Raising RESILIENCE

A SEMINAR SUMMARY FROM THE 21ST INTOSAI WGEA ASSEMBLY (2022) ON **WHY RESILIENCE AND CLIMATE CHANGE ADAPTATION MATTER FOR SUPREME AUDIT INSTITUTIONS**

INTOSAI Working Group on Environmental Auditing

XXI WGEA ASSEMBLY UKULHAS 2022 MALDIVES

AUDITOR GENERAL'S OFFICE

Speakers and Presenters

- Honorable President Mohamed Nasheed, Speaker of Parliament
- Honorable Abdulla Shahidh, President of the United Nations General Assembly
- Dr Sami Yläoutinen, Auditor General, SAI Finland, Chair of INTOSAI WGEA
- Mr Hussain Niyazy, Auditor General, SAI Maldives
- Ms Aminath Shauna, Minister of Environment, Climate Change and Technology of the Maldives
- Ms Sabra Noordeen, Special Envoy for Climate Change of the Maldives
- Mr Ibrahim Rasheed Aboobakuru, Minister of State for Tourism of the Maldives
- Mr Ricardo Mena Speck, Director, United Nations Office for Disaster Risk Reduction
- Dr Shobha Maharaj, International Panel for Climate Change
- Mr Joe Thompson, Assistant Director, Government Accountability Office, United States of America
- Mr Ali Shareef, Climate Change Specialist
- Dr Karoliina Pilli-Sihvola, Senior Specialist on Climate Change Adaptation, Ministry of Agriculture and Forestry of Finland
- Mr Mohamed Ibrahim Jaleel, Performance Audit Manager, SAI Maldives
- Dr Vivi Niemenmaa, Secretary General, INTOSAI WGEA Secretariat
- Ms Tina Väänänen, INTOSAI WGEA Secretariat
- Ms Rauhath Hussain, Performance Audit Director, SAI Maldives
- Ms Kimberley Leach, SAI Canada
- Mr Erick Alvarado Muños, SAI Costa Rica
- Mr Michal Rampir, SAI Czech Republic
- Ms Sylva Mullerova, SAI Czech Republic
- Mr Alar Jürgenson, SAI Estonia
- Ms Farah Al-Farhan, SAI Kuwait
- Mr Talal Al-Wuhaib, SAI Kuwait
- Mr Shaushan Saeed, SAI Maldives
- Mr Roland C. Pondoc, Commissioner, Acting Chairperson, SAI Philippines
- Mr Vladimir Matus, SAI Slovakia
- Mr Nutthanon Puengto , SAI Thailand
- Ms Anna Koziova, SAI Ukraine
- Ms Rosalyn Kapambwe, SAI Zambia

Authors and Editors

- Kira Nicole Kolesnik, INTOSAI WGEA Secretariat
- Dr Vivi Niemenmaa, INTOSAI WGEA Secretariat
- Rauhath Hussain, SAI Maldives
- Aminath Shuaau Mohamed, SAI Maldives
- Mohamed Ibrahim Jaleel, SAI Maldives

Layout and Design

Ahmed Shareef, SAI Maldives

**Images: Sourced from Unsplash and SAI Maldives*

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INTRODUCTION

This Seminar Summary is based on the special theme of the 21st Assembly of the INTOSAI Working Group on Environmental Auditing (WGEA), "Raising Resilience". The first day of the Assembly, held between 4-6 July 2022, was dedicated to the topic of resilience and climate change adaptation. The Assembly gathered 80 participants from 22 countries in the Maldives on the island of Ukulhas and was streamed online to 250 registered participants.

The location and the timing of the Assembly presented a unique opportunity to highlight the importance of climate resilience and climate change adaptation. Firstly, the Maldives, a country comprising of 1,200 islands in the Indian Ocean, is the lowest lying country in the world with most of the islands just about a meter above sea level. This makes the Maldives especially vulnerable to rising sea levels and extreme weather events.

Secondly, the Maldives is categorised as a Small Island Developing State (SIDS) which are faced with unique social, economic, and environmental vulnerabilities. Even though all countries are faced with myriads of threats related to climate change, resilience is particularly important for SIDS, as one of the opening speeches by the President of the United Nations General Assembly, Abdulla Shahid noted.

Thirdly, the 21st INTOSAI WGEA Assembly was held during the summer monsoon season in the Indian Ocean, the rough sea being a constant reminder of the power of a changing climate and a source of coastal erosion. As the Guest of Honour, President and Speaker of the Maldives Parliament, Mohamed Nasheed noted in his opening speech,bad weather is linked to carbon emissions.

Therefore, taking resilience and climate change adaptation as the main topic of the 21st Assembly and integrating local expertise was a unique opportunity. The Assembly also connected the topic strongly to auditing by asking what implications resilience and adaptation have for public sector budgets, risk assessments and the work of Supreme Audit Institutions (SAIs).

This seminar summary aims to present the key findings of the keynote speeches, presentations, panel discussions and audit case examples.

RESILIENCE & CLIMATE CHANGE RISKS

The concept of resilience and global disaster risk framework

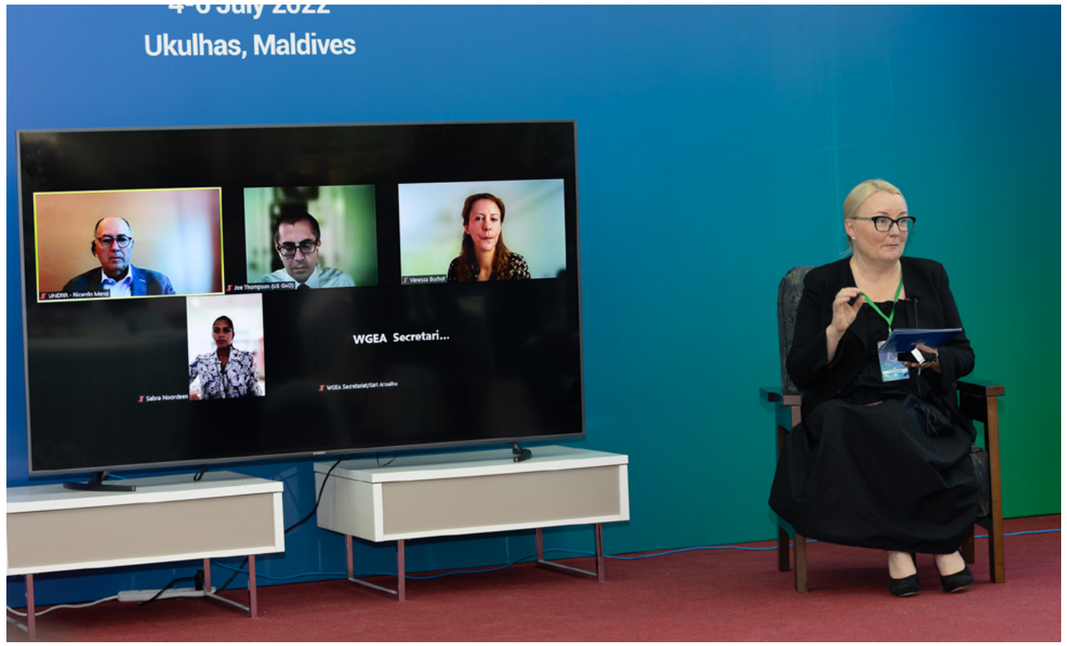
Guest of Honour of the Assembly, President and Speaker of Maldives Parliament, Mohamed Nasheed noted in his opening speech that resilience is one of the international buzzwords that you often hear in conferences, but it is unclear if anyone really knows what it means. He provided a straightforward definition:

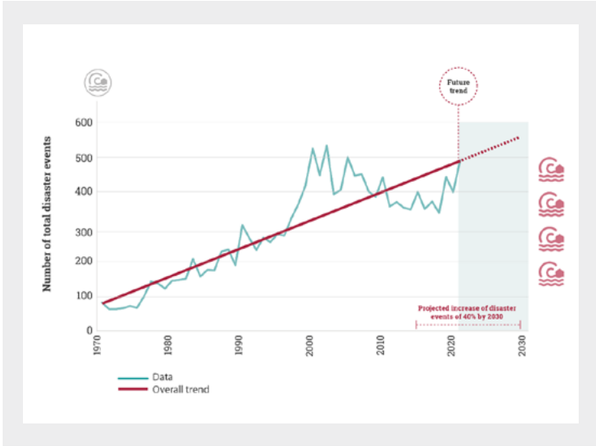
Resilience is what happens as a result of adaptation to climate change. Thus, it is the ability of not to get killed or your property destroyed by climate disaster. Resilience is about staying alive in a climate emergency.

As for a definition used by global organizations, resilience has been defined by the United Nations Office for Disaster Risk Reduction in the following manner:

Resilience is the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions[1].

[1]United Nations Office for Disaster Risk Reduction (UNDRR), "2009 UNISDR Terminology on Disaster Risk Reduction~ Geneva, May 2009 (http:/ /www.unisdr.org/we/inform/terminology cited in Sendai Framework for Disaster Risk Reduction (2015-2030) | United Nations Development Programme (undp.org), p. 5





40%
The number of disasters per year globally may increase by 40%

30%
Between 2001-2023 droughts are predicted to increase by 30%

3X
Between 2001-2030 extreme temperature events may triple

Adapted from the presentation "The Concept and Practice of Resilience - Sendai Framework for Disaster Risk Reduction" by Ricardo Mena, UNDRR

The keynote speaker of the resilience session, **Director Ricardo Mena** from the United Nations Office for Disaster Reduction Risk (UNDRR), the focal point for disaster risk reduction in the United Nations system, provided predictions for future disasters

Mena presented the global response for disaster risk management - the Sendai Framework. It focuses on preventing new risks and reducing existing disaster risks and calls for various measures to prevent and reduce hazard exposure and vulnerability and increase preparedness and recovery.

Mena stressed that we need to measure what we value. Currently, balance sheets are ignoring key variables related to climate risks and costs to ecosystems, as well as the positive social benefits of risk reduction. The real costs of extreme risks are especially undervalued.

Key actions include the need to rework financial systems to account for the real costs of risks, including long-term risks, and rework insurance systems to incentivise risk reduction. A similar shift must take place with national risk planning and financing. Mena also stressed the transdisciplinary approach, including transparency and citizen engagement, as well as multiscale risk management.

> **Comprehensive disaster management is central to development planning**
>
> *- Director Mena*

Reflections on resilience from the Maldives

Maldives Minister of Environment, Climate Change and Technology, Aminath Shauna, explained the importance of resilience in a situation where the sea level rises 3 – 4 mm a year. Almost all of the islands in the Maldives are eroding, flooding has increased, and majority of islands undergo water stress in climate change induced dry periods. In addition, corals have bleached which affects the ability of reefs to provide income, food, and protection against beach erosion. In this situation, it is impossible to wait for long-term plans. Her key message to the auditors is to understand how big a risk climate change is.

Although the impacts of climate change are larger and more urgent for SIDS, she stressed that we have reached a point where climate change affects everyone. Special Envoy for Climate Change, Sabra Noordeen, reminded us that sea level rise will have a huge impact on coastal urban areas also in the Global North.

> **My fear is not just losing a nation, but that we may have to move out before the final day comes**
>
> *- Minister Shauna*

Besides the role of Special Envoy, the Maldives has an emergency act for climate change. According to Noordeen, the act as well as the concept of resilience help mainstream climate change across the sectors. Resilience must be incorporated in all actions and sectors, including infrastructure, water, and food security, but also public health with questions such as how to deal with heat or air pollution.

Minister Shauna gave an example of resilience where the older tradition of collecting rainwater is re-introduced into the water management system. She also stressed building energy independence. Mitigation efforts and a new zero target for 2030 are also part of resilience. She also regarded conservation, such as protecting corals and mangroves, as part of resilience. Besides nature-based adaptation, there is however also a need for hard engineering solutions, as ecosystems alone cannot absorb the stress and shocks anymore.

> **Those states that are most affected are least responsible for global emissions**
>
> *- Special Envoy Sabra*

The audience was interested to learn more about data-related issues. Mena from the UNDRR informed about the Sendai framework monitor network but noted that not all countries are able to provide data, especially aggregated data, which could better enlighten the vulnerabilities. Special Envoy Noordeen explained the difficulties of coordinating various data to guide towards better policies. While Minister Shauna stressed that often SIDS are required to provide extensive data for the project financing. These data are not available, especially concerning longer time series.

Disaster Risk framework to assist auditing

An insight into how SAIs could approach resilience was provided by Assistant Director Joe Thompson from SAI USA (GAO). GAO's overall message related to climate change is limiting the federal government's fiscal exposure by better managing climate change risks in its various roles: government as a property owner, insurance provider, leader of national climate strategy planning, provider of technical assistance, as well as provider of disaster aid.

GAO HAS DEVELOPED A DISASTER RESILIENCE FRAMEWORK AS A RESPONSE TO THE NOTION THAT THERE ARE NO GOOD AUDIT CRITERIA FOR RESILIENCE. THE APPROACH IS BUILT AROUND INFORMATION, INTEGRATION, AND INCENTIVES.

PRINCIPLE:

INFORMATION	INTEGRATION	INCENTIVES
Accessing information that is authorised and understandable can help decision makers to identify current and future risk and the impact of risk-reduced strategies	Integrated analysis and planning can help decision makers take coherent and coordinated resilience actions	Incentives can help to make long-term, forward-looking risk-reduction investments more viable and attractive among competing priorities

Adapted from the presentation "GAO's Disaster Resilience Framework - Using the Disaster Resilience Framework to Conduct Forward-Looking Climate Resilience Audits" by Joe Thompson, GAO

GAO IDENTIFIED TWO RISK REDUCTION APPROACHES:

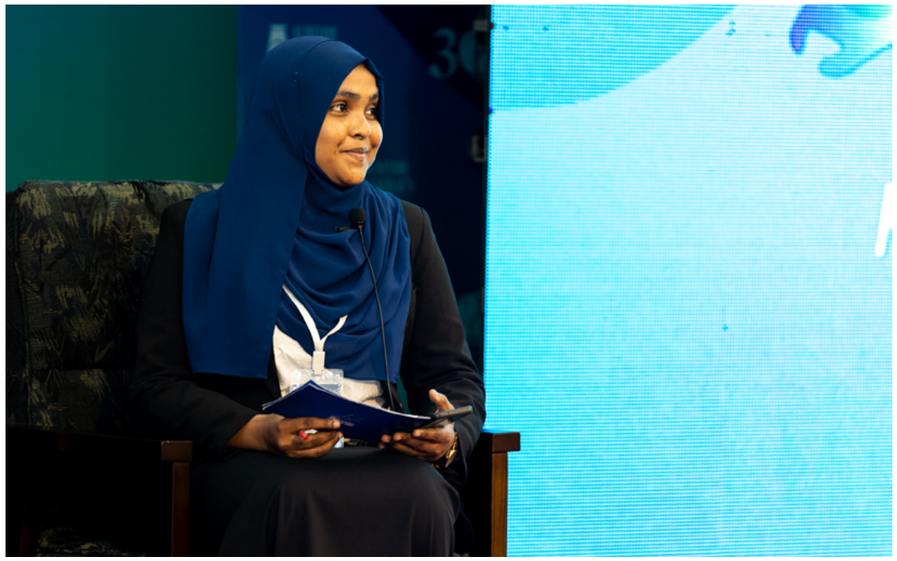
1

Mainstreaming, where the federal government "bakes in" risk framework into all actions

2

Strategic approach, where the focus is on identifying gaps in the way government operates, such as missing institutions on national climate information or climate migration.

Compared to the traditional approach where audits find areas where an improvement should take place, i.e., criteria pointing towards deficiencies, the disaster risk framework takes a different approach: it starts by exploring where we are now and identifying how to improve the problems. Therefore, these audits are forward-looking.



ADAPTATION IS THE PROCESS OF ADJUSTMENT TO ACTUAL OR EXPECTED CLIMATE AND ITS EFFECTS.

- Dr Maharaj

CLIMATE CHANGE ADAPTATION

Science base of adaptation: Any further delay in global action will miss a brief and rapidly closing window to secure a liveable future

Lead Author of the Small Island Chapter Dr Shobha Maharaj from the International Panel on Climate Change (IPCC) provided a keynote on the science base of adaptation Maharaj stressed how climate change is affecting the lives of billions of people across the world, through phenomena such as tropical cyclones, sea level rise and heavy rainfall resulting in increased losses and damages. For example, some islands in the Caribbean region have not been able to recover from a hurricane when yet another one hits them.

While action on adaptation has increased, the progress is uneven, and we are not adapting fast enough. Adaptation saves lives, reduces risks and has multiple benefits. In many places, the capacity for adaptation is already limited, and the maintenance and recovery of natural and human systems will depend on the achievement of mitigation targets. There are effective adaptation strategies, but the effectiveness decreases with increasing warming.

> **Vulnerable population groups in most vulnerable regions have the most urgent need for adaptation**
>
> *- Dr Maharaj*

Maharaj also stressed that there are limits to adaptation, as not even effective adaptation can prevent all losses and damages. Moreover, the quality of the adaptation matters as there is a risk for maladaptation. For example, the actions taken to adapt and mitigate climate change can have either beneficial or harmful effects on biodiversity.

According to Maharaj, current financial flows are insufficient, as only a small proportion of climate finance goes to adaptation. It is important to increase the capacity to access finance, especially in vulnerable regions and leverage public funding private finance. At the same time, the credit ratings of SIDS have started to include vulnerability to climate change, which can negatively affect accessing finance.

Monitoring and evaluation are important to track progress, not least because in the warming world, measures that are effective now, might not work in 20 years. Consequently, adaptation strategies might have to be revised, and they should be fact and data driven. Maharaj considered the lack of baseline data which affects especially SIDS as one risk. Concerning global climate models, there are not enough downscaled data on small islands.

CLOSE TO 3.6 BILLION PEOPLE LIVE IN HOTSPOTS OF HIGH VULNERABILITY TO CLIMATE CHANGE

These are across Small Islands, Central and South America, large parts of Africa, as well as South Asia, and the Arctic.

Due to overlapping challenges such as

1. Limited access to water, sanitation and health services
2. Climate-sensitive livelihoods
3. High levels of poverty
4. Weak leadership
5. Lack of funding
6. Lack of accountability and trust in government

Adapted from the presentation "Key Findings of the AR6 Report on Adaptation: Global with reference to small island perspectives" by Shobha Maharaj, on behalf of the IPCC Working Group II

Adaptation in the Maldives

Minister of the State for Tourism in the Maldives, Ibrahim Rasheed Aboobakuru, went through key challenges that climate change poses for tourism, the main economic sector in the Maldives. This especially includes beach erosion, flooding, warming of water, coral bleaching and strong tides and swells that create additional challenges. Tourism, and thus the whole economy in the Maldives, is depending on nature.

Climate Change Specialist Ali Shareef made some important remarks on climate finance. Especially SIDS are faced with availability and accessibility of finance. For SIDS, the requirements to access the available finance can be very burdensome. Concerning performance audits on climate finance, he made some suggestions for questions to be asked:

- **Are there other policies that can be counter-effective to climate policies?**
- **Is heavy infrastructure funding put into the optimal use from a climate perspective?**
- **Is donor funding put to best use from a national perspective, and not from the donor's interests?**

> **As many as 97% of the islands in the Maldives are affected by beach erosion**
>
> *- State Minister Aboobakuru*

Shareef noted that an additional challenge in climate policies is the changing legislative framework. If there are no proper assessments behind the legislative proposals, they can create problems in the long term. It is problematic from the policy coherence perspective if, for example, one law aims at reducing emissions, while the other encourages to reduce taxation of vehicles. Shareef urged auditors to include what the underlying factors are behind decisions in their analysis.

Climate Change

Risks & public finance

President and Speaker Nasheed argued in his opening speech that the first financial impact of climate change will be the default when country after country cannot pay their debts, especially as most climate-vulnerable countries are heavily indebted.

SAI Costa Rica estimated that the cost of repairing and reconstructing infrastructure in 2010 was 1.01% of GDP because of floods and storms. In future scenarios, the amount is estimated to increase up to 2.5% of the GDP. The report recommends that it is necessary to create a climate fiscal framework for Costa Rica to finance climate mitigation and adaptation. This framework should allow the identification of resources, allocating them according to priorities in the context of shortage of public resources and making the information available to citizens.

Erick Alvarado Muños provided insights into the pressure on public finances due to climate change based on the report from SAI Costa Rica on the pressure that climate change puts on public finance which is based on a report summarising previous audit reports.

AUDIT EXAMPLES FROM AROUND THE WORLD ON RESILIENCE & ADAPTATION

In total 14 SAIs provided 25 audit examples for the 21st Assembly. Based on the submissions, the first session was dedicated to audits on various government sectors, and the second was on water related audits. In this year's Assembly, the WGEA pioneered joint presentations from SAIs whose audits had correlating themes. More detailed audit summaries are available on our website[2].

[2] https://www.environmental-auditing.org/assembly-2022/assembly-audit-cases/

Adaptation can be audited in Various Government sectors

The session covered a vast array of audit examples from agriculture, infrastructure resilience, disaster relief and harmful subsidies. A Senior specialist on climate change adaptation Dr Karoliina Pilli-Sihvola from the Ministry of Agriculture and Forestry of Finland provided a commentary note of the session. She emphasised that as the consequences of climate change become increasingly evident, it is important that the policies on adaptation and disaster relief measures are efficient.

The audit of SAI Kuwait truly showed how climate change affects various sectors, including public health, transport, infrastructure, energy, and water protection. Pilli-Sihvola stressed how adaptation requires commitment across the government, both individual ministries in their respective sectors as well as in collaboration across the government. Besides the government, stakeholders including NGOs and regional and local authorities are also needed.

Resilience and adaptation in different
GOVERNMENT SECTORS

In 2021, SAI Kuwait (SAB) conducted a performance audit report on the role of government entities in dealing with climate change impacts. Kuwait is affected by climate change such as high temperatures, drought, sand, and dust storms with the possibility of intensity increasing in the future. This leads to increased risks of drought and food insecurity due to the depletion of soil fertility, water evaporation in crops, the disappearance of vegetation cover, and the exacerbation of desertification.

SAB recommended improved monitoring of climate change and coordination among relevant authorities, preparation of emergency healthcare plan, improved rainwater drain system, enhanced measures in power and water distillation plants, as well as follow-up GHG emissions reduction projects.

PRE-STUDY: KUWAIT'S CLIMATE

Adapted from the presentation "SAI Kuwait's Climate Change Audit Example on Resilience and Adaptation in Different Government Sectors" by SAI Kuwait

All over the world, agriculture and farmers are often at the forefront of facing climate change. Adaptation in agriculture is one of the most studied areas in adaptation research. The example of SAI Zambia showcased various adaptation measures. Oftentimes the problem is not in the plans but in their implementation. Changing agricultural practices is a long-term challenge as the audit case pointed out. Pilli-Sihvola urged auditors to concentrate on challenges in implementation.

Audits on Agriculture

SAI Costa Rica audited the effectiveness of the actions executed by the agricultural sector to mitigate, adapt, and manage the risk of climate change, to improve the life quality of the population, food security, the agri-environmental and economic sustainability of the productive process and the rise of the agricultural production. The audit recommended the implementation of a mechanism for the effective management, integration, and evaluation of the climate policies, plans and strategies as well as the implementation of metrics to estimate the impact of the actions related to mitigation, adaptation and risk management to support decision-making.

SAI Zambia assessed if the measures put in place by Government were effective in ensuring the country was food secure amidst climate change. The audit found that Government had mainstreamed activities related to climate change to the extent of planning. However, the actual implementation of the plans was not effective resulting in farmers still not being food secure. The Ministry should prioritise the activities that help spearhead SMART agriculture, improve monitoring mechanisms as well as harmonise the implementation of SMART agriculture practices.

The audit cases of SAI Costa Rica and the Philippines focused on disaster resilience. One important note is that often the disasters are related to poor governance, and not only natural disasters. Finally, Pilli-Sihvola considered harmful subsidies as presented by SAI Estonia an important and under analysed topic in adaptation policies.

The audit cases of SAI Canada and Costa Rica highlighted the importance of policy coordination, policy integration and policy coherence. Often audits concentrate on sectors, where there are already adaptation policies. Another approach would be to choose such sectors where adaptation has not yet started. One example is the health sector, noted also in the audit of SAI Kuwait.

Infrastructure

Both **SAI Canada** and **SAI Costa Rica** highlighted in their audits the importance of resilience in infrastructure to adapt to climate change. In both audits, the findings concentrated on outcomes and impacts on populations. In Canada, the Climate Lens tool was designed to assess whether infrastructure projects could better withstand the effects of climate change. Since 2021 the requirements of the tool were weakened, and the responsible department did not report publicly on the expected climate outcomes of investment programs. Whereas the Canadian audit made recommendations on reporting and monitoring requirements, SAI Costa Ria looked more into the construction of infrastructure and the timeliness of the completion.

Disaster Resilience

SAI Costa Rica examined the adequacy and relevance of the actions taken by the National Commission for Risk Prevention and Emergency Attention (CNE) to ensure the use of technical criteria to strengthen the resilience of public infrastructure exposed to extreme hydrometeorological events. SAI Costa Rica recommended to the CNE and relevant Ministries to design and implement regulations about principles, scope, and management tools to incorporate resilience measures in the life cycle of public infrastructure. The SAI also recommended reviewing and adjusting the technical regulations applicable to reconstruction projects to ensure the implementation of risk management measures in the life cycle of the works.

SAI Philippines conducted a Citizen Participatory Audit on the implementation of the City Disaster Risk Reduction and Management (CDRRM) Program by the City of Tuguegarao. The audit found among other things problems in the implementation of the projects and low utilization of disaster funds.

Environmentally
harmful subsidies

SAI Estonia reviewed identifying and phasing out environmentally harmful subsidies in Estonia. The review describes the nature of environmentally harmful subsidies and activities taken by EU countries and international organisations. The harmful impact of subsidies can occur on various environmental aspects: climate, water, biological diversity etc. There are also subsidies which work against climate resilience and climate change adaptation, such as subsidies encouraging water use in agriculture or forest clear-cutting practices. The Estonian government had not identified systematically, unlike many other countries, environmentally harmful subsidies. SAI Estonia recommended designating a responsible governmental authority and identifying and analysing all subsidies with adverse environmental impact comprehensively by using existing international methodologies. This would help to identify which subsidies are easier to phase out.

Pilli-Sihvola concluded by noting that adaptation is an area that increasingly attracts funding. Therefore, it is important that SAIs continue their audit activities in areas where they can add value.

Too Dry! Too much water!

Audits on water-related topics

Most audit submissions were related to water, and more specifically either to draughts or flooding. As Mohamed Ibrahim Jaleel from SAI Maldives noted in his commentary speech, these two topics should not be taken as a separate phenomenon, but rather as two sides of the same coin. Although these water challenges have been there for decades, the audits in the session have shown that there is much room for improvement, especially taken from the impacts of climate change. The audits have manifested a need for improving data collection, strategic planning, as well as project implementation.

Jaleel noted that more effort is needed to build the meteorological capacity to forecast the weather and to disseminate the data effectively to the public in order to prevent loss of lives and other damaging consequences. Furthermore, he also stressed the important role of land-use planning and incorporating green infrastructure to effectively deal with the cycle of flood and drought.

Audits on Drought

European Court of Auditors audited the effectiveness of managing desertification, a growing risk, especially in Southern Europe. The audit concluded that the EU Commission did not have a clear picture of these challenges, and the steps taken to combat desertification lack coherence. Neither had the Commission assessed progress towards meeting the commitment to achieving land degradation neutrality by 2030.

SAI Czech Republic examined the implementation of measures to mitigate the negative impacts of drought and water scarcity, and the provision for these purposes. The audit found:

1) insufficient legislation,
2) failure to adapt subsidy programmes to drought
3) conflicting subsidy programmes
4) undemonstrated effects and
5) growing damage caused by drought

SAI Slovakia verified whether the Slovak Republic is ready to cope with drought. The audit found lacking evaluation of historical drought occurrence nor the risks of its occurrence, missing indicators as well as thresholds, and defining geographical areas of drought risks. Finally, no national strategy for drought management was elaborated.

Audits on Flooding

European Court of Auditors, among others audited whether flood prevention, protection and preparedness under the Floods Directive (FD) were based on sound analysis and whether EU Member States managed appropriately financial resources. Audit found that the implementation of the European Union's flood-related action suffers from weaknesses in allocating funding. European Court of Auditors observed that major future challenges remain concerning the much fuller integration of climate change, flood insurance and spatial planning into flood risk management.

SAI Tanzania examined the effectiveness of national coordination and management of flood control measures. Audit identified among others the insufficiencies in supervision and urban planning schemes as well as insufficient integration of flood control measures.

SAI Czech Republic examined the effectiveness and economy of the funds allocated for flood protection measures and its compliance with legal requirements. Audit identified delays in constructions of flood measures. Audit revealed that more than 50% of the specific flood protection measures were not launched, nature-based measures were implemented only minimally, and volume of funds spent was significantly lower than needs.

SAI Slovakia audited compliance with the food risk plans and technical conditions of flood preventive measures. Audit found delays in construction of flood measures, underfinancing of maintenance as well as misleading calculated value of damage avoided by flood measures.

Water Management Development

In 2021, **SAI Ukraine** conducted a performance audit of the effectiveness of the State Target Program for Water Management Development and Environmental Rehabilitation of the Dnipro River Basin 2021. The audit revealed an unsatisfactory state of implementation of the program activities and failure to achieve the planned results. The audit found that the current climate change and constant pollution of water resources affect the environmental condition of water resources and may lead to a shortage of clean and drinking water at the soonest time.

Irrigation Management

SAI Thailand audited the Royal Irrigation Department and found that there was no stability in the water supply in the production sector. The water volume in the reservoirs could not reach their minimum required level, and some had been at this insufficient level for years. Consequently, Royal Irrigation Department is unable to provide the supplies when there is no rain.

Water Supply

SAI Maldives assessed the efficiency and effectiveness of government strategies relating to water provision. Climate change factors such as rising sea levels and changing rainfall patterns have affected the water supply. The audit found that emergency water supply has been ongoing constantly over the last 15 years and that the costs show an inconsistent trend over the years. The audit recommended evaluating the existing water supplying model and identifying cost-effective mechanisms for the water supplying process.

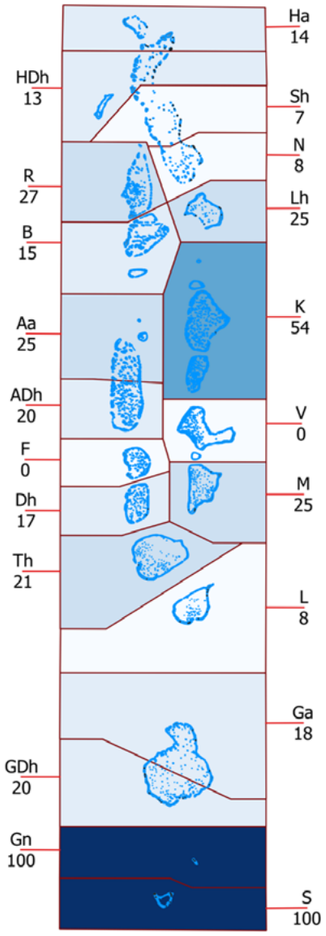


Figure 1: How much water production facilities have been established by percentage of inhabited islands in atolls

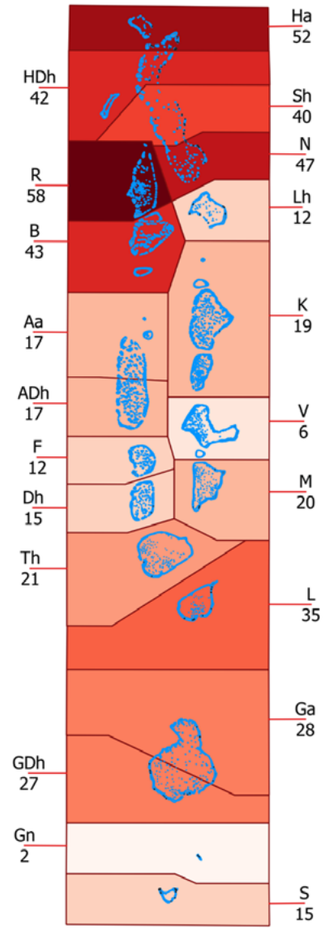


Figure 2: Average percentage of inhabited islands that have been supplied with water from 2005 to 2020

Adapted from the presentation "Performance Audit on Water Provision" by SAI Maldives

Jaleel highlighted the history of drinking water in the Maldives. He noted that historically freshwater aquifers were the primary sources of water for the island communities. In the small islands, there are no large surface water bodies, and most of the groundwater reserves occur as shallow and thin aquifers which are very susceptible to over-exploitation. With the introduction of septic tanks, the water pollution peaked due to the leaching of sewerage into the freshwater aquifer and caused large outbreaks of shigellosis and cholera resulting in loss of lives. Furthermore, the 2004 tsunami further aggravated the pollution and caused large-scale salinization of the freshwater lenses forcing the island communities to search for alternative water sources. Then, the island communities turned to harvesting rainwater. While collecting rainwater is a sustainable solution, its availability varies and with limited collection and storage space, lots of islands in the archipelago undergo water scarcity during the drier monsoons.

The next development in the water sector was to establish desalination plants. However, the economic burden of providing desalinated water to small populations with no economies of scale was soon realised and the government has been augmenting desalinated water with rainwater and even incorporated renewable energy in water production to reduce the costs of operation.

Currently, the new threat to the public water supply is bottled water. While a preference has been noted towards single-use plastic PET bottles over the public water supply, this causes lower revenues to services providers confounding the service sustainability and increasing the plastic waste problem of the nation.

Jaleel concluded by noting that SAIs have an important role in helping the government to steer development toward sustainability.

CONCLUSIONS

In conclusion, the 21st INTOSAI WGEA Assembly brought several important aspects related to climate resilience to the attention of SAIs:

1. The economic impacts of climate change are enormous. SAIs can make it clear that climate change poses significant risks to public sector budgets. All countries are affected, but particularly for SIDS, the urgency is clear. SAIs can look at the risk assessments of governments and ask whether climate risks are taken properly into consideration.

2. It is too late to mitigate the emissions only: we also need to adapt. Adaptation builds resilience and protects our societies from loss and damage. Internationally, there is less finance available for adaptation. SAIs could examine finance allocations and remind about the need to invest both in adaptation and mitigation and do this in an effective manner.

3. There is a need for urgent action, as the sea level rise and coastal erosion in the SIDS demonstrate. At the same time, it is crucial to assess longer-term impacts. For example, maladaptation risks locking development unfavourably for a long time. SAIs could ask in their audits whether assessments take long-term considerations into account.

4. Problems are interconnected and they emerge in many fields. Consequently, there are adaptation needs besides agriculture, infrastructure, and water supply, just to name a few, but also in the health sector. SAIs could examine whether governments work across sectors and enhance policy coherence. Here resilience is a useful cross-cutting concept.

5. One key issue is the availability and quality of data, both concerning the baseline data, time series, as well as aggregated data enlightening vulnerabilities or geographical specifies. Monitoring is important for keeping the strategies updated as the effectiveness of measures can change over time. SAIs can stress that good data serves more informed decision-making.

6. Climate change exacerbates many vulnerabilities and injustices among and between the nations. In the spirit of the Agenda 2030 “leave no one behind” principle, SAIs could help governments to pay attention to inequalities both nationally as well as globally. This also concerns international finance: it should prioritize local needs and vulnerabilities.

Opening ceremony — 10:15 - 11:15

- Chair of INTOSAI WGEA, Auditor General Dr Sami Yläoutinen, National Audit Office of Finland — Speech
- Auditor General of SAI Maldives, Hussain Niyazy — Speech
- President of UNGA, Honourable Abdulla Shahidh — Speech
- Guest of Honour
  Honorable President Mohamed Nasheed, Speaker of Parliament — Speech

Resilience and climate change risks — 11:30 – 12:45

Dr Vivi Niemenmaa, INTOSAI WGEA Secretariat — Moderator

- Director, United Nations Office for Disaster Risk Reduction Mr Ricardo Mena Speck: Resilience as a concept, Sendai Framework and UNDRR action — Keynote
- Minister of Environment, Climate Change and Technology, Ms. Aminath Shauna — Panel Discussion
- Special Envoy for Climate Change Ms Sabra Noordeen: Climate change resilience in the Maldives — Panel Discussion
- Assistant Director Joe Thompson, GAO USA: Disaster Resilience Framework — Panel Discussion

Climate change adaptation — 14:00-15:15

Ms Rauhath Hussain, Performance Audit Director, SAI Maldives — Moderator

- Keynote: Lead Author of the Small Island Chapter, Shobha Maharaj, IPCC: Science base of adaptation: Why is adaptation important? — Keynote
- Climate Change Specialist, Mr. Ali Shareef — Panel Discussion
- Minister of State for Tourism Mr. Ibrahim Rasheed Aboobakuru — Panel Discussion
- SAI Costa Rica: Pressure on public finances due to climate change — Presentation

APPENDIX 1 - AGENDA
Ukulhas Convention Center
July 04, 2022

Audit examples on resilience and adaptation in various government sectors — 15:30 - 16:30

Ms.Tiina Väänänen, INTOSAI WGEA Secretariat — Moderator

- SAI Kuwait: Cross-sectoral perspective into adaptation — Audit Case
- SAIs of Zambia & Costa Rica: Agriculture and adapatation — Audit Case
- SAIs of Canada & Costa Rica: Infrastructure and adaptation — Audit Case
- SAI Philippines: Urban resilience — Audit Case
- SAI Estonia: Harmful subsidies — Audit Case
- Senior specialist on climate change adaptation,
  Dr Karoliina Pilli-Sihvola, Ministry of Agriculture and Forestry of Finland — Commentary

"Too much water - not enough water": Audit examples on water related issues — 16:45 - 17:45

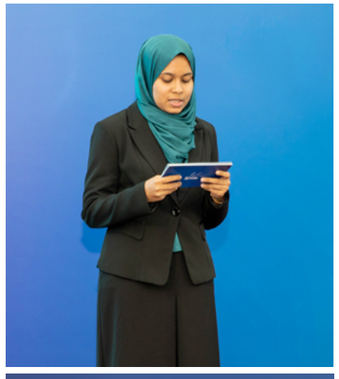
Ms.Tiina Väänänen, INTOSAI WGEA Secretariat — Moderator

- SAIs of Czech Republic, Slovakia & European Court of Auditors: Droughts — Audit Case
- SAIs of Czech Republic, Slovakia & European Court of Auditor & Tanzania: Flooding — Audit Case
- SAI Ukraine: Audit examples on adaptation and climate change — Audit Case
- SAI Thailand: Water Resources, the Augmentation of Irrigation Areas, Water Supply Management, and Water-Related Disaster Prevention — Audit Case
- SAI Maldives: Dry season water supply — Audit Case
- Performance Audit Manager, Mr Mohamed Ibrahim Jaleel,
  SAI Maldives — Commentary

APPENDIX 2

Event TEAM

Dr Vivi Niemenmaa
Tiina Väänänen
Kira Nicole Kolesnik
Heikkinen Aleksi
Aroalho Sari
Rauhath Hussain
Nishwa Firaq
Mohamed Ibrahim Jaleel
Ahmed Ashfaq
Ibrahim Shaheed
Mohamed Zabeen
Mohamed Riznee
Fasaha Fahmee
Khasma Mohamed
Aminath Muaza
Khadeeja Afsala
Aminath Nausha
Aminath Shuaau Mohamed
Shaushan Saeed
Fathimath Shahula Nashid
Ismail Shihadh
Ibrahim Siraj
Ahmed Ismaah
Mohamed Zamin
Ahmed Shareef
Aishath Yooha Ali
Ahmed Hamza Fazeel
Hudha Faheem
Raushan Imad
Mohamed Aiman
Fathimath Aasifa
Faarihaa Ahmed
Ali Naseer
Khairunnisa Hussain
Abdul Sameeu Ali
Mariyam Mafaza
Mariyam Thaiba Abdulla
Mariyam Shadha Mohamed Shahid
Aminath Nubua Ali
Fathimath Sharaaf Mohamed
Lujain Ali Waheed
Mohamed Hamdhoon
Hussain Rasheed
Aishath Nuha Solih
Ibna Iqbal
Ahmed Hassaan
Fathimath Rifqa
Khadheeja Najeeb
Mahir Ali
Mamdhooh Mohamed
Ahmed Mohamed
Ibrahim Looth Adnan
Fathimath Junaina
Muhammad Nazeeh



Participants of the 21st INTOSAI WGEA Assembly held at Ukulhas Convention Centre

INTOSAI
Working Group
on Environmental
Auditing