

SUSTAINABILITY REPORT 2022



VRA... We Add Value to Lives



**VOLTA
RIVER
AUTHORITY**

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Vision

To be a Model of Excellence for Power Utilities in Africa



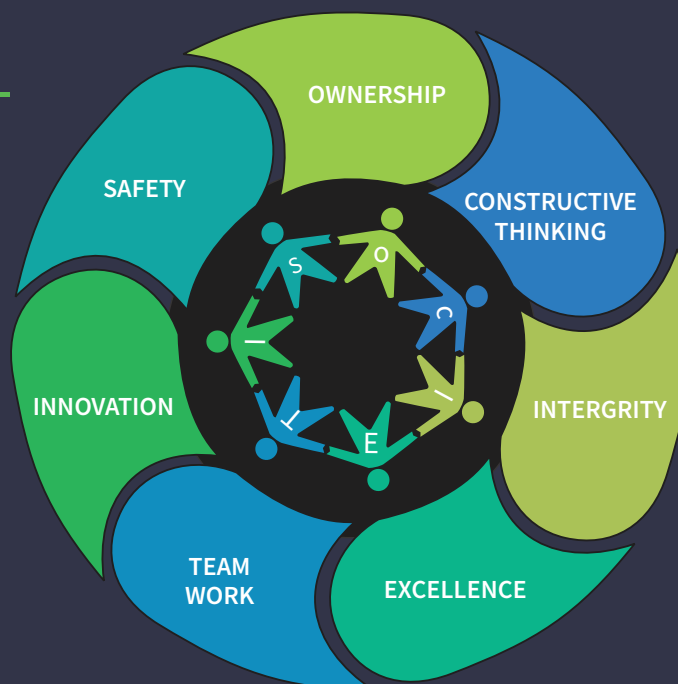
Mission

The Volta River Authority exists to power economies and raise the living standards of the people of Ghana and West Africa. We supply electricity and related services in a reliable, safe and environmentally friendly manner to add economic, financial and social values to our customers and meet stakeholders' expectations.

Values

S.O.C.I.E.T.I

“It begins with me”



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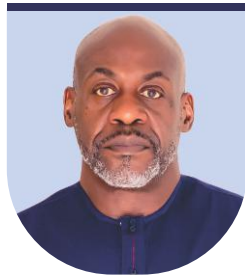
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CORPORATE LEADERSHIP



**Mr. Kofi Tutu
Agyare**
Chairman



**Mr. Emmanuel
Antwi-Darkwa**
Chief Executive



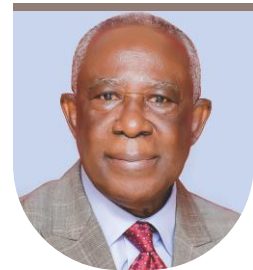
**Rev. Dr. Joyce
Rosalind Aryee**
Member



**Chief Musah
Badimsugru Adam**
Member



**Mad. Janet Akosua
Gyasiwaa**
Member



**Mr. Richard
Obeng Okrah**
Member



**Most Rev. Dr. Cyril
Kobina Ben-Smith**
Member



**Mr. Solomon
Adjetey Sowah**
Member

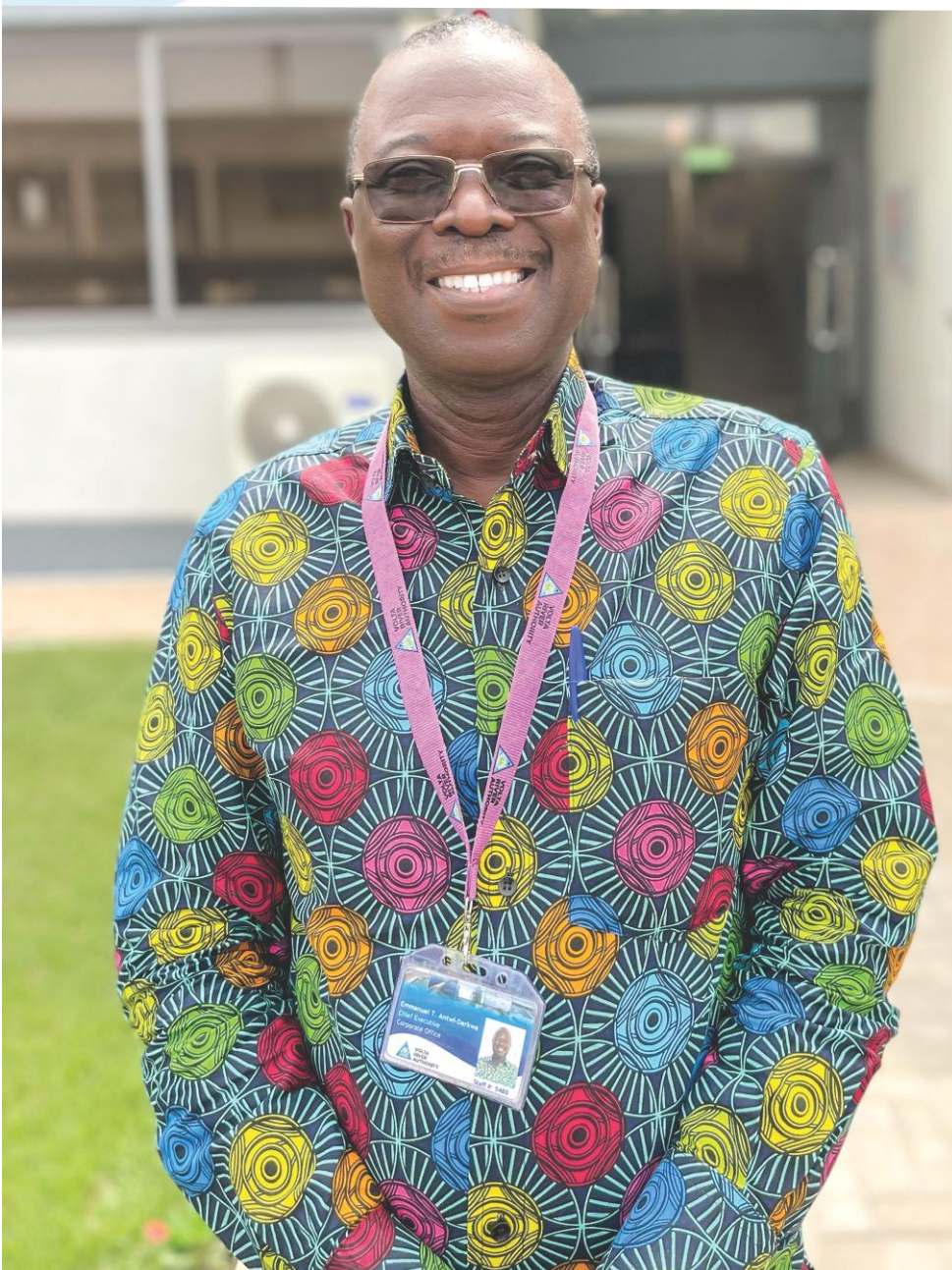


**Hon. Kwame
Anyimadu-Antwi**
Member



**Mrs. Claudia
Gyeke-Aboagye**
Board Secretary

CHIEF EXECUTIVE'S MESSAGE



In recent times, amidst the post COVID 19 economic challenges across the world, energy sustainability has become prominent especially as the world's focus has shifted towards climate change.

In Ghana, the Volta River Authority (VRA) is leading the charge towards business and environmental sustainability, by advocating for reliable, cleaner, efficient, affordable, and sustainable energy, which is essential for modern and digital economies that are sensitive to the environment.

As part of efforts towards ensuring environmentally sustainable operations, the Authority is diversifying its power generation portfolio to take advantage of available and sustainable sources of energy, especially in the renewable energy space, specifically through hydro and solar power generation.

The changing landscape of power generation and VRA's commitment to the fight against climate change in line with the Kyoto Protocol and the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC), makes the Authority a leader in ensuring sustainable development on the African continent.

Sustainability is therefore central to VRA's core values and manifested in our commitment to operating our thermal plants solely on natural gas to reduce emissions. This resonates with our strategic journey into the New VRA, from financial recovery to sustainability. It is on this score that we have developed the Smart City concept in Akosombo, which is expected to turn Akosombo into an industrial technology hub.

Also, in collaboration with other government institutions, VRA

introduced key interventions, including fuel-efficient, clean cooking techniques, through the introduction of Climate Smart Stoves in riparian communities to reduce their reliance on traditional fuel-wood. Our waste-to-energy programme, which seeks to recycle waste into energy through the segregation of solid waste, and our tree planting programme around the Volta River basin to restore the Volta Gorge to serve as a carbon sink, is intended to reduce carbon emissions in the atmosphere. Aside from commercial and rooftop solar installation systems provided by the Authority in many parts of the country, the Authority is making progress on a 150MW wind-power feasibility study to further boost our share of renewable energy in the power generation mix.

In anticipation of the dynamics of the business environment, we have revolutionised the fundamental structures of our business through digitalisation, creativity and innovation, business sustainability, and a work culture pivoted on the mantra of public sector delivery with a private sector mindset.

As a corporate institution that recognises the contribution of society, we have mainstreamed the needs of our impacted communities and developed programmes to mitigate their concerns. Our stakeholder engagements are tailored towards ensuring continuous collaboration with these communities and building a corporate culture that will sustain our relationship.

The business of the Authority is sustained by the collective skills of our staff, both past and present, and our working environment provides an opportunity for growth. In our pursuit to integrate sustainability into our operations, we shall continue to deliver quality services to our key stakeholders. We appreciate the contributions and support from our partners in the business and their role in our corporate social responsibility and sustainable development.

Sincerely,



Emmanuel Antwi-Darkwa

Chief Executive

ABOUT US

Established on April 26, 1961, under the Volta River Development Act, Act 46 of the Republic of Ghana, the Volta River Authority (VRA) was mandated to generate and transmit Electricity. However, following the promulgation of an amendment to the VRA Act in the context of Ghana Government Power Sector Reforms in 2005, VRA's mandate has been largely restricted to the Generation of Electricity. The amendment created an enabling environment for attracting Independent Power Producers (IPPs) onto Ghana's Energy market.

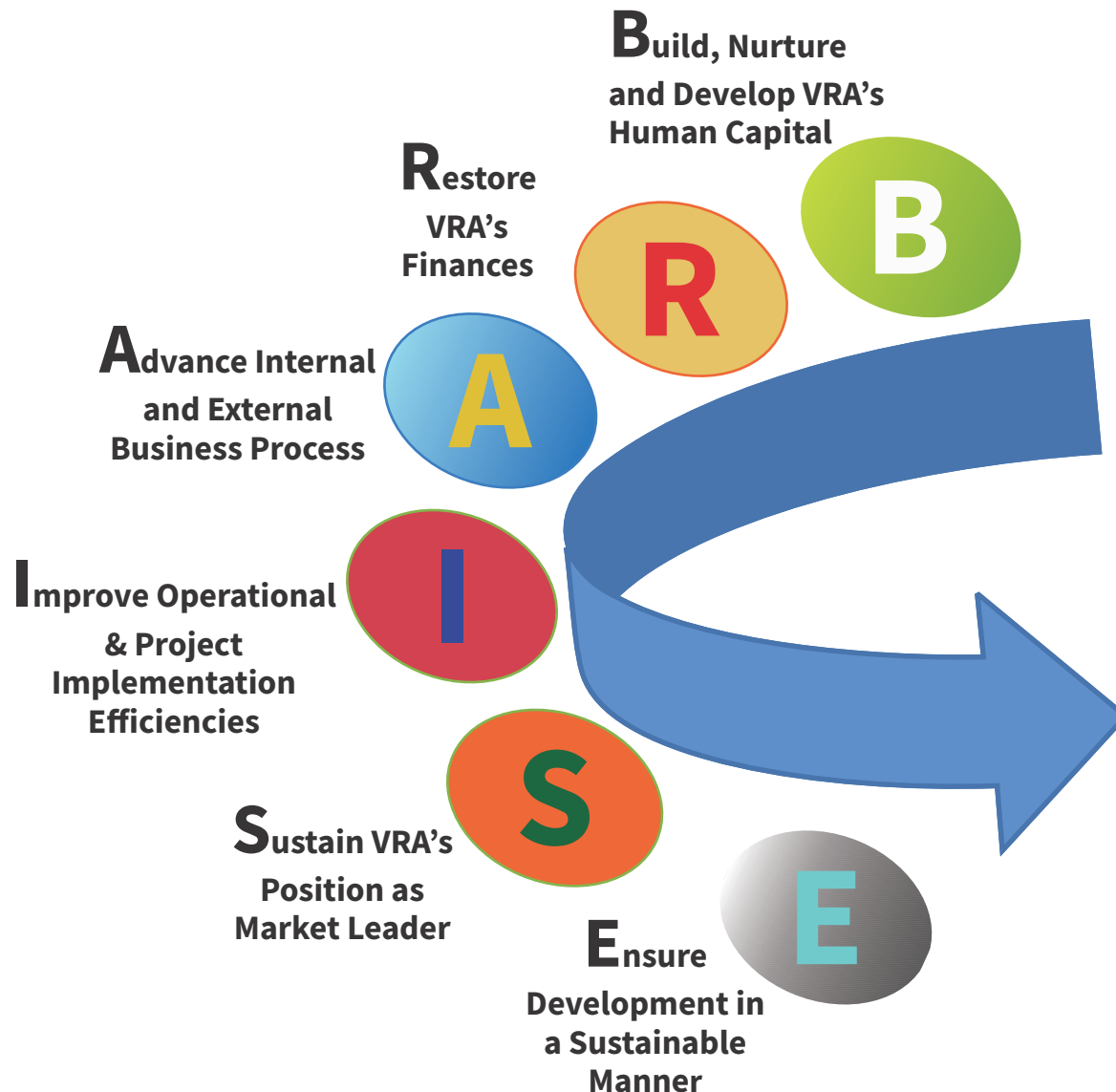
Following the amendment, the transmission function has been hived off into an entity designated Ghana Grid Company (GRIDCo), while VRA's Northern Electricity Department (NED), has been transformed into the Northern Electricity Distribution Company (NEDCo), a wholly owned subsidiary of VRA.

VRA has over the years diversified its power generation portfolio to take advantage of available and sustainable sources of energy, mainly from hydro and thermal (Natural Gas and Liquefied Petroleum Products) as well as Solar Energy sources. Accordingly, VRA operates a total generation installed capacity of 2669.0MW.

PLANT	INSTALLED CAPACITY (MW)
Akosombo Hydro Electric Power Plant	1,020
Kpong Hydro Electric Power Plant	160
Takoradi Thermal Power Station - TTPS - T1	330
Tema Thermal 1 Power Plant - TT1PP	110
Tema Thermal 2 Power Plant - TT2PP	80
Kpone Thermal Power Plant - KTPP	220
Ameri Power Plant	250
Navrongo Solar Power Plant	2.5
Lawra Solar Power Plant	6.5
Kaleo Solar Power Plant	13
TOTAL CAPACITY	2,532

CORPORATE STRATEGY

As part of measures to transform the fortunes of VRA, the Authority's Board in 2018 approved a 5-year strategic plan, headlined “B.R.A.I.S.E”, to steer the affairs of VRA to ensure that it fulfills its mission and mandate. The implementation of initiatives under the BRAISE strategy has been largely successful, following full rollout occurring in 2018. “BRAISE” has six strategic themes, as captioned by the respective acronyms below;

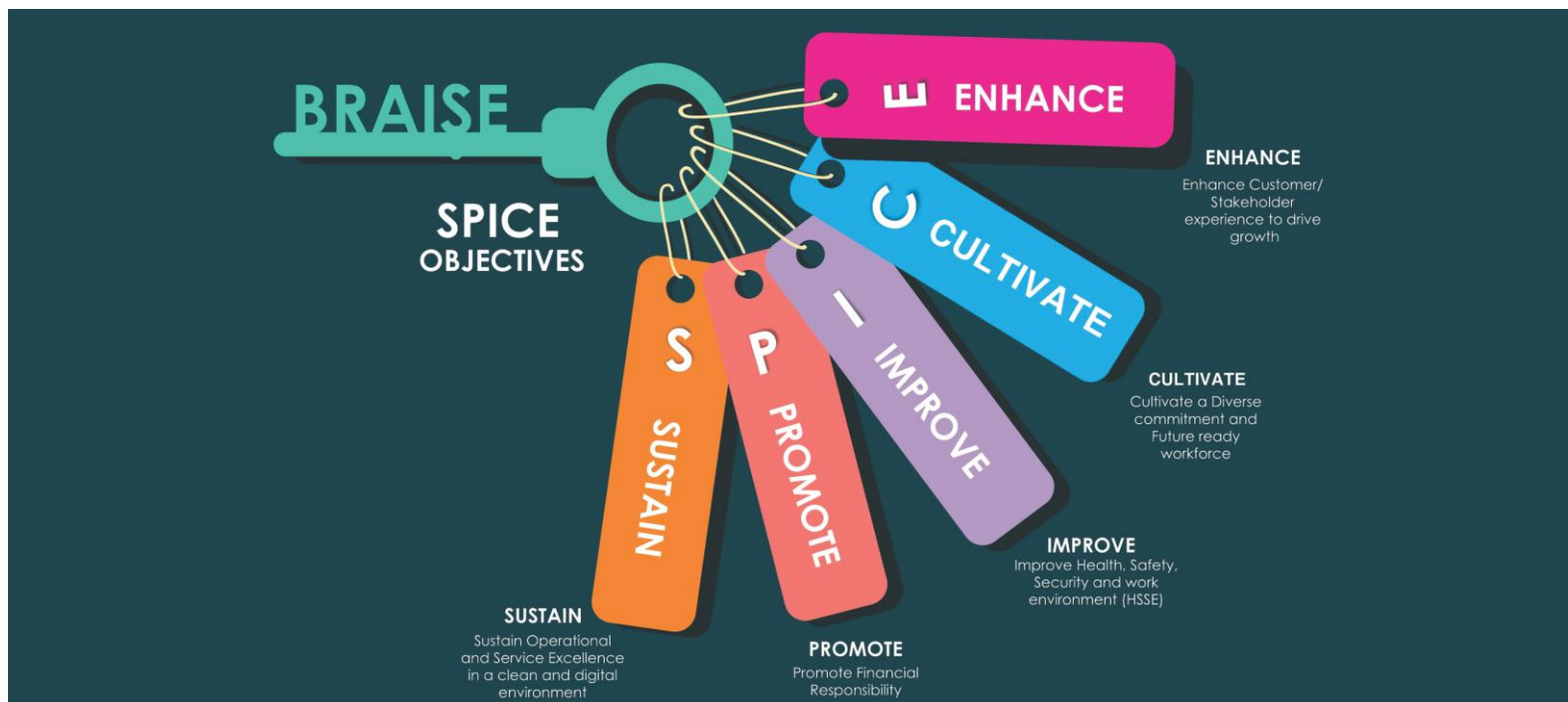


STRATEGIC PLAN

A review of the BRAISE strategy was carried out after three(3) years of implementation. It was determined that core aspects of the strategy, such as the financial recovery plan, had run their course. Some targets within the “BRAISE” also required revision due to increased competition in the local and sub-regional markets. A Sustainability Plan has been developed as a new strategic plan to help the Authority achieve financial and operational sustainability over the next five years. The overall objective is to help maintain VRA's position as a market leader in Ghana's power market. The plan still has “BRAISE”, which has been in implementation since 2018, as the overarching strategy. The Sustainability Plan, therefore, is to ensure that aspects of “BRAISE” that have been fully implemented are replaced with initiatives that will improve corporate performance and sustain the business.

REVISED STRATEGIC OBJECTIVES (S.P.I.C.E.)

The COVID-19 pandemic and the ensuing Russia-Ukrainian war have triggered a reshuffling of business dynamics worldwide, causing organizations to re-think and embrace agility in their strategies. In line with this and following a review of the internal and external business environment, the Authority has revised its 15 strategic objectives, into 5 objectives under the acronym S.P.I.C.E. The S.P.I.C.E. objectives, as indicated below, are to spur the Authority on to excellence in corporate performance.



STRATEGIC OUTCOMES - S.P.I.C.E. OBJECTIVES

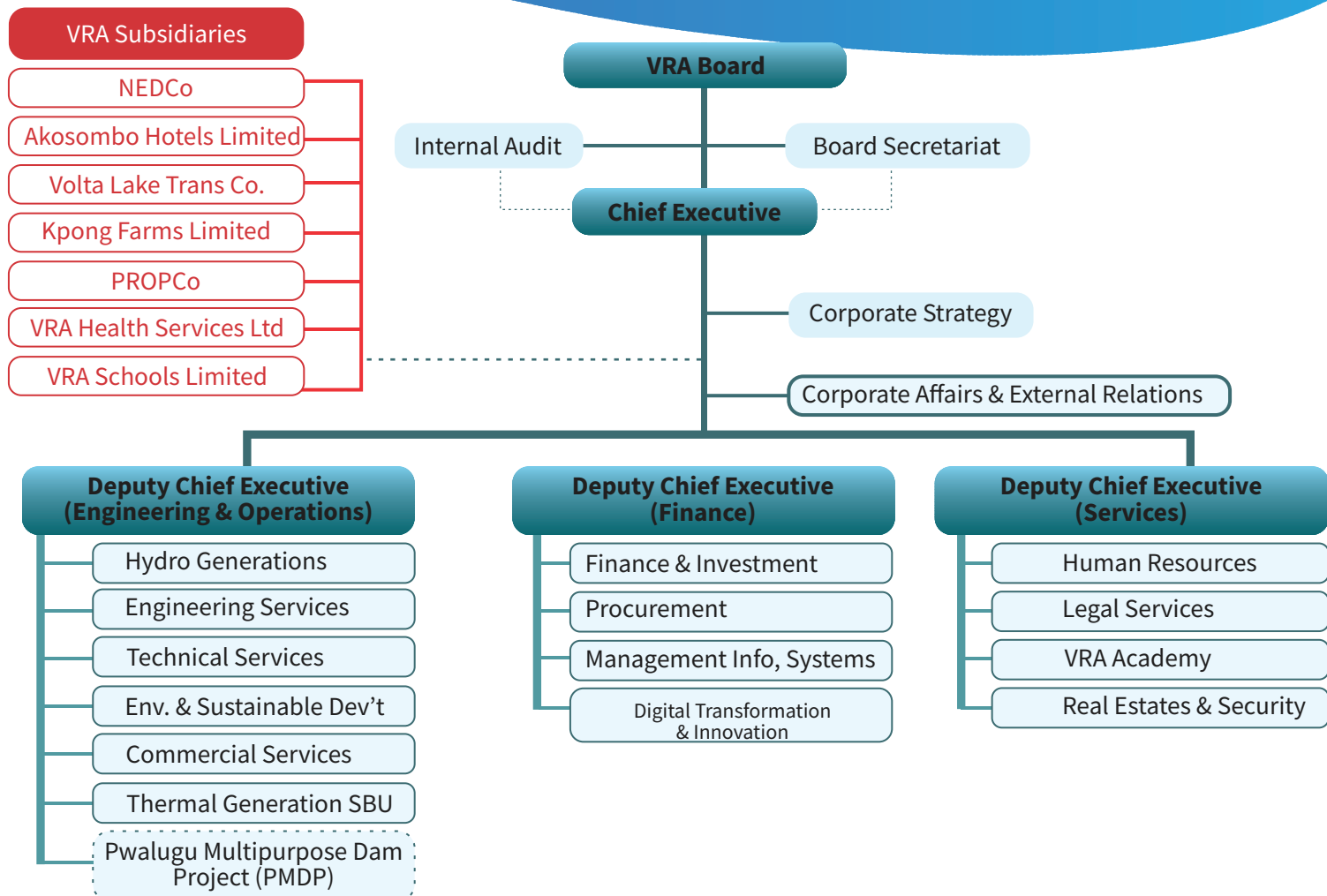
The S.P.I.C.E objectives are expected to catapult the Authority into a high-performing, digitally skilled, sustainable, customer centric and employee focused organization, with the ultimate objective of ascending to the Authority's corporate vision. The table below details the S.P.I.C.E. strategic objectives and their projected outcomes.

	Objectives	Definition	Outcome
S	Sustain Operational and Service Excellence in a Clean and Digital Environment	Operational and Service Excellence is sustained through enhancing efficiency, productivity, and digitalization improvements. The objective is to excel in power operations, asset management, project, and service delivery, incorporating appropriate digital technologies. It also entails increasing VRA's renewable footprint, in line with the global energy transition framework.	A high performing and efficient organization that leverages on digitization to deliver service in an environmentally sustainable manner.
P	Promote Financial Responsibility	Financial health is the responsibility of every employee. This entails driving revenue maximization through existing and new customers, managing costs in all aspects of the business (with emphasis on administrative costs, capital expenditures and competitive procurements). It also comprises actively managing receivables through tactical debt collection, pursuing optimal liquidity management, sourcing for competitive financing, and utilizing assets efficiently to maximize revenues.	A financially sustainable organization, with a strong balance sheet, healthy cashflows to settle all liabilities, and having the capacity and capability to attract funds for investments.
I	Improve Health, Safety, Security and Work Environment (HSSE)	Health, Safety, and Security are a conscious priority for staff, especially those stationed in our generating facilities. This entails fostering a work environment safe from external and internal threats to our assets and employees. VRA strives to promote a work environment that nurtures collaboration, wellness, and positive work atmosphere.	An organization with a safe work environment, well-engaged and motivated staff.
C	Cultivate a Diverse, Committed and Future Ready Workforce	Employees are equipped with the necessary skills and competencies to meet current and future organizational needs, considering the evolving business environment and energy industry. This involves developing a diverse workforce that embraces and actively provides opportunities for disabled persons and women. In addition, it involves enhanced collaboration, a culture of continuous learning, upskilling, and knowledge sharing among employees	A highly motivated, continuously learning organization, having a diverse workforce of skilled employees, equipped with requisite tools
E	Enrich Customer/ Stakeholder Experience to Drive Growth	Build and deepen relationships with our customers and key stakeholders within Ghana and the sub-region. This entails providing memorable customer service, through the delivery of tailored solutions and value propositions. Stakeholders in this regard include supervising agencies, ministries, regulators, regional institutions, and key players in the electricity value chain.	An agile and customer centric organization that: <ul style="list-style-type: none"> • Proactively responds to customer/stakeholder needs • Retains customers/ stakeholders' satisfaction • Attracts new customers • Boosts customer confidence Promotes customer loyalty

CORPORATE ORGANISATIONAL CHART

www.vra.com

VOLTA RIVER AUTHORITY *Corporate Organisational Structure*



CUSTOMER RELATIONS

DOMESTIC CUSTOMERS

The VRA reaches its customers in Ghana and neighbouring countries through Ghana Grid Company's (GRIDCo's) transmission system, which covers the entire country and links up with the national electricity grids of Cote d'Ivoire Compagnie Ivoirienne d'Electricité (CIE), Togo and Benin Communauté Electrique du Benin (CEB), as well as Burkina Faso Société National d'électricité du Burkina Faso (SONABEL).

01

Electricity Company of Ghana (ECG) remains VRA's major bulk customer. Power sold to ECG and NEDCo caters mainly for domestic, industrial, and commercial concerns within Ghana.

02

Bulk supply are also made to a number of mining companies including Newmont Ghana Gold, Newmont Golden Ridge, AngloGold Ashanti (Iduapriem) Ltd., AngloGold Ashanti Limited (Obuasi), Asanko Gold Mining Limited, Goldfields Limited, Future Global Resources.

03

Bulk Sales to other industries such as Akosombo Industrial Company Limited, Diamond Cement Ghana Limited, Savanna Diamond Limited, VALCo. Volta Aluminuun Company

EXTERNAL CUSTOMERS



Cote d'Ivoire, Compagnie Ivoirienne d'Electricité (CIE).



Compagnie Energie Electrique du Togo (CEET)

Communauté Electrique du Benin (CEB), Togo and Benin



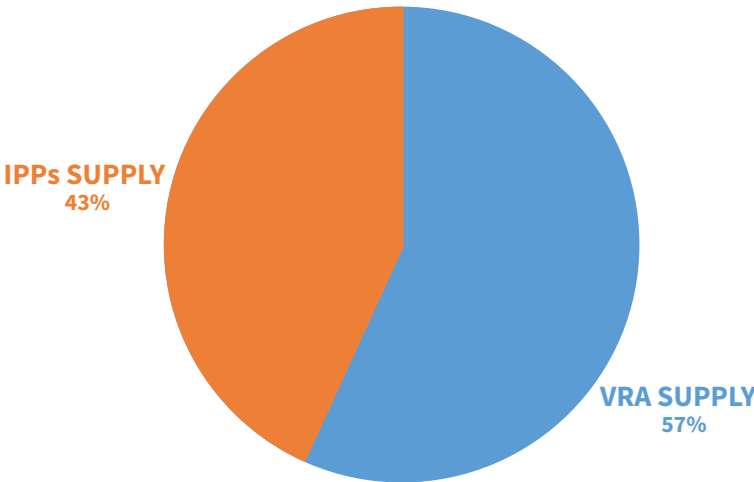
Société Béninoise d'Energie Electrique (SBEE)



Société Nationale d'électricité du Burkina Faso (SONABEL)

Market Share

VRA continues to remain the most dominant power producer and the market leader in Ghana's Electricity Market with a share of 57% in 2022.



Role in Regional Cooperation

VRA is a major foundational player in the West African Gas Pipeline Project (WAGP). The project is a 20-inch, 600km-long natural gas transmission pipeline from Nigeria to Ghana. VRA's participation in the WAGP is to get natural gas from Nigeria to operate its thermal facilities.

In addition, VRA plays a key partnership role in extending Ghana Gas' pipeline from the Jubilee Fields to its Western Thermal enclave at Aboadze, where it is tied onto the WAGP, thereby reducing significantly the cost of thermal generation while increasing electricity availability, accessibility and affordability and protecting the environment. Both Companies (WAGP and Ghana Gas) now supply gas to the VRA Thermal facilities. Recognizing the VRA's distinctive competencies in power system operations, the United Nations Development Programme (UNDP) appointed the VRA as the principal consulting agency for

the implementation of an Emergency Power Programme (EPP) in Liberia after years of conflict. Consequently, the VRA embarked on a power construction scheme to restore power to Monrovia and other critical institutions.

In collaboration with the West Africa Power Pool (WAPP), the VRA is participating in the development of a regional electricity market to provide the West Africa Sub Region with increased accessibility, availability and affordability to electricity under the auspices of ECOWAS.

VRA is also a founding member of the Association of Power Utilities of Africa (APUA), previously known as the Union of Producers, Transporters and Distributors of Electricity in Africa (UPDEA).

The APUA aims to promote the integration and development of the African power sector through active cooperation among its members and all international power sector organisations and donors.

Our Materiality Analysis

Our focus is on environmental sustainability, social performance, human rights, business ethics and commitment to our stakeholders and communities. They are defined along our own Community Development Programme (CDP) and Environmental Management Programme (EMP) as well as issues of importance, taking into cognisance the United Nations (UNGC) Global Compact guiding principles and the 17 Sustainable Development Goals (SDG).

OUR SUBSIDIARIES

Northern Electricity Distribution Company

The Northern Electricity Distribution Company (NEDCo) is the sole distributor of electricity in the Ahafo, Brong Ahafo, Bono East, Savannah, Northern, North East, Upper East, and Upper West as well as parts of Ashanti, Western North and Oti Regions, thus covering 64% of the geographical area of Ghana.

NEDCo manages the distribution infrastructure that supplies electricity to customers of VRA in border towns like Hamele, Leo and Bittou in Burkina Faso as well as Dapong in Togo. NEDCo also supplies electricity to Chache' which is a border town in Cote d'Ivoire via Power Purchase Agreement between NEDCo and CI-Energies.



Planned maintenance works by NEDCo staff

Akosombo Hotels Limited

The Akosombo Hotels Limited runs a three (3) star hotel, restaurant, modern conference/seminar facilities, pleasure activities, including cruising on the lake by MV Dodi Princess, and promotes tourism.



Front view of Volta Hotel

Volta Lake Transport Company Limited

The Volta Lake Transport Company (VLTC) operates river transport for passengers, and haulage of petroleum products and cargo such as cement. VLTC also provides ferry services across various parts of the Volta Lake.



Aerial view of Akosombo Harbour

VRA Property Holding Company

VRA Property Holding Company is responsible among others for the efficient management of all commercial real estate assets of VRA and its operational subsidiaries.



An interior view of PROPCo's property

VRA International Schools Limited

The VRA International Schools Limited (VISL) offers study opportunities in international curricular such as the Cambridge International Examination (UK) and the Scholastic Aptitude Test (USA) certificates. The VISL provides quality and affordable first and second cycle education in Akosombo, Akuse and Aboadze to wards of stakeholders of the Authority and the general public.



A view of VISL class room blocks

Kpong Farms Limited

The Kpong Farms Limited (KFL) plays a significant role in agricultural development through commercial farming, agro-processing and provision of machinery services. In recent times however, KFL's concentration is on commercial rice production ; that is the cultivation, processing and packaging to the final consumers.



KFL rice farm

VRA Health Services Limited

The VRA Health Services Limited (VHSL) provides medical care for Staff and their dependants as well as the general public. Its services are currently in the Authority's operational enclaves such as Akosombo, Akuse, Accra and Aboadze. VHSL also provides in-patient, out-patient and specialist services.



VHSL ward



VHSL consulting rooms waiting area

ABOUT THIS REPORT

This report describes VRA's sustainability performance in 2022 and covers its social, environmental and economic performance. The content of the report specifically describes VRA's business activities within the context of our sustainability performance and our contribution to the seventeen (17) United Nations (UN) sustainability development goals (SDGs), which encourage businesses to consider how they can best contribute to overcome global challenges.

The report has been prepared with reference to the ten (10) principles of the United Nations Global Compact (UNGC), to which VRA has been a signatory since 2003, and specifically addresses issues relating to the seventeen SDGs.



SOCIAL PERFORMANCE



ALTERNATIVE LIVELIHOOD

VRA's beekeeping and fruit-tree development projects, serves as alternative livelihood interventions aimed at reducing the prevalence of inimical activities along the Volta Lake by substituting them with environmentally friendly alternatives that supports the

socio-economic development of riparian communities within the Volta Basin. Alternative livelihood interventions have become a major source of income, helping to alleviate poverty among members of community based organizations in our riparian communities.

VRA in partnership with Community Based Organizations (CBOs) embarked on beekeeping projects in fifteen (15) riparian communities to produce honey in commercial quantities. In 2022, forty-two (42) beehives were procured by VRA in addition to the existing fifty-seven (57) beehives, thus bringing the total number of beehives to Ninety-nine (99). The total honey harvested in 2022, however, was 205 liters.



HUNGER ALLEVIATION

VRA is committed to eliminating hunger amongst its stakeholders. To this end, the Authority continues to create the enabling environment for individuals, community based organisations, and companies to carry out fish farming on the Volta Lake in order to provide for the

protein needs of its Communities and Ghanaians as a whole. The Volta Lake also serves as a major source of irrigation for carrying out farming activities within the Volta basin. The water is used to irrigate crop, rice and vegetable farms scattered across the Volta basin.



HEALTH AND WELL-BEING

VRA is committed to ensuring good health and well-being as anchored on the provisions of Volta River Development Act, Act 46. The Authority takes reasonable measures to ensure the health and well-being of the affected communities in its

operational areas.

VRA MANAGEMENT'S COMMITMENT STATEMENT ON COVID-19

The VRA Management is committed to protecting the health, safety, and overall well-being of its workforce and families, visitors and communities through the implementation of appropriate and acceptable protocols at our operational and work locations to combat the spread of COVID-19



**KEEP OUR DISTANCE, WASH YOUR HANDS AND
SANITISE REGULARLY'MASK UP ALWAYS;
NO FACE MASK NO ENTRY'**

VRA's HSSE Strategy

VRA holds Health, Safety, Security and Environment (HSSE) very paramount and therefore has a strategy embedded in its Corporate Objectives to deal with the increasing dynamic business environment.

The Authority's commitment to ensuring the health and well-being of its employees is evident in the “I” in the SPICE objectives that stands for “Improve Health, Safety, Security and Work Environment (HSSE),”

Safety Awareness Day Celebration

In 2022, the Authority recognised and rewarded Departments that adhered to Safety in the Operational and Non-Operational Work Area Safety Committees (WASACo) during its Safety Awareness Day celebration. The Tema Thermal Power Complex (TTPC) was adjudged first among the Operational departments whereas the Corporate Strategy Department was adjudged the first among the Non-Operational departments. This is a testament to the Authority's commitment to ensuring that safety standards are continuously upheld by its staff, at various work areas.



Akosombo staff at safety day celebration

AISOSA' Medical Outreach at Adjena

VRA International Schools Limited in collaboration with Akosombo International School Old Students Association (AISOSA) conducted a day-long health screening exercise in Adjena, a resettlement community in the Asuogyaman District of the Eastern region, to improve their health conditions.

The Brigade also donated medical supplies and medications to the Red Cross Society, AIS, VRA Hospital Akosombo, Akwamuman Secondary Senior High School, Adjena Senior High Technical School, and Adjena Health Centre.

VHSL acquires 3-D Mammograms

VRA Health Services Limited (VHSL) in 2022, commissioned two ultra-modern 3D Mammogram machines for use at the VRA

health facilities in Akosombo and Accra in screening and detecting breast cancer cases and to help reduce the prevalence of the disease in women, especially, female employees in the Authority. The Authority made this gesture, as part of its commitment to fight against breast cancer.



Commissioning of the two 3-D Mammograms

VRA Ladies embark on Breast Cancer Awareness

Breast Cancer Awareness Month is observed annually in the month of October, to raise awareness, improve support, screening for the disease and for early detection.

In 2022, the VRA Ladies organized a workshop on Management of Breast Cancer Disease with the theme “Early Detection of Breast Cancer” and went on a float in support of this initiative.



Breast cancer awareness creation by VHSL staff

Participation in World Neglected Tropical Diseases Day Celebration

In an effort to achieve the World Health Organization's (WHO's) target of controlling, eliminating and eradicating Neglected Tropical Diseases (NTDs) by 2030, the Authority participated in the launch of the 3rd World NTD Day Celebration, under the theme “Achieving Health Equity to End Neglect of Poverty Related Diseases”.

The celebration seeks to create awareness and to maximize WHO's efforts to eradicate NTD. The WHO representative Dr. Elizabeth Juma, reiterated the importance of surveillance and

data collection in the identification of the vulnerable and administration of appropriate interventions.

Rev. Dr. Joyce Aryee, the National NTD Ambassador and a member of the VRA Board in her speech advocated for Stakeholder institutions to intensify awareness creation and sensitization programs to draw more attention to NTD in the country.

VRA held consultative meetings with the Ghana Health Service (GHS) in 2022, on Neglected Tropical Diseases Programme (NTDP). Financial and technical proposals were discussed and working sessions were held to finalize the NTDP proposals. A Contract Agreement has since been drafted and reviewed by VRA as well as the NTDP Team and the contract sum is being finalised for adoption.



VRA Schistosomiasis Control Programme

The VRA Schistosomiasis Control Team paid a courtesy call on the Paramount Chief of Kpong, Nene Tetteh Yumu II as part of a working visit in his jurisdiction.



The VRA team deployed a number of interventions to control and manage the incidence of schistosomiasis in selected project impacted communities. Activities carried out include the following:

Snail Vector Prospecction

In 2022, VRA undertook an assessment of schistosomiasis snail vector population density and infectivity levels at the water contact sites of Twenty-one (21) Schistosomiasis endemic communities in the Asuogyaman and Lower Manya Krobo Districts of the Eastern Region, and the North Tongu and South Tongu Districts of the Volta Region. Details of the results are presented in the Table below.

No.	Community	Date	Biomphalaria pfeifferi			Bulinus truncatus		
			No. Examined	No. Positive	Infectivity (%)	No. Examined	No. Positive	Infectivity (%)
1	Kpong Ayikpala	19/05/22	1	0	0.0	12	0	0.0
2	Kpong Ahudwo	07/05/22	5	0	0.0	15	0	0.0
3	Avegagome	07/11/22	17	0	0.0	2	0	0.0
4	Asidohui	07/11/22	0	0	0.0	0	0	0.0
5	New Agave	07/11/22	0	0	0.0	0	0	0.0
6	Agave Tadze	08/11/22	0	0	0.0	0	0	0.0
7	Doffor	08/11/22	0	0	0.0	0	0	0.0
8	Adakope	09/11/22	0	0	0.0	0	0	0.0
9	Atabui	10/11/22	0	0	0.0	0	0	0.0
10	Amedomekope	10/11/22	0	0	0.0	0	0	0.0
11	Sokpoe	11/11/22	3	0	0.0	9	0	0.0
12	Aveguime	12/11/22	0	0	0.0	4	0	0.0
13	Belikope	07/12/22	0	0	0.0	0	0	0.0
14	Lorlori	08/12/22	0	0	0.0	0	0	0.0
15	Agbeve	13/12/22	0	0	0.0	0	0	0.0
16	Torkpo	14/12/22	0	0	0.0	0	0	0.0
17	Atratidzi	15/12/22	0	0	0.0	0	0	0.0
18	Tefie	17/12/22	0	0	0.0	0	0	0.0
19	Tsivume	18/12/22	0	0	0.0	0	0	0.0
20	Dzebenu	20/12/22	0	0	0.0	0	0	0.0
21	Sondo	20/12/22	0	0	0.0	0	0	0.0
Total			26	0	0.00	42	0	0.00

Twenty-six (26No.) Biomphalaria pfeifferi and Forty-two (42No.) Bulinus truncatus snails were found per man hour. None of the snails found had cercariae and thus were infective and lacked the ability to cause disease. Infectivity rates for both species of snails in all Twenty-one (21) communities assessed is thus 0.00%.

Minimizing Risk of Infection of Schistosomiasis through Shoreline Weeds Clearing

Simple handheld tools such as wheelbarrows, rakes, 200m nylon ropes, cutlasses, PPEs such as wader suits, and nitrile PVC hand gloves were distributed to twenty-six (26) communities in 2022,

to support them remove water weeds at their human-water contact sites. This helped in minimizing the risk of infection with cercariae which are transmitted by snails harbored by these aquatic weeds. Beneficiary communities are listed in the Table below.

No.	Ada East	Asuogyaman	Shai Osudoku	South Tongu
1	Ada Foah	Apenawo	Adakope	Adzake
2	Kewum	Konkodeka	Asutuare	Agave Tadze
3	Kpotsonu	Kudikope	Atabui	Alikekope
4		Old Apaaso	Atrobinya	Amedomekope
5			Doffor	Asidohui
6			Dormeliam	Avegagome
7			Kortorkor	Aveguime
8				Dzetorkoe
9				New Agave
10				Keseve
11				Tsatsukope
12				Tsetsekpo



Minimizing Parasitic Load Through Drug Administration

As part of efforts to minimize Schistosomiasis parasitic load and lower prevalence, VRA undertook Mass Drug Administration (MDA) exercises in thirty-six (36) communities in the Lower Manya Krobo, Shai Osudoku and the South Tongu Districts in 2022. The exercise was executed in conjunction with District Directorates of Health, who supported our team with Disease Control Officers and community volunteers. One thousand, six hundred and seven (1,607) persons in total were treated with Four thousand, nine hundred and ninety-seven (4,997) tablets of Praziquantel (PZQ); three hundred and twenty-six (326) people in the Lower

Manya Krobo, six hundred and fifty-three (653) in Shai Osudoku and six hundred and twenty-eight (628) in the South Tongu District.

The Praziquantel (PZQ) Tablets were administered together with Piriton; an anti-histamine to take care of allergic reactions and Aluminium Hydroxide (Aludrux – an antacid) to address any stomach upsets that might occur due to lysis of the adult worms. The number treated included One thousand, one hundred and fifty (1,150) adults representing 72% and four hundred and fifty-seven (457) children representing 28%. By gender, nine hundred and two (902) males representing 56% and seven hundred and five (705) females representing 44% reported for treatment. Similarly, in terms of ethnicity, 62% Ewes, 32% Dangmes and 6% other tribes reported for treatment.

The major occupation of persons that reported for treatment were pupils and students numbering four hundred and eighty-nine (489) which represents 30%. There were also two hundred and seven-two (272) fishermen and fishmongers representing 17%. The rest are two hundred and fifty-six (256) farmers representing 16%, two hundred and ten (210) traders representing 13% and 27% consisting of other occupations.

An evaluation of the MDA activities was subsequently carried out in Forty-two (42) communities in the Asuogyaman, Lower Manya Krobo, Shai Osudoku, North Tongu and the South Tongu Districts of the Volta Basin. One thousand, five hundred and sixteen (1,516) persons were examined. Ninety (90) of them were diagnosed positive for Urinary Schistosomiasis, translating into an average prevalence of Urinary Schistosomiasis in the Volta Basin for the year of 5.94%, as against a previous average prevalence of 28.53% recorded in these same communities. The individual community prevalence levels however ranged from 0.00 % - 39.47%. The Abuvienu community in the Shai Osudoku District recorded the highest average prevalence of 39.47%.

VRA observed with concern that a significant number of people in the Kpong area had haematuria (blood in urine) which is a

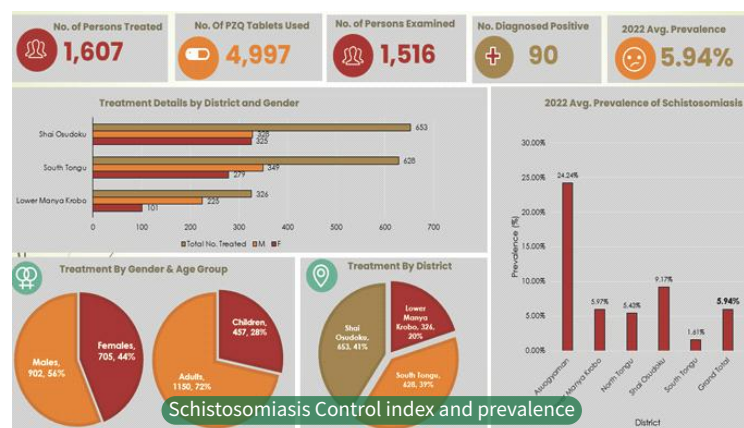
classical sign of Schistosomiasis infection. This is probably due to the high-risk trade they ply - majority of them being fisherfolks.

A second round of treatment has therefore been planned.

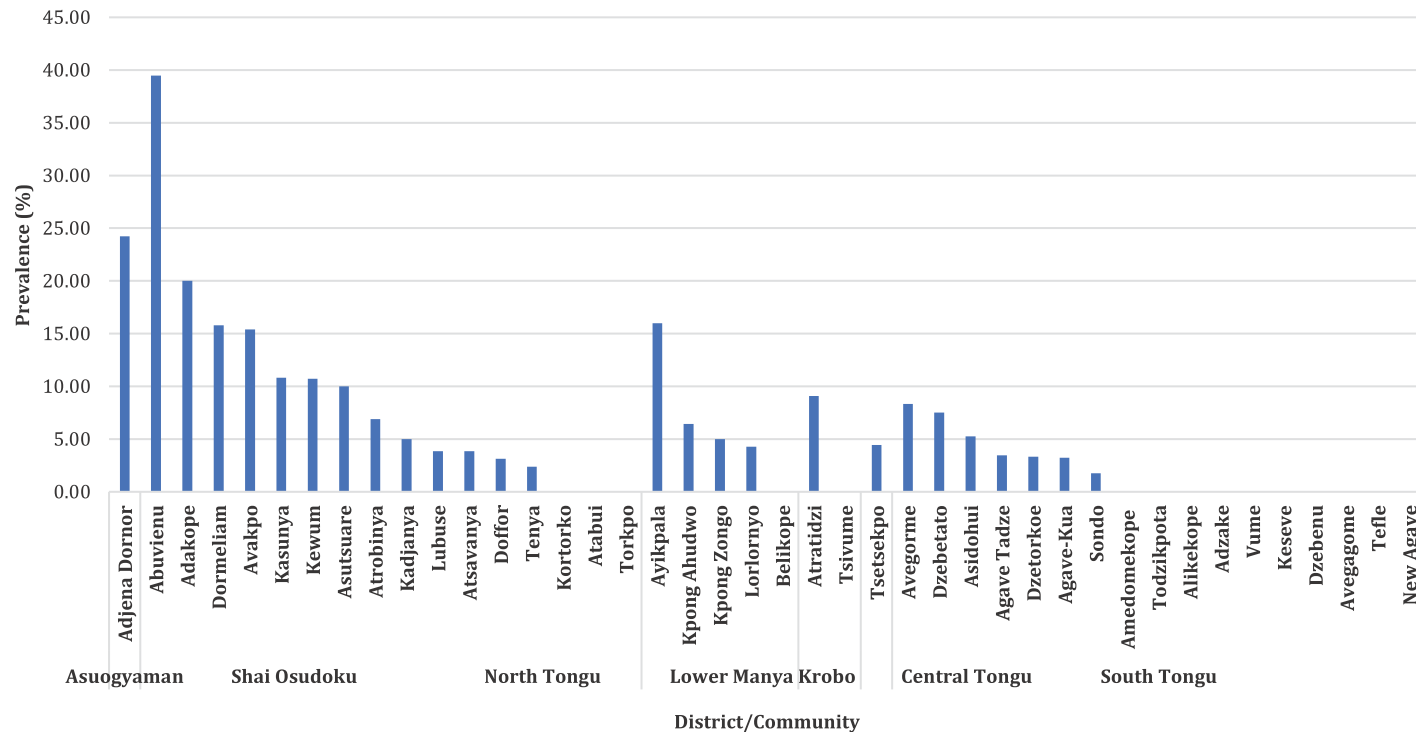
The year-to-date Schistosomiasis Control index therefore stands at 95.27% due to the several intervention programmes rolled out to 53 communities within the year.

Details of the MDA and evaluation activities are summarized in the Table and figures below.

No.	District / Community	No. Treated	No. of PZQ Used	No. Examined	No. Positive	Current Prevalence (%)	Previous Prevalence (%)	% Reduction in Prevalence
	Asuogyaman	0	0	66	16	24.24	13.21	83.52*
1.	Adjena Dornor			66	16	24.24	13.21	83.52
	Lower Manya Krobo	326	1,187	268	16	5.97	31.50	-66.04
2.	Kpong Ahudwo	174	655.5	109	7	6.42	23	-72.08
3.	Amedeka	58	172.5					
4.	Kpong Ayikpala	27	101	25	4	16	40	-60
5.	Belikope	25	98	24	0	0		
6.	Kpong Zongo	24	92	40	2	5		
7.	Lorloriwo	18	68	70	3	4.29		
	North Tongu	0	0	92	5	5.43	10.05	-52.82
8.	Atrasidzi			33	3	9.09		
9.	Tsetseko			45	2	4.44	4.71	-5.64
10.	Tsivume			14	0	0	15.38	-100
	Shai Osudoku	653	2,081	424	43	10.14	35.98	-65.59
11.	Asutsuare	86	255	30	3	10	21.50	-53.49
12.	Lubuse	65	199.5	26	1	3.85	66.3	-94.2
13.	Atrobinyia	53	191	29	2	6.9	54.74	-87.4
14.	Tenya	50	176	42	1	2.38		
15.	Kasunya	49	148.5	37	4	10.81	24.10	-55.14
16.	Kewum	47	146	28	3	10.71	31.84	-66.35
17.	Adakope	43	144.5	15	3	20	48.95	-59.14
18.	Abuvienu	46	130.5	38	15	39.47	29.35	34.49
19.	Avakpo	37	111	13	2	15.38	61.34	-74.92
20.	Kadjanya	29	109	20	1	5	13.8	-63.77
21.	Dormeliam	32	109	38	6	15.79	19.50	-19.03
22.	Kortorko	38	108	27	0	0	47.76	-100
23.	Doffor	26	89	32	1	3.13	31.09	-89.95
24.	Atabui	31	87	23	0	0	17.24	-100
25.	Atsavanya	21	77	26	1	3.85	36.25	-89.39
	South Tongu	628	1,729	666	10	1.50	24.72	-91.44
26.	Vume	116	304	52	0	0	3.25	-100
27.	Asidohui	80	198	38	2	5.26	45.05	-88.32
28.	Todzikipota	45	150	43	0	0	4	-100
29.	Tefie	43	137	35	0	0	35.80	-100
30.	Amedomekope	45	131	33	0	0	5.9	-100
31.	Tsatsukope	39	127					
32.	Agave-Kua	39	112.5	31	1	3.23	24.16	-86.65
33.	Dzetorkoe	37	95	30	1	3.33	12.35	-73.01
34.	Agave Tadze	37	93.5	29	1	3.45	14.41	-76.07
35.	Alikekope	28	81	32	0	0	1.56	-100
36.	Avegorme	30	72.5	12	1	8.33		
37.	New Agave	25	72	33	0	0	51.20	-100
38.	Dzobetato	24	58	40	3	7.5	14.29	-47.52
39.	Avegagome	24	58	3	0	0	74.10	-100
40.	Keseve	16	39.5	26	0	0	6.25	-100
41.	Adzake			62	0	0	65.80	-100
42.	Dzebenu			65	0	0		
43.	Sondo			57	1	1.75		
44.	Torkpo			45	0	0	14.75	-100
	Grand Total	1,607	4,997	1,516	90	5.94	28.56	-75.11



Prevalence of Urinary Schistosomiasis in the Volta Basin - 2022



sensitization & Public Health Education Programmes

All communities visited for Mass Drug Administration and evaluation exercises during 2022, were educated on Schistosomiasis and its implications prior to the commencement. This was aimed at influencing their behaviour, beliefs and practises towards the disease. Based on responses from the people before and after the educational campaign, the awareness level was seen to have increased. This encouraged a lot more of the people to present themselves for treatment and participate in all our programs. It also particularly helped disabuse the false perceptions some individuals have, about the medication.



Sensitization & Public Health Education at Tsetseko



SUPPORT FOR EDUCATION

VRA supports quality education. The Authority's Educational Scholarship programme for needy but brilliant students, as well as Employee Volunteer Programmes in Senior High Schools within its operational areas attest to this fact.

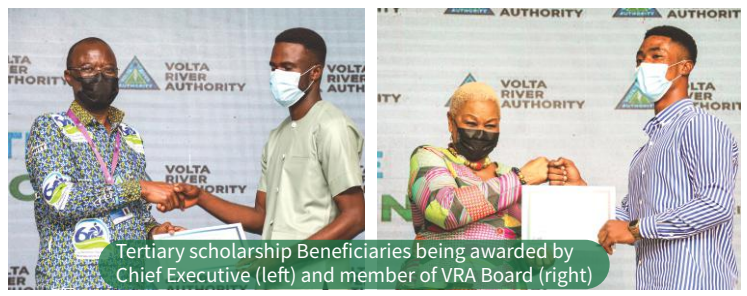
The Authority also donates educational materials and offers financial support towards Science, Technology and Mathematics (STEM) projects as well as quiz competitions in schools within its impacted communities. These programmes are intended to support the national education efforts and to maximize the potential of students to contribute to Ghana's human resource development needs.



Tertiary scholarship Beneficiaries in group photograph with management and invited guests

Tertiary Education Scholarship

In 2022, VRA supported sixty-one (61) beneficiary students from communities impacted by the Authority's operations with its Community Development Programme (CDP) Tertiary scholarship awards.



Tertiary scholarship Beneficiaries being awarded by Chief Executive (left) and member of VRA Board (right)



Tertiary scholarship Beneficiaries being awarded by Advisor (left) and Deputy Chief Executive Finance (right)

Proposed TVET Scholarship

VRA engaged with two hundred and eight (280) key stakeholders in eighteen (18) municipal/district assemblies in its operational areas on how best to implement TVET to cater for the gap created by persons who are unable to proceed to the tertiary education level. The Authority awards scholarships to support the developmental agenda of its impacted communities in this regard and further assists in the provision of tools and equipment for government owned technical vocational institutions.

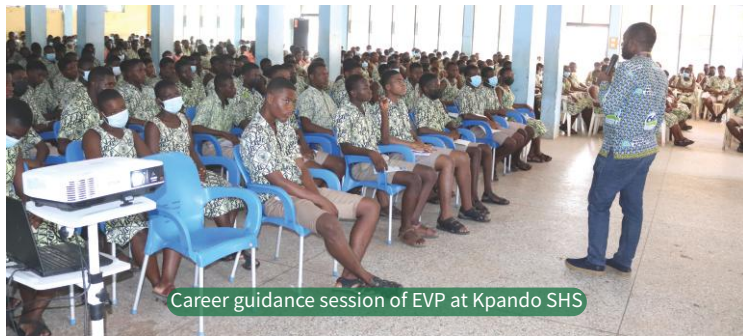
Employee Volunteer Programme

The Authority's Employee Volunteer Programme (EVP) is a flagship CSR initiative that aims at encouraging the Authority's staff to give back to society by participating in a day-long career guidance, counselling, and teaching exercise in Senior High Schools in communities within VRA's operational area.

In 2022, VRA organized the EVP for Kpando Senior High School in an effort to support and advance high-quality education in its impacted communities. About 850 students benefitted.



Staff Volunteers engaged in teaching at Kpando SHS



Donation of Educational Materials

The Volta River Authority has donated textbooks to enhance teaching and learning in the impacted communities. VRA in 2022, donated a total of 24,750 worth GHS1,370,325.00 of books to 55 Public Senior High Schools.

The schools are located in the Tema, Kpone, Kpando, Lower Manya Krobo, Yilo Krobo, Asuogyaman, Shai-Osudoku, Anloga, Shama, Ada East and West, Upper Manya Krobo, North and South Dayi, North, South and Central Tongu and Biakoye sub-Metropolitan/Municipal/District Assemblies.

The books donated consisted of Core Mathematics, Integrated Science and English Language text books for forms one (1) to three (3).



STRIVING FOR GENDER EQUALITY AND BALANCE

VRA is mindful of implementing policies to ensure gender equality and balance. The Authority is conscious of the fact that some professions like engineering are dominated by men, however, VRA gives equal opportunity to all individuals irrespective of gender.

VRA Urges Women in Energy Sector to Make Sacrifices to Attain Higher Heights

The Chief Executive of the Volta River Authority (VRA), Emmanuel Antwi-Darkwa, in 2022, during the Women in Energy conference urged women, particularly those working in the energy sector, to be prepared to make sacrifices and pay attention to the requirements of advancing in their fields of endeavour.

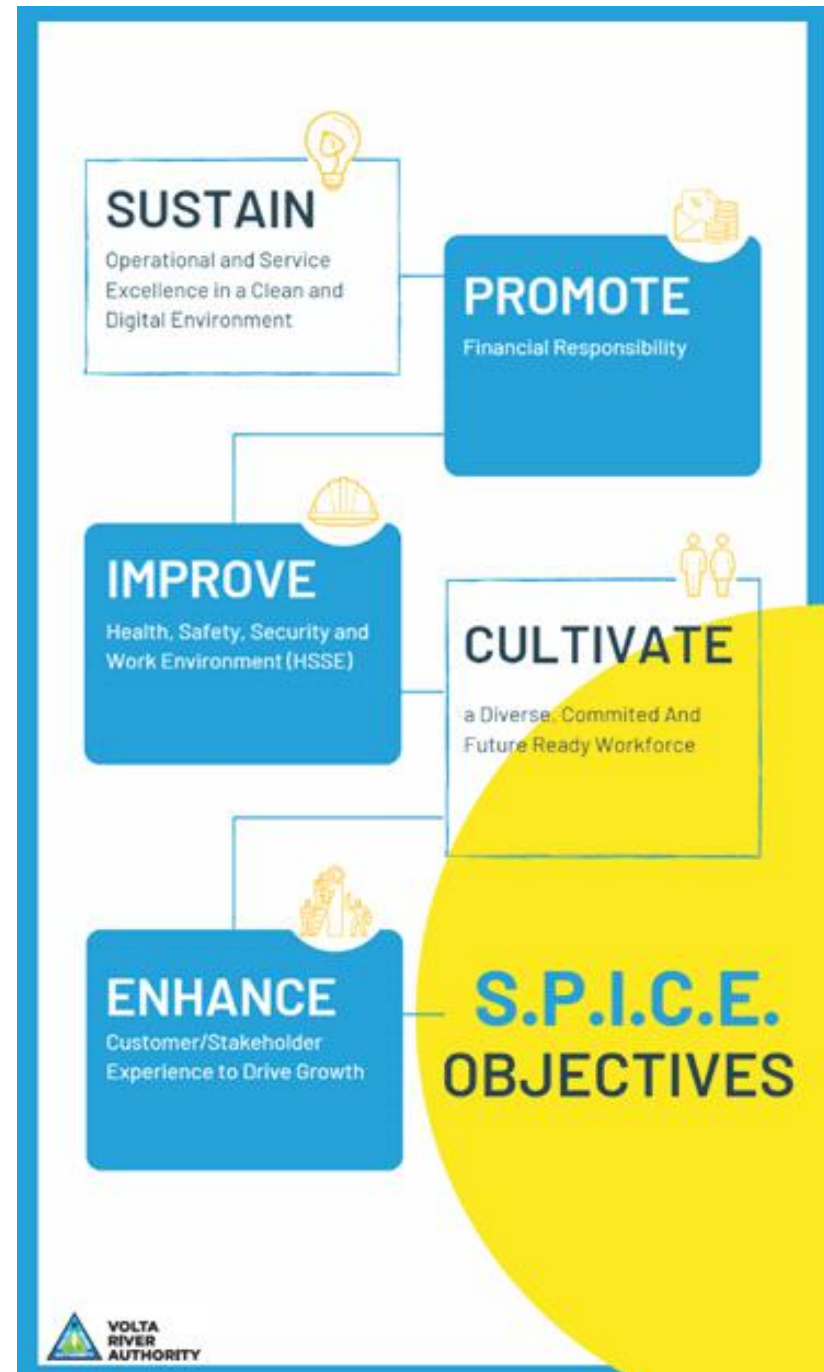
Professor Nana Browne Klutse, an Associate Professor in the Department of Physics at the University of Ghana, postulated in a Keynote presentation that "women accounted for fewer than a quarter of employees in the energy industry in Africa." She identified stereotypes, societal and cultural standards, lack of mentorship and training, as a few of the challenges that prevented women from participating in the energy business.

Diversity and Inclusion

In a bid to simplify and improve the implementation of the

Authority's Strategy for diversity and inclusion, VRA introduced the S.P.I.C.E. Corporate Objectives. These objectives were developed in line with best practices considering the increasingly dynamic business environment. The “C” stands for “Cultivate a Diverse, Committed and Future-ready Workforce.”

It is expected that this initiative would affirm the Authority's commitment to gender and disability equality, and drive the development of a diverse, accommodating and opportunity-laden work environment, to enable upward mobility for individuals such as Susan Van-Brocke who was recently appointed as Member of Governing Council of the Ghana College of Nurses and Midwives and also elected Chairperson of the VRA Ladies Association (VRALA).





WATER AND SANITATION

In fulfilling the Authority's objective of curbing the spread of Schistosomiasis in riverine communities along the Volta Lake, VRA continued to focus on the provision of water and sanitation facilities for communities impacted by its operations.

The intervention is to allow for a more sustainable way of curbing the spread of the health hazard prevalent and geared towards the attainment of SDG goal 6.

Provision of Clean Water to Communities

In 2022, VRA in collaboration with Project Maji Foundation, provided and handed over four (4) Standard Solar-Powered Mechanised Water systems to Atrobinya, Battorkope, Dansokrom-Asikuma and Akplorti in the Shai-Osudoku, Upper Manya Krobo Asuogyaman and South Tongu Districts. The beneficiary communities are in the Eastern and Volta Regions.



Handing over of water projects



Donation towards Environmental Sanitation

In accordance with the Authority's support for the UN Sustainable Development Goal 6 (SDG 6) and to address the unsanitary conditions and to ensure a clean environment, VRA has handed over four (4) Skip Containers to the Lower Manya Krobo Municipal Assembly.



Handing over of skip containers to Lower Manya Krobo Municipal Assembly

Provision of 20- Seater Biofil Sanitation Facility

VRA also completed and handed over a 20- seater Biofil sanitation facility with 10 Micro flush Biofil and Urinal for males as well as 10 Micro flush Biofil with a changing room for female students of Adjena Senior High/Technical School in the Asuogyaman District. The project was provided, following an increase in the school's enrollment arising from the implementation of the Free Senior High School policy.



Micro flush Biofil for Adjena Senior High/Technical School



7 RENEWABLE ENERGY



RENEWABLE ENERGY PROGRAMME

VRA is striving to provide affordable renewable and clean energy to ensure that it increases its renewable energy footprints.

The Authority is vigorously implementing its Renewable Energy Development Programme (REDP), which it started in 2011 to diversify the Authority's generation portfolio, assist in achieving the Government's Renewable Energy (RE) Policy Objective, and reduce its carbon footprint as well as that of its customers.

VRA Solar Projects

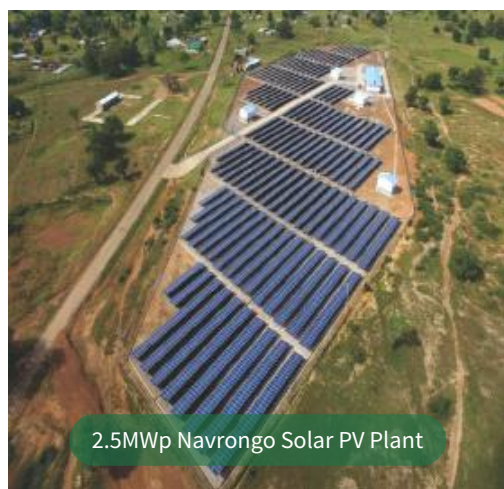
VRA's first solar plant built under its REDP was the 2.5 MW solar plant in Navrongo. Subsequently, the 6.5 MW Lawra Plant and the 13MW Kaleo plant were also completed, and Power Purchase Agreements were signed with some existing customers.

In 2022, a 15MWp Kaleo 2 Solar Plant is under construction and expected to be commissioned within the 2nd Quarter of 2023. VRA is concluding discussions with one of its existing customers identified as off-taker for the project. The Plants are all located in the northern part of Ghana.

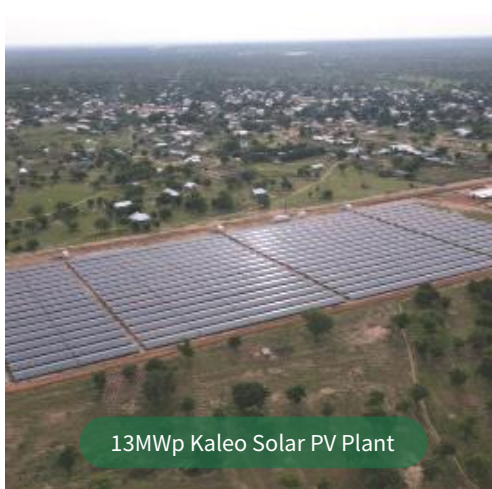
VRA Partners Government to Increase Mini-Grid Systems

The Ghanaian government and the Volta River Authority (VRA) are working closely together to expand mini-grids and standalone photovoltaic (PV) solar systems for use in distant villages that are not wired into the main energy grid.

There are about 15 micro solar grids with installed capacities ranging between 20-50kw installed in most remote villages in the country to give them access to clean electricity for sustainable economic development.



2.5MWp Navrongo Solar PV Plant



13MWp Kaleo Solar PV Plant



6.5MWp Lawra Solar PV Plant

8 GOOD JOBS AND ECONOMIC GROWTH



CONTRIBUTION TO GOOD JOBS AND ECONOMIC GROWTH

VRA is the leader in the electricity supply market in Ghana, with a market share of 57% as at the end of 2022. The remaining 43% is supplied by the Independent Power Producers (IPPs) and Bui Power Authority (BPA).

With the current leadership in market share, VRA is generating the needed power thereby positively contributing to the growth in Ghana's Gross Domestic Product (GDP).

The Authority is a net employer, that offers decent and fulfilling jobs that are satisfactory and competitive. VRA is determined to protect labour rights devoid of modern slavery and child labour in accordance with SDG 8.



Staff of Tema area at safety day event

In 2022, the Authority commissioned its Gas Turbine Unit 2 (GT12) at its Kpone Thermal Power Station, which was shut down in 2021 for a mandatory Type "C" Inspection to be undertaken by General Electric (GE) with support from VRA personnel.

Mechanical completion was achieved on January 8, 2022 for recommissioning to begin. Hot Commissioning activities were completed in January, 2022 to allow for troubleshooting of start-up and test run. The unit is currently operational

The works involved the disassembly of the Unit package, inspection of the internal hot gas paths, calibration of critical



Rigging of the Gas Turbine Combustor

devices and equipment, replacements of major parts and components, non-destructive testing of all internal rotating and static components, and maintenance works on the turbine set and its auxiliaries. The Gas Turbine (GT) main upper casings and combustor chamber were removed. Similarly the turbine rotor was taken out and main parts underwent thorough visual and specialized inspections. The electric generator and auxiliary systems were also inspected.



Gas Turbine Gearbox Coupling Shaft

The inspection was also aimed at assessing the rotor condition, carrying out a visual inspection of the compressor, recalibrating, adjusting, replacing or repair of parts and correction of instrument settings as per the agreed work scope. It also involved the implementation of upgrades as per the agreement between VRA and GE, as well as reporting gas turbine generator condition,

including recommendations for future operation and maintenance. This is to ensure reliability of power supply to consumers.



INNOVATIONS AND INFRASTRUCTURE ICT PROGRAMME

VRA engaged in a number of activities to ensure the availability of its Information Communication and Technology for business applications during 2022. Major activities carried out include: Technology/Architecture upgrades, Information Security/Awareness, Business Processes Digitalisation, Organisational Structure and Skills, IT Governance and Management.

Launch of Creativity and Innovation

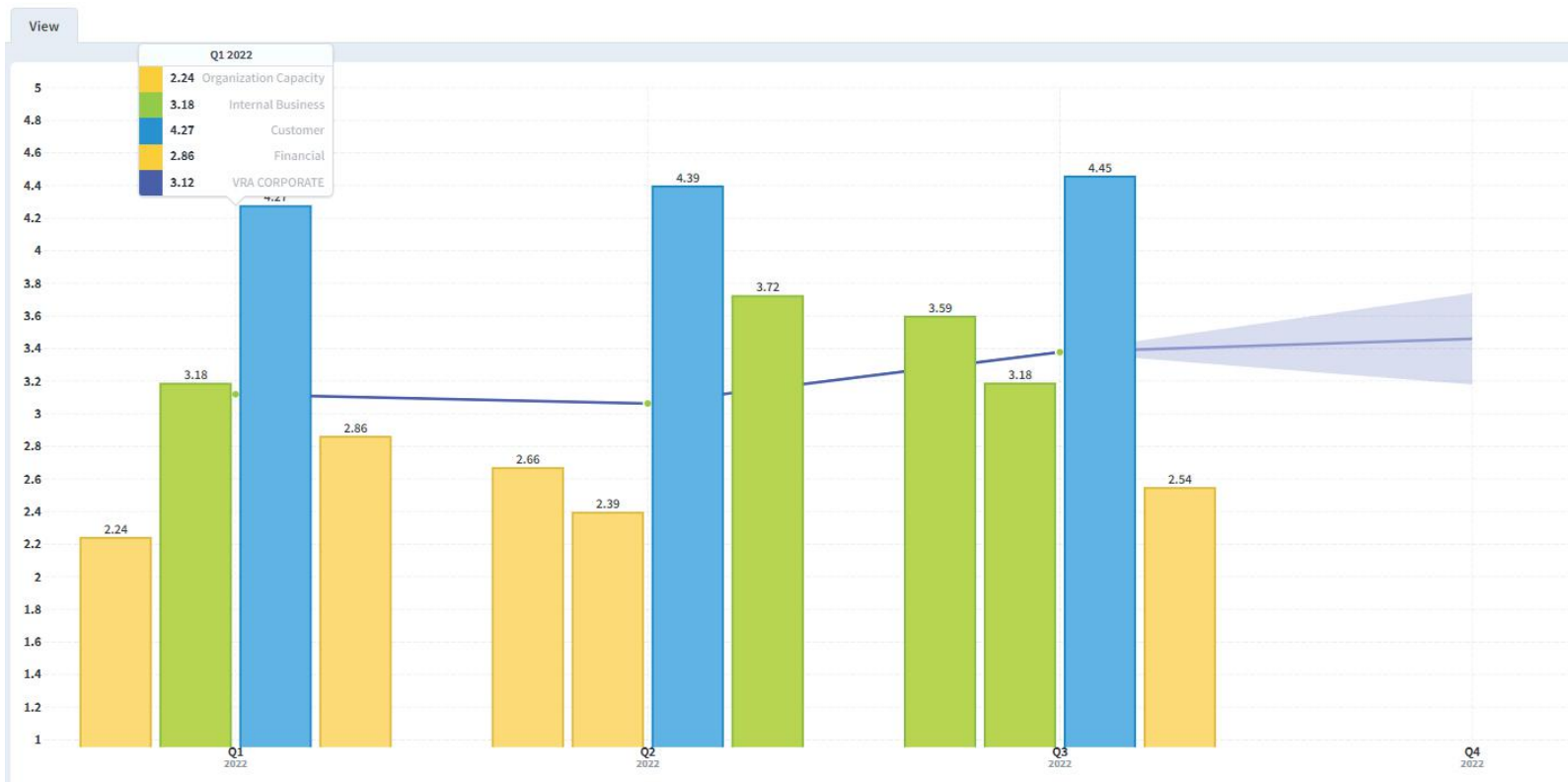
During the Authority’s 61st birthday celebration in 2022, VRA launched Creativity and Innovation day celebration under the theme **“Creativity and Innovation - The Anchor for our Sustainability”** during which, a team was inaugurated to lead Creativity and Innovation in the Authority.

Performance Evaluation Process

The Authority was successful in rolling out a data analytics driven platform for its Strategic Performance Management, using the Spider Impact Software in the 4th quarter of 2022. The 1st to 3rd quarter 2022 data has been uploaded for all departments onto the Spider Impact platform. VRA also initiated the use of Microsoft Power BI for real-time risk and operational analysis, in the first and 2nd quarter of 2022, which were shared with the Executive and Directors. A significant number of staff were also trained in Microsoft Power BI to facilitate data-driven decision making.



VRA Quarterly Performance Trend



Procurement and Tendering Process

The Volta River Authority created a new email address specifically for procurement and tendering related issues. The step towards digitisation and going paperless has ensured swift processing of transactions and convenience. The Authority initiated the digitization of signing of Purchase Orders and Purchase Requisition. This is to improve our business process and streamline VRA's activities. Currently, automation of the Purchase Order (PO) has been submitted as a business requirement for the Oracle Fusion Project.

In a quest to avoid cost of demurrage in our shipping activities, VRA created a common communication platform to bring all parties involved in the shipping and clearing activities together to share information on shipment schedules. This is to help manage shipments proactively and keep track of all goods in transit effectively.



REDUCED INEQUALITIES

VRA in an effort to reduce inequality, operates a fair wages & salaries structure devoid of inequalities, coupled with a fair HR system that allows growth through progression and promotion, to attract the best employees in various categories of professions.

The Authority offers equal opportunities for employment and publicises its vacancies internally and externally to attract the best employees. It also strives to bridge the inequality gap through a Collective Bargaining Agreement (CBA). In 2022, due to economic hardship the Authority granted Cost of Living Allowance (COLA) at the request of Staff groups.



STAKEHOLDER'S ENGAGEMENT

To address issues, execute decisions, and make sure the Authority's operations are not unnecessarily disturbed, VRA communicates with traditional leaders, opinion leaders including Municipal and District Assemblies and transport union officials in its impacted communities.

Several stakeholders, Communities and Municipal/District Assemblies participated in engagement held in 2022.



Demolition of illegal structures on VRA's natural Gas Pipeline Right of way

In line with strategies to improve customer and stakeholder satisfaction, the Authority engaged with the Tema Traditional Council (TTC), Kpone Traditional Council (KTC), Ghana National Fire Service (GNFS), Kpone Katamanso Municipal Assembly (KKMA) Ghana Police Service (GPS), National Investigation Bureau (NIB) and Tema Metropolitan Assembly (TMA) to discuss issues on the eviction of squatters and encroachers on the VRA's Natural Gas Pipeline Right of the way

VRA also held a stakeholder engagement with the Media (TV3, Metro TV, UTV, GTV, Accra FM, Daily Graphic, News-Times Corporation, GNA) on the pollution activities of Sentuo Steel Limited affecting the operations of TTPC and staff of the Authority.

VRA held a consultative meeting with the Kpone Katamanso Municipal Assembly (KKMA) to educate the Assembly on the Authority's CSR activities and VRA's operations

The Authority held a meeting with the Deputy Director-General of Ghana TVET Service, Mr. David Prah, to discuss the necessary measures needed to be in place to implement the Community Development TVET Programme proposed by VRA's impacted communities.

VRA held joint stakeholder engagement with the Kpone Katamanso Municipal Assembly (KKMA) and GRIDCo on the eviction of encroachers in Kpone under GRIDCo's pylons and VRA's gas pipeline right of way.

Pertaining to the demolition of illegal structures and clearing of debris under the GRIDCo/VRA pylons and right of way, VRA embarked on a trek with GRIDCo and KKMA to assess the extent of encroachment and also the cost of demolishing.

VRA also held a sensitization workshop with stakeholders (GNFS, KKMA, GPS, NIB, TMA) to sensitize the squatters on the VRA's natural Gas Pipeline Right of way and the danger of their continuous stay and activities within the area which includes

welding, metal fabrication, fuel trade, cattle rearing etc. VRA also, informed them of the urgency of the eviction exercise at the Bankoman, Tema New Town.



VRA's RESPONSIBLE CONSUMPTION PROGRAMME

In line with the Authority's strategy to ensure development in a sustainable manner, VRA continued to focus on issues related to sustainability, environmental conservation, as well as improving the livelihoods of people in the riparian communities. The activities implemented include afforestation and reforestation, bush fire prevention and management, alternative livelihood programmes, etc. The objective for the long-term investment in environmental sustainability in our operational areas is to avert the adverse consequences of the Authority's operations on the people and planet.

Green Procurement

To be able to source for goods and services that cause minimal adverse environmental impact, VRA trained its procurement staff on Green Procurement.

The training highlighted how to procure energy efficient cooling appliances such as Air -Conditions and Fridges. Resource Persons from Energy Commission assisted our team to prepare a Tender and Evaluation Report of a bid quotation received in line with Sustainable Procurement.

The Authority also sponsored staff to attend a training programme organized by the Public Procurement Authority (PPA) that helped procurement practitioners purchase goods, works and services that will reduce adverse environmental impact and help achieve sustainable goals.

Disposal Activities

In 2022, precautionary measures were put in place to reduce or avoid contamination from oil disposal. These measures helped the Authority to attain zero percent (0%) oil disposal for the year 2022.

Recycling programme

As the Authority plans to go green, waste paper products are shredded and dispatched to a local recycling centre in Akosombo on monthly basis through the Environment and Sustainable Development Department. Plans are also far advanced to get our electronic waste materials such as used toner cartridges to be recycled by a local waste management company.

ENVIRONMENTAL PERFORMANCE



CLIMATE CHANGE PROGRAMME

VRA's environmental policy requires that we develop and implement systems for all our business units to ensure compliance with national and international environmental protection regulations as well as monitor and report on environmental performance as required to our stakeholders.

Our Environmental Management Plan (EMP) and Preparedness Plan for our two hydroelectric plants as well as internal and external policies and regulations were strictly adhered to our Stakeholders' satisfaction. A variety of conservation programs, involving significant reductions in the Green House Gas (GHG) emissions were also carried out.

Environmental Sustainability

The Volta River Authority (VRA) is committed to ensuring the continual improvement in environmental sustainability of our operations and 'Go Green' by reducing our environmental footprints, achieving net zero emissions, implementing an effective environmental management system, promoting the inclusion of environmental sustainability indicators in Project Development and Management, and demonstrating leadership and innovation in environmental service delivery. VRA continually assesses its management performance through the implementation of these key strategic initiatives and programmes described in the subsections below.

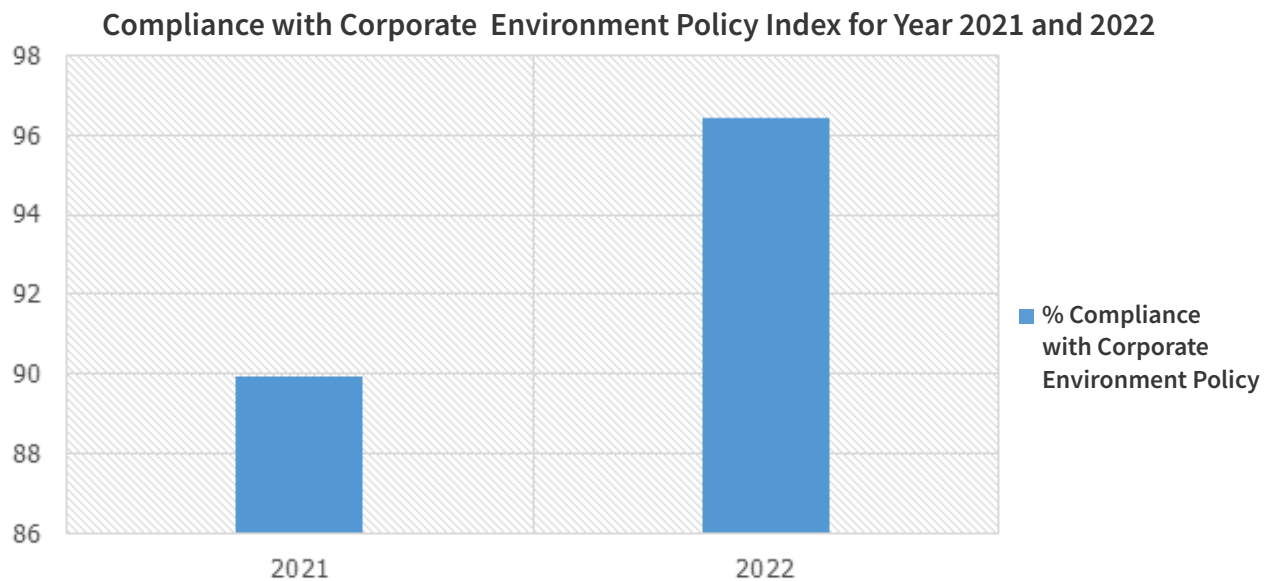
Environmental Stewardship & Compliance Monitoring

Managing our physical and social environment effectively and responsibly, in line with sustainability principles, is crucial for our success. The VRA's Corporate Environmental Policy embodies our commitment to sound environmental stewardship. It articulates our resolution to meet and exceed all applicable environmental laws, regulations, and standards. This is evaluated by our Environmental Policy Compliance Index and our Environmental Quality Compliance Index.

Our obligation for sound environmental stewardship also requires acquiring all requisite social and environmental licenses and permits for sustainable power generation whilst avoiding and/or mitigating any adverse environmental impacts our operations may have on our stakeholders, particularly host communities.

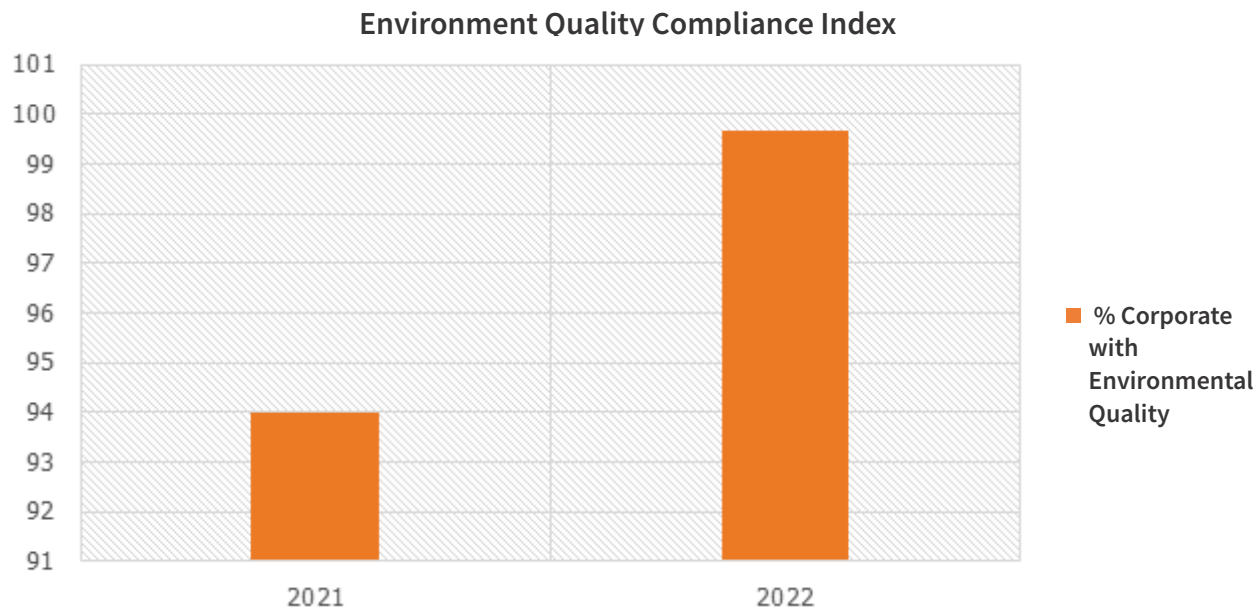
Environmental Policy Compliance Index

The Environmental Policy Compliance Index evaluates progress made in terms of carrying out activities prescribed for implementation or indicative of the policy. The VRA achieved a corporate score of 96% for the year 2022, an increase of 7% from the previous year as shown graphically below.



Environmental Quality Compliance Index

The Environmental Quality Compliance Index assesses our compliance with local environmental quality standards for emissions and discharges into the environment from our thermal power operations. The VRA achieved a corporate score of 99.7% for the year under review – an increase of 6% from the previous year, as shown graphically below.



Environmental Permitting

In accordance with the Environmental Assessment Regulations of 1999, LI 1652, the Environmental Permits for the underlisted business operations were successfully renewed during 2022.

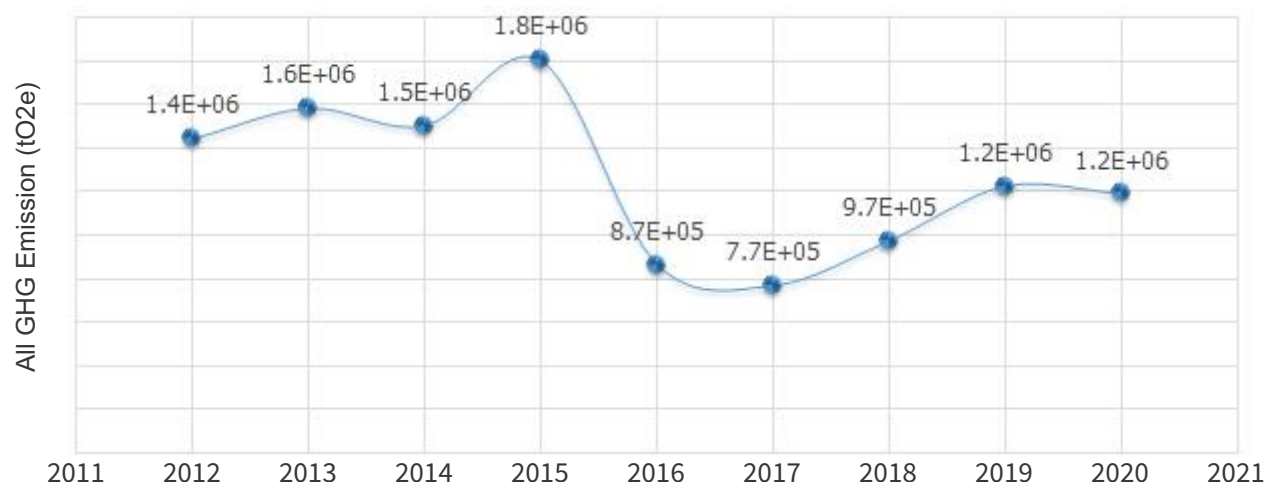
- Akosombo & Kpong Generation Stations
- 330 MW Takoradi Thermal Power Station
- 126 MW Tema Thermal 1 Power Station
- 80 MW Tema Thermal 2 Power Station
- 2.5 MW Navrongo Solar Power Project
- 220 MW Kpone Thermal Power Plant
- Natural Gas Pipeline from VRA Gas interconnections facility
- VRA Health Services Limited, Akosombo
- VRA Health Services Limited, Aboadze
- VRA Health Services Limited, Accra
- VRA International School Limited, Akosombo
- VRA International School Limited, Akuse
- VRA International School Limited, Aboadze

The Ghana Environmental Protection Agency (EPA) during 2022, also granted the Environmental Permit for the 250MW Kumasi Thermal Power Project following the submission of an Environmental Impact Statement. Furthermore, the final Environmental Management Plan for the 35MW Solar Power Project in Kaleo and Lawra was submitted to the EPA for consideration and renewal of Environmental Permit.

Carbon Footprint Management Programme

The VRA in 2016 initiated a “Corporate Carbon Footprint Management Programme” (CFMP) as part of its Corporate Strategic Objectives to allow for the measuring, reporting and management of its Greenhouse gases (GHG) emissions and strengthen its green credentials in the marketplace. The VRA, accordingly, published the 2012-2020 GHG Inventory Report on its corporate website (www.vra.com) during the period under review. The report compares GHG emission from 2012 to 2020, measures the impact of implemented reduction initiatives, and identify further reduction opportunities for future action. VRA's GHG emissions decreased by 17.4% from 2012 to 2020. Results of our GHG inventory is as presented in the graph below.

Corporate GHG Emission trend from 2012 - 2020



GHG Offsets and Reduction Strategy

In line with recommended GHG emission reduction actions, VRA has developed a Renewable Energy Development Programme (REDP) to increase its generation capacity from renewable sources. The VRA REDP sets a 5-10 years' Renewable generation capacity target of upscaling generation from renewable sources as detailed in the Table below.

PROJECT	RENEWABLE GENERATION SOURCES
2.5 MWp	Navrongo Solar Power Project (Operational since 2013)
6.5 MWp	Solar (Lawra) - (commissioned in 2020)
13.1 MWp	Solar (Kaleo) - Phase 1 (commissioned in 2021)
15.7 MWp	Solar (Kaleo) - Phase 2 (expected to be commissioned in 2023)
60MWp	Bongo Solar Power Project (Environmental Permit acquired)
0.448MWp	Akuse Residential & Institutional Office Buildings Solar PV Rooftop Project (Construction planned for 2023 Q4) - (On Hold)
0.069MWp	Head Office Solar Car Park (commissioned in 2021)
0.079MWp	Head Office Rooftop Project (commissioned in 2020)
75MWWind	Power Project -1 (Anloga, Srogbe, Anyanui) Construction expected to commence by Q4 2024 and expected to be commissioned in Q1 2026
60MWp	Solar Power Component - Pwalugu Multipurpose Dam (Construction planned for 2024)

So far, the 2.5 MW Navrongo Solar Power Plant has been operational since 2013, and emission savings till date is estimated at 10,791.00 tCO₂e. Annual GHG Emission savings from other planned renewable energy projects listed in the table above are estimated as 98,808 tCO₂e for the solar power projects (122.584MW) and 98.077 tCO₂e for the wind power projects (75MW).

Other GHG emission reduction strategies currently being implemented include converting existing simple cycle thermal power plants to combine cycle ones, fuel switch from light crude oil to natural gas in our thermal power generation, increasing our reforestation program coverage, the utilization of fuel-efficient climate smart stoves in impacted riparian communities, office paper usage reduction, sound solid waste management practices and leveraging on IT infrastructure to reduce business travels and transportation.

Payment of Environmental Services

VRA is currently implementing a Payment for Environmental Services (PES) scheme as a tool for securing the sustainable use of ecosystems within the Volta Gorge.

The Volta Gorge is a 5,149.25 Ha land stretching from the Akosombo dam wall to about 35km upstream of the Volta Lake.

The Gorge extends from the shoreline of the Volta Lake to the summit of the first hills bordering the Lake, and 300m of either bank on the Lake on the low slopes and excludes lands acquired by Government for the Akosombo dam. The core idea of PES is that external ecosystem beneficiaries make direct, contractual and conditional payments to local landholders and users in return for adopting practices that secure ecosystem conservation and restoration. The objectives of the scheme are:

- To ensure the permanent vegetative cover for the 5,149.24 hectares of land through forest tree and cash crop plantation development.
- To embark on developmental and social programmes to

reduce the dependence of the communities on the Volta Lake resources to minimize soil exposure and sedimentation.

- To restrict human disturbances in the Volta Gorge Protected Area.

In this regard, cadastral survey to map out ecological zones and ascertain land sizes of landholders commenced during 2022.

Environmental Pollution by Sentuo Steel Limited

In an effort to strengthen resilience and adaptive capacity to climate-related hazards and natural disasters, VRA collaborated with the Media to disseminate news to the public on the pollution activities of Sentuo Steel Limited which was affecting the operations of TTPC, staff of the Authority and the community. This action is vital, as it raises awareness and blows the whistle for increase human and institutional capacity to reduce climate change.





Climate Smart Stove (CSS)

Our CSS is designed to facilitate the protection of the watershed areas of the Volta Lake, reduce GHG emissions and enhance carbon savings, reduce forest degradation through the reduced consumption of firewood as fuel for cooking, as well as improve health conditions of the users of the stoves. During 2022, twelve (12) CSS champions within riparian communities of the Volta Lake were trained and engaged to undertake the maintenance of the cook stoves in their respective communities by mending cracks, reconstructing old and broken stoves and replacing damaged chimneys. Consequently, a total of 457 out of 510 existing stoves representing 89.6% were maintained in their respective communities



PROTECTING THE VOLTA LAKE

VRA takes steps to minimise pollution of the Volta Lake by monitoring and assessing quality of the reservoir. The monitoring is carried out on effluent from the tailrace of the Akosombo and Kpong Dams, as well as pollutant-laden effluents from suspected pollution sites

along the shoreline of the Volta. This is done by benchmarking our pollution monitoring performance against WHO/EPA targets in monthly, quarterly and half yearly reviews.

Volta River Authority (VRA), the Environmental Protection Agency (EPA), Water Resources Commission, Fisheries Commission, and Asuogyaman District Assembly in 2022 started a four-day monitoring and inspection programme along the shoreline of the Volta Lake to crack down on illegal private developers whose activities negatively affect the quality of the water of the Lake for hydropower generation.

Over the years, the Volta River Authority (VRA) has been implementing various activities to mitigate the impact of aquatic weed infestation and sand siltation due to the construction and operation of the Akosombo and Kpong Hydroelectric Power Dams. To effectively carry out these activities, the VRA has entered a Public-Private Partnership (PPP) agreement with two private sector companies to carry out the aquatic weed harvesting and sand dredging in the Lower Volta River on a larger scale.

The project is divided into two (2) parts, comprising dredging of sand and harvesting of aquatic weeds as follows:

Dredging

The Dredging Services involves dredging sand deposits from the Lower Volta River in the underlisted lots for riverbank nourishment among others:

- I. LOT 1: Akuse to Avakpo

- ii. LOT 2: Avakpo to Aklakpanu
- iii. LOT 3: Aklakpanu to Sogakope Bridge
- iv. LOT 4: Sogakope Bridge to Agotaga
- v. LOT 5: Agotaga to Ada (Estuary)

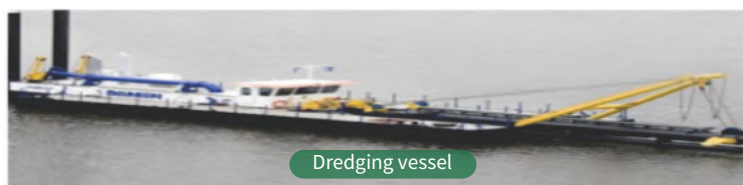
Aquatic Weed harvesting

The Aquatic Weed Harvesting Services includes harvesting aquatic weeds and transforming harvested weeds into economically usable forms (e.g., organic fertilizer, animal feed, gas for home use or power generation), among other things. The aquatic weed harvesting consists of the following lots:

- i. LOT 1: Kpong Headpond, i.e., from Akosombo Dam's tailrace to Kpong Dam.
- ii. LOT 2: Akuse to Sogakope Bridge
- iii. LOT 3: Sogakope Bridge to Ada (Estuary)

The projects will deliver the following objectives:

- i. Restore the ecosystem value of the Lower Volta River and improve socio-economic life of the riparian communities.
- ii. Reduce the prevalence of the Bilharzia menace among the riparian communities.
- iii. Ensure continuous environmental sustainability through the protection of community interest in the projects.



Dredging vessel



Aquatic weed harvester

Manual Harvesting at The Kpong Headpond

The Kpong Headpond is the section of the Volta River between the Akosombo and Kpong Hydropower Generating Stations. It covers a surface area of about 35km² with a maximum depth of approximately 15m and a mean depth of 5m. It serves as a major reservoir of water used in generating electric power from the 160MW Kpong Hydro Electric Power Plant and feeds individual socio-economic activities such as tourism and fishing activities. However, over 40% of the Kpong Hydropower reservoir is currently infested with water weeds. The major plant species infesting the Kpong Headpond are Water Hyacinth, Vossia cupsidata, Ludwigia stolonifera, Ipomea aquatic, Echinochloa pyramidalis, Typha domingensis, Pistia stratiotes, Neptunia oleracea, Commelina diffusa, Polygonum senegalense, Ceratophyllum demersum, Vallisneria aethiopicum, Salvinia nymphellula, Azolla africanus and Potamogeton octandrus species.



Before Manual Clearing
Aquatic weed

After Manual Clearing
Aquatic weed

The control of water weeds on the Kpong Headpond has been ongoing since the late 1980s by the Authority, which has used major control strategies, namely biological, mechanical, and herbicidal control methods. However, the Authority added the manual method to supplement its weed management efforts in 2022. As a result, The Authority has saved 14.486 GWh of power, which would have been lost to disturbances caused by the water weeds at the Kpong Generating Plant's wharf.



VRA REFORESTATION PROGRAMME

The Volta Gorge Reforestation Programme includes Environmental education in communities and schools, tree nursing for forest tree seedlings and grafted seedlings, tree planting, clearing of tree plantation, replacement of dead tree seedlings (beating-up), wild fire management,

survival surveys and monitoring activities to provide feedback for decision making.

VRA Reforestation Programme

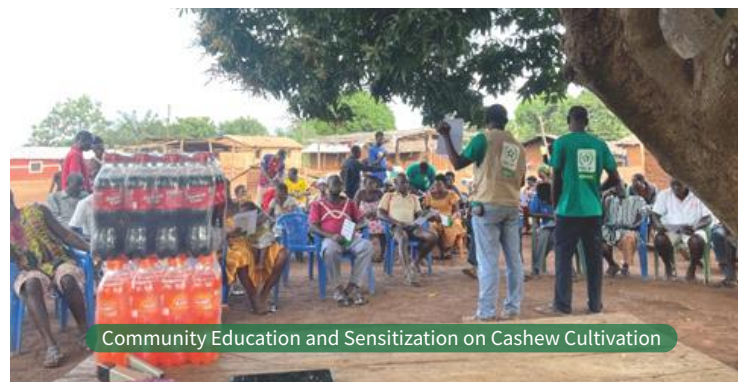
VRA is engaged in reforestation activities along the Volta Lake (i.e., Gorge and Buffer Zone areas) aimed at forest cover restoration. This is done by protecting the existing vegetation, and restocking of all grassy and degraded lands either by enrichment planting or full plantation development.

During the period under review, 16ha and 41.5ha of degraded lands within the Volta Gorge and Buffer Zone areas respectively were reforested with cashew and assorted forest tree seedlings under the programme.



Volta Gorge Reforestation

Community sensitization on the benefits of cashew cultivation was also undertaken in ten (10) local communities during the reporting year.



Community Education and Sensitization on Cashew Cultivation

Bamboo for the Protection of the Volta Lake

VRA continued with efforts to protect the shoreline of the Volta Lake to preserve the waterbody for sustained hydropower generation. This is underpinned by the collaborative venture between VRA and the Bamboo & Rattan Unit of the Forestry Commission and the Council for Scientific Research-Forest Research Institute of Ghana.

During the year 2022, the Authority planted four thousand (4,000) bamboo plantlets on a 10ha land hectares at Dodi Asantekrom.



Bamboo plantation at the shoreline of the Volta Lake

It is our view that, the successful execution of this venture would create the needed buffer to avert encroachment in the flood prone areas of the lake and protect the lake against inimical human activities.

Protection of Endangered 'T. Gentii Tree

VRA is working feverishly to increase and safeguard the population of a critically endangered *Talbotiella gentii* (*T. gentii*) tree, as part of efforts to restore the degraded Sapawso Forest Reserve, which serves as one of *T. gentii*'s natural habitats in Akosombo, in order to promote ecotourism. The tree species known as "*Talbotiella gentii*" is indigenous to Ghana and is rated as critically endangered on the International Union for Conservation of Nature (IUCN) Red List. This is due to the massive destruction of the species' native range by wildfires, human activity, and later exploitation of forested regions, which leads to decreased populations and increasing fragmentation. The Authority, Forest Services Division and the Somanya District of the Forestry Commission of Ghana are currently stepping up efforts to conserve the tree species.

Drone Technology Services

VRA's decision to adopt drone technology as part of efforts to protect the Volta Basin and halt illegal undertakings/projects along the Volta Lake, received a major boost by the appointment of A-M Surveys Limited to provide the services.

The project is expected to generate detailed maps and photographs of land use changes, erosion, human activities, aquatic weeds coverage, vegetation coverage and aquaculture developments, etc. along the volta riverine system, to allow for enhanced environmental planning and conservation activities.

Reforestation Along the Volta Lake

To reduce greenhouse emissions, ensure the continuous flow of water in the Volta Lake Basin, and safeguard sustainable hydroelectric power generation, VRA continued its reforestation programmes along the Volta Lake. By the end of 2022, about 3,152ha of the Volta Gorge area had been covered by dense forest vegetation consisting of both plantation and natural forest. The forest plantation area is 1,650ha, the natural forest covers 1,502ha and the area of land with rocks and grass vegetation is 2,017.24ha.

Cash Land Project

The Authority has initiated a project known as cashew for land (CASHLAND) to motivate landowners to release lands for the establishment of cashew plantations as a form of tree cover along the Volta Lake and protect the integrity of the water body. The programme, is also to serve as an alternative livelihood venture for them.

In 2022, 16.5 hectares of cashew plantation were established in 17 riparian communities. This was done in collaboration with the Department of Food & Agriculture at the District level in the Volta and Oti Regions. Also, a total of 16,300 seedlings were supplied to 25 riparian communities for planting, leading to a total of 41.5 hectares being planted. This brings the total forest cover under this programme to 281 ha as at the end of 2022.

Greening Ghana Tree Planting Initiative

The Authority planted trees to rehabilitate 2 hectares of degraded land at the Sapawso forest reserve to commemorate the 2022 edition of Green Ghana in Akosombo. The Sapawso Forest Reserve is under the



jurisdiction of Forest Service Division (FSD) within the Somanya District and is noted to have a natural stand of *Talbotiella gentii*, a plant which has gone extinct but only found in Ghana, thereby of global significance to tree lovers and forest conservators.

A total of 2,000 seedlings comprising 1,000 *T. gentii* and 1,000 of Mahogany and *Ceiba* seedlings were planted with FSD staff, military personnel, schools' pupils and other staff of the Authority. The Authority also rehabilitated the sign post of the reserve to showcase the area and also made a cash donation of GHs 100,000.00 to the Ministry of Lands and Natural Resources. The Authority further supplied about 2,000 seedlings to NGOs and other organizations to support the Green Ghana initiative.



ECONOMIC, HUMAN RIGHTS & BUSINESS PERFORMANCE



PEACE AND JUSTICE AT THE WORKPLACE

The Volta River Authority has at all times strived to exhibit the best of conduct in the area of Economic, Human rights and Business performance. The Authority does not do business at the expense of its stakeholders and communities. It is always mindful that its conduct does not negatively impact its people, planet and profit.

VRA as a state institution is guided by its contract with the State Interest and Governance Authority (SIGA), which sets performance targets for the Authority. VRA therefore conducts its businesses in a manner that portrays it as a strong institution that strives to attain peace and justice for all and not profit at the expense of others.

Governance and Ethics

In accordance with the Organisation for Economic Co-operation and Development (OECD) Governance Principles, VRA relates well with SIGA, the VRA Board, Shareholders and Stakeholders; with a system of structuring, operating and controlling the Authority to achieve specific results. Transparency, Accountability, Responsibility and Fairness are the pillars of the Authority's Corporate Governance culture. The Authority's quest to achieve good Corporate Governance is therefore anchored on the above pillars.

Transparency

The Chief Executive's planning letter to Staff at the beginning of 2022, set the tone for Management's engagement with Staff on operational and budgeting matters, bringing everyone on board. This letter clearly outlined the Authority's strategies for achieving the identified targets, with expectations from specific Departments and Staff in general. Corporate targets were set for 2022 from which departmental and individual targets were also derived for staffs of various departments.

Procurement Compliance

VRA also ensures that Procurement Laws, Policies, Procedures and best practices as required by the Public Procurement Act 663 (as amended) were all adhered to.

Anti-Corruption Compliance

VRA encourages high ethical standards and behaviour among employees with continuous education on the Authority's code of conduct and values. VRA carries regular assessment of Staff understanding on its core values. These exercises augment efforts to develop systems and strategies to promote dedicated and faithful service to the Authority. They also signal to contractors, suppliers and customers, the Authority's expectation regarding proper conduct and generally acceptable standards of behaviour.



PARTNERSHIPS AND AWARDS

In ensuring partnership for mutually beneficial relations, VRA permits all professionals to freely choose and belong to various professional groups and supports in the payment of their subscription.

Partnerships with Professional Bodies

The Authority also partners with reputable professional bodies for the achievement of mutual goals. Professionals in VRA belong to external bodies like the Ghana Institution of Engineers (GhIE), Ghana Institute of Architects (GIA), Institute of Chartered Accountants (ICA), Ghana Bar Association (GBA), Ghana Institute of Surveyors (GhIS), Ghana Journalists Association (GJA) and Institute of Public Relations (IPR), Ghana Institute of Procurement and Supply Chain (GIPS), Ghana, Chartered Institute of Human Resource Management (IHRMP), Chartered Institute of Administrators and Management Consultants (CIAMC), Corporate Ghana Hall of Fame, Institute of Directors Ghana (IoD) etc.

Awards and Recognitions

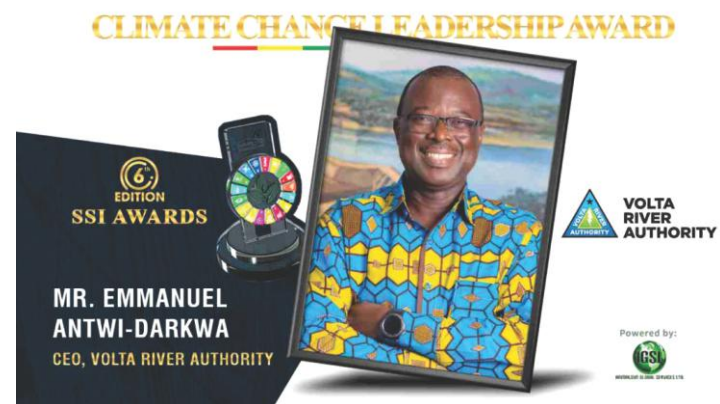
In 2022, the Volta River Authority's home-grown sustainability and social support activities for its multi-stakeholder population, was recognised at the 6th edition of the **Sustainability and Social Investment (SSI) Awards**, when the Authority meritoriously received six awards.



VRA was crowned overall best in the categories of “**Best Water Sanitation and Hygiene (WASH) Initiative Award of the Year**”, “**Net Zero Carbon Strategy of the Year**”, “**Best Company in Climate Change Mitigation Projects**”, “**SDG Pioneer of the Year**” and “**SSI Project of the Year (Environment)**”.



The Chief Executive, Mr. Emmanuel Antwi-Darkwa was named the “**Climate Change Leadership Award**” winner.



The awards were organised to recognise and honour over 40 organisations and individuals across the country that demonstrated outstanding leadership and commitment to Corporate Social Responsibility (CSR) and Sustainability. The SSI Awards was held under the theme 'Leading the Sustainability Transition through Private-Public Partnerships and Collaborations'.

National Governance And Business Leadership Awards

The Authority received three distinctive awards at the 2nd **National Governance and Business Leadership Awards (NGBLA)**. The VRA Community Development Program (CDP) Scholarship Scheme was crowned for **“Excellence in Promoting And Supporting Education”**, whereas, the Chief Executive, Mr. Emmanuel Antwi-Darkwa was named one of **“100 Most Influential Business Leadership Personalities in Ghana 2022”**.



VRA Wins Excellence in Promoting And Supporting Education

The Advisor, Office of the Chief Executive, Dr. Mrs. I. Stella Agyenim-Boateng was also adjudged the best in the category of **“Public Sector Industry Personality of The Year”** and was unveiled as the key and astute personality featured in the Governance & Business Leadership issue of the Africa Brand Focus Magazine.



Public Sector Industry Personality of The Year
Dr. Mrs. I. Stella Agyenim-Boateng

Ghana Corporate Brand Awards

The Volta River Authority (VRA) won the Industry Leadership Award (Energy) for 2022, at the **Ghana Corporate Brand Awards** to honour excellence in business performance, rewarding companies across different sectors and honouring brands that have performed extraordinarily.

The event, which was under the theme "Celebrating Consistency and Versatility of Corporate Brands" sought to recognise the most popular and trusted brands in Ghana.



Ghana Energy Awards

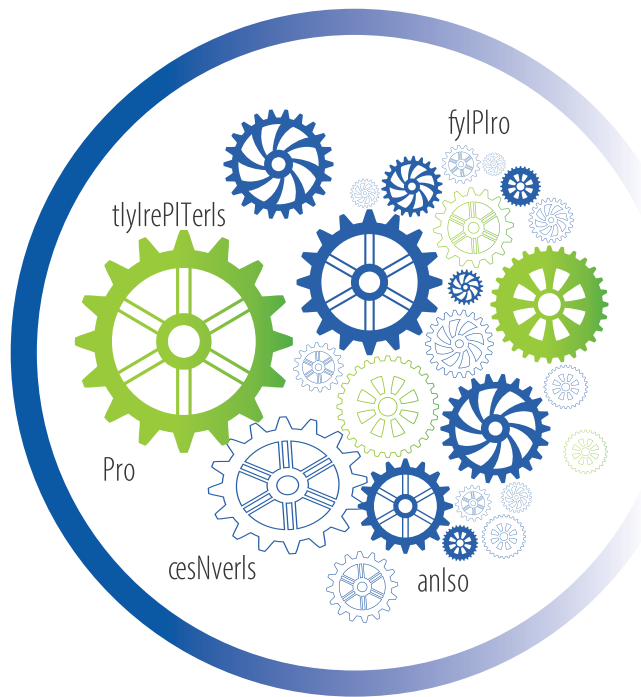
Mr Emmanuel Antwi-Darkwa, the Chief Executive of the Volta River Authority (VRA) also made history at the **6th Ghana Energy Awards** by winning for the third time, **“The Energy Personality of The Year (Male)”**. This makes him the only Chief Executive in the Energy sector to have won this coveted title for an unprecedented third time since the inception of the awards, six years ago. He was adjudged the “Energy Personality of the Year” 2018, 2021 and 2022.

Mr Emmanuel Antwi-Darkwa had earlier won “The Visionary Leadership Award” at the same event, while the Volta River Authority took home “Excellence in Power Generation Award”. The theme for the awards is *“Global Decarbonization: A Just and Equitable Energy Transition in Ghana”* and it recognised and awarded Excellence in Ghana's Energy sector.

The Deputy Minister for Energy Hon. Dr. Mohammed Amin Adam stated “Ghana remains committed to its SDG 7 obligation of ensuring investment in cleaner renewable energy, in the energy mix”.

AWARDS AND RECOGNITIONS IN 2022

AWARD	WINNER	ORGANISERS
Best WASH Initiative Award of the year	Volta River Authority (VRA)	6th Sustainability & Social Investment Awards
Net Zero Carbon Strategy of the year	Volta River Authority (VRA)	6th Sustainability & Social Investment Awards
Best Company in Climate Change Mitigation Project	Volta River Authority (VRA)	6th Sustainability & Social Investment Awards
SDG Pioneer of the Year	Volta River Authority (VRA)	6th Sustainability & Social Investment Awards
SSI Project of the Year (Environment)	Volta River Authority (VRA)	6th Sustainability & Social Investment Awards
Climate Change Leadership Award	VRA's Mr. Emmanuel Antwi-Darkwa	6th Sustainability & Social Investment Awards
Excellence in Promoting and Supporting Education	Volta River Authority (VRA)	2nd National Governance and Business Leadership Awards
Public Sector Industry Personality of the Year	VRA's Dr. Mrs. I. Stella Agyenim-Boateng	2nd National Governance and Business Leadership Awards
100 Most Influential Business Leadership Personalities in Ghana	VRA's Mr. Emmanuel Antwi-Darkwa	2nd National Governance and Business Leadership Awards
Industry Leadership Awards Ghana	Volta River Authority (VRA)	Ghana Corporate Brands Awards
The Energy Personality of the Year	VRA's Mr. Emmanuel Antwi-Darkwa	6th Ghana Energy Awards



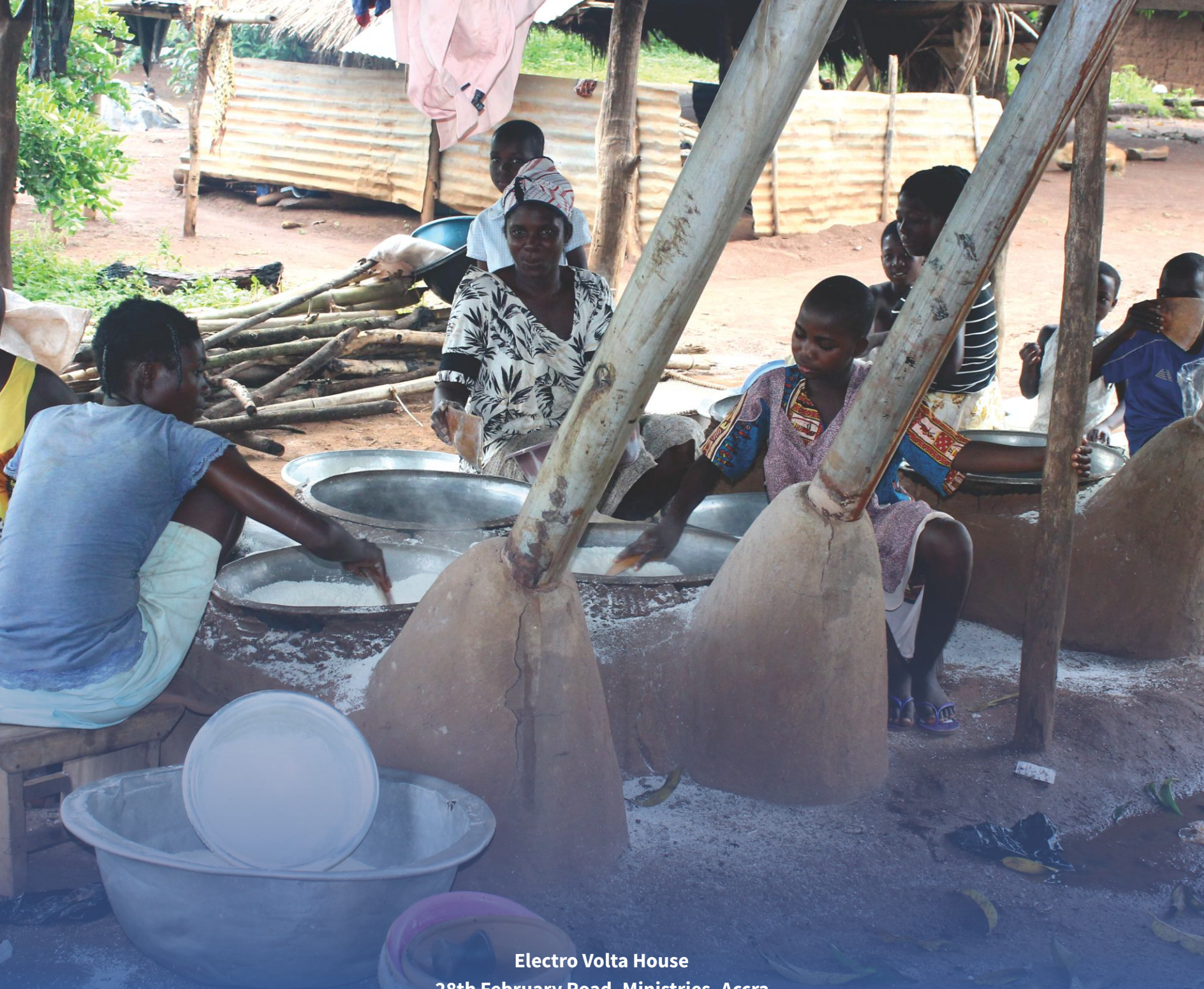
Creativity & INNOVATION

The Anchor for Our Sustainability

VRA... We Add Value To Lives



**VOLTA
RIVER
AUTHORITY**



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