

Supplementary Table S1. Summary of the search strategy

Electronic Database	Keyword/MesH terms	Number of retrieved studies
Scopus	Ghana* AND SDG OR {sustainable development goals} AND implement* OR evaluate* OR progress* OR success OR milestone OR bottleneck OR challenge OR gap OR difficult*	184
PubMed	Ghana AND "Sustainable Development Goals" OR SDG OR SDGs)	144
EBSCOHost (Academic Search Complete)	Ghana AND (sdgs or {sustainable development goals}) AND (progress OR successes OR bottlenecks OR challenges OR milestone OR gaps)	114
Medline	Ghana AND (sdgs or {sustainable development goals}) AND (progress OR successes OR bottlenecks OR challenges OR milestone OR gaps)	112
CINAHL complete	Ghana AND (sdgs or {sustainable development goals}) AND (progress OR successes OR bottlenecks OR challenges OR milestone OR gaps)	38

Supplementary Table 2. Characteristics of studies included

A. Peer-reviewed articles			
Author & Year of publication	Study design	Study population	HHSDG discussed
Kusi-Mensah et al (2022) [19]	Cross-sectional study	Children and adolescents between the ages of 6–19 years	SDG 3.4: Promote mental health and well-being SDG 6.2: End open defecation SDG 6.1: Access to safe water
Otieno et al (2022) [28]	Quasi-experimental: longitudinal impact evaluation study.	Baseline (2015) and end-line (2017) rounds of impact evaluation – before and after enrolment of household in LEAP 1000.	SDG 3: Good health and wellbeing
Akweongo et al (2021) [29]	Descriptive cross-sectional health facility survey	Patients accessing outpatient care services at different levels of the health system	SDG 3: Good health and wellbeing
Odonkor et al (2020) [30]	Descriptive, cross-sectional study	Adults 18 years above	SDG 13: Climate change
Nanewortor et al (2021) [31]	descriptive cross-sectional study	People living with HIV/AIDS, accessing HAART at a public hospital, and aged 18 years or older	SDG 2: Zero hunger
Abubakari et al (2021) [51]	Longitudinal study	Household survey data from the Kintampo health and demographic surveillance system	SDG 6: Clean water and sanitation.
Agyemang-Duah et al (2019) [49]	Cross-sectional Survey	Data from an Aging, Health, Lifestyle, and Health Services (AHLHS) survey. Poor older people aged 65 years or above	SDG 3: Good health and wellbeing
Amu et al (2021) [32]	Community-based cross-sectional study	All women aged 15–59 years and caregivers of children aged 13 years and younger; and all men aged 15–59 years	SDG 3: Good Health and wellbeing
Adomako et al (2021) [33]	Cross-sectional study	Water samples from the raw sewage. Through the treated sewage to adjoining surface water downstream	SDG 6: Clean water and sanitation.
Lelea et al (2022) [34]	Qualitative content analysis	Male and Female Farmers, chiefs, and inhabitants of the communities involved	SDG 2: Zero hunger SDG 5: Gender equality
Yambah et al (2022) [35]	Single group interrupted time series design	Pregnant women who had recorded more than 4 antenatal visits and attended a health facility in a given month. Women who had hemoglobin levels checked in 36th week	SDG 3: Good Health and wellbeing

		Mothers who delivered in a given month in CHPS facilities and hospitals.	
Tette et al (2020) [36]	Cross-sectional study	Parents or caregivers of consecutive outborn neonates admitted during the study	SDG 3: Good Health and wellbeing
Damoah et al (2021) [53]	Case study		SDG 3: Good Health and wellbeing SDG 13: Climate change
Arthur-Holmes et al (2022) [39]	Qualitative study	Key informants	SDG 6: Clean water and sanitation.
Issahaku et al (2021) [41]	Controlled experiment Multinomial Endogenous Treatment Effects (METE) model	Regions serving as the food baskets of Ghana The most vulnerable to the negative impacts of climate variability, particularly erratic rainfall patterns.	SDG 2: Zero hunger SDG 13: Climate change
Mensah (2021) [43]	Qualitative study	Key informants: Fisher folks and experts	SDG 6: Clean water and sanitation.
Doherty (2018) [54]	Case study		SDG 5: Gender equality
Yakovleva et al (2022) [44]	Qualitative study	Men and Women artisanal miners and key informants	SDG 5: Gender equality
Kwarteng et al (2020) [47]	qualitative study	Students	SDG 3: Good Health and wellbeing
Mensah et al (2021) [72]	Qualitative study	Key informants and community residents	SDG 6: Clean water and sanitation.
Ayanore et al (2022) [46]	Cross-sectional study Performance Monitoring and Accountability 2020 survey (PMA2020) two-stage cluster design	Private and public health facilities within 100 enumeration areas according to the Ghana Statistical Service	SDG 3: Good Health and wellbeing
Kumasi et al (2022) [55]	Mixed methods	Surveys and individual households	SDG 6: Clean water and sanitation.
Abrokwah et al (2020) [20]	Qualitative study	People living with physical disability 18-64 years of age	SDG 3: Good health and wellbeing
Akazili et al (2020) [23]	Qualitative study	Desk records Key informants involved or have been involved in either decision-making or implementation of SRHR programs or	SDG 3: Good health and wellbeing SDG 5: Gender equality

		advocacy for the implementation of SRHR policies or programs in Ghana	
Assan et al (2019) [24]	qualitative study	Stakeholders who influence the decision-making, management, and implementation of CHPS in Ghana	SDG 3: Good health and wellbeing
Quarshie et al (2022) [52]	Cross-sectional	Male and female farmers	SDG 2: Zero hunger
Antwi-Agyei et al (2021) [37]	case study	Key informants and stakeholders	SDG 13: Climate change
Friedman et al, (2019) [38]	Qualitative study	Cocoa farmers (males and females), community leaders	SDG 2: Zero hunger SDG 5: Gender equality
Ofosu et al (2021) [40]	Analytical cross-sectional study	Key informants	SDG 3: Good Health and wellbeing
Ward et al (2021) [21]	cross-sectional survey	Private and public health facilities that perform in vitro diagnostics	SDG 3: Good health and wellbeing
Gbagbo and Nkrumah (2022) [22]		Breastfeeding employees and student mothers University management	SDG 3: Good health and wellbeing SDG 5: Gender equality
Quarshie et al (2021) [25]	Community-based cross-sectional approach	Household survey	SDG 6: Clean water and sanitation.
Sheff et al (2020) [26]	cross-sectional household and health facility surveys	women of reproductive age (15–49 years) and health facilities	SDG 3: Good health and wellbeing
Foggitt et al (2019) [27]	Qualitative study	Key informants made up of community heads, landlords, and tenants	SDG 6: Clean water and sanitation.
Cobbinah et al (2020) [42]	Mixed method design	Environmental sanitation-related agencies that are into household toilet facility provision or management Household survey	SDG 6: Clean water and sanitation.
Amankwaa et al (2017) [48]	School-based, retrospective, cross-sectional qualitative study	Adolescents 14–19 years were recruited from three high schools	SDG 3: Good Health and wellbeing
Umar et al (2020) [45]	Qualitative study	Insured and uninsured residents and key informants	SDG 3: Good Health and wellbeing

B. Grey Literature			
Author & Year of publication	Title	Type of document	HHSDG discussed
United Nations International Children's Emergency Fund (2023) [59]	Child-Related SDG Progress Assessment for Ghana	Report	SDG 2: Zero hunger SDG 3: Good Health and wellbeing SDG 5: Gender equality SDG 6: Clean water and sanitation.
Sachs et al (2022) [67]	Sustainable Development Report 2022	Report	SDG 2: Zero hunger SDG 3: Good Health and wellbeing SDG 5: Gender equality SDG 6: Clean water and sanitation. SDG 13: Climate change
Akologo (2016) [70]	Bringing the Sustainable Development Goals (SDGs) to Life in Ghana: An assessment report on the Implementation status	Report	SDG 2: Zero hunger SDG 3: Good Health and wellbeing SDG 5: Gender equality SDG 6: Clean water and sanitation. SDG 13: Climate change
International Budget Partnership (2022) [69]	Ghana: Budget Credibility and the Sustainable Development Goals	Report	SDG 2: Zero hunger SDG 3: Good Health and wellbeing SDG 5: Gender equality SDG 6: Clean water and sanitation. SDG 13: Climate change
National Development Planning Commission (2020) [57]	Ghana SDGs Report 2020	Report	SDG 2: Zero hunger SDG 3: Good Health and wellbeing SDG 5: Gender equality SDG 6: Clean water and sanitation. SDG 13: Climate change
Blaboe (2019) [71]	Assessing SDG 3: Achieving Universal Health Coverage In Ghana	Thesis (Masters)	SDG 3: Good Health and wellbeing
Government of Ghana (2019) [60]	Ghana: Voluntary National Review on the Implementation of the 2030 Agenda for Sustainable Development	Report	SDG 2: Zero hunger SDG 3: Good Health and wellbeing SDG 5: Gender equality SDG 6: Clean water and sanitation. SDG 13: Climate change

Ministry of Finance (2018) [61]	Ghana's SDG Budget Baseline Report 2018	Report	SDG 2: Zero hunger SDG 3: Good Health and wellbeing SDG 5: Gender equality SDG 6: Clean water and sanitation. SDG 13: Climate change
Ministry of Finance (2021) [62]	Ghana's 2021 SDGs Budget Report	Report	SDG 2: Zero hunger SDG 3: Good Health and wellbeing SDG 5: Gender equality SDG 6: Clean water and sanitation. SDG 13: Climate change
National Development Planning Commission (2022) [63]	Ghana's 2022 Voluntary National Review Report on the Implementation of the 2030 Agenda for Sustainable Development	Report	SDG 2: Zero hunger SDG 3: Good Health and wellbeing SDG 5: Gender equality SDG 6: Clean water and sanitation. SDG 13: Climate change
Anafo (2021) [64]	Tracking the Progress on the Localization of the SDGs: Lessons for the West African Sub-region from Ghanaian Local Governments	Report	SDG 2: Zero hunger SDG 5: Gender equality
Ankiilu (2022) [68]	Is Ghana on Track to Meet the Sustainable Development Goals?	Blog post	SDG 2: Zero hunger SDG 3: Good Health and wellbeing
Forkuo (2019) [65]	Mainstreaming Sustainable Development Goals (SDGs) into Local Development Planning: A Comparative Study of Adentan and Lankwintanang- Madina Municipal Assemblies.	Master's thesis	SDG 2: Zero hunger SDG 3: Good Health and wellbeing SDG 5: Gender equality SDG 6: Clean water and sanitation. SDG 13: Climate change
Civil Society Platform Ghana (2019) [66]	Progress on the SDGs: Telling the Ghanaian story through the lens of citizens	Report	SDG 5: Gender equality SDG 13: Climate change

Supplementary Table S3. Key findings from peer-reviewed articles.

Author & Year of publication	Title of study	Aim of study	Key Findings, Progress and Challenges
Kusi-Mensah et al (2022) [19]	Accelerating progress towards the sustainable development goals for adolescents in Ghana: a cross-sectional study	To identify and map potential accelerators towards selected SDG targets involving youth	<p>CHALLENGES</p> <ul style="list-style-type: none"> ▪ Forty (4.2%) were diagnosed with specific mental health disorders. ▪ Ninety-seven (9.9%) engaged in open defecation ▪ Two hundred and forty-four (25.9%) had no access to privately owned pipe-borne water for the household
Otieno et al (2022) [28]	Health services availability and readiness moderate cash transfer impacts on health insurance enrolment: evidence from the LEAP 1000 cash transfer program in Ghana	To examine whether the Livelihood Empowerment Against Poverty (LEAP) 1000 impacts on NHIS enrolment were moderated by health facilities' service availability and readiness	<p>PROGRESS</p> <ul style="list-style-type: none"> • LEAP 1000 beneficiaries received NHIS premium waivers • Due to LEAP 1000 premium waivers, adults with the highest service availability and readiness were 18% more likely to enroll in NHIS than those with low service availability and readiness • Similarly, in children (20%) and women of reproductive age (25%).
Akweongo et al (2021) [29]	Insured clients out-of-pocket payments for health care under the national health insurance scheme in Ghana	To examine the types of services OOP charges are made for by insured clients and how much-insured clients pay out-of-pocket.	<p>CHALLENGES</p> <ul style="list-style-type: none"> • Widespread out-of-pocket payments reported among outpatients, including 49.7% overall and 46.9% of insured outpatients. • Despite NHIS coverage, 75% paid for consultations and 63.2% paid for drugs, with 34.9% purchasing medications outside facilities, mainly due to unavailability (67.9%) and lack of NHIS coverage (20.8%).
Odonkor et al (2020) [30]	Knowledge, Attitude, and Adaptation to Climate Change in Ghana	To investigate knowledge and adaptation to climate change among people in Ghana.	<p>PROGRESS</p> <ul style="list-style-type: none"> • Total of 43.9% of the respondents understood the meaning of climate change and 43% were either afraid or confused about climate change. • Respondents perceived the causes of climate change to include the burning of fossil fuel, deforestation, natural events such as ocean currents, carbon emissions from vehicles and industries, agricultural emissions of nitrous oxide from fertilizers, and an act of God. • Training (30.1%), national radio (27.7%), and television (19.1%) were the preferred leading methods for receipt of global warming information.

Author & Year of publication	Title of study	Aim of study	Key Findings, Progress and Challenges
Nanewortor et al (2021) [31]	Nutritional status and associated factors among people living with HIV/AIDS in Ghana: a cross-sectional study of highly active antiretroviral therapy clients	Examined the nutritional status and associated factors among HIV-positive clients accessing Highly Active Anti-Retroviral Therapy (HAART) at a public hospital in Ghana	<p>PROGRESS</p> <ul style="list-style-type: none"> • High proportion - 79% of the clients had good nutrition knowledge • High proportion - 74% had a good attitude toward nutrition <p>CHALLENGES</p> <ul style="list-style-type: none"> • Total of 42% were malnourished (underweight = 13.8%, and overweight = 28.3%). • Those with good nutrition-related knowledge were less likely to be malnourished than those with poor knowledge 56% (AOR = 0.44, 95% CI = 0.18–1.09)
Amu et al (2021) [32]	Prevalence and predictors of depression, anxiety, and stress among adults in Ghana: A community-based cross-sectional study	Examined the prevalence and predictors of depression, anxiety, and stress as well as the comorbidities of these mental health issues among adults	<p>CHALLENGES</p> <ul style="list-style-type: none"> • Over half of adults (of 51.8%) had at least one mental health condition with anxiety being the most common • The prevalence of depression and stress were 25.2% and 9.7%
Adomako et al (2021) [33]	Reduced Bacterial Counts from a Sewage Treatment Plant but Increased Counts and Antibiotic Resistance in the Recipient Stream in Accra, Ghana—A Cross-Sectional Study	Assessed bacterial counts and their antibiotic resistance patterns in water from (a) influents and effluents of the Legon sewage treatment plant (STP) in Accra, Ghana, and (b) upstream, outfall, and downstream in the recipient Onyasia stream	<p>PRGOGRESS</p> <ul style="list-style-type: none"> • Treated sewage showed significant bacterial reduction, including <i>E. coli</i> (99.9%), <i>A. hydrophila</i> (98.8%), and <i>P. aeruginosa</i> (99.5%), with decreased resistance to some antibiotics (e.g., tetracycline, ciprofloxacin) but increased resistance to others (e.g., gentamicin, imipenem). <p>CHALLENGES</p> <ul style="list-style-type: none"> • Downstream bacterial counts increased by 98.8%, dominated by <i>E. coli</i>, suggesting additional fecal contamination sources beyond the treatment plant. • Antibiotic-resistant bacteria increased along the sewage path, with highest resistance observed for amoxicillin/clavulanate (80–83%), cefuroxime (47–73%), aztreonam (53%), and ciprofloxacin (40%).
Lelea et al (2022) [34]	Strategies to Promote Sustainable Development: The Gendered Importance of	Investigate the reasons for the decline of the African Locust Bean (<i>Parkia biglobosa</i>)	<p>CHALLENGES</p>

Author & Year of publication	Title of study	Aim of study	Key Findings, Progress and Challenges
	Addressing Diminishing African Locust Bean (<i>Parkia biglobosa</i>) Resources in Northern Ghana's Agro-Ecological Landscape	concerning the agricultural, ecological, and cultural landscape and discuss the gendered impacts of these changes	<ul style="list-style-type: none"> • The African Locust Bean has cultural significance for women in the Dagomba culture. Women are marginalized with men and chiefs controlling land and tree access. • The scarcity of the African Locust Bean was attributed to aging tree populations, challenge caring for saplings until maturity, agricultural changes with increased mechanization and pesticide use, over-use as a firewood resource and reduced water availability.
Yambah et al (2022) [35]	The effect of the capitation policy withdrawal on maternal health service provision in Ashanti Region, Ghana: an interrupted time series analysis	To examine the effects of Ghana's capitation policy on maternal health care provision as part of lesson learning and bridging this critical literature gap.	<p>PROGRESS</p> <ul style="list-style-type: none"> • The capitation policy withdrawal was associated with a statistically significant trend increase in the provision of ANC4+ in hospitals (coefficient 70.99 $p < 0.001$) but no effect in CHPS facilities <p>CHALLENGES</p> <ul style="list-style-type: none"> • The policy withdrawal resulted in a statistically significant decline in the provision of Hb36 in CHPS (coefficient - 7.01, $p < 0.05$) but increased service provision in the hospitals (coefficient 32.87, $p < 0.001$)
Tette et al (2020) [36]	The Profile, Health Seeking Behavior, Referral Patterns, and Outcome of Outborn Neonates Admitted to a District and Regional Hospital in the Upper West Region of Ghana: A Cross-Sectional Study	Examined the health practices, care-seeking behavior, and referral of sick outborn neonates to a district and regional hospital in the Upper West Region of Ghana	<p>CHALLENGES</p> <ul style="list-style-type: none"> • Three neonatal deaths were recorded due to inappropriate practices including use of enemas, cord care with cow dung, and herbal baths • Sixty-seven (44%) only sought healthcare at the health facility after their babies were ill for ≥ 7 days • Ninety-four (61.4%) of the facilities, visited referred patients to destination hospitals without giving any treatment. • Delayed care-seeking behaviors of caregivers caused 12 neonatal deaths (7.8%) and was associated with low birth weight, using home remedies, and a maternal age of ≥ 30 years ($p = 0.018$)
Arthur-Holmes et al (2022) [39]	Artisanal and small-scale mining methods and the Sustainable Development Goal 6: Perceived	Examine methods of artisanal and small-scale mining (ASM) in Ghana, map their perceived impacts on water resources, and analyze the	<p>CHALLENGES</p> <ul style="list-style-type: none"> • Artisanal and small-scale mining methods such as alluvial, surface/open pit, and underground mining have negative impacts on water resources • Increasing erosion and river silting

Author & Year of publication	Title of study	Aim of study	Key Findings, Progress and Challenges
	implications for clean water supply	implications of these perceptions for meeting the targets related to Clean Water of the United Nations Sustainable Development Goal 6 (SDG 6)	<ul style="list-style-type: none"> • Poisoning of waterbodies with mercury (Hg) and other heavy metals
Issahaku et al (2021) [41]	Climate change adaptation strategies, farm performance, and poverty reduction among smallholder farming households in Ghana	To examine the effect of the adoption of adaptation strategies on farm performance and multi-dimensional poverty index	<p>PROGRESS</p> <ul style="list-style-type: none"> • A greater reduction in downside risk exposure was associated with the adoption of adaptation strategies • A higher crop output was recorded due to the adaptation strategies
Mensah (2021) [43]	Fisherfolk's Perception of and Attitude to Solid Waste Disposal: Implications for Health, Aquatic Resources, and Sustainable Development	Explored fisherfolk's perception and attitude concerning solid waste disposal and the implications of these for public health, aquatic resources, and sustainable development (SD) in a Ghanaian fishing community	<p>CHALLENGES</p> <ul style="list-style-type: none"> • The fisher folks perceived waste as useless and a nuisance and the experts saw it as a nuisance and/or resource. • The fisher folk did not sort their waste in line with best practices • The fisher folks were not willing to pay for waste collection services, citing poverty as the main reason • While most fisherfolk disposed of their waste into bins as approved, others did so onto the street, into the drains, lagoon, and sea. • While the fisherfolk were aware that indiscriminate waste disposal led to diseases such as malaria and cholera, their perceptions of the effect of the same on aquatic resources were mixed.
Yakovleva et al (2022) [44]	Gender equality in artisanal and small-scale mining in Ghana: Assessing progress towards SDG 5 using salience and institutional analysis and design	Investigates whether ASM sector policies integrate gender equality principles of the United Nations Sustainable Development Goals (SDGs)	<p>CHALLENGES</p> <ul style="list-style-type: none"> • Women who want to join the mine must be authorized by males • Men decide the benefits and payroll of women • Supervisory and monitoring roles are reserved for men • At the constitutional level, women are forbidden from taking up governance functions • Women are given enforcement roles and are expected to resolve conflicts among females

Author & Year of publication	Title of study	Aim of study	Key Findings, Progress and Challenges
			<ul style="list-style-type: none"> Enforcement of rules and conflict resolution between women and men is a male prerogative
Ayanore et al (2022) [46]	Sub-national variations in general service readiness of primary health care facilities in Ghana: Health policy and equity implications towards the attainment of Universal Health Coverage	Assessed the GSR of PHC facilities in Ghana to provide evidence to inform health policy and drive action towards reducing health inequities	<p>PROGRESS AND CHALLENGES</p> <ul style="list-style-type: none"> The average general service readiness (GSR) index of primary health care facilities in Ghana was 83.4%, but lower in rural areas. Hospitals scored highest in GSR (92.8%), while CHPS compounds scored lowest (64.3%). Facilities in several regions had significantly reduced odds of scoring above the national GSR average, highlighting regional disparities.
Mensah et al (2021) [72]	Open defecation near a world heritage site: causes and implication for sustainable tourism and heritage management	Examined the causes of open defecation (OD) in the neighborhood of a World Heritage (WH) site in Ghana and the implications of the practice for sustainable tourism and heritage management	<p>CHALLENGES</p> <ul style="list-style-type: none"> Open defecation near a World Heritage site was primarily caused by the absence of toilets, poor sanitation facilities, and negative public attitudes. Contributing factors included poverty, lack of awareness, weak law enforcement, and cultural practices. The practice posed serious threats to public health, tourism sustainability, and the heritage site's integrity.
Kwarteng et al (2020) [47]	Knowledge and attitudes on HIV/AIDS and HIV testing among basic school students in Tamale Metropolis, Ghana	Assesses students' knowledge and attitudes on HIV/AIDS and HIV testing in Ghana	<p>PROGRESS</p> <ul style="list-style-type: none"> Good knowledge about HIV/AIDS and HIV testing among students. <p>CHALLENGES</p> <ul style="list-style-type: none"> Negative attitudes and feelings toward HIV testing and counseling among the students
Abubakari et al (2021) [51]	Open defecation and attainment of Sustainable Development Goal Six: evidence from Kintampo Surveillance System, Ghana	Examined whether the open-defecation (OD) free target is achievable by 2030	<p>CHALLENGES</p> <ul style="list-style-type: none"> There is an increasing rate of open defecation in the municipality i.e. 2012: 40.5%, 2013: 41.3%, 2014: 43.5%, 2015: 43.8%, 2016: 44.2:% The results showed that The Open defecation-free target is not achievable in 2030 or even if the current trend continues
Agyemang-Duah et al (2019) [49]	Prevalence and Patterns of Health Care Use Among Poor Older People Under the Livelihood Empowerment	Examined the prevalence and patterns of health care use among poor older people in	<p>PROGRESS</p> <ul style="list-style-type: none"> 85% of the respondents utilized health care Females were higher utilizers (88% vs. 75%)

Author & Year of publication	Title of study	Aim of study	Key Findings, Progress and Challenges
	Against Poverty Program in the Atwima Nwabiagya District of Ghana	the Atwima Nwabiagya District of Ghana	<ul style="list-style-type: none"> Health service utilization among older poor people under the LEAP program was high, with 85% accessing care. Females used services more frequently, but males incurred higher costs for health care. <p>CHALLENGES</p> <ul style="list-style-type: none"> Most respondents paid with personal funds, indicating limited financial impact from the LEAP program.
Damoah et al (2021) [53]	Artificial intelligence (AI)-enhanced medical drones in the healthcare supply chain (HSC) for sustainability development: A case study	Draw on <u>corporate social responsibility (CSR)</u> as a theoretical lens to explore how an AI-enhanced medical drone application in Ghana's healthcare supply chain (HSC) improves the HSC system and contributes to <u>sustainable development</u>	<p>PROGRESS</p> <ul style="list-style-type: none"> Ghana launched a medical drone program in April 2019) Sustainable healthcare supply chain management (real-time delivery of essential medicines, blood, and blood products across the country especially to hard-to-reach local communities) Reduces deaths relating to childbirth, accidents, and snakebites Reduction of carbon emission with carbon and noise-free drones
Doherty (2018) [54]	Gender Equality and Women's Empowerment through Fair Trade Social Enterprise: Case of Divine Chocolate and Kuapa Kokoo	Look at women's role in the cocoa value chain and how their strategic interests, practical needs, and power can be addressed	<p>PROGRESS</p> <ul style="list-style-type: none"> A Cocoa corporative that ensures that 30% of women participate in all levels of decision making The corporative ensures women farmers received the necessary training, education, and empowerment In 2015, more than 50% of the National Executives of the corporation were women The first female president was in 2010 Total of 100% vote in the 2013 annual general meeting to make an explicit commitment to gender equity in the cooperative's constitution and created gender committees at the district level.
Kumasi et al (2022) [55]	Universal water service delivery: Insights on what it takes from Ghana	Explore insights from water delivery services	<p>PROGRESS AND CHALLENGES</p> <ul style="list-style-type: none"> Cost of achieving full coverage of the communities with water supply: <ul style="list-style-type: none"> Bongo: USD10,342,190 East Gonja: USD15,828,421

Author & Year of publication	Title of study	Aim of study	Key Findings, Progress and Challenges
			<ul style="list-style-type: none"> ○ Wa East: USD10,111,616
Abrokwah et al (2020) [20]	Accessing Healthcare in Ghana: Challenges Encountered and Strategies Adopted by Persons with Disabilities in Accra	To determine the barriers that persons with physical disabilities face in accessing healthcare in Accra	<p>CHALLENGES</p> <ul style="list-style-type: none"> ▪ Persons with physical disabilities faced multiple barriers to accessing healthcare, including physical, financial, and attitudinal obstacles. ▪ Common issues included inaccessible infrastructure, unfriendly health staff, and poor coverage by the NHIS. ▪ Communication and transportation difficulties further hindered timely and respectful care for disabled individuals.
Akazili et al (2020) [23]	Challenges and facilitators to the provision of sexual, reproductive health, and rights services in Ghana	To examine challenges and facilitators to the effective provision of three sexual, reproductive health and rights (SRHR) services (maternal health, gender-based violence (GBV), and safe abortion/post-abortion care) in Ghana	<p>CHALLENGES</p> <ul style="list-style-type: none"> ▪ Inadequate funding ▪ Non-inclusion of some SRHR services including family planning and abortion/post-abortion services within the health benefits package ▪ Hidden charges for maternal services. ▪ Poor supervision ▪ Unequitable distribution of logistics and health personnel ▪ Fragmentation of support services for GBV victims across agencies ▪ Socio-cultural and religious beliefs and practices affecting service delivery and utilization
Assan et al (2019) [24]	Challenges to achieving universal health coverage through community-based health planning and services delivery approach: a qualitative study in Ghana	To holistically explore the challenges to achieving UHC through the community-based health planning and service (CHPS) initiative in Ghana.	<p>CHALLENGES</p> <ul style="list-style-type: none"> ▪ Inadequate understanding of the CHPS concept ▪ Major contextual changes ▪ Stalled policy change to meet growing health demands ▪ Changes in the political landscape and leadership ▪ Changed leadership priorities
Antwi-Agyei et al (2021) [37]	Understanding climate services for enhancing resilient agricultural systems in Anglophone West Africa: The case of Ghana	To address the question what are the key challenges in mainstreaming climate information services into national policies for resilient agricultural building in Ghana?	<p>CHALLENGES</p> <ul style="list-style-type: none"> • Low awareness of climate change among policymakers • Human institutional capacity constraints • Low prioritization of climate information services • Low appreciation of the vulnerability status of various local assemblies

Author & Year of publication	Title of study	Aim of study	Key Findings, Progress and Challenges
Friedman et al, (2019) [38]	Vulnerability of Ghanaian women cocoa farmers to climate change: A typology	Conveys how homogeneous representations of women farmers and the technical focus of climate-orientated policy interventions may threaten to further marginalize the most vulnerable and exacerbate existing inequalities	<p>CHALLENGES</p> <ul style="list-style-type: none"> • Only 20% of cocoa farm operators or managers are women • Small land sizes compared to that of men (their land holdings are on average half the size of men's) • Women are commonly still expected to work on husbands' farms • Men control the monetary gains of the farm
Ofosu et al (2021) [40]	Assessing the functionality of an emergency obstetric referral system and continuum of care among public healthcare facilities in a low resource setting: an application of process mapping approach	Establish process details of emergency obstetric referral systems across different levels of public healthcare facilities to deepen understanding of systemic barriers and preliminary solutions	<p>CHALLENGES</p> <p>About 70% had a range of barriers that contribute to delay in referral and delay in accessing care concerning</p> <ul style="list-style-type: none"> • Communication and transport system • Resources (space, equipment, and physical structures) • Staffing (numbers and attitude) • Healthcare providers (HCP) knowledge and compliance with referral policy • Financing for referral
Quarshie et al (2021) [25]	Tackling post-COVID-19 pandemic food crises through the adoption of improved maize seeds and technologies by smallholder farmers: The case of Ejura Sekyeredumase in Ghana	To examine the factors influencing the adoption of improved seeds and complementing technologies in Ghana	<p>CHALLENGES</p> <ul style="list-style-type: none"> • Low level of awareness of improved seeds, particularly hybrid seeds, and technologies, and the adoption rate of these technologies among the rural farmers • The high cost of seeds, the promise of more yields, poor market access, and poor social networks influence seed availability and accessibility
Ward et al (2021) [21]	Availability and Prices of WHO Essential Diagnostics in Laboratories in West Africa: A Landscape Survey of Diagnostic Testing in Northern Ghana	To determine the availability and pricing of laboratory testing in the Northern Region of Ghana to identify current gaps concerning the WHO's	<p>PROGRESS</p> <ul style="list-style-type: none"> • Health centers offered 2 out of the 20 tests recommended by WHO for facilities without laboratories. ▪ Clinical laboratories offered 11 out of 72 tests ▪ Urban laboratories offered 36 out of 72 EDL tests ▪ Rural laboratories had 12 out of 72

Author & Year of publication	Title of study	Aim of study	Key Findings, Progress and Challenges
		Essential Diagnostics List (EDL)	<ul style="list-style-type: none"> ▪ Private facilities had high test prices than public laboratories. ▪ National Health Insurance reimbursements were lower than out-of-pocket prices (38%) <p>CHALLENGES</p> <ul style="list-style-type: none"> • Large disbursement gap by the NHIS
Gbagbo and Nkrumah (2022) [22]	Breastfeeding-friendly policies and programs in three public Universities in Ghana	Assessed availability and implementation of breastfeeding policies and programs in three public universities in Ghana.	<p>CHALLENGES</p> <ul style="list-style-type: none"> • Although all three universities studied were gender/child-friendly, none had formal breastfeeding policies or programs in place. • Financial constraints and lack of policy guidance hindered the establishment of breastfeeding-supportive environments. • Student mothers faced limited legal protection, inadequate breastfeeding facilities, and low awareness of breastfeeding importance.
Quarshie et al (2021) [25]	Conceptual Behaviour Underpinning the Occurrence of Nonfaecal Matter in Faecal Sludge in Some Urban Communities, Ghana	To assess the perception underpinning the occurrence of non-faecal matter in Faecal sludge in Ghana	<p>CHALLENGES</p> <ul style="list-style-type: none"> ▪ Sanitary pads, diapers, rags, and toilet paper were frequently found in faecal sludge in urban areas. ▪ These behaviors were influenced by gender dynamics, poor toilet conditions, and social fears such as ritual exposure or concealing abortions. ▪ Shared facilities and stigma surrounding menstrual hygiene further contributed to non-faecal waste disposal in toilets.
Sheff et al (2020) [26]	Evaluating health service coverage in Ghana's Volta Region using a modified Tanahashi model	To examine the system of care at the community level in Ghana's Volta Region to highlight the continued reforms needed to achieve Universal Health Coverage.	<p>PROGRESS</p> <ul style="list-style-type: none"> ▪ Poor NHIS coverage (16.9%) ▪ High childhood immunization (93.8%) and antenatal clinic visit (65.9%) at initial contact but dropped to 76.7% and 25.1% respectively due to poor quality coverage <p>CHALLENGE</p> <ul style="list-style-type: none"> ▪ Poor access to funds and low-quality coverage
Foggitt et al (2019) [27]	Experiences of shared sanitation – towards a better understanding of access, exclusion, and ‘toilet	Examines shared sanitation access and use by using innovative mapping methods in compound house units in	<p>PROGRESS</p> <ul style="list-style-type: none"> • In a low-income urban area, 56% of house units had at least one toilet, mostly flush types. <p>CHALLENGES</p>

Author & Year of publication	Title of study	Aim of study	Key Findings, Progress and Challenges
	mobility' in low-income urban areas	Fante New Town, Kumasi, Ghana	<ul style="list-style-type: none"> • Despite this, 47% of residents still used public toilets, practiced open defecation, or used “flying toilets.” • Access was often restricted by landlords, and maintenance costs discouraged household toilet use.
Cobbinah et al (2020) [42]	Environmental planning crisis in urban Ghana: Local responses to nature’s call	Analyses the factors that inhibit the provision of in-house household toilet facilities in urban Ghana and assesses how urban residents are Coping with the absence of in-house toilet facilities, and the urban planning implications	<p>PROGRESS AND CHALLENGES</p> <ul style="list-style-type: none"> • The provision of in-house toilet facilities is influenced <ul style="list-style-type: none"> ○ Socio-economic (e.g. income and educational levels) ○ Cultural (community belief system concerning toilet provision) • Distortions in the urban planning regime (e.g. limited monitoring systems, inadequate logistics, and personnel).
Umar et al (2020) [45]	The shared experiences of insured members and the uninsured in health care access and utilization under Ghana’s national health insurance scheme: Evidence from the Hohoe Municipality	Explored the experiences of the insured members of the NHIS, the uninsured, and health professionals in accessing and utilizing health care services under the NHIS	<p>CHALLENGES</p> <ul style="list-style-type: none"> • Both insured and uninsured individuals faced financial and access-related challenges under the NHIS. • Insured patients perceived service quality as poor, while the uninsured struggled with affordability. • Long waiting times and negative attitudes from providers further discouraged healthcare use.
Amankwaa et al (2017) [48]	In-school adolescents’ knowledge, access to, and use of sexual and reproductive health services in Metropolitan Kumasi, Ghana	Examines the level of SRH-related knowledge, service access, and use among school-going adolescents in Kumasi Metropolitan, Ghana	<p>PROGRESS</p> <ul style="list-style-type: none"> • Most in-school adolescents had good knowledge of sexual and reproductive health (SRH) services. <p>CHALLENGES</p> <ul style="list-style-type: none"> • However, access and use were limited due to stigma, fear of teachers and parents, and negative attitudes from providers. • Cultural taboos around adolescent sexuality also discouraged service uptake.

Supplementary Table S4. Key findings from grey literature.

Author & Year of publication	Title	Progress and Challenges
National Development Planning Commission (2020) [57]	Ghana SDGs Report 2020	<p>PROGRESS</p> <p>SDG 2 (Zero hunger)</p> <ul style="list-style-type: none"> • The prevalence of stunting among children under five declined from 22.7% in 2011 to 17.5% in 2017 <p>SDG 3 (Good health and wellbeing)</p> <ul style="list-style-type: none"> • The maternal mortality ratio reduced from 580 per 100,000 live births in 2007 to 310 in 2017, and further to 106.6 by 2020 • Skilled birth attendance increased from 73.7% in 2014 to 79.9% in 2017 • New HIV infections declined from 20,323 in 2016 to 17,580 in 2020 • Tuberculosis incidence decreased from 14,602 in 2019 to 12,443 in 2020, while malaria incidence dropped from 221 to 186 per 1,000 population between 2019 and 2020 <p>SDG 5 (Gender equality)</p> <ul style="list-style-type: none"> • Cases of intimate partner violence and violence against women aged 15 and older decreased from 19,171 in 2013 to 8,324 in 2017, contributing to SDG 5 (Gender Equality). <p>SDG 6 (Clean water and sanitation)</p> <ul style="list-style-type: none"> • Access to safe drinking water increased from 80% in 2015 to 86% in 2020, indicating improvement in SDG <p>SDG 13 (Climate change)</p> <ul style="list-style-type: none"> • Ghana enhanced climate reporting capacity and remained a signatory to international frameworks. <p>CHALLENGES</p> <p>SDG 2 (Zero hunger)</p> <ul style="list-style-type: none"> • Food insecurity persisted in several regions, with over 70% of households in the Northern, Upper East, and Upper West regions affected <p>SDG 3 (Good health and wellbeing)</p> <ul style="list-style-type: none"> ▪ Health sector faced unequal distribution of professionals and infrastructure deficits ▪ Mental health indicators were excluded from national reports

Author & Year of publication	Title	Progress and Challenges
		<p>SDG 5 (Gender equality)</p> <ul style="list-style-type: none"> ▪ Delay in passage of the Affirmative Action Law ▪ Women are least represented in local assemblies ▪ Cultural and religious practices that still promote early marriage and female genital mutilation, especially in rural communities <p>SDG 6 (Clean water and sanitation)</p> <ul style="list-style-type: none"> ▪ Open defecation ▪ Stalled water and sanitation projects ▪ Poor behavioral change <p>SDG 13 (Climate change)</p> <ul style="list-style-type: none"> ▪ Weak local capacity for climate risk analysis and lack of coordinated data systems. ▪ Poor financing for climate change projects
Government of Ghana (2019) [60]	Ghana: Voluntary National Review on the Implementation of the 2030 Agenda for Sustainable Development	<p>PROGRESS</p> <p>SDG 2 (No hunger)</p> <ul style="list-style-type: none"> • Stunting among children 5 years and younger decreased from 30% (1998) to 23% (2011) and further declined from 19% (2014) to 18% (2017). ▪ Underweight declined from 22.1% (2003) to 14.3% (2011) and reduced further to 13% (2017). <p>SDG 3 (Good health and well-being)</p> <ul style="list-style-type: none"> ▪ Maternal deaths declined from 580 per 100,000 live births (2007) to 310 per 100,000 live births (2017). ▪ About 97% of pregnant women visited the antenatal clinic once, 85% at least 4 times, and 26% at least 8 times in 2017. ▪ Deliveries by skilled birth attendants: increased from 73.7% (2014) to 79.9% (2017). ▪ Under-5 mortality declined from 111 (2003) to 80 (2008) to 60 (2014) and further to 56 per 1000 live births in 2017 ▪ Neonatal mortality declined from 43 (2003) to 30 (2008) to 29 (2014) to 27 per 1000 live births in 2017.

Author & Year of publication	Title	Progress and Challenges
		<p>SDG 5 (Gender equality)</p> <ul style="list-style-type: none"> ▪ In 2015, Psychological violence peaked at 24.8% among divorced /separated/widowed women compared to 21.3% among married/ cohabiting women. ▪ Girls marrying before age 15 decreased from 1.1 in 2006 to 0.4% by 2017, ▪ Female representation in government modestly increased <p>SDG 6 (Clean water and sanitation)</p> <ul style="list-style-type: none"> ▪ Improved water services: increased from 37.3% (2013) to 44.3% (2017). Rural water services increased from 9.9% (2013) to 17.9% (2017). ▪ Safely managed sanitation: basic sanitation improved from 14.3% (2015) to 21% (2017). <p>SDG 13 (Climate action)</p> <ul style="list-style-type: none"> ▪ Ghana has published several strategic climate change documents ▪ Climate change was integrated into the primary and secondary school learning curriculum to enhance behavioural change <p>CHALLENGES</p> <p>SDG 2 (No hunger)</p> <ul style="list-style-type: none"> ▪ Low productivity and poor investment (local and foreign) in agriculture ▪ High import duties on agriculture inputs and high production and processing cost <p>SDG 3</p> <ul style="list-style-type: none"> ▪ Poor geographical access to quality healthcare ▪ Shortage of healthcare professionals and inequitable distribution of critical staff ▪ Poor funding and infrastructure
Ministry of Finance (2018) [61]	Ghana's SDG Budget Baseline Report 2018	<p>PROGRESS</p> <p>SDG 2</p> <ul style="list-style-type: none"> ▪ GH¢833.73 million core expenditure ▪ Funding sources include government, development partners, and petroleum receipts ▪ The Government of Ghana introduced the Planting for Food and Jobs policy in 2017 <p>SDG 3</p> <ul style="list-style-type: none"> ▪ GH¢3,055.98 million core expenditure

Author & Year of publication	Title	Progress and Challenges
		<ul style="list-style-type: none"> ▪ Funding sources include government, internally generated funds, and development partners <p>SDG 5</p> <ul style="list-style-type: none"> ▪ GHCC6.94 million core expenditure ▪ The Ministry of Gender, Children, and Social Protection was formed to replace the Ministry of Women and Children’s Affairs in 2013 ▪ The National Gender Policy was adopted in 2015 <p>SDG 6</p> <ul style="list-style-type: none"> ▪ The Ministry for Water and Sanitation was established in 2017 ▪ GH¢126.9 million core expenditure ▪ Funding sources include internally generated funds, developmental partners, and government <p>SDG 13</p> <ul style="list-style-type: none"> ▪ National Climate Change Policy was launched in 2013 (NCCP 2013) ▪ The Natural Resources, Environment, and Climate Change (NRECC) unit was formed by the Ministry of Finance in 2010 ▪ A study on Climate financing in Ghana was published in 2015 ▪ A set of Climate Change Finance Tracking Tools were developed in 2016 to enhance the coordination and management of funds ▪ GH¢121.69 million core expenditure <p>CHALLENGES</p> <p>SDG 2</p> <ul style="list-style-type: none"> ▪ Over-dependence on the rainfall irrigation system and over-reliance on traditional farming techniques (lack of mechanized farming systems) ▪ Poor marketing and unstable food pricing ▪ Land degradation through mining activities ▪ Inadequate agriculture staffing <p>SDG 6</p> <ul style="list-style-type: none"> ▪ Insufficient resources and lack of reliable project monitoring systems

Author & Year of publication	Title	Progress and Challenges
		<ul style="list-style-type: none"> ▪ Shortage of funding from developmental partners due to Ghana’s upgrade to a lower middle-income country (LMIC)
Ministry of Finance (2021) [62]	Ghana’s 2021 SDGs Budget Report	<p>PROGRESS</p> <p>SDG 2</p> <ul style="list-style-type: none"> ▪ Key initiatives were launched between 2016 and 2020. These include Planting for Food and Jobs, Rearing for Food and Jobs, Planting for Exports and Rural Development, Greenhouse villages, the Ghana Agricultural Sector Investment Program, Agricultural Mechanization ▪ GHC1196.87 million budget allocation ▪ Sources of funding: consolidated fund, consolidated other funds, external sources, and statutory fund <p>SDG 3</p> <ul style="list-style-type: none"> ▪ Action plan for local vaccine production ▪ Construction of 16000 Community-based Health Planning and Services ▪ Work has started on the Agenda 111 project (building 111 health facilities) ▪ GHC4402.7 million budget allocation ▪ Sources of funding: consolidated fund, consolidated other funds, external sources, and statutory fund <p>SDG 5</p> <ul style="list-style-type: none"> ▪ quota systems continue to be implemented at the tertiary level to enroll a certain percentage of female ▪ Community sensitization dialogues for 370 traditional and religious leaders in the Savannah, Upper East, Upper West, and Western regions on Child Marriages. ▪ GHC94 million budget allocation <p>SDG 6</p> <ul style="list-style-type: none"> ▪ “Water for All” program and construction of a fecal sludge management infrastructure ▪ Community-Led Total Sanitation Program and Toilet for All Agenda project ▪ The Greater Accra Resilient and Integrated Development Project ▪ GHC750.40 million budget allocation <p>SDG 13</p> <ul style="list-style-type: none"> ▪ Increased drought-threatened electricity generation

Author & Year of publication	Title	Progress and Challenges
		<ul style="list-style-type: none"> ▪ The updated Nationally Determined Contributions was launched in 2021 ▪ Ghana’s Climate Change Public Expenditure and Institutional Review was conducted in 2021 which revealed that the majority of government expenditure went into agriculture, water, and sanitation policies. ▪ GHC166.20 million budget allocation <p>CHALLENGES</p> <p>SDG 2 Disasters such as droughts, wildfires, and pests</p> <p>SDG 13 Less funding for climate action</p>
National Development Planning Commission (2022) [63]	Ghana’s 2022 Voluntary National Review Report on the Implementation of the 2030 Agenda for Sustainable Development	<p>PROGRESS</p> <p>SDG 2</p> <ul style="list-style-type: none"> ▪ Moderate to severe food insecurity declined from 49.5% (2017) to 47.7% (June 2020) and 47.0% (2020) while Severe food insecurity increased from 8% (2017) to 9.5% (June 2020) and declined to 6.2% (2020) ▪ Anemia in school-going children reduced from 60% (2019) to 55% (2020) to 50% (2021) ▪ Introduction of the Girls’ Iron and Folic Acid Tablets Supplementation (GIFTS) program and the Micronutrient Powder Initiative in 2017 <p>SDG 3</p> <ul style="list-style-type: none"> ▪ Maternal deaths declined from and visits by pregnant women for antenatal services from skilled birth personnel increased from 55.5% (2016) to 59.1% (2019) but declined to 58.7% (2020) ▪ Increased antenatal attendance and skilled delivery among pregnant women ▪ Under-5 mortality rate and neonatal mortality rates declined. ▪ New HIV infections, TB incidence and malaria incidence declined ▪ The Ministry of Health through a partnership with Zipline established four Drone Delivery Centers in 2020 <p>SDG 5</p>

Author & Year of publication	Title	Progress and Challenges
		<ul style="list-style-type: none"> ▪ Ghana enacted and amended gender-related laws: the Children’s Amendment Act, 2016 (Act 937), Ghana Aids Commission Act, 2016 (Act 938), Right to Information Act, 2019 (Act989), Land Act, 2020 (Act 1036), Real Estate Agency Act, 2020 (Act 1047) ▪ Rape cases and defilement cases reduced were reduced from 580 (2018) to 504 (2019) to 503 (2020) ▪ Female Supreme Court Judges increased from 26% (2019) to 28% (2020) and 31% (2021) against the 2021 target of 40% ▪ Ghana organized a National Gender Equality Clinic to promote sexual and reproductive health among adolescent girls in 2021 <p>SDG 6</p> <ul style="list-style-type: none"> ▪ Access to improved drinking water increased from 85.3% (2010) to 92.2% (2021). ▪ Access to household toilets increased from 46% (2010) to 59.3% (2021) ▪ Access to public toilets declined from 35% (2010) to 23% (2021). <p>SDG 13</p> <ul style="list-style-type: none"> ▪ Ghana’s total greenhouse gas (GHG) emissions increased from 49.19 MtCO₂e (2016) to 58.56 MtCO₂e (2019). ▪ Common sources of GHG emissions were from Forestry and other land uses 50.47% (2016) and 58.56% (2019). ▪ In 2019, the Drive Electric Initiative was launched to promote electric vehicles <p>CHALLENGES</p> <p>SDG 2</p> <ul style="list-style-type: none"> ▪ Several challenges related to the COVID-19 pandemic, Flooding, Illegal mining, Farm destruction by nomadic farmers, Reduced farm animal production and Bushfires were encountered ▪ Poor road network ▪ Price hikes and food inflation <p>SDG 3</p> <ul style="list-style-type: none"> • COVID-19 pandemic further illustrated the inequitable distribution of health facilities and health professionals

Author & Year of publication	Title	Progress and Challenges
Anafo (2021) [64]	Tracking the Progress on the Localization of the SDGs: Lessons for the West African Sub-region from Ghanaian Local Governments	<p>PROGRESS</p> <p>SDG 2</p> <ul style="list-style-type: none"> ▪ Planting for Food and Jobs (SDG 2) and One Village, One Dam <p>SDG 5</p> <ul style="list-style-type: none"> ▪ A quota system to appoint 30 percent of women for government appointment and all public institutions ▪ The Affirmative Action Bill was passed to increase women’s participation in decision-making at all levels and ranks (SDG 5) <p>CHALLENGES</p> <ul style="list-style-type: none"> ▪ Unidentified evaluation indicators, Poor data collection and Poor institutional capacities ▪ Poor functionality of government officials and employees and Poor accountability of government officials ▪ Funding constraints including Inadequate domestic funding sources, Poor revenue mobilization, Leakage in revenue collection and Huge budget deficits ▪ Lack of evaluation tools for measuring SDGs progress
Forkuo (2019) [65]	Mainstreaming Sustainable Development Goals (SDGs) into Local Development Planning: A Comparative Study of Adentan and Lankwantanang- Madina Municipal Assemblies.	<p>PROGRESS</p> <ul style="list-style-type: none"> • SDGs successfully integrated into the local development plan - HHSDGs 2, 3, 5, 6 and 13 <p>CHALLENGES</p> <ul style="list-style-type: none"> ▪ Poor financing and low awareness of SDG relevance among local communities
Civil Society Platform Ghana (2019) [66]	Progress on the SDGs: Telling the Ghanaian	<p>PROGRESS</p> <p>The role of Ghana Civil Society Organizations in SDG progress:</p> <p>SDG 5</p>

Author & Year of publication	Title	Progress and Challenges
	story through the lens of citizens	<p>Release of land to women in the Ellebelle District and its environs under the advocacy of equal opportunities for all</p> <p>SDG 13</p> <ul style="list-style-type: none"> ▪ Promotion of local ownership of climate action ▪ Monitoring government implementation strategies ▪ Community empowerment program ▪ Disaster risk management ▪ Provide relief items for disaster-affected communities ▪ Building collaborations with the government <p>CHALLENGES</p> <ul style="list-style-type: none"> • Lack of data and under-funding
Ankiilu (2022) [68]	Is Ghana on Track to Meet the Sustainable Development Goals?	<p>CHALLENGES</p> <ul style="list-style-type: none"> ▪ Poor tracking tool, Untimely access to data and Inaccurate and aggregated data ▪ Huge funding gap (\$43.2 billion per annum) ▪ The COVID-19 pandemic reversed some SDG gains made ▪ Technology, Social protection, and health-related inequalities
Blaboe (2019) [71]	Assessing SDG 3: Achieving Universal Health Coverage In Ghana	<p>PROGRESS</p> <ul style="list-style-type: none"> • The National Health Insurance Scheme (NHIS) <ul style="list-style-type: none"> ▪ Population coverage: Increased from 38.4% (2013) to 39% (2014), 40% (2015), declined to 38.4% (2016), 35.6% (2017), and increased to 35.8% (2018) ▪ Information, education, and communication: Collaboration with stakeholders. Interaction with healthcare providers under the scheme using a provider contact database. <ul style="list-style-type: none"> ○ Support from five (5) development parties: DANIDA, The Royal Netherlands Embassy, USAID, The British Department for International Development (DfID), KOFIH, ADB, and GIZ. ▪ Accessibility: Introduction of mobile renewal using USSD codes

Author & Year of publication	Title	Progress and Challenges
		<p>CHALLENGES</p> <ul style="list-style-type: none"> ▪ Poor population coverage of the National Health Insurance Scheme (NHIS) ▪ Poor funding of the NHIS ▪ Loss of interest by beneficiaries and healthcare service providers due to administrative issues ▪ Poor education and training for scheme members ▪ Poor monitoring and evaluation
International Budget Partnership (2022) [69]	Ghana: Budget Credibility and the Sustainable Development Goals	<p>BOTTLENECK</p> <ul style="list-style-type: none"> ▪ Inadequate domestic and international financing for programs ▪ Budget incredibility: Deviation from planned national budgets during the implementation of programs ▪ Lack of data on budget expenditure
Akologo (2016) [70]	Bringing the Sustainable Development Goals (SDGs) to Life in Ghana: An assessment report on the Implementation status	<p>BOTTLENECK</p> <ul style="list-style-type: none"> ▪ Poor inter-ministerial coordination and reporting system to reflect national development ▪ The influence of rapid demographic transitions such as population growth and urbanization on sanitation, urban planning, and structural transformations ▪ Poor funding ▪ Sub-regional inequalities ▪ An imbalance between good governance and sustainable environment management ▪ Poor data and information management systems
United Nations International Children's Emergency Fund (2023) [59]	Child-Related SDG Progress Assessment for Ghana	<p>PROGRESS</p> <p>SDG 2 (Zero hunger)</p> <ul style="list-style-type: none"> ▪ Stunting among children under 5: 14.2% as of 2020 (on track) ▪ Wasting among children under 5: 6.8% as of 2017 (Acceleration needed) ▪ Overweight among children under 5: 2.9% as of 2020 (target met) <p>SDG 3 (Good Health and wellbeing)</p> <ul style="list-style-type: none"> ▪ Under-five mortality rate: 44.7 deaths per 1000 live births as of 2020 (Acceleration needed) ▪ Neonatal mortality rate: 22.9 deaths per 1000 live births as of 2020 (Acceleration needed)

Author & Year of publication	Title	Progress and Challenges
		<ul style="list-style-type: none"> ▪ New HIV Incidence in children under five: 0.88 per 1000 population as of 2020 (Acceleration needed) ▪ New HIV incidence in girls 15-19 years: 1.18 per 1000 population as of 2020 (Acceleration needed) ▪ New HIV incidence in boys 15-19 years: 0.1 per 1000 population as of 2020 (Acceleration needed) ▪ Maternal mortality rate: 308 per 100000 live births as of 2017 (Acceleration needed) ▪ Skilled birth attendants: 78.9% as of 2018 (on track) ▪ Adolescent birth: 78 per 1000 women as of 2018 (on track) ▪ Health, learning, and psychosocial well-being among children aged 36-59 months: 68.4% as of 2018 (Acceleration needed) <p>SDG 5 (Gender equality)</p> <ul style="list-style-type: none"> ▪ Child labor among children aged 5-17 years: 20.1% as of 2018 (insufficient data) ▪ Intimate-partner violence and abuse among women and girls 15-19 years: 23% as of 2008 (insufficient data) ▪ Non-intimate-partner sexual violence among women and girls 15-19 years: 3% as of 2008 (insufficient data) ▪ Women 20-24 years who were engaged in child union or marriage before attaining age 18: 19.3% as of 2017 (Acceleration needed) ▪ Female genital mutilation: 2.4% as of 2017 (on track) ▪ Sexual violence among young women 18-29 years by age 18: 10% as of 2008 (acceleration needed) ▪ Children 1-14 years who experienced violence by caregivers: 94% as of 2018 (insufficient data) <p>SDG 6 (Clean water and sanitation)</p> <ul style="list-style-type: none"> ▪ Schools with access to water, sanitation, and hygiene (WASH) infrastructure: 53.6% as of 2019 (Insufficient data) ▪ Safely managed drinking water: 41.4% as of 2020 (Acceleration needed) ▪ Safely managed sanitation: 13.3% as of 2020 (Acceleration needed) ▪ Open defecation: 17.8% as of 2020 (Acceleration needed)

Author & Year of publication	Title	Progress and Challenges
Sachs et al (2022) [67]	Sustainable Development Report 2022	<p>PROGRESS</p> <p>Overall SDG performance by country rank: 110/163 Performance index: 62%</p> <p>SDG 2 (Zero hunger)</p> <ul style="list-style-type: none"> ▪ Undernutrition prevalence: 6.1% (2019), Prevalence of stunting in children under-5: 17.5% (2017) and Prevalence of wasting in children under-5: 6.8% <p>SDG 3 (Good Health and Wellbeing)</p> <ul style="list-style-type: none"> ▪ Maternal mortality rate: 308 per 100000 live births (2017), Neonatal mortality rate: 22.9 per 1000 live births (2020) and Under-5 mortality rate: 44.7 per 1000 live births (2020) ▪ Tb incidence: 143 per 100000 populations (2020) ▪ New HIV infections: 0.6 per 1000 uninfected population (2020) ▪ Life expectancy at birth: 66.3 years (2019) ▪ Universal Health Coverage index: 45 (2019) <p>SDG 5 (Gender Equality)</p> <ul style="list-style-type: none"> ▪ The ratio of female-to-male mean years of education received: is 81.5% (2019) ▪ The ratio of female-to-male labor force participation rate: is 89.7% (2020) <p>SDG 6 (Clean water and Sanitation)</p> <ul style="list-style-type: none"> ▪ Access to basic safe drinking water services: 85.8%(2019) ▪ Access to basic sanitation services: 23.7% (2020) <p>SDG 13 (Climate action)</p> <ul style="list-style-type: none"> ▪ Carbon dioxide emissions from fossil fuel combustion and cement production: 0.5 tCO₂/capita (2020)

Supplementary Table S5. Gaps identified, recommendations and future research needs

Gaps Identified	Recommendations	Future Research Needs
SDG 3 - Good health and wellbeing		

High maternal mortality and neonatal mortality	Strengthen maternal and neonatal health service infrastructure, healthcare worker capacity. Enhance maternal and neonatal education programs.	Evaluate drivers of maternal and neonatal deaths, including social and cultural practices, and health system capacity at all levels of healthcare.
Poor healthcare access and infrastructure, especially in rural areas	Increase access to primary healthcare in rural areas and improve infrastructure and healthcare worker capacity	Conduct operational research projects on the best models to improve primary care access and referral systems
Weak NHIS coverage and high out-of-pocket payments	Reform NHIS benefit packages and expand coverage for essential services, including SRHR	Conduct cost-effectiveness studies on revised benefit packages and expanded coverage.
Inadequate mental health services and coverage	Mainstream mental health into UHC and train more mental health professionals	Investigate prevalence, access gaps, and stigma-related barriers
SDG 2 – Zero Hunger		
Persistent malnutrition in children under five (stunting, wasting, underweight)	Expand nutrition-sensitive agriculture, school feeding, and food fortification programs.	Conduct studies to assess regional disparities in child nutrition and long-term outcomes.
Low awareness and adoption of improved farming inputs/tech	Strengthen farmer education on hybrid seeds and sustainable farming practices	Study barriers to the adoption of climate-resilient and nutrition-sensitive farming methods
SDG 5 – Gender Equality		
High levels of gender-based violence and child marriage	Strengthen legal enforcement, shelter services, and community support systems	Map prevalence and effectiveness of interventions against GBV

Lack of SRHR integration into NHIS and poor service availability	Include comprehensive SRHR (e.g. family planning, post-abortion care) in benefit packages	Research SRHR needs and access among adolescents and rural women
SDG 6 – Clean Water and Sanitation and SDG 13 – Climate Action		
Inadequate sanitation infrastructure and public toilets	Invest in public WASH infrastructure and enforce sanitation bylaws	Evaluate urban sanitation coverage and barriers in low-income settlements
Unsafe disposal of waste (e.g., diapers, sanitary pads in toilets)	Scale up behaviour change education on hygiene and waste management	Study WASH knowledge gaps and risk perception among urban populations
Poor protection of water sources (e.g., due to small-scale mining)	Enforce environmental laws and expand safe water delivery in mining zones	Investigate water contamination risks and community adaptation strategies
High emissions from sectors like agriculture, industry, and transport	Promote clean energy and climate-smart agriculture	Study carbon footprints of local industries and potential for emissions reductions