

INTERNAL AUDIT DIVISION

REPORT 2019/121

Audit of the implementation of the environmental action plan in the African Union-United Nations Hybrid Operation in Darfur

The Mission needed to expedite implementation of its environmental action plan to minimize environmental risks as the Mission downsizes and starts to liquidate

13 December 2019 Assignment No. AP2018/634/07

Audit of the implementation of the environmental action plan in the African Union-United Nations Hybrid Operation in Darfur

EXECUTIVE SUMMARY

The Office of Internal Oversight Services (OIOS) conducted an audit of the implementation of the environmental action plan in the African Union-United Nations Hybrid Operation in Darfur (UNAMID). The objective of the audit was to assess the adequacy and effectiveness of UNAMID's environmental plans, actions and systems to ensure efficient use of natural resources and minimize risks to personnel, local communities and ecosystems. The audit covered the period from 1 July 2017 to 31 December 2018 and included the five-pillars of the Mission Environmental Action Plan (MEAP): environmental management system; water and wastewater management; solid waste; energy management; and environmental wider impact.

The Mission needed to expedite implementation of its environmental action plan to minimize environmental risks as the Mission draws down and subsequently liquidates.

OIOS made 10 recommendations. To address issues identified in the audit, UNAMID needed to:

- Develop a consolidated environmental strategy tailored to the Mission drawdown phase and pending liquidation to ensure adequate environmental capacity to regularly monitor implementation of planned environmental actions and projects;
- Regularly conduct environmental inspections and establish a mechanism to monitor implementation status of environmental recommendations;
- Ensure accuracy of the MEAP and related environmental performance data;
- Regularly inspect, repair and maintain all wastewater treatment plants and equipment and clean-up the areas affected by untreated wastewater discharge;
- Regularly test quality of water and maintain pipes and water storage systems;
- Take action to prevent open burning of waste; and inspect garbage at the collection points prior to transportation to the tipping site;
- Expedite the procurement of disposal services for electronic equipment and waste, and enhance oversight to ensure disposal of hazardous waste in an environmentally friendly manner;
- Protect soil by preventing oil and fuel spillage and treat contaminated soil;
- Ensure that all medical waste in all locations is collected, stored and disposed of in a safe manner; and
- Ensure environmental screening is conducted for any new projects.

UNAMID accepted the recommendations and has initiated action to implement them.

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Audit of the implementation of the environmental action plan in the African Union-United Nations Hybrid Operation in Darfur

I. BACKGROUND

1. The Office of Internal Oversight Services (OIOS) conducted an audit of the implementation of the environmental action plan in the African Union-United Nations Hybrid Operation in Darfur (UNAMID).

2. The erstwhile Department of Field Support (DFS) through its environmental strategy, developed the Mission Environmental Action Plan (MEAP) to assess and monitor missions' environmental activities, including those implemented to reduce risks and improve efficiency in the use of natural resources. MEAP consists of five pillars: environmental management system; water and wastewater management; solid waste; energy management; and environmental wider impact.

3. Security Council resolution 2429 (2018) of 13 July 2018 authorized a drawdown and reconfiguration of UNAMID. At the time of the audit as of 30 June 2019, 27 team sites were closed and the Mission was expected to close an additional 10 team sites, three sector headquarters and its super camp, as well as take measures to minimize the environmental impact of its footprint on local communities and ecosystem before its closure scheduled for 2020.

4. The Occupational Safety and Environmental Unit (OSEU) of UNAMID is responsible for coordinating with the Head of Mission, Director of Mission Support (DMS), Force Commander, Police Commissioner and chiefs of implementing sections/units every six months to review the implementation of MEAP and its performance against established indicators. The Unit is headed by an Environmental Officer at the P-3 level, who reports to the DMS through the Senior Administrative Officer in the Office of Mission Support and is supported by one national professional officer. UNAMID allocated \$2,406,600 and \$434,740 for environmental management activities through various technical units in 2017/18 and 2018/19, respectively.

5. Comments provided by UNAMID are incorporated in italics.

II. AUDIT OBJECTIVE, SCOPE AND METHODOLOGY

6. The objective of the audit was to assess the adequacy and effectiveness of UNAMID's environmental plans, actions and systems to ensure efficient use of natural resources and minimize risks to personnel, local communities and ecosystems.

7. This audit was included in the 2019 risk-based work plan of OIOS due to operational, health and reputational risks relating to poor environmental practices.

8. OIOS conducted this audit from January to June 2019. The audit covered the period from 1 July 2017 to 31 December 2018. Based on an activity-level risk assessment, the audit covered higher and medium risk areas in the implementation of the environmental action plan, which included the five-pillars of MEAP.

9. The audit methodology included: (a) interviews of key personnel; (b) reviews of relevant documentation; (c) analytical reviews of data; and (d) visits to 5 of the 17 Mission sites in Nyala, Zalingei, Golo, Kabkabyia and El Fasher.

10. The audit was conducted in accordance with the International Standards for the Professional Practice of Internal Auditing.

III. AUDIT RESULTS

A. Environmental management system

Need to develop an environmental strategy tailored to the Mission's drawdown and pending liquidation and monitor implementation of planned environmental actions and projects

11. As part of its environmental management system, UNAMID established an environmental compliance policy and standard operating procedures (SOPs) for solid waste management and waste oil disposal, designated an environmental officer, appointed environmental focal points for each contingent and formed police unit, developed a training module on environmental issues and conducted training for all Mission staff and uniformed personnel.

However, while MEAPs for 2017 and 2018 had been established, it was not based on a strategy 12. tailored for the drawdown phase and subsequent closure of the Mission. The lack of adequate planning and assigning of appropriate resources has impacted the Mission's ability to effectively consolidate and prioritize its environmental and operational activities during the drawdown phase. For instance, the Mission had planned 58 actions to be implemented by June 2019, including: (a) follow-up mechanisms for environmental inspections; (b) monitoring of ongoing environmental projects; (c) installation of water meters to monitor water consumption; and (d) separation of greywater and blackwater into separate treatment systems. Mission management had not been effectively monitoring the status and impact of these environmental actions, stating that there were other competing priorities, such as closing of team sites and at the same time managing the reduction in staffing levels. In addition, some of the suggested actions in the MEAP template, such as metering of generators and development of a mission specific energy infrastructure management plan and waste management plan may not be viable for UNAMID to invest in or implement due to the drawdown process. As a result, only 38 per cent of the MEAP actions have been implemented by the established due date, and the Mission had limited assurance that projects were achieving their environmental objectives.

(1) UNAMID should: (a) develop a consolidated environmental strategy tailored to the Mission drawdown and liquidation phase; and (b) regularly monitor implementation of planned environmental actions and projects.

UNAMID accepted recommendation 1 and stated that the earlier MEAP was limiting as prepopulated by the Rapid Environment and Climate Technical Assistant Team at the Global Service Centre in Brindisi (REACT) and some action points were not relevant to the Mission. Subsequent to the audit, discussions were held with REACT and the MEAP was amended to remove the prepopulated action points and allow missions to identify and document their own action points. The Mission's environmental action points within the December 2019 MEAP report will thus be tailored to suit the anticipated drawdown and liquidation. The Mission stated that regular monitoring and reporting on implementation of planned environmental actions and projects had previously been done through follow-ups, routine inspections, monthly joint Video-Tele-Conferences with United Nations Secretariat Headquarter, REACT and the United Nations Global Service Centre (UNGSC), and bi-annually MEAP reporting. These mechanisms will be used and enhanced to monitor the action points listed in the December 2019 MEAP. Recommendation 1 remains open pending receipt of evidence that UNAMID has tailored its MEAP to address all environmental issues during the drawdown and liquidation phase, and improved monitoring of planned actions and projects.

UNAMID provided environmental awareness briefings and trainings to Mission personnel

13. UNAMID, in order to create awareness on environmental issues, sent regular email broadcasts and displayed posters to encourage environmentally friendly practices in the Mission. OSEU had systematically provided briefings during induction training to new arrivals on subjects such as waste segregation, reduction of paper consumption and prudent use of energy. UNAMID also provided training to contingent and formed police unit environmental focal points to strengthen their capacity for the function. The Mission held events such as the World Water Day, World Day to Combat Desertification and Drought and the World Environmental Day and planted indigenous trees and plants to aid reforestation. While UNAMID management was active in creating awareness among Mission personnel on environmental practices, there were still weaknesses in waste handling and disposal as discussed later in this report.

Regular annual environmental inspections were not conducted

14. UNAMID is required to conduct environmental inspections of all sites at least annually and follow up on the implementation of the recommendations.

15. OSEU was not conducting regular environmental inspections of Mission sites. For instance: (a) in 2016/17, 5 of the 37 sites were inspected; (b) in 2017/18, 14 of the 27 sites were inspected; and (c) in 2018/19, 10 of the 17 sites were inspected. OIOS estimated that between July 2017 and January 2019, OSEU issued 100 recommendations, but these were not tracked and assigned to responsible units to implement, and OSEU did not systematically follow up on their status, thus action had not been taken to address them. Th recommendation included discontinuance of the open burning of waste, addressing inadequate discharge of untreated wastewater in Zalingei and reducing oil spillage from generators.

16. The above occurred because Mission management did not properly task OSEU to: (a) prepare an annual inspection plan based on its staffing capacity; and (b) implement a mechanism to monitor and report to management on action taken to implement recommendations to address environmental risks. As a result, the Mission was not acting timely and adequately on environmental issues, impacting the effectiveness of MEAP implementation and thus exposing the Mission to continual health and safety risks and environmental damage. Subsequent to audit fieldwork, the Mission has developed an annual inspection plan for all sites.

(2) UNAMID should establish a mechanism to monitor implementation status of environmental recommendations and assign units responsible for their implementation as well as target dates for completion.

UNAMID accepted recommendation 2 and stated that an Environmental Assessment Corrective Action Plan follow-up matrix was being developed for the monitoring of implementation status of any environmental related recommendations. Recommendation 2 remains open pending receipt of a copy of the monitoring matrix including units responsible and the implementation target dates.

Need to improve accuracy of the reported environmental performance data

17. UNAMID is required to submit its MEAP and related performance data to the Department of Operational Support every six months. Additionally, the Mission is required to provide indicative plans to be incorporated in the budget submission for the subsequent fiscal year.

18. During the audit period, the Mission submitted its MEAP reports in a timely manner, but OIOS noted the following inaccuracies:

- Hazardous waste was co-mingled with other solid waste in landfills in Nyala and Zalingei and had not been disposed of in any of its landfills as reported in the MEAP;
- MEAP reported that the Mission maintained an inventory of hazardous materials and waste held at all locations, but there was no documented evidence to support this;
- Rough estimates of water consumption rates and ground water extraction levels were reported instead of actual data, and the methodology applied was not reasonably supported or disclosed in the MEAP;
- Twenty-six wastewater treatment plants (WWTPs) were reported as operational, whereas only 16 were operational during the OIOS site visits; and
- The Mission reported having implemented adequate measures such as installation of grease traps at all locations to manage grey water, but grey water was being discarded in garbage bins or buried in sand because of a lack of grease traps.

19. The above occurred because OSEU was compiling the data for the MEAP reports based on the information submitted by technical units, but without proper independent verification, and also, the Mission used different calculation methods from the ones required by MEAP. The Division of Mission Support also did not monitor the adequacy of data verification and MEAP reporting process. Inaccurate environmental performance data may reduce the Mission's ability to make informed decisions on environmental matters.

(3) UNAMID should implement measures to ensure accuracy of the data reported in the Mission-wide Environmental Action Plan.

UNAMID accepted recommendation 2 and stated that on 7 August 2019, Officer-in-Charge Mission Support Division had approved UNAMID directive on the MEAP data quality checks mechanism. On 8 August 2019, OSEU had circulated the approved UNAMID directive on MEAP data quality checks mechanism to Service, Section and Unit Chiefs responsible for MEAP data collection and reporting. On 25 August 2019, OSEU reminded responsible technical section/unit chiefs for implementation. Based on the actions taken by UNAMID, recommendation 3 has been closed.

B. Water and wastewater

The Mission put in place compensating measures to monitor water consumption

20. UNAMID is required to establish a water supply concept and water conservation programme to provide strategic and operational direction to manage water supply options in field locations. The Mission is also required to monitor its water abstraction and water consumption and implement measures to conserve water and mitigate environmental risks related to long-term sustainability of water resources.

21. The Mission had installed meters at most of its main water sources and established a mechanism to recycle and reuse wastewater for irrigation, vehicle and generator washing, and construction works. To conserve water, the Mission was rationing water supplied in camps with availing water at certain hours of the day. To prevent water evaporation, thousands of trees were planted across the Mission, and a treated water injection well was built in El Fasher in 2017 to discharge treated wastewater underground to recharge the root zone of the Mission's tree plantations.

22. However, due to limited resources and competing priorities, the Mission had not installed meters at any of the water consumption points such as accommodations, ablutions and kitchens, and therefore could not accurately monitor its water consumption. The Mission installed a smart meter for one well in El

Fasher and had methods of monitoring groundwater levels in Nyala and Zalingei, as well as an electronic groundwater monitor well in El Fasher. However, the Mission did not regularly abstract water meter readings in these three locations, citing inadequate capacity.

23. None of the other locations visited had meters for monitoring groundwater level; however, the Mission had installed right-sized capacity water pumps usually calibrated at 75 per cent of the borehole yield capacity and these were equipped with automated sensors to prevent over-abstraction at all locations and this was the basis used in estimating consumption data in line with the DFS guidelines. UNGSC confirmed that this was in line with its guideline. UNAMID and UNGSC also confirmed that the groundwater monitoring programme in peacekeeping missions was still under development and that UNAMID was the only mission piloting the programme in collaboration with the Centre. An effective groundwater and aquifer water level monitoring programme was expensive and it was considered not useful to incur this expenditure at this stage of the Mission.

Need to improve wastewater management

24. To mitigate environmental and health risks and prevent discharge of untreated wastewater into the environment, UNAMID is required to install and maintain WWTPs at Mission's camps/sites to treat its wastewater; conduct laboratory testing of its effluent; and regularly inspect pipes, tanks, wastewater treatment systems and disposal sites. The Mission had installed 43 WWTPs covering all Mission locations and had sufficient spare parts for their repair and maintenance. OIOS inspected 32 WWTPs and observed the following:

- The two WWTPs in Golo did not work properly resulting in untreated wastewater being discharged outside the camp to the surrounding area;
- One of the three WWTPs in Nyala was not functioning because its power line had been stolen months prior to the OIOS visit;
- Six of the 11 WWTPs in Zalingei were not functioning and 40 cubic liters of untreated wastewater were discharged on a weekly basis outside of the camp next to the tipping site that was being used for other types of waste. The Sector Engineer decided to treat water from one of the non-functioning plants using an outdated filtering system without informing Mission management. This method was ineffective, and the untreated wastewater discharged from the old filter system was dark brown and emitted a strong odor.
- One overflowing septic tank and leakage from ablutions at the Ethiopian camp were observed in Zalingei;
- In Kabkabyia, one of the two WWTPs was not functioning and the effluent from another WWTP was dark brown and emitted a strong odor. The effluent was not sent to the holding tanks installed but discharged by pipes through the camp's fencing to the surrounding area;
- UNAMID did not separate black and grey wastewater in any of its locations, contrary to the Mission's MEAP reporting that had reported that there was proper separation of grey and black water; and
- Commercial and contingent kitchens had not installed grease traps, contrary to the Mission's MEAP reporting. However, UNAMID had installed WWTPs that can handle both black and grey water.

25. The above happened because the Mission did not regularly inspect WWTPs and surroundings to maintain and repair WWTPs and clean-up affected areas. As a result, UNAMID personnel and the local population in some locations continued to be exposed to health and safety risks.

(4) UNAMID should regularly inspect, repair and maintain all wastewater treatment plants and equipment and clean-up areas affected by untreated wastewater discharge.

UNAMID accepted recommendation 4 and stated that controls had been put in place to promptly identify and report mal-functioned plants to facilitate timely repairs. Water and Environmental Protection (WEP) had developed a reporting template to be used by WEP officers at each team site to be submitted to the Engineering Section in El Fasher on a weekly basis. Where repairs cannot be conducted by WEP staff, a request for materials and work force would be reported. For severe malfunctions/urgent breakdowns requiring immediate intervention, camp managers were encouraged to communicate to the Chief Engineer through email or telephone. Upon the receipt of information, technicians would be deployed immediately to undertake any necessary repairs. Recommendation 4 remains open pending receipt of evidence that the Mission conducted regular inspections and repairs of all WWTPs and carried out the clean-up of the affected areas.

Need to improve potable and non-potable water and treated wastewater testing and storage

26. To minimize health and safety risks to Mission personnel and damage to the local environment, the Mission is required to regularly test water quality and regularly inspect pipes and water storage systems. This includes non-potable water sourced from boreholes, commercial vendors and municipalities which are subsequently treated to produce potable water. Such water is required to be tested daily in compliance with the World Health Organization's (WHO) drinking water guidelines and weekly for full chemical tests.

27. In El Fasher: (a) the required daily testing of potable water was done sporadically with poor record keeping; and (b) there was no evidence of conducting the required weekly full chemical tests during 11 of the 12 weeks reviewed. The Mission also did not have a schedule to regularly test the chlorine levels in non-potable water and had evidence only for a dozen of sporadic tests performed during the audit period. Additionally, review of treated wastewater effluent testing records in El Fasher for three months showed that the Mission did not maintain complete records. Of the required 32 monthly testing records, only 5 were available, all showing higher chemical oxygen demand (COD) and biochemical oxygen demand (BOD) results than recommended by WHO standards.

28. In Zalingei, record keeping was poor, and therefore OIOS was unable to determine if testing was conducted regularly. There were no reagents to test wastewater for COD and BOD. In Nyala, records showed that testing was only conducted every two to three weeks instead of weekly. There were no reagents for wastewater testing in September 2017, from February to August 2018 and in January 2019 due to slow procurement and delays in customs clearance. The Engineering and Environment Protection Section (EEPS) stated, that due to a lack of manpower, testing was not done in any team site.

29. During site inspections, OIOS observed leakages from water pipes, storage facilities and ablution facilities as well as overflowing tanks in all locations. Water abstracted from boreholes was stored mostly in bladders instead of tanks which were prone to leakage and not easy to clean. Treated wastewater was mostly collected in tanks that were not covered and showed signs of microorganism growth. Although EEPS recruited a plumber in every team site to repair and maintain the water systems, the above occurred due to inadequate monitoring of the work executed by staff. As a result, there were health and safety risks to Mission personnel and waste of water due to the leakages and overflows.

(5) UNAMID should take action to ensure that: (a) laboratory testing of potable, non-potable and treated wastewater is conducted regularly; and (b) inspection and maintenance of pipes and water storage systems, such as water tanks and bladders is conducted regularly.

UNAMID accepted recommendation 5 and stated that testing of drinking water and treated wastewater were now done regularly in El Fasher and Zalingei. Several efforts had been made to get the water sample for testing from the team sites. The camp managers had been instructed to send water samples regularly for testing. The Engineering Section had envisaged that the required logistical arrangements would be finalized to facilitate regular testing of water samples from team sites on a regular basis. The steel tanks had been installed in all those priority locations and UNAMID had no other planned construction of steel tanks. The leakages from the bladders, storage tanks and pipelines had been monitored and actions taken for any repair works in El Fasher and team sites. Recommendation 5 remains open pending receipt of evidence of the regular testing of potable and non-potable water at all locations and the bladders in priority locations have been replaced with steel tanks and the leakage control mechanism was functional and effective.

C. Solid waste

Procedures for disposal of waste needed to improve

30. UNAMID is required to develop and implement a waste management plan to properly control and reduce waste and its impact on the environment. OIOS field visits showed that:

- Hazardous and non-hazardous waste was mixed and dumped together at the same tipping site; and organic waste was not separated and composted, which can lead to the spread of vectors and attract wildlife.
- Mass scavenging took place at all external tipping sites because the sites were not properly secured. Dead animals were also witnessed at the sites in Nyala and Zalingei.
- Continued open burning of waste was observed at all sites visited, except El Fasher, despite the Mission reporting in the MEAP that open burning had been discontinued.
- In one location, United Nations official documents, such as personnel files were dumped at the tipping site without shredding.
- UNAMID used garbage skips for waste collection in selected locations. The garbage collection trucks transported the skips directly to the tipping site in Zam Zam without passing through the Mission's internal waste collection point, and UNAMID had no control over the contents of the skips.
- Waste, scrap and construction materials, including hazardous waste (air conditioners, florescent lights, oil filters, and chemicals) were littered around the camps at all locations. Piles of contingent-owned equipment waste and scrap were also observed littered in contingents' camps.

31. The above occurred because of lack of engineered landfill and recycling facilities. As a result, the Mission had difficulty to effectively control and reduce the amount of disposable waste. Following an assessment by the REACT Team in September 2018, the REACT team issued a report in October 2018 that recommended for the Mission to procure and install high capacity incinerators. The Mission successfully conducted a bid for the same and a contract was awarded in May 2019 following which the supplier shipped

the incinerators. However, as at the time of the audit, the incinerators were yet to be cleared by Government of Sudan and were still stuck at the port. Subsequent to the audit fieldwork, UNAMID also engaged a new solid waste collection contractor to transfer the waste from the collection point to the tipping site, including sorting and inspecting the waste.

(6) UNAMI should expedite the installation of heavy-duty incinerators and prevent open burning of waste.

UNAMID accepted recommendation 6 and stated that the large capacity incinerators were under customer clearance at Port Sudan. Once cleared from Sudanese Customs and delivered at site, they would be installed. Regarding open burning, the instructions were given to camp managers to stop open burning. As an alternative measure, Engineering Section had commissioned excavation of garbage pits in the few team sites that lacked adequate waste disposal measures. Recommendation 6 remains open pending receipt of evidence that the incinerators have been installed and functional and open burning of garbage has ceased or mitigated.

Need to improve handling and disposal of hazardous waste

32. To mitigate environmental risks, the Mission is required to properly segregate hazardous waste such as used batteries, tires, petroleum oil and lubricants, scrap metals and electronic items prior to disposing of them in an environmentally friendly manner.

33. UNAMID established contracts with three vendors for the disposal of tires, batteries, scraps and filters in 2017 and contracts with two vendors for disposal of toner cartridges and collection of used oil/lubricants. Even though UNAMID had established mechanisms to segregate, collect and store hazardous waste, OIOS observed batteries, used tires, fuel/oil filters, toner cartridges, fridges, microwaves, fluorescent tubes and solvents scattered around the camp and commingled with other non-hazardous waste in the tipping sites in all visited locations, except El Fasher.

34. The Mission had no disposal contract for electronic waste (e-waste), and large amounts were accumulated in all locations and had not been disposed of since inception of the Mission. In sectors and team sites, e-waste was stored in containers and has not yet been shipped to El Fasher Property Disposal Unit. There were approximately 40 shipping containers filled with e-waste in the disposal yard in El Fasher alone, but there were no inventory records of the content and no reliable estimation of the amount of e-waste in other Mission locations. This occurred because of delays in procuring services of e-waste disposal contractor, and poor inventory management throughout the life of the Mission. There was also limited guidance and oversight of sites to ensure appropriate disposal of hazardous materials.

35. Almost none of the contingent generators had proper ground coverings leading to soil contamination. Out of 33 inspected United Nations-owned equipment generator sites in five locations, only 10 were placed on proper concrete slaps for the used oil and oil/water separators and had bonded fuel tanks. The 23 remaining sites had either no concrete slaps, no oil spill containment walls, broken slaps, no bonded fuel tanks, no oil/water separator or leaking fuel lines. This contributed to contamination of soil around the generator power sites and used oil storage areas. Furthermore, dumping of used oil and air filters was also observed in Zalingei and Nyala. Contaminated soil and improper storage of used oil was observed in the transport workshops in all five locations visited. While the Mission affirmed the need to ensure prevention of fuel spillage, it would not have enough time and resources to undertake construction of concreate slabs at all the generator sites. Therefore, only maintenance works may be required at this stage.

(7) UNAMID should, in coordination with the Global Procurement Support Section in Entebbe, expedite the procurement of electronic waste disposal services to ensure disposal of hazardous waste in an environmentally friendly manner.

UNAMID accepted recommendation 7 and stated that due to lack of capacity in the Procurement Section, UNAMID requested the Regional Procurement Office (RPO) in Entebbe to assist them in procuring an e-waste contractor in May of 2018, and with the assistance of the contractor planned to begin the disposal of e-waste prior to closure of sector headquarters, beginning in April 2019. Since then, the Mission had made numerous follow ups with the RPO, and on 9 September 2019, the case was submitted to the Headquarter Committee on Contracts (HCC). However, the latest information received from the Global Procurement Support Section was that they were still waiting for the signed minutes of the HCC. However, UNAMID would continue to follow up with the RPO until completion of the process. The Mission was also in discussions with the REACT team on alternative measures should the bidding process for the e-waste contract fail. Recommendation 7 remains open pending receipt of evidence that the electronic waste and other hazardous waste were appropriately disposed of.

(8) UNAMID should excavate contaminated soil for treatment and replacement with fresh soil.

UNAMID accepted recommendation 8 and stated the bioremediation of oil contaminated soil had been a major and mandatory part of environmental clean-up activities before closure of any camp. In all team sites and sector headquarters so far closed, the oil contaminated soil was removed and treated through bio-remediation process, while the excavated soil was replaced with fresh soil. Mission would ensure that soil remediation was done prior to the handover of each site. The process for treatment of contaminated soil in remaining team sites had been on-going and the rest of the team sites will be followed as per environmental clean-up plan. Based on the past actions taken by UNAMID and the mandatory clean-up activities required before the closure of the Mission to be reviewed as part of a future OIOS audit, recommendation 8 has been closed.

Need to ensure proper disposal of medical waste

36. UNAMID is required to dispose of medical waste through incineration or other suitable methods, to prevent immediate and future danger to personnel and the local population.

37. OIOS field visits to 12 medical facilities showed that all facilities had clearly marked containers for sharp objects and needles and bins for infectious medical waste. However, while there were staff in the locations visited to operate the incinerators, at the time of the audit, only 3 of the 12 facilities had working incinerators to dispose the biomedical waste. Also, the following was noted:

- Eleven out of 12 facilities did not keep appropriate records of all medical waste produced and incinerated making it difficult to monitor proper disposal;
- In Zalingei, medical waste was placed in ripped, unmarked plastic bags (containing sharp objects and bloody gauze) in front of the incinerator and medical waste was scattered around the site including drugs;
- Hazardous medical ashes were disposed together with other types of waste in the respective tipping sites, except for El Fasher, which used to encapsulate ashes in metal drums located around the camp

site. At the time of the audit, approximately four tons of medical ashes were being stored in a sea container next to the incinerator awaiting disposal post encapsulation;

- All other UNAMID locations did not have incinerators and the medical waste was either burned in open drums or dumped in the tipping sites with the general waste;
- Zalingei, Nyala and El Fasher tipping sites showed large amounts of medical waste including pharmaceuticals. Both offsite tipping sites in Zalingei and El Fasher were also used by the municipality, therefore, OIOS was not able to determine the origins of the waste. Both sites had scavengers and children present which posed health and safety risks to the local population and reputational risk to UNAMID; and
- Incinerators inspected in Kabkabyia and Zalingei showed signs of heavy wear and tear, and there were no maintenance records available for any of the incinerators in place.

38. The above was mainly because the Mission did not have enough functional incinerators and alternatives, such as transporting medical waste to the locations with adequate facilities, for medical waste due to ineffective maintenance. Poor or inadequate medical waste management practices could result in serious environmental safety and occupational health issues.

(9) UNAMID should take steps to repair and maintain incinerators for medical waste or establish alternative measures to ensure all medical waste in all locations is collected, stored and disposed of in a safe manner.

UNAMID accepted recommendation 9 and stated that the Engineering Section had conducted an easement of all medical incinerators in the remaining team sites and identified malfunctioning incinerators that are serviceable and those that were non-serviceable. The Engineering Section would engage the Medical Section in requisitioning spare parts to execute repairs. As the Mission did not plan on procuring additional incinerators for medical waste, the Engineering Section in collaboration with the Medical Section would affirm alternative disposal methods for medical waste. Recommendation 9 remains open pending receipt of evidence that all locations have either a functioning incinerator or have alternative procedures in place for safe disposal of medical waste.

D. Energy management

Mission was managing its energy demand effectively

39. The Mission is required to conduct a comprehensive energy consumption and production analysis at key sites and establish a mission-specific energy management plan to effectively and efficiently manage its energy demand. Additionally, the Mission is required to minimize its greenhouse gas emissions while ensuring enough power for operations.

40. UNAMID had conducted energy production and consumption analysis for all its locations but these figures were calculated using the capacity of the generators and the running hours per day instead of direct measurement from energy meters. The calculation method and savings achieved were approved by REACT. The Mission had prepared a list of ongoing and planned projects related to energy management. Additionally, the Mission requested assistance of REACT to complete the new energy management plan considering the drawdown phase.

41. To reduce energy consumption, UNAMID installed energy efficient air conditioning units, replaced conventional lights with light emitting diode lighting, and gravity flow water supply systems. The Mission also established generator synchronization and right-sizing projects. All generators in the Mission were right-sized and all United Nations-owned equipment generators in El Fasher were synchronized. An analysis done by the Mission showed that the synchronized operating system brought about a reduction in annual fuel costs of \$2.4 million during 2017/18.

42. UNAMID also implemented projects such as centralized power stations, installation of different types of solar systems, such as 14 solar plants, 131 solar water heaters, 5 solar water pumping systems, 5 gravity water supply systems, and 2,010 solar streetlights, and replaced its old generators with energy efficient ones. The Mission estimated that with the installation of solar products, it has achieved savings in fossil fuel from both the gravity system and the solar power of around \$179,000. OIOS concluded that UNAMID had made good efforts to conserve energy.

E. Wider impact

Need to conduct environmental screening of new projects and formal outreach with the local communities

43. UNAMID is required to assess potential environmental impact of all projects; conduct baseline studies for all new sites; and restore, as much as possible, all vacated Mission sites to their original environmental condition with proper documentation. The Mission is also required to engage with communities and integrate their concerns and priorities related to the environmental impact of the Mission.

44. UNAMID had established standard operating procedures on team site closure that adequately identified necessary tasks and responsible units. OIOS review of environmental clean-up activities showed that the Mission had prepared clean-up reports and obtained the necessary environmental clearance certificates from the Government of Sudan for all 24 sites vacated between 2017 and 2019. During the audit period, UNAMID conducted two environmental baseline studies. While due to other operational priorities, no assessments and studies were conducted during the start-up phase when taking over Mission locations from the previous African Union Mission, the Mission conducted comprehensive pre-closure assessments that included visits to all closing locations to identify the remediation measures, as well as obtaining the required environmental clearance certificates upon vacating the sites.

45. UNAMID did not conduct required screening to assess environmental impact of new projects undertaken by the Mission. Although OSEU was part of the Project Review and Approval Committee, the Environmental Officer only participated in four of nine meetings during the audit period. Also, the Governance and Community Stabilization Section, which was responsible for administering programmatic funds and projects, had requested guidelines and a checklist for environmental screenings from OSEU to no avail. OSEU stated that screenings were done by EEPS for projects related to water and sanitation only; but there was no evidence to support this. Inadequate environmental screenings were due to the lack of oversight and prioritization from the Division of Mission Support. Also, there were no clear guidance and coordination between OSEU and EEPS on environmental screening of projects. This adversely impacted the Mission's effectiveness in preventing environmental, occupational health and reputational risks.

46. During the audit period, UNAMID has implemented environmentally supportive projects in local communities such as installation of solar panels to produce solar power for police and government institutions, installation of ablutions for police and prisons and improved access to drinking water at UNAMID boreholes. In its 2019/20 budget, UNAMID has allocated \$34 million of programmatic funds to support the state liaison function activities, including various construction projects with environmental impact. The Mission had also conducted brick making and tree planting campaigns, trained local

communities on composting and recycling, and provided training to local municipal solid waste management staff on proper disposal practices. However, there was no formal mechanism for UNAMID to address concerns of local communities related to the Mission's presence. The Mission reported in the MEAP that it had reached out to local communities through consultative surveys; but there was no evidence to support this. The lack of formal outreach to local communities on environmental issues could negatively impact the reputation of the Mission. UNAMID stated that it was in the process of formalizing procedures to address community concerns, therefore OIOS did not make a recommendation on this.

(10) UNAMID should: (a) establish and disseminate guidelines on the environmental screening of any new projects; and (b) act to improve coordination between the Occupational Safety and Environmental Unit and the Engineering and Environment Protection Section and ensure environmental screening is conducted for all upcoming construction projects supporting the state liaison function.

UNAMID accepted recommendation 10 and stated that DOS promulgated SOPs on Environmental Impact Assessment (EIA) for United Nations field missions and disseminated for implementation to field missions in 9 May 2019. At the Mission level, the same code cable and SOP were circulated by the Office of the Director of Mission Support to all responsible managers for implementation. Environmental screening is one of the elements of an EIA included in this SOP and the Mission has adopted the DOS SOP on EIA. Recommendation 10 remains open pending receipt of evidence that all new approved projects were subject to an environmental screening.

IV. ACKNOWLEDGEMENT

47. OIOS wishes to express its appreciation to the management and staff of UNAMID for the assistance and cooperation extended to the auditors during this assignment.

(*Signed*) Eleanor T. Burns Director, Internal Audit Division Office of Internal Oversight Services

STATUS OF AUDIT RECOMMENDATIONS

Rec. no.	Recommendation	Critical ¹ / Important ²	C/ O ³	Actions needed to close recommendation	Implementation date ⁴
1	UNAMID should: (a) develop a consolidated environmental strategy tailored to the Mission drawdown and liquidation phase; and (b) regularly monitor implementation of planned environmental actions and projects.	Important	0	Receipt of evidence that UNAMID has tailored its MEAP to address all environmental issues during the drawdown and liquidation phase, and improved monitoring of planned actions and projects.	31 January 2020
2	UNAMID should establish a mechanism to monitor implementation status of environmental recommendations and assign units responsible for their implementation as well as target dates for completion.	Important	0	Receipt of a copy of the monitoring matrix including units responsible and the implementation target dates.	31 January 2020
3	UNAMID should implement measures to ensure accuracy of the data reported in the Mission-wide Environmental Action Plan.	Important	C	Action taken	Implemented
4	UNAMID should regularly inspect, repair, and maintain all wastewater treatment plants and equipment and clean-up the areas affected by untreated wastewater discharge.	Important	0	Receipt of evidence that the Mission conducted regular inspections and repairs of all WWTPs and carried out the clean-up of the affected areas.	31 January 2020
5	UNAMID should take action to ensure that: (a) laboratory testing of potable, non-potable and treated wastewater is conducted regularly; and (b) inspection and maintenance of pipes and water storage systems, such as water tanks and bladders is conducted regularly.	Important	0	Receipt of evidence of the regular testing of potable and non-potable water at all locations and the bladders in priority locations have been replaced with steel tanks and the leakage control mechanism was functional and effective.	31 January 2020

¹ Critical recommendations address critical and/or pervasive deficiencies in governance, risk management or control processes, such that reasonable assurance cannot be provided with regard to the achievement of control and/or business objectives under review.

² Important recommendations address important (but not critical or pervasive) deficiencies in governance, risk management or control processes, such that reasonable assurance may be at risk regarding the achievement of control and/or business objectives under review.

 $^{^{3}}$ C = closed, O = open

⁴ Date provided by UNAMID in response to recommendations.

STATUS OF AUDIT RECOMMENDATIONS

Rec. no.	Recommendation	Critical ¹ / Important ²	C/ O ³	Actions needed to close recommendation	Implementation date ⁴
6	UNAMID should: (a) expedite the installation of heavy-duty incinerators; (b) prevent open burning of waste; and (c) ensure that all garbage is inspected at the internal waste collection point prior to transportation to the tipping site.	Important	0	Receipt of evidence that the incinerators have been installed and functional and open burning of garbage has ceased or mitigated.	30 June 2020
7	UNAMID should, in coordination with the Global Procurement Support Section in Entebbe, expedite the procurement of electronic waste disposal services and enhance oversight to ensure disposal of hazardous waste in an environmentally friendly manner.	Important	0	Receipt of evidence that the electronic waste proposal and other hazardous waste are appropriately disposed of.	31 March 2020
8	UNAMID should excavate contaminated soil for treatment and replacement with fresh soil.	Important	C	Action taken	Implemented
9	UNAMID should take steps to repair and maintain incinerators for medical waste or establish alternative measures to ensure all medical waste in all locations is collected, stored and disposed of in a safe manner.	Important	0	Receipt of evidence that all locations have either a functioning incinerator or have alternative procedures in place for safe disposal of medical waste.	31 March 2020
10	UNAMID should: (a) establish and disseminate guidelines on the environmental screening of any new projects; and (b) act to improve coordination between the Occupational Safety and Environmental Unit and the Engineering and Environment Protection Section and ensure environmental screening is conducted for all state liaison function construction projects.	Important	0	Receipt of evidence that all new approved projects were subject to an environmental screening.	31 December 2019

APPENDIX I

Management Response

Rec. no.	Recommendation	Critical ⁵ / Important ⁶	Accepted? (Yes/No)	Title of responsible individual	Implementation date	Client comments
1	UNAMID should: (a) develop a consolidated environmental strategy tailored to the Mission drawdown and liquidation phase; and (b) regularly monitor implementation of planned environmental actions and projects.	Important	Yes	Environmental Protection Officer	31 January 2020	The Mission concurs with the findings while noting that, the earlier Mission Environmental Action Plan (MEAP) was limiting as it was previously pre- populated by the Rapid Environmental and Climate Technical (REACT) team. As such, some of the action point included were not relevant to the mission. Subsequent to the audit, discussions were held with the REACT team and the MEAP was amended to remove the pre-populated action points and allow the missions to identify and document their own action points. The Mission's environmental action points within the December 2019 MEAP report will thus be tailored to suit the anticipated drawdown and liquidation. The MEAP will remain as the primary environmental strategy document for the UNAMID. However the Mission notes that Regular monitoring and reporting on implementation of planned environmental actions and projects has been done in the past through follow-ups, routine inspections, monthly joint Video Tele Conference with UN Secretariat Headquarters, REACT and UN Global Service Centre (GSC), and bi-annually MEAP reporting. These mechanisms will be used and enhanced to monitor the action points listed in the December 2019 MEAP.
2	UNAMID should establish a mechanism to monitor implementation status of environmental recommendations and	Important	Yes	Environmental Protection Officer	31 January 2020	An Environmental Assessment Corrective Action Plan (EACAP) follow-up matrix is being developed and will be used for monitoring of implementation status of any

⁵ Critical recommendations address critical and/or pervasive deficiencies in governance, risk management or control processes, such that reasonable assurance cannot be provided with regard to the achievement of control and/or business objectives under review.

⁶ Important recommendations address important (but not critical or pervasive) deficiencies in governance, risk management or control processes, such that reasonable assurance may be at risk regarding the achievement of control and/or business objectives under review.

Rec. no.	Recommendation	Critical ⁵ / Important ⁶	Accepted? (Yes/No)	Title of responsible individual	Implementation date	Client comments
	assign units responsible for their implementation as well as target dates for completion.					environmental related recommendations. In the case of Troops and Police Contributing Countries' (T/PCC) camps, recommendations will be sent to and followed-up with Mission's Force Headquarters (FHQ) and police environmental focal points, whereas for Mission Support Accommodation (MSA) camps, recommendations will be sent to and followed-up with the respective Service and Sections Chiefs
3	UNAMID should implement measures to ensure accuracy of the data reported in the Mission-wide Environmental Action Plan.	Important	Yes	Environmental Protection Officer	Implemented	On 7 August 2019, Officer in Charge Mission Support Division (MSD) approved UNAMID directive on MEAP data quality checks mechanism. On 8 August 2019, Occupation Safety and Environmental Unit (OSEU) circulated the approved UNAMID directive on MEAP data quality checks mechanism to Service, Section and Unit Chiefs responsible for MEAP data collection and reporting. On 25 August 2019, OSEU reminded responsible technical Section/Units Chief for implementation. Therefore, UNAMID recommend OIOS to close this recommendation.
4	UNAMID should regularly inspect, repair, and maintain all wastewater treatment plants and equipment and clean-up the areas affected by untreated wastewater discharge.	Important	Yes	Chief Engineering and Environment Protection Section	Implemented	The repair of non-functioning Waste Water Treatment Plants (WWTPs) has been an on- going activity as the plants can break down anytime. However, necessary controls have been put in place to ensure prompt identification and reporting of any mal- functioned plants thus facilitating timely repairs to be conducted.

Rec. no.	Recommendation	Critical ⁵ / Important ⁶	Accepted? (Yes/No)	Title of responsible individual	Implementation date	Client comments
						The following mechanism has been enhanced to report on the functionality the WWTP in order to take timely action on any required repairs: <i>i)</i> Water and Environmental Protection (WEP) Unit has developed a reporting template on environmental matters to be used by the WEP officers at each team site. The report is prepared and submitted to Engineering Section in El Fasher on a weekly basis. The report amongst other items provides status of functionality of WWTP and where repairs cannot be conducted by the WEP staff on the ground, a request for materials and work force is reported using the same report. <i>ii)</i> For severe malfunctions/urgent breakdowns requiring immediate intervention, camp managers are encouraged to communicate to the Chief Engineer through emails or telephone calls. Upon the receipt of information of any breakdowns, the technicians are deployed immediately to undertake any necessary repairs. The necessary effort and mechanism have been made to ensure all the WWTPs are being regularly maintained. UNAMID thus requests for closure of this recommendation.
5	UNAMID should take action to ensure that: (a) laboratory testing of potable, non-potable and treated wastewater is conducted regularly; and (b) inspection and maintenance of pipes and water storage systems,	Important	yes	Chief Engineering and Environment Protection Section	31 March 2020	 (a) The water quality testing for drinking water and treated waste water has been done since from the beginning of the mission with some irregularity. However, testing of drinking water and treated waste water are now being done regularly in El Fasher and

Rec. no.	Recommendation	Critical ⁵ / Important ⁶	Accepted? (Yes/No)	Title of responsible individual	Implementation date	Client comments
	such as water tanks and bladders is conducted regularly.					 Zalingei. Several efforts have been made to get the water sample for testing from the team sites. The camp managers have been instructed to send the water sample regularly to El fasher for testing. Engineering sections envisages that the required logistical arrangements will be finalized to facilitate regular testing of water samples from the team sites on a regular basis (at the very least monthly). (b) Initially, the priority locations for construction of steel tanks were given to 5 Sector Headquarters (SHQs) (El Fadher, Nyala, El Geneina, Zalingei and El Daein). However, due to the closure of the three SHQs, the locations were changed to include Golo, Nertiti and Kabkabiya instead of Nyala, El Geneina and El Daein. The steel tanks have been installed in all those priority locations. The mission has no other planned construction of steel tanks. The leakage from the bladders, storage tanks and pipe lines has been monitored and actions were taken for any repair works. In El Fasher, the leakage control campaign has started which includes identifying any malfunctioned facilities in the staff accommodations and offices, removing of some of the bladders and replacing of old bladders with a new ones. This exercise will be completed by January 2020.

Rec. no.	Recommendation	Critical ⁵ / Important ⁶	Accepted? (Yes/No)	Title of responsible individual	Implementation date	Client comments
						For team sites, the camp managers were instructed to report through weekly reports on the information about any leakage in their camp. WEP office in El Fasher is ready to assist any leakage related issues which the team sites cannot solve at their level. There are plumbers deployed in every team site to take care of any minor leakages.
6	UNAMID should expedite the installation of heavy-duty incinerators and prevent open burning of waste.	Important	Yes	Chief Engineering and Environment Protection Section	30 June 2020	The Large Capacity incinerators are under customer clearance at Port Sudan. Once they are cleared from Sudanese Custom and delivered at site, they will be installed. The mission envisages to have the installations completed by June 2020 however, this will be dependent on the timely port clearance of the incinerators by the Government of Sudan. Regarding open burning, the instructions were given to the Camp Managers to stop open burning. As an alternative measure, the mission's Engineering section has commissioned excavation of garbage pits in the few team sites that lack adequate waste disposal measures.
7	UNAMID should, in coordination with the Global Procurement Support Section in Entebbe, expedite the procurement of electronic waste disposal services to ensure disposal of hazardous waste in an environmentally friendly manner.	Important	Yes	Office of Division of Mission Support	31 March 2020	Due the Mission's lack of capacity in the procurement section, UNAMID requested the Regional Procurement Office (RPO) in Entebbe to assist in executing the bidding process for the e-waste contract (amongst other bids) in May of 2018. An initial plan of action with likely dates of completion of the tendering and award process was agreed upon with the RPO to enable the mission begin

Rec. no.	Recommendation	Critical ⁵ / Important ⁶	Accepted? (Yes/No)	Title of responsible individual	Implementation date	Client comments
						disposal of the e-waste prior to closure of the sector headquarters beginning in April 2019. Since then, the Mission has made numerous follow ups with the RPO on completion of the tendering process.
						On 9th September 2019, the case was submitted to the Headquarter Committee of Contract (HCC) by Global Procurement Support Section (GPSS) (formerly RPO) and deliberated upon on 13th September 2019. The latest information received from GPSS indicates that they are still waiting for the signed minutes of the HCC providing feedback on the case.
						UNAMID notes that the procurement process is being led and undertaken by the RPO and the Mission has little control or influence of the process and thus are not in a position to expedite the same. The Mission however will continue to follow up with the RPO until the eventual completion of the tendering process. The Mission is also in discussions with the REACT team on alternative measures should the bidding process for the e-waste contract fail.
8	UNAMID should excavate contaminated soil for treatment and replacement with fresh soil.	Important	Yes	Chief Engineering and Environment Protection Section	Implemented	The bio-remediation of oil contaminated soil has been a major and mandatory part of Environmental Clean up activities before closure of any camp. In all team sites and sector headquarters so far closed, the oil contaminated soil was removed and treated

Rec. no.	Recommendation	Critical ⁵ / Important ⁶	Accepted? (Yes/No)	Title of responsible individual	Implementation date	Client comments
						through bio-remediation process, while the excavated soil was replaced with fresh soil. The process for treatment of contaminated soil in remaining team sites has been on-going and currently it is being done in Khor Abeche and Shangil Tobaya. The rest of the team sites will be followed as per Environmental clean-up plan. Eventually the treatment of contaminated soil in all the locations will be done before each site is closed closure. The Mission thus affirms that adequate structures and mechanisms are in place to ensure that soil remediation is done in all sites. The Mission therefore request for closure of this recommendation.
9	UNAMID should take steps to repair and maintain incinerators for medical waste or establish alternative measures to ensure all medical waste in all locations is collected, stored and disposed of in a safe manner.	Important	yes	Chief Engineering and Environment Protection Section	31 March 2020	Engineering Section has conducted an easement of all medical incinerators in the remaining team sites and identified malfunctioning incinerators that are serviceable, as well as non-serviceable incinerators. Engineering section will engage Medical Section in requisitioning of spare parts for the serviceable incinerators after which Engineering will execute the repairs. As the mission does not plan on procuring additional incinerators for medical waste, Engineering section in collaboration with medical section will affirm alternative disposal methods for medical waste (e.g. accumulation and transportation of waste for

Rec. no.	Recommendation	Critical ⁵ / Important ⁶	Accepted? (Yes/No)	Title of responsible individual	Implementation date	Client comments
						incineration in other team sites that have functional incinerators).
10	UNAMID should: (a) establish and disseminate guidelines on the environmental screening of new projects; and (b) act to improve coordination between the Occupational Safety and Environmental Unit and the Engineering and Environment Protection Section and ensure environmental screening is conducted for all upcoming construction projects supporting the state liaison function.	Important	Yes	Environmental Protection Officer	Implemented	The mission notes that on 1 April 2019, Department of Operation Support (DOS) promulgated an SOP on Environmental Impact Assessment (EIA) for UN Field Missions. This document was further disseminated for implementation to field missions by USG Khare through a code cable # 0593 dated 9 May 2019. At mission level, the same code cable and SOP were circulated by the Office of DMS to all responsible managers for implementation. Environmental Screening is one of the elements of an EIA included in this SOP. Mission has adopted the DOS – SOP on Environment Impact Assessment that is also applicable to the screening of ongoing State Liaison Function (SLF) projects. Evidence of this process is available. In view of the above, the mission does not need to establish nor disseminate any new guidelines on the environmental screening of new projects. The Mission thus requests for closure of this recommendation.