Environmental and Social Assessment
Grand Nokoué Solid Waste Project, Benin

Non-Technical Summary

February 2026

Public

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Introduction

The EBRD and EIB are considering jointly financing the EUR 71 million Grand Nokoué Solid Waste Project in Benin, implemented by the state-owned SGDS. The project targets improved waste management for the Grand Nokoué regions—home to 2.75 million people and generating over 600,000 tonnes of waste annually. Planned investments include sorting and composting facilities, biogas production, landfill gas and leachate treatment, and upgraded waste transport systems ("the Project"). The Project will be developed and implemented by Société de Gestion des Déchets et de la Salubrité ("SGDS", or the "Company"), a state-owned company in charge of the collection, treatment and disposal of solid waste throughout Benin and who are responsible for operation of existing waste management system in the region.

This document summarises the results of an Environmental and Social Assessment of the project, undertake as part of the Environmental and Social Due Diligence to evaluate the Project's compliance with national laws and EBRD Environmental and Social Policy (2024) requirements, identify environmental and social risks, and determine any needed additional studies or corrective actions across the project lifecycle.

Project overview

The Grand Nokoué Solid Waste Project is part of the Clean Oceans Project Identification and Preparation (COPIP) programme, which supports global initiatives to reduce plastic pollution in marine and freshwater environments.

The project aims to modernise waste management in Grand Nokoué by enhancing collection, sorting, transport, organic waste treatment, and landfill controls. Its components focus on reducing the volume of waste sent to landfill, limiting harmful emissions and leachate generation, and improve overall environmental performance.

Schedule

According to the anticipated project schedule, the procurement and pre-construction phase is planned for 2026, and construction activities will commence in 2027. The overall expected duration for the implementation of the Project components is expected to be 4 years, commencing operation in 2031.

Organizational arrangements

The existing waste management system implemented by the Société de Gestion des Déchets et de la Salubrité Société Anonyme (SGDS) for the municipalities of the Grand Nokoué relies on:

- Small and Medium-sized Enterprises (SMEs), in charge of the pre-collection of household waste In urban and semi-urban areas, that transport waste to around 60 collection points ("PRs") managed by SGDS through collection point agents who supervise activities on site.
- Independent cooperatives working at most PRs, in charge of sorting valuable recyclables while waste is transferred to larger containers (15 or 30m3).
- SGDS operators manage the waste collection fleet (including a mechanized collection or direct collection service in urban areas with suitable road infrastructure), as well as the transport to Transfer Centers ("CTs") or Technical Landfill Sites ("CETs").
- Finally, the Agence d'Exécution des Travaux Urbains (AGETUR), a private company, operates the Technical Landfill Centers (CETs) on behalf of SGDS.

Project Components

Based on pre-feasibility and feasibility studies, and as refined through the most recent Technical Due Diligence (January 2026), the Project currently comprises the following main investment components:

- Installation of manual sorting facilities and upgrade to the existing facilities at up to 60 waste collection points to improve separation of recyclable materials;
- Construction of four waste sorting centres, the final locations of which will be determined upon completion of the ongoing technical studies and the required approval processes;

- Development of organic waste treatment facilities, including:
  - two composting platforms, the final sites of which will be confirmed in accordance with the ongoing technical and environmental studies;
  - one pilot biogas facility.
- Implementation of landfill gas and leachate management systems at the two existing landfill sites:
  - Final surface cover for closed cells at both landfill sites;
  - A single leachate treatment plant to be constructed at the Ouèssè landfill, with capacity to receive excess leachate from the Takon landfill if required;
  - One flaring system at the Ouèssè landfill and use of biofilters and coke–compost oxidation systems for landfill gas management at Takon;
- Procurement of waste transport vehicles and waste collection containers to improve operational efficiency and reduce fuel consumption.

The sites initially identified in coordination with the municipal authorities during the Project's pre-feasibility and feasibility studies (2024-2025) as shown in Figure 1 (COPIP sites) constitute the working basis for the detailed technical studies. The final location of all components will be confirmed once the technical designs have been finalized and regulatory procedures completed.

Additional components are under consideration as part of the long-term modernisation programme, subject to the finalisation of financing arrangements.

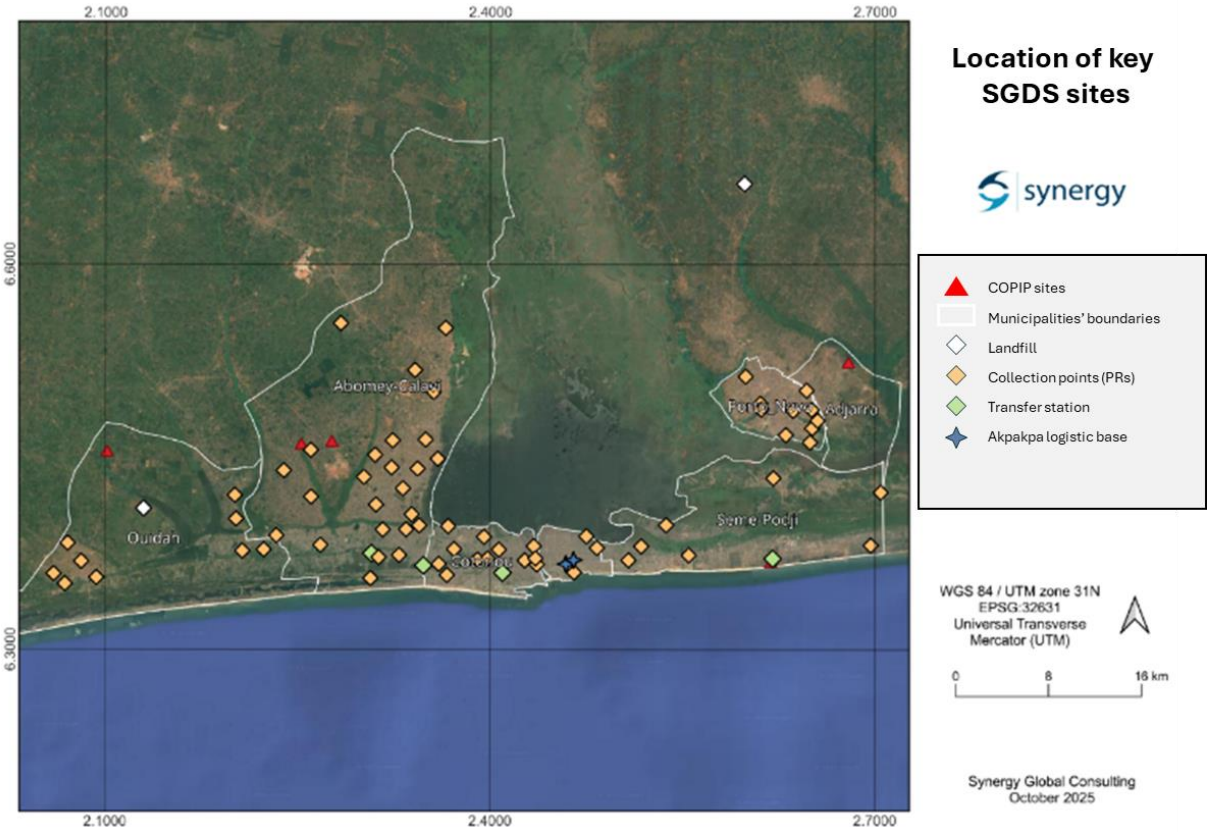


Figure 1 – Overview of the main sites operated by SGDS as well as possible project component's locations

Applicable legal requirements

Waste management in Benin is governed by a diverse legal framework combining the Constitution, framework laws, and a series of decrees and implementing orders. This legal framework thus constitutes the reference basis for the modernization of SGDS facilities.

In parallel to the National regulatory framework, the following international frameworks have been adopted:

- EBRD Environmental and Social Policy (ESP) 2024.
- EBRD Environmental and Social Requirements (ESRs)

In accordance with EBRD ESRs, substantive requirements from EU Directives relevant to this project are also applied, i.e. the Environmental Impact Assessment (EIA) Directive, the Landfill Directive and the Industrial Emissions Directive (IED). Specifically landfill closure, leachate treatment and landfill gas management are aligned with the EU Landfill Directive and composting plants will align with the Best Available Technique (BAT) requirements under the IED. In addition, the Project moves the broader waste management system towards alignment with the EU Waste Framework Directive in terms of source segregation, recycling and biological treatment of waste diverted from landfill.

Regulatory compliance

The regulatory classification of each project component needs to be confirmed by the Beninese Environment Agency (ABE) as part of each facility's permitting process. This classification will have an implication on the type of ESIA required (detailed or simplified) for each project component (including associated facility), particularly since national guidance normally mandates detailed ESIAs for sorting and waste-handling facilities. It likely that tailored, component-specific assessments will need to be developed once the technical design is finalized and the ABE's compliance process progresses.

Environmental and social baseline

The environmental and social baseline was developed through a comprehensive review of existing bibliography, including previous studies, complemented by site visits and targeted surveys involving interviews with SGDS representatives, as well as workers from cooperatives and SMEs.

The following table presents the baseline for the 2 existing landfill sites (Takon and Ouèssè) as well as 4 sites which have been considered as candidates for the sorting and composting facilities. However, the choice of such sites is not final and may be subject to change.

Existing landfill sites

Element	Ouèssè landfill	Takon landfill
Overview		
Air quality	The landfill is in a peri-urban area with sensitive receptors directly bordering the site. Air quality may be degraded by untreated biogas emissions and traffic-related pollutants. Dispersion modelling shows high methane concentrations on site, decreasing northeastward with prevailing winds. An air quality monitoring programme is in place, with quarterly measurements in compliance with applicable national standards. Improvement measures are planned as part of the project and are incorporated into the project's Environmental and Social Action Plan (ESAP) to address the observed exceedances of WHO guidelines.	The landfill is in a rural area with the nearest sensitive receptors over 250 m away. Air quality may be degraded by untreated biogas emissions and local vehicle traffic. Dispersion modelling shows high methane concentrations inside the site that drop quickly with distance. An air quality monitoring programme is in place, with periodic measurements in compliance with national standards. Improvement measures are planned as part of the project and are incorporated into the project's Environmental and Social Action Plan (ESAP) to address the observed exceedances of WHO guidelines.
Noise	Noise levels are mainly influenced by landfill truck traffic, with receptors located very close to the site. Measurements in Q2 2025 recorded up to 62 dB(A), remaining below the 70 dB(A) limit.	Ambient noise is mainly influenced by truck movements to and from the landfill. Some receptors (homes and small businesses) are located close to the site. Measurements (Q2 2025) show maximum noise levels of 47 dB(A), well below the limit of 70 dB(A).
Geology/soils	Stratigraphy shows an organic horizon, followed by thick low-permeability silty layers over sandy-silty and sandy horizons. This configuration forms a natural low-permeability barrier (8–13 m depth), underlain by moderately permeable sands. Piezometer data indicate a clay barrier down to 32–35 m. Leachate mismanagement could contaminate soils and groundwater through infiltration.	Local soils consist of lateritic and variegated clays, sandy clays, gravels and kaolin, with low to very low permeability depending on compaction. Potential soil contamination could occur due to untreated leachate infiltration, though no soil quality analyses are available to confirm this.

Hydrology	The site lies less than 500 m from Lake Toho, part of an extensive and economically important wetland system. Water quality in this system shows organic and microbiological pollution pressures.	The nearest watercourse lies 1.5 km east of the landfill, within a wetland area. Water quality shows signs of organic and microbiological pollution.
Hydrogeology	Groundwater likely flows west to east, though this is unconfirmed. Water levels are around 11 m, with inflows at 11–16 m and 35–36 m depth. Groundwater quality is generally good regarding nutrients, salts and metals, but shows widespread bacteriological contamination and elevated ammonium at some points, likely due to local domestic sources such as septic tanks. No evidence of leachate signature in groundwater has been detected. However, hydrogeological uncertainty limits interpretation.	Groundwater likely flows west to east, though this is not formally confirmed. Water levels are around 35 m deep. Groundwater quality is generally good but shows bacteriological contamination and elevated nitrogen, probably due to surface-exposed wells near septic tanks. No evidence of leachate signature in groundwater has been detected. However, hydrogeological uncertainty limits interpretation.
Biodiversity	Vegetation is highly anthropised and degraded, dominated by grassland and marsh species. Wildlife is limited due to ecosystem degradation, though various bird species frequent the marshes and landfill. Proximity to wetlands forming part of a Ramsar site increases ecological sensitivity, rated as moderate.	The surrounding landscape consists mainly of modified habitats such as fallow lands and agricultural areas. The landfill may attract pests. Proximity to wetlands forming part of a Ramsar site increases ecological sensitivity, which is therefore rated as moderate.
Land use, occupancy and tenure	The Ouèssè landfill site is located in a relatively densely populated area, with buildings directly bordering the northern and southern edges and dense clusters to the southwest and northeast. A mosque lies to the northwest of the site, and a large agricultural area is also nearby.	The Takon landfill is located on the outskirts of the area but remains close to both inhabited and agricultural zones. Houses are located close to the site boundaries in the north-east and north-west parts of the area.
Livelihoods and economic activities	The presence of nearby agricultural areas indicates ongoing livelihood activities close to the site.	The presence of nearby agricultural areas indicates ongoing livelihood activities close to the site.

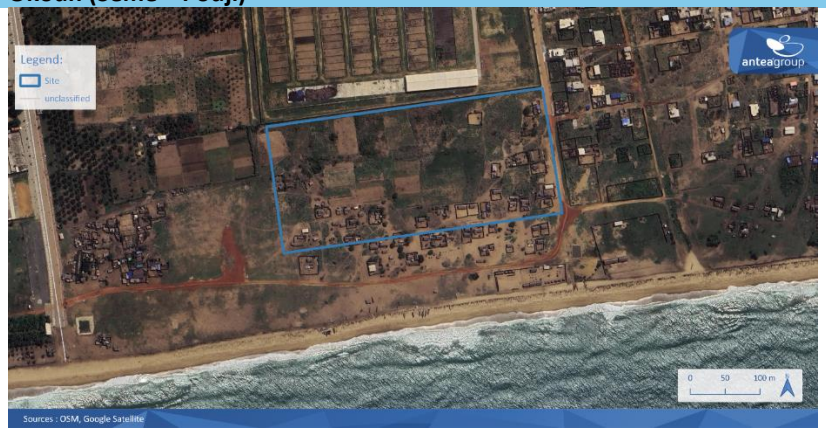
Potential Sites for Sorting Centres and Composting Plants

The four sites described below are the locations identified for the future sorting centres. Public land has already been formally allocated by the municipalities for the sites of Adjarra, Gakpé and Sèmè-Okoun, as well as by the government for the Ouédo site. The required land processes are being carried out in accordance with the applicable legal framework and the Resettlement Policy Framework and Livelihood Restoration Framework.

This overview reflects the current status of the available studies. The technical specifications of the future facilities will be finalized following the completion of the detailed studies, and the final locations of the sites will be confirmed accordingly, in consultation with the competent authorities.

Element	Gakpé (Ouidah)	Ouédo (Abomey-Calavi)
Overview		
Air quality	The site is in a rural area with no notable nearby pollution sources. Vehicle traffic on the adjacent road is minimal, making its contribution negligible. Only a few sensitive receptors exist in the vicinity, located 180 m south and about 300 m northeast of the site.	The site is situated in a peri-urban area where air quality may be affected by odor nuisances. No significant external pollution sources are identified in the immediate surroundings.
Noise	Ambient noise levels around the site are very low due to its distance from main roads and limited surrounding human activity. However, a few noise-sensitive receptors are located near the project boundary.	Ambient noise levels are low due to limited nearby human activity and distance from major roads. However, several noise-sensitive receptors are located close to the site boundaries, including residential areas situated 30 m west and north, and 110 m south, as well as scattered homes and small businesses to the east.
Geology/soils	The area is flat, around 30 m in elevation, and not exposed to flooding risks. Dominant soils are ferralitic, with sandy surface layers transitioning to sandy-clayey horizons. The land was likely used for agriculture before being fenced.	The area is generally flat, with ferralitic soils characterized by sandy surface layers and sandy-clayey horizons at depth. Regional borehole profiles show a 15–20 m thick low-permeability clay/lateritic layer that provides protection against surface contamination. Deeper layers

		alternate between clayey sands and sands. Soil screening indicates low disturbance and some ecological value.
Hydrology	There are no rivers, streams, or direct waterways near the site. However, a wetland zone is located approximately 900 m to the northeast.	The site lies at 7–8 m elevation with a slight southward slope and is located within a high flood-hazard zone (potential water height > 1 m). No surface watercourses are located nearby, though wetlands exist approximately 2.5 km west and 3 km east of the site.
Hydrogeology	No site-specific hydrogeological data are available. Regionally, the Continental Terminal aquifer is known to be complex and generally unconfined, typical of the southern plateaus of the coastal basin.	Groundwater depth is around 19 m. A clay surface layer (6–30 m thick) provides protection from surface pollutants. Groundwater generally flows from north-northwest to south-southeast.
Biodiversity	The site has been fenced for several years, allowing ecosystems to regenerate undisturbed and creating a local biodiversity hotspot richer than the surrounding landscape. No high conservation value fauna were identified, but Khaya senegalensis (VU) was recorded.	The site, located in an area undergoing rapid urbanisation, is partially developed (electric line infrastructure and drainage). Wildlife has declined due to human pressures, but some ecosystem services (e.g., medicinal and fruit plant harvesting) persist. Biodiversity assessments confirm low conservation value.
Land use, occupancy and tenure	No housing or sensitive facilities are located on and near the site. Eight adjacent plots belong to private owners.	The site is currently unoccupied, with basic infrastructure already in place (stormwater drainage system, electricity line pylons). It is surrounded by plots designated for residential development: 30 m to the west and north, and 110 m to the south. To the east, urbanization is much sparser, with few houses and commercial activities.
Livelihoods and economic activities	Agricultural and market-gardening activities are carried out on several of the neighbouring private plots, particularly east of the site along the 1,300-meter access road that will require rehabilitation and paving, and to the south, where cultivated areas are visible on satellite imagery. The exact number of land users has not yet been confirmed, and the area that may be affected will depend on the final width of the rehabilitated access road and the construction footprint.	Two easily removable metal shelters used by women vendors were observed south of the road running along the eastern side of the site. Due to uncertainties regarding the exact site boundaries, the potential presence of additional mobile vendors along other roads bordering the site could not be confirmed. Further clarification of the exact site limits and confirmation of land allocation will be required to accurately assess impacts related to site securing.

Element	Okoun (Sèmè—Podji)	Adjarra
Overview		
Air quality	The site is located in a peri-urban coastal area, with sensitive receptors mainly in the formal and informal housing directly south of the site. Its proximity to the SGDS sewage sludge treatment plant may generate odor and volatile emissions that negatively affect local air quality.	The site is located on the northeastern edge of the urban area, near the Adjarra River lowlands. Surrounding buildings are predominantly residential, with no nearby industrial pollution sources. Air quality may be lightly affected by local vehicle traffic.
Noise	Ambient noise levels are moderate, influenced by vehicle movements linked to the nearby transfer station and sludge treatment plant. Although the area is away from major roads, several residential and commercial receptors are located close to the site.	Ambient noise levels are low due to the site's distance from major roads and limited nearby human activity. Some noise-sensitive receptors, including houses and small shops, are located close to the project boundaries.
Geology/soils	Soils are shaped by leaching and sedimentation processes and are predominantly hydromorphic, nutrient-poor, and low in organic matter. Soil quality may have been affected by possible mismanagement of the sludge treatment plant (e.g., spills or poor leachate containment).	The area is flat (approx. 18 m elevation) and outside known flood zones. Soils are ferralitic with sandy-clayey textures typical of barre soils. A portion of the site was previously used as an uncontrolled dumpsite, which likely caused localized soil contamination.
Hydrology	The project area is near the ocean with drainage flowing toward the Atlantic. Wetlands lie about 2.5 km north of the site. Flood hazard mapping indicates that parts of the site fall within low-to-moderate flood zones (potential water depth < 1 m).	The project is located near wetland areas, with surface water streams about 400 m north. The Aguidi River, an important permanent watercourse, supports significant wetland and gallery forest ecosystems within the municipality.
Hydrogeology	The water table lies close to the surface, which requires particular attention to pollution prevention due to the high permeability of the soil. A borehole and a well are present on site. Groundwater quality monitoring is being carried out, and corrective measures are incorporated into the project's action plan to manage existing contamination and ensure the protection of the water resource.	The site lies within the coastal sedimentary basin, where groundwater is abundant and traditionally accessed through wells and boreholes. One well and one borehole exist on site, but no technical or water-quality data are available. The former dumpsite area may pose a risk of diffuse contamination of the shallow aquifer. Groundwater quality monitoring is being carried out, and corrective measures are incorporated into the project's action plan to ensure the protection of the water resource.

Biodiversity	The site contains modified habitats such as fallow land and agricultural fields, with low ecological integrity and no threatened fauna. However, some vulnerable plant species are present. The site is located near a sandy shoreline known for marine turtles and migratory birds. While Critical Habitat is not triggered for turtles, Priority Biodiversity Feature is triggered for other biodiversity values and ecosystem services.	The site contains modified habitats such as fallow land and agricultural fields, with some vulnerable plant species but no threatened fauna. Biodiversity value is generally low, though the presence of Khaya senegalensis (VU) and ecosystem services triggers PBF.
Land use, occupancy and tenure	Two wooden structures are present on the municipal plot, but their exact status is still unconfirmed. Field observations suggest they may be storage shelters linked to nearby market-gardening activities, although this requires verification. If these structures were residential, up to nine people could face physical displacement based on average household size in Sèmè-Podji. Additional receptors include two parish centers located 300 m and 480 m west of the site, as well as 20–30 dwellings to the south. According to municipal authorities, these occupants are fishermen informally settled there after multiple prior relocations. A Resettlement Action Framework will be prepared in accordance with EBRD standards and Beninese legislation (RPF). It will be disclosed and subject to consultation prior to any actions affecting the concerned populations.	The Adjarra site is currently used for market-gardening activities authorised by the municipality. The tenure status of surrounding parcels remains uncertain. The site contains several municipal structures, including a storage building, a rabbit-breeding facility, an administrative building and a guard post. While no dwellings are located on the site, several houses lie within 50 meters to the south. An old dumpsite is also present; although the presence of waste pickers could not be confirmed, some individuals were observed nearby during the field visit. The site also hosts a functional borehole and water tower, reportedly constructed by an NGO.
Livelihoods and economic activities	Market-gardening activities are also present on the Okoun site, and although the identity and number of users remain unknown, they my experience economic displacement.	The Adjarra site hosts municipality-authorised livelihood activities, including market gardening carried out by around twenty mostly female farmers who have cultivated the area for seven to eight years, as well as a rabbit-breeding activity managed by a young man. All users operate under municipal authorisation, and a Site Director has been appointed to oversee activities, though his role is not formally documented.

E&S Audit of the existing operations

The environmental audit identified several areas where management systems and operational practices can be strengthened to align with international standards, while confirming that no major legacy liabilities were identified.

SGDS SA has initiated a programme to bring all its facilities into compliance with national and international standards, which will be pursued in accordance with the requirements of the ESAP. Environmental and Social Management Systems (ESMS) are generally aligned with national requirements, and are in the process of formalisation and structuring. An Environmental, Health and Safety (EHS) plan exists, whose supporting documentation and sources would benefit from clarification. Emergency response plans are available for certain facilities and will be developed for the landfill sites. A systematic environmental and social training programme, as well as a consolidated risk register, are being finalised as part of the project. Emissions monitoring is carried out in accordance with site-specific Environmental Management Plans.

SGDS has initiated the necessary steps with the competent authorities to obtain all required environmental permits for its facilities (e.g. ESIA, ESMP, compliance certificates). Reporting obligations are generally met and inspections are conducted regularly. No evidence of fines or regulatory violations was identified.

SGDS has embarked on a continuous improvement pathway for its Environmental and Social Management System (ESMS) in order to progress towards full compliance with the EBRD Environmental and Social Requirements (ESRs), EU standards, and Best Available Techniques (BAT).

In-house environmental staff are experienced and have strong expertise in national permitting processes. A capacity-building programme on EBRD and EU requirements is included in the project action plan. However, familiarity with EBRD and EU requirements remains limited. Contractor monitoring is carried out and will be strengthened, although a harmonised and fully structured system is not yet in place. Management has expressed a strong commitment to complying with international standards.

No evidence of past environmental fines or confirmed contamination incidents was identified. Recent groundwater monitoring results show no signs of leachate contamination, consistent with local geological conditions.

Operational Environmental Performance

- Air quality and odour: Landfill gas management systems are limited, with few biogas wells and no routine gas measurements. Odour complaints are limited and mainly associated with a separate sludge site. Dust is generally well controlled. Air quality monitoring is conducted but shows methodological gaps. There is currently no formal grievance mechanism.
- Noise: Noise levels are generally low, as operations are largely manual. Monitoring is conducted quarterly but does not fully align with international standards.
- Leachate and water management: Most collection points lack dedicated leachate and stormwater management systems. Transfer stations discharge mixed runoff and leachate to municipal drains. Landfills have drainage systems, but discharge arrangements are unclear or potentially inadequate. Leachate is mainly managed through evaporation or recirculation, and older landfill cells lack fully engineered collection systems.
- Waste and hazardous materials management: Waste sorting at collection points is manual and does not clearly separate hazardous waste. At landfill sites, incoming waste is not systematically inspected upon discharge.
- Biodiversity: Some facilities are located near lagoons or environmentally sensitive areas. The project provides for bringing all existing facilities up to standard, including securing them and ensuring their environmental compliance, in order to prevent any impact on the surrounding biodiversity.
- Major hazard management: Emergency response plans are available for transfer stations and landfills. Fire drills are conducted in coordination with the fire department, and firefighting equipment is present on site.

Overall, while no major environmental liabilities were identified, improvements are required in system formalisation, permitting compliance, gas and leachate management, and alignment with international environmental and social standards.

Environmental and Social Assessment

Environmental impacts

Impacts of waste treatment and disposal facilities

The present section presents the environmental impacts associated with the leachate and biogas treatment facilities at the landfills of Takon and Ouèssè and the foreseen sorting and composting facilities.

Air Quality and GHG Emissions

Project activities may generate dust, exhaust emissions from vehicles and machinery, and odors associated with waste handling and organic material processing. Dust may occur during earthworks, waste unloading, material handling, and dismantling activities. During operation, odor emissions may arise from waste reception areas, composting processes, digestate handling, and leachate treatment. Mechanical equipment and traffic will also produce exhaust emissions.

The installation of landfill cover and biogas treatment systems (flaring at Ouèssè and oxidation windows at Takon) will significantly reduce uncontrolled landfill gas emissions compared to current unmanaged conditions. With appropriate design and operational controls, the biogas treatment facilities will contribute to reduce air quality impacts from the existing landfills.

The diversion of waste from landfill, introduction of new waste treatment technologies and landfill gas collection and treatment is estimated to reduce CO_2 emissions by approximately 75,000 tonnes per year.

Figure 2 – Operations at Takon landfill

Noise

Noise will be generated by construction equipment, waste unloading operations, mechanical sorting lines, compost turning equipment, pumps, flare systems, and truck movements. Some facilities, such as sorting centers and composting or biogas units, may generate continuous operational noise from mechanical equipment.

During dismantling or rehabilitation works, temporary increases in noise levels may occur due to demolition activities and vehicle movements. These disturbances are expected to remain localized and can be mitigated through standard noise management measures and appropriate scheduling.

Geology and Soils

Soil disturbance will occur where earthworks, foundations, excavation of tanks, installation of drainage systems, or dismantling activities take place. There is a potential risk of soil contamination from accidental spills of fuels, oils, leachate, digestate, compost, or other waste-related materials.

Composting and biogas facilities present a comparatively higher contamination risk due to the handling of organic-rich materials and liquids. However, properly designed containment systems, sealed platforms, drainage networks, and controlled leachate management will substantially reduce the risk of long-term soil degradation. Where necessary, remediation measures would be implemented at closure.

Surface Water (Hydrology)

There is a potential risk of contaminated runoff carrying sediments, waste particles, or organic matter into nearby drainage channels or water bodies, particularly during heavy rainfall. Composting areas and digestate handling zones may generate nutrient-rich runoff if not properly managed.

Leachate treatment systems are designed to significantly reduce the uncontrolled discharge of polluted water from landfill areas, representing a key environmental improvement due to the implementation of the Project. Residual risks may occur in the event of extreme rainfall, system malfunction, or accidental overflow, but these can be minimized through appropriate engineering design and monitoring.

Groundwater (Hydrogeology)

Groundwater could be affected if leachate, digestate, or other contaminated liquids infiltrate the soil due to leaks, liner failure, or accidental spills. Facilities involving underground tanks, basins, or deep foundations present a higher theoretical risk if not properly sealed and maintained.

The installation of a final cover on the old landfill cells, controlled collection and treatment of leachate and biogas will significantly reduce existing risks of uncontrolled groundwater contamination. Long-term monitoring will be required to ensure continued protection, particularly at landfill and composting sites where organic liquids are stored or treated.

Biodiversity

Vegetation clearance and site preparation may cause localized habitat disturbance. Waste management activities may attract birds, rodents, insects, and other scavenging species. Noise, lighting, and human activity may also disturb nearby fauna.

If not properly managed, nutrient-rich runoff could affect nearby aquatic ecosystems. However, improved leachate control will contribute to reducing the risk of environmental pollution around landfill sites.

Impacts of collection points (PRs)

Common environmental and social impacts at PRs are presented in the following table.

Element	Site characteristics
Air quality	Dust generated mainly during unloading/transfer, especially where ramps are inaccessible; most outgoing tricycles/trucks are covered; about half of nearby residents report odor nuisance at PRs.
Noise	Low noise levels; activities are mostly manual and not significant sources of acoustic disturbance.
Traffic	High tricycle traffic at some PRs; trucks may temporarily place containers in public areas during exchange operations.
Water management	Most PRs lack leachate and stormwater management systems; some have drains/trenches; few are roofed.
Hazardous materials	No hazardous materials sorting observed.

Housekeeping	Generally acceptable housekeeping; some scattered litter found outside PR boundaries.
Biodiversity	Some PRs are close to lagoons or other high-value biodiversity areas; presence of flies and rodents frequently reported.
Health, safety and security	Refer to section Human health

Figure 3 – One collection point (PR)

Impacts of the waste collection fleet

Municipal waste collection fleets generate impacts mainly through truck circulation, causing air pollution, noise, vibrations, dust, traffic disturbances, and occasional spills or odors during waste handling. Expanding the fleet will increase these impacts, though newer, cleaner, more efficient trucks should partly offset them. Traffic-related impacts will be most pronounced near new sorting plants, especially in Adjarra and Ouédo, where access roads pass through residential areas.

Social impacts

Labour and working conditions

The project provides for the gradual and structured formalization of the working conditions of all actors in the sector, including SGDS employees, pre-collection SMEs, and members of sorting cooperatives. A labour management plan will be developed to ensure non-discriminatory, safe and dignified conditions for all, with worker representation mechanisms, clear contracts, enhanced monitoring of subcontractors, and specific protective measures for vulnerable groups. It is essential to ensure that the new jobs created by the project result in decent and equitable working conditions for all stakeholders

Figure 4 – Workers at one collection point (PR)

Human health

While the Project aims to improve environmental and public-health conditions across Greater Nokoué, it may also generate or exacerbate health and safety risks for both local communities and workers.

Across all facilities—PRs, future sorting centres, composting plants and landfills—nearby residents may experience nuisances such as odours, dust, noise, flying debris, pests, and increased traffic hazards from tricycles, collection trucks and heavy vehicles. Risks of fires, intrusions, and exposure to communicable diseases or gender-based violence may also arise where fencing, lighting, or security measures are lacking. People living very close to facilities are more exposed to these impacts.

Workers face additional risks linked to mechanical and electromechanical equipment, heat, noise, odours, psychosocial stress, road-traffic hazards, and insufficient PPE or medical monitoring. At sorting and composting facilities, they may be exposed to bioaerosols, chemical or biological agents, and injuries from handling operations. New technologies such as biogas and aeration systems introduce further electromechanical and technological hazards.

Additional sanitary risks exist where fertilizers derived from organic waste are used. Exposure may occur through contaminated food, soil or water, or direct handling, potentially causing neurological, renal, developmental, infectious, carcinogenic, or endocrine effects, particularly among vulnerable groups such as children, pregnant women, and subsistence farmers.

Landfill-related risks remain significant due to their scale and proximity to settlements, including mosquito proliferation, dust and odour, accidents involving heavy trucks, and exposure to leachate or biogas emissions, despite partial safeguards from existing certifications.

Figure 5 – Vegetables gardens at Adjarra

Land acquisition, involuntary resettlement and economic displacement

The table below presents the potential impacts associated with the construction of the four sorting centres on public land allocated by the municipalities of Adjarra, Sèmè-Podji and Ouidah, and by the government in Abomey-Calavi."The required land processes are being carried out in accordance with the applicable legal framework and the EBRD's requirements.

Impact Type	Site	Available information
Restriction or loss of access to land as a productive asset	Adjarra (Adjarra)	Market gardening cultivated on the project footprint by an association of around 20 people, mostly women, with municipal authorization, present on site for 7–8 years.
	Okoun (Sèmè-Podji)	Market gardening cultivated on the project footprint.
	Gakpé (Ouidah)	Potential disturbances to agricultural activities on adjacent parcels and along the access road during construction. Parcels belong to identified individuals. Final project impacts and impacts from rehabilitating the access road must be further assessed.
Potential destruction of market gardening crops	Adjarra (Adjarra)	Market gardening cultivated on the project footprint by an association of around 20 people, mostly women, with municipal authorization, present on site for 7–8 years.
	Okoun (Sèmè-Podji)	Market gardening cultivated on the project footprint.
	Gakpé (Ouidah)	Potential destruction of crops on adjacent parcels and along the access road during construction. Parcels belong to identified individuals. Final project impacts and impacts from rehabilitating the access road must be further assessed.
Disruption of commercial activities	Adjarra (Adjarra)	Rabbit-breeding activity located on the project footprint, using a municipal building to store cages.
	Adjarra (Adjarra)	Potential informal waste-picking on dumpsite located on the site (their presence could not be confirmed during field investigations).

Impact Type	Site	Available information
	Gakpé (Ouidah)	Potential disturbances to agricultural activities on adjacent parcels and along the access road during construction.
	Ouédo (Abomey-Calavi)	Potential disturbances to informal commercial activities located along main roads during construction or operation.
Destruction of commercial buildings	Adjarra (Adjarra)	Two permanent buildings (a shop and the rabbit-breeding structure) belonging to the municipality.
Destruction of administrative buildings	Adjarra (Adjarra)	One administrative building and one guard post.
Destruction of infrastructure	Adjarra (Adjarra)	One borehole and one water tower.
	Okoun (Sèmè-Podji)	One tubewell.
Destruction of residential buildings (partial or total)	Okoun (Sèmè-Podji)	Two wooden/tin structures located on the project footprint, potentially dwellings.

The potential impacts linked to the construction of the anaerobic digestion pilot unit could not be assessed as no information is available on the site location. In addition, the potential impacts linked to the extension of the Ouèssè landfill footprint must be assessed in detail, as a composting plant financed by the Bank may be constructed on the site.

Livelihoods

The Project is expected to create positive livelihood opportunities through local employment during construction and new jobs in sorting and composting facilities during operation. The scale and inclusiveness of these benefits depend on the final technical design and on the Project's ability to integrate informal workers currently active in waste sorting. Most waste sorting cooperative members (operating on PRs) rely on informal waste activities as a key livelihood safety net, meaning that the formalisation of sorting and compost value chains could exclude vulnerable workers—particularly women, migrants and low-skilled individuals—or displace long-standing informal activities. Any reduction or transformation of informal waste collection, which supports women, elderly people, migrants and persons with disabilities, can lead to significant income losses and weakened resilience. A social development plan will be prepared to support the fair and inclusive integration of these actors, with particular attention given to women, migrants, and low-income groups, in order to ensure that the opportunities created by the project benefit the entire value chain.

Cultural heritage

During the preparation and construction phases, the construction of sorting centers, composting platforms, and the anaerobic digestion pilot unit may affect nearby cultural heritage sites, although current information indicates limited known sites and uncertain impacts. Additional detailed studies are required once final site locations and transport routes are confirmed to thoroughly assess potential effects on cultural heritage, including possible archaeological finds.

Environmental and Social Mitigation Measures

In addition to measures already included in the Project design described above, the following mitigation measures have been identified to further mitigate the impacts above:

Topic	Impact	Mitigation Measure
Capacity Building	Limited familiarity of staff with EBRD/EU requirements and good international practice may result in lack of efficient management of environmental and social risks and impacts.	• Implement a structured training programme on international E&S standards for SGDS teams and contractors.
Air quality and odours	Construction works and operations at the composting plants and pilot anaerobic digestion plant may result in odours, dust and emissions affecting air quality.	• Implement a management plan for odours, dust and other pollutants. • Implement manual/automatic monitoring of emissions in alignment with international standards.
Wastewater	Operations at the waste treatment facilities may result in the production of leachate, process wastewater or treated effluents, which, if released to the environment, can result in the contamination of surface water, soils and groundwater.	• Design new facilities to achieve no process water discharge. • Implement manual/automatic monitoring of effluents, including treated wastewater. • Undertake baseline water quality of receiving bodies and define target concentrations and dispersion monitoring.
Hydrogeology	Knowledge gaps of the hydrogeological conditions of sites (including landfills) lead to the risk of groundwater contamination including sources adopted by communities.	• Conduct full hydrogeological characterisation and contamination risk assessment and update groundwater monitoring accordingly.
Fleet & Traffic	Construction and operation will result in an increase in road traffic causing air pollution, traffic disturbances, road safety risks, congestion near new sorting sites. Newer, cleaner, more efficient trucks should partly offset such impacts.	• Implement fleet performance improvement measures (maintenance, routing, load coverage). • Develop road safety plans for waste transport operations.
Biodiversity	The Project may result in potential impacts on sensitive areas (including wetlands) mostly resulting from treated effluent discharge.	• Conduct biodiversity screening for all new sites and develop a Biodiversity Management and Monitoring Plan compliant with EBRD requirements ; where required, prepare an offset plan. • Implement anti-bird-attraction measures.
Workers Health, Safety & Security	Workers are exposed to occupational risks (accidents, exposure to waste, fire risks, lack of welfare facilities, unsafe access).	• Establish an H&S Management System covering SGDS and contractors. • Provide and enforce PPE.

Topic	Impact	Mitigation Measure
		• Conduct regular H&S training for workers, SMEs and cooperatives, including emergency response drills. • Upgrade PRs and sorting centres with sanitation facilities, rest areas, firefighting equipment, safe access and traffic management.
Community Health, Safety & Security	Community members may be impacted from traffic, nuisances, and sexual exploitation, abuse or harassment (SEAH) resulting from the construction and operation activities and the presence of workers.	• Upgrade the site fencing to improve security at existing landfill sites • Implement SEAH policies and training. • Integrate community safety and traffic management measures in operational plans.
Labour and working conditions	The Project may, in the absence of targeted measures, not benefit equitably the most vulnerable actors in the sector, in particular for cooperative members, women and migrant workers—unless formalisation is accompanied by strong H&S measures, clear contracts, oversight of subcontractors, and protections against unequal treatment.	• Formalise HR policies and labour procedures for employees to ensure fair recruitment, equal treatment, clear worker representation, and safe, compliant working conditions. • Establish a worker-accessible grievance mechanism covering employees, subcontractors and self-employed workers. • Develop a labour management plan for contracted and self-employed workers. • Improve cooperative workers' conditions through representation mechanisms, income safeguards, and strengthened labour, OHS and GBVH-sensitive standards.
Human health	Despite its broader public-health benefits, the Project may expose nearby communities and workers to increased health and safety risks from nuisances, traffic, hazardous substances, technological systems and bioaerosols—alongside heightened risks of gender-based violence in poorly secured environments.	• Develop and implement OHS plans/measures tailored to each site. • Develop and implement a comprehensive road-safety plan with safer routes, speed control, driver training and sobriety checks. • Improve site security through fencing, trained guards, access controls, lighting and coordinated incident reporting. • Apply ESR4-compliant procedures for hazardous-substance inventories, safe storage, SDS access and spill response. • Apply BAT-aligned design and operational controls for sorting and composting facilities. • Enhance community awareness through targeted health and safety communication.
Land acquisition, involuntary resettlement and economic displacement	Construction of new sites may cause loss of land, crops, structures and income-generating activities for users of project footprints and adjacent areas, requiring mitigation through resettlement and livelihood restoration.	• Detailed processes and requirements for detailed surveys, compensations and mitigations for livelihood related impacts are included in the Land Acquisition and Livelihood Restoration Framework (LA-LRF) which is also disclosed by SGDS • Implement the Project's Resettlement and Livelihood Restoration Policy Framework and develop site-specific Resettlement Action Plans and/or Livelihood Restoration Plans.

Topic	Impact	Mitigation Measure
Livelihoods	While the Project will create new formal jobs, it also risks reducing or displacing informal waste-based livelihoods—particularly for women, migrants and low-income groups—unless inclusive integration strategies are implemented.	• Develop a social development plan to identify informal workers, support their fair and inclusive integration into formal jobs and cooperatives, prevent discrimination—especially for vulnerable groups—and monitor barriers to ensure corrective action. • Establish an external complaint mechanism ensuring that anyone affected by Project activities can submit concerns (anonymously if they wish).
Cultural heritage	Construction activities may affect known or unknown cultural heritage resources, requiring further assessment once final site locations and access routes are confirmed.	• Develop site-specific assessments and procedures for managing potential Project impacts on cultural heritage (including for the extension of the Ouèssè landfill). • Implement a chance finds procedure during the construction of the Project

Stakeholder Engagement

As part of the Project, a Stakeholder Engagement Plan (SEP) has been developed to guide how the project team communicates and works with local communities and other interested groups. This plan helps ensure that people living near the project, or those who may be affected by it, are kept informed, can ask questions, and share their opinions. The SEP has been disclosed by SGDS.

The SEP reflects the project's commitment to open and respectful communication. Engagement activities include public meetings, focus group discussions, household surveys, meetings with municipal and customary authorities, and communication through radio, social media, posters and local notice boards.

Specific measures are planned to ensure the participation of vulnerable individuals and groups, such as informal occupants of the land made available for the new Project sites, informal workers, women, migrants, elderly persons, low-literacy groups, and those facing language barriers. Engagement methods will be adapted accordingly (e.g. use of local languages, visual materials, separate consultations, facilitation by community intermediaries, or mobile outreach mechanisms).

The SEP also includes an external complaints mechanism. This mechanism consolidates existing SGDS channels and ensures that anyone affected by Project activities can submit concerns—anonymously if they wish—through multiple entry points (phone, WhatsApp, suggestion boxes, SGDS field staff, village committees, municipal authorities, or directly on project sites). All complaints will be registered, assessed, and responded to in a transparent, timely, and non retaliatory manner.

The main objective of the grievance mechanism is to assist Project Affected Persons with an efficient and effective resolution of their grievances related to the Project activities. Furthermore, it aims to rapidly address any residual impacts raised by complainants and seeks to avoid, whenever possible, the initiation of lengthy and costly judicial processes. However, it does not prevent stakeholders from having recourse to judicial grievance channels.

Environmental and Social Action Plan

An Environmental and Social Action Plan (ESAP) has also been developed, which lists specific actions to ensure the Project meets both Beninese laws and EBRD standards, and bridges any remaining compliance gaps. The ESAP will become part of the financing agreement with EBRD. The ESAP includes actions related to the implementation of mitigation measures outlined above and a summary of additional actions are:

- Management Systems: Assign Environmental and Social Action Plan and Environment Health Safety and Security responsibilities within SGDS; Develop a Project specific Environmental and Social Management Plan covering the construction and operational phase; Prepare and adopt a Project Environmental and Social Management System (ESMS) and a long-term strategy for hazardous waste management
- Site Selection and Design: Complete the site selection for the sorting centres and composting plants considering E&S risks and impacts and following the mitigation hierarchy. Conduct technical assessment on air quality and odour to validate site layouts and mitigate off-site impact and additional assessments as required based on E&S sensitivities at each location (e.g. cultural heritage, biodiversity, social)
- Permitting: Bring sites into environmental and social compliance with national regulations and secure all necessary permits
- Land Acquisition: Developing, disclosing and implementing site-specific Resettlement and Livelihood Restoration Plans (RPs) prior to any impacts occurring
- Stakeholder Engagement: Implementing and regularly reviewing and updating the Project's SEP

Contact Details

For any enquiries, seek further information or any clarifications, please use the contact information below:

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