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OF GOVERNMENT AUDIT

Asian Organisation of Supreme
Audit Institutions



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of Government Audit - October 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.

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From the desk of the Chairman of ASOSAI

SMART and GREEN SAI: Challenges after the pandemic



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

Since 2020 our world has moved to the next normal era. The Covid-19 pandemic changes public sector auditing in at least two issues. The first reflects the power of digital disruption, which could improve audit methodologies through remote working, big data analytics, and real-time audit. Disruptive technology could leverage audit tasks and develop audit efficiency. The concept of 5ABCDI could transform traditional SAI into SMART SAI in the future. 5ABCDI consists of 5G, AI, Blockchain, Cyber Security, Data Analytics, and the Internet of Things (IoT). Certainly, SAI should prepare the digital transformation in the future.

For the next issue, the pandemic makes SAI consider the various roles. Some SAIs play the advisory role in giving constructive recommendations through non-audit products. The non-audit products might cover the measures, research, and tools that could support good public financial management by oversight function. Likewise, some SAIs extend their paradigm set to insight and foresight. The new audit paradigm could create value and benefit for citizens.

In the meantime, SAI could support the green economy through environmental performance auditing. In addition, chapter II of the 2021 Bangkok Declaration encourages SAIs to promote the SDGs' achievement. Interestingly, the characteristics of a green economy are low-carbon, resource-efficient, and socially inclusive. Therefore, SAI plays a key role in sustaining the green economy. The auditing of plastic waste is the topic on which SAI could conduct the audit. The reduction of plastic waste represents sustainable consumption and production (SCP). SCP aims to improve production processes and practices to reduce resource consumption, waste generation, and emissions across the full life cycle of processes and products.

Finally, we are in a new era of challenges. The future of SAI will lead to both SMART and GREEN SAI.

From the desk of the Secretary General of ASOSAI



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

As Secretary General of the ASOSAI, I wish to take this opportunity to express my warm greetings and heartfelt wishes to all colleagues and their families across the Asian public sector auditing community.

Plastic, a kind of synthetic resin material, was invented merely over 100 years ago. However, it has evolved from a necessity facilitating socio-economic growth into one of the most threatening challenges to the global ecology and environment. Statistics from United Nations Environment Programme (UNEP) show that plastic production soared from 2 million tons in 1950 to 348 million tons today. 8 million tons of plastic waste enters the ocean every year, which breaks up into microplastic particles over time and then drifts to every nook and cranny of the ocean on currents. Microplastic particles are found even in the surface waters of the Antarctic region. In August 2019, a WHO report *Microplastics in drinking-water*[1] noted that microplastic particles are ubiquitous in the environment and have been detected in oceans, waste water, fresh water, food, air, as well as portable and running water, with different concentrations. Pollution is a universal problem, and plastic waste out of control will encroach on rivers, oceans, and soil worldwide. What makes people concerned is that fast-growing marine plastic waste has deteriorated marine ecology and environment, which led to a decrease in the number of marine species, and even jeopardized human health. Such changes matter to everyone. Countries around the world are making unremitting efforts to effectively grapple with plastic waste pollution and have reached a certain consensus. Several effective measures are underway. In February 2022, Mr. Espen Barth Eide, President of the fifth session of the UN Environment Assembly, delivered a speech at the UNEA-5 in Nairobi, Kenya. "The world is intimidated by three global eco-crises," I quote, "climate change, biodiversity loss, and pollution. If there are no immediate measures, plastic pollution will enlarge its hazard and threaten human subsistence. But if we move into a circular economy, plastic will be a product that can be used over and over again." That session also endorsed a draft resolution to *End Plastic Pollution*, a legally binding agreement targeting to promote the elimination of plastic pollution worldwide.

[1] https://www.who.int/news/item/20-08-2019-microplastics-in-drinking-water

INTOSAI's 2013 *Beijing Declaration* clarifies that INTOSAI will continue to focus its attention on researching major issues of global and regional importance and provide SAIs with effective guidance and reference for risk response. In September 2022, INTOSAI WGEA officially launched the document on *Auditing Plastic Waste: Research and Audit Benchmarks for Supreme Audit Institutions* developed under the Quality Assurance procedure for non-IFPP documents. It marks that auditing plastic waste has emerged as a pioneering audit topic catering to future development trends of audit work, and is also a norm for all SAIs. As one of the regional groups of the INTOSAI, ASOSAI has been committed to promoting and strengthening cooperative governance of the regional environment among all member states with high-level solidarity, collaboration, and vitality. To effectively address plastic waste pollution and better encourage all nations to implement their responsibilities for environmental governance, an increasing number of SAIs have listed or is planning to list this topic on their agenda, and we have seen some promising results. I am convinced that we will surely prevail over the challenges posed by plastic waste pollution with concerted efforts of all.



From the desk of the Editor

Ms. Eti Shukla
Principal Director (International Relations)
Office of the Comptroller and Auditor General of India

Dear Colleagues,

The theme of the previous edition of this Journal was 'Auditing Climate Change: Carbon Emission and Carbon Finance'. The tremendous response we received from our readers attests to the topical nature of the subject and growing appreciation that we as auditors of governmental action have a significant role to play in ensuring that the munificent bounties of our planet are preserved for posterity as well. Continuing with the general theme of environmental auditing, we have chosen another significant topic viz., plastic waste, for this edition of the journal.

There is no gainsaying the fact that the menace of plastic pollution has reached alarming proportions in recent years. It has been reported that, of the 6.3 billion or so tonnes of plastic waste produced since the 1950s, only 9% has been recycled and another 12% incinerated. The rest has been dumped in landfills or the natural environment.[1]

Owing to its non-biodegradable property, plastic persists on the surface of the earth for years together, choking plant and animal life, clogging drains and causing all manner of havoc. To add to the problem, micro-plastic pollution has emerged as a new source of concern that calls for urgent and well considered action from Governments all over the world. Microplastics are tiny fragments of plastic waste and plastic fibres whose impact on natural life and environment is yet to be fully comprehended. Due to natural weathering and chemical degradation all plastic waste can degrade into microplastics particles. These particles can spread fast and have even been detected in remote corners of the world thousands of kilometres away from their source. These are small enough to be ingested and incorporated into the bodies of living organisms including humans. Microplastics have even been detected in human blood.

The problem of plastic pollution is global in nature and requires concerted action by Governments. Many Governments have adopted measures, such as banning of single use plastics, setting targets for recycling, and formulating policies for production, use and disposal of plastic. Our role, as public sector auditors, begin from developing a comprehensive understanding of the dimensions of the problem that will enable us to design meaningful audit programs and strategies and generating audit conclusions and recommendations that are actionable, far-sighted and impactful.

[1] https://www.economist.com/international/2018/03/03/the-known-unknowns-of-plastic-pollution?gclid=Cj0KCQiAkMGcBhCSARIsAIW6d0CyJAUzyAECvG0OyRSsumNqTBAV9mJ6nBnlvKWGaaMCzoDgdwhNVpQaAiVfEALw_wcB&gclsrc=aw.ds

The complexity and highly technical nature of the problem necessitates that the global audit community arrive at shared paradigms for effectively framing audit questions, and support each other in developing audit methodologies and tools that enable them not only to recommend corrective actions but also to stimulate policy reforms.

It is my earnest hope that the contributions of our fellow auditors published in this edition of our journal result in more vibrant dialogue and collaboration among our SAIs and inspire us to make a collective impact on the timely management of this problem.

I am grateful to General Chanathap Indamra, Chairman of ASOSAI and Mr Hou Kai, Secretary-General of ASOSAI, for their motivational messages. I thank SAIs of China, Egypt, Korea, India, Indonesia, Maldives, Malta, Serbia, Vietnam and the INTOSAI Working Group on Environmental Auditing (WGEA) for contributing articles for this issue of the journal. My gratitude is due to the authors for their painstaking efforts to bring clarity and comprehensiveness to this issue and throwing light on the various modalities of addressing the same through audit. I shall also reiterate my request here to actively follow our Twitter handle- @AsosaiJournal for accessing the articles published in the journal.



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ASOSAI

News

58th Governing Board Meeting of ASOSAI

58th Governing Board Meeting of ASOSAI was hosted by SAI Pakistan online on 31st May 2022. In the meeting the CAG of India presented a report on ASOSAI Journal and moved a motion for establishing the Special Committee on the feasibility study of establishing a Working Group on IT Audit and Data Analytics, which was accepted by the Governing Board members. SAI Korea will host the next Governing Board Meeting.

13th ASOSAI Research Project

1st Meeting of 13th ASOSAI Research Project was held virtually on May 12, 2022 to discuss and agree on the project outline, roles and responsibilities of all members involved, task distribution, as well as the timeline of the project. The overall theme of ASOSAI Research Project 13 is "Remote Audit for SAIs: Future and Challenge".

Kick- off meeting of ASOSAI (WGCMA)

BAI Korea held the kick-off meeting for the ASOSAI Working Group on Crisis Management Audit (WGCMA) on May 11, 2022. During the meeting, discussion was held on tentative work plan 2022-24 and draft Terms of Reference.



First virtual meeting of the ASOSAI Working Group on Sustainable Development Goals



The first virtual meeting of the ASOSAI Working Group on Sustainable Development Goals was held on 24th of May, 2022. The meeting was held with the participation of members of the ASOSAI Governing Board and the Audit Committee. The meeting was chaired by the State Audit Bureau of Kuwait with attendance of the ASOSAI Secretary and 11 members of the working group. The Chair mentioned that the chairmanship will be assigned to Kuwait for 3 years to lead the working group as per the decision taken in the 15th ASOSAI Assembly meeting. As the Chair of ASOSAI WGSDGs, SAI Kuwait proposed a potential Working Plan with the participants. SAI members agreed to nominate SAI Russia to be the Vice Chair of the Working Group. It was decided that participants and project leaders will be elected in the next meeting.

Kick-off Meeting for the Task Force for research on ASOSAI Regulations

The Kick-off Meeting for the Task Force for research on ASOSAI Regulations was held on 10th May 2022. The meeting was conducted for updating the ASOSAI Handbook, revising the financial rules of ASOSAI, Preamble, Chairpersonship, membership term etc.

2022

Meeting of ASOSAI Working Group on Environmental Auditing Cooperative research on the topic "The Role of SAI and Auditing Climate Finance: Case study of ASOSAI WGEA"

A meeting of ASOSAI Working Group on Environmental Auditing Cooperative research on "The Role of SAI and Auditing Climate Finance: Case study of ASOSAI WGEA" was organized online by SAI Thailand on 21st July 2022 to discuss "The Role of SAI and Auditing Climate Finance: Case study of ASOSAI WGEA" undertaken by the ASOSAI Working Group on Environmental Auditing as a cooperative research project. Participants from the Supreme Audit Institutions of China, India, Indonesia, Thailand and Vietnam attended the meeting and exchanged ideas on the framework, activities, and opportunities for collaboration. At the beginning. Dr Sutthi Suntharanurak, from SAI Thailand gave a presentation on the theme "The Role of SAIs in Climate Finance" covering the background, timelines, output and the envisaged contributions. He also discussed some other connected themes and methodology including the team for this research project and its final output. The tentative timeline for completion of the project is April 2023. Member representatives from the other participating SAIs provided their feedback and suggestions on various issues related to the topic. The meeting ended with a decision to further augment the proposal in the light of inputs and feedback received from participating SAIs which will be shared in the due course by SAI Thailand.



Participants.



China India indonesia Sri lanka Thailand Vietnam

Audit Planning Meetings of ASOSAI Capacity Development Program on "Audit on Implementation of Sustainable Development Goals (SDGs)" (April 2022)

Two online Audit Planning Meetings of ASOSAI Capacity Development Program on "Audit on Implementation of Sustainable Development Goals (SDGs)" were successfully concluded for three days each in April, 2022. In each meeting, six resource persons from SAIs of Bhutan, India, Nepal, Malaysia, Pakistan and Thailand facilitated the meeting with the support of the Program Manager from SAI Philippines and the Subject Matter Expert from SAI Indonesia. Staff of the Capacity Development Administrator of ASOSAI (SAI Japan) also attended for organizing the meetings. In those meetings, total 34 participants from 15 SAIs attended the meetings and actively discussed their audit plans.







Theme

Articles



Auditing Plastic Waste

-SAI India

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About the Author

The author is 1990 batch IAAS Officer. Ever since joining this service, he has held several executive level posts within the organization and holds more than 20 years of experience in the areas of auditing & accounting, finance and administration. Audit experience pertains to 3 areas of audit viz. compliance audit, financial attest audit and performance audit of the government departments and public sector undertakings. At the international level, the author has supervised the audit team conducting the audit of Indian mission in countries viz. Algeria, Libya, Nigeria (Abuja &Lagos) and Saudi Arabia where significant audit observations were raised and reported to the concerned ministry for further improvement and corrective action. In the year 2021, he conducted Compliance Audit of FAO's (UN Food and Agriculture Organisation, Rome) Sub-regional office, Zimbabwe and Country offices of Cameroon, Malawi and Zimbabwe. The audit was successfully conducted remotely due to travel restriction of Coronavirus pandemic.

The officer has done MBA(Finance) from Amity University. He is currently posted in Government Accounting Standard Advisory Board in CAG's office, a body which advises Government on forms of accounts under Article150 of the Constitution of India.

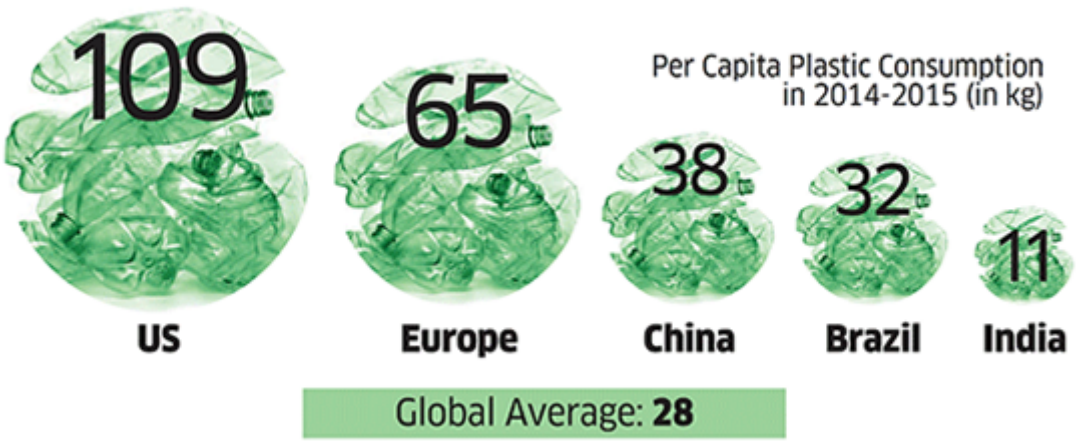
2022

"We don't need a handful of people doing zero waste perfectly. We need millions of people doing it imperfectly."-- Anne Marie Bonneau

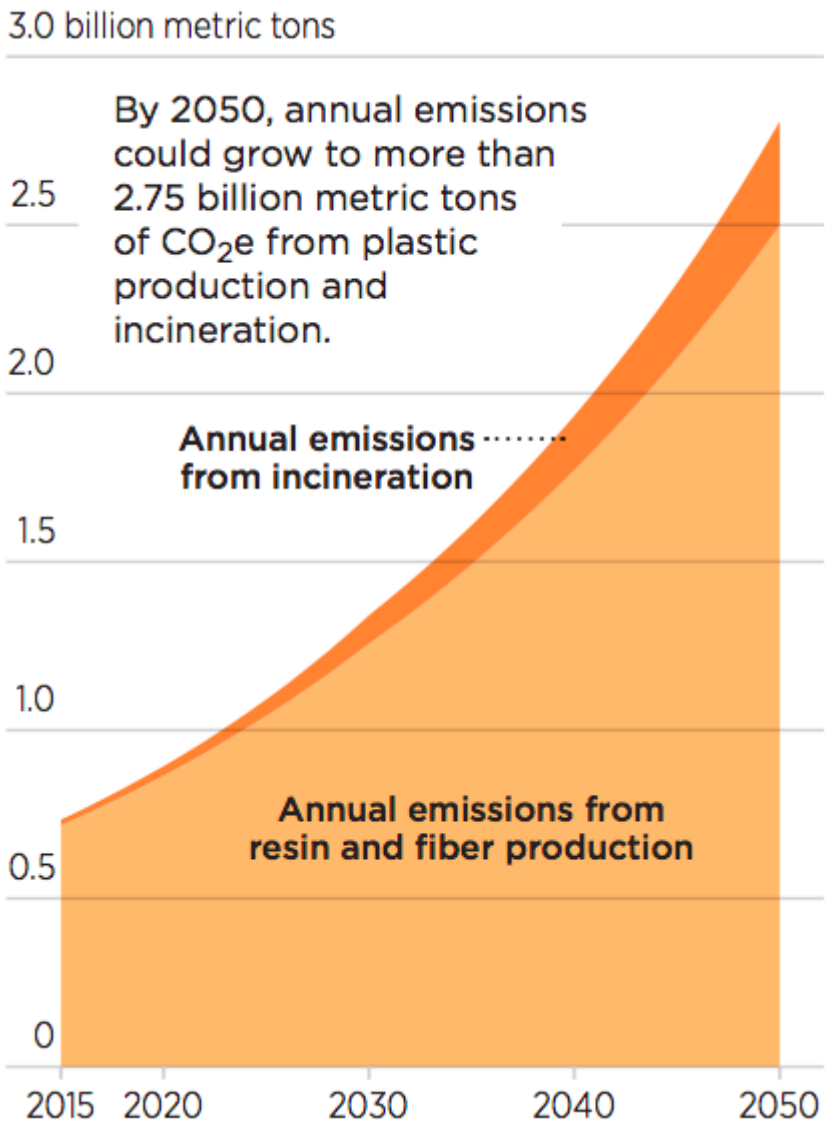
Anne Marie Bonneau is the founder of The Zero-Waste Chef and has been featured in many sustainability publications. In addition to writing her blog, Anne Marie teaches fermentation and takes sourdough bread baking classes in Northern California.

1. Introduction

Plastic products have become an integral part of our daily life as a result of which the polymer is produced at a massive scale worldwide. On an average, production of plastic globally crosses 150 Million tonnes per year. A report by the United Nations in 2020 found that "the global material footprint grew from 73.2 billion metric tons (mt) in 2010 to 85.9 billion mt in 2017, involving increase by 17.4 per cent". Rising population, urbanization, modern lifestyle, human development and wellbeing are the biggest drivers of consumerism and economic growth in contemporary times. Its broad range of application is in packaging films, wrapping materials, shopping and garbage bags, fluid containers, clothing, toys, household and industrial products, and building materials. Unsustainable consumption and production patterns along with increasing waste and emissions has contributed to various environmental concerns. While some kinds of plastic do not decompose at all, others could take up to 450 years to break down. The figure below captures per capita plastic consumption in FY 2014-15:



Annual Plastic Emission by 2050:



2022

1.2. Plastic as a boon

Plastics are not inherently bad, and they have many redeeming ecological features. Many of the techniques we utilize in our designs involve targeted use of plastic products. Their durability and low maintenance reduce material replacement, their light weight reduces shipping energy, their formulation into glue products allows for the creation of engineered lumber and sheet products from recycled wood, and their formulation into superior insulation and sealant products improves the energy performance of our structures. Once plastic is discarded after its utility is over, it is known as plastic waste. It is a fact that plastic waste never degrades, and remain on landscape for several years. Mostly, plastic waste is recyclable but recycled products are more harmful to the environment as this contains additives and colors. The recycling of a virgin plastic material can be done 2-3 times only, because after every recycling, the plastic material deteriorates due to thermal pressure and its life span is reduced. Hence recycling is not a safe and permanent solution for plastic waste disposal. It has been observed that disposal of plastic waste is a serious concern due to improper collection and segregation system.

1.3. Plastic as a bane

Plastic is versatile, lightweight, flexible, moisture resistant, strong, and relatively inexpensive. Those are the attractive qualities that lead us, around the world, to such a voracious appetite and overconsumption of plastic goods. However, durable and very slow to degrade, plastic materials that are used in the production of so many products, ultimately, become waste. Our tremendous attraction to plastic, coupled with an undeniable behavioral propensity of increasingly over-consuming, discarding, littering and thus polluting, has become a combination of lethal nature.

The disposal of plastics is one of the least recognized and most highly problematic areas of plastic's ecological impact. Ironically, one of plastic's most desirable traits: its durability and resistance to decomposition, is also the source of one of its greatest liabilities when it comes to the disposal of plastics. Natural organisms have a very difficult time breaking down the synthetic chemical bonds in plastic, creating the tremendous problem of the material's persistence. A very small amount of total plastic production (less than 10%) is effectively recycled; the remaining plastic is sent to landfills, where it is destined to remain entombed in limbo for hundreds of thousands of years, or to incinerators, where its toxic compounds are spewed throughout the atmosphere to be accumulated in biotic forms throughout the surrounding ecosystems

1.4. Groundwater and soil pollution

Plastic is a material made to last forever, and due to the same chemical composition, plastic cannot biodegrade; it breaks down into smaller and smaller pieces. When buried in a landfill, plastic lies untreated for years. In the process, toxic chemicals from plastics drain out and seep into groundwater, flowing downstream into lakes and rivers. The seeping of plastic also causes soil pollution and have now started resulting in presence of micro plastics in soil.

1.5. Pollution in Oceans

The increased presence of plastic on the ocean surface has resulted in more serious problems. Since most of the plastic debris that reaches the ocean remains floating for years as it does not decompose quickly, it leads to the dropping of oxygen level in the water, severely affecting the survival of marine species. Materials like plastic are non-degradable which means they will not be absorbed and recycled. When oceanic creatures and even birds consume plastic inadvertently, they choke on it which causes a steady decline in their population. The harmful effects of plastic on aquatic life are devastating, and accelerating. In addition to suffocation, ingestion, and other macro-particulate causes of death in larger birds, fish, and mammals, the plastic is ingested by smaller and smaller creatures (as it breaks down into smaller and smaller particles) and bio accumulates in greater and greater concentrations up the food chain—with humans at the top. Even plankton, the tiniest creatures in our oceans, are eating micro plastics and absorbing their hazardous chemicals. The tiny, broken down pieces of plastic are displacing the algae needed to sustain larger sea life who feed on them. Some important facts about plastic are as under:

1. Plastics are made from oil with a highly polluting production process. Plastics just do not dissolve; they break down into micro-particles that circulate in the environment. A single water bottle can take up to 1000 years to break down.

2. Asia is the world leader in plastic pollution. The Philippines alone dumped over 1 billion pounds of plastics into our oceans. That is over 118,000 trucks worth. In 30 Years there is likely to be more plastic in our oceans than fish. 83% of our drinking water contains plastic. Studies show that consuming plastic could lead to cancer, effects on hormone levels, and heart damage. Plastics have been found in the blood of even new born babies.

3. Over 600 marine species are affected by plastics. Nearly 45000 marine animals have ingested plastics and 80% were injured or killed. Plastics can pierce animals from inside or cause starvation, entanglement, loss of body parts and suffocation.

4. As plastics travel with ocean currents, an island of trash called the "Great pacific Garbage Patch" has been created. There are now many islands of trash in our seas.



Figure: Whale killed by plastic waste

1.6. Dangerous to human life

Burning of plastic results into formation of a class of flame retardants called as Halogens. Collectively, these harmful chemicals are known to cause the following severe health problems: cancer, endometriosis, neurological damage, endocrine disruption, birth defects and child developmental disorders, reproductive damage, immune damage, asthma, and multiple organ damage.

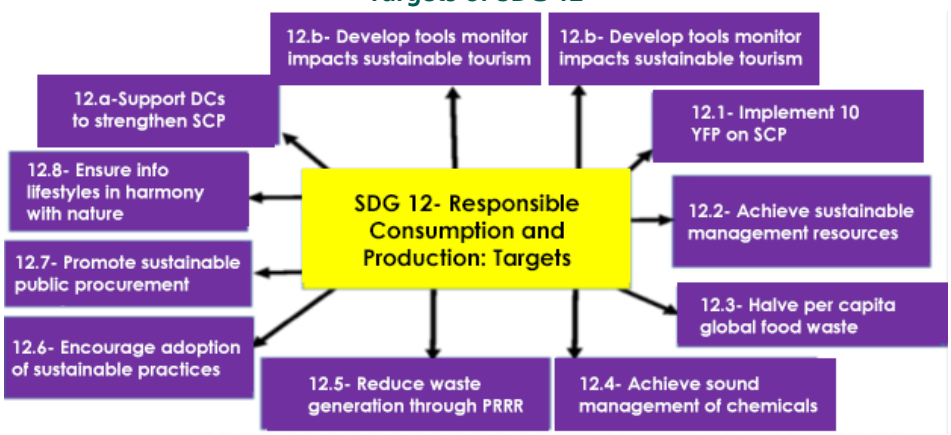
2. Global response to global crisis

There is clarion call by the world community to find sustainable solution to crisis. Steps have been taken at various levels-World Organisations, National governments of the respective country, Civil society, Supreme Audit Institutions (SAIs) and other Stakeholders towards mitigation of crisis as given below:

2.1. UN's Initiative:

In 2019, United Nations Environment Assembly (UNEA) recognized plastic waste crisis as a serious and rapidly growing issue. With the objective of significantly reducing manufacture and use of single-use plastic products by 2030, mem¬ber states adopted a Ministerial Declaration titled 'Innovative Solutions for Environmental Challenges and Sustainable Consumption and Production' at the end of UNEA session (2019.). Further, Heads of State, Ministers of environment and other representatives from UN Member States endorsed a historic resolution at the UN Environment Assembly (UNEA-5) March 2022 in Nairobi to end Plastic Pollution and forge an international legally binding agreement by 2024. The resolution addresses the full lifecycle of plastic, including its production, design and disposal. The 17 SDGs were set up in 2015 by the United Nations General Assembly and are intended to be achieved by 2030. SDG 12 concerning SCP, underpins every other SDG. SDG 12 aims to ensure sustainable consumption and production patterns, champions this theme and believes in sustainable lifestyles by increasing resource efficiency and reducing environmental degradation, as depicted in Figure below:

Targets of SDG 12



YFP: Year Framework of Programme; **SCP:** Sustainable Consumption and Production
PRRR: Product Reduction, Recycling, and Reuse; **DCs:** Developing Countries

2.2. India's Initiatives

India: According to the reports for year 2017-18, Central Pollution Control Board (CPCB) has estimated that India generates approximately 9.4 Million tonnes per annum plastic waste, (which amounts to 26,000 tonnes of waste per day), and out of this approximately 5.6 Million tonnes per annum plastic waste is recycled (i.e. 15,600 tonnes of waste per day) and 3.8 Million tonnes per annum plastic waste is left uncollected or littered (9,400 tonnes of waste per day). Out of the 60% of recycled plastic: 70% is recycled at registered facilities, 20% is recycled by Unorganized Sector, 10% of the plastic is recycled at home.

The Government of India notified Plastic Waste Management (PWM) Rules, 2016 on 18th March, 2016, superseding Plastic Waste (Management & Handling) Rules, 2011. These rules were further amended and named as 'Plastic Waste Management (Amendment) Rules, 2018. Altogether 18 States and Union Territories have taken initiative and imposed some kind of ban on plastic manufacture, stock, sale, or use of plastic carry bags, namely Andhra Pradesh, Arunachal Pradesh, Assam, Chandigarh, Chhattisgarh, Delhi, Goa, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Maharashtra, Odisha, Sikkim, Tamil Nadu, Uttar Pradesh, Uttarakhand and West Bengal.

Successful case studies on plastic ban in India

i. Operation Blue Mountain in Nilgiris ,Tamil Nadu

Operation Blue Mountain campaign was led by Supriya Sahu, the District Collector in 2001 to ban the use of plastic in the district. The campaign was crucial to unclog the river sources and springs in the popular hill station of Nilgiris. The experiment has been documented by erstwhile Planning Commission and UNDP as the best practice on governance from Indian States. In order to make people understand, the campaign used pictures of choking animals. They also explained how plastic clogs drains and also seeps into the lake and other water bodies.

ii. Sikkim first State to ban Plastics Bottles & Disposable Foam Products

Sikkim, which is often applauded for being one of the cleanest states in India has now taken one more step to reduce its carbon footprint. In two recent notifications issued by the state's home department, the Sikkim government has decided to manage its waste in a more efficient and eco-friendly manner by banning the use of plastic water bottles in all Government meetings and programmes. Further, it has banned the use of disposable foam products across the entire state.

iii. Maharashtra Ban on Plastics

Maharashtra will be the 18th state in India to ban single-use disposable plastic. Maharashtra has banned disposable products manufactured from plastic and thermocol (polystyrene). Maharashtra plastic ban carries penalties starting at Rs. 5,000 and goes up to Rs. 25,000 and 3 months of imprisonment. The government has played a major role by bringing in the law, mechanism of imposing it, the fines and the paraphernalia that goes with the implementation. Now, flower vendors are sending flowers to people's home in cloth bags. Vegetables are being sold in cloth bags. Women in self-help groups are looking at making jute or cotton bags as a major source of income. Medicines are coming in small paper pouches. Tea and coffee stalls, college canteens and restaurants are doing away with plastics. Also, the corporates like Starbucks, Coca Cola and Bisleri have risen to the occasion and taken up responsibility of collecting waste plastics from Mumbai and recycle it or up-recycle it to different use. People participation can be seen as NGOs, schools, celebrities, industrialists have begun campaigns to beat plastic pollution.

iv. Himachal Pradesh Sustainable Plastic Waste Management Plan

The Government of Himachal Pradesh enacted the Himachal Pradesh Non-Biodegradable Garbage (Control) Act, 1995, to deal with the menace of plastic and other non-biodegradable waste. This Act embodied a move towards scientific disposal of non-biodegradable waste and also imposed a ban on coloured plastic carry bags produced from recycled plastic. The Government of Himachal Pradesh introduced the Sustainable Plastic Waste Management Plan in 2009. The Plan focusses on controlling the use of plastic and developing a systematic disposal mechanism. In order to achieve the objectives of its Clean Himachal and Healthy Himachal drive, the Government also prohibited the use of plastic cups and plates in 2011; conducted Information, Education and Communication (IEC) activities to generate awareness about the harmful impact of plastic waste, and encouraged citizens to stop using plastic products.

A cursory look at Public - Private initiatives to reduce single use plastic bags and Styrofoam products across the globe:

AREA	COUNTRY	YEAR	ACTION TAKEN	TYPE	FEATURES
Asia	Indonesia	2017	Government commitment	Memorandum of understanding	Because of a four-year campaign organized by citizens to get plastic bags banned in Bali, the governor signed a memorandum of understanding to phase out plastic bags by January 2018.
Europe:	Germany	2016	Public - private agreement	Ban or levy	Voluntary ban or levy on plastic bags (retailers can decide whether to phase out plastic bags or to apply a fee of € 0.05 to € 0.50 (about $ 0.06 to $ 0.60). The agreement was made by the Ministry, the German Retail Federation and participating companies to curb the use of plastic bags. In addition, many more companies participated without having signed the agreement.
	Switzerland	2016	Public - private agreement	Levy	Switzerland's largest supermarket chains introduced a plastic bag levy based on a voluntary agreement, which was approved by the parliament as an alternative to a total ban. Impact: Demand for plastic bags dropped by 80-85%
	Switzerland	2016	Public - private agreement	Levy	85 brands (including all big distributors) participated in the "Eco-sac" ("Öko-Tut") initiative, a cooperate project between the Ministry of the Environment, the Luxembourgian Trade Confederation and the non-profit association Valorlux to reduce the consumption of lightweight plastic bags by replacing them with the so-called "Öko-Tut" (a reusable bag). Impact: Plastic bag consumption dropped by 85% in nine years and the "Öko-Tut" has replaced most free plastic bags at supermarkets across the country.

AREA	COUNTRY	YEAR	ACTION TAKEN	TYPE	FEATURES
North America	Canada	2016	Private Initiative	Levy	A big supermarket chain announced that it will start charging consumers CAD 0.05 (around $ 0.04) per single-use plastic bag and CAD 0.25 per reusable bag.
Oceania	Australia	2017	Private Initiative	Ban or Levy	Some major supermarkets announced that they will phase out lightweight plastic bags or provide bags but charge AUD 0.15 ($ 0.12) per bag.

Successful Case Studies on Plastics Ban across the continents

i. China: National and provincial policies: Prior to 2008, about 3 billion plastic bags were used in China every day, creating more than 3 million tonnes of garbage each year. Due to such large volume of plastic waste, plastic litter in China is now being called as "white pollution". To curb the production and consumption of plastic bags, in 2008, the Government of China introduced a ban on bags thinner than 25 microns and a levy on thicker ones, promoting the use of durable cloth bags and shopping baskets. Exemptions were allowed for bags used in the handling of fresh food such as raw meat and noodles for hygiene reasons.

Impact: One year after the introduction of the legislation, the distribution of plastic bags in supermarkets fell on average by 70%, avoiding the use of 40 billion bags. Within seven years, the number of plastic bags used by supermarkets and shopping malls shrank by two-thirds, with 1.4 million tonnes of bags avoided. However, plastic bags do remain common, especially in rural areas and farmers' markets, due to weak enforcement. China has recently (January 2018) introduced a ban on the import of plastic scrap.

ii. Costa Rica: Total Single-Use Plastic Ban: By being first to pledge phasing out all single-use plastic bags, Costa Rica has emerged as an environmental leader in many ways. It was successful in doubling its forest cover from 26% in 1984 to more than 52% in 2017. On 5th June 2017, World Environment Day, the government announced a National Strategy to phase out all forms of single-use plastics by 2021 and replace them with alternatives that biodegrade within six months. The ban aims at eliminating not only plastic bags and bottles, but also other items such as plastic cutlery, straws, Styrofoam containers and coffee stirrers. The Strategy promotes the substitution of single-use plastic through five actions: i. Municipal incentives, ii. Policies and institutional guidelines for suppliers, iii. Replacement of single-use plastic products, iv. Research and development, and v. Investment in strategic initiatives. In implementing this project, the government is supported by the United Nations Development Programme (UNDP), local governments, civil society and private sector groups.

iii. Kenya: Punitive total ban: Prior to 2017, about 100 million plastic bags were used in Kenya every year in supermarkets alone, impacting the environment, human health and wildlife especially in areas where waste management systems are inadequate. In Western Kenya, veterinarians claimed that in their lifetime, cows ingest a considerable amount of plastic bags, among other plastics. In February 2017, the Government of Kenya announced a ban on the production, sale, importation and use of plastic carry bags, which came into full effect after six months (in August 2017). Under the new law, representing the third attempt in the past decade, offenders can face fines of up to $ 38,000 or four-year jail terms, making Kenya's plastic bag ban the most severe in the world. Before the law entered into force, UN Environment supported the organization of a stakeholder dialogue where national and local-level officials could engage with private sector representatives to exchange views on how best to implement the regulation. Large supermarket chains are selling reusable cloth bags, as the government encourages retailers to offer consumers alternatives to plastic bags. Kenyans are slowly adjusting to life without plastic bags but there is not yet a clear account of the impact of the ban. The government is now starting an analysis to measure the overall act of the ban. On one hand local 'green' businesses see this as an opportunity for new innovative solutions to succeed and prosper, on the other hand, during this transition period - where there is lack of affordable eco-friendly alternatives – hygiene and food loss concerns are being raised by small-scale vendors (selling for instance pre-cooked foods, fruits and vegetables in markets).

iv. Rwanda: In 2004, the Rwandan Ministry of Environment, concerned by the improper disposal of plastic bags, as they were often burned or clogged drainage systems, commissioned a baseline study which revealed that plastic bag litter was threatening agricultural production, contaminating water sources and creating visual pollution. In 2008, the Rwandan government banned the manufacturing, use, sale and importation of all plastic bags. Paper bags replaced plastic ones, and citizens also started using reusable bags made of cotton. Along with the new ban, tax incentives were provided to companies willing to invest in plastic recycling equipment or in the manufacturing of environmentally friendly bags. Critics claim that stakeholders were insufficiently consulted during the policy design and that the poorest fractions of the population were not considered. Despite good intentions, after the enforcement of ban, investments in recycling technologies were lacking, as there were good and cheap alternatives available. As a result, people started smuggling plastic bags from neighboring countries and a lucrative black market emerged. With time, enforcement of the law became stricter, and if caught, offenders would face high fines and even jail. In the long run, citizens became used to the new regulation and, Kigali, the capital of Rwanda, was nominated by UN Habitat in 2008 as the cleanest city in Africa.

v. Antigua and Barbuda: In January 2016, Antigua and Barbuda prohibited the importing, manufacturing and trading of plastic shopping bags. In July of the same year, the distribution of such bags at points of sale was banned, leaving enough time for retailers to finish their stocks. Since plastic bags sold in large retailers accounted for 90% of the plastic litter in the environment, the ban was first implemented in major supermarkets, and later extended to smaller shops. Key elements of policy's success include four rounds of stakeholder consultations to ensure engagement and acceptance of the policy. Stakeholders engaged include major retailers, the National Solid Waste Management Authority, the Ministry of Trade and the Department of Environment. After approval by the Cabinet, it was decided that the ban would be incorporated in the existing legislation, as this was more expedient than instituting a new law. An awareness-raising campaign titled "I'm making a difference one bag at a time" included frequent television short clips by the Minister of Health and the Environment providing information on the progress of the ban and feedback from stakeholders. A jingle was produced to promote the use of durable bags for a cleaner and healthier environment. Moreover, shoppers were provided with reusable bags outside supermarkets, and seamstresses and tailors were taught how to manufacture such bags so as to meet increasing demand. Major supermarkets were also required to offer paper bags from recycled material, in addition to reusable ones. To encourage the manufacturing and use of alternatives to plastic bags, the legislation includes a list of materials that will remain tax free, such as sugar cane, bamboo, paper, and potato starch.

Impact: In the first year, the ban contributed to a 15.1% decrease in the amount of plastic discarded in landfills in Antigua and Barbuda, and paved the way for additional policies targeting the reduction of plastics. For instance, the importation of plastic food service containers and cups was prohibited in July 2017. As of January 2018, single-use plastic utensils were banned, as well as food trays and egg cartons. At a later stage, Styrofoam coolers are also expected to be outlawed.

2.3. SAI Initiatives: When problem like this occurs across the globe at such an unprecedented scale, the auditor cannot do fence sitting watching as a mute spectator but proactively engage with the major stakeholders towards mitigation of crisis. In befitting response to crisis, the INTOSAI Working Group on Environmental Auditing (WGEA) adopted this topical issue into its Work Plan 2020-2022 to steer the project under leadership of SAI India. A WGEA survey on management of plastic waste conducted in 2020 as a part of this research project showed that out of the 40 SAIs which responded, 58 percent of SAIs reported existence of legislations/regulations/policies/guidelines for plastic waste management in their country and 40 percent of SAIs also have conducted audit work specific to plastic waste management. Some case studies are given below:

i. State Audit Office of the Republic of N. Macedonia: A performance audit on the topic "Efficient treatment and management of plastic waste" covering the period 2017 – 2019 was conducted and it was observed: a. Strategic, planning and program documents at central, local and regional level documents are not adopted and some are outdated posing challenges for setting up an Integrated Waste Management System. b. Lack of initiatives toward reusing plastic waste. c. Informal waste collection sector is not properly recognized in relevant legislation. d. Activities regarding management of plastic waste were neither sufficient nor efficient in prevention/reduction of plastic waste. e. Low level of awareness about plastic waste collection/segregation mechanisms signifying lack of implementation in educational/ information tools. f. Measures are not providing incentives for plastic waste processing. g. Apathy from manufacturers towards measures to extend the life cycle of products. h. Inefficient collection and transportation of packaging waste (selected waste). i. Inconsistencies in implementation of measures based on "polluter pays" principle. j. Absence of regulatory mechanism in respect of collective packaging waste handlers regarding collection and utilization of realized revenue. k. The amount of collected fees paid to the treasury account or to the collective packaging waste handlers is insignificant, indicating insufficient funding for encouraging activities for collection, transport, processing and disposal of packaging waste. l. Inefficient data collection system in respect of issued permits (export of plastic waste), collected, processed and deposited plastic waste. m. Insufficient monitoring mechanism for waste management at national and local level and the supervisory activities by competent institutions.

ii Supreme Audit Court of Iran (SAC): Supreme Audit Court of Iran (SAC) has used the pathology model in environmental auditing in the process of conducting audit of plastic waste management. SAC in this method examined the pathology of the mechanisms governing the ecosystem (policies and laws at the macro level) in a small range, and finally based on the findings and results of the audit offered recommendations for improving its environmental status. Pathology requires a systematic approach to the whole process and its purpose is to identify the nature and type of the problems that have arisen and need to be solved. In this model, damage is anything that interferes with the system in achieving its goal, or whatever that hinders the achievement of the goal. Pathology is the first step to get things done legally, prevent breaches of obligations and also deal with problems. It includes four stages of a. recognizing the nature and mechanisms, b. identifying harmful signs, c. rooting out the causes and factors of damage, d. finding solutions to deal with damage.

Conclusion: Based on performance and compliance audits conducted in relation to plastic waste during the last few years, SAI underlined the significance of constructive and promising measures in the field of waste management such as submission of a bill to reduce plastic bags (2019) for approval by the Islamic Consultative Assembly, building up a committee to reduce plastic consumption in the Environmental Protection Organization, increasing public culture regarding the nature and damages of plastic waste and, consequently, the activities of the public and their participation in plastic waste management. In addition, in order to increase the awareness of auditors, the Supreme Audit Court had compiled a book on waste audit and also by translating the experiences of other SAIs, tries to participate in training courses and conferences, share experiences with other peers and improve its status.

iii. Accountability State Authority (ASA), Arab Republic of Egypt: The Accountability State Authority (ASA) of Arab Republic of Egypt conducted an audit to evaluate the performance of the Egyptian Environmental Affairs Agency with regard to its process of plastic waste management operations in 2019 and recommended to: a. Strengthen legislation encouraging recycling. b. Encourage plastics recycling to become a recognized activity to develop the sector performance. c. Improve performance of Waste Management Regulatory Authority. d. Increase training courses for workers in this field to improve their skill. e. Oblige packaging manufacturers to put a label on the plastic packing material to facilitate the sorting process.

Government Actions: In June 2019, Government announced banning plastic bags usage & disposable plastic tableware in Marsa Allam & Hurghada cities. An "Environment" initiative was taken by the Government to raise awareness of reducing the consumption of plastic bags.

iv. United States Government Accountability Office (GAO): GAO was asked to review federal efforts that advance recycling in the United States. The performance audit was conducted from August 2019 to December 2020. The GAO examined (1) cross-cutting challenges affecting recycling in the United States, (2) actions that selected federal agencies had taken that advance recycling, and (3) actions Environment Protection Agency (EPA) had taken to plan and coordinate national efforts to advance recycling. Based on GAO analysis of stakeholder views, five cross-cutting challenges affect the U.S. recycling system: (1) contamination of recyclables; (2) low collection of recyclables; (3) limited market demand for recyclables; (4) low profitability for operating recycling programs; and (5) limited information to support decision making about recycling.

Conclusion: 1. EPA has not taken steps to implement Resource Conservation and Recovery Act (RCRA) requirements to conduct studies and develop recommendations for administrative and legislative action about either existing policies or Extended Producer Responsibility (EPR) requirements. 2. EPA's draft national strategy does not align with desirable characteristics for effective national strategies. 3. Commerce has taken actions to advance recycling, in part by supporting export markets for U.S. recyclables. However, Commerce has not taken action to stimulate the development of domestic markets for recyclables, as we recommended in 2006. 4. Moreover, according to EPA officials, recent changes to the Basel Convention might further reduce export markets for plastic recyclables. Recommendation: To develop an implementation plan: a. For conducting a study and developing recommendations for administrative or legislative or eliminating such incentives and disincentives, upon the reuse, recycling and conservation of materials. b. Regarding the necessity and method of imposing disposal or other charges on packaging, containers, vehicles, and other manufactured goods to reflect the cost of final disposal, the value of recoverable components of the items, and any social costs associated with non-recycling or uncontrolled disposal. c. To incorporate desirable characteristics for effective national strategies, including (1) identifying the resources and investments needed, and balancing the risk reductions with costs, (2) clarifying the roles and responsibilities of participating entities, and (3) articulating how it will implement the strategy and integrate new activities into existing programs and activities.

v. The National Audit Office of the People's Republic of China (CNAO): Objective : To investigate the implementation of China's ban on imported solid waste, and the impact of the use of imported waste plastics on the environment, with a focus on the illegal transfer of import licenses for solid waste and final disposition of the imported waste plastics. Audit findings and audit methods applied: 1 Illegal transfer of import licenses for solid waste: a. Some companies import waste plastics in violation of the regulated quota and the requisite provisions. b. Some unqualified companies cooperate with qualified companies to apply for import licenses in the name of the latter, and make profits through direct reselling upon actual import of the waste plastic violating regulations of the Administrative Measures for the Import of Solid Waste. 2 Disposition of the imported waste plastics- Some companies use waste plastics as raw materials to produce packaging against regulations violating the regulations of the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China and other authorities.

3. Best practices for plastic waste management:

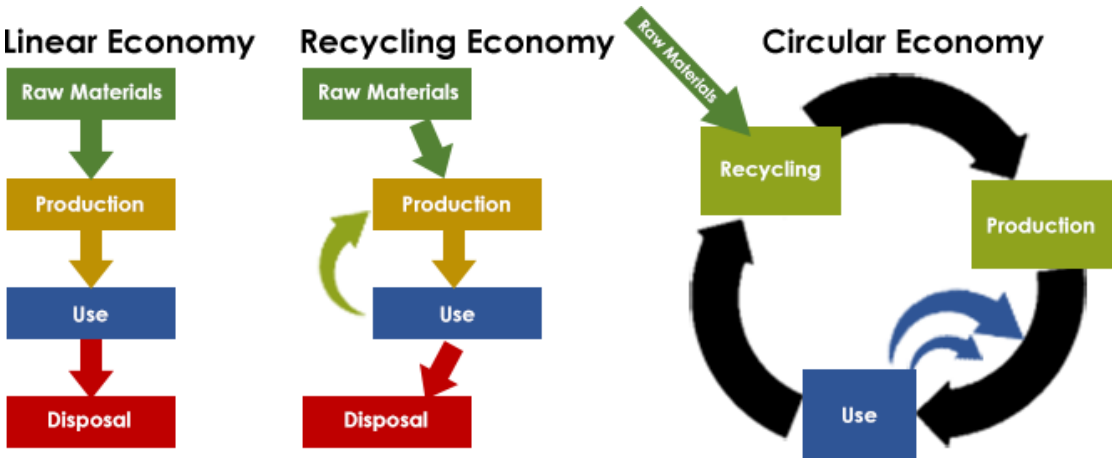
Sweden	Return System	Sweden's Return system delivers reusable crates and plates to goods producers for use in shipping their products to wholesalers/retailers.
Italy	Ecoplasteam	Ecoplasteam is a private company that uses a process to treat polylaminates (PO-LA) to create a new, drop-in material (EcoAllene) for use in a number of applications such as construction, furnishings and non-food packaging.
Australia	Bio Pak	BioPak is a specialist in the field of compostable, sustainable packaging and has produced a wide number of food packaging products from sustainably produced paper products, bioplastic, sugarcane and sustainable wood.
Czech Republic	Miwa	MIWA (Minimum Waste) is a private company in Czech Republic that seeks to make waste-free shopping the "new normal". MIWA sells two primary products – food distribution systems and compatible food containers.

4. Circular Economy

One way of handling plastic waste in efficient and productive manner is urge of the world community to move to circular economy from linear economy. The circular economy is a restorative and regenerative by design. This means materials constantly flow around a "closed loop" system, rather than being used once and then discarded. In the case of plastic waste, this means simultaneously keeping the value of plastics in the economy, without leakage into the natural environment. This can be achieved via long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, recycling and upcycling. The ultimate aim is to minimise the amount of resources consumed, and waste generated, by our economic activities. Circular economy approaches are also contributing to the implementation of the Paris Agreement and climate related targets, as well as the biodiversity targets.

In contrast, the linear economy aims at a "take, make, dispose" model of production, as illustrated in Figure below. Circular economy is market economy, new values should be introduced and therefore regulation needed besides markets. For example, oil is a very easy item to trade, while plastic waste is not. Therefore, circular economy needs to be made as efficient as the market economy because the outcome is better. A circular economy for plastic is necessary to limit consumption of plastic while ensuring that the plastic used is appropriately managed throughout its lifecycle.

Figure: From linear economy to circular economy



5. Way forward

Given the broad spectrum of possible actions to curb single-use plastics and their mixed impact, UN Environment has drawn up a 10-step roadmap for governments that are looking to adopt similar measures or improve on current ones. The steps are based on the experiences of 60 countries around the globe:

- Target the most problematic single-use plastics;
- Consider the best actions to tackle the problem;
- Assess the potential social, economic and environmental impacts;
- Identify and engage key stakeholder groups;
- Raise public awareness about the harm caused by single-used plastics;
- Promote alternatives;
- Provide incentives to industry;
- Use revenues collected from taxes or levies on single-use plastics to maximize the public good, thereby supporting environmental projects or boosting local recycling with the funds and creating jobs in the plastic recycling sector with seed funding;
- Enforce the measure chosen effectively, by making sure that there is clear allocation of roles and responsibilities;
- Monitor and adjust the chosen measure, if necessary and update the public on progress.

6. Conclusion

Adoption of Agenda 2030 has added a new dimension requiring SAI work to include SDG audits. Shifting SAI activities from "accountability for process" to "accountability for performance," is becoming more important for improving accountability and efficiency in public governance. Growing emphasis are laid on the ideas related to circular economy, integrated waste management including recycling practices and stringent regulations for abatement of pollution caused by plastic. This subject has also emerged as a very relevant field of study by SAIs around the world in terms of sustainable production and consumption of plastic, its mismanagement, plastic waste and pollution caused by plastic. Unprecedented rate of production and consumption of plastic for economic and social progress has resulted in depletion of natural resources and adverse impact on environment, reaching a critical stage. With increasing demand and production of plastic, the extent of plastic waste and resulting menace has increased globally indicating unsustainable management of this valuable product. Plastic waste poses serious environmental, social, economic and health threats and its harmful effects on terrestrial and marine ecosystems have also become major global concerns. There is a clear upward trend in the number of public policy responses to the plastic pollution problem over the last decade, at global, regional and national levels, yet the risk remains seriously high. It is therefore imperative for the Governments to review their policies towards management of plastic waste. SAIs can examine the efficiency and effectiveness of measures taken by Governments in the respective countries. A transformative and circular economy approach covering the entire value chain from production of plastic to plastic waste management is needed to address the problem of mismanaged plastic waste in a comprehensive manner. Covid-19 has aggravated the problem as PPEs, masks and disposable syringes are made of plastic. This envisages the concepts of producing less, consuming less, adopting environmentally friendly techniques for recycling, upcycling, imposing legal instruments and proper disposal of waste that already exists to prevent contamination or leakages. Urgent actions are therefore required to be taken through involvement of numerous stakeholders in society including citizens, governments, community organizations, businesses, and manufacturers. Policy solutions, increased awareness and improved design and disposal processes, among others, can minimize the impact of plastic waste on society.

7. Recommendations

- The auditors should endeavour proactively with constructive approach for mitigation of global crisis by engaging themselves with the major state actors, civil society, private agencies etc.;
- Acquire domain knowledge of plastic waste management through skill development process to carry out compliance/ performance plastic waste audit effectively;
- Audit planning should be aligned with the UNGA's 17 SDGs especially SDG 12 and periodical reporting on audit findings to national government for initiating corrective measures;
- Promote best practices across the departments and try to address cross cutting issues; and
- Recommend measures for people participation to be taken up by national governments across the globe in this holistic nature purging process which remains at core of all initiatives.

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Auditing Plastic Waste - An Overview and Experience from SAI India

-SAI India

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1. Introduction

Plastic Waste, or plastic pollution is the accumulation of plastic objects in the Earth's environment that adversely affects wildlife, their habitat, and human beings. It also refers to the significant amount of plastic that is not recycled and ends up in landfills or thrown into unregulated dump sites[1]. Plastic Waste has become ubiquitous and its rapidly increasing levels represent a serious problem on a global scale, negatively impacting the environmental, social and economic dimensions of sustainable development.

Fragile marine ecosystems are also facing the menace of plastic pollution. Because of their size, micro-plastics and nano-plastics enter the bodies of animals through ingestion and inhalation blocking the digestive tract. These can further enter the marine food chain, introducing plastic debris into higher trophic levels including humans. There are examples of coral reefs and mangrove forests that have been seriously damaged by plastic pollution[2]. It is estimated that, by 2050, global greenhouse gas emissions associated with plastic production, use, and disposal would account for 15 percent of allowed emissions i.e., limiting global warming to 1.5°C (34.7°F) in line with the Paris Agreement on climate change[3]. Management of plastic waste is of urgent importance and a global risk area for sustainable development.

2. A Regulatory Paradigm for Plastic Waste Management

2.1 Global Regulations: Various efforts have been made by Governments and International Organizations across the world for curbing plastic waste in the form of Global Conventions, Regional Protocols and Collaborations, International Plans, Campaigns and Plastic Waste Alliances, as shown in Figure 1. These initiatives can be traced back from 1972 (London Convention) to 2020 (European Plastics Pact). In 2022, a resolution was adopted by the United Nations Environment Assembly held in Nairobi to end plastic pollution, and forge an legally binding international agreement by the end of 2024.

2.2 Plastic Waste and Sustainable Development Goals

In September 2015, the United Nations established the sustainable development agenda for the period until 2030. The agenda contains 17 Sustainable Development Goals (SDGs), 169 targets and 231 unique indicators[4]. There is only one indicator (14.1.1b) under Goal 14 which is specifically related to reducing impacts of plastic in the marine environment as indicated in Figure 2[5]. Plastic pollution is impacting every part of the earth's ecosystem and impacts nearly every Sustainable Development Goal in one way or the other.

[1] Plastic Waste – everything you need to know.

[2] "Tekman, M. B., Walther, B. A., Peter, C., Gutow, L. and Bergmann, M. (2022): Impacts of plastic pollution in the oceans on marine species, biodiversity and ecosystems, 1–221, WWF Germany, Berlin. Doi: 10.5281/zenodo.5898684".

[3] Nations sign up to end global scourge of plastic pollution.

[4] Total indicators as by 53rd United Nations Statistical Commission (E/2022/24-E/CN.3/2022/41) (Source: United Nations-Statistics Division).

[5] Responsible Consumption and Production: Managing plastic and food waste for a sustainable future.

2.3 Regulatory Framework for Management of Plastic Waste in India

The Government of India has notified Acts and Rules for sustainable management of plastic waste from time to time. A timeline of important initiatives since enactment of Plastic Manufacture, Sale and Usage Rules (1999) to Plastic Waste Management Amendment Rules (2021) is shown in Figure 3. A ban on identified single-use plastic items has been notified vide the Plastic Waste Management Amendment Rules, 2021 on 12th August 2021, which is in force from 1st July, 2022.

2.4 Institutional Framework for Management of Plastic Waste in India

In India, plastic waste comes under the ambit of Municipal Solid Waste. It is treated under the "Special waste" category as it requires special handling and disposal because of its quantity, concentration, physical and chemical characteristics, and biological properties. Due to a lack of proper segregation at the source, plastic waste frequently ends up in the mixed Municipal Solid Waste stream[6].

The roles and responsibilities of different institutions in Solid Waste Management extend to Plastic Waste Management also. The framework for Plastic Waste Management in India can be broadly divided into the following levels[7].

- **Central Government-** The responsible institutions are Ministry of Environment, Forest and Climate Change, Ministry of Urban Development and Central Pollution Control Board. Their roles and responsibilities include making of laws and rules, policies and norms; guidelines, manuals and providing technical assistance, and financial support for monitoring implementation of laws and rules.

- **State Government-** The responsible institutions are State Urban Development Departments and State Pollution Control Boards. Their roles and responsibilities include monitoring the implementation of laws and rules, state policy and Solid Waste Management Strategy, issue of Guidelines, Manuals, and providing technical assistance and financial support. These also report on Service Level Benchmarks to the Ministry of Urban Development and grant consent for setting up waste treatment and disposal activities.

- **District level-** At the district level, the District Urban Development Cell looks after waste related issues. It reviews the performance of Urban Local Bodies on waste management process.

- **Urban Local Bodies-** These provide Municipal Solid Waste Management services, prepare Solid Waste Management plans, frame byelaws, levy and collect fees, provide finance to Solid Waste Management systems, create public awareness and involve the informal sector in Solid Waste Management. The informal sector comprises of waste recyclers, Non-Government Organisations, Community-based organizations and private partners.

[6] Municipal Solid Waste Management Manual.

[7] Report No 4 of 2018- Performance Audit of Solid Waste Management in Urban Local Bodies Karnataka.

Responsibility of local bodies[8]-

1. Local bodies are responsible for development and setting up of infrastructure for segregation, collection, storage, transportation, processing and disposal of plastic waste.

2. Local bodies are responsible for setting up, operationalization and co-ordination of waste management systems and for performing the associated functions, namely:-

- Ensuring segregation, collection, storage, transportation, processing and disposal of plastic waste; Ensuring that no damage is caused to the environment during this process;
- Ensuring channelization of recyclable plastic waste fraction to recyclers;
- Ensuring processing and disposal of non-recyclable fraction of plastic waste in accordance with the guidelines issued by the Central Pollution Control Board;
- Creating awareness among all stakeholders about their responsibilities;
- Engaging civil societies or groups working with waste pickers; and
- Ensuring that open burning of plastic waste does not take place.

3. Local bodies also frame bye-laws incorporating the provisions of rules.

3. Audit of Plastic Waste

3.1 INTOSAI Working Group on Environmental Auditing (WGEA) work

The INTOSAI WGEA has worked on Sustainable Development issues since 2007[9]. Under the INTOSAI WGEA working plan 2020-2022, SAI India is the leader in contributions on Work Package 2: SDG 12- Responsible Consumption and Production- Focus on Plastic waste.

3.2 Plastic Waste Audits by Supreme Audit Institutions

Some audit reports by the Supreme Audit Institutions on themes related to plastic waste are illustrated as under:

- The Netherlan Court of Audit published a report "Reducing the Use of Plastics"(2019), and noted that working in coordination and encouragement with other organisations is important for achieving the targets in relation to the use of plastics. The audit found that, since only packaging materials are recycled, plenty of potentially usable plastics still end up in incinerators and public support is required for effective waste separation by the people. Audit found that more drastic measures are required to bring about a circular economy. These should include both recycling targets and targets for the prevention and reuse of plastics.

(Source:https://www.eurosai.org/handle404?exporturi=/export/sites/eurosai/.content/documents/audit/Reducing-the-use-of-plastics.pdf)

[8] Municipal Solid Waste Management Manual.

[9] Introducing the INTOSAI Working Group on Environmental Auditing.

- A comprehensive summary of audits on plastic waste -"Joint Report on Management of Plastic waste in Europe" (2022)[10]- was prepared by 12 Supreme Audit Institutions, viz., Albania, Bulgaria, Hungary, Malta, Moldova, North Macedonia, Poland, Portugal, Romania, Serbia, Slovakia and Turkey. It revealed that existing legislations and organisational arrangements were insufficient to reduce the generation of plastic waste and ensure its proper treatment. The report also noted that more intensive measures are required to encourage and persuade citizens to change their consumption patterns to reduce the use of plastic products and thus scale down the quantity of waste generated, and re-use plastic products as far as possible.

(Source:https://nao.gov.mt/en/press-releases/4/1301/joint-report-on-management-of-plastic-waste-i)

3.3 Plastic Waste Audits by SAI India during the last five years: Selected Snap-shots

- Performance Audit Report on "Conservation of Coastal Ecosystems[11]" (2022) indicated that the global indicators for SDG 14.1 include 'Index of coastal eutrophication and plastic debris density'. While the national indicator Coastal Water Quality Index (CWQI) prepared by the Ministry of Earth Sciences takes into account nutrient pollution, the Ministry of Earth Sciences, was yet to prepare an indicator related to plastic debris density. Audit also found that all the stakeholders in the field of coastal management were not mapped, and Ministry of Earth Sciences was yet to prepare an indicator related to plastic debris density which was a vital part of the action to preserve the coastal and marine ecosystem. Further, the States had not localised their indicator frameworks to suit their local conditions. As such, the measures taken up by the Government towards achieving the targets under SDG 14 need further impetus.

(Source: https://cag.gov.in/webroot/uploads/download_audit_report/2022/Report%20No.%204%20of%202022_CCE_English_PDF-A-062f0f908256ef0.76318631.pdf)

[10] Joint Report on Management of Plastic Waste in Europe April 2022.

[11] Report No 4 of 2022- Performance Audit on Conservation of Coastal Ecosystems, Union Govt, MoEFCC.

- Performance Audit Report on "Waste Management in Indian Railways" (2022)[12] highlighted that the assessment of the quantity of plastic waste generated was not done at a majority of the railway stations selected for audit. It highlighted the non-installation of Plastic Bottle Crushing Machines (PBCMs) and absence of provision of 'Plastic only Bin' in stations and coaching depots. The audit recommended that Indian Railways needs to put in place an effective monitoring mechanism for managing plastic as well as solid waste in an environment-friendly manner.

  (Source: https://cag.gov.in/en/audit-report/details/116657)

- Compliance Audit of "Department of Urban Development in Karnataka" (2020)[13] highlighted that the guidelines issued by the Commissioner and provisions of Indian Road Congress regarding the use of plastic waste in bitumen mixes in the construction of roads was not observed by the engineering division concerned. The works were executed without adding plastic waste during the formation of roads.

(Source: https://cag.gov.in/webroot/uploads/download_audit_report/2020/Report%203%20of%202020_English-05fd1cdd9c123c4.02129258.pdf)

- Performance Audit of "Waste Management in Rajasthan" (2018)[14] revealed that the Urban Local Bodies (ULBs) did not assess the quantum of plastic waste generated and made any future projections about the composition and quantities of the plastic waste to be generated, in the urban areas. None of the test-checked ULBs had either registered any retailers/street vendors for selling/providing consumer goods in plastic sheets/packaging or ensured compliance to the extant rules. They did not frame any bye-laws for levy of user charges for plastic waste management and established no mechanism for collection, handling, storage, transportation and disposal of Plastic Waste.

(Source: https://cag.gov.in/cag_old/sites/default/files/audit_report_files/Report_No_2_of_2018_-_Local_Bodies_Government_of_Rajasthan.pdf)

- The Performance Audit of "Solid Waste Management in Urban Local Bodies in Karnataka" (2018)[15] revealed the failure of the Urban Local Bodies to perform the prescribed responsibilities and devise methods for utilization of plastic in roads which resulted in mismanagement of Plastic Waste.

(Source: https://cag.gov.in/cag_old/sites/default/files/audit_report_files/Report_No_4_of_2018_Performance_Audit_of_Solid_Waste_Management_in_Urban_Local_Bodies_Government_of_Karnataka.pdf)

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4. Challenges and Way Forward

Non-availability of authentic and reliable data on generation, collection, segregation and treatment of plastic waste is a major hindrance in the auditing of plastic waste issues. Many stakeholders related to plastic waste are not mapped by policy makers in their National Indicator Frameworks thereby making data collection a challenge. Therefore, efficient mechanisms and infrastructure for collection and assessment of credible and complete data regarding plastic waste is crucial for audit. This should include last-mile mapping of end-users of plastic to the institutions of local self-government at both rural and urban levels. This will also aid in framing plastic waste management policies and programmes and their outcome assessments.

Non-production of records and production of incomplete records act as significant constraint in audit scrutiny. It is also a challenge for auditors to keep themselves updated with the domain/ technical knowledge including various recycling techniques so as to comment effectively on plastic waste recycling and its alternate usage such as Bitumen mix roads, etc. SDGs indicators can be used as criteria by auditors during audits. However, there is lack of sufficient indicators on plastic waste despite its interlinkages with many SDGs.

The rules governing the treatment of plastic waste and public awareness, effective implementation of Extended Producer Responsibility measures in plastic waste generation, sorting and segregation of plastic waste from other Municipal Solid Waste can promote better management of plastic waste.

Supreme Audit Institutions play an important role in overseeing the impact of environmental policies related to plastic waste. SAIs do so by conducting independent audits of government activities. The conduct of such audits in the area of plastic waste and pollution would thus help in red-flagging crisis areas of environmental degradation, which would then assist the executive authorities to take suitable remedial action in the sphere. Plastic pollution is not only a "severe anthropogenic issue in the coastal and marine ecosystems across the world". It is also a crucial component of the overall paradigm of degenerative climate change with its destructive effects on manifold ecosystems and consumption patterns. The need of the entire global community is to thereby acknowledge this fact; and successful auditing of plastic waste is thus of immense necessity.

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Roles and Responsibilities of Audit in Addressing Plastic Waste

-SAI China

National Audit Office of China

The invention of plastic was once hailed as "man's masterpiece". However, it has evolved into one of the huge challenges to the global environment from a necessity facilitating socio-economic growth within the 110 years since its birth. Statistics from United Nations Environment Programme (UNEP) indicate that plastic production soared from 2 million tons in 1950 to 348 million tons today. In 2004, a paper[1] issued in the magazine Science first put forward the concept of microscopic plastic, i.e. a kind of plastic particle with diameters less than 5 millimeters. In August 2019, a WHO report Microplastics in drinking-water noted that microplastics are ubiquitous in the environment and have been detected in marine water, wastewater, fresh water, food, air and drinking-water, both bottled and tap water, with different concentrations. From the perspective of global governance experience, the government makes a huge difference in addressing plastic waste pollution. By extension, how SAIs in all countries set their roles and responsibilities to make supervision more effective?

I. Introduction and Background

As necessities for modern life, plastic products from straws and rope to automobile and industrial equipment exist everywhere thanks to their low price and high quality. Generally speaking, plastic shares its significant convenience for our environmental and socio-economic sectors. At the same time, we have to face challenges to the environment posed by such items, as it is overused and littered. At present, 120 million tons of disposable plastic products alone are produced annually, of which only 10 percent is recycled, about 12 percent is burned, and over 70 percent is discarded into the soil, river, ocean, etc. For example, plenty of agricultural films are left in the 0-30-cm-depth plow layer of farms, greatly threatening agricultural production and food safety. Moreover, plastic waste is the most obvious polluter in the ocean, which shows a fast-growing curve. According to a 2015 report in the magazine Science, up to 8 million tons of plastic waste is pumped into the ocean in 2010, leaving marine organisms in a dangerous dilemma. In addition to large pollutants such as plastic bottles, plastic bags, plastic pipes, and food packaging, what is worse is that they produce lots of plastic particles threatening the physical health of animals or humans, as these particles enter their bodies through adhering to seafood, sea salt, and other ways. An organization associated with the Convention on the Conservation of Migratory Species of Wild Animals released the report Risk assessment of plastic pollution to migratory species in the Mekong and Ganga River Basins on March 1st, 2022. The report focuses on the impacts of plastic pollution on freshwater and terrestrial species, maps plastic hotspots, and assesses the risk of plastic pollution on migratory species in the Ganga and Mekong River basins.

[1] Lost at Sea: Where is all the plastic?

On February 28, 2022, Mr. Espen Barth Eide, President of the fifth session of the UN Environment Assembly (UNEA-5), delivered a speech at the Opening Plenary of the UNEA-5 in Nairobi, Kenya. He said, the world is intimidated by three global eco-crises: climate change, biodiversity loss, and pollution. As we recover from the global pandemic, the responsibility bestowed upon us for response to the environmental issue is even greater. If there are no immediate measures, plastic pollution will enlarge its hazard and threaten human subsistence. But if we move it into a circular economy, plastic will be a product that can be used over and over again. The Draft Resolution of End Plastic Pollution the Assembly indicated the establishment of an intergovernmental negotiating committee with the aim of finalizing a global legally binding agreement by 2024 that is expected to address the full lifecycle of plastic products, including its production, design, recovery, and disposal.

II. Approach to addressing plastic waste

A lot of data show that the high output and low recycling of plastic products implies an increasing number of plastic wastes making its way into the natural world and becoming a menace to the safety of the environment. 80 percent of ocean garbage is generally regarded to come from the land. We'd like to embrace a revitalizing plastic industry with its products feature clean and recyclable and thereby minimize plastic waste, making humans take benefits and avoid harm from plastic. For this purpose, what should we do?

Strengthening the lifecycle control of plastic products: A prevailing governance experience believes that addressing plastic waste needs coordination and interaction between the government, the market, and the public. The government introduces direction policies, the market meets environmental demands, and the public implements eco-friendly initiatives. The UNEA 2022 resolution addresses the full lifecycle of plastics and the design of reusable and recyclable products and materials and focuses on the adoption of diversified manners for addressing plastic waste pollution. The EU's 2020 Circular Economy Action Plan 2.0 further enriches moves against recycled plastics, microplastics, bio-based plastics, and single-use plastic products. These moves provide constructive solutions for addressing plastic waste in support of taking reusable and recyclable products as a gauge to evaluate the performance of corporates in terms of fulfilling environmental protection responsibilities, so as to encourage enterprises to lower the use of plastic or take alternative options. The Chinese government added ocean garbage into the routine monitoring of the marine environment since 2007 and carried out the monitoring of ocean microplastics in waters under Chinese jurisdiction as well as ocean and polar waters since 2016.

Investing more funding to bolster the recycling utilization of plastic: Environmental governance requires a great number of funds from the government and society. Recycling or burning at present is the best way to reduce plastic product pollution. However, China does not make the utmost of such ways to its waste plastic. Therefore, it is imperative to enlarge subsidies to encourage the recycling of plastics, constitute an effective recycling system, and prevent plastic products from flowing into oceans, rivers, and soil to the greatest extent. This indicates that the government should increase direct funding or indirect guidance in a series of aspects such as the recycling of plastic, reduction in waste and offering alternatives, construction of disposal facilities, and reduction of the influence on the environment. For instance, providing farmers with fiscal subsidies for the recovery of agricultural plastic film from them, expanding the funding to build waste incineration plants for power generation, enhancing abilities to monitor plastic waste pollution in oceans and rivers, or developing projects for plastic waste collection in major waters.

Intensifying the supervision of the law on plastic pollutant emission: Some nations and international organization such as China and the EU have imposed or been designing a Plastics Ban for reducing the use of single-use plastic bags to stop more microplastics from entering the environment. They also push the development and application of innovative green packaging materials to advance the sustainable development of resources. For instance, in October 2018, European Union Parliament overwhelmingly approved a ban on single-use plastics which stipulates that the use of single-use plastics should be prohibited from 2021 to help curb the ocean plastic pollution crisis. Since 2020, China has prohibited the import of waste plastic and banned the production and sale of disposable plastic-foam dinnerware.

Promoting cooperation among countries in trans-basin and trans-regional governance: Waste's transferring to another country does not mean its elimination. Take the example of ocean plastic waste with characteristics of trans-regional and cross-border flowing, to achieve cooperative governance among nations, some regional international organizations with a special focus on the issue of ocean plastic waste formulate a deluge of policy guidance and course of action. For example, in 2019, China presented its willingness at the 22nd ASEAN-China Summit to promote the implementation of the Marine Plastic Reduction Initiative under the framework of ASEAN-China Partnership for Eco-Friendly Urban Development, clearly expressing China's firm confidence in deepening international collaboration on the reduction of ocean plastic pollution. In 2019, more than 180 parties hailed the unanimous endorsement of the agreement on banning the import of plastic wastes according to their situations in the 14th Meeting of the Conference of the Parties to the Basel Convention (COP14) in Geneva, Switzerland, witnessing a global consensus on strengthening plastic waste control. China's ban on waste import also makes waste-exporting countries accelerate to re-examine and strengthen plastic governance from the perspective of the circular economy.

III. Audit's roles in addressing plastic waste

UN Resolution A/RES/66/209, entitled Promoting the efficiency, accountability, effectiveness, and transparency of public administration by strengthening supreme audit institutions, and UN Resolution A/RES/69/228, entitled Promoting and fostering the efficiency, accountability, effectiveness, and transparency of public administration by strengthening supreme audit institutions, states that work of all SAIs is an integral part of 2030 Agenda for Sustainable Development. In September 2022, INTOSAI WGEA officially launched Auditing Plastic Waste: Research and Audit Benchmarks for Supreme Audit Institutions as the audit guidance for all SAIs. It marks auditing plastic waste has emerged as a pioneering audit topic catering to future development trends of audit work, and is also a norm for all SAIs.

Enhancing audit-based supervision on the implementation of policies concerning addressing plastic waste: Resource-Environmental Auditing takes real-time audits of the implementation of a country's major policies and measures as a crucial means to exert its functions. To respond to challenges posed by plastic waste pollution effectively, all nations enact a diversity of policies such as the policy of controlling the full lifecycle of plastic products. These policies play an important role in pointing out the future direction of addressing plastic waste. Take China as an example, addressing plastic waste relates to the Ministry of Ecology and Environment, Ministry of Agriculture and Rural Affairs, and other appropriate functional departments in charge of oceans and rivers. However, these authorities will issue different policies to achieve their particular management purpose. In this case, the audit should pay attention to the synergistic implementation effect of various policies, including the implementation of state-level policies by different local governments, as well as the coordinating among various policies introduced by local governments, focusing on the non-implementation of existing policies, deviation in implementation, or self-issued policies in violation of the laws and regulations.

Focusing on auditing funding granted by governments to address plastic waste: Government grants play an irreplaceable role in addressing plastic waste effectively. All SAIs should focus on their main responsibilities and works to supervise the use of funding. Although the fiscal system of countries varies, the use of funding still sees some common ground such as construction subsidies or tax relief for plastic waste recycling systems, as well as funding rewards for plastic waste reduction conducted by communities and businesses. The audit should give priority to funding management and performance evaluation, including reasonable budget arrangement, fair allocation of funds, completion of project objectives, input and output analysis, and effect assessment of tax relief or punishment policies.

Boosting governments or enterprises to better implement their legal duties or obligations: Enterprises shall shoulder major social responsibility for the environment. Plastics Bans have been laws in some countries and enterprises and governments are mandated to implement and supervise respectively. For example, large international consumer goods enterprises should take responsibility for the full lifecycle control of plastic products. As an institution with the power of independent supervision and inspection, audit institutions should prioritize inspecting enterprises' compliance with regulations and policies related to addressing plastic waste, including enterprises' implementation of their appropriate responsibilities for plastic production, use, and disposal, governments' approval for the establishment of plastic production enterprise and supervision of those enterprises, completion of the target set by the government for plastic reduction, governments' implementation of international cooperation agreements or projects on addressing plastic waste.

IV. Challenges and prospects of audit in addressing plastic waste

According to the INTOSAI's Implementation Guidelines for Performance Auditing, it is agreed that environmental auditing is, in principle, not different from the audit approach as practiced by SAIs and that it could encompass all types of audits. Audit attention may be devoted to, for example, the disclosure of environmental assets and liabilities, compliance with legislation and conventions – both national and international –as well as to measures instituted by the audited entity to promote economy, efficiency, and effectiveness. In terms of worldwide audit experience and typical practices, the audit work of addressing plastic waste sees the following three aspects of challenges and prospects.

First, it is difficult to grasp the role and responsibility of government auditing. As a segment of addressing pollution, addressing plastic waste requires much more expertise. How government audit accurately sets its role and responsibility deserves careful study. We must find the best way to conduct audit work, with some starting points as follows: audit emphasis on policy or funds; accurate evaluation on the effect of addressing plastic waste; and performance evaluation on the government funds.

Second, better skills and knowledge for auditors are required. Field auditors will encounter some emerging challenges because they need to leverage wide-range knowledge to audit on addressing plastic waste, including circular economy, statistical measurement, recycling, and harmless disposal. Generally, a person with expertise in the sectors of the economy, technology, finance, the environment, and statistics may be a better auditor working on addressing plastic waste, able to find salient problems hiding in the process of addressing plastic waste and propose more flexible suggestions for audit reports.

Third, audit meets many difficulties in acquiring true data. The success of addressing plastic waste rests on the authenticity and accuracy of data, including statistical data from the whole process of plastic products design, production, use, and abandonment, use and recovery data of agricultural plastic films, monitoring data of microplastics in the oceans and rivers, etc. Such data is the key basis for the audit work. However, audit institutions cannot directly engage in the acquisition of such data. In case of incomplete data, it will seriously affect judgment. Therefore, a huge challenge is how to obtain data and ensure its authenticity and accuracy.

With the view to sustainable development, several effective approaches to address plastic waste focus on the application of a circular economy philosophy, effective control of the whole industrial chains, environmental risk assessment on the full lifecycle, improvement of recycling technologies, and cooperation on addressing multinational pollutants. An array of government funds and private investments are pooled to make the results positive. EU has provided Horizon 2020 with a budget of more than € 250 million in R&D directly relating to the EU's Plastics Strategy, about half of which is in support of enterprises' developing alternative materials. As regulations and policy, government funds, and requirements of the effect assessment increase in all nations, more opportunities will emerge in audit's promotion to address plastic waste.

The State Audit Office of Viet Nam affirms its role and effort in protecting the environment and minimizing the impact of plastic waste

-SAI Vietnam

By The State Audit Office of Viet Nam

Nowadays, sustainable development associated with environmental protection is no longer a concern of a single country but an urgent global issue and the vital factor for mankind's existence. In Viet Nam, environmental protection is an integral factor in socio-economic development. Over the years, Viet Nam has made a lot of efforts in developing and protecting the environment. However, due to various reasons such as immediate economic goals, less awareness of environmental protection, lacking focus on communication activities and socialization in line with environmental protection, there are limitations to environmental protection, violations of the law on environment, environmental incidents, hot spots of environmental pollution, and lawsuits in the environmental field, which seriously affected production, people's lives and caused social unrest. Environmental pollution, particularly that of garbage and wastewater, including plastic waste, seriously destroying the environment and human health, has become a heated issue and draws concern of the whole society.

Clearly recognizing the environmental threat of plastic waste

The use of plastic products has become a daily habit due to its superiority, versatility, and cheapness to meet all social utility needs, at the same time its consequences also present everywhere on our planet. It is common to see plastic waste in both urban and rural areas, from plains to high mountains, from indoors to streets, fields, rivers, seas, deserts, underground, or in the air. Plastic waste being affected by nature, humans, animals and so on eventually turns into micro-plastics. Currently, micro-plastics are found to be infiltrated everywhere in the living environment, making food and drinking water unsafe, polluting the atmosphere, destroying the environment and sustainable development.

Vietnam is one of the countries with the largest plastic emissions in the world. According to statistics from the Viet Nam's Ministry of Natural Resources and Environment, about 1.8 million tons of plastic waste is discharged into the environment each year in Viet Nam, of which 0.28 million to 0.73 million tons is discharged into the sea. Yet only 27% of it is either recycled or reused by facilities and businesses. Ho Chi Minh City (HCMC) is one of the busiest cities in Viet Nam. This rapidly urbanizing, highly populated city is facing the burning problem of garbage and plastic waste. In the project "Building a system to observe plastic waste in society and the environment" implemented by the French Embassy in Viet Nam, it has been shown that, out of 250.000 tons of plastic waste generated per year in HCMC, there are 48,000 tons taken to landfill, and more than 200,000 tons are recycled or discharged directly into the environment. The Saigon River is assessed as having the 5th largest amount of plastic waste in Viet Nam and 45th in the world. According to the statistics of waste volume in HCMC in 2020 of the Department of Natural Resources and Environment of HCMC, each day the city generates about 9,000 to 9,500 tons of domestic solid waste, of which over 1,800 tons is plastic waste (accounting for more than 20%) while only 200 tons are recovered for recycling (accounting for about 11% of plastic waste). The amount of plastic waste tends to increase rapidly from 5.5% (in 2009) to 13.9% (in 2017), which is completely consistent with the situation that plastic utensils such as plastic cups, plastic boxes, plastic bags and so on are used widely everywhere due to their convenience. In Vietnam, owing to its convenience, low price and diverse designs, plastic bags are now widely used and are distributed free of charge when selling at most markets, supermarkets, and commercial centers, bookstores, retail stores, etc. Plastic bags are thin and cheap, so the recycling units are not interested in collecting and recycling them. Besides, when discarded indiscriminately, plastic bags are easy to disperse but difficult to decompose in the environment, causing various negative environmental and socio-economic impacts, creating a burden on the state budget.

Solution of the Viet Nam's Government

Vietnam has been implementing many strategies to reduce plastic waste and protect the environment. In 2020, Viet Nam's National Assembly approved the Law on Environmental Protection 2020, which stipulated the functions of the SAV to perform audits in the field of environment in accordance with the provisions of Law on the State Audit Office and other relevant legal regulations, and simultaneously added regulations on the reduction, reuse, recycling and treatment of plastic waste; limited the use of single-use plastic products and non-biodegradable plastic bags; encouraged the production of environmentally friendly products to replace traditional plastic products. The Prime Minister also approved the National Strategy to 2023 on General Management of Solid Waste, with a vision to 2050 in Decision No. 2149/QD-TTg dated December 17, 2009 and Decision No. 491/QD-TTg dated 17/5/2018. Accordingly, the Strategy clearly states the goal as follows: (1) By 2015, to reduce 40% of the volume of plastic bags used in supermarkets and trade centers compared to 2010, this rate will become 65% by 2020 and by 2025, to use 100% environmentally friendly plastic bags in commercial centers and supermarkets for living purposes to replace difficult-to-decompose plastic bags. To implement the abovementioned Strategy, the Government promulgated the Project "Strengthening the control of environmental pollution caused by the use of non-biodegradable plastic bags in daily life until 2020" according to Decision 582/QD-TTg dated 11/4/2013 of the Prime Minister (the Project) which includes 2 goals:
(1) By 2020, to reduce 65% of the volume of non-biodegradable plastic bags used in supermarkets, trade centers, and to reduce 50% in markets for people's living, compared to 2010; (2) By 2020, to collect and reuse 50% of the total amount of non-biodegradable plastic bag waste generated in daily living activities.

The role and efforts of the State Audit Office of Viet Nam

The State Audit Office of Viet Nam (SAV), with its position and role as an organ established by the National Assembly, operating independently and only complying with the law, audits the management and use of public finances and assets with the objective of making an important contribution to the stable, sustainable and transparent development of the national financial system. Recognizing the importance of environmental protection and sustainable development, the SAV's leaders show great interest in and consider environmental audit as one of the SAV's prioritized activities. This is reflected in a number of the specific SAV's actions such as: Establishing a working group on environmental audit since 2008; recognizing environmental audit in the Action Plan to implement the SAV's Development Strategy to 2020; the SAV's development strategy to 2030 (in the period of 2021-2030); implementing environmental audits, etc. In particular, after the 14th ASOSAI Assembly with the theme of "Environmental audit for sustainable development" was successfully held in September 2018 in Viet Nam, the promotion of environmental audit is one of the SAV's important tasks and goals.

Thoroughly grasping the public information and burning issues on plastic waste, particularly in HCMC, from 2018, the SAV's leaders directed to conduct the audit of the implementation of the solutions to reduce the use of non-degradable plastic bags in HCMC. The audit's objective is to evaluate HCMC's solutions to implement the National Strategy and the Government's Project to reduce the use of non-biodegradable plastic bags, minimize the impact of plastic waste, and contribute to environmental protection.

The results of the performance audit on "The implementation of solutions to reduce the use of non-degradable plastic bags of Ho Chi Minh City according to the Government's Project" have shown that since the implementation of the Project in Ho Chi Minh City, there has been a positive change in public awareness on issues related to plastic bags.

Although this audit only covers the local level, as HCMC is the largest city in the country, the audit results also brought to the scene many limitations on the national level such as: (i) The Project and legal documents related to plastic bags fail to provide a clear definition and classification of non-biodegradable plastic bags that need to get limited in their use, leading to unclear restrictions on their use of including PE or not for pre-packaged goods; as well as plastic bags made from other materials such as PP, PA, PVC, imported nylon, reusable plastic bags, industrial plastic bags, T-bags or other multi-layer bags, thereby causing difficulties in the direction of implementation; (ii) The control of the use of plastic bags at retail units, particularly in traditional markets, still remained at low levels; tax authorities did not fully inspect, control and manage tax declarations, and the business household tax assignment is inappropriate, inaccurate, and does not fully cover business activities; (iii) There have been various errors and inadequacies in the organization carrying out the licensing and renewal procedures for the certification of biodegradable plastic bags and the enterprises producing biodegradable bags do not meet technical standards and environmentally friendly criteria, etc.

The audit's results have also pointed out many inadequacies in the management coordination between the central and local authorities, between line ministries (Ministry of Natural Resources and Environment) and local-level state management agencies in Viet Nam in implementing the Project's objectives; and various loopholes in the management policy of non-biodegradable plastic bags. Therefore, even the act of reducing the use or banning plastic bags are insufficient to ensure the reduction of environmental pollution due to different interpretations between localities across the country, while the problem of environmental pollution is without administrative boundaries.



Plastic waste on the side of Sai Gon river (Ho Chi Minh city)
(Source: www.vietnamplus.vn)

From the current situation and inadequacies in the mechanism and administration, in addition to the recommendations for financial handling, the SAV has provided recommendations to the Ministry of Natural Resources and Environment and the City People's Committee. HCMC has adjusted the management, administration, inspection and handling of violating units. Additionally, the SAV has also made recommendations to the Ministry of Finance, the Ministry of Natural Resources and Environment to advise and submit the advice to the Government to amend and supplement mechanisms and policies on management and tax policies in order to strengthen the solutions of limiting the manufacturing of products that are difficult to decompose, and simultaneously to encourage people to use environmentally friendly plastic bags to reduce the impact of plastic waste.

In Viet Nam, the legal system on environmental protection is still somewhat inadequate and unfeasible, causing many difficulties to organizations and individuals in the process of law compliance and enforcement. The awareness of environmental protection, awareness and understanding of the role of environmental audit of organizations, businesses and people are still limited. Therefore, the SAV are faced with many difficulties carrying out environmental audits.

However, since the SAV always pay much attention on multitudes of areas - such as training to improve the quality of human resources, survey work, building audit plans, building audit objectives, criteria, and detailed audit program suitable to the reality and human resources of the audit team; identifying key objectives for in-depth audit; assigning and arranging audit time in a scientific and reasonable manner for each auditor; applying flexibly the audit methods; respecting and promoting the team's collective intelligence; highly appreciating the responsibility and having a close relationship with the head of the audited units in providing timely information and documents for audit activities; learning from SAIs in the community of Supreme Audit Institutions and so on, the SAV's environmental audits have achieved numerous important results, with multiple solutions having been proposed for protecting the environment in general and minimizing the impact of plastic waste in particular, contributing to amending the mechanisms and policies of environmental management, raising awareness and understanding of organizations and individuals in the observance of environmental protection regulations.

In the context of the ongoing globalization, the SAV has been gradually developing, perfecting and consolidating the organization and been constantly exchanging and learning experiences from SAIs in the community of supreme auditing institutions in the region and around the world to further improve its capacity in conducting environmental audits, boosting environmental audit to a new level.

An Overview about Plastic Waste, Repercussions – Confrontation Initiatives and The Role of SAI's within the Framework of Environmental Auditing



-SAI Egypt

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Dr. Khaled Mohamed El Basueny was the Winner of the INTOSAI WEGA Award: "Inspiration in Environmental Auditing" in August 2022. He currently serves as the Undersecretary of the Accountability State Authority of Egypt (ASA).

The discovery of plastic in the year 1907 was a worldwide boom, and the word "Plastic" means "changing the shape without breaking" and is derived from the Greek word "Plastikos".

As a result of substituting plastic for other materials such as glass and metals, plastic is used in preserving food, insulating facilities, using electronics, and in the infrastructure projects such as the water and sewage pipes and the electronic cables, in addition to the pharmaceutical packages, chemical industries, durable goods and the automobile industry. The Plastic's industry has become a global industry amounting to around US.522.6 billion, and its capacity is expected to multiply by 2040.

The plastic pollution is considered one of the greatest environmental challenges of the 21st century as it causes widespread damages to ecosystems and to the human health. The COVID-19 pandemic has led to an increase in the quantity of the single-use plastic wastes worldwide by about 1.6 metric tons per day where 3.4 billion face masks/ face shields are discarded every day.

The synthetic rubber constitutes about 60% of the car tires that are consumed annually worldwide, and it is estimated by more than one billion tires, 200 million of which are consumed by the United Stated of America alone.

Estimates indicate that up to 5 trillion plastic bags are consumed annually worldwide, around 10 million plastic bags per minute.

2022

In 2019, 460 million tons of plastic were produced, and the global plastic use is expected to almost triple multiply by 2060 with 353 million tons of generated wastes, and 22 million tons leaked to the environment. The plastic industry contributed with 1.8 giga tons of GHG emissions (3.4 % of the total global emissions) and they are expected to increase by 15% in 2050, with 140 million tons of plastic accumulating in rivers and oceans.

This article aims to clarify the impact of the plastic wastes' pollution on health, climate change, and biological diversity, as well as the magnitude of pollution of the oceans, seas and rivers. It refers to some relevant international initiatives and points out the Egyptian experience to combat the plastic wastes' pollution the role that SAIs can perform in this field as well as highlighting the experience of SAI Egypt in this respect so as to be shared with other SAIs, in application of the INTOSAI motto; "mutual knowledge benefits all."

The Plastic-Related SDGs

Goal 12 "Responsible Consumption and Production'' is considered the main goal concerned with tackling the plastic problem, but is linked to many Goals; e.g. (Goal 13 related to climate change) as well as the SDGs 2, 3, 8, 14, 15, 17. Despite the global pervasive pollution caused by Plastic, there is only one indicator (14b, 1, 1) within the global indicators framework which it related specifically to the density of the plastic debris.

Plastic Pollution and the Climate Change

The plastic production accounts to about 6% of the global oil consumption, and it is expected to reach 20% by 2050 as plastic wastes are handled by their disposal in landfills, incineration, and recycling. This leads to the production of Black Carbon whose global warming's potential surpasses that of Carbon Dioxide by about 5,000 times and causes half the smog visible in cities such as New Delhi.

Plastic Pollution and Biodiversity

- More than 800 marine and coastal species are affected by this pollution through ingestion and entanglement of plastic materials in addition to other risks.
- The plastic bags thrown in the oceans and seas have caused the death of more than 12% of the marine species, the most famous of which is the turtle.
- Around 1 million seabirds and 100,000 marine mammals are killed each year, and the plastic pollution costs about U.S.13 billion annually in terms of the damages occurring to marine ecosystems.

Plastic Pollution Rivers, and Oceans

Rivers are the main channel for polluting oceans with Plastic where about 90% of all Plastic Wastes entering the world's oceans came from ten rivers only, equivalent to about 11 million tons of plastic wastes flow annually into the oceans, and this amount might triple by 2040. When these wastes drift into the ocean, they release Methane and Ethylene gases into the water and air due to their exposure to sunlight.

Plastic Pollution and the Mediterranean Sea

A number of 22 countries overlook the Mediterranean Sea. The plastic wastes will multiply by 4 times by the year 2050. The "coastal activities constitute 50% of the plastic thrown into the sea." Globally, the Mediterranean Sea is one of the most plastic-polluted seas as it contains about 7% of the world's marine debris and minute Micro plastics, even though it represents only 1% of the world's water.

Plastic pollution and the Red Sea

The pollution of the Red Sea with plastic is considered a special environmental crisis because it is rich in coral reefs, "the level of the plastic waste in the Red Sea is relatively low", as a result of the absence of dense human settlements on it which minimizes the chances of littering and polluting the sea, in addition to the absence of a permanent river current that flows into the Red Sea.

International Initiatives

Some countries including France, Morocco, India, New Zealand and China have banned the use of plastic bags due to their negative impact on the environment. Rwanda and Taiwan had prohibited the plastic bags' use in 2008 while Kenya had completely forbidden their usage in August 2017. Since 2018, the European Union has adopted the Carbon certificates as a financial instrument.

The Egyptian Experience in Combating Plastic Waste Pollution

A statistic study indicated in 2015 that the consumption of plastic bags amounts to 12 billion Egyptian pounds annually. Most factories that produce synthetic fibers depend, in about 40 to 60% of their production capacity, on the plastic wastes which are recycled as a raw material.

Egypt aims to reduce the annual consumption of the single-use plastic bags to the rate of 100 bags/capita by 2025 and 50 bags/capita by 2030.

The government has taken several initiatives to raise the awareness of reducing the consumption of plastic bags, including:

- Banning the single-use plastic bags and cutlery in several governorates, including the Red Sea and Alexandria, since July 2019.
- The Campaigns "Live Green", "Very Nile", "E-Tadweer" and "Eco Egypt" aim to remove 35 tons of plastic wastes from the River Nile besides launching the National Initiative for Smart Green Projects in August 2022.
- Launching the National Initiative for funding the smart green projects in the different governorates in August 2022.
- Launching the National Climate Change Strategy 2050.

The Legislative Framework

In March 2022, the Countries' Presidents, the Environmental Affairs' Ministers and other representatives from 175 countries endorsed a historic resolution at the Fifth Session of the United Nations Environment Assembly in Nairobi to end plastic pollution and conclude a legally binding international agreement by 2024 that addresses the entire life cycle of the plastic materials, including their production as well as their design and disposal.

The procedural and legislative framework in Egypt to combat plastic pollution is represented in certain laws and measures international and besides agreements, including, e.g.

- The Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (the Barcelona Convention adopted in 1976 and amended in 1995).
- The Regional Convention for the Conservation of the Red Sea and Gulf of Aden Environment (1982).
- The Egyptian Constitution 2014, the Environmental Law No. 4 of 1994, Waste Management Law No. 202 of 2020.
- The establishment of the National Committee to reduce the use of the single-use plastic bags.

The Role of SAIs in Combating Plastic Waste Pollution

SAIs can examine the efficiency and effectiveness of the measures taken by governments through focusing on the plastic waste, the depletion of natural resources, the negative impact on the environment and the human health, the unsustainable management of this valuable product and the serious environmental, social, economic and health threats it poses. Its harmful impacts were extended to the terrestrial and marine ecosystems as well, entails demanding the adoption of the less production and less consumption concepts, the adoption of environment-friendly techniques for recycling, along with imposing the legal tools and the proper disposal of existent wastes in order to prevent pollution or leakage, in addition to, engaging many stakeholders in society including citizens, governments, NGOs, companies and manufacturers as well as increasing the awareness and improving the design and disposal processes and thus reducing the impact of plastic wastes on society.

The INTOSAI Working Group on Environmental Auditing (WGEA) has adopted this substantive issue in its Action Plan 2020-2022, regarding SDG 12 - Responsible Consumption and Production - as well as the draft INTOSAI Strategic Plan 2023-2028.

The Role of SAI Egypt (ASA) in Auditing the Plastic Waste Pollution

The ASA follows up the orientation towards the circular economy and integrated waste management, including the recycling practices, and following up the implementation of strict regulations to reduce the plastic wastes pollution through:

- Requesting the enactment of a legislation that bans the usage of the harmful plastic bags, setting standardized specifications "barcode" for environment-friendly bags, providing incentives for committed factories, and orienting towards using paper and cloth bags.
- Requesting the amendment of the legislations on the Capital Market Law No. 95 of 1992 and its executive regulations to allow the issuance of various financial tools, including Carbon certificates.
- Verifying that the plastic producing companies have obtained the necessary license, the ISO certificates as well as the various professional safety certificates.
- Following up the competent authorities to dispose of plastic wastes through reusing and recycling as well as following up the establishment of closed and developed public dumps instead of open dumpsites.
- Requesting the audited entities and companies to provide the adequate funding for all the plastic production stages as well as encourage innovation.
- Requesting the other governorates to follow the model of the Red Sea Governorate's experience regarding banning the usage of all the single-use equipment and plastic bags.
- Activating the concept of the "Green ASA", through rationalizing the procurements and limiting the single-use plastic products, and raising the awareness of the ASA's auditors through conducting training courses in auditing the environmental affairs and the SDGs' implementation.

The Role of the SAI of Indonesia in Exterminating the Proliferation of Plastics

-SAI Indonesia



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Background

Plastic is everywhere. It has many good attributes, but the problem of plastic waste, especially single-use plastics, is rapidly becoming a key concern globally. In addition, the COVID- 19 pandemic has further increased the amount of single-use plastic waste worldwide.

The INTOSAI Working Group on Environmental Audit (WGEA) adopted this topic into its 2020-2022 Work Plan. In addition, a report by the United Nations in 2020 found that "the global material footprint grew from 73.2 billion metric tons (mt) in 2010 to 85.9 billion mt in 2017, involving an increase of 17.4 percent." Increasing population, urbanization, modern lifestyles, human development, and well-being are the biggest drivers of consumerism and economic growth in contemporary times. However, unsustainable consumption, production patterns, and increasing waste and emissions have contributed to various environmental problems. One of these concerns is the sustainable consumption and production of plastic products and the mismanagement of waste.

The proliferation of plastics is one of the main causes of environmental pollution and threatens the climate. If plastics' production, disposal, and burning continue on their current growth trajectory, by 2030, these global emissions could reach 1.34 gigatons per year. By 2050, the production and incineration of plastics could emit 2.8 gigatons of CO_2 per year. These critical annual emissions will accumulate in the atmosphere over time. Suppose growth in plastic production and combustion continues as predicted. In that case, cumulative greenhouse gas emissions by 2050 will exceed 56 gigatons of CO_2 emissions, or between 10-13 percent of the total remaining carbon budget, leading to a global plastic waste crisis. In 2019, the United Nations Environment Assembly (UNEA) also recognized the plastic waste crisis as a rapidly growing problem.

As a member of the United Nations, Indonesia has responded to this by manifesting it in the form of a legal product, Presidential Regulation (PP) of the Republic of Indonesia Number 18 of 2020 concerning the 2020-2024 National Medium-Term Development Plan. In the PP, it is explained that the vision and mission of the President of the Republic of Indonesia is the main basis for the preparation of the 2020-2024 RPJMN, which is further translated into seven national development agendas, one of which is building the environment, increasing disaster resilience, and climate change. At the point of national development, it is explained that the quality of the environment in Indonesia generally does not show improvement, so more progressive efforts to repair and control environmental damage are needed to achieve the expected results in the future.

The Supreme Audit Agency of the Republic of Indonesia responded to the concentration of the 2020-2024 RPJMN. BPK adopts the organizational maturity model developed by the US Government Accountability Office, which is incorporated in the 2020-2024 BPK Strategic Plan. The stages of the BPK's strategy in succession are encouraging efforts to eradicate corruption, increasing transparency, ensuring accountability, encouraging the implementation of 3E aspects (effectiveness, efficiency, economy), exploring public policies and issues, and helping the community and decision-makers to choose alternative futures.



BPK, as a State Institution that carries out an examination function, makes a legal product in the form of Regulation of the Supreme Audit Agency of the Republic of Indonesia Number 3 of 2020 concerning the Strategic Plan of the State Audit Board of 2020-2024 (BPK Strategic Plan) which will support the Indonesian government in realizing seven national development agendas, one of them is related to the development of environmental quality by carrying out national thematic examinations/audits for this matter.

BPK translates the policy by conducting a thematic audit related to the environment. One of the thematic audits related to environmental quality conducted by BPK is an examination of the performance of plastic waste management in Jambi Province. In two consecutive years, BPK has conducted thematic audits on solid waste management in two Jambi Province governments. In 2021 BPK will carry out a Performance Examination on the Effectiveness of Management of Household Waste and Waste Similar to Household Waste in Jambi City.

The purpose of the performance check is to assess the effectiveness of local government efforts in managing waste. The scope of the inspection is the policy and strategy of waste management by the Government, waste reduction, handling of waste, and evaluation of waste management by the Government.

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The focus of the inspection is the authority directly related to waste management. In this case, the Department of the Environment, the Public Works Department of Public Housing, the Regional Development Planning Agency, and several other agencies are involved in waste management. Through this examination, BPK found several main reasons why plastic waste had not been resolved and provided recommendations that could help resolve the waste problem. The determination of the Jambi City Government to be the examination object is also not without reason. The two authorities can be said to be two extreme examples of waste management poles. The Jambi City Government is the best axis of waste management in Jambi Province with its success in operating the Talang Gulo TPA.

BPK Audit on Jambi City Government

The examination aims to assess the effectiveness of waste management by the Jambi City Government. In order to do this, BPK develops audit criteria outlined in the criteria model and communicated and approved by the Jambi City Government. Examination criteria includes 1) assessment of regulations, policies, and planning, 2) implementation of waste generation restrictions, and 3) collection and transportation. From the audit, BPK caught several problems, including the following :

The Plastic Shopping Bag Restriction Policy Has not Been Fully Implemented

Based on Government Regulation Number 81 of 2012, the limitation of waste generation is an effort to minimize waste generation carried out from before the production of a product and/ or product packaging until the end of the use of the product and/ or product packaging. Examples of implementation of waste generation restrictions include :

- using goods and/ or packaging that can be recycled and easily decomposed by natural processes,
- limiting the use of plastic bags,
- avoiding the use of single-use goods and/ or packaging.

To find out the implementation of the plastic shopping bag restriction, BPK has distributed questionnaires to business actors. Questionnaires were distributed by sampling using the cross-sectional method with binominal proportions, with a minimum calculation number of 60 questionnaires to business actors scattered in the Jambi City area consisting of business actors in shop houses (Ruko), modern retail stores, restaurants, and shops.



The survey informs that most business actors are willing to replace plastic shopping bags with environmentally friendly ones. However, most business actors need help in making efforts to limit plastic shopping bags. Constraints experienced include consumers who still need to learn about their shopping bags and want to be given plastic shopping bags from the store. Besides, the costs incurred to replace plastic shopping bags with environmentally friendly bags are greater than if they continue to use plastic shopping bags.

Based on an interview with the Head of the Section for Increasing Community Participation, it was obtained information that the evaluation of the implementation of plastic bag restrictions in 2021 will only be carried out at supermarkets that have many modern vendors and retailers. This is done to make it easier for the government to monitor. However, in conducting monitoring, the government is still targeting large and medium-scale business actors so that it has not touched small business actors. This is due to the additional cost factor, so it is difficult for small business actors to apply a paid environmentally friendly bag. In addition, direct application to small business actors can cause polemics if large business actors have yet to fully implement a policy limiting the use of plastic shopping bags. Therefore, the government prioritizes efforts to implement restrictions on plastic bags for all large business actors.

Based on the report on the results of monitoring and evaluation of the Jambi City Environmental Service regarding the application of restrictions on the use of plastic shopping bags and based on the statement of attitude of business actors, information was obtained that there are no traders in traditional markets who have implemented policies to reduce the use of plastic shopping bags. In an interview, the Head of the Market Management Division at the Industrial Trade Office explained that Disperindag has yet to learn the appropriate solution. Hence, traders in the market are willing to apply regulations regarding restrictions on plastic shopping bags. In addition, according to their observations, substitute plastic bags are not suitable to be applied in the market. So far, they have yet to find a strong material to accommodate heavy shopping loads suitable for replacing plastic bags on the market.

Based on the results of monitoring and evaluation of the Jambi City Environmental Service information, there are no traders in traditional markets who have implemented policies to reduce the use of plastic shopping bags. In an interview, the Head of the Market Management Division at the Industrial Trade Office explained that Disperindag has yet to learn the appropriate solution. Hence, traders in the market are willing to apply regulations regarding restrictions on plastic shopping bags. In addition, according to their observations, substitute plastic bags are not suitable to be applied in the market. So far, they have yet to find a strong material to accommodate heavy shopping loads suitable for replacing plastic bags on the market.



The picture above shows a pile of garbage at the Talang Gulo Lama TPA, which has filled the entire TPA area, so it is not sufficient again. The picture above shows a pile of garbage in the Talang Gulo Baru TPA's landfill area from March. Until November 13, 2021, an area that has filled the sub-cell one, and the pile height has exceeded the limit of the barrier. Suppose it is not anticipated early through waste sorting in the context of recycling, reuse, and waste processing. In that case, it is feared that the waste entering the Talang Gulo TPA landfill area will not be controlled and will shorten the useful life of the TPA.

The observations of waste at the Talang Gulo TPA show that almost all of the waste transported to the Talang Gulo TPA is still in a mixed condition. The sorted waste is transported to the TPA mainly in the form of waste from the felling of trees carried out by the DLH, while the waste is from households, business actors, and TPS/Depo/TPS-3R is still in a mixed condition.



From the composition of the waste generation above, it can be seen that by sorting organic and inorganic waste, the potential for plastic waste is, on average, 16.55% of the total waste generation in residential and non-residential areas. Referring to the composition of the waste generation and the volume of waste generation in 2020 and Semester I of 2021, which are contained in the Jakstrada Report document, the potential for plastic waste that can be processed if waste is separated at the source level is 25,835 tons out of a total of 156,101.00 tons. Waste generation in 2020 amounted to 13,083 tons, a total of 79,052.00 tons of waste generation in Semester I of 2021.

No	Category	Residential	Non-Residential	Average	2020 (tn)	Semester I 2021 (tn)
1	Organic	43%	34%	38.5%	60,099	30,435
2	Inorganic					
	a. Plastic	16%	17.1%	16.55%	25,835	13,083
	b. Paper	9%	31.3%	20.15%	31,454	15,929
3	Others	32%	18%	24.8%	38,713	19,605
Total		**100%**	**100%**	**100%**	**156,101**	**79,052**

Operational Waste to Energy (WTE) Not Optimal

Waste processing in WTE includes sorting, composting, and bio-gasification activities that produce compost, gas, and electrical energy. The waste processing process at the Talang Banjar WTE in outline is as follows: a) Organic waste enters the WTE from the source. b) The incoming waste is sorted and chopped. c) Waste that enters the composting section is further processed to become compost through a process of stirring, mixing, providing materials for fermentation, and milling when they are old enough. d) Garbage that enters the biodigester will be left for three days in the barrel and then put into the inlet tank of the biodigester and processed with a mixture of water to a certain extent. e) Gas produced from the biodigester will be flowed and stored in the gas holder for further use. f) Solid waste at the tank outlet is taken/ moved after the maximum limit and can be used as compost material. Liquid waste is processed through a waste treatment plant until it reaches a certain quality standard before being drained out so as not to pollute the environment. g) Gas stored in the gas holder can be used as fuel for biogas stoves and power plants.

Based on the information from the Head of the Waste Reduction Section, as well as the WTE coordinator and the results of physical observations, it is known that waste processing activities in WTE are still running but not yet optimal, especially for activities to process waste into energy, including: (1) Waste processing activities into thermal energy are not running and are not working. Methane gas distributed to residents as direct energy through biogas stoves for as many as ten families has been stopped since 2019. (2) The activity of processing waste into electrical energy is not running. The gas energy produced was initially used for power plants for WTE operations, but since 2019 this activity has been stopped. This is because the generator engine is damaged. However, operational activities at WTE continue from sorting and composting to filling the biodigester. Filling the inlet in the biodigester is still carried out even though it does not provide benefits and is not enough to be distributed to residents.

Inadequate socialization and education related to plastic waste management

In order to implement one of the plastic waste management strategies, namely Increasing Community Involvement through Communication, Information, and Education (KIE), the Environmental Service 2020 conducted one socialization activity and waste management training for the Family Welfare Empowerment Team (TP PKK) at the sub-district level in eleven districts. Furthermore, in 2021, socialization activities were planned through activities for Clean and Healthy Lifestyles and Increasing the Role of Women Towards Healthy and Prosperous Families. However, until the examination ended on November 24, 2021, these two activities have yet to be carried out due to budget refocusing for handling the Covid-19 pandemic.

In addition to face-to-face socialization activities, the Environmental Service also conducts socialization of waste management through electronic media (public service advertisements broadcast on television) and social media (Instagram and Facebook platforms), with material including restrictions on plastic bags and the dangers of using plastic.



The results of interviews with the Head of the Waste Reduction Section and the Section Head for Increasing Community Participation explained that the socialization was carried out based on a written request from the party who wanted to receive socialization. In 2020, the party requesting socialization was the TP PKK. After that, the implementation of socialization to TP PKK, socialization, and/ or other waste management education was not carried out due to budgetary constraints. In 2021, socialization and/ or education on waste management will not be carried out due to the budget refocusing on handling the Covid-19 pandemic.

The results of the analysis of the budget document show that regarding the problem of socialization and education coverage of waste management to the community and to reduce the impact of budget constraints, the Environment Agency should be able to coordinate with other regional apparatuses to identify and synergize plans for socialization and education about waste management with programs and/ or other activities that already exist in the planning and budget documents, including programs or activities related to environmental health and public health at the Health Office, publication activities at the Public Relations Section and the Communications and Informatics Office, Empowerment Program, and other programs/ activities.

In addition to the synergy of socialization and education on waste management with other programs and activities, optimizing the use of information technology and social media should also be an alternative for socialization and education on waste management that are cheap, fast, and can reach the wider community. The results of the answers to the questionnaire submitted by BPK to as many as 106 respondents, where each respondent can choose more than one media that is considered the most appropriate for conveying socialization and education, shows that the majority or as many as 75 respondents (70.75%) answered social media, as many as 70 respondents (66.03%) answered local officials, 42 respondents (39.62%) answered mass media and only 33 respondents (31.13%) answered face-to-face.

Conclusion

The challenges faced by Indonesia in reducing plastice waste are severe. Cross-sectoral coordination is needed, such as the Ministry of Environment and Forestry and Local Government. 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 and local government must implement the recommendation. With a business process like this, it is hoped that Indonesia's target to reduce plastic waste can be achieved.

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Auditing Plastic Waste: The Case of the Maldives

-SAI Maldives

1. Introduction

The production and consumption of plastic materials has experienced an exponential growth since the 1950s (C. Thompson, et al., 2014). This has mainly been due to factors such as the profitability of the plastic industry, the simple technology required for its production as well as the consumption patterns that increasingly support the use of plastic (Kapinga & Chung, 2020). Although plastics have economic benefits, unsustainable production and consumption patterns such as excessive single use plastics, unnecessarily packaging products that are mismanaged or mishandled has caused plastic to become one of the most significant environmental threats we face today (Molloy, Varkey, & R. Walker, 2022). Furthermore, inadequate waste management systems, and leakage of macro and micro plastics into the environment including oceans can cause plastic pollution, or more specifically marine plastic pollution (Bergmann, Gutow, & Klages, 2015). The harmful effects of plastic waste and pollution on the environment, as well as in economic and social aspects has forced governments to take various measures to either reduce the use of plastics or dispose of the material more effectively.

Plastic waste can also be linked to several Sustainable Development Goals (SDGs), mainly SDG 11 (Sustainable Cities and Communities), SDG 12 (Responsible Consumption and Production), and SDG 14 (Life Below Water). It was also a main topic of the INTOSAI WGEA for the period 2020 – 2022. Despite the significance of the topic, it can be observed that audits focusing on plastic waste are scarce compared to audits on other waste concerns such as solid waste management. In order to bridge this gap, and encourage Supreme Audit Institutions (SAIs) to develop audits focusing on plastic waste, this article aims to explore the ways in which SAIs can ensure government accountability in implementing effective reduction and disposal measures of plastic waste, and also identify how SAIs can contribute to tackling the plastic waste problem, using the Maldives as an illustrative example.

2. Maldives and Plastic Waste

2.1 Country overview

The Maldives is a Small Island Developing State (SIDS) located in South Asia on the Indian Ocean, with the territory being consisted of over 98% ocean. The country is comprised of 1,190 islands in a chain of 26 coral atolls. Of these islands, only 188 islands are inhabited and 180 islands are designated as tourist resorts (Nashfa, 2016). A population of 557,426 is dispersed unevenly across the 17 administrative atolls and 4 cities (National Bureau of Statistics, United Nations Population Fund, 2017). A majority of the total population lives in the capital city of Male', whereas 70% of inhabited islands have a population less than 1000 residents (Malatesta, di Friedberg, Pecorelli, Di Pietro, & Cajiao, 2015). Hence the islands of Maldives are often classified into 4 categories (Malatesta, di Friedberg, Pecorelli, Di Pietro, & Cajiao, 2015):

- Islands inhabited by local populations; often with low population density
- Urban settlements; where population density is high
- Islands used exclusively as tourist resorts
- Uninhabited islands

Similar to other SIDS, Maldives also relies heavily on tourism as a source of income (Kapmeier & Gonçalves, 2018). It represents the largest sector in the Maldivian economy, contributing to roughly more than 30% of the Gross Domestic Product (GDP) (Nashfa, 2016), and is the biggest employer in the tertiary sector (Kapmeier & Gonçalves, 2018). However, as (Mateu-Sbert, Ricci-Cabello, Villalonga-Olives, & Cabeza-Irigoyen, 2013) states, "..While tourism helps Small Island Developing States (SIDS) sustain employment and income for their citizens, it also consumes resources and degrades the environment"

As a country that relies on its environment for a significant portion of its economy, reducing the impacts of plastic waste on our environment and proper waste management practices are an urgent need. Studies have specifically shown that the bioaccumulation of micro-plastics along the beaches and shallow reef flat environment is a serious concern for the ecosystem as well as the local community relying on the marine resources (B. Patti, K. Fobert, E. Reeves, & da Silva, 2020). B. Patti, K. Fobert, E. Reeves, & da Silva (2020) states that "without a significant increase in waste reduction and rapid improvements to waste management, small island communities will continue to generate high levels of micro plastic pollution in marine sedimentary environments, with potential to negatively impact the health of the eco system, marine organisms, and local island communities."

As a result of the significantly varied population density across the country, as well as the diversity of industry across the 4 categories of islands, plastic pollution and waste management needs challenges also significantly varies in the Maldives (Karasik, 2022).

2.2 Plastic waste generation

The Maldives generates about 43 tonnes of plastic waste per year, which constitutes approximately 12% of the total waste produced in the country (Karasik, 2022). Plastic and rubber also made up 4% of total imports to the country in the year 2018, and from the imported sources of plastic, plastic sacks and bags are some of the most commonly used in daily consumption (Maldives Ocean Plastics Alliance; NIG Capital;, 2021).

It is also observed that tourist resorts generate the most waste per capita (3.5 kg per capita), followed by waste generation in Male' the capital island (1.7 kg per capita), and the lowest being waste generation for outer atolls (0.8 kg per capita) (Ministry of Environment and Energy, 2015).

Polyethylene terephthalate (PET) bottles are a significant source of plastic consumption in the Maldives. More than 57% of the households in the Maldives consume mineral water in PET bottles. This is mainly due to the fact that 86% of the population prefers mineralized bottle water as a safe source of drinking water, over that provided by the public utility. Although households in outer islands traditionally relied on ground water and rainwater for drinking purposes, growing populations present challenges to continue relying on these sources of drinking water (Maldives Ocean Plastics Alliance; NIG Capital;, 2021). In order to combat the supply challenges faced in drinking water, the government has included targets to establish water production facilities primarily desalination supplemented with rainwater including island-wide networks with household metered connections. The government's National Strategic Plan (NSAP) (2019) also acknowledges the challenge in PET bottles as under the policy of phasing out single-use plastics there are proposed actions on conducting public awareness campaign to increase confidence and use in piped water from the aforementioned systems and to introduce water coolers in public spaces with the aim of phasing out plastic bottles.

2.3 Waste management practices, policies and legal frameworks

In order to identify main risk areas, auditors first need to identify the current practices surrounding the subject matter, as well as the integration of plastic waste into national strategies and plans. We will then further look at the main legislative frameworks and policies.

Waste generated in the Greater Male' Region is transported to the island Thilafushi, an artificial landfill where 500 tons of rubbish is dumped every day (M.W. Stevens & Froman, 2019). Waste segregation was not practiced until June 2022 following an amendment to the Waste Management Regulation in efforts by the government to improve the proper handling of waste at the household and community levels. Although the waste management of other inhabited islands is the responsibility of the local island councils, open burning of waste at low temperatures in sites along shorelines are often practiced in these islands as well. This is due to the lack of proper infrastructure measures such as waste management centres and machinery (Naufal, 2022). Waste management on resorts are more advanced and are focused on minimizing, segregating, and making compost. Each resort is required by law to have an incinerator for leaves, paper, packaging and cardboard (Colombo, et al., 2014).

Parley for the Oceans is an environmental organization that collects plastic waste from Maldives and ships it to companies to be used in recycled plastic products. However, a 2009 study by JICA found that total recyclable waste constituted only 20% of the total waste generated of which PET comprised of only 0.14% (Nashfa, 2016). Studies also show that the plastic waste recycling rates in the South Asian Region are significantly below the world average of 20%, mainly due to the underdevelopment of plastic recycling technologies and infrastructure in the region (Kapinga & Chung, 2020). This further indicates a need for more robust waste management policies, as well as the case for waste reduction in Maldives.

The National Strategic Action Plan (NSAP) of the Maldives for the years 2019 – 2023 developed by the current administration, includes certain milestones the government aims to achieve. Notably, to minimize the open burning of waste by 50% in all inhabited islands and to phase out the importation, production and use of single use plastics in the country by 2023. Following this, the Ministry of Environment, Climate Change and Technology (MoECCT), developed a Single Use Plastics Phase-out Plan for the period 2020 – 2023. Under this plan, the import and production of certain SUPs have been banned by a Presidential Decree in 2021.

The primary document that guides waste management in the Maldives is the National Waste Management Policy formulated in 2015 by the Ministry of Environment and Energy (now Ministry of Environment, Climate Change and Technology), and the main legislative framework regarding waste management is the Waste Management Regulation (2013).

3. Developing Audit Objectives and Questions

After obtaining a thorough understanding of the national circumstances surrounding plastic waste in the region, as well as the areas that pose key risks in the plastic waste generation, management and disposal cycle, auditors can proceed to develop audit objectives which will define the focus of the audit. Based on these audit objectives, audit questions can then be generated which can further detail the purpose of the audit and be utilized to create the overall Audit Design Matrix (ADM).

Below are two potential audit objectives, along with possible audit questions around which auditors can design an audit of plastic waste. These audit objectives could be the aim of exclusive and individual audits or they could be included as the objectives for one large audit.

Audit Objective 1: Identifying and assessing the policy measures and institutional arrangements surrounding plastic waste management

Audit Questions:

a. Does the government have an effective legal framework or national policy in place to manage plastic waste?
b. Were the relevant stakeholders input acquired in formulating the policies and frameworks?
c. Were the policies developed with consideration to the related SDGs and their achievement (SDG 11, 12 and 14)?
d. Are the roles and responsibilities of the involved entities clearly defined?
e. Were the available resources (financial and human resources) considered in developing the policies and regulations?
f. Is there effective collaboration across the stakeholders involved in formulating the policies?
g. Are there any instances of fragmentation, overlap and duplication across the policies?

Audit Objective 2: Identifying the effectiveness and extent of implementation of existing policies for plastic waste management

Audit Questions:

a. To what extent has the government been able to implement the policies and plans regarding plastic waste management?
b. Does the implementation of the policies and plans effectively manage or reduce the environmental impacts caused due to plastic waste?
c. Are the implementation of the policies and plans contributing towards the achievement of the SDGs 11, 12 and 14?
d. Are the current policies financially and operationally sustainable in the long term?

4. Conclusion

Reflecting on the current waste management landscape in the Maldives, it can be seen that the establishment and proper implementation of effective mechanisms are urgently required to solve the plastic waste management issues in the country. SAIs can aid governments by monitoring the current conditions of the country in achieving their targets towards tackling plastic waste and provide recommendations by identifying lacking areas.

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Auditing Plastic Waste

-SAI Malta

William Peplow
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Mr. Peplow has been employed at the National Audit Office since 1986 and is currently senior audit manager within the Performance Audit Unit. He has been managing performance audits since 1999. He has also participated in parallel audits with State Audit Institutions of other EU Member States dealing with environmental themes and EU funding, namely Structural Funds. Since 1994, he has been the NAO's representative in the INTOSAI and EUROSAI Working Groups on Environmental Audit. Mr. William Peplow holds a Master of Arts degree in Public Policy, a Master's degree in Business Administration and a Diploma in Public Administration.

Performance Audit - The effectiveness of plastic waste management in Malta (2021)

Introduction

A core variable that drives human pressures on the environment is the size, composition and distribution of population. With a population of around 516,000 and an area of just 316 square kilometres, the Mediterranean island state of Malta ranks among the most densely populated countries in the World and is by far the most densely populated country in the European Union. Despite the revenues generated by tourism, these statistics become more dramatic when the arrival of 2.7 million[1] visitors who arrive annually to Malta through the island's dynamic tourism industry are equated in these figures. The foregoing implies great stresses on Malta's waste management, including that relating to plastic – which causes harm to humans, animals and plants through toxic pollutants. It can take hundreds or even thousands of years for plastic to break down, so the environmental damage is long-lasting.

In Malta, plastic is imported either in granular form, which is then processed locally, or already processed. Some plastic will become waste, some will remain in stock or in circulation for some time, until it is disposed of. There are two main categories of plastic waste, namely plastic packaging and other non-packaging plastic.

1 Data refers to 2019 figures. Source: NSO, Inbound Tourism: December 2021.

Why did we do this audit?

As at end 2017, Malta was lagging behind in attaining national and European Union (EU) waste management targets, such as those related to the recovery and recycling of plastic waste. Inadequate waste separation at source practices result in potentially recyclable waste being landfilled, which is by far the most expensive solution in financial and environmental terms. National waste strategies and the legislative framework advocate the polluter pays in principle but in practice, Government is shouldering the lion's share of waste management-related costs.

On the other hand, Malta had embraced the principle of sustainable use of plastics through various policies, strategies and plans. This strategic framework recognised that addressing of plastic waste challenges was an urgent priority on a supranational and national level.

These circumstances prompted the National Audit Office Malta to evaluate, through a performance audit, the extent to which Government was effectively managing plastic waste, mainly that resulting from packaging and single use plastics.

This audit considered aspects and criteria emanating from the principles of the circular economy, which in turn constitute a tangible contribution to reaching the United Nation's Sustainable Development Goal (SDG) 12, entitled Ensuring Sustainable consumption and production patterns. The latter includes a target to substantially reduce waste generation through prevention, reduction, recycling and reuse by 2030. SDG 3 and SDG 14 also come into play as these target microplastics and decisive actions to fight marine litter, respectively.

A further impetus to carry out this audit was that this study was to form part of a cooperative audit that was carried out jointly with another 11 European State Audit Institutions (SAIs) within the auspices of the European Organisation of Supreme Audit Institutions Working Group on Environmental Auditing (EUROSAI WGEA). The partners of the cooperative audit were the SAIs of Albania, Bulgaria, Hungary, Moldova, North Macedonia, Poland, Portugal, Romania, Serbia, Slovakia and Turkey. This cooperative audit performed by the different countries through a harmonised audit scope and methodology determined the degree to which different countries in Europe are effectively managing plastic waste as well as identifying best practices.

The publishing of the NAO's report was timed to coincide with the drafting of national plans and the upgrading of the waste management infrastructure on the island. This study sought to add value by eliciting inefficiencies and leakages in the plastic waste management process which could be addressed through the ongoing national initiatives.

Objectives, Methodology and Limitations

Within this context, the Malta NAO's report:

a. determined whether plastic waste management data is comprehensive and reliable.
b. assessed whether the legal instruments and policies in place are adequate to provide proper plastic waste management and effective in the context of planned goal.
c. assessed whether implementation, monitoring and enforcement are effective.

We adopted various techniques to realise the above audit objectives. These included documentation reviews, on site visits, interviews and data analysis. This approach enabled us to triangulate results to elicit more robust conclusions.

Despite this multi-approach methodology we encountered a range of limitations, namely:

- **Plastic-specific recycling targets** - There were no national and EU plastic-specific recycling targets in other waste streams such as waste electrical and electronic equipment or end-of-life vehicles, despite there being an overall recycling target. As a result, this Office could not obtain reliable data on how much plastic is recovered from other waste streams.

- **Strategies are still being drafted** - On the national level, the European legislation on single use plastics was at the time still in the transposition stage. Moreover, the publication of a new Waste Management Plan was imminent to relace the then previous document which addressed issues up to 2020.

- **Data fragmentation** – The national regulator ERA (in full) encountered various problems to collect comprehensive data from stakeholders and to ascertain its quality and integrity.

- **Data availability** – Data is reported to the EU two years in arrears. Consequently, the NAO was at times constrained to utilise unofficial data provided by operators.

- **Products containing plastic are not necessarily registered with customs** – Unless the products are plastic granules, containers, bags or bottles, these are not registered as plastic products. Thus, products such as calculators and toys are not registered under the plastic category. Moreover, due to the free movement of goods, only plastic products that are imported or exported from / to countries outside the European Union are registered. Similarly, small quantities are excluded from such registration.

Main Findings

Waste management costs, including those related to plastic waste, are mostly borne by Government – particularly through the annual subvention of around € 25 million to WasteServ – the public entity responsible for organising, managing and operating integrated systems of waste management, including the sorting, reuse, utilisation, recycling, treatment and disposal of waste.

This deviates from the polluter pays principle. But it is also being acknowledged that socioeconomic principles come into play. The full transfer of costs to polluters implies that in turn these will be passed on to consumers – which would have an inflationary effect. Additionally, as a small country lacking in critical mass led to diseconomies of scale pushing up the cost per unit significantly. Moreover, the collapse of the recyclables' market in 2017 and operational difficulties brought about by the incident at Sant'Antnin Waste Treatment Plant (SAWTP) in May 2017, which at the time was Malta's main facility, meant that WasteServ revenues decreased disproportionally and thus the entity remained far from recovering its waste treatment costs. These circumstances also raised questions regarding the equitable sharing of risks and responsibilities through WasteServ's agreement with the Packaging Waste Recovery Schemes.

Separation at source opportunities are not being fully exploited as separation guidelines are not strictly adhered to by waste generators – another variable which increases waste treatment costs and augments the amount of waste rejects to the detriment of recycling opportunities. The roots of this situation lie in two factors. Firstly, current regulations do not encourage stricter separation by waste streams, which renders waste treatment more complex and costly. Secondly, inappropriate waste separation at source practices contaminated potentially recyclable material.

Malta's waste management operations were carried out within an infrastructure which lacked the appropriate capacity. In recent years, as outlined earlier, matters became more exacerbated through the SAWTP incident. Government acknowledged this and there was a strong political commitment to allocate around € 500 million to extend and upgrade Malta's waste treatment facilities.

Conclusions

There is no doubt about the required investment in Malta's waste management facilities. Such an investment, however, will not deliver its full potential unless it is complemented with the increased adoption of circular economy principles, which in turn will facilitate the attainment of Sustainable Development Goals targets. The health and environmental risks of plastic can only be mitigated through a consorted effort by all stakeholders, including political, administrative, the industry and consumers, as well as an effort to reduce its production at the outset. This is especially relevant for a small country where its geographic and demographic make-up constitute major constraints and limitations on a number of fronts.

Recent Developments

Since the publication of this performance audit in 2021, Government has implemented a number of initiatives to mitigate the risks associated with plastic waste and embrace further the principles of the circular economy. The publication of Malta's new Waste Management Strategy is imminent and has already undergone a public consultation process. Additionally, the process for upgrading Malta's waste infrastructure has commenced.

In 2021, Malta trebled its plastic waste recycling performance through investment in available infrastructure. Government has also announced that, as of January 2023, differentiated landfill fees to further encourage waste separation will become applicable so that Malta can continue moving towards its environmental targets. Malta has already implemented and is in the process of implementing other initiatives outlined in the Single Use Plastic (SUP) strategy. The net effect of these initiatives is to stem leakages from the various stages of the waste management chain through measures that promote the values of the Circular Economy Waste hierarchy.

Municipal plastic waste recycling at a low level in the Republic of Serbia

-SAI Serbia

A total of 831 thousand tons of municipal plastic waste was produced in the Republic of Serbia from 2017 to 2019. Of this amount of waste, 14 thousand tons, or 2 percent of this type of waste, were collected and recycled separately. Given that the separate collection of municipal plastic waste is not systematically organized, large amounts end up in unsanitary landfills or in the soil and riverbeds, the Performance Audit Report on "Management of Plastic Waste" showed.

As the audit conducted by the State Audit Institution in 2020 showed, 897 thousand tons of plastic waste were produced in Serbia from 2017 to 2019.

Plastic takes up to a thousand years to decompose and in the meantime it causes great damage to the environment and, indirectly, to human health. On the other hand, the current way of using plastic and disposing of plastic waste does not achieve the economic benefits that a circular approach would bring, so plastic, as a valuable material for the economy, is lost after it has become waste, Points out Dr Dusko Pejovic, President of the State Audit Institution of the Republic of Serbia and the Auditor General.

This audit showed that the regulations in Serbia in the area of waste management are mostly harmonized with the European Union regulations, but that mechanisms for their full implementation have not been created.

Not all goals defined by the strategic and planning framework have been realized. Instead of the planned 26 regional waste management centres, 10 were established. Fifteen local self-government units did not adopt local waste management plans.

Separate waste collection was established by 43 percent of local self-government units, while the share of separately collected waste in total municipal waste is 5 percent.

In order to improve the system of collecting recyclable waste, it is necessary to include informal collectors in the existing system of waste collection. The methodology for calculating the municipal waste recycling rate from 2017 to 2019 was not established, which may affect the reliability of data on the recycling rate. The auditors call for decisive and concerted action if Serbia wants to increase the amount of plastic packaging waste it recycles by 2030.

New INTOSAI WGEA publication on auditing plastic waste

INTOSAI WGEA Secretariat

The plastic waste problem, especially related to single-use plastic, has rapidly become one of the key environmental concerns globally. Particularly concerning is the plastic waste in oceans and other water bodies. At the same time, microplastics have become a recognised health concern.

INTOSAI Working Group on Environmental Auditing (WGEA) adopted plastic waste as one of the focus areas in 2020-2022. The project was led by SAI India, and supported by a group of SAIs, the WGEA Steering Committee as well as the other project leaders working with climate finance (SAI USA), sustainable transport (SAIs of Indonesia, China, and Thailand), as well as policy coherence and multi-stakeholder engagement (SAI Canada and SAI Finland).

The WGEA report provides a thorough study on the topic with practical examples on how to audit plastic waste. The publication also contributes to the follow-up and review of the United Nations Sustainable Development Goals (SDGs), and particularly Goal 12 on sustainable consumption and production.

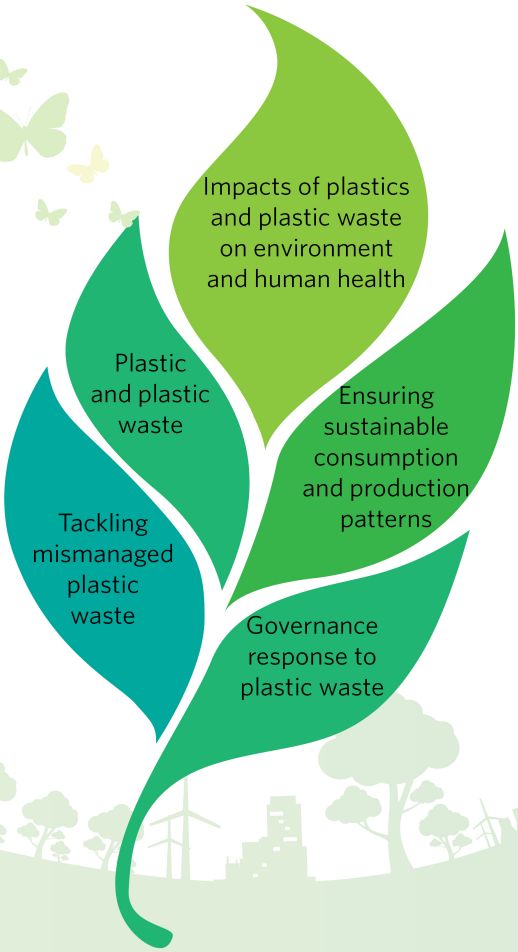
The report is available on the WGEA website:

https://wgea.org/media/k2abct3h/wgea-wp2_plasticwaste_2022.pdf

AUDITING PLASTIC WASTE

Plastic waste problem has rapidly become one of the key environmental concerns globally, particularly concerning marine litter and microplastics has become a health concern. Tackling the plastic waste problem and moving towards a **circular economy** contributes to SDG 12 on sustainable consumption and production. UN adopted a resolution on plastic pollution in 2022 aiming at an multilateral agreement.

The WGEA report provides possible audit questions on following topics:



INTOSAI Working Group on Environmental Auditing

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

More information: www.wgea.org/publications

2022



Activities in Member SAIs

The National Audit Office of the Kingdom of Bahrain:

1. Financial Audit training for Bahrain General Sports Authority

The National Audit Office (NAO) held a webinar on Financial Audit for employees of the Bahrain General Sports Authority, which was presented by Abrar Alsaegh, Audit Supervisor at the Regulatory Audit Directorate.



The participants of the two-day training course were financial auditors and management analysts who learnt more about financial audit procedures related to planning, implementation, and reporting. In addition, participants were introduced to risk assessment, financial analyses, detailed tests, selection of audit samples, implementation of control procedures, stating audit observations and following-up on audit findings.

2. Launch of Customs Revenue Audit Training



In June, the National Audit Office (NAO) of the Kingdom of Bahrain in cooperation with the Arab Organization of Supreme Audit Institutions (ARABOSAI) organized training on Auditing Customs Revenues which was attended by 30 trainees from 14 Arab countries.

The three-day webinar was delivered by Ahmed Buti, Audit Manager, and Abdul Rahman Alhajeri, Senior Auditor, from the Regulatory Audit Directorate at the NAO in the Kingdom of Bahrain and focussed on two main areas: customs revenue in view of international customs agreements and customs revenue audit procedures.

Participants learned about the origin of customs tax (tariff) and the most important international trade agreements that include clauses related to this tax, such as the United States-Mexico-Canada Agreement (the new NAFTA Agreement), the Agreement on the Customs Union of the European Union (EUCU), and the Agreement on Facilitating and Developing Trade Exchange between Arab Countries, The Common Customs System for the Cooperation Council for the Arab States of the Gulf.

Furthermore, procedures were discussed for financial, performance and compliance audit for customs revenues, reasons for imposing customs tax with an overview of the World Customs Organization (WCO) and the Harmonized Systems Agreement that aims to facilitate trade and exchange of information by coordinating the classification of goods in international trade.

Majeed Ateyya, Assistant Undersecretary - Regularity Audit at the NAO stressed that the NAO believed in the importance of training to enhance the development of audit work and audit procedures in order to contribute to the common goal of Supreme Audit Institutions (SAIs) to preserve public money and ensure its proper use.

3. The National Audit Office of the Kingdom of Bahrain Supports Professional Qualifications

The National Audit Office (NAO) of the Kingdom of Bahrain believes in the importance of supporting its employees to acquire specialized knowledge and skills in the field of accounting and auditing according to best practices.

It is in this spirit that it runs a development (scholarship) programme for its staff to obtain one of the internationally accredited professional qualifications in auditing and accounting. As part of the programme the NAO undertakes the following:

- guides employees to choose an appropriate professional qualification,
- develops a plan for relevant professional qualification exams,
- bears the costs for the employee to obtain the professional qualification according to the approved procedures for each professional qualification.
- grants study leave according to approved procedures for each professional qualification.

Currently, 46% of the NAO's technical staff have professional qualifications, and 14 employees have signed the scholarship agreement to obtain professional qualifications during the professional year 2021/2022.

Number of NAO employees holding professional qualifications	
Certified Internal Auditor **(CIA)**	**15**
Chartered Public Accountant **(CPA)**	**15**
Certified Management Accountant **(CMA)**	**9**
Association of Chartered Certified Accountants **(ACCA)**	**7**
Certified Information Systems Auditor **(CISA)**	**3**

4. Employees receiving professional qualifications

As a result of its efforts to provide ongoing training and professional qualification courses for its employees through projects and programmes that comply with the international audit standards issued by the International Organization for Supreme Audit Institutions (INTOSAI), the National Audit Office could congratulate several employees on receiving professional qualifications:



Othman Farhan, senior auditor at the Regularity Audit Directorate qualified as a Certified Internal Auditor (CIA) from the Institute of Internal Auditors (IIA) in the United States of America.

Hasan Saleh Shehab, auditor at the Regularity Audit Directorate obtained his Certified Management Accountant (CMA) certification from the Institute of Management Accountants (IMA) in the United States of America.



Dr. Isa Alnoaimi, Assistant Auditor General, Administrative Audit, received the Anti Bribery and Corruption Certificate from the Association of Certified Specialists in Combating Money Laundering in the United States of America (ACAMS).



His Excellency Sheikh Ahmed bin Mohammed Al Khalifa, Auditor General of the NAO, congratulated all employees on their newly achieved qualifications and wished them further success in their career.

He stressed that there is a constant need for the development, modernization and introduction of new training programmes to keep pace with the latest global advancements in the field of auditing and to provide employees with the required skills. He emphasized that investing in the development of human cadres was vital for institutions to be successful and encouraged all employees to make use of the support and opportunities offered by the NAO to obtain professional qualifications from internationally accredited institutes.

5. Winners of Gulf Research Competition

Somaia Saleh Almeer and Maryam Ebrahim Taleb from the National Audit Office (NAO) of the Kingdom of Bahrain won the fifth competition of the Gulf Cooperation Council (GCC) for Research and Studies in the field of auditing and accounting, for their joint research on "Automation of the audit work and its role in developing performance.

The Training and Development Committee of the GCC's Supreme Audit Institutions (SAIs) announced the names of the competition winners on the sidelines of its 31st meeting, which was held via video conference on the 24th of this month.

14 papers from SAIs of the GCC countries had been entered into the competition which included 3 topics: "Automation of audit work and its role in developing performance", which was won by Somaia Almeer and Maryam Taleb, "The role of audit institutions in auditing in light of emergency crises", won by Ali Muhammad Al-Namah from the State Audit Bureau of Qatar, and "Performance Audit of Sustainable Development Goals", where the first place went to Salwa Hamed Al-Mulla from the State Audit Bureau of Qatar, and the second place to Abrar Abdel Wahab bin Sabt from the State Audit Bureau of Kuwait.

6. Forensic Audit

The National Audit Office (NAO) continues to carry out and expand its forensic audit work as part of its audit mandate. According to the latest statistics, the NAO has so far completed 11 forensic reports, most of them for entities covered by its audit mandate.

His Excellency Sheikh Ahmed bin Mohammed Al Khalifa, Auditor General of the NAO, confirmed that the NAO would continue to expand its forensic audit tasks and build further capacity in this field by keeping up to date with forensic audit policies, developing technical tools and providing employees with additional training.

He stated that the NAO aimed to provide recommendations to the entities subject to its audit to address weaknesses and strengthen regulations to avoid future violations and abuses. He explained that Forensic Auditing had proven its usefulness in practice as an effective audit tool: it helped develop more specialized and technical auditing methods and acted as a "pre-warning" before violations could occur thus proving to be a very useful tool for the protection of public funds and the verification of their proper management.

“The forensic audit reports that we have completed during the past two years have been well and positively received by those concerned at the highest levels," he said.

The Auditor General added that the NAO’s Forensic Auditing work aimed to detect cases of corruption and financial and administrative fraud and included submitting reports to the judicial authorities, state agencies and competent authorities with recommendations on how to avoid violations.

He stated that, to enable the NAO to perform that type of audit, the NAO had developed plans and programmes for the past two years which consisted primarily in training its employees in cooperation with one of the world's leading institutions in Forensic Auditing and encouraging them to obtain relevant professional qualifications. He added that in early 2021 an internal team was formed to carry out forensic auditing which also formed the focus of the NAO’s new strategic plan (July 2021 - June 2025).

The head of the NAO’s forensic audit team, Dr. Isa Alnoaimi, Assistant Auditor General - Administrative Audit, said that a training programme consisting of a series of expert forensic audit courses had been launched under the title "Capacity Building and Enhancing Skills and Expertise in the Field of Forensic Auditing" in cooperation with an expert company.

He stressed that so far 25 employees from the NAO and other relevant authorities had benefited from the program's first phase which provided training in preparing professional forensic audit reports. He added that, according to the training program, the forensic audit team would receive further specialized training on an annual basis.

Dr. Alnoaimi explained that the program aimed to provide employees with the skills to prepare specialized reports, strengthen cooperation and partnership with the entities subject to the NAO’s audit, provide added value to stakeholders, and achieve the NAO’s strategic objectives leading to improved services for Bahrain’s citizens.

According to last year's plan, the NAO approved 6 Forensic Auditing training courses held over a period of 5 months covering the following topics: Overview of Forensic Auditing procedures, Forensic Auditing and Financial Crimes, Advanced Analysis of Big Data, Electronic Discovery Techniques (E- Discovery), Investigative Interview Techniques, Documenting Worksheets, Forensic Reporting and Evidencing.

Dr. Alnoaimi stressed that the NAO advised and encouraged its technical staff to obtain forensic audit qualifications from recognized international institutes.

E-Course on Auditing Waste Management is open for registration

National Audit Office of Estonia

The Massive Open Online Course (MOOC) on Auditing Waste Management was developed and launched under the auspices of INTOSAI WGEA in 2019. It is a freely accessible e-course, fully online and self-paced. While the materials of the course are accessible all the time, the project lead, National Audit Office of Estonia, officially runs the course once a year in cooperation with University of Tartu. Facilitators then also provide support in course discussion forums and aim at encouraging group-learning. Participants successfully completing all tasks will receive a certificate from the University of Tartu. **The next course will run from 23 January to 19 February 2023,** registration is already open here.

Recently the INTOSAI WGEA Massive Open Online Course (MOOC) on Auditing Waste Management earned an honourable recognition by receiving an e-course quality label from the Estonian Quality Agency for Higher and Vocational Education. The quality label is an acknowledgement of excellent results in the application of digital technology in the learning process.

The aim of this course is to introduce the concept of waste and main waste related topics: from the categories of waste and waste-related problems to the principles, policies and tools used in waste management, as well as the possibilities for auditing waste issues using performance audit methods.

The course consists of reading material, video lectures, exercises, tests, and audit cases based on the practice of several Supreme Audit Institutions from the International Organisation of Supreme Audit Institutions (INTOSAI).

Register for the course here!

The Comptroller and Auditor General of India

1. SAI India presented a proposal on establishing a new working group on Information Technology Audit and Data Analytics during the 58th Governing Board Meeting of ASOSAI that was held virtually on 31st May, 2022.

The purpose of the Working Group is to provide support to member SAIs in developing their knowledge and skills in the use and audit of Information Technology as the SAIs need to keep pace with such developments and embrace the evolving opportunities in IT and data analytics.

The Special Committee has been formed to study the feasibility of creation of the ASOSAI Working Group on IT Audit and Data Analytics and consist of 15 member SAIs (SAIs of China, India(Chair) Indonesia, Japan, Jordan, Oman, Malaysia, Mauritius, Maldives, Korea, Palestine, Philippines, Russia, Thailand, Turkey) of ASOSAI who have expressed their interest in joining the Special Committee.

The report of the Special Committee will be presented at the 59th Governing Board Meeting of ASOSAI to be hosted by BAI Korea.

2. The International Centre for Information Systems and Audit (iCISA), Noida was set up for Information Systems and Information Technology Audit in March 2002 to conduct high quality, skill-developing training programmes for national and International participants, using the latest pedagogy and training tools. iCISA is an ISO 9001:2008 (QMS) and ISO 27001 (ISMS) certified institution which strives for ensuring quality systems in training and alignment of IT audit with global best practices.

iCISA has been conducting national and International training programmes, since inception. iCISA has been conducting International training programme (ITP), under the Indian Technical and Economic Co-operation (ITEC), a fl agship capacity building programme of Ministry of External Affairs, Government of India. The training programmes cut across practically all audit domains, riding on the back of a rich heritage of knowledge and skills. Careful and creative content design and a wide and diverse pool of world class faculty from all spectrums of economy have ensured that training programmes are thought-provoking, informative, engaging and aspirational.

Every year iCISA conducts five residential International Training Programmes under Indian Technical & Economic Cooperation (ITEC) programme of Ministry of External Affairs, which are attended by around 40 participants from 30-35 countries. Apart from this, iCISA also conducts customized Bilateral Training Programmes for various Supreme Audit Institutions. During pandemic, iCISA switched to conducting online Training Programmes (Multilateral and Bilateral).

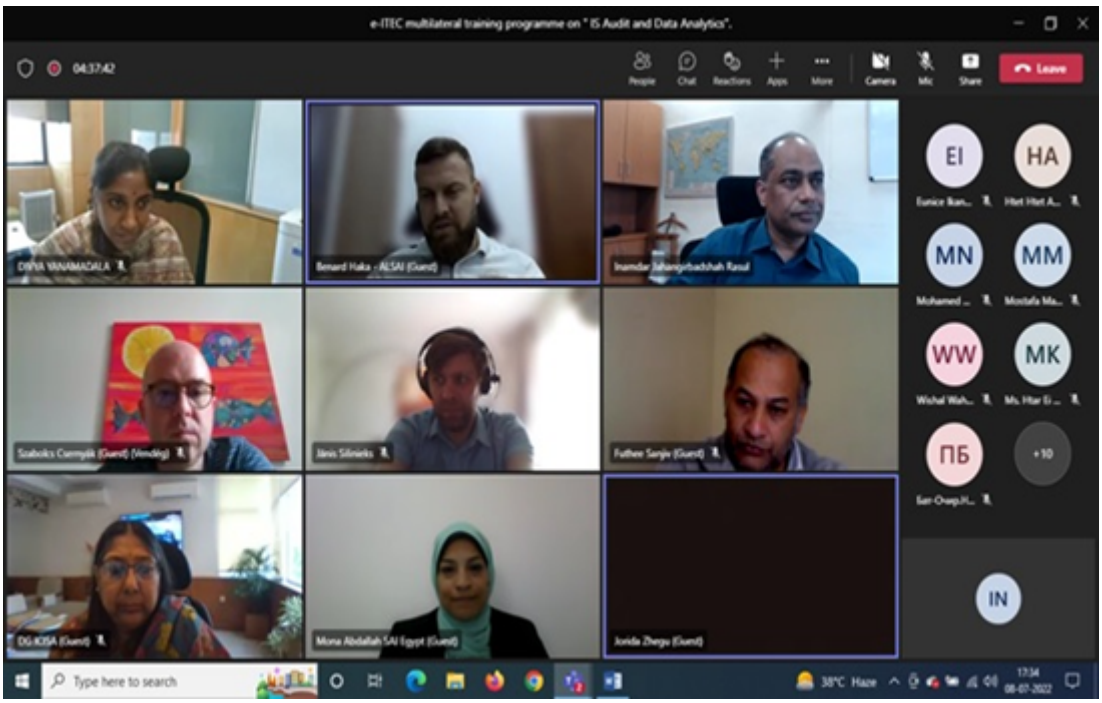
During the period from 01st May to 31st October, 2022, iCISA conducted following ITPs and BTPs:

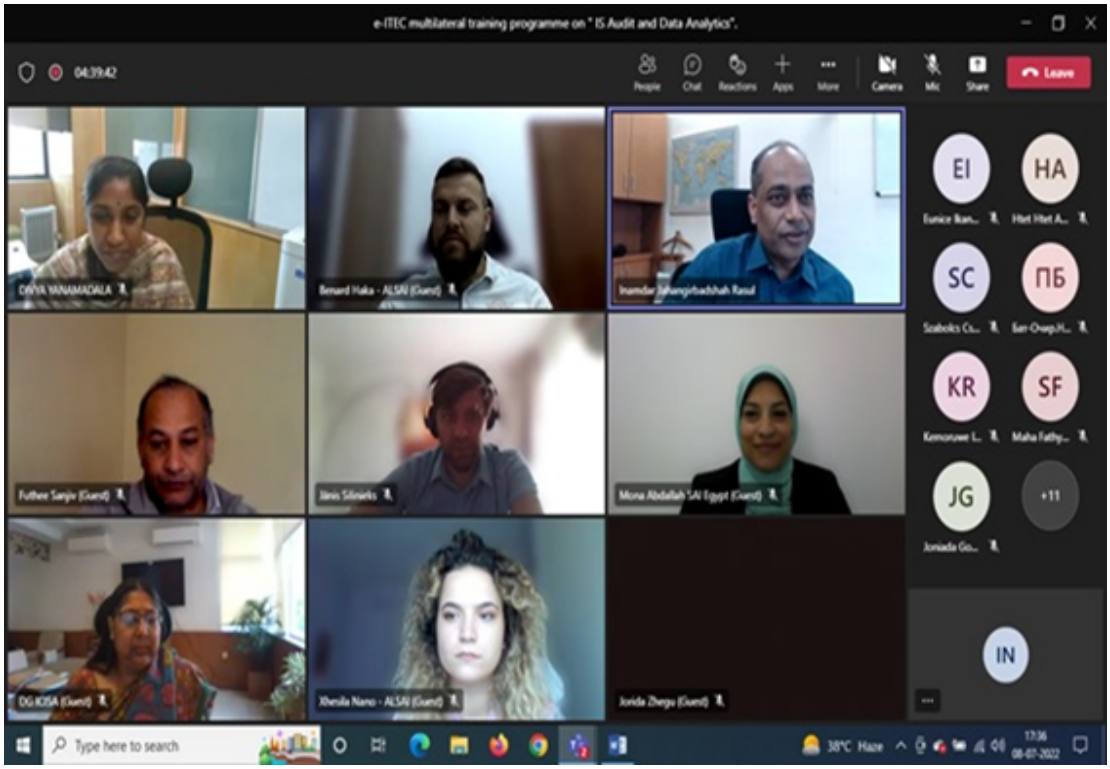
Sl. No.	Name of the Training programme	Duration	Period	No. of participants	No. of Countries
1.	e-ITEC (Multilateral) Training Programme on "IS Audit and Data Analytics"	10 days	27.06.2022 to 08.07.2022	25	12
2.	e-ITEC (Multilateral) Training Programme on "Auditing in IT Environment"	10 days	05.09.2022 to 16.09.2022	18	14

Apart from abovementioned training programmes, iCISA, conducted a two weeks "Training and Knowledge sharing exchange programme" for 09 officers of AGO, Maldives from 31st October to 12th November, 2022 under MoU signed between SAI, India and SAI, Maldives.

"IS Audit and Data Analytics" under the aegis of
e-ITEC programme of Ministry of External Affairs, Government of India

(27th June – 08th July, 2022)





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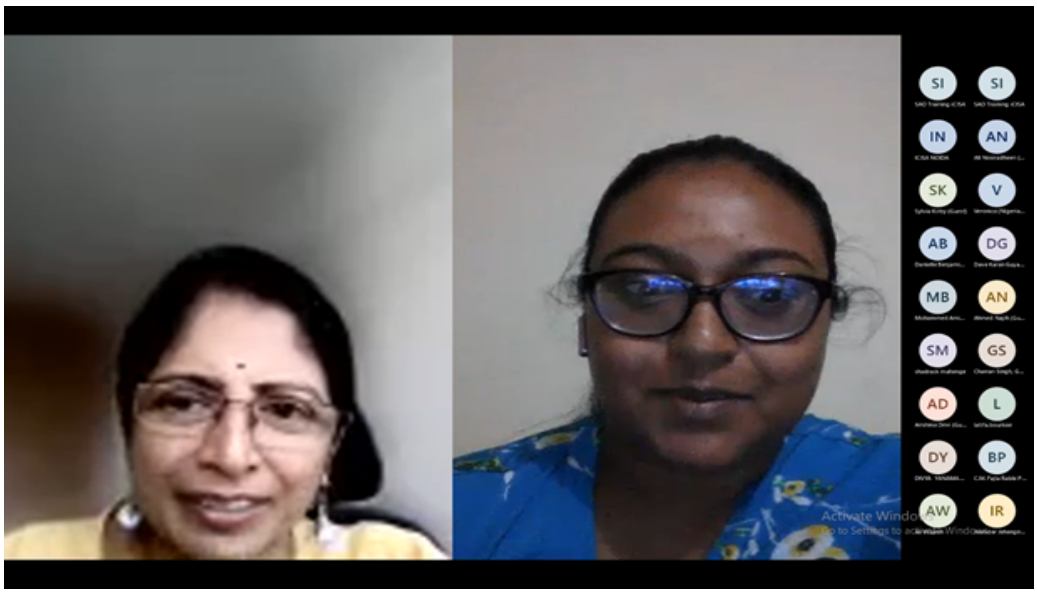
e-ITEC programme of Ministry of External Affairs, Government of India

(05th September – 16th September, 2022)





3. International Centre for Environment Audit & Sustainable Development (iCED), as the Global Training Facility (GTF) of INTOSAI Working Group on Environmental Auditing (WGEA) organized International Webinar on "Clean Water and Sanitation" on 26th & 27th September, 2022 in two batches through virtual mode. A total of 47 participants (34 in Batch- I & 13 in Batch-II) from 14 SAIs across the world participated in this programme. Ms. Sayantani Jafa, Additional Deputy Comptroller and Auditor General & Director General, iCED inaugurated the Webinar. She highlighted that access to water, sanitation and hygiene is a human right, yet billions are still facing daily challenges accessing even the most basic services. Achieving universal, adequate, and equitable access to safely managed water and sanitation services is at the core of sustainable development and requires worldwide effort. Before closing, she thanked Mr Sami Yläoutinen, the Auditor–General of Finland and Chair of INTOSAI Working Group on Environmental Auditing and his team from the National Audit Office (NAO), Finland, for their support in organizing this webinar. During this one day Webinar (held in two batches), domain expert from The Energy and Resources Institute (TERI), New Delhi, India provided an overview of Clean Water and Sanitation with respect to SDG 6 and experts from SAI India and European Court of Auditors (ECA) shared their experiences of audit of water and sanitation. Ms. Sayantani Jafa, ADAI and DG, iCED graced the valedictory session of both the batches. She emphasized the importance of this webinar for providing opportunity for sharing of experiences and perspectives from different national contexts. She congratulated the participants and thanked all the resource persons for sharing their experience with participants.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International Centre for Environment Audit and Sustainable Development (iCED), Jaipur
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SAYANTANI JAFA
Participants (14)
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Good afternoon everyone. Lalaina from SAI Madagascar
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Report of the
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Rejuvenation of River Ganga
(Namami Gange)
Flora, Fauna and Ecological Flow
Rural Sanitation
Human Resource
Performance Audit of Water Pollution in India
Performance Audit on Rejuvenation of River Ganga (Namami Gange)
24 Rivers across 25 States
22 Lakes in 14 States for NLCP
169 projects across 19 states, covering 41 cities
150 Blocks across 25 States for GW
Eight out of 11 river basin states
87 out of 145 projects
Seven Central And Eight State Audit Offices.
Decisive shift in approach for river conservation- treating river eco-system entirely, develop synergy, inter-sectoral convergence and multi-disciplinary approach
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2022



Other Articles

Audit on the Demographic Crisis of Korea: Focusing on Regional Areas

- By SAI Korea

1. Introduction

The Board of Audit and Inspection (BAI) has strived to strengthen preventive auditing to help identify, predict, and respond to potential problems and crises in our society. In this regard, BAI conducted a series of audits which provided analyses and projections about the impact of demographic changes on key social sectors and sought for improvement measures in current responses. Amongst these, this particular audit focused on demographic change in rural Korea.

In Korea, the Total Fertility Rate (TFR) dropped below the replacement level of 2.1 in 1983, and has since continued to fall significantly for the last 4 decades. This demographic crisis is particularly intensified in rural areas with local governments expressing their concerns about villages "disappearing" altogether. It is believed that demographic challenges in Korea largely stem from two interconnected issues: a sharp reduction in fertility rate and overconcentration in capital areas.

2. Audit Theme and Approach

This audit presents the following questions: "How will the regional population change in the future if the current level of super-low fertility trend and urban centralization continues?"; "What are the causes of these phenomenon?"; and "How can the government policies be improved?"

In terms of audit approach, first, BAI made projections about the national population for the next 30, 50 and 100 years, in cooperation with Statistics Korea. Based on these estimations, BAI asked for assistance from the Korea Employment Information Service (KEIS) to calculate the Extinction Risk Index (ERI) in that time frame.

Next, BAI outsourced the research to compare TFR, rate of marriage, etc. based on the microdata from the Statistics Korea and to analyze the correlation between urban centralization and super-low birth rate.

Lastly, conducted a survey on 245 officials in charge of demographic policies in local governments nationwide to figure out the causes of low-birth rate as well as the problems of government policies.

2. Audit Results

(Summary) Super-low birth rate and shrinking regional population are linked with urban centralization. Younger generation in local areas are leaving the capital to find decent jobs while those in the capital are staying single or marrying late due to fierce competition and uncertainty about their future. BAI audited government policies on low birth rate and relocation of government functions to check if they have sufficiently considered ways of easing overpopulation in capital areas, and improve local conditions for education and working.

A. Long-term Estimation of Regional Population

Keeping the TFR of 0.98 from 2018 as reference point, BAI analyzed the long-term estimations in year 2017, for the 17 Si and Do as well as 229 Si, Gun, and Gu areas[1]. As a result, 13 Si and Do were found to be facing a population decline by up to 23% in 30 years, while 16 Si and Do are projected to see the maximum 44% drop in 50 years, and eventually all 17 Si and Do will experience the maximum 79% depopulation in 100 years.

On the other hand, by 2047 (30 years from 2017), an increase in population (by 6.2%) would be observed in the Gyeonggi Do district, while population in Incheon will exceed that of Busan[2], deepening regional disparities even further.

Looking at Si, Gun and Gu, 158 (69%) out of 229 districts will experience depopulation in 30 years (2047) while 71 districts will see an increase in population due to urban centralization, worsening regional disparity. In 50 years, 213 districts (93%) will lose a large proportion of its population while 16 districts will witness increased population. However, in 100 years, all districts will face population decline.

Long-term rate of change in population by Si, Gun, and Gu (Unit: district, %)

Category		2047	2067	2117
Increased population		**71(31.0)**	**16(7.0)**	-(-)
Decrease in population	**Subtotal**	**158(69.0)**	**213(93.0)**	**229(100)**
	0~20% reduction	116(50.7)	55(24.0)	1(0.4)
	20~40% reduction	42(18.3)	116(50.7)	1(0.4)
	40~60% reduction	-(-)	42(18.3)	27(11.8)
	60~80% reduction	-(-)	-(-)	181(79.1)
	Over 80% reduction	-(-)	-(-)	19(8.3)
Total		229(100)	229(100)	229(100)

B. Regions with Higher Risk of Depopulation

The Extinction Risk Index (ERI) compares the elderly population aged 65 and over with the childbearing female population between 20 and 39, in order to measure the ability of regions to sustain its population in the future. In this audit, BAI predicted that regional districts are at a higher risk of extinction.

[1] Si and Do: Provincial-level divisions; Si, Gun, Gu: Municipal-level divisions.

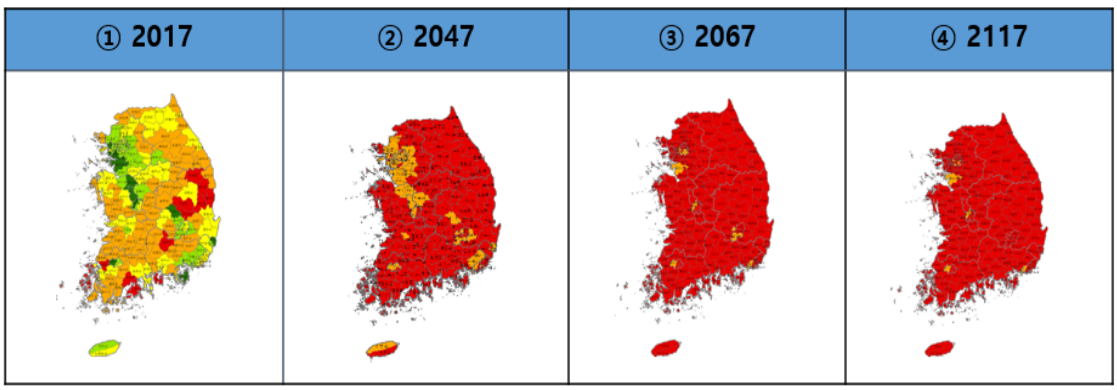
[2] While Gyeonggi Do and Incheon are located within capital areas, Busan is located in a non-capital area.

Extinction Risk Index

Category		ERI
Low risk stage (Low-risk region)		1.5 and over
Normal risk stage (Normal region)		1.0 below 1.5
① **Alert stage**		0.5 ~ below 1.0
② **Extinction risk stage**	Entering risk stage	0.2 ~ below 0.5
	Higher risk of extinction	Below 0.2

In the audit results, it was noted that all Si, Gun, and Gu areas will enter the extinction risk stage in 30 years (2047), which corresponds to 'the declining stage' in the demographic transition model. If there is no significant turning point, these districts are forecasted to shrink gradually.

Extinction risk regions based on population estimations



C. Younger generation's migration to capital areas

It was predicted that even with largescale depopulation, the overconcentration in capital areas will further intensify, rising above the current level (of 50.1%). In particular, the concentration of younger population in urban centers will increase to about 54% by 2047, driving urban centralization.

Young generation's migration to capital areas mainly stems from the following: (1) When compared to regional universities, there are more high-ranking institutions in the capital areas; and (2) local regions have fewer types of jobs and the 'decent' jobs are concentrated in capital areas, as 73% of companies with total assets of KRW 5 trillion or more are located in capital areas.

D. Super-low Birth Rates in Capital Areas

Although young people are concentrated in capital areas, urban TFR and marriage rates are lower than those of regional areas, which is deemed as the main driving force behind depopulation in Korea. TFRs of capital area and Seoul are lower than that of regional areas, and this difference is ever growing.

TFRs in capital areas, Seoul and Regional areas (2000~2019)

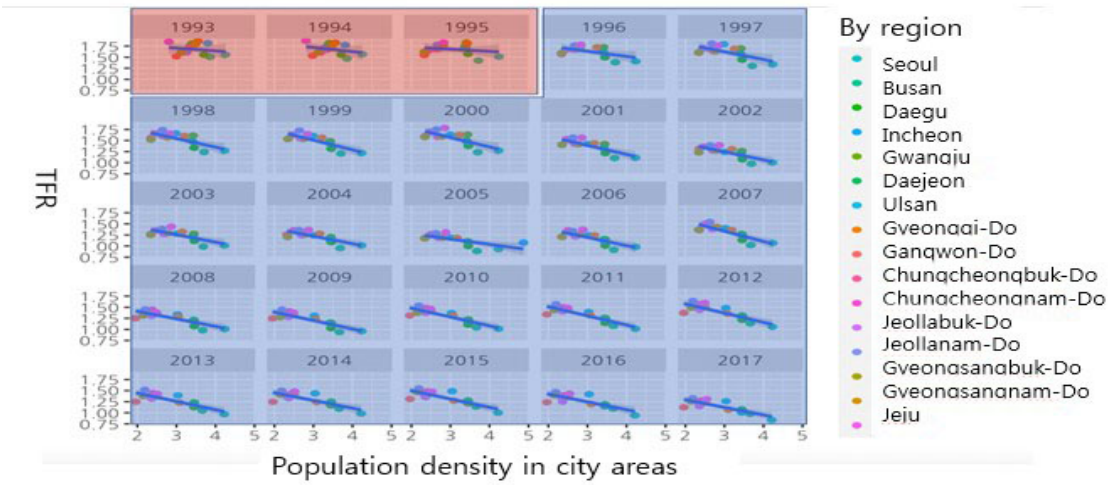
(unit: persons)

Category	2000 (①)	2005	2010	2015	2019 (②)	Range of drop (①-②)	Ratio of drop (①-②)/①]×100
Nationwide	1.48	1.09	1.23	1.24	0.92	0.56	37.8%
Capital areas	1.42	1.05	1.16	1.15	0.85	0.57	40.1%
Seoul	1.28	0.93	1.02	1.00	0.72	0.56	43.8%
Regional areas	1.53	1.12	1.30	1.35	1.01	0.52	34.0%

The audit intended to see if there is a correlation between high population density and low births and analyzed the key factors.

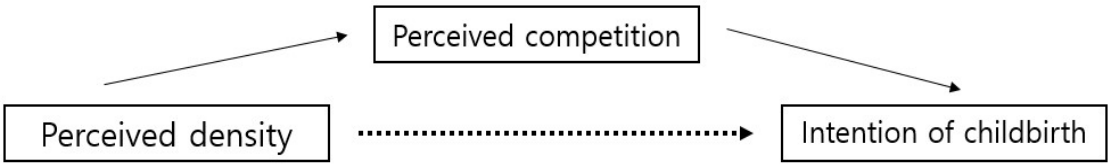
In urban areas of Korea (2005~2017), a strong negative relationship between the population density and the TFR could be observed. Other social and economic factors apart from population density, such as economy, housing, and jobs were also considered in the regression analysis. Among them, population density was found to have the greatest impact on the TFR.

Correlation between population density and TFR in urban areas (1993~2017)

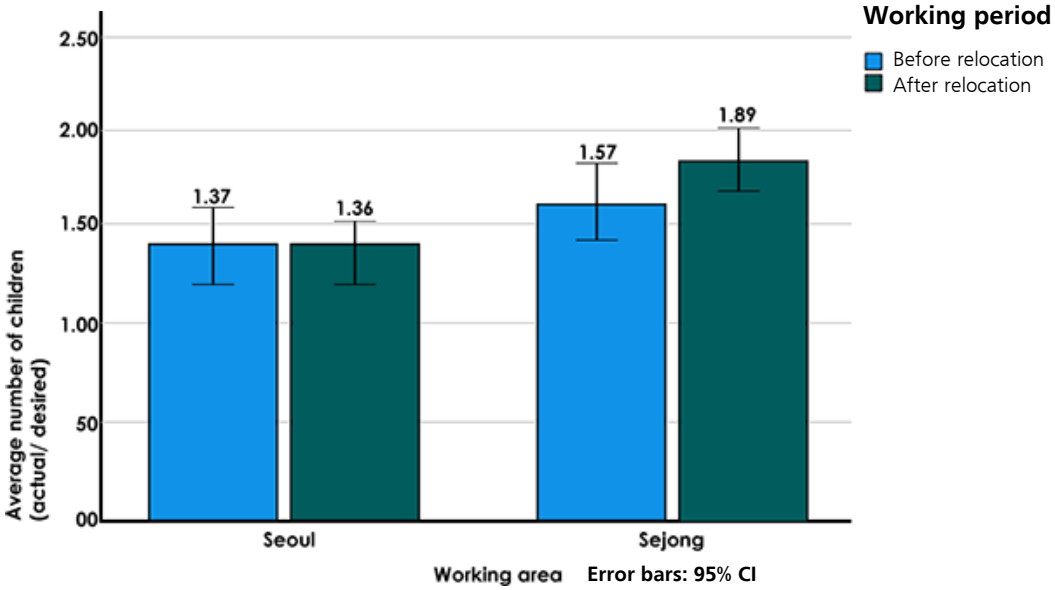


❖ Highlighted area in red (1993~1995): No significant relationship, Highlighted area in blue (1996~2017): Significant relationship found

In order to analyze the impact of population density on the desire to have children, the audit verified the psychological process through 5 rounds of surveys. It was found that if an individual perceives a high population density, he/ she tends to perceive intensified competition, and therefore, attaches more importance to education and career, showing a negative attitude to marriage and childbirth.



Also, the audit conducted a survey and analysis on central government officials working in Seoul and Sejong City[3] in order to study the effect of changed population density on the fertility rate due to relocation. There was slight drop in the fertility rate (1.37->1.36) for officials working continuously in Seoul, whereas the officials working in Sejong showed a higher fertility rate after (1.89) the relocation than before (1.36). The officials in Sejong displayed lower perception of population density and greater intention for childbirth.



E. Measures to Increase Policies Combatting Low-birth Rate

The Korean government established the Presidential Committee on Ageing Society and Population Policy (PCASP) in 2005, and has since implemented various policy measures to increase the number of births.

[3] Seoul is the capital city of Korea, Sejong City is a newly developed administrative city to mitigate population disparity between the two areas. Central government organizations were relocated to Sejong City in 2011.

Since its inception in 2004, the PCASP has developed three master plans, and implemented 292 projects in 18 different fields (total budget: KRW 262 trillion).

The PCASP measures to combat low-birth rate have increased the Marital Fertility Rate (MFR). It believes in shifting away from policies which only focus on providing young married couples with childcare help, and focus more on ensuring a social security net, ensuring couples are able to marry in the first place. There is also a need for improvement in settlement conditions in regional areas, especially considering that urban migration and intensified competition is the real reason behind the dip.

The audit conducted a survey on 245 officials in charge of demographic policies in local governments to find out the key measures in place to increase birth rate, major reasons for urban centralization and countermeasures. Majority of the respondents thought that the outflow of young generation and resulting depopulation are the main reasons behind the low birth rate in regional areas. Also, they listed lack of decent jobs and quality education as the major drivers of this migration.

Major Reasons Behind Low Births in Regional Areas

Category	Outflow of young gen.	Lack of population eligible for marriage	Difficulties in childcare (environmental, economic)	Increased housing costs	Values that consider marriage and childbirth as less important	Gender inequality	Others
Frequency (%)	134 (66.3)	46 (22.8)	18 (8.9)	14 (6.9)	14 (6.9)	4 (2.0)	14 (6.9)

Therefore, the PCASP needs to cooperate with related organizations including the Presidential Committee for Balanced National Development (PCBND) to support and manage relevant measures to improve education and job opportunities for the youth in regional areas.

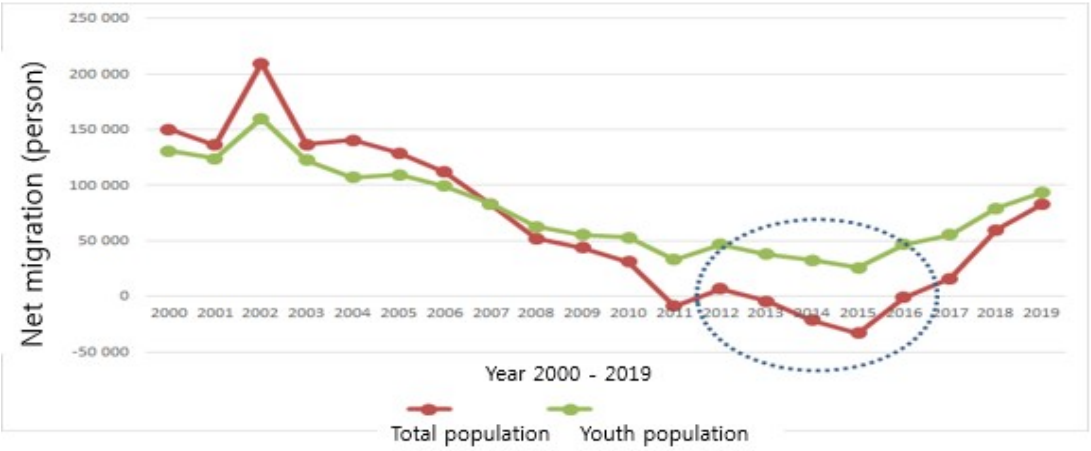
F. Relocation Policies

Korean government relocated 153 public organizations from capital areas to regional areas in December 2019. 112 organizations (42,909 employees) moved to 10 "Innovative Cities."[4]

For the past twenty years, the net flow of capital population to regional areas occurred only between 2013 to 2015 during full scale relocation. At the time, 58,000 people moved to regional areas, but after completion, the inflow to capital areas grew again in 2016 and urban centralization kept intensifying (51.6% in 2020). The net inflow of young generation (aged 15 ~ 34) dropped between 2013 and 2015, but rebounded from 2016 onwards.

[4] "Innovative Cities" refer to 10 regional areas developed in order to relocate public organizations concentrated in capital areas.

Net migration of population between urban and rural areas (2000~2019)



The audit analyzed the inflow of population in 10 Innovative Cities, and found that a total of 196,538 people had moved in. When analyzing the net inflow population by region, the mother cities[5] had the highest rate at 54%, followed by 23% in neighboring regional areas, while the capital areas accounted for only 15% (28,666 people).

The audit also inspected 18 former offices of the 13 relocated public organizations that submitted their relocation plans (with predictions on the expected benefits of relocation on population growth) to the government. Although 13 public organizations were relocated, a mere 6,560 people were transferred.

As a whole, the net inflow population from capital areas to 4 Innovative Cities only stood at 21,838.

Inflow population to 4 Innovative Cities from capital areas

(unit: city, persons)

Innovative Cities	Relocated organizations	Net inflow population to Innovative Cities from capital areas
Gwangju· Jeollanam-do Innovative Cities	16; including the Korea Electric Power Corporation (KEPCO)	5,730
Gangwon Innovative City	12; including the Korea Resources Corporation	5,141
Chungbuk Innovative City	11; including the Institute of Justice	7,171
Jeonbuk Innovative City	12; including the National Institute of Agricultural Sciences	3,796
Total	51	21,838

5 "Mother cities" herein refers to the old downtown in the Si, Gun, Gu which have now been turned into Innovative Cities.

The effects of relocation were limited because of (1) poor participation from private companies in the relocation initiative; and (2) insufficient efforts to establish and manage comprehensive plan to utilize the former offices.

As of late 2019, the number of private companies that relocated to the 10 Innovative Cities stood at 1,425, among which only 224 (15.7%) moved from capital areas. Total number of employees in those 224 companies was at 3,422, which means each company hired only 15 employees on average.

According to Article 43 of the Special Act on Innovative City, the Ministry of Land, Infrastructure and Transport (MOLIT) was supposed to establish plans to effectively utilize these buildings. Yet, the audit found, by reviewing major plans since 2003, that no specific plans were put in place.

Also, Article 34 of the Special Act on Innovative City stipulated that the relocation should be financed by selling the former offices. However, the audit found that 12 organizations, changed the registered purpose of the buildings to sell them at a higher price (building in green belt zone → residential/ commercial building), ironically leading to real-estate development in the capital areas- which in turn increased population.

3. Audit Recommendation

BAI recommended the PCASP and the PCBND to adhere to the following:

1) As low TFR lingers and the youth continues to migrate to capital areas, it is forecasted that Korea shall experience a dramatic reduction in total population and ageing, as well as possible regional extinction at a rapid pace.

In this regard, the audit concluded that profound comprehensive measures should be needed through government-wide cooperation (PCASP, PCBND, central and local governments) to address regional disparities in population.

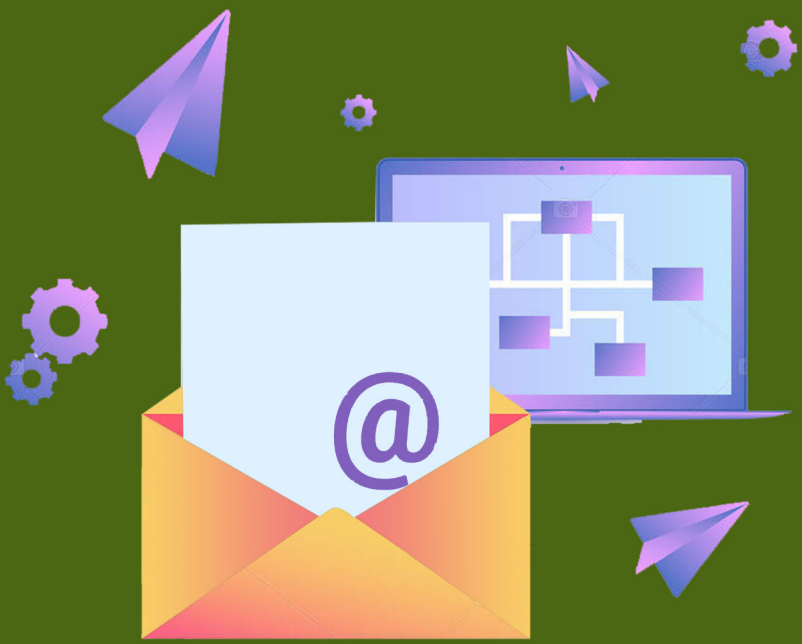
2) Public organizations have been relocated to regional areas to ease overpopulation in capital areas and promote development tailored to each region. However, very few private companies participated in the relocation, and no comprehensive plans were set up to utilize the public institutions' former offices. Therefore, the relocation initiative not as successful. Also, the former offices were used as facilities to attract more population and employment, resulting in stimulating urban population growth instead.

In this context, proper relocation of private companies is in order. Also, their former offices should be put to proper use, without undermining the goal of rural population growth. To this end, government-wide efforts (by PCBND, PCASP, central/ local governments) are needed to implement in-depth balanced national development policies in tandem with demographic policies.

Tentative schedule of ASOSAI capacity development activities for 2022-2023

(As of the end of October 2022)

Year	Date	Event	Venue
2022	October 19-21 and October 25-27	Audit Review Meetings for ASOSAI Pilot Capacity Development Program on "Audit on Implementation of Sustainable Development Goals (SDGs)"	Online
2023	November/ December (TBD)	ASOSAI Seminar (Theme: Challenges in IT Audit and How to Deal with them)	(TBD)
	(TBD)	Instructors' Design Meeting for ASOSAI Capacity Development Program 2023 (Workshop) on "Audit of Infectious Disease Prevention Programs in post COVID-19 situation"	(TBD)
	(TBD)	ASOSAI Capacity Development Program 2023 (Workshop) on "Audit of Infectious Disease Prevention Programs in post COVID-19 situation"	(TBD)
	(TBD)	ASOSAI Seminar (Theme: How to Meet the Public Expectation on SAI)	(TBD)



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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

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