AS) since 2011 and possesses multidisciplinary qualifications – M.Sc (Hons) Agriculture Biotechnology, Pakistan and M.Sc Forensic Audit and Accounting, United Kingdom. He has conducted and supervised a variety of audits, including forensic audits, performance audits, regularity audits, environmental audits, and special studies.

Introduction

According to the World Economic Forum Global Risk Report (2017) 'Extreme Weather Events' and 'Failure of Climate Change and Adaptation' are the top two likeliest world risks to materialize and are both in the top 3 risks in terms of impact.

Over the course of the past decade, a cluster of environment-related risks – notably extreme weather events and failure of climate change mitigation and adaptation as well as water crises – has emerged as a consistently central feature of the GRPS [Global Risks Perspectives Survey] risk landscape, strongly interconnected with many other risks, such as conflict and migration. This year, environmental concerns are more prominent than ever, with all five risks in this category assessed as being above average for both impact and likelihood.



Mr. Attique ur Rahman
Deputy Director
(Federal Government Audit)



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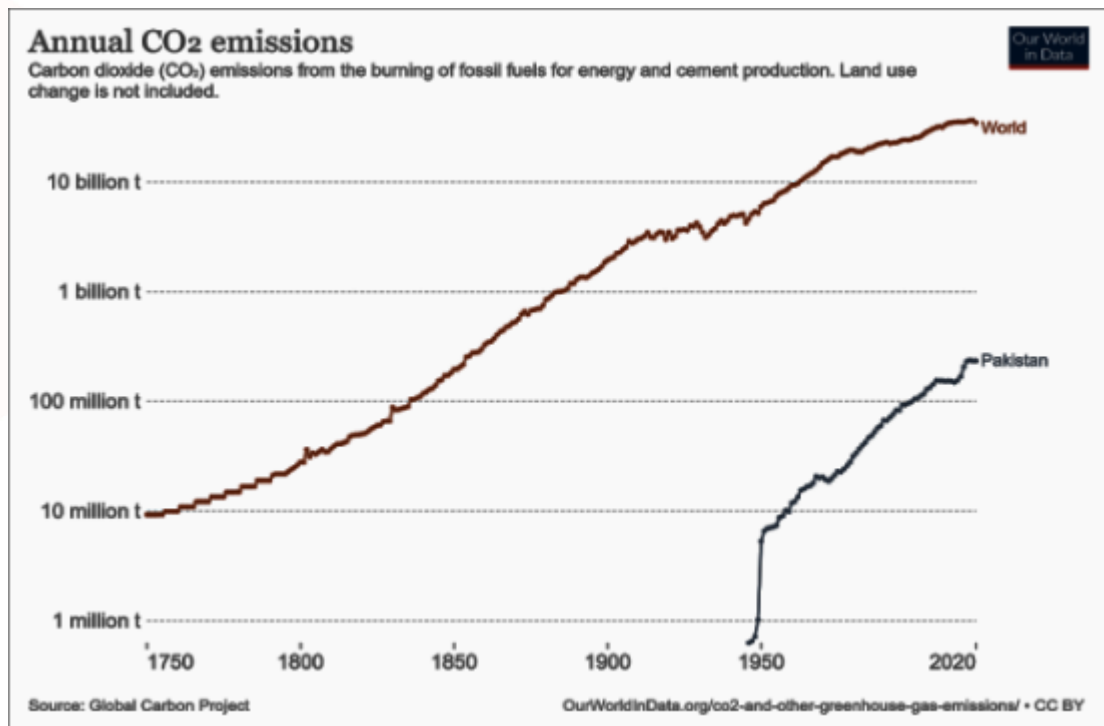
Besides, “more than half of all industrial emissions of carbon dioxide since the dawn of the Industrial Revolution have been released since 1988” (Dr. Peter C. Frumhoff, Director of science and policy at the Union of Concerned Scientists, 2014).

Climate change poses a significant impact in many regions of the world, with developing-country people bearing the brunt of the cost. Pakistan is South Asia's second-largest country. Sixty percent (60%) of the Indus basin's entire watershed area is located inside Pakistan's borders. The climate in the north ranges from warm winters and hot, dry summers to semi-arid and desert zones in the west and south.

2. The Carbon Profile of Pakistan

Graph 01 reflects Pakistan's cumulative emissions as a share of global cumulative emissions. This chart shows cumulative CO₂ emissions – the sum of emissions produced since 1751 to the given 2020. This allows us to understand how much of the total CO₂ emissions to date have been emitted by Pakistan. Pakistan contributes 0.3% of the total global emission (Andrew, R. M., & Peters, G. P. (2021).

Pakistan's highest CO₂ emission was recorded during 2018 i.e., 238 million tons and then it declined to 234 million tons in 2020. However, globally it was 36.70 billion tons in 2018 and declined to 34.84 billion tons in 2020. The data include CO₂ emissions from fossil fuels for energy and cement production and excludes land use.

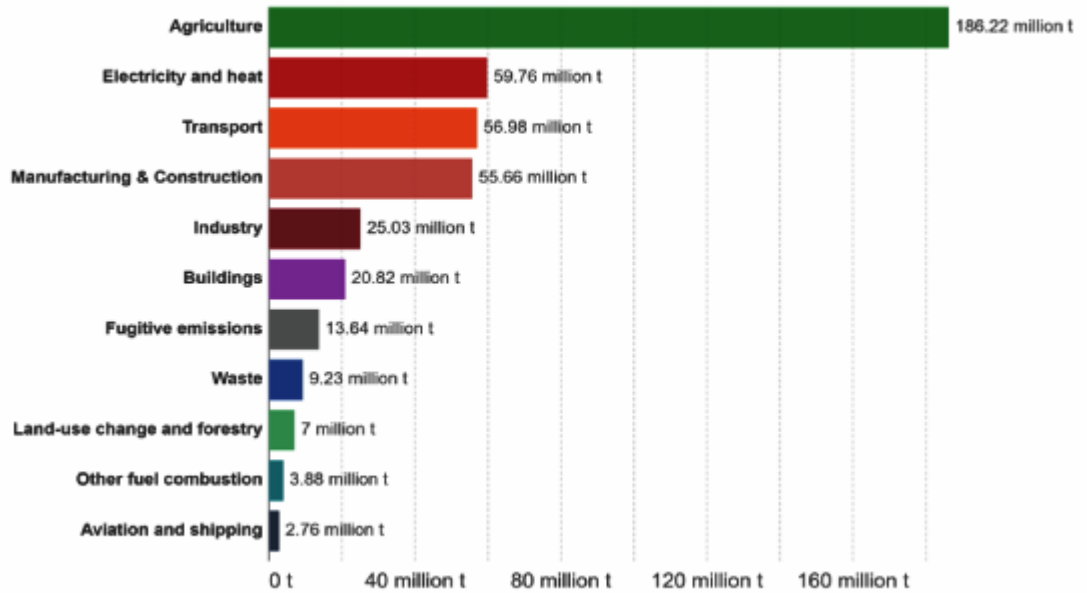


Graph 1: Change in Annual CO₂ emission Pakistan Vs World

Source: Andrew, R. M., & Peters, G. P. (2021).

Greenhouse gas emissions by sector, Pakistan, 2018

Greenhouse gas emissions are measured in tonnes of carbon dioxide-equivalents (CO₂e).



Source: CAIT Climate Data Explorer via Climate Watch

OurWorldInData.org/co2-and-other-greenhouse-gas-emissions • CC BY

Graph 02: GHG equivalents to CO₂ - Pakistan

In Pakistan, four sectors, including agriculture, electricity and heat, transport and manufacturing, and construction, are major emitters of GHGs, as reflected in graph 02. These areas also invite the attention of policymakers and audit in Pakistan.

3. Impact of Climate Change

Due to its geographical positioning, Pakistan has been rated among the top ten nations most affected by climate change in the last 20 years, according to German Watch. According to the Global Climate Risk Index annual report for 2020, Pakistan lost 0.53 percent of its GDP, incurred US\$ 3792.52 million in economic damages, and had 152 extreme weather events between 1999 and 2018. According to an ADB study, the socioeconomic consequences of environmental degradation are significant, with climate adaptation demands ranging from \$7 billion to \$14 billion per year. Because the government is aware of the situation, it is taking steps to mitigate the negative effects of climate change in the country at the policy, management, and operational levels (Ministry of Finance, Government of Pakistan, 2020).

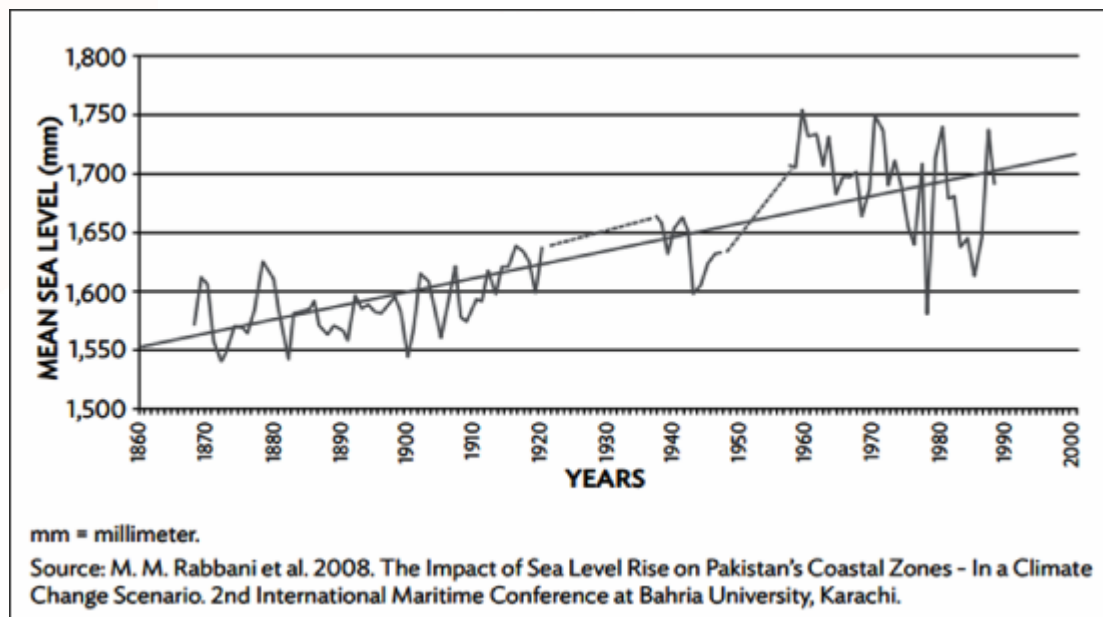
Pollution is the leading source of death and disease in the world's environment. Over 124 million people in 51 countries and territories are experiencing food insecurity at crisis levels or worse, necessitating quick action (FAO, 2022).

Extreme weather disasters and natural and man-made resource scarcity have already elevated business continuity risks significantly. Higher activism, including shareholder activism, as well as increased danger of environmental legal action from entities such as Client Earth, can occur when consumers and the public in general believe inadequate action is being made.

Micheal Bloomberg, Chairman of Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD) stressed the urgency of climate related risk in the Recommendations of the Task Force (2017) as below:

The risk climate change poses to businesses and financial markets is real and already present. It is more important than ever that businesses lead in understanding and responding to these risks – and seizing the opportunities – to build a stronger, more resilient, and sustainable, global economy

Particularly, for Pakistan, as a result of increased precipitation variability and glacier melting under future climate change scenarios, Pakistan's river flows are predicted to fluctuate significantly. As evaporation rates grow, so may the need for irrigation water. Wheat and basmati rice yields are predicted to fall, forcing production to move north due to a lack of water. The amount of water available for hydropower generating may be reduced. Additional air conditioning demand is predicted to increase as temperatures rise, resulting in increased energy consumption. The efficiency of nuclear and thermal power plants may be compromised when air and water temperatures rise. Heat waves of extreme severity have been connected to an increase in mortality. City drainage systems may be strained as a result of heavy rainfall and flash floods. Coastal infrastructure may be harmed by rising sea levels (Rabani et al 2008).



Graph 03: Mean Sea level Rise recorded at Karachi Coast, Pakistan (1860-2000)

Adapting to these impacts may include: development or use of crop varieties with greater heat and drought tolerance, modernizing irrigation infrastructure and employing water-saving technologies (ADB, 2017).

According to the estimate, by 2080, Pakistan would have seen a 4.38°C temperature increase. The study also found that (i) temperature increases in both summer and winter are larger in northern Pakistan than in southern Pakistan, and (ii) temperature increases in both areas are higher in winter than in summer. There is no substantial difference in the percentage of precipitation change. In southern Pakistan, however, there is a summer rise in precipitation and a winter reduction (W. Iqbal and M. Zahid. 2014).

The annual mean temperature in Pakistan has risen by about 0.5°C in the last 50 years, and the number of heat wave days per year has increased fivefold. Sea level along the Karachi coast has risen approximately 10cm over the last century. Annual rainfall in Pakistan is likely to have a considerable inter-annual fluctuation rather than a major long-term trend. By the end of the century, sea level is anticipated to rise another 60 cm, affecting low-lying coastal communities south of Karachi (ADB, 2017)

4. INTOSAI Working Group on Climate Audit

The 10th INTOSAI Working Group on Environment Audit noted that climate change adaptation has suddenly become a hot issue in auditing. The United Nations Sustainable Development Goals (SDGs) are used as audit topics by Supreme Audit Institutions. A report on a survey done every three years for SAIs throughout the globe was produced by a global Working Group on Environmental Auditing (2021).

Finally, the amount of audits performed by different SAIs varies greatly, particularly when it comes to performance audits. During the year 2018-2020, the number of environmental performance audits per SAI ranged from one to 186. Differences in SAI size might account for the variance (INTOSAI, 2021). The increased sensitivity towards auditing climate change is a welcome development in SAIs.

5. Global Trends in Audit of Climate Change

Audits reviewed indicated that auditors need to improve their consideration of climate-related risks when planning and executing their audits (FRC, 2020)

Some of the good practices and guidelines to assess climate related issues by an auditor have been developed by the Financial reporting Council (2020); Chartered Institute of Internal Auditors (2020), National Audit Office, UK (2021) and others. A brief review is given below:

5.1. How might climate change impact an audit?

Auditors must be aware of how climate-related concerns may affect the entity's annual report and how this should be integrated into the audit. This insight must be adapted to each entity's unique conditions as well as the audit's significance. This is divided into the following distinct steps, which are illustrated in the diagram below.

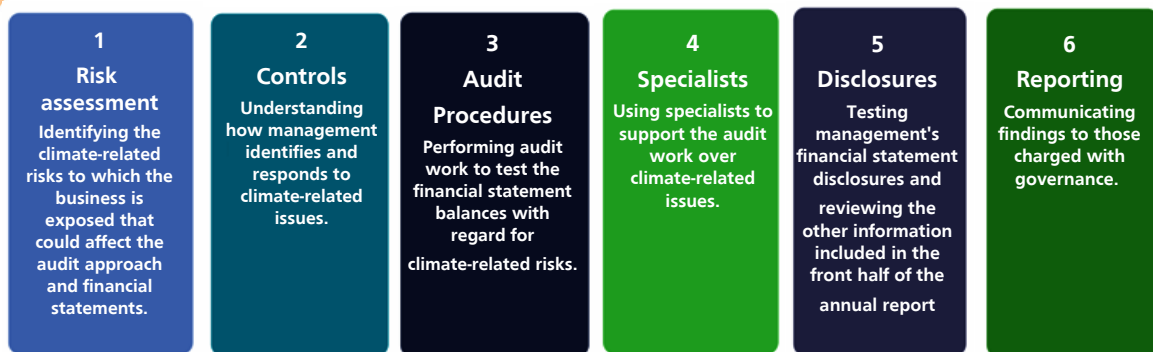


Fig 1: Audit Steps FRC Climate Thematic – Audit (FRC-2020)

5.2. Internal Audit

The auditors may check whether climate change and its impact on the environment are included in the scope of internal auditing and risk assessment. If they were not included, what were the possible reasons for their exclusion? Besides, the auditor may evaluate the skill sufficiency of the HR who is responsible for risk assessment posed by climate change, including carbon emissions and those who communicate assurance reports to stakeholders. Moreover, an auditor may examine whether the management conducts an impact assessment study of any strategic change impacting the operations of the business.

5.3. Organizational Strategy:

Auditors may review whether an organization's strategic plan includes the aspect of climate change and its allied risks, as well as the long-term impact of climate change on business operations, along with risk profiling and their mitigation strategies.

"One of the challenges for auditors is ensuring the completeness of risk considerations on climate change, for example on provisions – are they properly challenging management? There are some industries like energy where it's obvious, but I have a sense that there are certain industries that may be a bit naïve and for whom the penny hasn't dropped. The auditor could rightfully challenge"
- Investor (Financial Reporting Council, 2020)

Moreover, the auditor may assess whether the management has envisaged sustainability targets by adopting continuous mitigation practices and exploring new business opportunities, especially in the context of public sector business enterprises including airline organizations, railways and various public sector manufacturing plants, etc. The policy documents may be examined to check management's plan to reduce carbon emissions, reduce waste, and conserve natural resources. The auditors may also see whether the innovations and outcomes in terms of service delivery or product development are aligned with the long-term climatic goals of the government. The auditors may also check whether the management expresses commitments to climate change, including recycling and reusable energy resources (like the Capital Development Authority, Islamabad, Pakistan, has constructed a plastic road to reuse plastic material).

5.4. Governance and Oversight:

The auditor may examine whether the board has allocated clear senior accountability for climate change and environmental impact within the organization; defined suitable roles and responsibilities and their implementation; cognizance of its legal and regulatory responsibilities related to climate change and environmental impact; and the availability of an adequate management and reporting framework in place to oversee the required operations and capture the necessary information for reporting.

5.5. Risk Assessment and Management

The auditor may examine whether the management of an entity has performed an assessment of the entire business model up to 20 years ahead to understand the areas where improvement is necessary; developed a climate change and environmental impacts risk register; existence of a suitable plan in place to address any known deficiencies, implement improvements, and ensure the strategic Insurance policies cover physical damage caused by the effects of climate change, and the relevant policies need to be reviewed and updated.

National Audit Office, UK (2021) developed a risk taxonomy in “Climate change risk: A good practice guide for Audit and Risk Assurance Committees”. It identified various types of climate-related risks that organizations could encounter. The risks listed below are not all-inclusive, but they are representative of the kinds of risks that public sector organizations face as a result of climate change.

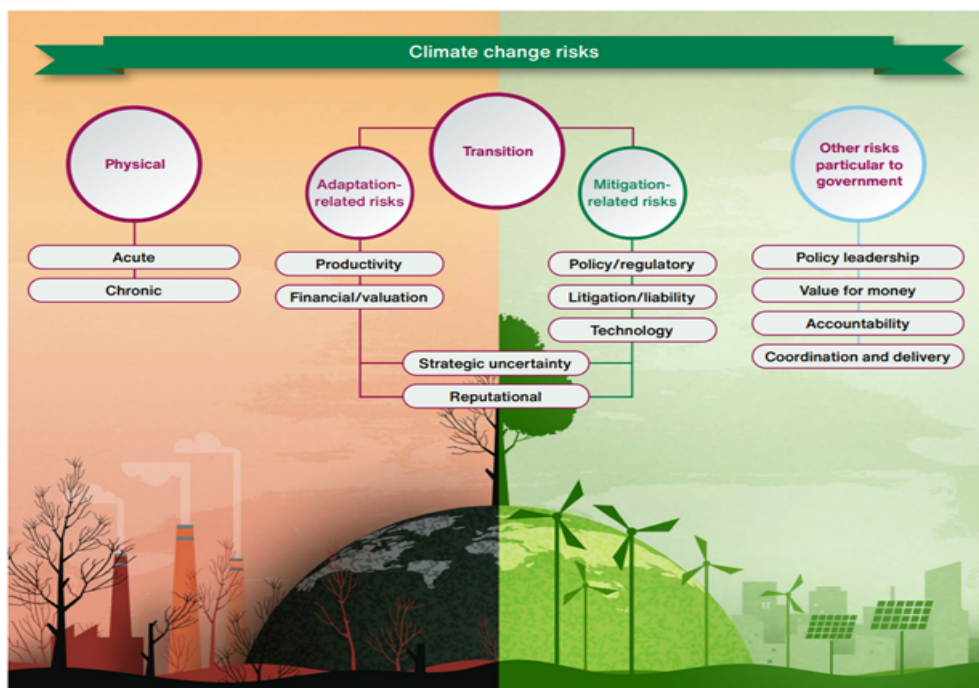


Fig 02: Climate Change Risk (National Audit Office, UK, 2021)

Floods, for example, will have a substantial impact on infrastructure, causing structural damage and widespread service disruption is known as the climate change's **acute physical risk**. Meanwhile, the more gradual effects of rising temperatures, such as sea level rise and coastal change is **chronic physical risk**.

Adaptation is defined as actions that increase resilience to existing or anticipated climate change risks, including as financial and value risks, strategy uncertainties, and reputational threats (Auditor-General Department, South Australia, 2021).

Mitigation measures are those that are taken to avoid or minimise emissions and the severity of future climate change. Policy and regulatory risks, legal and liability risks, and technology risks are all examples of mitigation risks (Auditor-General Department, South Australia, 2021).

For rest of the terminology used in this risk template, the explanation may be accessed [here](#)¹

5.6. Key Performance Indicators and Reporting

The auditor may check whether suitable key performance indicators have been implemented that link to government mandated targets, kept the board updated on key metrics and progress toward achieving targets; Set up the necessary external reporting and disclosure framework; set up independent verification of external reporting.

6. Some ISAs relevant to Climate-Related Risks

The table below covers some of the important aspects of risk assessment and responses to identified risks, audit evidence, and communication with those in charge of governance and auditor reporting. However, ISAs related to climate risk are shared here.

¹ Climate change risk: A good practice guide for Audit and Risk Assurance Committees” Available At: <https://www.nao.org.uk/wp-content/uploads/2021/08/Climate-Change-Risk-A-good-practice-guide-for-Audit-and-Risk-Assurance-Committees-.pdf>

ISA Standard

Effect on Auditing Financial Statements

ISA 315 (Revised 2019), Identifying and Assessing the Risks of Material Misstatement

The auditor may evaluate the implications of climate-related risks when implementing ISA 315 (Revised 2019) while acquiring an understanding of the entity and its environment, including:

Whether or not climate-related risks have an impact on, or will have an impact on, the entity's business model, particularly its supply chain. The auditor's understanding of climate-related risks extends to the components within the group if the entity's structure includes subsidiaries, divisions, or branches (i.e., a group). Furthermore, the auditor may get insight into how management and those in charge of governance see climate-related risks.

Similarly, industry, regularity and other factors may also be assessed.

ISA 320, Materiality in Planning and Performing an Audit

The auditor's judgement of materiality and performance materiality in line with ISA 320 may be influenced by climate-related risks

ISA 330, The Auditor's Responses to Assessed Risks

If the auditor's appraisal of the risk of material misstatement at the assertion level includes the implications of climate-related risks, the auditor's subsequent audit processes must take these risks into account. The greater the risk rating, the more convincing audit evidence the auditor must acquire.

ISA 250 (Revised), Consideration of Laws and Regulations in an Audit of Financial Statements

Other rules and regulations may include environmental regulations when it comes to climate-related risks. A violation of such regulations might have a significant impact on the financial statements, for example, a breach could result in a contingent responsibility for prospective litigation as well as fines or penalties imposed by the regulations.

ISA 450, Evaluation of Misstatements Identified during the Audit

Affects additional information to be provided in the entity's annual report that might reasonably be expected to impact the economic judgments of financial statement readers. Given that the majority of climate-related data is now reported outside of financial statements, this may be the case for climate-related data.

Table 01: Some ISAs relevant to Climate-Related Risks

Source: International Auditing and Assurance Standards Board (IAASB), 2020 on “The Consideration of Climate-Related Risks in an Audit of Financial Statement”.

The auditor must identify and analyze the risks of material misstatement at the financial statement and assertion levels for classes of transactions, account balances, and disclosures using risk assessment processes. Climate-related risks may increase the risk of material misstatement in one or more important statements, such as accuracy, valuation and allocation, rights and duties, and presentation for a particular transaction class, account balance, or disclosures (IAAB, 2020).

7. The UK and Australian Legal Frameworks for making Audit Opinions regarding the Audit of Climate Change

Given that both the UK and Australia use IFRS and ISAs, the relevant auditing standards listed in the first column of Table 1 of Risky business, as well as the corresponding suggested climate risk implication listed in the second column, are both plausible, and similar relationships in auditor consideration and evaluation of accounting standard-based expectations of adjusting for climate risk are likely.

The table 02 has been reproduced from the Climate Change and Professional Liability for Auditors: a Comparative United Kingdom and Australian Analysis Paper 1(2018).

Auditors’ duties and annual accounts: examples of climate risk implications

Relevant standards (paraphrased)	Suggested climate risk implications
<p>The auditor is responsible for determining whether the financial statements are produced in compliance with the appropriate financial reporting framework in all material respects.</p> <p>ASA 700 Forming an Opinion and Reporting on the Financial Report</p>	<p>Auditors may need to assess the impact of climate risk on assumptions and estimates used in making yearly financial statements, such as:</p> <ul style="list-style-type: none">• recognition of mineral resources and reserves (AASB 6);• fair value measurement of PP&E (AASB 13)• impairments of PP&E, goodwill, mineral resources, and agriculture (AASB 136, AASB 6, AASB 141);• depreciation method and assumptions for PP&E (AASB 116); and• asset retirement obligations (AASB 116, AASB 137).

The auditor must determine whether the accounting estimates in the financial statements are appropriate in the context of the applicable financial reporting framework or are misstated based on the audit evidence.

ASA 540 Accounting Estimates and Related Disclosures

When an auditor determines that climate risk is relevant to important assumptions used in accounting estimates, the auditor may be required to:

- Obtain written representations from management (ASA 540 [37]); and
- Include in the audit documentation the basis for the auditors' conclusion about the reasonableness of accounting estimates and indicators of possible management bias (ASA 540 [18]).

The auditor must first have a thorough understanding of the organisation and its surroundings, as well as the company's internal controls, in order to detect and analyse the risks of material misstatement. Among other things, the auditor must be aware of:

- Relevant industry, regulatory, and other external factors;
- The nature of the entity, its operations, ownership and governance structures;

In light of the firm's objectives, plans, and other business risks, as well as the efficacy of its internal controls and risk management systems, auditors may need to evaluate the implications of climate risk while getting a knowledge of the organisation and its surroundings. It's possible that you'll need to know how to:

- regulatory climate risk implications;
- climate-related market risk implications;

Table 02: Auditors' duties and annual accounts: examples of climate risk implications

Source: Climate Change and Professional Liability for Auditors: a Comparative United Kingdom and Australian Analysis Paper 1(2018).

8. Conclusion

Pakistan has continuously been classified as one of the countries most affected by climate change. Climate change is widely recognized as a spatial issue, and mitigating the hazards associated with it is a massive undertaking that necessitates well-planned and coordinated national and global initiatives to reduce its negative impacts on the environment and human life. It is widely understood that history will assess the current generation's reaction to this issue, since if we fail to confront it courageously, quickly, and cooperatively, we risk condemning future generations to an irrevocable calamity. As a result, politicians, scientists, developers, engineers, and others all across the world are utilizing geographic information system technology to better grasp this complicated problem and provide real answers in a variety of climate change scenarios (Economic Survey of Pakistan, 2019-2020).

Most firms are developing guidance in this area and some are beginning to incorporate climate change considerations into audit templates. However, firms should continue to make their guidance more granular and comprehensive and to provide audit teams with more examples of good climate risk disclosures and sustainability reporting (FRC, 2020)

In the above scenario, it is the responsibility of auditors to provide deep insight into matters of climate change to policymakers so that they could take well-informed decisions in the light of recommendations and findings made by auditors.

9. References

- ADB (2017) 'Climate Change profile of Pakistan', Available at: <https://www.adb.org/publications/climate-change-profile-pakistan#:~:text=Climate%20change%2Drelated%20natural%20hazards,frequency%20of%20extreme%20climatic%20events>. Accessed on 20.04.2022.
- Andrew, Robbie M., & Peters, Glen P. (2021). The Global Carbon Project's fossil CO2 emissions dataset [Data set]. Zenodo. <https://doi.org/10.5281/zenodo.5569235>.
- Bloomberg, M. (2017) 'Recommendations of the Task Force on Climate-related Financial Disclosures', <https://assets.bbhub.io/company/sites/60/2020/10/FINAL-2017-TCFD-Report-11052018.pdf>, accessed, 21.04.2022
- Economic Survey of Pakistan (2019-2020) Available at: https://www.finance.gov.pk/survey/chapter_20/16_Climate_Change.pdf, Accessed on 20.04.2022.
- Chartered Institute of Internal Auditors (2020), "Climate change and environmental impact". Available at: <https://www.iiia.org.uk/resources/ethics-values-and-culture/climate-change-and-environmental-impact/?downloadPdf=true>, Accessed on 20.04.2022.

Climate Change and Professional Liability for Auditors: a Comparative United Kingdom and Australian Analysis Paper 1(2018). Available at; <https://www.cpaaustralia.com.au/-/media/project/cpa/corporate/documents/tools-and-resources/environmental-social-governance/climate-change-and-professional-liability-risk-for-auditors-1.pdf?rev=9817028bc1f648ff88ee8fc0fe5a4cc9&download=true>, Accessed, 21.04.2022

FAO (2021), "The state of food security and nutrition" Available at: <https://www.fao.org/state-of-food-security-nutrition/en/>. Accessed on 20.04.2022.

Financial Reporting Council (2020) 'Climate Thematic- Audit' <https://www.frc.org.uk/getattachment/0ef2c94a-9028-4efa-ac80-3b8c2e0d9a11/Audit-FINAL.pdf>

Hannah Ritchie, Max Roser and Pablo Rosado (2020)-"CO₂ and Greenhouse Gas Emissions". Published online at OurWorldInData.org. Retrieved from: 'https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions'

INTOSAI (2021), 10th INTOSAI Working Group on Environment Audit, Available at https://www.environmental-auditing.org/media/117588/wgea-10th_intosai_wgea_survey_publication.pdf, Accessed on 20.04.2022.

IAASB (2020) 'The Consideration of Climate-Related Risks in an Audit of Financial Statement', <https://www.ifac.org/system/files/publications/files/IAASB-Climate-Audit-Practice-Alert.pdf>, Accessed, 21.04.2022

Peter C. Frumhoff (2014) at Union of Concerned Scientist available at: <https://blog.ucsusa.org/peter-frumhoff/global-warming-fact-co2-emissions-since-1988-764/>. Accessed on 20.04.2022.

Ministry of Finance, Government of Pakistan (2020) Available at: https://www.finance.gov.pk/survey/chapter_20/16_Climate_Change.pdf, Accessed on 20.04.2022.

National Audit Office (2021) "Climate change risk: A good practice guide for Audit and Risk Assurance Committees" Available At: <https://www.nao.org.uk/wp-content/uploads/2021/08/Climate-Change-Risk-A-good-practice-guide-for-Audit-and-Risk-Assurance-Committees.pdf>

Rabbani, Golam & Inam, Asif & Tabrez, Ali & Sayed, N & Tabrez, Syed. (2008). THE IMPACT OF SEA LEVEL RISE ON PAKISTAN'S COASTAL ZONES– IN A CLIMATE CHANGE SCENARIO. 10.13140/2.1.2353.9203.

W. Iqbal and M. Zahid. 2014. Historical and Future Trends of Summer Mean Air Temperature over South Asia. Pakistan Journal of Meteorology. 10 (20). Islamabad.

Activities in Member SAs

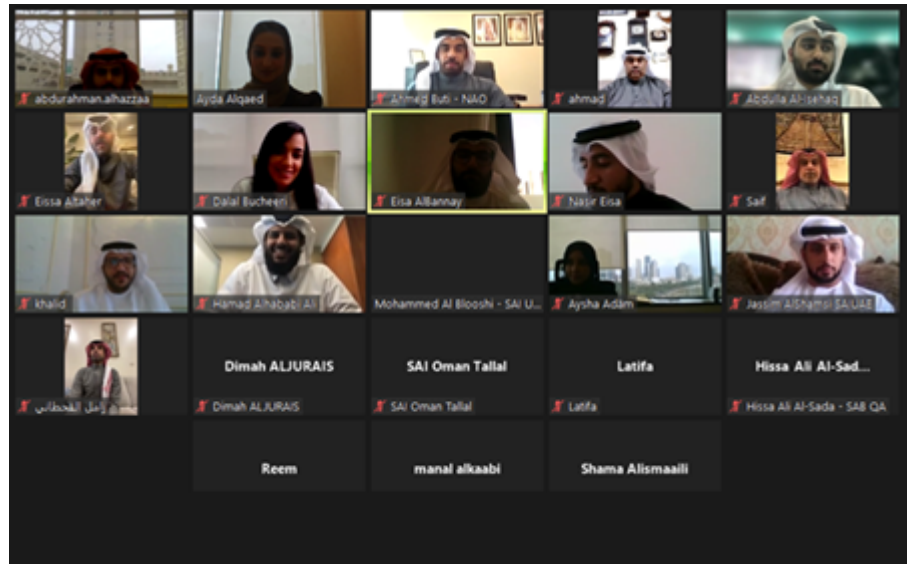


The National Audit Office of the Kingdom of Bahrain – Focus on Audit Training

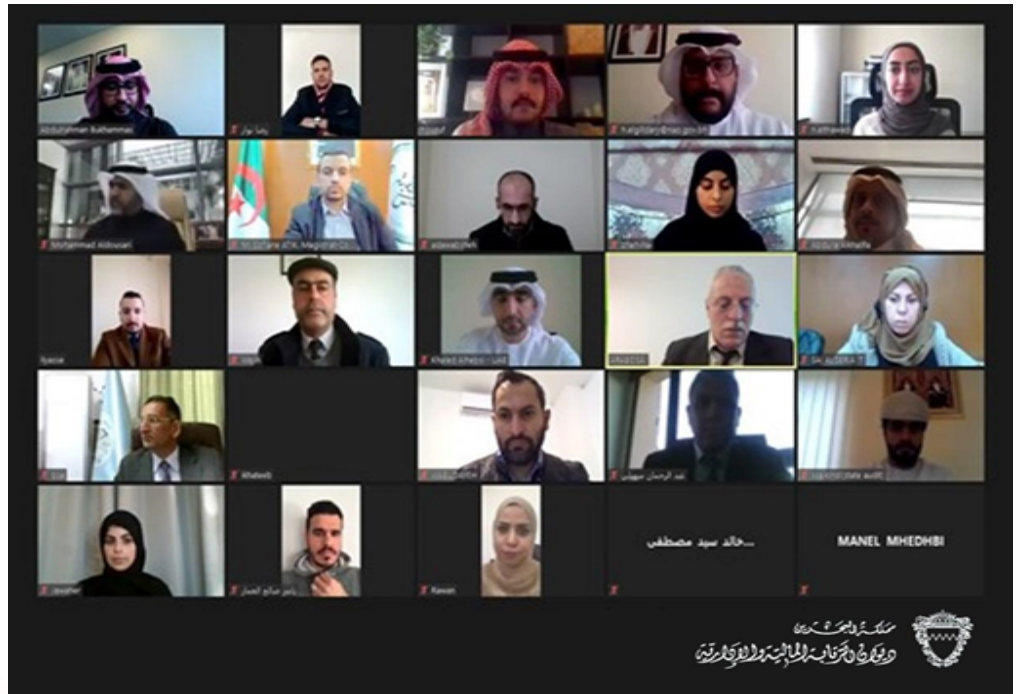
As part of its strategic objectives, the National Audit Office (NAO) of the Kingdom of Bahrain is dedicated to build the capacity of its staff. In 2021, for instance, employees from the NAO participated in 30 internal and 47 external training courses that were held in cooperation with local, regional and international organizations. Despite the exceptional circumstances caused by the Covid-19 pandemic, the NAO implemented its training programme for 2021 as planned and is continuing with its comprehensive training plan for 2022.



One important part of the NAO's 2021 training plan was a programme on capacity building and enhancing skills and expertise in the field of Forensic Auditing which was conducted in cooperation with global company Kroll, and which was offered to its employees and other relevant entities in Bahrain. The programme included 6 separate courses over a period of 5 months with completion in November 2021, covering topics such as Overview on Forensic Auditing, Auditing Financial Crimes, Advanced Analysis of Big Data, Forensic Email Review Techniques, Investigative Interview Techniques, Forensic Reporting and Evidencing. Besides, the NAO's training plan for 2021 included training for NAO employees on topics such as "Auditing the oil and extractive industries", "The investment sector", "Financial Analysis Skill", "Financial Indicators", "Sustainable Development", "Crisis Management", and "Disaster Recovery".



The NAO's focus on training continues in 2022 as it prepares a 3-year training plan for employees of Supreme Audit Institutions (SAIs) in the Gulf. As a member of the Training and Development Committee of the SAIs of the Cooperation Council for the Arab States of the Gulf, the NAO agreed at the beginning of this year to adopt three new training programmes: "Performance Audit of Public Policies", "Risk-Based Audit in accordance with the COSO (Committee of Sponsoring Organisations) Initiative" and "Accrual-Based Government Accounting considering IPSAS (International Public Sector Accounting Standards)" which have been added to the already approved training programmes on "Auditing Government Procurement", "Auditing Public Debt" and "INTOSAI Professional Standards Framework and related developments".



In addition to the GCC training plan, the NAO follows its own training programme. During the first quarter of 2022, the NAO conducted and participated in 14 training courses. It held a regional webinar on “Auditing Public Debt” in conjunction with the Secretariat General of the Cooperation Council for the Arab States of the Gulf which was attended by participants from various audit offices from the Gulf Cooperation Council Countries. The three-day course was presented by Mr. Ahmed Buti, Audit Manager at the NAO Regularity Audit Directorate which covered the definition of public debt, the role of the law in defining its components, the strategic importance of public debt at country level as well as the procedures for financial, performance and compliance audit of public debt in accordance with INTOSAI standards and best practices in this field.



Furthermore, the NAO organized a four-day regional course on “Risk-based Accounting” in cooperation with ARABOSAI. The course was conducted by Administrative Audit Director Mr. Mahmood Mahmood and Senior Auditor at the NAO’s Administrative Audit Directorate, Mr. Hasan Yusuf, and discussed risk-based auditing tools and approaches, how to assess the risks and deal with the identified risk levels based on the entity’s nature of activity, and how this is reflected in the audit plan.

In addition, the NAO held a local training course on “Financial Audit” for the Bahrain Ministry of Foreign Affairs. The two-day course was presented by Ms Ameera Madan and Ms May Alkhulaif, Audit Managers at the NAO’s Regularity Audit Directorate. Participants were introduced to the NAO (establishment, law, objectives, competencies, standards, audit types it conducts), the planning of audit tasks, risk assessment, and relevant laws and regulations. The program also touched on financial analysis methods, detailed audit checks and audit procedures, and provided an overview of the annual report prepared by the NAO.

The NAO’s focus on continuous training and professional development of its employees constitutes an essential part to help fulfil its mission to verify the soundness and legality of the use of public funds and accomplish its vision of a highly professional independent audit institution assisting the entities subject to its audit in improving performance, ensuring accountability and enhancing transparency.

The NAO encourages its staff to obtain audit qualifications approved by reputable international institutes and organisations, such as CPA (Certified Public Accountant), ACCA (Association of Chartered Certified Accountants), CMA (Certified Management Accountant), CIA (Certified Internal Auditor), CISA (Certified Information Systems Auditor).

Comptroller and Auditor General of India Session of the UN Panel of External Auditors



In December 2021, regular session of the UN Panel of External Auditors (6 & 7 December) and Technical Group meeting (1 to 3 December) were held at the UN Headquarters, New York, USA. The CAG of India chaired the UN Panel session. Important issues discussed in this session included a discussion on the impact of COVID-19 on the internal controls of UN organizations. Panel Members emphasized that despite the pandemic, it is essential to strengthen the controls in place; establishing appropriate and comprehensive levels of assurance and monitoring to ensure that the use of resources can be appropriately controlled and scrutinized.

Visit of SAI Maldives delegation



H.E Mr. Hussain Niyazy, Auditor General of Maldives with Mr. Girish Chandra Murmu, Comptroller and Auditor General of India

A six member SAI Maldives delegation led by H.E Mr. Hussain Niyazy, Auditor General of Maldives visited India from 28th February to 11th March, 2022. As part of the visit, they stayed briefly at NAAA Shimla and iCISA, Noida. The delegation met with CAG to discuss the operationalization of the recently renewed MoU and the way forward for both the SAIs.

The 18th annual meeting of INTOSAI Compliance Audit Sub-Committee (CAS)



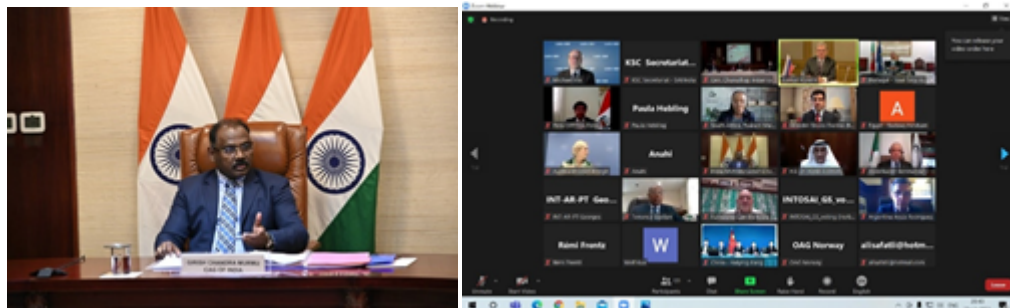
CAG of India as the CAS Chair inaugurating 18th CAS meeting on 28 October, 2021

The 18th Annual Meeting of the INTOSAI Compliance Audit Sub-Committee (CAS) was held on 28 October 2021. The meeting was hosted by the Supreme Audit Institution (SAI) of India, Chair of CAS. Representatives from 20 member SAs, AFROSAI-E and SAI Thailand as observers and the INTOSAI Development Initiative participated in the meeting. The meeting was inaugurated by the C&AG of India in his capacity as chair of CAS.

The C&AG of India, in his opening remarks, pointed out that the impact of compliance audit goes beyond plugging leakages in Government expenditure and saving funds to improving public accountability and transparency.

He touched upon the efforts of Supreme Audit Institutions in conducting compliance audits of COVID-19 related initiatives which have helped, on the one hand, their respective governments in streamlining and improving their pandemic management strategies and making mid-term adjustments, and on the other, the SAIs themselves in reassessing their strategies and methods in conducting audits under changed circumstances. The C&AG of India proposed that the 3I approach – innovating, institutionalizing and integrating – may be an ideal strategy to address the major challenge of capacity building.

CAG of India participates in the 75th INTOSAI Governing Board Meeting



The 75th Meeting of the INTOSAI Governing Board was held virtually on 23 November 2021. Presenting the report of the Knowledge Sharing and Knowledge Services Committee, the CAG of India reiterated the KSC's commitment to fostering cooperation and sharing of knowledge between the Supreme Audit Institutions to enable them to ensure public accountability and improve governance.

The CAG of India highlighted two important guidance documents developed by KSC, through its working groups, to guide Supreme Audit Institutions around the world to conduct audit of Disaster Management and Privatization. He expressed the hope that the guidance on audit of disaster management will help Governments in assessing and addressing the increasingly systemic and complex disaster-related risk and strengthening the international collective effort to achieve the overall 2030 agenda of Sustainable Development. Reviewing the work of the working groups of KSC, the CAG of India expressed confidence that KSC's activities will expand the horizon of audit activities, augment audit capacity, and facilitate SAIs in adopting new technology and methodologies. The CAG of India concluded his report by highlighting SAI India's decision to celebrate 16th of November as Audit Day every year, to rededicate ourselves to the mission of promoting good governance through our continuous quest for excellence in public audit.

Theme Articles



Responding to Climate Change: China's Renewable Energy Audit

- SAI China

Climate change is a common challenge for humanity. As stated in the State of the Global Climate 2020 released by the World Meteorological Organization, the global mean temperature for 2020 was around 1.2°C warmer than pre-industrial times, and the last 10-year average (2011-2020) was the warmest on record. Effective efforts to reduce greenhouse gas emissions are of extreme urgency for the world. For China, actively responding to climate change and accelerating green and low-carbon development offer major opportunities for adjusting its economic structure, transforming its economic development mode and achieving sustainable development. With no or little greenhouse gas and pollutant emission in its production and use, renewable energy becomes an effective tool for climate action and pollution control. The transformation from fossil energy consumption to renewable energy consumption, through increasing power generation from renewable energy and reducing greenhouse gas, such as carbon dioxide, emissions from coal power generation, is of vital importance to the achievement of the United Nations' Sustainable Development Goals.

1. Background

Energy is an important material basis and driving force for the progress of human civilization, and is a matter of people's livelihood and national security. Since the beginning of this century, the global response to climate change has set out on a new journey. China together with over 130 countries and regions has set carbon neutrality targets. The global energy mix is being quickly adjusted and the technical level and cost efficiency of renewable energy have significantly increased. Electricity generation from renewable energy sources such as wind, solar and biomass has leapt forward, increasing tens of times. Renewable energy took about 60% of the world's new electricity generating capacity in the last five years.

At the general debate of the 75th Session of the United Nations General Assembly on September 22, 2020, President Xi Jinping announced that China would scale up its Nationally Determined Contributions (NDCs) by adopting more vigorous policies and measures, strive to peak carbon dioxide emissions before 2030, and achieve carbon neutrality before 2060. By 2030, China aims to bring its total installed capacity of wind and solar power to over 1.2 billion kW. China announced in 2021 a decision to stop building new coal-fired power projects overseas, demonstrating its concrete actions in response to climate change. Also in 2021, China submitted two documents to the UN Framework Convention on Climate Change Secretariat—China's Implementation of National Independent Contribution Effectiveness and New Initiatives for New Targets and China's Long-term low-GHG-emissions development strategy (LGEDS) for the Middle of this Century. China has formulated and released top-level design documents on the first anniversary of the double carbon target, representing the Chinese government's unremitting efforts in fulfilling its international commitment to reduce carbon emissions.

Carbon dioxide mainly comes from the burning of fossil fuels. To achieve the goals of peaking carbon emissions and subsequent carbon neutrality requires the development of renewable energy including photo-voltaic, wind power, etc. By the end of 2020, China has further adjusted its energy mix and made the remarkable achievement of low-carbon transformation, with non-fossil energy consumption increased to 15.9% of the total energy consumption while coal consumption dropped to 56.8%. The installed capacity of renewable energy¹ power generation, 600 million kW, accounting for 27% of China's total installed power generation capacity, ranked the first in the world. Within this figure, wind power contributed 290 million kW, photovoltaic 270 million kW, and biomass 34.09 million kW, ranking the first in the world for 12, 7, and 4 consecutive years respectively. In 2020, China's total renewable energy utilization reached 680 million tons of standard coal, equivalent to a coal replacement of nearly 1 billion tons.

In terms of government subsidies for renewable energy, the Chinese government has allocated more than RMB 600 billion yuan in total. China has reduced subsidies for photo-voltaic power since 2011, and has been accelerating subsidy cuts since 2016. Nevertheless, as the technological cost decreased, the supply of photo-voltaic power and wind power rapidly increased. With the dramatic subsidy declines, the supply of solar power grew sevenfold, and the supply of wind power also expanded rapidly with the lowering cost of technology.

2. Audit of renewable energy in China

The INTOSAI Working Group on Environmental Auditing (WGEA) Auditing Sustainable Energy: Guidance for Supreme Audit Institutions issued in 2010 after studying the theories and experience in various countries, marked auditing sustainable energy has become a new area for SAIs following the auditing of water resources, waste, biodiversity, etc. To comprehensively and systematically assess the development status of renewable energy such as wind, photo-voltaic and biomass power, SAI China organized a special audit of electricity generated from renewable energy sources. The audit aimed at promoting better and faster development in this area by revealing common problems and providing feasible recommendations. The audit basically followed the four major steps proposed in Auditing Sustainable Energy: Guidance for Supreme Audit Institutions, namely understanding the sustainable energy issue and its influence on society, economy, and the environment, understanding the governmental response to the sustainable energy issue, how to choose audit topics and design the audit.

Questions: 1. How were the national policies implemented and the goals related to renewable energy achieved? 2. How to identify and assess potential risks in this area? 3. How effective were the government subsidies? 4. Were the supporting market mechanisms working?

Audit Objective

The purpose of initiating the audit was to promote more efficient and cost-effective use of renewable energy. By conducting the special audit on electricity generation from renewable energy, our objectives were to:

¹ Not inclusive of hydropower

- a. evaluate the efforts made by central government departments and local governments in implementing macro policies responding to climate change, and in promoting the development of renewable energy such as wind, photo-voltaic and biomass power;
- b. evaluate the performance in collecting, managing, and using of government subsidies;
- c. detect common problems and potential risks in fund management and program implementation;
- d. evaluate the implementation of central policies and effectiveness of fiscal funds;
- e. identify any obstacles in the system; and
- f. make appropriate and practical audit recommendations.

Scope of Audit

- a. Performance of central government departments and local governments in promoting renewable energy development and delivery of relevant tasks: We checked whether the development plans were prepared for renewable energy such as wind, photo-voltaic, and biomass power, whether the targets for installed capacity and power consumption were achieved, and whether there were uncoordinated, incompatible, or even conflicting plans made by the departments and local governments;
- b. The natural resources providing renewable energy, including land, ocean, forest, and their biodiversity status: We checked the use of land and forest for developing photo-voltaic power and compensation paid for such uses, the balance between the massive occupation of arable land and food security, and the negative effects of offshore wind power on marine resources and the biodiversity status;
- c. Collection, management, and use of government subsidies for electricity generation from renewable energy: We revealed problems in the use of fiscal funds such as inadequate collection, unfair and untimely distribution, inefficient management and illegal charges, and special attention was paid to projects with low efficiency of the fund. We also checked the financial sector's support to the development of renewable energy, such as green credit mechanisms, etc.; and
- d. Operation of the national carbon emissions trading market: We checked the implementation of policies, the design of the trading system, market management, assessed its effectiveness, and detected potential risks of fraud such as false trading of renewable energy generation in the name of carbon emissions reduction.

Findings

Based on an overall evaluation of the industry of the electricity generation from renewable energy we identified some common problems. In general, the electricity generation from renewable energy in China achieved rapid development in the past five years, both in terms of its market share and core technology, which has laid a solid foundation for the achievement of carbon dioxide peak and neutrality goals. Some common problems found in the audit are as follows:

- a. Some local governments failed to perform their responsibilities or achieve targets on renewable energy. For example, some regions had an insufficient investment in renewable energy such as wind, photo-voltaic, and biomass power, which were significantly lower than the national average growth rate in installed capacity.
- b. There were conflicts between renewable energy development and ecological protection including the protection of arable land, forests, and oceans, especially the grain production was affected by the reduction of arable land in some regions, though risks were generally under control.
- c. There were problems in the collection, management, and use of government subsidies for renewable energy, such as inaccurate calculation of electricity generation from renewable energy and their subsidies, and insufficient management in some projects, which affected the effectiveness of the subsidies.

3. Challenges and Outlook

From the auditors' perspective, the challenges in the development of renewable energy in China are as follows:

- a. Synergy needs to be fostered between government policy guidance and technological progress. Compared with the technological progress of renewable energy, government policy generally has a lag. This may lead to contradictions between policy guidance and rapid technological innovation in the renewable energy sector. Therefore, a synergy between policy and technology is particularly crucial to the development of the industry.
- b. The volume and exit time of government subsidies need to be determined. The government subsidies are used to promote the development of the sector of electricity generation from renewable energy. However, with the increasing government expenditure, it is unlikely that subsidies will always be available. Therefore, the volume of government subsidies and exit time become issues to be addressed.
- c. A right balance should be achieved between the government and the market. Similar to other emerging industries such as the new energy vehicles, the development of renewable energy requires government support in its early stage. But with the improvement of the market, it is supposed to enter a soundtrack of self-development, where the market becomes the main driving force of its development. Therefore, it is equally important to determine the intensity and timing of government support.

The audit results show that the development of renewable energy in China will remain in the fast lane, thanks to a well-developed market, the development of advanced technologies, as well as strong policy and financial support. Our audit which aimed at further development of renewable energy indicates that the wide use of renewable energy in China has contributed to the cost-reducing of renewable energy. Moreover, an increasing number of Chinese photo-voltaic and wind power equipment manufacturers and operators have invested globally, accelerating the global green energy transformation. For example, in 2021, Chinese enterprises signed 198 agreements abroad related to electricity generation from renewable energy including solar, wind, biomass power, and energy storage. In particular, there is a rapid growth in their investments in renewable energy projects in developing countries and regions, helping less developed countries and regions in applying advanced technologies of green energy, and consequently contributing to the high-quality development in these countries and regions.

About the authors

Auditing Climate Change – Carbon Emission and Carbon Finance: Study Case of SAI Indonesia

-SAI Indonesia



Mr. Muhammad Rafi Bakri is an alumnus of the State Finance Polytechnic of STAN in Accounting Study Program, where he was an Outstanding Student in 2020. At BPK, Rafi works as a financial manager, which is a vital supporting part, and has succeeded in bringing BPK Representative Office in Jambi Province as the 1st Winner of the 2021 DIPA Management Unit. Rafi has also written and published several journal articles related to economics, accounting, and public finance.



Mr. Gilbert Simson Gattang is an alumnus of D3 Accounting at State Finance Polytechnic of STAN. After completing the official bond vocational school, Gilbert continued his Bachelor's Degree in Accounting at the Universitas Terbuka and became the Outstanding Student of 2020. Currently, Gilbert is continuing his bachelor's degree in Law at the same university. At BPK, Gilbert works as a financial analyst in the finance sub-section of the BPK Representative Office in Jambi Province. Gilbert's 4 years of work experience in financial analysis have brought the representative office a 2nd Place for the Best DIPA Management Unit (Budget Executor) in 2018 and 1st Place for Best DIPA Management Work Unit (Budget Implementation) in 2021.

Abstract

Carbon gas emissions is a problem throughout the world, including Indonesia. Various ministries are coordinating with one another to overcome this. To ensure the achievement of the target, BPK conducts performance audits on the executing ministry. This research is a qualitative research using semi-structured interviews and content analysis methods. The researchers found that according to the results of BPK's audit, the activities carried out to reduce carbon gas emissions still need to be improved. This has caused many activities not meeting their targets.

Introduction

Indonesia is one of the ratifying countries of the Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. The Government of Indonesia has ratified the Climate Change Convention through Law Number 6 of 1994 concerning Ratification of the United Nations Framework Convention on Climate Change. Indonesia's commitment and contribution were again demonstrated by ratifying the Paris Agreement in New York on 22 April 2016. As a ratifying country, Indonesia is committed to making efforts to reduce greenhouse gas emissions and actively prevent climate change.

The Indonesian government is committed to the issue of climate change. The commitments contained in the Nawa Cita became the basis for preparing Indonesia's First Nationally Determined Contribution (NDC) document, which was submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in November 2016. Indonesia's First NDC outlines Indonesia's transition to a low-emissions and climate-resilient future. Moreover, the Government of Indonesia through BPK issued the Regulation Number 3 of 2020 concerning the 2020-2024 Strategic Plan of the Audit Board. BPK will prepare reliable and professional auditors to strengthen audit resources by collaborating with professional organizations. In order to respond to global issues, BPK has designed an audit strategy that can oversee the implementation of the Sustainable Development Goals (SDGs).

INTOSAI, at the congress in Abu Dhabi in 2016, agreed to oversee the SDGs program in their respective countries. INTOSAI agreed on four approaches to examining the SDGs as contained in the first theme of INCOSAI XXII (International Congress of Supreme Audit Institution), namely: (1) assessing a country's readiness to implement the SDGs; (2) performing performance checks on the implementation of government programs that have aspects of the SDGs; (3) assessing and supporting the implementation of the 16 SDGs goals concerning effective, accountable, and transparent institutions; and (4) being a role model for transparency and accountability in the governance of their respective organizations, including in auditing and reporting activities.

Alignment of BPK audit theme with the 2020–2024 RPJMN/RPJMD (National/Local Medium-Term Development Planning) will be carried out through national/local thematic audits and other significant examinations. Based on the 2020-2024 RPJMN, there are seven national development agendas, one of which is the environmental development agenda with the following targets: (1) improving the quality of the environment; (2) enhancing disaster and climate resilience; and (3) low carbon development.

Theoretical Framework

Agency Theory

In public sector accounting and auditing, one of the problems that often occurs is the agency problem. According to Adams (1994), agency theory shows the relationship between owners of economic resources (principals) and those who control the resources (agents). Agents as resource controllers certainly have more information than the principal, so the principal has difficulty in carrying out supervision (Hanne et al., 1990). Moreover, agents can take advantage of these conditions to satisfy personal interests.

The next problem that can occur is from the principal himself. The principal assumes that the agent commits fraudulent acts, then the principal as a policymaker does the same thing, such as reducing the allocation of resources to increase personal wealth (Mitnick, 2011). Adverse selection can occur because the principal does not have perfect information regarding his resources, so the principal makes a policy from the imperfect information (Panda & Leepsa, 2017). Scapen (1991) states that this principal-agent problem is a moral hazard in public sector accounting.

To overcome this moral hazard, both the principal and the agent will incur costs. After the agency costs are incurred, there is Pareto-Optimality in the contract (Shankman, 1999). The principal can incur supervision costs to monitor the performance of his agents in managing existing resources so that the principal becomes more aware of the available information. The supervision fee will be compensated to the agent's salaries. Therefore, agents will maximize resource management so that their salaries are not compensated by incurring costs for internal audits. With an internal audit, the risk of mismanagement of resources can be minimized (Shapiro, 2005).

Research from Stanford University (1989) suggests that the agency problem is a problem found in almost all organizations, including the government. This agency theory tells us that there is always a practice of self-interest in the organizational world, whether we like it or not. Agency theory also suggests two important pieces of information for organizational life. The first is the treatment of information. Information is considered a commodity that has a cost and can be purchased. This shows how important information systems are in organizations, especially the government (Wehmeyer et al., 2017).

The second piece of information in agency theory is related to the risk. Organizations are assumed to have no clear future. Organizations may be faced with prosperity, bankruptcy, or some intermediate outcome, and that future is only partly controlled by organization members. Uncertainty is viewed in terms of risk/reward trade-offs, not just in terms of inability to preplan. The implication is that outcome uncertainty coupled with differences in willingness to accept risk should influence contracts between principal and agent (Eisenhardt, 1989).

Institutional Theory

The institutional theory states that an institution can experience change because it adopts another organizational structure and management considered better than the organization itself (Carpenter & Feroz, 2001). The condition in which an organization changes the structure and management of the organization itself for various reasons is called an isomorphism (Campbell, 2007).

Dacin (2002) identified three major sources of pressure on institutionalized norms or practices; functional, political, and social sources. Functional pressures for deinstitutionalization are those that arise from perceived problems in performance levels or the perceived utility associated with institutionalized practices. These pressures may be tied to broad environmental changes, such as intensified competition for resources (Kostova et al., 2008).

Institutional change can proceed from the most micro interpersonal and suborganizational levels to the most macro societal and global levels. It can take place in relatively brief and concentrated periods or over time measured in decades or centuries. (Suddaby, 2010). BPK as a member of ASOSAI and INTOSAI, always cooperates and exchanges ideas with SAIs of other countries. Through these activities, a new audit policy or approach can be applied by BPK.

Research Method

This is a qualitative research that uses a content analysis method and semi-structured interview. Interviews were conducted to complement and convince researchers regarding the content analysis that has been carried out. The interviewees are the BPKs auditor who involved in the carbon-related audit.

The main method used in this research is content analysis. Content analysis is a research method for making reproducible and valid inferences from data about the context, with the aim of providing knowledge, new insights, factual presentations, and practical guides to behavior (Elo & Kyngäs, 2008). Bengtsson (2016) and White & Marsh (2006) found that content analysis can be applied to all types of text, regardless of the source of the material. In addition, there are no special rules you need to follow, such as detailed interviews, focus group interviews, individual written questions, open questions such as surveys and situational observations, images and movies.

The documents used in the content analysis are audit reports and an overview of semester audit results from two ministries, namely the Ministry of Environment and Forestry and the Ministry of Energy and Mineral Resources. These two ministries oversee carbon issues in Indonesia.

Result and Discussion

Forest Investment Program – Project I

Deforestation, forest degradation and peat decomposition account for about 15% of greenhouse gas emissions globally and up to 60% in Indonesia. Through the Indonesia Nationally Determined Contribution (INDC), the Government of Indonesia plans to reduce greenhouse gas emissions by 29% of the APBN (state budget) in 2013 and 41% with international budget support. The project issued by INDC is called Forest Investment Program-Project I (FIP-1). FIP-1 received support from the Asian Development Bank (ADB) because it relates to an SDG's goal.

The execution of this program is a cross-directorate national program at the Ministry of Environment and Forestry. This program involves various experts at the central and regional levels. The outcome of this program is a reduction in carbon emissions of 3.7 million tons by 2026 and an increase in community income by 20% from the initial conditions in the Kapuas Hulu area.

In order to achieve this outcome, BPK needs to conduct an audit-related to grant funds from ADB for the FIP-I Project. The scope of the audit consists of (1) Annual Plan and Actual Project Expenditure and Financing, (2) General Consolidated Cumulative Project Financing and Expenditure, (3) General Consolidated Annual Plan and Actual Project Financing and Expenditure and (4) Realization Budget DIPA fiscal year 2019 for each Implementing Agency (IA).

BPK found conditions related to weaknesses in the internal and operational control systems. BPK's findings on the administration of fixed assets obtained from goods expenditures by the Project Support Unit (PISU) consultant services were insufficient. This resulted in not presenting complete information on the purchase of fixed assets amounting to Rp1,035 billion so that there would be high losses. BPK recommends that the Minister of Environment and Forestry revise the consultant service contract based on these weaknesses.

In addition, BPK also found non-compliance in testing compliance with regulations in the 2019 FIP-I Project Financial Report. The non-compliance found was a four-wheel vehicle work package that used grant funds exceeding the standard guidelines for the cost of activities of the Ministry of Environment and Forestry. These problems resulted in inefficiency in the procurement of facilities and infrastructure of Rp. 258 million, which was caused by (1) the unit price in the Annual Work Plan (AWP) exceeding the proper guidelines, (2) the Commitment Making Officer not being careful in preparing the estimated price, and (3) the Budget User Authority lack of supervision and control over the implementation of the budget. BPK recommends that the relevant ministry as the executing agency of FIP-I tighten supervision and more orderly control over the budget execution of the project. BPK also recommends giving sanctions according to the provisions to related parties so that the same mistake does not occur.

BPK monitors the follow-up of the Ministry of Environment and Forestry on the recommendations that have been given. The results of follow-up monitoring of examination findings are as follows.

Table 1. Monitoring of Audit Follow-Up

No	Year	Number of Findings	Number of Recommendation	Appropriate -Follow Up	Unappropriate -Follow Up
1	2018	2	2	2	2
2	2019	-	-	-	-

Source: BPK Report

Bio Carbon Fund Initiative for Sustainable Forest Landscape in Jambi

The BioCarbon Fund Initiative for Sustainable Forest Landscape (BioCF-ISFL) is a multilateral facility program supported by donor governments and managed by the World Bank. The concept of this program is to manage agricultural expansion and land use to minimise forest loss and increase carbon emissions. Besides Indonesia, other countries participating in the BioCF-ISFL are Ethiopia, Colombia, and Zambia.

In the preparation stage, the World Bank gave a grant of Rp. 19.95 billion according to the cooperation agreement between the Government of Indonesia (Ministry of Finance) and the World Bank on October 31, 2018. The activities at this stage are divided into (1) Data Management, Baseline and MRV System, (2) Capacity Building, (3) Policy and Institutional Arrangement, (4) Benefit Sharing Mechanism, (5) Investment Plan, (6) Risk Management, and (7) Facilitating and Supporting.

Table 2. Distribution of Activities for Implementing Agencies

Implementing Agency	Activities
Directorate of Climate Change Mitigation	Data Management, Baseline, MRV
Directorate of Sectoral and Regional Resource Mobilization	BSM, Investment Plan, Facilitating and Supporting
Vertical Office	Capacity Building

Source: BPK Report

BPK assesses the financial statements of the Preparation of SLP project with several criteria, such as conformity with the provisions in the Project Financial Management Guidelines and Grant Agreement. BPK also explores the procedures for using funds and internal compliance from project managers so that targets can be achieved. BPK found non-compliance with regulations in the implementation of the Preparation of SLP. There is an overpayment of Rp63 million on the grant expenditure in the consultant services contract. This is due to the non-optimal financial manager so that losses occur.

Then, there is also an overpayment of the resource person's honorarium of Rp16.8 million. Examination of payment documents shows that the honorarium of speakers and moderators paid in gross, namely honorarium money according to standards without deducting income tax 21. The total overpayment of income tax components for the honorarium of speakers and moderators tested for quotation amounted to Rp16 million, namely the Directorate of MPI amounting to Rp10 million, the Directorate of MS2R amounting to Rp1 million and BPPIKKHL Sumatra Region amounting to Rp5 million. This loss can certainly reduce the effectiveness and efficiency of using grant funds in reducing carbon emissions.

Covid-19 Infectious Waste Management

Improving the quality of the environment is a national development target listed in the 2015-2019 RPJMN. The national development target is one of the Ministry of Environment and Forestry program targets, namely improving public health and environmental quality by reducing risks due to exposure to waste.

The Ministry of Environment and Forestry's 2019 Performance Report reports a decrease in waste in 2016-2019. However, the data does not describe in detail the types and steps to reduce B3 waste implemented, especially by the Ministry of Environment and Forestry. The narrative of the 2020-2024 RPJMN describes that the capacity of the environment is decreasing due to high pollution and not optimal handling efforts. Limited management facilities and other challenges in the form of increasing violations of environmental laws related to waste pollution are the main problems for waste management in the 2015-2019 period.

BPK is tasked with assessing the effectiveness of monitoring waste management and recovering land contaminated with waste to mitigate the adverse effects of carbon emissions. One of the focuses of BPK is medical waste generated by medical devices during the handling of Covid-19. Through a series of inspections, BPK concluded that the infectious waste management was not optimal. Only 69 of the 132 referral hospitals have carried out infectious waste management properly. BPK carries out the test through the SIRAJA application. Based on the results of observations in the field, it is known that there are 261 hospitals compiled in the Ministry of Health data but do not yet have the SIRAJA application. This indicates that there is a potential for undetected infectious waste that can cause an increase in carbon emissions.

BPK also found that as of November 2020, there were 1,663 tons of infectious waste. DKI Jakarta Province contributed the most infectious waste with 338 tons, followed by East Java with 212 tons and Central Java with 123 tons. Moreover, the Ministry of Environment and Forestry does not have precise data on whether the waste has been appropriately managed or not. BPK concluded that the amount of infectious waste recorded by the Ministry of Environment and Forestry was not entirely valid and was not in line with the increase in Covid-19 cases. The condition of a lot of data is a big problem for the ministry.

Table 3. The Big Five Provinces of the Largest Covid-19 Waste-Producing

	Province	Volume (ton)
1	DKI Jakarta	337,16
2	East Java	211,99
3	Central Java	122,82
4	West Kalimantan	108,84
5	Banten	103,46

Source: BPK Report

Regarding this problem, the Director of PKPLB3 agrees that there are still many obstacles in monitoring the management of infectious waste handling Covid-19. The invalid data related to the amount of medical waste generated from the technical ministry government and the Ministry of Environment and Forestry. Furthermore, it will follow up on these findings according to BPK recommendations.

BPK recommends the Minister of Environment and Forestry to coordinate with the Ministry of Health, Regional Government, and Health Facilities to take an inventory of the infectious waste generators handling Covid-19 from ODP and unify their management to ensure the handling of the negative impacts of waste on humans and the environment.

Contribution of Renewable Energy to the National Energy Mix

The Government of Indonesia, one of the countries that signed the Paris Agreement, is committed to reducing greenhouse gas emissions by 29% by 2030. One of the steps that have a significant effect in efforts to mitigate global warming by reducing GHG emissions is to reduce dependence on fossil fuels. Data from the Ministry of Energy and Mineral Resources as of the first semester of 2019 shows that fossil fuels in the national primary energy mix are still at 90.99%, consisting of 35.08% petroleum, 35.12% coal, and 20.79% natural gas.

The Ministry of Energy and Mineral Resources mandates to form renewable energy to achieve this goal. The potential of renewable energy in Indonesia is still very wide open. The highest potential comes from solar power with 207,898 Mega Watts. However, the installed capacity of solar power is only 92 MW or 0.044% of the potential. This condition also occurs in other renewable energy sources.

The Ministry of Energy and Mineral Resources used funds of IDR 735 billion in 2017 to carry out this. The use of funds for renewable energy continues to increase to Rp. 1.5 trillion in 2018. With such funds, BPK needs to conduct an in-depth examination to ensure that the funds are used following their designation and that the Ministry of Energy and Mineral Resources can achieve the target of reducing carbon emissions.

Based on the BPK examination, there have been positive achievements made by the Ministry of Energy and Mineral Resources. The positive achievements include that as many as 15 provinces in Indonesia have executed instructions from the relevant ministries and have issued many incentive schemes in the geothermal sector. This incentive will encourage people to use renewable energy. However, behind the positive achievements, several things have been found by BPK.

These findings include the ineffective coordination of cross-sectoral policies. This is because there is a difference between the general national energy plan and the regional one, which affects the assumptions used. For example, related to economic growth, in RUEN economic growth is assumed to be around 7-8%, while in RUED the average ranges from 6-7% so the energy needs in RUED will not be the same as energy needs in RUEN. The complexity of the Indonesian state which consists of many provinces is one of the causes.

The next finding is that there is disharmony in policies on the use of Conservation Forest areas so that the utilization of geothermal potential is not adequate. There is a nature reserve forest, a nature conservation forest area, and a hunting park. Geothermal exploitation activities for indirect use in LHP Performance on Effectiveness of EBT Contribution Program In BEN 27, protected forest areas and production forests can be carried out if the Business Entity has obtained a borrow-to-use forest area permit. Meanwhile, geothermal exploitation activities for indirect use located in conservation forest areas can only be carried out if the Business Entity has obtained a permit to use environmental services. However, the permit is still often hampered.

Carbon Tax

The carbon tax will be carried out in stages according to a roadmap that will consider the development of the carbon market. The carbon tax implementation will prioritize the principles of justice (just) and affordability (affordable) by taking into account the business climate and small communities. The carbon tax rate is set higher or equal to the carbon price in the carbon market with a minimum rate of IDR 30.00 per kilogram of carbon dioxide equivalent (CO₂e). The first implementation was on April 1, 2022 in the coal-fired power plant sector with a cap and tax scheme that is in line with the implementation of the carbon market, which has already started running in the coal-fired power plant sector.

However, over time and seeing the readiness of the tax implementation, the Ministry of Finance is finally compiling various technical rules for implementing the carbon tax planned to be implemented on July 1, 2022. The government will apply a carbon tax when regulation and readiness of the electricity sector is the first sector to be imposed. This readiness is essential so that the core objective of implementing a carbon tax has an optimal impact, so the government decided to implement a carbon tax on July 1, 2022.

The government will continue to consult with the House of Representatives in preparing the implementation of this carbon tax. The technical rules for implementing the carbon tax include tariffs and the basis for imposition, methods for calculating, collecting, paying or depositing, reporting, and a carbon tax roadmap. Meanwhile, other technical regulations, such as the Emission Upper Limit for the PLTU sub-sector and procedures for implementing the Carbon Economic Value in power plants, will be determined by the Ministry of Energy and Mineral Resources (ESDM). In order for climate control instruments to run optimally, the government is also preparing various derivative rules from Presidential Regulation 98/2021, including those related to the implementation of Carbon Economic Values (NEK) and Nationally Determined Contributions (NDC) at the Ministry of Environment (KLHK) and the Value Steering Committee. Carbon Economy at the Coordinating Ministry for Maritime Affairs and Investment.

The climate issue is cross-sectoral. This carbon tax will be a new task for BPK to ensure the implementation of the policy so that it can become a tool to reduce carbon emissions in Indonesia. BPK must also ensure that the flow of funds from carbon tax revenues is appropriately allocated.

Conclusion

The challenges faced by Indonesia in reducing carbon gas emissions are severe. Cross-sectoral coordination is needed, such as the Ministry of Environment and Forestry, the Ministry of Energy and Mineral Resources, and the Ministry of Finance. The cross-sectoral coordination needs to be monitored so that all activities are effective and efficient. BPK plays a vital role in the supervision process by conducting performance checks. Through the examination, BPK obtains findings and provides recommendations to the executing ministry. The executing ministry must implement the recommendation. With a business process like this, it is hoped that Indonesia's target to reduce carbon gas emissions can be achieved.

References

- Adams, M. B. (1994). Emerald Article: Agency Theory and the Internal Audit. *Managerial Auditing Journal*, 9(8), 8–12.
- Bengtsson, M. (2016). How to plan and perform a qualitative study using content analysis. *NursingPlus Open*, 2, 8–14. <https://doi.org/10.1016/j.npls.2016.01.001>
- BPK 2020a. Audit Report No. 03/LHP/XVII/01/2020. Jakarta, Indonesia: BPK
- BPK 2020b. Audit Report No. 26a/LHP/XVII/09/2020. Jakarta, Indonesia: BPK
- BPK 2020c. Audit Report No. 28a/LHP/XVII/09/2020. Jakarta, Indonesia: BPK
- BPK 2020d. Audit Report No. 29a/LHP/XVII/09/2020. Jakarta, Indonesia: BPK
- BPK 2021. Audit Report No. 3/LHP/XVII/01/2021. Jakarta, Indonesia: BPK
- Campbell, J. L. (2007). Why would corporations behave in socially responsible ways? An institutional theory of corporate social responsibility. *Academy of Management Review*, 32(3), 946–967. <https://doi.org/10.5465/AMR.2007.25275684>
- Carpenter, V. L., & Feroz, E. H. (2001). Institutional theory and accounting rule choice: An analysis of four US state governments' decisions to adopt generally accepted accounting principles. *Accounting, Organizations and Society*, 26(7–8), 565–596. [https://doi.org/10.1016/S0361-3682\(00\)00038-6](https://doi.org/10.1016/S0361-3682(00)00038-6)
- Dacin, M. T., Goodstein, J., & Scott, W. R. (2002). Institutional theory and institutional change: Introduction to the special research forum. *Academy of Management Journal*, 45(1), 45–57. <https://doi.org/10.2307/3069284>
- Eisenhardt, K. M. (1989). Digitalis: Reappraisal of its use after acute myocardial infarction. *Academy of Management Review*, 14(1), 57–74. <https://doi.org/10.1159/000169659>
- Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, 62(1), 107–115. <https://doi.org/10.1111/j.1365-2648.2007.04569.x>
- Hanne, D., Baiman, S., Bandura, Albert, Coles, J. L., Daniel, N. D., Naveen, L., Ang, J. S., Cole, R. A., Lin, J. W., Bradley, M., Jarrell, G. A., Kim, H., Bosse, D. A., Phillips, R. A., Heath, J., Fama, E., Ferrell, A., Liang, H., Renneboog, L., ... D'aveni, R. A. (1990). AGENCY THEORY AND BOUNDED SELF-INTEREST Journal: Academy of Management Review Academy of Management Review AGENCY THEORY AND BOUNDED SELF-INTEREST. *Journal of Financial Economics*, 15(3), 857–878.
- <http://dx.doi.org/10.1016/j.jfineco.2015.12.003%0Ahttp://search.ebscohost.com/login.aspx?direct=true&db=aph&%2338;AN=4369846&%2338;site=ehost-live>

Kostova, T., Roth, K., & Dacin, M. T. (2008). Institutional theory in the study of multinational corporations: A critique and new directions. *Academy of Management Review*, 33(4), 994–1006.

<https://doi.org/10.5465/AMR.2008.34422026>

Mitnick, B. M. (2011). Origin of the Theory of Agency: An Account By One of the Theory's Originators. *SSRN Electronic Journal*, October 2005.

<https://doi.org/10.2139/ssrn.1020378>

Panda, B., & Leepsa, N. M. (2017). Agency theory: Review of theory and evidence on problems and perspectives. *Indian Journal of Corporate Governance*, 10(1), 74–95.

<https://doi.org/10.1177/0974686217701467>

Scapen, R. W. (1991). *Management Accounting: A Review of Contemporary Developments: A Review of Recent Developments*. Palgrave.

Shankman, N. A. (1999). Reframing the Debate Between Agency and Stakeholder Theory. *Journal of Business Ethics*, 19, 319–334.

<https://link.springer.com/article/10.1023/A:1005880031427>

Shapiro, S. P. (2005). Agency theory. *Annual Review of Sociology*, 31, 263–284.

<https://doi.org/10.1146/annurev.soc.31.041304.122159>

Suddaby, R. (2010). Challenges for institutional theory. *Journal of Management Inquiry*, 19(1), 14–20. <https://doi.org/10.1177/1056492609347564>

Wehmeyer, M. L., Shogren, K. A., Little, T. D., & Lopez, S. J. (2017). Development of self-determination through the life-course. *Development of Self-Determination Through the Life-Course*, 1–303. <https://doi.org/10.1007/978-94-024-1042-6>

White, M. D., & Marsh, E. E. (2006). Content analysis: A flexible methodology. *Library Trends*, 55(1), 22–45. <https://doi.org/10.1353/lib.2006.0053>



Climate finance: INTOSAI WGEA focus area, audit example from SAI Finland

- SAI Finland

One of the INTOSAI Working Group on Environmental Auditing (WGEA) focus areas in 2020-2022 is climate finance. SAI USA has led the work package and the WGEA will publish the report "Auditing climate finance: research and audit criteria for Supreme Audit Institutions" at the 21st INTOSAI WGEA Assembly taking place in 4 – 6 July 2022 in hybrid format. The report will summarize key audit approaches and tools that can be used to audit climate finance, in both recipient and donor countries, and provide several audit case studies to illustrate the use of these tools.

One of the audit case studies was the SAI Finland performance audit on steering and effectiveness of international climate finance, published in 2021. The audit concluded that despite the government's intention to scale up climate finance and direct half of it to climate change adaptation, there was no published plan on how this increasing finance should be allocated and what its specific objectives are. The audit also found out that it is difficult to form an overall picture of how effective the finance has been so far.

The audit recommended among other things that the Ministry for Foreign Affairs should draw up a public plan for how it will increase and allocate Finland's international climate finance, justifying the choices and priorities. This audit resulted in, for example, the Finnish Foreign Ministry accepting a new climate finance plan in 2022.

For more information on the audit: [Finland's international climate finance - Steering and effectiveness - National Audit Office of Finland \(vtv.fi\)](#)

21st INTOSAI WGEA Assembly meeting: [WGEA - Working Group on Environmental Auditing](#)

About the authors

Climate Change , Carbon Lock-In, and Multi Stakeholders Engagement

-SAI Indonesia



Mr. Muhammad Rizkarmen is an auditor at BPK's Representative Office in West Java Province. He completed both his bachelor and master's degrees at Bandung Institute of Technology. In addition to being an auditor, he has various working experiences in the area of engineering, finance, and procurement. He is also a Certified Fraud Examiner from the Association of Certified Fraud Examiner and a national procurement expert from the National Public Procurement Agency of Indonesia.



Mr. Normas Andi Ahmad has a bachelor degree in Chemical Engineering from Diponegoro University and a master degree in Environment and Sustainable Development from Glasgow University. He is experienced in conducting audit on energy and natural resources management as well as SDGs related audits. His audit engagements include Audit on SDGs Preparedness, Audit on Watershed Pollution Control, Audit on Sustainable Palm Oil Management, and Audit on Renewable Energy Development.

Climate change is a strategic issue at the global level that has been the focus of attention of world leaders in recent years. Several action plans have become common understandings at the global level, ranging from efforts to address deforestation to the encouragement of the use of green products (United Nations Climate Change, 2021). Efforts to encourage the use of environmentally friendly products are not an easy work. There is a phenomenon of carbon lock-in which hinders the development of carbon-saving technologies or environmentally friendly products due to several factors (Unruh, 2000).

The term carbon lock-in is the condition where the fossil fuel-based energy systems have locked the industrial economies that creates long-term market and policy problems that might stymie the spread of carbon-saving technologies, despite their obvious environmental and economic benefits (Unruh, 2000). This carbon lock-in phenomenon can occur because of (a) infrastructural and technological lock-in, (b) institutional lock-in, and (c) behavioral lock-in (Seto, et al., 2016). These three major types of carbon lock-in are interrelated specifically where institutional and behavioral lock-in reinforces infrastructural and technological lock-in.

The physical infrastructure can lock communities into carbon-intensive emission pathways that are difficult to change because of its long life uses (Seto, et al., 2016). Furthermore, the non-environmentally friendly technologies such as combustion engine-based vehicles or fossil fuel-based vehicles have more competitive prices. Currently, the price of the fossil fuel-based vehicles are more competitive because they have a relatively large production scale due to the high demand from its consumers which is much related to the behavioral lock-in.

The institutional lock-in differs from the technological lock-in in respects of intended feature, institutional nature, and differences between political processes and market (Seto, et al., 2016). The institutional lock-in such as industry standards can also hinder the development of environmentally friendly technologies such as electric vehicles. Several researches have shown that electric vehicles area promising way to reduce carbon dioxide emissions (Rizkarmen, Kusuma, & Pramono, 2019).

People's behavior (behavioral) who are accustomed to environmentally unfriendly technologies can also hinder the development of new technologies that are more environmentally friendly.

Multi-stakeholder engagement is very much needed to overcome the climate change issue and the phenomenon of carbon lock-in. The stakeholders, according to their roles, functions, and authorities, need to be actively involved in finding alternative solutions to the issues.

For example, the government needs to play a role through its policies inter alia the incentive policies for environmentally friendly technologies, disincentive policies for non-environmentally friendly technologies, elimination of institutional barriers, campaigns to change people's behavior, and the supporting infrastructure for example the ease and availability of the charging stations for electric vehicles. The government's involvement here is very important to encourage economic transformation from the equilibrium of environmentally unfriendly technologies to a new equilibrium that is environmentally friendly. The role of the government needs to be strengthened, especially about the financial aspect, as a key element in economic development (Sachs, Woo, Yoshino, & Taghizadeh-Hesary, 2019).

Currently, the financial services institutions are more likely to be interested in financing fossil fuel-based projects because green projects are considered to have some risks as the new technologies and provide a lower rate of return on investment.

The government needs to encourage the development of green projects and increase the financing of investments that provide environmental benefits, through new financial instruments and new policies. These policies are collectively known as “green finance”, which include green bonds, green banks, carbon market instruments, green fiscal and monetary policies, financial technology, green community-based funds, and others. (Sachs, Woo, Yoshino, & Taghizadeh-Hesary, 2019).

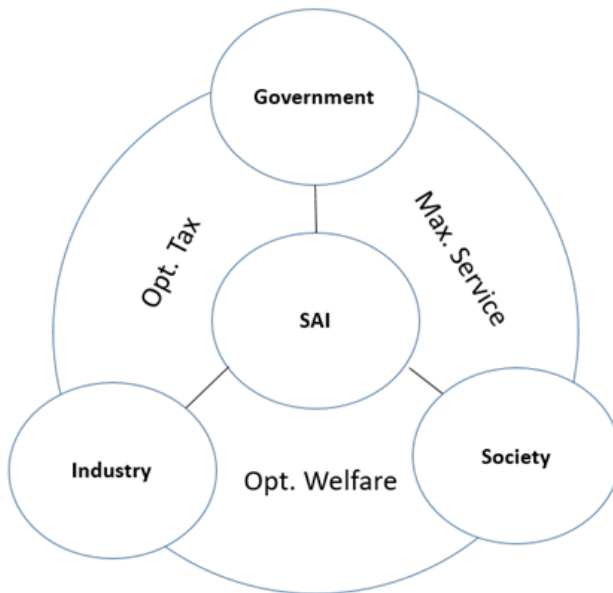
Some of the biggest car manufacturers, including Jaguar and Bentley, have previously stated their intention to go all-electric between 2025 and 2030. Ford claims that by 2030, all of its vehicles sold in Europe will be electrified. However, some of the world's largest car manufacturers believe that progress will be stunted in many markets because many governments plan to continue to rely on fossil fuels (Bateman, 2021). The government policies as mentioned before will encourage the industry to start increasing their production of electric vehicles. This increase in production is expected to make the price of electric vehicles more competitive and encourage the changes in people's behavior to switch from fossil fuel-based vehicles to electric vehicles. Bloomberg NES forecasted that electric cars will be cheaper to produce than fossil fuel vehicles by 2027 (Partridge, 2021). Other examples of policies for developing the electric vehicle ecosystem include establishing an electric mobility roadmap, implementation strategy administration, providing specific and easily accessible incentives, and electrifying public transport and ride-hailing services (UNIDO, 2020).

Another stakeholder that has a crucial role in overcoming carbon lock-in is Supreme Audit Institutions (SAIs). SAIs have a significant role in accelerating successful climate change mitigation and adaptation by providing recommendations that improve cross-sectoral coordination and policy coherence between stakeholders (Yudi & Ahmad, 2021). Furthermore, the role of SAIs is being recognized as crucial to supporting the government response mechanisms through maintaining public financial management discipline, ensuring transparency and accountability (World Bank, 2020). The relation between stakeholders can be shown as follows:

Table 1: Summary of the multi stakeholders engagement to overcome the climate change issue

No	Stakeholders	Alternative Effort
1.	Government	<ul style="list-style-type: none"> - incentive policies for environmentally friendly technologies, - disincentive policies for non-environmentally friendly technologies, - elimination of institutional barriers, - campaigns to change people's behavior, - build the supporting infrastructure such as the ease and availability of the charging stations.
2.	Business/Industry	<ul style="list-style-type: none"> - increasing the production of electric vehicles
3.	Civil Society	<ul style="list-style-type: none"> - the willingness to switch from fossil fuel-based vehicles into electric vehicles
4.	Supreme Audit Institution	<ul style="list-style-type: none"> - audit program and recommendation

Figure 1: Relation of the stakeholders



From the table and figure above, it can be implied that SAIs have a crucial role in catalyzing the successful interaction between stakeholders. For example, SAIs provide recommendations to the government to maximize its services to the community especially in providing access to more environmentally friendly products and technologies. SAIs can also encourage industries through relevant stakeholders to improve community welfare as well as to improve the production process to become more efficient.

We can conclude that carbon lock-in more or less exacerbates the level of carbon emissions and climate change. However, this problem can be immediately reduced through a multi-stakeholder engagement approach. This article aimed to introduce the term carbon lock-in and its relation with climate change. Further review and studies might be needed to enrich this article.

REFERENCES

- Bateman, K. (2021, Dec 6). What are countries doing to encourage the transition to electric vehicles?. weforum.org. Retrieved from <https://www.weforum.org/agenda/2021/12/electric-cars-global-transition-ev-chargers/>.
- Partridge, J. (2021, May 9). Electric cars 'will be cheaper to produce than fossil fuel vehicles by 2027'. <https://www.theguardian.com/>. Retrieved from <https://www.theguardian.com/business/2021/may/09/electric-cars-will-be-cheaper-to-produce-than-fossil-fuel-vehicles-by-2027>.
- UNIDO (2020). Best Practices in Electric Mobility. Vienna: UNIDO

Rizkarmen, M., Kusuma, T. G., & Pramono, A. J. (2019). From Trade Deficits and Severe Air Pollution to Sustainable Development: Implementation Strategy of Electric Vehicles and Renewable Energy in Indonesia. International Conference of State Finance and Accountability. Bali.

Sachs, J., Woo, W. T., Yoshino, N., & Taghizadeh-Hesary, F. (2019). Why Is Green Finance Important? Tokyo: Asian Development Bank Institute.

Seto, K. C., Davis, S. J., Mitchell, R. B., Stokes, E. C., Unruh, G., & Ürge-Vorsatz, D. (2016). Carbon Lock-In: Types, Causes, and Policy Implications., 41, hal. 425-452. doi:

<https://doi.org/10.1146/annurev-environ-110615-085934>

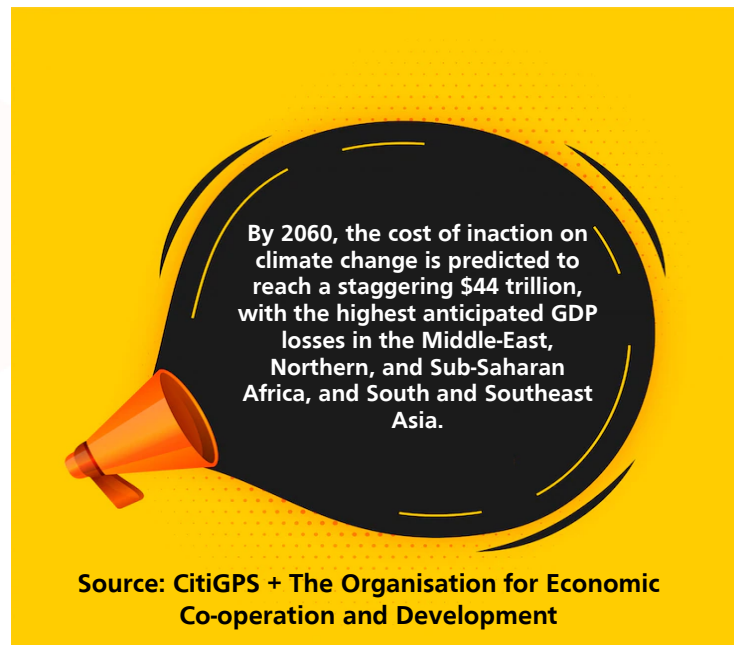
United Nations Climate Change. (2021). COP26 The Glasgow Climate Pact. The 26th United Nations Climate Change Conference - UK 2021 (hal. 13). Glasgow: United Nations.

Unruh, G. C. (2000). Understanding Carbon Lock-In. Energy Policy, 28(12), 817-830. doi:

[https://doi.org/10.1016/S0301-4215\(00\)00070-7](https://doi.org/10.1016/S0301-4215(00)00070-7)

World Bank Group. (2020). Covid-19 Role of Supreme Audit Institutions (SAIs) in Government's Response to Covid-19: Emergency and Post Emergency Phases. World Bank, 2020.

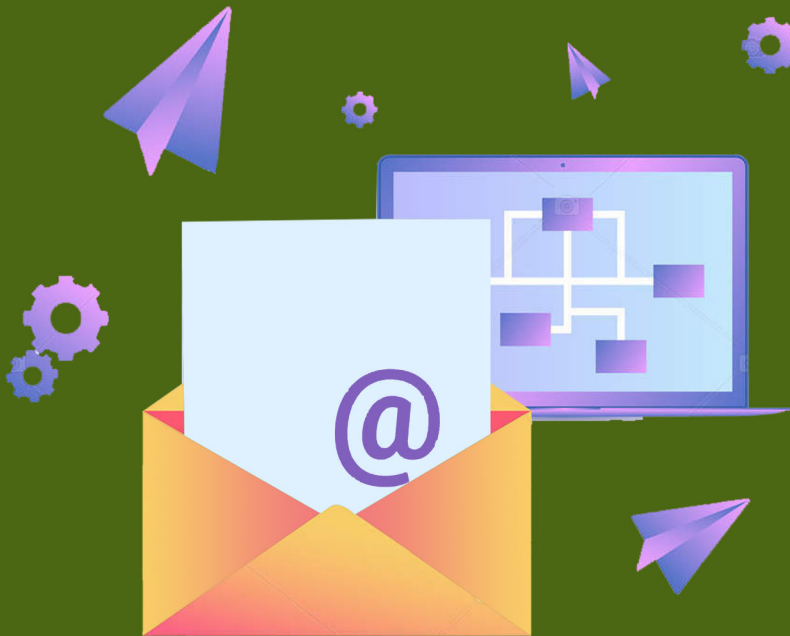
Yudi, K., & Ahmad, N. A. (2021). The Role of SAI in Alleviating Climate Change: Case Study of SAI Indonesia-SAI Indonesia. Asian Journal of Government Audit.



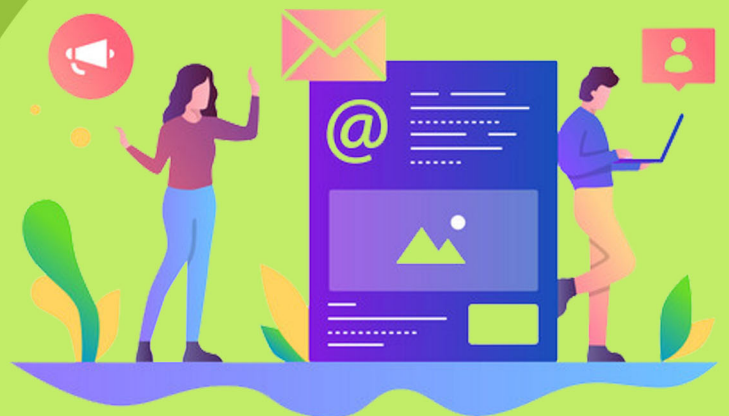
Tentative schedule of ASOSAI capacity development activities for 2022

(As of the end of April 2022)

Year	Date	Event	Venue
2022	April 19-21, 26-28	Audit Planning Meeting for ASOSAI Pilot Capacity Development Program on "Audit on Implementation of Sustainable Development Goals (SDGs)"	Online
	Around October	Audit Review Meeting for ASOSAI Pilot Capacity Development Program on "Audit on Implementation of Sustainable Development Goals (SDGs)"	(TBD)
	November/ December (TBD)	ASOSAI Seminar (Theme: TBD)	(TBD)



EMAIL/WEBPAGE ADDRESSES OF MEMBER SAIS



Email / Webpage Addresses Of Member SAIs

SAI	Email address	Webpage
Afghanistan	saoaf.int@gmail.com, naderahmadi1358@gmail.com	http://sao.gov.afinfo.saoa
Armenia	intrel@armsai.am	www.coc.am
Australia	external.Relations@anao.gov.au	www.anao.gov.au
Azerbaijan	office@sai.gov.az, international@sai.gov.az, hilal_huseynov@yahoo.com	www.ach.gov.az
Bahrain	info@nao.gov.bh, tr.ir@nao.gov.bh	www.nao.gov.bh
Bangladesh	international@cagbd.org	www.cagbd.org
Bhutan	info@bhutanaudit.gov.bt, tashilhamo@bhutanaudit.gov.bt, hrird@bhutanaudit.gov.bt	www.bhutanaudit.gov.bt
Brunei Darussalam	info@audit.gov.bn, nora.jahali@audit.gov.bn	www.audit.gov.bn
Cambodia	ir.audit@naa.gov.kh	www.naa.gov.kh
China	cnao@audit.gov.cn	www.audit.gov.cn
Cyprus	cao@audit.gov.cy, mmavromichalis@audit.gov.cy, akikas@audit.gov.cy	www.audit.gov.cy
Georgia	iroffice@sao.ge, kgigilashvili@sao.ge	www.sao.ge
Iran	pria@dmk.ir	www.dmk.ir
India	ir@cag.gov.in	www.cag.gov.in
Indonesia	international@bpk.go.id wahyudi.bpk99@yahoo.co.id	www.bpk.go.id
Iraq	bsa@d-raqaba-m.iq, bsairaq@yahoo.com	www.d-raqaba-m.iq

Email / Webpage Addresses Of Member SAIs

SAI	Email address	Webpage
Israel	Israel_sco@mevaker.gov.il, int_relations@mevaker.gov.il, sagi_e@mevaker.gov.il, rachel_t@mevaker.gov.il	www.mevaker.gov.il
Japan	liaison@jbaudit.go.jp	www.jbaudit.go.jp/
Jordan	info@ab.gov.jo, fawwaz.odaibat@ab.gov.jo	www.ab.gov.jo
Kazakhstan	int.rel@esep.gov.kz, a.tasmaganbetov@esep.gov.kz	www.esep.kz
Korea	koreasai@korea.kr	www.bai.go.kr
Kuwait	IR@sabq8.org,suadz@sabq8.org, IR@SAB.GOV.Kw	www.sabq8.org
Kyrgyzstan	kyrsai@mail.ru,esep@esep.kg, b.toktasunova@esep.kg, tbarchynai@gmail.com	www.esep.kg
LAO-PDR	ird.sao.la@gmail.com	www.audit.gov.bn
Malaysia	international@audit.gov.my, ag@audit.gov.my	www.audit.gov.my
Maldives	info@audit.gov.mv, niyazy@audit.gov.mv, inaeem@audit.gov.mv	www.audit.gov.mv
Mauritius	aud@govmu.org philisetse@gmail.com	www.nao.govmu.org
Mongolia	mnao@audit.gov.mn, info@audit.gov.mn	www.audit.mn
Myanmar	AUDITORGENERAL@mpmail.net kkadec@gmail.com	
Nepal	oagnep@ntc.net.np, hrd_ir@oagnep. gov.np, sharmatm@gmail.com	www.oagnep.gov.np
New Zealand	international@oag.parliament.nz enquiry@oag.govt.nz, Margaret.Graham@oag.govt.nz	http://www.oag.parliament.nz/
Oman	chairman@sai.gov.om, intr@sai.gov.om	www.sai.gov.om

Email / Webpage Addresses Of Member SAIs

SAI	Email address	Webpage
Pakistan	saipak@comsats.net.pk	www.agp.gov.pk
Palestine	facb@saacb.ps pr@saacb.ps	www.saacb.pss
Papua New Guinea	agopng@ago.gov.pg, CAdiunegiya@ago.gov.pg	www.ago.gov.pg
Philippines	mgaguinaldo@coa.gov.ph, cadelacruz2017@gmail.com, danilocabug@gmail.com, jbmcoa@yahoo.com, scontarciego@gmail.com	www.coa.gov.ph
Qatar	info@sab.gov.qa, tech.dep@sab.gov.qa	www.sab.gov.qa
Russia	intrel@ach.gov.ru, terehina@ach.gov.ru,	www.ach.gov.ru/en/
Saudi Arabia	ird@gab.gov.sa	www.gab.gov.sa
Singapore	ago_email@ago.gov.sg, Sarah_Foo@ago.gov.sg	www.ago.gov.sg
Sri Lanka	ag@auditorgeneral.gov.lk, addlag.cgse@auditorgeneral.gov.lk, chulanthawickramaratne@yahoo.com, interdep@sai.tj, chairman@sai.tj, info@sai.tj	www.auditorgeneral.lk
Tajikistan	interdep@sai.tj, chairman@sai.tj, info@sai.tj	www.sai.tj
Thailand	int_rela@oag.go.th, sutthisun@gmail.com, prajuck_b@oag.go.th	www.oag.go.th
Turkey	int.relations@sayistay.gov.tr, yusufada@sayistay.gov.tr	http://www.sayistay.gov.tr
U.A.E.	president@saiuae.gov.ae, IR@saiuae.gov.ae	www.saiuae.gov.ae
Vietnam	vietnamsai@sav.gov.vn, vietnamsai@gmail.com	www.kiemtoannn.gov.vn www.sav.gov.vn,
Yemen	tech_coop2007@yahoo.com, gogo13026@gmail.com	www.coca.gov.ye

Electronic communication between Supreme Audit Institutions is increasing rapidly. In view of this, a list of e-mail and World Web Site Address of ASOSAI members (as available with us) have been compiled and shown in the above table. It is requested that addresses of those SAIs that do not in appear in the table may please be intimated to the Editor for incorporating in the future issues of the Journal. Please also let us know in case there are any modifications to the addresses listed above.

Other Important Email/webpage Addresses

Organization	Email address	Webpage
INTOSAI	intosai@rechnungshof.gv.at	www.intosai.org
ASOSAI	gs@asosai.org	www.asosai.org
EUROSAI	eurosai@tcu.es	www.eurosai.org
OLACEF	relacionesinternacionales@contral (Executive Secretariat, SAI of Chile) PresidenciaOLACEFS@asf.gob.mx (Presidency of OLACEFS, SAI of Mexico)	www.olacefs.comoria.cl
PASAI	enquiry@oag.govt.nz	www.pasai.org
ARABOSAI	secretaire.general@courdescomptes .nat.tn, contact@arabosai.org	www.arabosai.org
INTOSAI Development Initiative (IDI)	idi@idi.no	www.idi.no
INTOSAI Community Portal	ir@cag.gov.in	www.IntosaiCommunity.net