



NEMA NEWS

The National Environment Management Newsletter

Vol. 22 No. 1

June 2019

WORLD ENVIRONMENT DAY 5TH JUNE 2019 CELEBRATED

Theme: "Fight Air Pollution to Protect Human Health and Environment"

Air Pollution: Approximately 7 million people worldwide die prematurely each year from air pollution (UN Environment).

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Let's Fight Air Pollution this WED

By Tony Achidria

The United Nations General Assembly during the United Nations Conference on the Human Environment (Stockholm, 1972), declared the 5th of June the International World Environment Day (WED). WED commits each Member State to reflect on efforts put in place at national level with regards to protection of the environment, as well as to reaffirm her commitment to sustainable environment management.

World Environment Day is a UN Environment-led global event, the single largest celebration of our environment each

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World Environment Day is here. June 5th of every year is the United Nation's principal vehicle for encouraging awareness and action for the protection of our environment. This year global celebrations will be in China under the theme "Air Pollution".

National celebrations are taking place in the Karamoja region; specifically in Moroto District at Naitakwae grounds, under a localized theme "Fight air pollution to protect human health and the environment."

Air pollution is a problem that costs the global economy \$5 trillion every year in welfare costs; Air pollution is fundamentally altering our climate, with profound impacts on the health of the planet.

In Uganda air pollution being driven by rapid urbanization and population growth in urban areas. Major pollutants include fumes from automobiles, industries, domestic burning of rubbish, road dust, smoke from cook stoves, bush and charcoal burning. But all is not lost, as there is a concerted effort by Government, individuals, the private sector and Civil Society Organizations to combat and put an end to the practices that cause air pollution.

In this edition, we feature stories on the status of Uganda's air quality, what is being done to improve the situation and also highlight activities that NEMA has been undertaking to protect and conserve our environment.

As we celebrate World Environment Day 2019, let us remind ourselves that every action counts in this environmental journey. Everyone must do what they can in their capacity to protect our planet for our survival and that of future generations.

A Happy World Environment Day.

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Let's Fight Air

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year, which takes place on June 5 and is celebrated by thousands of communities worldwide. 143 countries take part in World Environment Day, and the day focuses on environmental concerns ranging from pollution to global warming and sustainable food production to protection of wildlife.

China will host the World Environment Day 2019 celebrations

under the global theme, 'Air Pollution'. China with its growing green energy sector, has emerged as a climate leader. By hosting World Environment Day 2019, the Chinese Government will be able to showcase its innovation and progress toward a cleaner environment.



Tony Achidria

WHY AIR POLLUTION?

Air pollution is the contamination of air by gasses and solid particles. Air pollutants are only visible to the naked eye in some conditions for instance dust particles, smoke from open flames, vehicle emissions, soot from burning of solid fuels, etc; but for most cases the items polluting the air are too tiny to be seen with the naked eye.

Air pollution comes from different sources including vehicle emissions, industrial furnaces, wood fuel from cook stoves, kerosene lamps, coal-fired power plants, wildfires, sand and dust storms, among others. According to statistics from the UN Environment and the World Health Organization (WHO), approximately 7 million people worldwide die prematurely each year from air pollution, with an estimated 1 million of these deaths occurring in Africa.

The world over, airborne pollutants are responsible for about one third of deaths from stroke, chronic respiratory disease, and lung cancer, as well as one quarter of deaths from heart attack.

World Environment Day 2019 therefore urges governments, industries, communities, and individuals to explore renewable energy and green technologies, to improve air quality in cities and regions across the world.

GLOBAL AIR POLLUTION FACTS

- 9 out of 10 people worldwide live in places where the air quality is above the WHO guidelines
- Air pollution costs the global economy \$5 trillion every year in

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Pollution

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welfare costs.

- Ground-level ozone pollution is expected to reduce staple crop yields by 26 per cent by 2030.
- Air pollution is fundamentally altering our climate, with profound impacts on the health of the planet.

UGANDA'S CASE

According to the Air Visual's 2018 World Air Quality Report, the annual air quality in Kampala based on presence of particulate matter (PM_{2.5} of 40.4µg/m³) was two times higher than the levels recommended by the World Health Organization (WHO) of 25µg/m³.

Air pollution is a growing challenge not just in Kampala City but across the country. As we celebrate this year's World Environment Day let us all take a step to fight air pollution in order to protect human health and the environment.

Uganda joins the rest of the world to commemorate **World Environment Day 2019** under the localized theme: **"Fight Air Pollution to Protect Human Health and Environment"**. World Environment Day National celebrations will be hosted by Moroto District on 5th June 2019, at Naitakwae Grounds, Moroto Municipality. This will be the first time WED is being celebrated in the Karamoja region.

Moroto District is located at the foot of Mountain Moroto in North

Eastern Uganda. The district is part of the larger Karamoja sub-region and is characterized by rocky mountainous landscape with moderately low rainfall. The main economic activities in the district are livestock keeping, subsistence agriculture and limestone and marble mining.

The district is bordered by Kaabong District to the north, Kenya to the east, Amudat to the south, Nakapiripirit to the south-west, Napak to the west and Kotido to the north-west. Moroto is approximately 457km by road, north east of Kampala.

Air pollution in Karamoja region is mainly from uncontrolled bush burning, dust storms especially during the dry seasons, smoke from charcoal burning, as well the rapidly developing mining industry that has contributed to pollution and related problems e.g. through gold mining and the use of mercury in its extraction, limestone, marble and granite extraction all of which have processes which exacerbate air pollution, among others. The situation is made worse by rampant deforestation that has robbed the region of vast tree cover.

Statistics from the UN Environment and the World Health Organization (WHO), indicate that approximately 7 million people worldwide die prematurely each year from air pollution, with an estimated 1 million of these deaths occurring in Africa

How can we reduce air pollution?

The fact is that human activities contribute the most to any type of pollution. Hence, it is our responsibility to find solutions. And considering the harmful effects of air pollution, it is high time that everyone contributes a bit to prevent release of pollutants.

Social awareness about air pollution is the most essential step to be taken for the prevention of air pollution. Awareness programs and/or advertisements should be encouraged, so that people understand the potential health hazards of pollution. Improvement of transport facilities and proper use of land for the sake of social benefits are equally important for controlling air pollution.

Public Transport: Whenever possible, try to travel by public transport. This helps in two ways; prevents air pollution and increases public income. If you are going to a nearby place, walk or use a bicycle, instead of using your vehicle. The objective is to minimize the use of fuels as far as possible.

Car Pool; a car pool will reduce the number of cars on our roads, thereby, preventing air pollution by cutting down the use of fossil fuels. This way, it will help in the sustainable use of fossil fuel and its conservation for the future generations.

Vehicle Care: Automobiles should be services regularly to keep them in a good condition.

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Air Pollution, a Global Concern of Local Significance

By *Patience Nsereko*

Air pollutants consist of a complex mixture of substances which may occur as gases, solid or liquids. Several different compounds exist in the air, however, a set of key indicators have been developed and generally accepted by international and national environmental and health bodies to help characterize ambient air quality. These include; Particulate matter (PM) measured as particles in the air with an aerodynamic diameter of $<10\mu\text{m}$ (PM₁₀) and $<2.5\mu\text{m}$ (PM_{2.5}), Nitrogen dioxide, Sulphur dioxide and Ozone (ground-level ozone). However, this does not imply that other pollutants in the air are not harmful to human health and the environment.

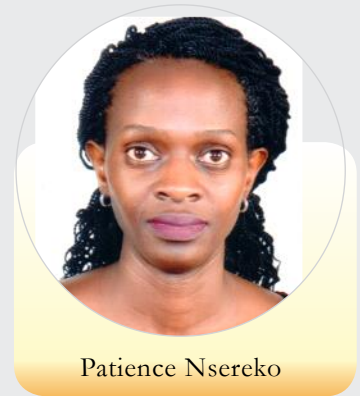
According to studies published by the World Health Organization (WHO), air pollution levels are normally higher in developing countries than in industrialized developed countries. For instance, levels of particulate matter have reportedly reached 4-5 times higher in developing countries than developed countries. The highest concentrations of PM₁₀ and Sulphur dioxide occur in Africa, Asia and Latin America. Africa comes second to Asia with annual average concentrations of PM_{2.5} of $40\text{-}150\ \mu\text{g}/\text{m}^3$, values higher than the recommended WHO guideline values of $10\ \mu\text{g}/\text{m}^3$ (annual mean values). It is estimated that **91% of the world's population lives in places where**

air quality levels exceed WHO limits. According to the 2018 WHO air quality database, 97% of cities in low- and middle- income countries with more than 100,000 inhabitants do not meet WHO air quality guidelines.

Many developing countries including Uganda lack accurate, comprehensive and consistent air quality data. However, some individual studies undertaken for instance by the Makerere University College of Health Sciences in selected cities (Kampala, Jinja) indicated PM_{2.5} mean values of $132.1\ \mu\text{g}/\text{m}^3$, which was 5.3 times above the WHO limits (Kirenga, et al, 2015).

Globally, sources of air pollution include; industrial activities, waste management, transport, energy production and use, agriculture and household energy systems. In Uganda the main sources of air pollution include, emissions from vehicles, industrial activities, biomass fuel use, burning of waste and waste management practices. Unpaved roads are also a major source of air pollution. However, air pollution can also arise from

Studies published by the World Health Organization (WHO), show that air pollution levels are normally higher in developing countries than in industrialized developed countries



Patience Nsereko

anthropogenic sources such as dust storms, particularly in areas near arid or semi-arid regions. The mining sector (mining and quarrying) is also increasing becoming a major source of air pollution.

In 2017, there was a significant increase of 95% in transport licensed vehicles for public use, 25% increase in privately registered vehicles and 12% increase in newly registered motorcycles (UBOS, 2019). With many reconditioned vehicles imported into the country the levels of air pollution are likely to increase if no action is taken to address this concern. Old vehicles are more likely to have incomplete combustion thus leading to release of pollutants into the air. The two-wheeled cycles which are increasing in number, are a major source of emissions, particularly cycles with two-stroke engines. The type of fuel that is used in these vehicles also influences the emissions that come with exhaust fumes, due to the constituents of fuel, such as Sulphur or Lead.

In industry, boilers and furnaces are a major source of emissions due to the energy sources (biomass and heavy fuels) and the technology used.

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Air Pollution, a Global Concern

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Many facilities lack efficient technology to minimize emissions and yet the manufacturing sector is growing. There also no systems in place to monitor air quality.

Indoor air pollution in households mainly arises from the use of kerosene and biomass fuels for energy and lighting. However, there is almost no data the levels of household air pollution in the country, and yet this is a major concern as the majority of households use solid fuels in inefficient stoves.

Indoor air pollution also occurs in industrial establishments. Data from inspections undertaken by NEMA, indicates that food processing (grain, coffee, sugar, among others) and manufacturing (textile, steel and aluminum, cement, Lead recycling plants), are some of the Facilities that may have high levels of indoor emissions. In some cases, levels of particulate matter (instant measurement) have reached over 750 $\mu\text{g}/\text{m}^3$.



Indoor air pollution levels in an industrial facility

Health and environmental risks of air pollution

The risk of air pollution is often dependent upon the concentration of pollutants in the air (ambient or indoor) and the amount of time persons spend within a polluted environment. In Uganda, many persons are exposed to pollutants in the air during heavy traffic that is a common occurrence particularly in the urban areas, at their workplaces and in households. Mothers and children are at high risk of exposure to smoke from cooking stoves.

WHO estimates that 4.2 million deaths occur every year as a result of exposure to ambient (outdoor) air pollution, while, 3.8 million deaths occur every year as a result of household air pollution due to the nature of cook stoves and fuels used. In regard to infant mortality, 50% of pneumonia deaths in children under 5 are due to household air pollution. Developing countries like Uganda are the most impacted and unfortunately, the impacts including chronic and acute respiratory diseases, cancers, heart disease and impacts on the un-borne child, may not be immediately observed.

Diseases such as asthma, lung cancer, tuberculosis, eye cataracts, have been linked to exposure to indoor air pollution. Carbon monoxide that may be released from use of cooking stoves in poorly ventilated environments, is an

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Let's Fight Air Pollution

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This will ensure that thick exhaust fumes that would otherwise find their way into the atmosphere are minimized.

Minimize Pollutants: Always try to minimize smoke emission. One way is to compost dried leaves and kitchen waste, instead of burning them. Composting will also give you organic fertilizer for your garden.

Alternative Energy: Another effective way to prevent air pollution is to use alternative energy sources such as solar energy, hydroelectric energy, and wind energy. Nowadays, sophisticated technologies such as wind turbine, solar water heaters are introduced to generate electricity and other energy forms for household uses.

Recycle: Recycling is a simple approach to reduce pollution in two ways; it enables us to save energy which is required for burning and minimizes the pollutants released during manufacturing.

Smart Purchasing: Remember to carry paper bags and minimize using plastic bags. While buying the products, always choose air-friendly and recyclable products that will minimize the emission of pollutants.

And, finally plant trees; trees convert carbon dioxide into oxygen and thereby cleaning up polluted air. So we need to stop unsustainable cutting down of trees.

The writer is the Senior Public Relations Officer, NEMA.

Development Projects Approved during January-March 2019

By Margaret Aanyu

The number of certificates of approval issued during January - March, 2019, was much higher than the number of certificates issued in the October - December, 2018 Quarter. That is, a total of 344 certificates of approval were issued during January - March, 2019, Quarter, compared to 221 certificates issued during October - December, 2018. The number of Certificates of Approval issued in each month were: January, 86; February, 82; and March, 176; respectively. Figure 1 shows comparison between the total of EIA reports (PBS+EISs) submitted during the January–March, 2019 Quarter and the Certificates of Approval issued to developers.

The summary of categories of projects, for which the certificates of approval were issued. Overall, the January - March, 2019 Quarter witnessed Fuel Facilities (total of 81), infrastructure projects (70), Information Communications Technology (ICT) projects (70), and Processing/Manufacturing Industries (54), as the leading categories of projects approved (see Figures 2 and 3 below). Therefore, out of the total projects approved/certificates issued, Fuel Stations accounted for 23.5%, Infrastructure Projects, 20.3%, ICT Projects, 20.3%,

and Industrial Projects, 15.7%. Hence, these four categories of projects constituted 79.8% of the total projects approved. For the October - December, 2018 Quarter, however, these four categories of projects accounted for 80.1% of projects approved.



Margaret Aanyu

Figure 1: Comparison between the total of EIA reports (PBS+EISs) submitted during the January - March, 2019 and the Certificates of Approval issued to developers.

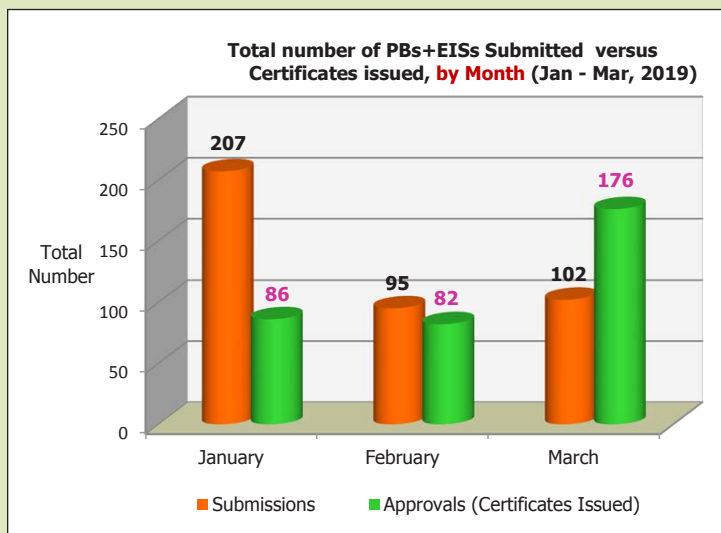
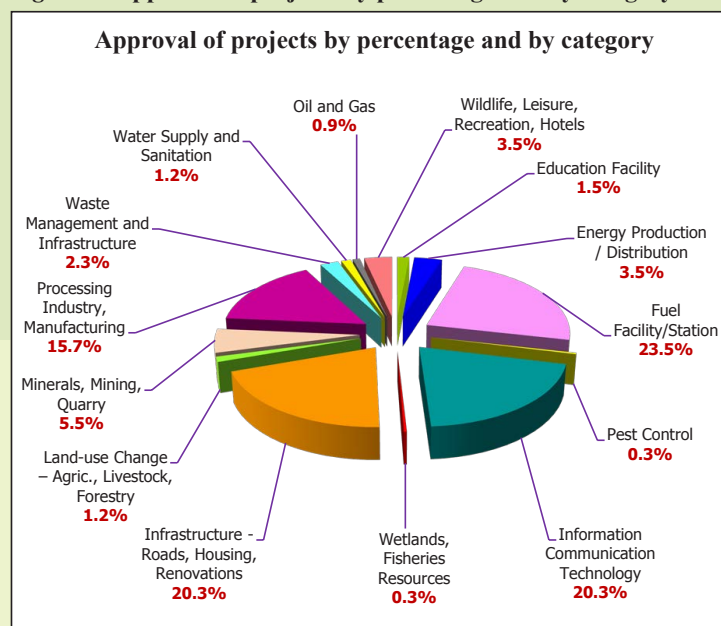


Figure 2: Approval of projects by percentage and by category



Source: NEMA 2019

The writer is the Environment Assessment Manager, NEMA

Air Pollution: One of the Leading Public Health Risks

By Jennifer Kutesakwe

Air pollution is one of the leading global public health risks. The World Health Organization (WHO) ranks indoor air pollution (from biomass fuel combustion) and urban outdoor air pollution 10th and 14th, respectively, among the 19 leading risk factors for global mortality. However, its magnitude in many developing countries' cities is not known. For Uganda, data on air pollution is nearly non-existent and there is currently no framework for monitoring and regulating air pollution. Yet, Kampala,

Uganda's capital, has the second worst air quality in Africa, according to the "AirVisual's 2018 World Air Quality Report". Recent studies carried out on air quality in Kampala indicated that the concentrations of particulate matter (PM_{2.5}) were three times higher than the WHO air quality guidelines for ambient air (25 µg/m³). High PM concentrations have been observed in the city center, industrial areas and in residential areas with unpaved roads, and likewise Nitrogen dioxide (NO₂) and Sulphur dioxide (SO₂) concentrations are reported to be above the WHO cut-off limits.



Jennifer Kutesakwe

A recent study comparing lung health of children living in Buwenge Sub County in Jinja and their counterparts in Kampala, revealed that children living in Buwenge Sub-county, Jinja District had better lung performance compared to their counterparts in Kampala which is likely to be as a result of poor air quality. The greyish appearance in the sky in Kampala is also attributed to the deteriorated air quality within the city.

Air Quality Problem

Particulate matter (PM₁₀) particles in the air which are less than a 10 micrograms per cubic metre (µg m³) once breathed, can cause inflammation in the major organs of the body like lungs, heart, brain and blood. The particulate matter less than 2.5 microns in diameter are very dangerous as they can penetrate deep into tissues. It is estimated that out of the 7,989 deaths registered in Uganda, about 3,141 were due to acute lower respiratory disease, 192 Chorionic Pulmonary diseases, 126 lung cancers, 1,624 Ischemic Heart Disease and 2,905 are stroke-related. People with already existing heart and respiratory conditions like asthma are most at risk of air pollution.

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An image showing indoor Air Pollution at Iganga Steel Division



An image showing Air Pollution from the burning of Biomass.

In general, the air pollution problem is attributed to emissions from increased traffic and reconditioned motor vehicles, industrial emissions, and other anthropogenic activities such as open burning of waste and indoor biomass-fueled cookstoves. Absence of proper reliable data and air quality regulations hinders impact assessment on health population as well as quality of monitoring and enforcement.

Mercury Use and Practices in Artisanal Use and Small Scale Gold Mining Sector in Uganda

By Anne Nakafeero



Anne Lillian Nakafeero

1. Information on the amounts of mercury used and gold mining areas with mercury use

1. Major Artisanal and small scale gold mining regions in Uganda include Central Region (Mubende, Kassanda and Kyegegwa Districts); Kigezi Region (Kabale and Kisoro Districts); Eastern Region (Busia, Bugiri and Namayingo Districts); Karamoja Region (Amudat, Nakapiripirit, Kaabong, Moroto, Nabilatuk and Kotido) and Kigezi Region (Kabale and Kisoro Districts)
2. A total of 32,146kg of mercury (Hg) is annually released into the environment
3. Gold (and silver) extraction with mercury amalgamation is the highest contributor (18496kg/yr) of mercury emissions in Uganda
4. Mercury use hotspots are concentrated within the Eastern Districts of Busia and Namayingo. Their proximity to the Kenyan border makes the smuggling of mercury easy. Mercury availability and the alluvial nature of the ore in the eastern region has made mercury use rampant in the region. The central region mercury hot spots are districts of Kassanda and Mubende, and in Ankole region, its Buhweju, Bushenyi and Ibanda . In the Karamoja region the mercury hotspots are only in Moroto, Amudat and Nakapiripirit Districts.
5. Over 15,000 kg of mercury are used per year. The Central region uses the highest amount of all mercury in gold production with over 7,800 kg Hg/y (51%); followed by the Eastern region with over 5,000 kg Hg/y (33%). Karamoja region uses over 1,200 kg Hg/y (8%).

Existing worst practices in mercury use at ASGM sites

- whole ore amalgamation;
- open burning of amalgam or processed amalgam;
- burning of amalgam in residential areas; and
- Cyanide leaching in sediment, ore or tailings to which mercury has been

added without first removing the mercury.

2. The prevalent mining and processing techniques being used in ASGM in Uganda

1. Gold processing with mercury is most prevalent in ASGM
2. Few miners use gravitation methods

3. Actors in the mercury value chain

1. Foreign traders – specialized dealers of Kenyan, Tanzanian and Congolese origins who bring in and sell mercury to other mercury traders, gold buyers, and ASGM operators;
2. Local traders who sell mercury in the ASGM sites. These are predominantly gold buyers who also engage in mercury supply in order to attract gold selling customers;
3. Jewellery shops in Kampala, allegedly owned by people of Asian origin;
4. Mining companies

4. Trade of mercury

1. Mercury trade statistics indicate that South Africa and Kenya are the principal source countries, although Malaysia appears to have dominated official mercury imports over the past two years.
2. According to URA, eight consignments totaling 615 kg entered the country between January 2013 and February 2016, mostly from Kenya.
3. A representative of the URA emphasized that smuggling is likely to be rampant given the apparent lack of logistical and regulatory constraints.
4. Most of the respondents indicated that the Malaba border post on Uganda's eastern border was one of

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odourless gas that is toxic to humans. Exposure to high levels of carbon monoxide can cause unconsciousness or even death, while exposure for long periods of time has been linked to heart disease. Continued exposure to Lead is known to affect brain development and the central nervous system and is particularly poisonous to children. The main routes of exposure are through inhalation of particles or ingestion of Lead contaminated dust. There is no 'safe' level for Lead exposure!

NEMA has developed draft Air Quality Regulations and has acquired equipment to facilitate air quality monitoring, particularly emissions from industrial establishments. There are also efforts, through the East African Community, to harmonize the air quality regulations across the East African Region as air pollution knows no geographical boundaries.

Urban and transport authorities are urged to develop transport policies and systems that will facilitate

Workers should also be subjected to regular medical checks to ensure that any potential health impacts are identified early enough and addressed.

We are called upon to promote circular production systems, that is, recycling and reuse of materials and waste, less incineration and more efficient incineration systems where incineration is unavoidable. Waste minimization should be prioritized. Government and other stakeholders should continue to raise awareness about the sources and impacts of air pollution.



Emissions from a furnace in a Lead recycling plant, persons working in such facilities are at risk of health impacts arising from the activity

WHO estimates that 4.2 million deaths occur every year as a result of exposure to ambient (outdoor) air pollution, while, 3.8 million deaths occur every year as a result of household air pollution due to the nature of cook stoves and fuels used

The global theme for this year's **World Environment Day 2019, 'Air pollution'** draws attention to the fact that air pollution is a global issue that affects countries across the world.

Need for action

Cognizant of the risk air pollution poses to human health and environment, the Government of Uganda is taking action to address the issue. For instance, the Government banned the importation of vehicles older than ten (10) years and vehicle emission limits have been provided for in the Traffic Control Act.

decongestion and promote less energy use, for instance providing for safe walk ways.

Industries are required to put in place efficient technology and source abatement measures. The persons working in such Facilities must be provided with adequate Personal Protective Equipment (PPE) to minimize exposure to emissions.

Air pollutants know no boundaries, have no limits and can remain suspended for hours and days in the air. We cannot stop breathing, but we can control the air we breathe. Every action counts! Let us **'Fight air pollution and protect human health and the environment'**.

The writer is the Principal Environment Inspector, NEMA.

HIGHLIGHTS FROM MOROTO



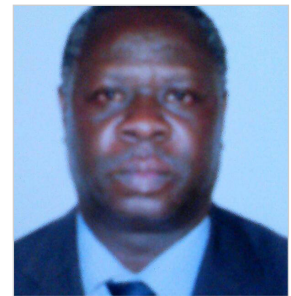
Mr. Keem Andrew Napaja
LCV Chairman, Moroto



Mr. Lochap Peter Ken
RDC, Moroto



Mr. Gwokto Martin Jacan, CAO, Moroto



Mr. Lotyang John
DNRO, Moroto

By John Lotyang

Moroto is situated in the North-Eastern part of Uganda with a land area of 3,537.71 sqkm and population of 104,539 according to the 2014 census.

Socio-Economic State

The main economic activities in the district are livestock keeping, subsistence agriculture; limestone and marble mining. Moroto district has a very low literacy level of 12% compared to the national average of 54%. The top five causes of morbidity in the district are diseases related to poor environmental sanitation, lifestyles and low literacy levels.

These constitute 90% of the disease burden, well above the national average, and include diarrhoeal and skin diseases, intestinal worms, eye infections, trauma, anaemia and malnutrition. Farmers have not adopted modern methods of agriculture.

Mining has attracted the local people to live in clusters. In Rupa, there are more than 1,000 people living a

households. However, there is little effort to restore the degraded mining areas.

Wood fuel is the major source of energy for households. This has exacerbated the already precarious land degradation. High winds are common and have damaged infrastructure in the district.

Mountain Moroto is the main tourist attraction for mountain climbing, camping, bird watching and forest walks. Nakiloro, is an archaeological site, as well as Apule, the dispersion site of the Karimojong people.

Moroto has a low population density with people living in dispersed settlements. The homesteads, with as many as forty inhabitants, are not permanent; during the dry season they usually move to set up temporary camps in areas with pasture and water.

Management of solid waste is one of the biggest dilemmas facing Moroto Municipality. Most institutions use pit latrines and the few water-borne toilets in senior quarters and hotels.

Land use

Much of the land in Moroto district is used for grazing and settlement. Until recently 50% was gazetted as wildlife reserves – Bokora, Matheniko, that extends to Napak district. Land in Moroto District is communally owned; and there is no comprehensive land use plan.

Forests and woodlands

The forests include woodlands and bushland, and are found on some hills and mountains, notable is Mt Moroto Central Forest Reserve. The reserve can be broadly classified as dry Combretum, Butyrospermum and dry acacia savannas, with Juniperus-Podocarpus dry montane forest. The flora and fauna of this forest reserve is characterised by a high number of rare and/or restricted-range species. More than 30,000 people live in or derive subsistence (hunting, charcoal burning, collecting honey, mushrooms, wild fruits, medicinal herbs) from Mt. Moroto Forest Reserve. Livestock within the forest is estimated at 6,010. The exact status of the forest area is not known because of temporary cultivation, settlement, and grazing patterns.

STATE OF ENVIRONMENT

The demand for tree products (fuel wood, building poles etc) exceeds the existing supply in the district, and the current harvesting patterns are not sustainable. Alternative sources of energy are costly, and have not been sufficiently promoted to cause a shift from wood fuel. Consequently, the vegetation is already as low as 30% in some places; while some of the land is bare.

Water resources

Surface water in the district is seasonal, except for the upper courses of a few streams fed by springs in the mountainous areas of Iriir and Mt. Moroto. 12% of the population depends on streams and rivers during the rainy season; while 2% get their water from dams and wells. Silting of dams and valley tanks due to soil erosion is a major problem. There is recurrent shortage of water, accompanied by seasonal migration of people to wetter areas in the south. Human and livestock demand for water was projected to increase by 7.8% between 1991 and 2010, and 72% from 1989 to 2010 respectively. There are no immediate plans in place to increase supplies, implying continued scarcity and deterioration in quality of water.

Wetland resources

The main wetland systems identified include Okok – Nakodiokodio that are fairly large seasonally flooded wooded grasslands; and Okere – Nangolol Apolon, a small long and narrow seasonal system/network, draining in Kocholut, Kotipe and Loki dams. Most wetlands are seasonally flooded grasslands dominated by *Acacia* – *Hyparrhenia* species. Several species

of reptiles, amphibians and birds such as cattle egrets can be found in the wetlands. Hunting at the subsistence level for meat is common. Some of the wetlands are being cultivated, while others have been modified by bushfire and cutting of trees. Most wetlands in Moroto district are located in very remote and insecure areas, such as the Bokora-Matheniko Wildlife Reserve, part of the reason they have remained intact.

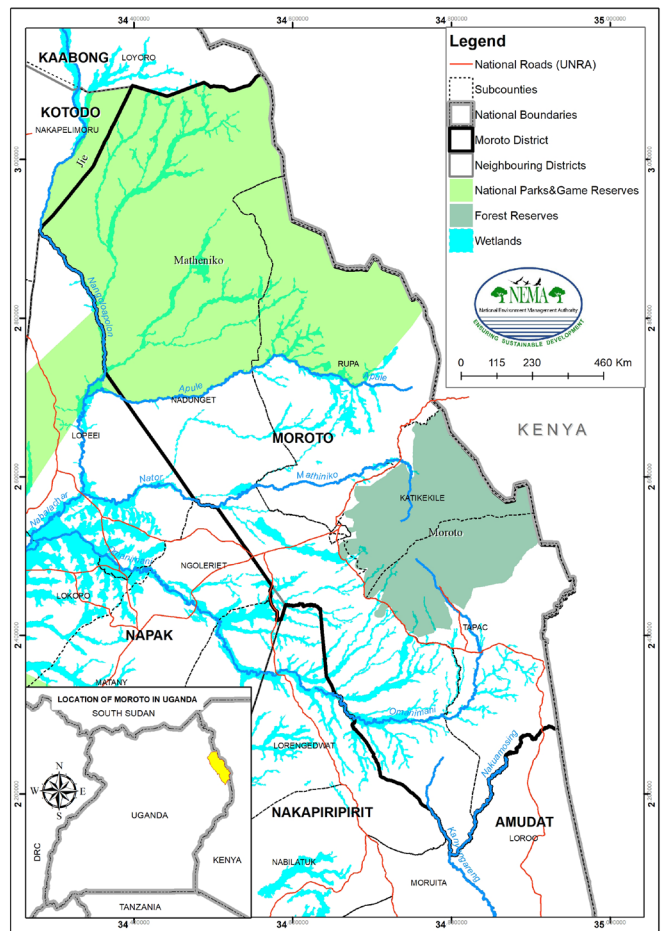
Biodiversity

Wildlife was once abundant in Moroto, both in terms of numbers and diversity of species. Moroto forests still support numerous species such as baboons, monkeys, bush pigs, leopards, hyenas, reptiles and a diversity of bird species. Wildlife in the savannah and rangelands areas are more diminished, but include duikers, oribi, rabbits, squirrels, jackals, guinea fowls, ostriches, secretary birds, kites and storks. The wetlands have fish, crocodiles, ducks, storks, snakes, and butterflies. In recent years, large mammals have disappeared from Matheniko Bokora wildlife reserves.

Mineral endowment

The mining sector is significant in Moroto district, with minerals including limestone, marble, silver, copper, iron, manganese, chrome, titanium, niobium, tantalite, and

Map of Moroto District



radioactive minerals. Artisanal mining is common in Tapac, Rupa and Katikekile sub-counties.

Challenges in Environmental Management in Moroto

The department remains under funded yet there are several activities that require financial and logistical resources.

Lack of adequate transportation has hindered field based activities. The dry spells have continued to impact on agriculture and tree planting since 2017 despite availability of tree seedlings from partners.

The writer is the Moroto District Natural Resources Officer

AWARD DURING LABOUR CELEBRATIONS

1 MAY 2019

BREIF PROFILE OF MR. SABINO FRANCIS OGWAL

Mr. Sabino Francis Ogwal is born to the late Ismael Okori and the late Josephine Agol. He is a Lango from the Owumolao Clan. His comes from Obuii village in Amunga parish, Olilim sub-county, Otuke District.

Francis has a Master of Science Degree in Environment and Natural Resources and Bachelor of Science Degree from Makerere University.

Francis has 22 years working experience in environment and natural resources management. He currently works at the National Environment Management Authority (NEMA) as a Natural Resources Manager (Biodiversity and Rangelands).



Francis has over the 22 years committed life, time and energy promoting the course for biodiversity. Francis is passionate and selfless in his work. His outstanding contribution is visible at local, national and global level.

At the national level Francis coordinated the development of the National Biodiversity Strategy and Action (2015-2025). This Strategy has been integrated in the National Development Plan (NDP) II. Furthermore Francis is actively involved in resources mobilization (through project proposal development) for biodiversity management and has to date helped Government to mobilize over USD 6.5 million from a number of development partners. In addition Francis coordinated the development of a National Biodiversity Finance Plan to guide investment in biodiversity.

At the national and local level, Francis is at the forefront of protecting and restoration of rangelands ecosystems (also known as the cattle corridor). The outcomes of his effort include the following:

1. Initiated a programme on the protection of rangelands ecosystems, with a focus on protection of threatened but very important species in the rangeland landscape, beginning with the shea butter tree in the shea belt districts from eastern through northern to West Nile districts namely Serere, Soroti, Dokolo, Katawi, Amuria, Lira, Alebtong, Otuke, Abim, Agago, Pader, Kitgum, Gulu, Nebbi, Arua
2. Contribution to implementation of the Presidential Directive (of 2006) on the protection of the shea butter tree and value addition to shea-based products. Francis coordinated development of the following to enhance implementation of the Presidential Directive on shea:
 - a) National Shea Export Strategy for shea products;
 - b) Manual on post-harvest handling of shea products,
 - c) Framework for certification of shea products;
 - d) Standards on shea products for lip balm, cosmetics, after shave and lip shine (gloss).
 - e) National Strategy for the Conservation and Sustainable Use of the shea butter Tree in Uganda;
 - f) Collaboration with academia and research institutions for research on shea
 - g) Collaboration with the private sector involved in value addition to the shea including Blessed Organic Release and Guru Nanak
3. Another key outcome from the programme on protection of the shea butter tree is the declaration of the tree

a reserved species in the National Forestry Regulations of 2016. This has given the tree a high conservation and protection status. Furthermore networking and collaboration with Resident District Commissioners, district leaders and district technical staff have been established. Inter-district enforcement has been established.

4. GoU/GEF/UNDP project on the Kidepo Critical landscape which has supported local communities especially women on value addition to shea products. The women are now producing soap from shea in addition to processing oil. The machines availed to women groups has increased their capacity to produce more oil from shea nuts compared to the traditional method.

A litre of shea oil (cold press) is currently sold at UGX20,000. The project has set up market information centres in Otuke and Agago district to support local communities in accessing market information on shea products.

5. Through the Kidepo project local communities in Abim, Kaabong and Kotido districts have supported in number of community initiatives to only protect the environment but also bring income to local communities. This include a cultural centre for women group in Kawalakol sub-county in Kaabong districts.
6. Afforestation of bare hills in Itojo sub-county, Ruhaama County in Ntungamo district. It has proved to very successful intervention. More local communities are now interested in planting trees on the bare hills not only to protect the environment but also to raise income.
7. Francis is currently working with the local governments to identify sites that have high eco-tourism potential and species in the landscape that have potential for value addition (using the lesson learnt on value addition to shea products). The pilot districts are Katawi, Napak and Nakapiripirit. This will be expanded to other districts (subject to availability of financial resources).
8. Development of the National Biodiversity Strategy and Action Plan and the National Biodiversity Finance Plan. The National Biodiversity Finance Plan identifies opportunities for resource mobilization to address the financing challenge for biodiversity at the national level with aim of increasing investment in biodiversity by Government for socio-economic development and livelihood improvement.
9. **At the global level**, Uganda's profile and visibility has been raised high since Francis was designated as the National Focal Point for Convention on Biological Diversity (CBD) for Uganda in 2005.
10. Francis served on the Bureau of the Convention on Biological Diversity (CBD) from 2012 -2014 where he served as Vice President representing Africa region. In December 2016, Francis was elected by the Conference of the Parties (COP) CBD **first Chair of the Subsidiary Body on Implementation (SBI)** of the CBD. He became the first African to hold that post and also the first globally to be elected to that post.
11. Following his excellent work as Vice President to the COP Bureau and first Chair of SBI, Francis was elected by COP to the CBD at its fourteenth meeting in Egypt in November 2018 as **Co-chair for the development of the post-2020 global biodiversity framework**.

Francis and Co-chair (from Canada) have been given the responsibility to guide the 196 Parties to the CBD in the development of the post-2020 global biodiversity framework and to present the Framework for adoption by Parties at its fifteenth meeting in October in 2020 in China.

The post2020 global biodiversity framework is a very important framework because it will identify actions that needs to be taken at national, regional and global level to reduce biodiversity loss.

The post-2020 global biodiversity framework will form the basis for investment in biodiversity by global community for the next ten years (2021-2030). This Framework will replace the current global Strategic Plan for Biodiversity which ends in October 2020.

12. 12. Uganda, through Francis, is providing leadership at the global level on matters concerning biodiversity. Francis has contributed significantly in raising the profile and visibility of Uganda at the global level.



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Using Conservation to promote community livelihoods: the case of Eteteunos Moruita Wildlife Conservation Centre, Kaabong District, Karamoja

By Okiria-Ateker James

Eteteunos Moruita Wildlife Conservation Group is keen on protecting Karamoja's rich landscapes as well as promoting its unique culture and way of life.

The group, which is made up of 30 women was formed in 2015 as part of efforts by the Kidepo critical landscape project to promote community led conservation of this biodiversity rich area.

As part of their efforts to conserve environment and promote their culture, the group decided to establish a cultural centre – Eteteunos Moruita Wildlife Conservation Centre – located at the periphery of Kidepo national park in Kawalakol sub-county, Kaabong district.

To support their dream, the project provided the group with 86.8m Uganda shillings (USD23, 795). With this support, the group was able to construct four grass thatched bandas depicting Karimojong culture, a main reception house for a craft shop and a meeting room

as well as sink a borehole close to the centre to provide water to the centre, its visitors and the surrounding communities.

The cultural centre has now become popular with low income tourists visiting Kidepo national park. A single night in the banda costs 25,000 Uganda shillings (USD6.9).

The hall in the main reception house on the other hand is hired out for meetings at 50,000 Uganda shillings per day (USD13.7). In addition, the craft shop in the main reception house is stocked with a variety of craft materials ranging from Karimojong stools, hats, Karimojong wear (for both men and women), ladies' hand bags among other items. Prices for the craft items range from 25,000 to 100,000 Uganda shillings (USD6.9 to USD27.4).

In addition, the group also performs Karimojong cultural dances to tourists at a fee of 10,000/= Uganda shillings (USD 2.7) and conducts conservation education campaigns in the parishes bordering the park.

As a result of their work, Uganda Wildlife Authority (UWA) added the group an additional 46,000,000 Uganda shillings (USD12, 603) from its revenue sharing resources to construct four more permanent *bandas*. In March 2019, UWA again added more 100,000,000 Uganda shillings (USD 26,702.3) for pulling water from the borehole to the centre.

The earnings from the cultural centre have helped improve the lives of the women group and the surrounding communities. It is a good example of how biodiversity conservation can be coupled with community livelihoods for a positive and sustainable outcome.

**The writer is the Project Manager
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Air Pollution

From page 7

One measure of outdoor air pollution is the Air Quality Index (AQI) which rates air conditions based on concentrations of five major pollutants: ground-level ozone, particle pollution (or particulate matter), carbon monoxide, sulfur dioxide, and nitrogen dioxide. Some of those air pollutants also contribute to indoor air pollution, along with radon, cigarette smoke, volatile organic compounds (VOCs), formaldehyde, asbestos, and other substances.

Environmental impacts

Though many living things emit carbon dioxide when they breathe, the gas is widely considered to be a pollutant when associated with cars, planes, power plants, and other human activities that involve the burning of fossil fuels such as gasoline and natural gas. This is because carbon dioxide is the most common of the

greenhouse gases, which trap heat in the atmosphere and contribute to global warming and climate change. Humans have pumped enough carbon dioxide into the atmosphere over the past 150 years to raise its levels higher than they have been for hundreds of thousands of years.

Other greenhouse gases include methane (from poorly managed wastes, livestock etc), chlorofluorocarbons (CFCs) (which were used in refrigerants and aerosol propellants until they were banned in the late 1980s because of their deteriorating effect on Earth's ozone layer), water vapour among others.

Another pollutant associated with climate change is sulfur dioxide, a component of smog which is a primary cause of acid rain. Volcanic eruptions may also spew massive amounts of sulfur dioxide into the atmosphere, sometimes causing cooling that lasts for years. In fact, volcanoes used to be the main source

of atmospheric sulfur dioxide; today, people are.

Airborne particles, depending on their chemical makeup, can also have direct effects separate from climate change. They can change or deplete nutrients in soil and waterways, harm forests and crops, and damage cultural icons such as monuments and statues.

What can be done?

- Stop open burning of waste
- Switch off the engine while in traffic jam
- Regularly service your car and where necessary the engine should be tuned.
- Use public transport as opposed to self-drive
- Tarmac all roads and fill potholes
- Limit exposure to smoke in and outdoor
- Do not cook in closed doors
- Water dusty roads and construction areas
- Plant grass and trees in bare areas

The writer is an Environment Inspector, NEMA.

Mercury Use

From page 6

the major entry points for smuggled mercury. Other known conduits included, the border towns of Busia in Eastern Uganda and Mutukula on the Southern border with Tanzania.

5. Most traders (often Kenyan) deliver the mercury directly to mine sites, although the resource is as readily available in Kampala, where it is sold under-the-counter, among others, in jewelry stores.
6. Whereas the ports of Mombasa and Nairobi are closer to Uganda than the Port of Dar es Salaam, Tanzania's northern goldfields are proximately situated around Lake Victoria, prompting Tanzanian dealers to supply mercury to Ugandan markets for

good profits. Uganda has also been reported to be a transit country for a mercury trade route feeding into the Democratic Republic of Congo (DRC).

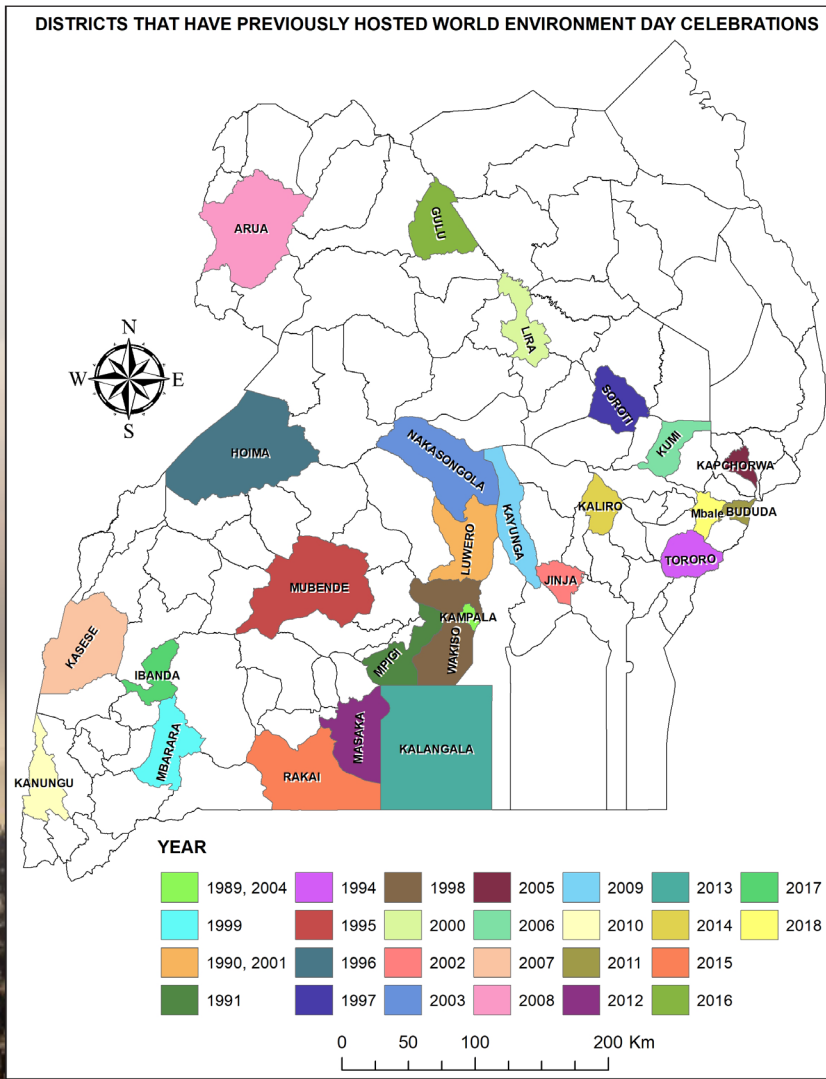
7.

5. Miner population

1. The percentage of children (<18 yrs) among miners ranges from 0 to 5% whereas children (<14 yrs) among miners ranges from 0 to 2%.
2. Percentage of women among miners ranges from
3. At least 45% of the miners engaged in ASGM are women.

****Article to be continued in the next issue**

The writer is a Senior District Support Officer, NEMA.



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SUSTAINABLE DEVELOPMENT GOALS



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