GREEN BUSINESS GAZETTE

ISSUE 9

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COP26: Fighting Global Climate Change

Africa A Victim of Toxic Waste Dumping

How To Take Care of Solar Panels

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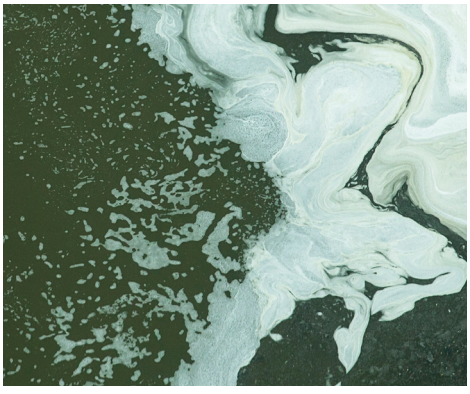

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FROM THE EDITOR'S DESK

Greetings to our highly esteemed readers, regular readers and those who just got on board. It is my utmost pleasure to introduce to you the latest Green Business Gazette Issue 9 for the month of November 2021. The magazine is the first of its kind and the leading business sustainability magazine in Zimbabwe. First introduced in June 2020, the magazine has gained momentum and has managed to grow into an internationally recognized magazine thanks to our readers and supporting stakeholders. We extend our profound gratitude to Konrad-Adenauer-Stiftung for their kind support in making this publication a success.

The magazine brings to you the latest and topical issues in the world of environmental management and business sustainability. In each issue rich stories that educate and update you on what is happening locally, regionally and internationally are published and it is our hope that you find them beneficial and suitable to your taste.

As the world still continues to fight the Covid-19 pandemic attention has not been shifted from one potentially devastating phenomenon that is life threatening to everyone across the globe. Global efforts are being made to combat climate change for the benefit of the world today and the future. Issue 9 updates us on the move made by Google to reduce users carbon footprint. New features have been added to Google Search, Maps, Travel and Nest that allow for the selection of sustainable options, greener travelling routes, hotels and continuously alerting the world on electrical vehicles and other carbon neutral options. We are excited and looking forward to the upcoming COP26, where parties will be submitting their revised Nationally Determined Contributions (NDCs). This issue gives an insight of COP26 which was held in Glasgow, United Kingdom from the 31st of October 2021 to the 13th of November 2021.

The issue also takes a dive on the moves Zimbabwe is making in the field of energy efficiency and biodiversity utilization and conservation. We get a report on the Ministry of Energy and Power Development National Energy Efficiency Validation Workshop and the new exercise Zimbabwe has embarked on to assess the status of its Biodiversity Economy. Regionally, the issue presents the crucial matter on toxic waste dumping in Africa mainly the Gulf of Guinea. Other key stories the issue is bringing to table are on waste management and green opportunities. It is unequivocal that environmental and business sustainability are the key to a less burdened world that will still be able to support all species of flora and fauna, human beings especially. We therefore encourage you to continue promoting sustainable practices wherever you are, be it at your workplace, community or at home.

Happy reading to you all!

Tawanda Collins Muzamwese
EDITOR IN CHIEF

COP-26 FAILS TO DELIVER: BIG LET-DOWN AS COUNTRIES STICK TO HIGH EMITTING FUELS AND ADOPT WEAK TEXT

Tawanda Collins Muzamwese

The much hyped about COP-26 Summit has failed to deliver favourable outcomes to decelerate increase in temperature by less than 1.5 degrees. Delegations from across the world took time to reiterate commitments to emission reductions in the event which was held from 31 October to 13 November 2021 in Glasgow, Scotland.

Raising ambitions on NDCs is being spoken about by many countries, but the action on the ground is failing to tally with the urgency. Glasgow will go down in the history of climate talks as a missed opportunity. The commitments to deal with coal emissions and fossil fuels were toned down in the final text. This reneging, reversed all the efforts which have been put into the discussion.

If the world is to reduce emissions drastically, action must be taken to reduce emissions especially those coming from fossil fuels. The major sources of greenhouse gas emissions are traditional fossil fuels such as coal. The world's reliance on coal makes it difficult to strike any meaningful agreement.

Although a deal was stuck in Glasgow, it is weak. The major issues which will halt climate change remain circumnavigated and a fossil based and coal-powered economy remains on the table. It is not a good thing to see some of the top polluters in the world reneging when it comes to ending subsidies on fossil fuels and let alone continue supporting a coal-based development model.

Major coal producers prefer to go towards a "phase down" of coal rather than a "phase out". These semantics and their implications remain mind-boggling to a plethora of delegations. In some cases, it may mean loss of jobs and close down of whole sectors. In another perspective it may mean meeting the targets of emission reductions. Consensus in such circumstance is as rare as brushing the teeth of a lion.

Due to the different country contexts and the fact that countries depend on different natural resources, it is difficult at times to reach consensus when some countries see the agents of pollution as a source of income. Negotiators faced a tough time in Glasgow in trying to harmonise perception and bring stronger commitments that would lead us towards a carbon neutral future.

For African countries, this means another long wait to redemption as they bear the brunt of climate change due to the higher levels of vulnerability. As delegations circumnavigated decisive and commanding text, in favour of loose text which is based on encouraging action, an agreement in Glasgow was watered down.

With no country willing to take responsibility for historical damage caused in the path to irreversible climate change, pledges for financing continue to be made at a level which is far less that the demand for financial resources. Meagre resources available for financing climate change, make it difficult for putting the plans into practice.

TOWARDS COP26 CLIMATE SUMMIT; A Leap Towards Our Planet's Ray of Hope

by Sipho Graham Ndebele

Previous COP series are interrelated and they have built upon some of the milestones which were achieved at the COP26 session. The table below outlines the key previous COP sessions.

This year, COP26 was held in Glasgow, United Kingdom between 31st October 2021 and 12th November 2021. It was hosted by the United Kingdom in partnership with Italy. The exciting buzz of the climate summit was that, parties were expected to submit their reviewed NDCs. The conference was expected to be taken last year in 2020 but it was postponed to 2021 due to the novel Covid-19 global pandemic safety measures.

COP	Location	Time	Decision
3	Kyoto, Japan	1 December to 10 December 1997	Adopt Kyoto Protocol on the GHG stabilization
11	Montreal, Canada	28 November to 9 December 2005	Adopt Montreal Action Plan agreement to "extend the life of the Kyoto Protocol beyond its 2012 expiration date".
16	Cancún, Mexico	28 November to 10 December 2010	Raise US$100 billion per annum "Green Climate Fund", and a "Climate Technology Centre" and Network.
21	Paris, France	30 November to 12 December 2015	Adopt Paris Agreement on keeping global temperatures below 2o Celsius and 1.5o Celsius preferably above pre-industrial levels by mid-century.

The Conference of Parties (COP) is a supreme decision-making body of the United Nations Framework Convention on Climate Change. The UNFCCC was formed in 1994 in order to stabilize greenhouse gas emissions and protect mother nature from climate change threats. COP's key task is to review national communications and emission inventories submitted by its parties. The body aims at assessing the effects of the measures taken by its parties and the progress made in achieving the ultimate objective of the convention.

COP26 aims to achieve four key targets in order to contain climate change namely;

- Mobilise finance.
- Work together to deliver.
- Adapt to protect communities and natural habitats.
- Secure global net zero by mid-century and keep 1.5 degrees within reach.

The COP26 session had a lot of expectations in regards to its roadmap, due to the global need for urgent and concrete actions which tackle climate change. The Paris Agreement goal aims to limit global warming temperatures below 2o Celsius and preferably 1.5o Celsius above pre-industrial levels. Climate experts say that the 1.5o Celsius goal is alive. A breakthrough on this goal was considered through the commitment made by 190 countries on phasing down coal applications. Despite the commitment made, the world expected that, COP26 will phase out not phase down the use of coal and fossil fuels.

African nations are expected to experience severe effects originating from climate change due to their geographic location and economical capacity. To sustain adaptation and mitigation against climate change implications, developed nations had previously committed to raise and fund developing nations with USD $100 billion annually. COP26 extensively discussed on climate finance and reached a consensus on increasing support to developing countries. COP Parties welcomed the call to at least double climate finance for adaptation and mitigation, reaffirming the duty to fulfil the pledge of providing climate finance funding.

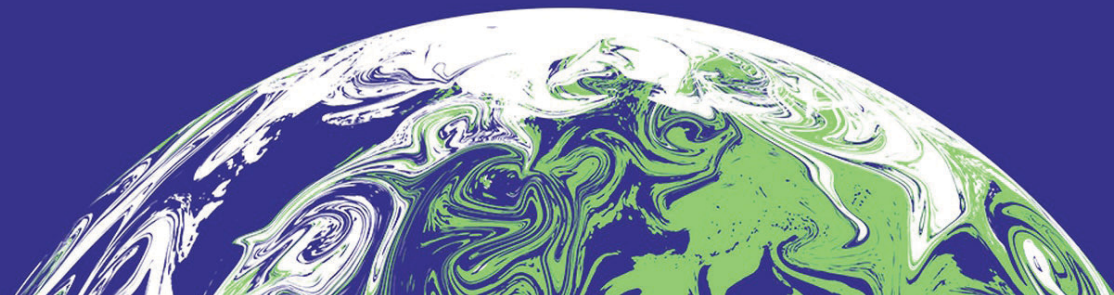
Trees are a key player towards controlling climate change through carbon sequestration. Human activities have serious impacts on our forest ecosystems. The area of primary forest worldwide has decreased by over 80 million hectares since 1990.

More than 100 world leaders at COP26 pledged to stop and reverse deforestation by 2030. Boris Johnson articulated that climate change and biodiversity are two sides of the same coin. Hence, the quality of biodiversity is dependent to climate change.

Despite the strides made at COP26, the discussions did not address all the expectations its stakeholders. Developing countries were pushing for a clear plan for a loss and damage funding facility. The cause did not break through hence, the next COP to be held in Egypt next year, is a ray of hope.

The president of the COP26, Alok Sharma acknowledged that the agreement was weaker than many had hoped for. However, he insisted that the pact was not a failure, describing it as a "historic achievement". Now, the COP26 set ambitions require genuine action to deliver.

THE CLIMATE HAS NO BORDERS



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Titaku/ Envirosmat Consultancy is a growing firm in the line of business and environmental sustainability running under the Titaku Environmental Engineers (Pvt) Ltd group. The firm specialises in environmental impact assessments (EIAs), industrial hygiene surveys, environmental monitoring exercises, environmental engineering designs, pegging of mine claim boundaries, siting of works plans drawings, mapping and most recently NORM radiological surveys.

The consultancy is made up of a team of experts in environmental science, safety and health, environmental health, geology, hydrology, social sciences, engineering and cartography. Through its pool of professionals, the consultancy has managed to diversify its field and has integrated information and results for the best of the clients to which it offers its services to.

The consultancy focuses on quality service delivery in a professional and timely manner to aid in the smooth flowing of business and investment. It offers its services in the mining, manufacturing, construction, energy and fuels, recreation, agriculture and services sectors. The Envirosmat Consultancy – Titaku brand has a wide client base of over 200 organisations within the private and public sector, large corporates, SMEs as well as individuals.

The consultancy firm has taken strides by offering professional services to big corporates such as ALROSA Zimbabwe, Prospect Lithium Zimbabwe, ZUVA Energy, PRObrands, ZIMPARKS, POTRAZ to mention just but a few and also pioneering EIA studies for medicinal cannabis projects in Zimbabwe.

The firm is open to navigating new ground and projects within the field of business and environmental sustainability.

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THE TIGER PHOTOIONIZATION DETECTOR (PID) (left)
AND KANE 905 HANDHELD COMBUSTION ANALYSER (right)

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THE MOVEMENT DRIVE-IN-CINEMA AND RECREATIONAL PARK PROJECT

KATOMBORA ISLAND RESORT CENTRE PROJECT

A VICTIM OF TOXIC WASTE DUMPING

by Wadzanai D. Manyame

Toxic colonialism has become a persistent trend in Africa. West Africa has been recorded as the top destination for toxic waste with special mention to the Gulf of Guinea. Life taking and health threatening cases of toxic waste dumping have been recorded in the region. The right to good health and well-being under the UN Sustainable Development Goals and a clean and safe environment under the Constitution of almost every government in the world, is being breached, and this is mainly being done by economic giants in Europe, Asia and the United States of America. Knowingly, to avoid high costs of waste treatment and disposal in their countries, the above-mentioned states are falsely transporting waste material under the banner of reusable material to Africa. In some instances, waste is openly being transported as waste, but it is being said to be non-toxic waste when the opposite is true. Lives have been lost, health complications have been experienced and this trend continues as some African countries have not yet ratified to the internationally set treaties that control and ban the transboundary movement of hazardous waste such as the Basel and Bamako Conventions.

Toxic waste is unwanted or used up material that is capable of posing harm to the environment and life on earth. The waste emanates from industrial, mining, farming and manufacturing processes as well as health institutions. Toxic waste can also be termed hazardous waste and comes in different forms, that is solid, oils, liquid, gas and sludge form. Depending on the main constituents of the waste, toxic waste presents different characteristics and effects and therefore impacts the environments, plants, animals and humans differently. The waste can be rich in toxic chemicals such as mercury, radioactive active material such as uranium, persistent organic compounds such as dichlorodiphenyltrichloroethane (DDT), endocrine disrupting compounds such as lead. The upgrades in technology are also contributing to the generation of large amounts of toxic waste especially in the form of redundant electronic waste, e-waste. According to a report made by Inger Andersen in February 2020, close to 180 million tons of both hazardous and household waste are generated every year globally. Of this 9.3 million tons of hazardous waste experiences transboundary movement. Mostly from the Western countries and China to Africa for disposal. This normally occurs in cases where the treatment is too polluting for the developed countries, too expensive or less profitable.

In Africa however, the global poor are thriving day and night to get out of poverty and every dollar counts no matter how little it is. Therefore, offers are accepted to let African grounds be waste dumps for such waste as long as a fee is paid. It does not matter how little it is. Waste that costs US$620 000 to treat and dispose in the Netherlands costed US$22 000 in Cote d'Ivore. The balance was paid through lost lives and crippled health of thousands of Ivorian citizens.

Africa is a victim of continued illegal trade of toxic materials and waste and this is attributed to a number of causes, most of which are economic. It is a public secret that Africa has some of the most impoverished countries who are in debt and are trying to keep their economies afloat for the betterment of their citizens. This makes it vulnerable to exploitation by developed nations who prey on the weak. The cost of treatment and disposal of waste in developed countries is higher compared to that charged by the desperate African countries. Generation of funds from levies collected from importers benefits the African countries. Ghana for example generates and benefits from close to US$100 000 million from the levies collected from importers of electronic waste every year. There are more rigorous environmental laws and standards in developed countries which make it difficult for toxic waste to be carelessly disposed of in Europe, China and the United States of America unlike in African states where environmental management is still a growing field and corruption is taking over. Advocations such as 'Not In My Back Yard' have also taken a lead role in ensuring the management of hazardous waste does not bring harm to the citizens of developed countries. The industrial giants seeking to dispose of their toxic waste then turn to Africa where the 'door is always open'. In some instances, the transportation of toxic waste has been done under the façade of importation of goods for reuse and recycling, where only 25% will be workable material and the rest, garbage.

Topical cases of illegal toxic waste disposal that have been recorded in Africa are mainly in the Gulf of Guinea. Countries mainly affected are Nigeria, Ghana and Cote d'Ivore. Approximately 500 containers of electronic waste are transported to Nigeria on a monthly basis. In 1988, 2000 drums of Italian hazardous waste were transported to a small town in Nigeria called Koko under the guise that it was fertilizer. A monthly rental of US$100 was being paid to a Nigerian citizen to keep these drums on his farm. When the waste leaked chemical incidents were experienced which lead to environmental damage, health loss and loss of human life. In 2006, a Trafigura case was recorded. The effects of this event are still being felt. A Netherlands multinational oil company saw it expensive to pay US$62 000 to treat and dispose its toxic waste. After approaching an Ivorian citizen, a US$22 000 deal was settled under the conditions that the waste would be disposed of in Abidjan, Cote d'Ivore. 17 people died and tens of thousands were poisoned. The effects of this incident were persistent to the extent that a call for Trafigura to disclose the contents of the waste disposed of in Abidjan was made by UN Human Rights experts in 2016.

A convention was introduced to realize a total ban in the importation of hazardous waste called the Bamako Convention. The Convention was negotiated by countries in the Organization of African Unity in Mali and came into force in 1998. The Bamako Convention was born following failures realized by the Basel Convention. The Basel Convention reduces and controls the transboundary movements of hazardous waste whilst the Bamako seeks to completely ban any kind of transboundary movement of any form of toxic waste. The unfortunate scenario however is that the main culprits or rather victims of illegal toxic waste dumping which are countries in the Gulf of Guinea with special mention to Nigeria and Ghana, are not ratified to the Bamako Convention and therefore illegal trade of toxic waste continues in West Africa.

EDIBLE COFFEE CUPS BEGIN TO BE USED BY MANCHESTER CITY FOOTBALL CLUB

Tawanda Collins Muzamwese

SUSTAINABILITY TRANSCENDS THE BOUNDARIES OF HUMAN IMAGINATION AND LIES DEEPER INTO UNFAMILIAR SECTORS. AT FOOTBALL STADIUMS, THE ISSUE OF WASTE IS ENDEMIC. PLASTIC AND OTHER NON-BIODEGRADABLE MATERIALS HAVE BEEN CAUSING SERIOUS POLLUTION IN THE WORLD.

Manchester City Football Club is dealing with issues of plastic waste by introducing edible cups. The edible cups can hold coffee for at 30 minutes before getting wet. Upon finishing the beverage, a customer can go on to consume the cup which is made up of edible material. Such innovations are scaling up the implementation of sustainable development in football.

A sport which is revered by many, shows great innovation and ability to bring solutions to a world which is facing pollution challenges. Scaling up edible cups could help end the menace of plastic in many football stadiums. Edible cups are both sustainable and made of natural ingredients.

Plastic has long been blamed for effects on biodiversity, water pollution as well as emissions throughout its value chain. It is high time that scaling up of the alternative edible cups is done as a matter of urgency.

At the global level, football institutions are getting serious on sustainability. At the recently held COP-26 summit, the FIFA President reiterated FIFA'S commitment to climate neutrality through the Climate Action.

Google Launches New Features to Help Users Reduce their Carbon Footprints

by Bright Chituu

Updates to Google Search, Maps and Shopping might lead one to decide which route to take, which hotel to book or which product to buy. As the climate change challenges are being magnified in our cultural and political dialogs, the world's biggest companies are racing to step up and show the world what they're doing to deal with it.

Google has been a corporate leader in sustainability and it became carbon-neutral in the year 2007, which means that it has purchased offsets to balance all carbon-emitting energy sources since then and has pledged to run on carbon-free energy by 2030. On the 29th of September the company launched a collection of new features that would help consumers make more sustainable and eco-friendly choices, ranging from the ground transportation to the flights they take. These features added to Google Search, Maps, Travel and Nest focus on reducing carbon emissions.

SEARCH ENGINE

Google is planning to switch up the way results for "climate change" appear in its Search platform. Google search users will be led to a dedicated results page with climate-related information. It plans to source data from reputable authorities on the subject, including the United Nations, Intergovernmental Panel on Climate Change (IPCC), Climate Action Network and World Meteorological Organization.

The firm would like to make it easier for customers to view more eco-friendly options when shopping on Google. Early next year when car users search for car models and manufacturers, Google will also show results for hybrid and electric vehicles. When searching for a particular electric vehicle, users will also a find local charging station that is well-suited for the model. Google Maps will default to the most environmentally friendly route if the time it takes to make the trip is roughly the same as it would have without taking carbon emissions into account. Google Maps calculates fuel usage based on the road incline, traffic congestion and traffic predictions. The company has estimated that the feature could save more than one million tons of carbon emissions per year which is equivalent to removing more than 200,000 cars from the road, as well as saving people's money by reducing fuel consumption.

This initiative will also show the associated carbon dioxide emissions for every flight you look up directly in search results, including seat-specific details. If it will take significantly longer to reach your destination by the more environmentally friendly route, then customers will be able to choose between the faster or more sustainable route. Google searches related to travel will debut information about whether hotels have made meaningful commitments to sustainability, including whether they've received any environmental certifications.

Google has already launched a new service for Nest thermostat owners in the US, which it plans to start rolling out over the next several weeks. It's called "Nest Renew," and allows users to automatically shift their heating and cooling to times when there's more renewable energy available on the grid. This is a strategy that energy experts and environmental advocates have promoted as an important step to making homes more energy efficient whilst reducing the strain on electricity grids during times of peak demand. In selecting markets, Google is planning to offer a Renew Premium subscription, which would enable subscribers to match their fossil-fueled electricity use with some investment in renewable energy (through renewable energy certificates).

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Benefiting from **Wood Waste** – Strategies for Timber Industries

by Sipho Graham Ndebele

Sitting on a couch in an office can be very comfortable, just as being sheltered against rain or sunlight in your house feels safe. To have these goods and services in place, wood and timber is required to deliver a couch or a roof. Timber is produced from wood which is extracted by cutting down trees that are seasoned to produce timber suitable for the market. Along the value chain, there are chops and chunks of wood that become useless in the process and eventually, waste materials. Wood waste is harmful to our environment if not handled properly. Yet, wood waste has value that may be harnessed into resources.

The Zimbabwe Eastern Highlands provide about 90% of the country's timber. About 70,000 tonnes of sawdust is produced annually. This figure is a threat to the environment and economically, it is inefficient. Wood waste concentrates at timber processing factories such as plywood mills and saw mills. It is influenced by the diameter of logs being processed, saw type and product specification. Sawdust, off-cuts, trims and shavings are some of the types of wood waste generated from timber production.

As a result of the hazards and risks that wood waste poses on the environment and humans, including the business efficiency trade-offs, entities are now innovating means of recovering matter and value out of the wood waste.

Allied Timbers engineers developed means to incinerate sawdust in order to produce steam for energy production to meet their energy needs in drying kiln and other operational purposes. Sawdust is biomass matter which can be used as fuel to produce heat or electricity. Most wood waste can be used to fuel boilers and produce steam to generate electricity. Sawdust can also be used to produce briquettes. Habourside Traders based in Mutare developed an initiative which converts sawdust waste into briquettes, a source of fuel that can be used by communities against charcoal. It engaged Border Timbers and other timber production companies to collect their wood waste for briquettes production.

Other applications of wood waste include mulching, landscaping and paper making. Mulch is matter spread over plants or soil to enrich or insulate the soil while compost is decayed organic matter used as fertilizer. Sawdust and wood pallets can be used to mulch gardens and farms. They can also be decomposed to produce compost or manure, organic fertilizer that can be used to add nutritional value to plants and soil. Animals require bedding to provide cushioning and good rest. Wood shavings are soft and warm while sawdust is finer than wood shavings and highly absorbent. Both materials help to insulate livestock against cold and drafts and they also absorb moisture to keep their habitat dry. Wood shavings and saw dust best suit habitat housing for horse, goats, sheep, cows and poultry.

Our homes are our dreams. Wood chips can be used for landscaping as they can suppress weeds, retain soil moisture and improve appearance. They can also regulate soil temperatures and bring in a natural look. Wood chips can also be used to prevent mud and dust through serving as matter for crafting path ways. Pulping is another solution on tackling wood waste through paper making using wood chips generated from saw mills and furniture manufacturing.

Re-use and recycling of wood waste provides diverse opportunities both to the environment and human development. Harnessing wood waste diverts waste materials away from landfills. This prevents pollution and ecological damage, on the other side, it also controls climate change fuelling by limiting emissions which arise from landfills. Heat and electricity can be generated from burning wood waste biomass to produce energy out of steam. This initiative strikes energy saving opportunities and sustainability through conservation of resources by implementing a circular model. To action wood waste harnessing initiatives, there is need for human capital. Diverse green jobs and opportunities emanate from the movement through the development and operation of industries which work on harnessing value out of wood waste.

ZIMBABWE ONTO ITS **BIODIVERSITY** ECONOMY STATUS

by Wadzanai D. Manyame

Zimbabwe is one of the most advanced countries in biodiversity in Africa. It holds much value in its natural reserves, from the miombo woodlands to the non-timber forestry products, fisheries and wildlife. The natural reserves hold a lot of potential in terms of business development, tourism and contributing towards boosting the economy of the country. Outside of the tourism, fisheries, forestry and wildlife sectors, most utilization of biodiversity is unaccounted for. The cumulative value of biodiversity in this country has never been calculated and its full potential never really portrayed. Zimbabwe under the Ministry of Environment, Climate, Tourism and Hospitality Industry with the support from African Wildlife Foundation (AFW) has embarked on a journey to value its biodiversity through a biodiversity economy survey. The survey is being conducted by Zimbabwe Environmental Law Association in conjunction with Anchor Environmental Consultants, a South African team of seasoned consultants, who are experts in conservation biodiversity and selected local experts from various institutions of relevance to biodiversity economy. The team is being led by Dr Jane Turpie of Anchor Environmental Consultants. The output will be a report on the status of the biodiversity economy in Zimbabwe. A first of its kind which will include a framework for national capital accounting and a strategy for capitalizing on key investment opportunities. The report will be used as a tool to inform policies in natural resources management and biodiversity economy itself and any other relevant fields where the information to be obtained is found useful.

As stated by Olivia Mufute, the African Wildlife Foundation Country Director for Zimbabwe, the study is being carried out following a request made by the Ministry of Finance and Economic Development to the Ministry of Environment, Climate, Tourism and Hospitality Industry. The Ministry of Finance and Economic Development requires a tool to inform policies in order to maximize the country's inclusive wealth whilst ensuring the long-term sustainability of its biological resource base. A study inception report has been drafted and shared with relevant stakeholders. A meeting was held on the 28th of September 2021. Key sectors to the biodiversity economy study are forestry and wildlife, fisheries, bioprospecting, private sector, civil society and the finance sector. These were present at the inception meeting discussing the objectives of the study, the proceedings to be followed when conducting the survey, the data needs, data availability, how the information will be presented and the working timelines. The country is meant to gain a clearer view of the contribution of biodiversity to the economy of Zimbabwe as well as its role in sustaining livelihoods and driving growth and development.

In Zimbabwe, communities especially in the rural areas rely on natural products to sustain their livelihoods. Exploitation of non-timber forestry products especially such as baobab, marula, 'masawu' and 'mazhanje' have seen children being put through school and families being fed. Though seasonal these resources have already proven to be of great value. The gap is that these cases are rarely recorded and the value being brought by the sale and production of cosmetics and juices from marula fruits, baobab, other non-timber forestry products as well as other exploitable species of flora and fauna is unaccounted for. Most of this work is being done in the informal sector or community projects. Hence, it is therefore of great importance to ensure that the value of such natural resources has been measured as it paves way for possible future investments, sustainable practices and utilization of resources as well as uplifting of livelihoods.

SEWAGE WASTE **AFFECTS COMMUNITIES**

by **Tendai Kaneta**

Sewage is a mixture of water, human excreta, used water from bathrooms, food preparation waste, laundry waste produced by a community. It is discharged from residences and from commercial, institutional and public facilities that exist in the locality. Sewage is transported through a sewer system comprised of septic tanks, pipes, soakaways. It contains different macro-pollutants and micro-pollutants. The main parameters that are measured to assess the sewage quality as well as treatment options include solids, organic matter content, nitrogen, faecal contamination. Sewage is supposed to be managed well because it has direct impacts on human health and the environment. As part of its management, it is collected and transported for release into the environment after a treatment level has been reached. It can also be disposed through deposition into landfills or sewage farms.

The effects of sewage on the environment are largely negative. There is need for proper treatment before it can be disposed of in the landfills as part of sewage management. If sewage is not properly treated before exposure to the environment, it will contaminate the water and harm huge amounts of wildlife and human lives too. Sewage waste is manifested with different types of bacteria which affects the human body. Diseases can be caused by the bacteria which affect the human body causing diarrhoea, nausea and excessive vomiting. When a human body is exposed to the sewage bacteria mainly through ingestion bacterial infections can occur. An example of a bacterial infection is the Escherichia coli which is a frequent cause of many bacterial infections such as cholangitis, urinary tract infection (UTI). If left untreated it eventually leads to kidney failure or even death. E. coli is mainly characterised by vomiting, diarrhoea, abnormal pain and fever among other related issues.

Poor maintenance of sewer systems in municipalities have seen communities living in sewerage infested areas. Where blocked systems end up bursting and the sewerage flows out into the community streets polluting the land and seeping into the ground connecting with water supply systems as well as contaminating underground water. Continued urbanization also brings a burden to the old and dilapidated sewage systems. This has caused a number of water borne disease outbreaks to occur in Zimbabwe. Lives have been lost, families have been left incapacitated after losing parents or the breadwinners. In the year 2008, Cholera outbreaks were recorded in the urban settlements where the main driver of cholera was seen to be poor sanitation. There have also been ravaging outbreaks of Typhoid in Zimbabwe every year since 2010. The disease is caused by a bacteria called Salmonella Typhi which is spread through contaminated water and poor sanitation.

Poor treatment of sewage waste is also another factor affecting communities. Sewage is being discharged into water bodies before it has reached recommended specifications. An investigation on the Marimba River and Lake Chivero was done to see the potential impacts of discharging sewage from the Crowborough Sewage Treatment Works into these water bodies on water quality. High concentrations of ammonia were noted making it difficult for complete treatment of the water to take place. The processes being carried out are not being effective enough to reduce the nutrient concentrations. The investigation results pointed out the need for strict management of sewerage waste for the protection of the health of citizens in different communities.

Flue Gas Analysis Principles

by Tendai Kaneta

During the cold winters, many households make use of different heating systems which include boilers or water heaters, fireplaces or wood stoves. These systems make use of a fuel which is burnt in the combustion chambers producing gases including both visible smoke and various invisible gases. Every system is designed to vent out gases to the outdoors through chimneys or vent pipes, however in some instances, they may escape into a home, where they could raise a number of health issues and this is called combustion spillage. Every year major and long-term incidences of combustion spillage do occur. They have a direct impact on the environment with serious or tragic results. Of critical concern are the combustion gases are produced on a larger scale in industries and manufacturing companies. These are emitted through the stacks or pipes, the gases are called flue gases. These have much more effects to the environment and human health. By causing air pollution chances of global warming increase and workers as well as people who live in close proximity to high emitting companies are at risk of respiratory diseases.

Flue gases have been defined as gases that exit into the atmosphere via a flue, which is a pipe or channel for conveying combustion gases. Efforts to monitor the concentrations of the gases were made hence the introduction of Flue Gas Analysis. The process used to be time consuming and expensive. However, modern advancements in technology have made it cheaper and easier to conduct. Besides monitoring the emitted gas concentrations, large companies also do the analysis so as to know the performance of their plants. Regular flue gas analysis is a great way of ensuring that the plant is achieving optimal efficiency at all times. It is also important for companies to monitor their gases for compliance with set emission regulations. The Environmental Management Agency is the statutory body responsible for ensuring the sustainable management of natural resources and protection of the environmental in Zimbabwe. According to Statutory Instrument 72 of 2009, the chimney of the air polluter is supposed to have a height of fifty metres so as to provide adequate dispersion of the pollutants. Furthermore, the Agency made it mandatory for companies to do emission analysis on every polluting appliance quarterly (after every 3 months) as a measure to monitor the polluting gases concentrations. Companies are mandated to comply with this Statutory Instrument.

Flue gases are a mixture of combustion products which depend largely on what is being burnt and how. These include water vapour, carbon dioxide (CO_2), Nitrogen (N_2), Carbon Monoxide (CO), Sulphur Dioxides (SO_2), Hydrogen Sulphides (H_2S) and Oxygen (O_2). Of these gases, carbon dioxide and nitrogen are the most harmful to humans and to the environment. As greenhouse gases they contribute to climate change, ocean acidification and global warming.

The flue gas analyser needed will depend on the type of emitter to be studied. Different devices come with a variety of different features. Due to forever advancing technologies, first world countries make use of Continuous Environmental Monitoring Systems where real time values of gas concentrations are captured continuously, recorded and monitored. Unfortunately, this has not yet been brought home due to the high financial costs in purchasing the systems. In Zimbabwe, it is required to measure emissions quarterly as per Environmental Management Agency requirements so it might not seem necessary to advance to continuous monitoring, when in actual fact, Continuous Environmental Monitoring Systems is much more effective when it comes to monitoring gas emissions. There is a greater need to invest in advanced equipment to trace compliance with companies with the vision of **reducing Greenhouse Gas Emissions to 40% by 2030.**

Caring and Maintenance of Solar Panels

by **Simba Machisa**

Climate change has caused unrest the world-over due to various catastrophic events that have ravaged societies. According to the Afrobarometer report released on the 1st of September 2021, Zimbabwe is making progress on climate action, education and electricity. Due to the fact that Zimbabwe has made progress on climate action it has moved off grid and has highly commended and embedded renewable energy. Most of the industries and residential areas have embraced this government initiative on adopting renewable energy. This has also given an opportunity for local start-ups, entrepreneurs and SMEs to exploit this grey area.

In the event of using solar panels to generate electricity, it is essential for the owner to maintain it. There is need to understand that roof top solar panels may become dirty because of exposure to dust, bird droppings, sand, or pollution. An unclean panel runs the risk of becoming less efficient and thereby producing less electricity.

Types of solar panels:

- Photovoltaic solar panels
- Thermal solar panels
- Hybrid solar panel

PRECAUTIONS that must be taken during cleaning solar panels

HARD WATER: leave white residue that diminishes photovoltaic output
ABRASIVE SPONGES: scratch the panels
VERY COLD WATER: Cleaning with very cold water on a warm panel can result in thermal shock and permanently damage the solar panel
VERY HIGH-PRESSURE WATER: damage the joints in the panel frame
SOLVENTS AND DETERGENTS: products may damage the surface of the solar

Safety is of utmost importance:

- Avoid taking the unnecessary risk of climbing onto roof
- Avoid leaning too heavily on the panels
- Do not touch the electrical components
- Extreme care should be taken if surfaces are slippery or wet

There is need to always secure ladders before climbing onto the roof. Currently, there is no regulatory maintenance framework to adhere to with respect to solar installation, but following the manufacture's specification is key. The cleaning and preventive maintenance should be done periodically to ensure panel efficiency.

GREEN JOBS:
Opportunities in Our Environmental Challenges

by **Sipho Graham Ndebele**

EMPLOYMENT is a gamble and its security is not certain. We have seen Covid-19, Artificial Intelligence and Technology pushing companies to downsize or terminate certain occupations. Either due to lockdown restrictions or a human performed task being replaced by a machine. Dynamics have shaped us as human beings. They both diminish and replenish certain situations and their risks and opportunities.

The International Labour Organisation; World Employment and Social Outlook - Trends 2018 reported that 24 million jobs could open up as we adopt sustainable practices and cleaner technologies. Green jobs are activities which create added-value products and services from waste products. This is done by realizing opportunities in our environmental challenges and exploiting them as solutions thus, promoting circular economy and green growth.

Through innovation and entrepreneurship, green initiatives solve environmental challenges and create employment in the value and supply chain process. In the world we live in today, we face many challenges such as load shedding, waste landfills and water shortages which undermine our productivity and also pose hazards to our well-being and our environment. These challenges have opportunities locked within them through solutions. Hence, our mindset and abilities are up for the task to identify and unlock the value within them.

Various citations towards environmental challenges exist in the Zimbabwean context. In 2008 to 2009 Zimbabwe experienced a Cholera outbreak which claimed many lives. Poor water quality and sanitation cultivated the water-borne disease as urban councils struggled to treat and provide adequate and portable water to meet its citizens' needs. Ineffective solid waste and sewage handling were linked to the causes of the outbreak. The year 2018 and 2019 saw the country experience a national load shedding that affected the economy and the standard of living. The climate change induced water crisis resulted in low water levels at Kariba Dam, the country's main hydro-power source which undermined the country's electricity targets. During the Covid-19 pandemic on the 18th of August 2020, Pomona dumpsite, Harare's Municipal's solid waste disposal site broke into fire. Tonnes of solid waste burned and released dense smog which was found above both local and international air pollution prescribed levels by the Standards Association of Zimbabwe and World Health Organization, respectively.

Market driven demand is growing towards green products and services as they are durable, affordable and eco-friendly. Consumption patterns are expanding in regards to clean and affordable energy, food, water and effective waste collection and disposal. Including sustainable clothing, vehicles and construction materials.

Organic waste is a solid waste nuisance, but it can be digested using a biogas digester to produce biogas (methane) and a by-product manure (organic fertilizer) for energy needs such as cooking and heating and agricultural purposes. That way, we reduce the amount of waste disposed-off at landfills and its related impacts.

Plastic waste is now an alarming global environmental problem. Plastic can be melted and mixed with concrete to make eco-bricks which can be used in construction applications. The bricks are also more durable and affordable than ordinary bricks, therefore, effective use of plastic in brick making controls plastic pollution.

Non-renewable energy made from coal significantly contributes to climate change and global warming among other pollution problems. Sunlight can be absorbed by solar panels to create renewable energy which is clean and affordable hence, reducing the release of green-house-gases and climate change.

Surface water pollution is cultivating human ill-health such as cholera outbreaks. Water treatment and use of ground water resources through boreholes can be utilized to access clean and affordable water which improves sanitation and may prevent water-borne diseases.

Innovative solutions to our environmental challenges promote sustainability by containing the related implications as well as improving the socio-economic development. Let us be think tanks.

Understanding the Most Common Hazardous Types of Medical Health Care Waste

by Simba Machisa

It has been estimated by WHO that 16 billion injections are administered worldwide, but not all the needles and syringes are properly disposed of afterwards. The waste generated by health-care activities, about 85% is general, non-hazardous waste, while 15% is considered hazardous material that may be infectious, toxic, or radioactive (WHO 2015). In most African countries, there are no adequate systems in place for the safe disposal of health care waste such as incineration and landfills. Medical waste is defined as any waste that is generated as a by-product of healthcare work at doctors surgeries, dentists, hospitals, and laboratories even from home based care. This includes any material that could encounter the body during diagnosis, research, drug administration or any type of treatment.

Major sources of health-care waste are:

- Hospitals and other health facilities
- Laboratories and research centres
- Mortuary and autopsy centres
- Animal research and testing laboratories
- Blood banks and collection services
- Nursing homes for the elderly

Medical waste most hazardous

TYPES OF WASTE

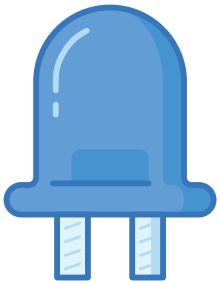
- Infectious waste: waste contaminated with blood and other bodily fluids (swabs, bandages and disposable medical devices).
- Pathological waste: human tissues, organs or fluids, body parts and contaminated animal carcasses.
- Sharps waste: syringes, needles, disposable scalpels and blades, etc.
- Chemical waste: solvents and reagents used for laboratory preparations, disinfectants, sterilants and heavy metals contained in medical devices (mercury in broken thermometers) and batteries.
- Pharmaceutical waste: expired, unused and contaminated drugs and vaccines.

In European countries medical waste is governed by local, state and federal guidelines for handling, storage, and ultimate disposal. These guidelines involve many organizations, training, equipment, and procedures to ensure that medical waste follows compliance. The problems happen when any of these steps are missed, allowing the waste to enter into the environment where it can become potentially hazardous. Improper disposal of untreated health care waste can lead to the contamination of drinking, surface, and ground waters if the landfills are not properly constructed.

DID YOU KNOW?

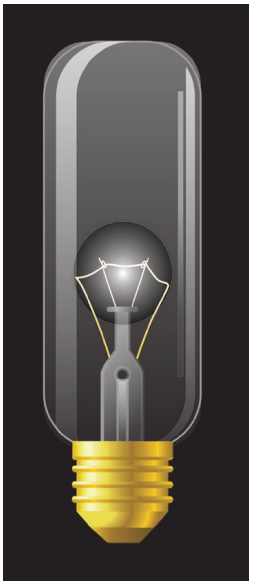
There are over 30 000 known species of fish in the world

THE HEAVIEST LION RECORDED IN HISTORY WEIGHED **375 KGS.**



Over 14% of the world's population does not have access to electricity

EVERY ZEBRA HAS A UNIQUE PATTERN OF BLACK AND WHITE STRIPES.



Energy Saving LED bulbs can attain an average life span of 20 000hours, which is 20 times the lifespan of a

Climate change will cause sea level to rise by 90cm by the year 2099 to the detriment of the world and cause flooding in certain countries.

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