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REVIEW

Comparison of the Waste and Air Management Policies between South Korea and Uganda

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Abstract

South Korea has made notable advancements in waste reduction and air pollution mitigation in recent years, but Uganda continues to struggles with these issues. The commendable progress in South Korea has been achieved as a result of its robust and well-established policy framework, which has been a major factor in attaining remarkable outcomes in waste and air pollution management. The South Korean government has implemented comprehensive waste and air pollution management policies, and these policies, along with public education campaigns and the state of the art technologies, have been successful. However, waste and air pollution management policies in Uganda lack specificity, commitment from government officials, and public awareness. As South Korea continues its efforts toward acheiving higher expectations in managing waste and air pollution, Uganda can draw valuable lessons from the example of South Korea's effective implementation of these policies.

Key words : Waste reduction, Air pollution, South Korean environmental policies, Uganda' s environmental policies, Public awareness

1. Introduction

Most low income countries like Uganda dispose Municipal Solid Wastes(MSWs) through open dumping due to poor planning, lack of resources, poor policy implementation, bad attitude, poor education, and outdated systems of management (Tibihika et al., 2021). Indiscriminate waste disposal contaminates surface and underground water supplies. Moreover, the urban population in Uganda is projected to surpass 32 million by 2050 and this increases the volume of waste generated, overwhelming existing waste management infrastructure and worsening environmental pollution (Oates et al., 2019).

Annually, over 6.6 million deaths occur due to air pollution affecting low and middle-income countries like Uganda, comprising nearly 90% of the total (Wolf et al., 2022). Various pollutants, including particulate matter, carbon monoxide, ozone, nitrogen dioxide, lead, benzene, and sulfur dioxide, pose significant risks to public health. Particulate matter exacerbates respiratory conditions such as asthma, hinders lung function, reduces visibility, impacts plant metabolism when deposited on leaves, and can cause corrosion of historical monuments and statues (Opio et al., 2021). The prevalence of air pollution in Uganda has had a significant

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impact on public health, particularly in Kampala, which was ranked as the most polluted city in Africa in the 2018 WorldAir Quality Report by AirVisual. Uganda's air quality is classified as hazardous, according to the standards set by the World Health Organization (WHO), with new data revealing that the yearly average concentration of $PM_{2.5}$ in Uganda is 50 mg/m^3, surpassing the recommended maximum level of 10 mg/m^3. Air pollution, particularly indoor pollution, presents a significant health hazard in Uganda, contributing to high prevalence of respiratory and cardiovascular ailments due to the widespread use of traditional technologies and fuels for cooking and lighting (Shvetsova and Lee, 2020). Therefore, Uganda is the most dangerous country in the world regarding waste management and air pollution.

Meanwhile, South Korea has in place advanced technology and robust regulatory framework which contribute to successful waste management and air pollution control (Bourtsalas et al., 2019). This research study is therefore aimed at elucidating on how the waste and air management policies in both South Korea and Uganda have impacted the waste and air pollution control in these regions over the years. This study focuses on what lessons can Uganda learn from South Korea's experience regarding waste management and air pollution control.

1.1. Waste management policies in Uganda

A waste management policy is a formal set of guidelines, regulations, and objectives established by governments or organizations to effectively manage and address the lifecycle of materials.

The National Environment Management Policy (NEMP) of 1994 sets forth comprehensive objectives, goals, and core principles for environmental management in Uganda. A key focus of this policy is the prioritization of efficient waste management strategies aimed at reducing pollution, conserving ecosystems, and safeguarding public health. The National Environment Act of 2019 focuses on current environmental issues such as climate, hazardous chemicals, and concerns related to petroleum activities, and plastic management. The National Environment (Waste management) Regulations, 2020, holds significant importance in Uganda's effort to combat inadequate waste management practices.

The Public Health Act assigns the Ministry of Health the responsibility of overseeing solid waste management nationwide, as stipulated in the Public Health Act, Cap 281. The Local Government Act of 1997 is enforced by the Ministry of Local Government, granting the Ministry the authority to oversee decentralized services provided to districts throughout Uganda, encompassing responsibilities such as Solid Waste Management. The Ministry of Energy and Mineral Development enforces the National Energy Policy of 2019, which promotes the utilization of waste-to-energy resources such as briquettes, power generation through waste incineration, and biogas (Lee et al., 2024).

The National Climate Change Policy of Uganda outlines specific approaches to address waste management challenges, including advocating for the sustainable utilization of wastes for energy production and other purposes, such as fertilizers, subsequent to segregation. The Environmental and Social Safeguards (ESS) Policy Framework aims to ensure that projects and programs comply with global standards, enhancing energy efficiency and reducing material resource consumption (Yang et al., 2015).

The National Electronic Waste Management Policy of 2020 is overseen by the Ministry of

Information and Communication Technology in collaboration with various government bodies. This policy aims to facilitate the creation of electronic waste management facilities within Uganda and raise awareness among the public regarding e-waste management practices. The National Industry Policy, 2020, is overseen by the Ministry of Trade and Industry. Its primary goal is to foster the adoption of environmentally sustainable production techniques, promote waste material recycling, ensure proper waste handling and disposal procedures, and encourage efficient resource management strategies. The Renewable Energy Policy in Uganda aims to promote the conversion of municipal and industrial waste to energy.

1.2. Waste management policies in South Korea

The Waste Cleaning Act, established in 1961, was the first legislative measure regarding solid waste management. Its primary objective was to contribute to environmental preservation and improve the standard of living by reducing waste generation and processing waste in an environmentally sustainable way. The Environmental Conservation Act was enacted in 1978 in response to growing societal concern for environmental issues.

Recognizing the increasing pollution challenges associated with industrial and societal progress, the Environmental Agency was established in 1980. The Waste Management Act of 1986 consolidated the Filth Cleaning and Environmental Conservation Acts, integrating recycling as a fundamental element (Trnka, 2020). The Promotion of Saving and and Recycling of Resources Act, enacted in 1992, aims to enhance environmental preservation and promote sustainable economic growth by promoting the utilization of recycled resources through waste generation control and recycling facilitation. The Radioactive Waste Management Act, serves the primary objective of mitigating potential risks associated with radioactive waste, safeguarding the public, and promoting environmental preservation through the establishment of regulations essential for the secure and effective handling of radioactive waste. The Management and Use of Livestock Excreta Act: The primary objective is to convert livestock waste into valuable resources or ensure its proper disposal in order to prevent environmental contamination. The Resource Circulation of Electrical and Electronic Equipment and Vehicles Act: The Act aims to encourage the proper promotion of recycling practices for electrical and electronic equipment, as well as vehicles, in a manner that is conducive to sustainable resource management. The Transboundary movement and disposal of hazardous waste is governed by legislation enacted in 1992.

The Waste Control Act originally specified which waste materials could be recycled and the acceptable treatment methods. All legislation pertaining to waste management, recycling, and the transboundary movement of waste has been combined within a comprehensive legal structure known as the Framework Act on Resource Circulation. Enacted in May 2016, this law officially took effect on January 1, 2018. This law aims to help transition from the prevailing mass production-centric and waste-generating economic model to a more sustainable and efficient resource-circulating paradigm.

South Korea has implemented the Basic Plan for Resource Circulation in conjunction with the Framework Act on Resource Circulation. This strategic initiative, which spans from 2018 to 2027, aims to establish national goals and ways to reduce waste production and enhance resource circulation. The Act on the Promotion

of Biogas Production in South Korea, formally known as the Act on the Promotion and Use of Biogas Using Organic Waste Resources, was enacted and made public in 2022. The primary objective of this Act is to encourage the utilization of organic waste resources for biogas production, thereby supporting the country's renewable energy goals and addressing waste management concerns.

1.3. Air pollution policies in Uganda

There are two sources of standards for air quality in Uganda, neither of which is adopted into statute. According to National Environment Act, National Environment Management Authority is required to work in consultation with the authority to develop criteria and procedures for measuring air quality. This includes establishing ambient air quality standards, occupational air quality standards, emission standards for different sources, and criteria and guidelines for air pollution control (Nagawa, 2022). The National Climate Change Policy(2015): Uganda's National Climate Change Policy is designed to target air pollution within the broader scope of mitigating greenhouse gas emissions and fostering sustainable development (Aryampa et al., 2023).

1.4. Air pollution policies in South Korea

The Clean Air Conservation Act(2007) aims to ensure that everyone live in a healthy and comfortable environment. It promotes eco-friendly driving culture reducing emissions of pollutants, including greenhouse gases. The Special Act on the improvement of Air Quality in the Seoul Metropolitan Area(December 2003) is designed to protect the health and well-being of residents and advance the overall quality of life in the metropolitan area. Indoor air quality Control Act(implemented on May 2004): The main objective of this legislation is to monitor indoor air quality in public facilities, newly constructed multi-family residences, and public transportation systems. The Act on the Integrated Control of Pollutant-Discharging Facilities: This is accomplished by streamlining the regulation of pollution-releasing facilities, with the aim of reducing emissions from individual enterprises and implementing customized environmental control measures according to the unique requirements of each establishment. The Special Act on Fine Dust Reduction and Management, initially enacted on August 14, 2018, and later amended on March 26, 2019 seeks to establish a healthy living environment by mitigating the health risks associated with fine dust.

2. Materials and Methods

2.1. Applying the laws and regulations in Uganda and South Korea

Uganda has the National Environment Act and the Public Health Act, which outline responsibilities for waste management and environmental protection. However, the enforcement of these regulations is weak. Uganda's waste management policy framework is fragmented and lacks a comprehensive national strategy, leading to inconsistencies in waste management practices across the country (Maswanku and Yolcu, 2024).

Regarding air pollution in Uganda, Mining Act, 2003 Sections 109 of the Mining Act state that the holder of an exploration license or lease shall take necessary measures to prevent or minimize pollution of the environment in accordance with the National Environment Act. Penal Code Act, Cap 120 basically criminalizes air and water pollution. Section 177 applies to air pollution and provides that a person commits an offence if he voluntarily vitiates the

atmosphere in any place as in general dwelling or in business areas. This section creates a prohibition of air pollution however it is a minor offence classified as a misdemeanor.

In South Korea, dealing with waste management, the concept of new policy framework must be approached in three important points. First, activating the effective recycling system to reuse wastes already generated is the most important. It will be essential to waste reduction and breakaway from existing landfill method (expecting the preservation of the landfill-performed or landfill-requiring). Second, the utilization of substitute resource can be expected through the optimal transforming the wastes into the recycled product. Third, the characteristics of target waste must be evaluated by strategic environmental assessment before any decision is made for recycling. How hazardous and dangerous the waste is should be evaluated. Wastes Control Act was implemented from 20 July 2015, Enforcement Ordinance of Wastes Control Act was implemented from 21 July 2016, and Enforcement Regulation of Wastes Control Act was implemented from 21 July 2016 (Um et al., 2018).

In South Korea, The Clean Air Conservation Act functions as a framework law managing air quality and atmospheric condition. The purpose of this Act is to enable all people to live in a healthy and clean environment by preventing air pollution which causes harm to people and atmospheric condition and by managing and preserving the atmospheric environment in a proper and sustainable manner. The Act identifies 22 terms such as air pollutant, air pollutants subject to watch for hazard, climate/ecosystem-changing substances, greenhouse gases, gas, granular matter, dust, exhaust fumes, soot, specified hazardous air pollutant, volatile organic compound, air pollutant-emitting facilities, and air pollution prevention facilities. The Act mandates the Minister of Environment to establish and implement Comprehensive Plans every ten years in order to improve the atmospheric environment by reducing air pollutants. There has been recent amendment upon Long-Range Transboundary Air Pollutant. The amendment on 1 December 2015 implies the changing stance of the government toward transboundary pollution, which seems to mirror the public perception, that there is a more serious problem than "yellow sand." The definition of 'long-range transboundary air pollutant' is newly introduced in the amendment. The term, strictly speaking, is replaced with the 'yellow sand' which is wind-brown dust from China to the Korean Peninsula. Revised law expands the object of regulation to the air pollutants over the yellow dust (Kim, 2013; Kim and Park, 2018).

2.2. Public awareness about waste management and air pollution in Uganda and South Korea

Municipal solid waste collection is currently one of the most critical lacking public services in slum areas in Uganda and its low coverage has caused public outcry. Factors that affect solid waste management in slums include inaccessibility, unaffordability where the service is expected to be paid for, and poor sanitation. The involvement of communities has a direct bearing on effective solid waste management and so do their awareness, attitudes, and practices. Participation is influenced by social pressures, environmental motivation, attitudes, and economic incentives (Mukama et al., 2016).

In Uganda, slum residents were more concerned with the effects of poor solid waste management than the causes. This could be an indication that community members lack sufficient knowledge on the casual relationships

between poor solid waste management and its related consequences. There is thus need to create awareness among slum residents on the importance of proper solid waste management, while putting emphasis on aspects with most significant impacts on public health. Attitudes towards social responsibility on solid waste management were also low among slum residents. This clearly indicates that the most did not understand their roles as regards solid waste management at both household and community levels further indicating the need to raise awareness about solid waste management among slum dwellers. Other studies done elsewhere have previously suggested that such awareness could increase participation in solid waste management initiatives. Slum residents had high willingness to participate in solid waste management initiatives including separation of wastes and composting. Willingness to participate however varied across different groups in the community; for instance, single people had significantly lower willingness to participate in composting. Knowing that there are groups with low willingness to participate in solid waste management improvement initiatives helps programmers in designing awareness campaigns particularly targeting them. Successful implementation of such campaigns might improve participation rates. Marital status influenced the respondents' willingness to participate in composting probably because the married have a higher sense of responsibility (Huang et al., 2024).

In Uganda, under the National Objective and Directive Principles of State Policy, the Constitution provides for protection of the environment and states that The State shall promote sustainable development and public awareness of the need to manage land, air and water resources in a balanced and sustainable manner for the present and future generations. The State shall take all possible measures to prevent or minimize damage and destruction to land, air and water resources resulting from pollution or other causes.

For South Korea, the average score concerning awareness about waste management was higher than that of participation. The scores for awareness and participation were relatively higher for older age groups. In addition, they were relatively higher for women than for men and married respondents. The relatively high scores for participating in waste separation for recycling was partly because of the volume-rate garbage disposal system adopted in Korea in 1995. The Ministry of Environment reported that the amount of waste produced per capita was reduced by 20% after the system went into effect. The scores for the awareness and participation were relatively higher for women and married people. Homemakers scored highest among the occupational groups. Furthermore, the score was higher as the educational level increases (Ha et al., 2023).

While the surface PM_{10} concentration level in South Korea was higher in the early 2000s, it has drawn little public attention until recent years. People considered severe haze cases to be a part of the Asian dust phenomenon, and few paid serious attention to aerosols. The main cause for the sudden increase in public interest and concern about the PM level was the announcement of the World Health Organization (WHO) in October 2013 that PM is a cancer-causing agent. The International Agency for Research on Cancer (IARC) has classified outdoor air substance as a carcinogenic material. In its evaluation, the IARC concluded that outdoor air pollution may cause lung or bladder cancer. The level of PM tends to suppress public outdoor activities in polluted conditions, implying that people react to avoid such a hazardous environment. Also, public awareness of PM has shifted the sensitivity of people's

responses for the frequency of going out. Since November 2013, when public awareness became higher, external activities have decreased significantly (Lee et al., 2020).

2.3. Cooperation between the central government and the regional goverment in Uganda and South Korea

In Uganda, there is a lack of coordination among the various government agencies responsible for waste management. Institutionally, multiple agencies are involved in waste management, including the National Environment Management Authority (NEMA), KCCA, and local governments. However, coordination among these agencies is poor, resulting in overlapping responsibilities and gaps in service delivery. The lack of a central authority to oversee and coordinate waste management activities exacerbates the inefficiencies in the system.

In South Korea, primary responsibility for waste treatment rests within local authorities. They must collect wastes from residential areas and business areas and treat them in safe and sanitary manner. Central government (MOE; Ministry of Environment) provides legal framework and policy systems and makes rules and regulations the local authorities and other agents should comply with when they deal with their wastes. Central government makes long and short term national plans for the waste management and provides local authorities and other related agents with financial and other non financial assistance. 53 Government agencies conduct various assisting programs and administrative works on behalf of central government. Environmental Science Institute and Korea Environmental Institute conduct research works for the policy development and Environmental Human Resources Institute provides training for the manpower in waste related fields from both public and private sectors. The Environmental Resource Corporation performs the implementation of the waste policies and programs on behalf of central government and it also conducts various assistance programs to recycling industries so that they can perform their duties in a well established legal framework. It also provides financial and non-financial assistance to recycling industries (Park, 2009).

In South Korea, at the national level, many environmental responsibilities are fragmented across multiple ministries. The Ministry of Environment (MEnv) is responsible for environmental policy and legislative development, formulation and implementation of comprehensive plans for environmental conservation, and support for environmental management activities of local governments. Provincial and city governments play an important role, administering environmental permits and enforcing environmental laws as statutory delegates of the MEnv. They also develop and implement environmental conservation policies within their jurisdiction and are in charge of municipal waste management, local water supply and sewage treatment, as well as regulation of vehicle emissions and noise. In addition, over 60% of the MEnv budget is spent on support to local governments (Kwon et al., 2024).

2.4. Utilization of cutting-edge technology in dealing with waste management and air pollution control in Uganda and South Korea

Materials recovered are processed into products, materials or substances for either the original, or other uses. This does not include energy recovery, fuel or backfilling operations. Materials retrieved by Ugandan urban communities for recycling include plastic, metal, paper, organic waste, and industrial

waste. Some of these materials are recycled by local industries within Uganda, while others are predominantly exported for recycling. The households areas also practices composting at the individual level to produce fertilizer for garden and fields. Bio-gas production is also practiced in rural areas by some livestock-keepers. Organic waste is also used for animal feed and reduce the need for purchased feed in urban agriculture (Mohee and Simelane, 2015).

Nowadays, Uganda installs low-cost AI air quality devices to monitor pollution levels. Data collected from AI will inform public health policies to fight pollution-related diseases. The AI monitoring system is helping target interventions to reduce emissions and is showing which areas have poor air quality. We can now identify pollution hotspots and respond quickly to areas where air quality reaches dangerous levels (Musenze, 2025).

Taking a closer look in South Korea, in 2015, out of the 17.8 Mt of Municipal solid waste that were generated, 10.4 Mt (58.8% of the total) were recycled or composted. About 4.5 Mt (25.3%) were combusted with energy recovery, and 2.7 Mt (15.9%) were landfilled. The rate of recycling plus composting nearly tripled from only 4.1 Mt (24%) in 1995 to about 10.5 Mt in 2015. However, this number has dropped since 2009, where the total recycling and composting were 11.4 Mt (61%), and the waste-to-energy has increased from 3.8 Mt (20%) to 4.5 Mt (25.3%) during the same period. Waste-to-energy also rose from only 0.7 Mt (4%) in 1995 to 4.5 Mt (25.3%) in 2015. As a result, landfilling was significantly reduced steadily from 12.6 Mt (72%) in 1995 to 2.7 Mt (15.9%) in 2009.

Greenhouse gas emission from the transportation sector contributed 27% of the global emissions in 2019, affecting the air pollution of the country. One representative example of how to reduce these emissions would be to replace internal combustion engines with eco-friendly electric or hybrid vehicles. Electric or hybrid vehicles theoretically do not emit greenhouse gases at all during operation. However, this is not strictly true from the viewpoint of a life cycle assessment that takes into account emissions from production process, including the generation of electricity to power them. However, a previous study showed that from the life cycle assessment point of view, the emissions of electric vehicles amounted to only 10%–24% of those of internal combustion vehicles. Therefore, replacing internal combustion vehicles with electric vehicles could be an effective and efficient way to reduce greenhouse gases. The cutting-edge technology employed a combination of mobile remote sensing and in situ technologies to assess the pollutant emission flux and identify emission sources within an industrial complex in South Korea. The mobile measurement technology employed facilitated the identification of primary emission sources by pinpointing areas with a high emission flux and analyzing wind data through repeated measurements. The continuous monitoring of gasses undergoing volatilization is also essential. Monitoring data with remote sensing, in situ observations, meteorological data, and residential concentration measurements to enhance emission monitoring and refine local emission mitigation strategies are important (Dehkhoda et al., 2024).

3. Results and Discussion

3.1. Waste management in Uganda

Landfilling is the most prevalent and only authorized waste disposal method in Uganda. Most landfill suffers from issues like inadequate infrastructure, inadequate leachate and gas management, and potential groundwater

Fig. 1. Illegal dumping and landfill site in Kampala.

Fig. 2. Community waste recycling containers in South Korea.

Fig.3. Volume based waste fee bags used only for food wastes in South Korea.

contamination (Agunyo, 2022). Waste composting is a viable strategy for managing organic waste in Uganda. By using cattle manure and earthworms, vermicomposting can manage organic waste, conserve nutrients, and reduce greenhouse gas emissions (Allan, 2014).

In Uganda, recycling rates remain low primarily due to inadequate infrastructure and limited public awareness. Burning and illegal dumping of waste that are not considered acceptable or recommended methods of waste management are heavily practiced in Uganda (Kabasiita et al., 2022). In Uganda, there is ongoing exploration of waste incineration as a viable solution for waste management and energy production. Anaerobic digestion technique is increasingly being adopted in Uganda to reduce dependence on non-renewable energy sources (Jjagwe et al., 2019; Amulen et al., 2022).

3.2. Waste management in South Korea

The Volume Based Waste Fee system requires households and commercial entities to purchase designated Volume Based Waste Fee bags for waste disposal, thereby linking waste treatment costs to the volume of waste disposed (Choi et al., 2023). In South Korea, the Municipal Solid Waste collection mechanism predominantly operates through a door-to-door collection approach. Municipal Solid Waste is typically gathered collectively, where occupants of apartment complexes take their refuse to specified collection sites such as fixed waste receptacles and bins positioned in proximity to their residences (Sumarkho, 2018). Within this system, it is incumbent upon all individuals to comply with regulations by procuring and utilizing Volume Based Waste Fee bags for non-recyclable waste, and ensuring proper waste disposal. South Korea actively advocates for a circular economy, emphasizing the utilization of recycled materials and enhancing resource efficiency. In 2019, recycling constituted the highest proportion at 86.6% among various waste disposal methods, with landfilling accounting for 6.1% and incineration for 5.2% (Chavando et al., 2022).

Waste-to-energy is the process of generating energy, usually in the form of heat and electricity, by using waste as a fuel source, through processes like incineration, gasification, pyrolysis, anaerobic digestion, and landfill gas recovery. Incineration is capable of achieving 80-85% and 95-96% mass and volume reduction respectively of the waste. Gasification is a process that transforms carbon-rich materials into gases such as nitrogen, carbon monoxide, hydrogen, and carbon dioxide. Pyrolysis, a thermal degradation process occurs at high temperatures, distinct from combustion and hydrolysis because it does not require additional reagents such as oxygen or water. The conversion of solid waste into refuse-derived fuel involves the utilization of both wet and dry processing methods. Biogas is generated through a series of four sequential stages by anaerobic microorganisms, involving hydrolysis, acidification, acetic acid formation, and methane generation. The estimated energy conversion from liquid manure, sewage sludge, and food waste is approximately 11 trillion kcal/year, equivalent to 1.1 million tons per year, resulting in savings of about 830 billion per year (Huerta-Reynoso et al., 2019).

3.3. Air pollution control in Uganda

Under the National Environment Management Authority, failure to establish, maintain, and implement an environmental management system is considered an offense, and upon conviction, the operator may face fines, imprisonment, or both. Facilities or individuals emitting pollutants shall maintain records, reports, and other relevant documents related to

ongoing pollution, and any person engaged in activities that may result in pollution must submit an annual report to the Authority (Forster and Nakyambadde, 2020).

Mobile sources, primarily vehicles, significantly contribute to air pollution in Uganda. The government in Uganda enhanced vehicle emission standards and fuel quality control, implemented vehicular inspections, and imposed restrictions on older and highly polluting vehicles during the importation stage to reduce their presence on Ugandan roads. Additionally, incentives are provided to encourage the adoption of electric vehicles, hybrid cars, and cleaner fuel technologies.

3.4. Air pollution control in South Korea

Since 1990, fugitive dust generating businesses are required to report to local authorities and implement government-recommended preventive measures. Restrictions on Volatile Organic Compounds content in paint have also been established to minimize emissions from organic solvent use. In addition, South Korea has actively adopted advanced technologies to further reduce vehicle emissions. Construction firms that fail to address fugitive dust may incur penalties that impact their eligibility for government-funded construction projects. Random inspections are also conducted to monitor emission patterns and noise levels before vehicle sales. Since 2016, large diesel vehicles in Korea have been outfitted with Portable Emissions Measurement Systems, while small to medium-sized diesel vehicles certified post 2016 must meet emissions criteria. Real-driving emissions assessments have been obligatory for all vehicles since 2018. Civil environmental monitoring groups play a crucial role in identifying and reporting visible violations. Meanwhile, air pollutants coming from China increase $PM_{2.5}$ level in Korea. They contribute 38.4% to $PM_{2.5}$ levels in Korea (Jun and Gu, 2023). Nowadays, South Korea seeks to collaborate and cooperate environmental issues with adjacent countries such as China and Japan.

4. Conclusions

Both Uganda and South Korea have fundamental laws regarding preserving and preventing environment. However, if you take a closer look into legislation and laws of both countries regarding waste treatment and air pollution control, South Korea entitled regional sectors of government to have specific bylaws and made companies and public to follow the specific procedures while Uganda lacks connectedness of legislation from the main government sector to regional government sectors. Also, South Korea utilized the state of the art technology to convert waste to energy and have been successful in using proper technology. Although South Korea faces impacts of yellow dust and air pollutants coming from China, South Korea actively seeks to find solution whatsoever.

Uganda can learn from South Korea and can adopt laws and regulations of South Korea regarding waste control and air pollution control. Uganda needs strong enforcement to awake public awareness and needs collaborative efforts between central government sector and marginal government sectors. Advanced technologies are also needed along with expertise regarding waste treatment and air pollution control. Therefore, cooperation with other countries could bring new technologies into Uganda in dealing with waste and air control, and in Uganda, active participation of government, public, and expertise altogether will have bright future ahead.

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