INTERNAL AUDIT DIVISION

REPORT 2019/079

Audit of implementation of the environmental action plan in the United Nations Mission in the Republic of South Sudan

The Mission needed to improve the implementation of its environmental action plan to minimize environmental risks to personnel, local communities and ecosystems

27 August 2019
Assignment No. AP2018/633/10

Audit of implementation of the environmental action plan in the United Nations Mission in the Republic of South Sudan

EXECUTIVE SUMMARY

The Office of Internal Oversight Services (OIOS) conducted an audit of implementation of the environmental action plan in the United Nations Mission in the Republic of South Sudan (UNMISS). The objective of the audit was to assess the adequacy and effectiveness of the Mission's environmental action plan (MEAP) and systems in ensuring efficient and effective use of natural resources and minimizing environmental risks to personnel, local communities and ecosystems. The audit covered the period from 1 July 2017 to 31 December 2018 and included a review of the five pillars of MEAP comprising environmental management system, water and wastewater management, solid waste, energy management and wider impact.

The Mission needed to improve the implementation of its environmental action plan to minimize risks to personnel, local communities and ecosystems and achieve efficiency in its use of natural resources.

OIOS made ten recommendations. To address issues identified in the audit, UNMISS needed to:

- Ensure effective functioning of the environmental committees to assess and recommend measures to mitigate environmental risks, and implement all required measures for enhancing environmental management system;
- Ensure that the recommendations from environmental site inspections are specific and measurable and establish a mechanism to monitor the implementation status of environmental recommendations;
- Establish a monitoring mechanism to ensure accurate and complete MEAP performance data reporting;
- Develop a comprehensive water conservation programme and install water meters across the Mission to accurately measure water consumption and extraction to identify and minimize water wastage;
- Expedite the installation of additional wastewater treatment plants and improve repair and maintenance of wastewater treatment equipment;
- Provide suitable facilities and measures for the collection, segregation and storage of hazardous and non-hazardous waste at all sites and take necessary action to rehabilitate contaminated soil at affected sites;
- Implement measures to monitor that contractors dispose of waste only at government approved sites and sensitize and monitor contractors and contingents to properly transport and dispose waste;
- Prioritize the acquisition of services for recycling shredded plastic waste;
- Allocate resources to procure and install meters on all generators to monitor efficient use of energy, review and update its energy management plan, and expedite the rightsizing and synchronization of generators in all locations; and
- Assess current environmental conditions at the locations where the baseline studies had not been conducted to document their initial environmental status.

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

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Audit of implementation of the environmental action plan in the United Nations Mission in the Republic of South Sudan

I. BACKGROUND

1. The Office of Internal Oversight Services (OIOS) conducted an audit of implementation of the environmental action plan in the United Nations Mission in the Republic of South Sudan (UNMISS).

2. In line with the environmental strategy of the Department of Operational Support (DOS), UNMISS developed its Mission-wide Environmental Action Plan (MEAP) to assess and monitor its environmental activities 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 wider impact.

3. Effective October 2018, the Mission established the Environmental Management and Occupational Safety and Health Unit (EMOSHU) to coordinate the review of the performance status of MEAP with the Director of Mission Support (DMS) and other managers and to oversee implementation of its environmental activities. EMOSHU was headed by a Chief at the P-4 level, who was assisted by a national staff, reporting to the Chief of the Business Performance Management Section under the Office of the Deputy Director of Mission Support. The Environmental Engineering Unit (EEU) carried out day-to-day tasks of implementing MEAP. EEU had five staff, headed by the Chief Environmental Engineer at the P-4 level, who was assisted by four United Nations Volunteers, reporting to the Chief of the Engineering Section.

4. The approved operating budgets to implement environmental activities were $10.4 million, $8.5 million and $3.6 million in the periods 2016/17, 2017/18 and 2018/19, respectively. As at January 2019, UNMISS had a total of 4,140 civilians and 15,106 uniformed personnel deployed in 98 sites across 10 field offices belonging to the Mission's 18 locations.

5. Comments provided by UNMISS are incorporated in italics.

II. AUDIT OBJECTIVE, SCOPE AND METHODOLOGY

6. The objective of the audit was to assess the adequacy and effectiveness of UNMISS's environmental action plan and systems in ensuring efficient and effective use of natural resources and minimizing environmental risks to personnel, local communities and ecosystems.

7. This audit was included in the 2018 risk-based work plan of OIOS due to the risk that potential weaknesses in UNMISS environmental practices could have an adverse impact on the environment, health of local population and the Mission's operations and its reputation.

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 the MEAP.

9. The audit methodology included: (a) interviews with key personnel; (b) reviews of relevant documentation; (b) analytical reviews of data; and (c) visits to 30 of the 98 sites in 4 Mission locations of Malakal, Bentiu, Wau and Juba.

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 improve effectiveness of the Environmental management system

11. UNMISS was in the process of revising its environmental management system (EMS) to enhance the overall management of environmental risks. The Mission had developed environmental goals, objectives, roles, responsibilities and standards of conduct for relevant personnel in its MEAPs for 2017/18 and 2018/19. UNMISS had also developed adequate environmental policy, guidelines and standard operating procedures for the management of all five pillars of MEAP and appointed environmental focal points for all civilian and contingent sites.

12. UNMISS established the Mission Environment Management Committee (MEMC) on 21 August 2014 and 10 environmental field committees during 2017 to oversee the implementation of environmental management measures across the Mission. However, none of the 10 field environmental committees convened during the audit period to assess and recommend measures to mitigate environmental risks. MEMC convened one out of the required six quarterly meetings. This impacted effective discharge of their functions and ability to provide strategic guidance and oversight of the environmental management of the Mission.

13. As of May 2019, UNMISS had not fully implemented any of the 14 measures required in the MEAP and the 3 additional measures developed by the Mission to enhance its EMS. These measures included the need to: assess capacity of Mission personnel to fulfil environmental objectives and address any gaps; and ensure that causes of incidents and issues identified in site inspections and performance reporting are adequately analyzed and addressed. This was due to a lack of oversight over the implementation of planned EMS measures and inadequate structure and staffing capacity to effectively implement the planned EMS actions. To address this, in October 2018, UNMISS established EMOSHU to monitor effective execution of EMS measures across the Mission.

(1) UNMISS should ensure that: (a) environmental committees are regularly convened to assess and recommend measures to mitigate environmental risks; and (b) all measures required to enhance the environmental management system, including formal approval of the system by senior management, are implemented in a timely manner.

UNMISS accepted recommendation 1 and stated that MEMC will meet twice a year and the terms of reference will be changed accordingly. Environmental Committees would be reinstated at all main field locations. The Mission was in the final stage of drafting its EMS. This new system will allow the Mission to streamline and prioritize the planning, implementation and monitoring of environmental actions. Recommendation 1 remains open pending receipt of evidence that environmental committees are regularly convened to function effectively, EMS has been formally approved by senior management, and the planned EMS actions are implemented in a timely manner.

UNMISS provided environmental briefings and training to Mission personnel

14. UNMISS is required to keep staff updated on the Mission's environmental policies, guidelines and objectives.

15. EEU had developed training materials and systematically conducted environmental briefings during induction trainings to new civilian personnel, military staff officers and United Nations individual police officers on solid waste segregation, hazardous materials handling and energy efficiency practices. In addition, EEU trained 37 environmental focal points representing all contingents to sensitize and train their respective troops on environmental risks and measures. The sensitization and training included avoidance of practices such as discharging untreated wastewater into the environment, burning or burying of waste and spillage of oils into the soil, among others. Also, UNMISS regularly broadcasted environmental messages and ran environmental awareness campaigns encouraging environmentally friendly practices, such as efficient water and energy use across all Mission locations, and DMS presented annual green camp awards to promote clean and healthier civilian and contingent sites.

16. Although UNMISS had made substantial effort to train Mission personnel and raise their awareness on environmental policies, guidelines and objectives, further effort was needed to ensure proper waste handling and energy management by the Mission personnel as later discussed in this report.

Need to monitor implementation of recommendations from environmental inspections

17. UNMISS is required to conduct site inspections at least annually to assess compliance with established EMS standards. The Mission is also required to implement recommendations issued by the Environmental Technical Support Unit (ETSU) of DOS as part of the technical support and assessment in fulfilling the Missions' environmental mandates.

18. In September 2018, ETSU assessed the Mission's water and wastewater management systems and made 13 recommendations, 5 of which had been adequately implemented as of May 2019. Actions to implement the remaining eight recommendations were being taken with target completion dates ranging between July 2019 to December 2019.

19. During the audit period, EEU conducted environmental inspections of all Mission sites and issued 98 inspection reports. However, it did not maintain a central repository and systematically monitor implementation of environmental recommendations. OIOS reviewed 40 inspection reports and noted that 125 of the 361 recommendations (35 per cent) were still outstanding at the time of the audit. These included recommendations to: raise concrete platforms to prevent leakage of hazardous waste; properly segregate and dispose of hazardous and medical waste; and connect all wastewater pipes to the sewerage system. Also, many of the recommendations were not specific and measurable, did not have target implementation dates and lacked key information to facilitate effective monitoring of their implementation. For example, the recommendations included: "improve generator and car workshop", "maintain good practice during fueling, refueling and regular vehicle and generator maintenance", and "keep up the cleanliness and tidiness".

20. The above occurred due to insufficient quality control over EEU inspection reports and a lack of a mechanism to monitor implementation of recommendations, impacting effective implementation of MEAP.

(2) UNMISS should: (a) strengthen quality control over environmental inspection reports to ensure recommendations are specific, measurable and time bound; and (b) establish a mechanism to monitor the implementation status of environmental recommendations.

UNMISS accepted recommendation 2 and stated that it will issue instructions to all stakeholders who conduct environmental inspections to ensure that recommendations are specific, measurable, achievable, realistic and timely. The Mission will would establish a formal implementation monitoring mechanism to track the implementation status of the recommendations. Recommendation

2 remains open pending receipt of evidence of quality controls ensuring that environmental recommendations are specific, measurable and time bound, and of a mechanism to monitor implementation status of these recommendations.

Need to improve accuracy and completeness of environmental performance data

21. UNMISS is required to submit its MEAP and related performance data to ETSU of DOS every six months. Additionally, the Mission is required to provide indicative plans to be incorporated in the budget submission for the subsequent fiscal year.

22. The Mission timely submitted progress updates on the implementation of MEAP to DOS for the fiscal year 2017/18 together with the plans for environmental activities for 2018/19. However, OIOS review of the performance data reported in the MEAP workbook covering the period July 2017 to June 2018 noted weaknesses in data reported. For example:

- UNMISS did not report electricity generated by 150 of 320 United Nations-owned equipment (UNOE) generators in four civilian sites and 228 of 242 contingent-owned equipment (COE) generators in 80 sites because these generators did not have meters installed;

- Readings from generators with installed meters were not systematically collected and verified prior to submission because EEU had not provided adequate guidance and supervision on this to the field offices;

- UNMISS reported that 4.43 million kilo watt hours (kwh) of electricity was generated by 15 UNOE generators in Kwajok, where 287 personnel was residing. This data appeared to be disproportionately high compared to other locations and may have been reported in error. For comparison, Malakal with 2,875 personnel and 32 functional UNOE generators and Bentiu with 2,312 personnel and 14 functional UNOE generators reported 2.10 million kwh, and 1.18 million kwh of electricity generated, respectively. There was no national electricity grid, and generators were the only power source for these sites;

- The following data reported in MEAP for the period from January to June 2018, did not have supporting documentation, as it was based on estimates: (a) 455.8 million litres of water extraction; (b) 456.44 million litres of water consumption; and (b) 4.7 million kilograms of solid waste in one location; and

- UNMISS did not monitor and report in MEAP some required environmental actions, such as: the underground water extraction level due to lack of meters; type, volume and weight of non-hazardous waste due to lack of weighing scales; types of hazardous substances held or used by various technical units due to oversight.

23. The above occurred because of the lack of measurement tools, guidance and supervision of staff as described above. In addition, a monitoring mechanism to verify the accuracy and completeness of performance data had not been established by the Engineering Section, which impacted the Mission's ability to make informed decisions on environmental matters.

(3) UNMISS should establish a monitoring mechanism to verify the accuracy and completeness of the performance data reported in the Mission's Environmental Action Plan.

UNMISS accepted recommendation 3 and stated that it will establish a formal mechanism to verify the accuracy and completeness of the performance data reported in the MEAP template. Recommendation 3 remains open pending receipt of evidence of a monitoring mechanism established to verify the accuracy and completeness of MEAP performance data.

B. Water and wastewater management

Need to develop a water conservation programme and monitor water consumption and groundwater levels

24. UNMISS is required to establish a water supply concept and conservation programme, including measures for monitoring its water abstraction and consumption and implementing measures to conserve water and mitigate environmental risks.

25. The Mission developed a comprehensive water supply concept evaluating various water supply options, including boreholes, truck delivery of treated water by contractors, and water directly extracted from rivers through pipeline or transported by water trucks. The Mission was also regularly reminding its personnel to conserve water through email broadcasts and reusing treated wastewater from some wastewater treatment plants (WWTPs) for carwash, dust control and gardening purposes. The Mission was planning to expand the use of treated wastewater from all its WWTPs.

26. OIOS visits to 30 sites indicated that meters monitoring water consumption were installed at only 5 sites. The remaining 25 sites (1 civilian and 24 contingent) had no water meters, because the Engineering Section was waiting to receive and install them, including smart water meters from the United Nations Global Service Centre in Brindisi. As a result, the Engineering Section was estimating the water consumption from these sites based on capacity of the storage facilities, and the Mission's ability to effectively mitigate water wastage was hampered.

27. Further, UNMISS had not installed groundwater level meters/monitors at any of the 41 boreholes used by the Mission, which could result in unrestrained extraction and depletion of underground water resources. EEU explained that the procurement and installation of the required equipment to monitor groundwater levels would be undertaken after completion of the ongoing geophysical exploration studies to identify potential borehole drilling points and the actual drilling of the boreholes.

28. Above happened because the Mission did not have a comprehensive water conservation programme covering essential elements, such as analysis of water use, metering system to measure water derived from supply sources, targets for water savings, reduction of water loss or waste and monitoring of the programme. As a result, UNMISS was unable to assess the effectiveness and efficiency of its water supply and conservation measures to inform appropriate and timely action when necessary, and accurately report water extraction and consumption in the MEAP template.

(4) UNMISS should: (a) develop a comprehensive water conservation programme; (b) install water meters across the Mission to accurately measure water consumption and identify any water wastage; and (c) install groundwater extraction meters/monitors at all boreholes.

UNMISS accepted recommendation 4 and stated that a comprehensive water conservation programme/document is being developed. Water meters were installed at all civilian camps and it was preparing solicitation to provide meters for contingents' camps. The United Nations Global Service Centre has completed the first of the three phases for borehole extraction monitoring. Recommendation 4 remains open pending receipt of a comprehensive water conservation programme

and evidence that meters have been installed to monitor water consumption and groundwater extraction.

Need to expedite actions to properly treat wastewater

29. To mitigate environmental and health risks, UNMISS is required to install and maintain WWTPs at all Mission sites to prevent discharge of untreated wastewater into the environment.

30. UNMISS developed a Wastewater Risk Mitigation Plan and implemented several measures to improve wastewater management. For example, it renovated one and constructed two new septic tanks in Juba and Malakal, respectively, to prevent overflow. Also, in March 2019, staff of the Water and Sanitation Unit were trained on installation, operations and maintenance of WWTPs. As of May 2019, the Mission had received 30 out of the required 40 WWTPs. The Mission stated that it was planning to install them after the rainy season due to potential damage, and that installation of all 40 WWTPs would be completed by 31 March 2020.

31. UNMISS had 10 functional laboratories, which tested the quality of treated wastewater on a weekly basis. Records showed the effluent quality was within acceptable standards. Water for drinking and domestic use was tested daily and results broadcast on UNMISS intranet.

32. Inspection of 21 WWTPs and 103 septic tanks during 30 sites indicated the following:

- Three WWTPs were spilling untreated wastewater into the surrounding environment because they were directly connected to ablution units, resulting in excess wastewater being pumped into the plants over and above their installed capacity;

- Four WWTPs were non-operational for more than one year due to the unavailability of spare parts such as pumps, air blowers and sensors;

- While the Mission was separating black wastewater from grey wastewater, in 26 sites, to reduce the load on existing WWTPs, untreated grey wastewater coming mainly from bathing areas was being discharged into the environment; and

- Signs of wear and tear, damages and/or corrosion of lids from rainwater were observed on 47 out of the 103 septic tanks.

33. The above occurred because the wastewater management measures had not kept pace with the rapid expansion of the Mission exposing UNMISS to environmental risks.

(5) UNMISS should: (a) expedite the installation of additional wastewater treatment plants; and (b) improve repair and maintenance activities of wastewater treatment plants and septic tanks.

UNMISS accepted recommendation 5 and stated that installation of WWTPs will resume in the dry season as the wet season presents conditions that damage the WWTPs. Moreover, WWTPs were being maintained following manufacturer's recommended schedules with adequate records. Recommendation 5 remains open pending receipt of evidence that WWTPs have been installed and are operational.

C. Solid waste

Need to segregate waste at source and adequately store it in all sites

34. The Mission is required to develop and implement a waste management plan to properly control and reduce waste and its impact on the environment.

(a) Non-hazardous waste was not properly segregated and stored at some sites

35. In 25 of the 30 sites visited, OIOS observed that waste was properly segregated at source. Non-hazardous general waste from offices and accommodations was deposited into clearly labelled receptacles. Other non-hazardous waste such as written-off electronic equipment, used generator sets, and general construction waste was also segregated and kept at designated locations. Biodegradable waste including kitchen and food-waste was segregated to create compost for re-use in gardens. Non-biodegradable recyclable waste including plastic and glass items were segregated and retained in designated containers. Also, parts from old written-off sea containers were used in the structures of a staff welfare building and for creating additional living space in two sites. However, in five sites, non-hazardous waste such as plastic bottles, papers, aluminum cans and food waste were not segregated at source.

36. Non-hazardous waste was not properly stored in 7 of the 30 sites visited. For example: (a) in one site, due to inadequate supervision, written-off generators, construction and electronic waste were stored in the Property Disposal Unit (PDU) yard in a disorderly manner; and (b) six sites did not have proper on-site waste collection areas because the Engineering Section had not provided suitable facilities. In three of these sites, waste was collected in open pits, and the remaining three used stationary trucks as collection points, which resulted in scavenging by birds and animals.

(b) Hazardous waste was not stored properly at some sites

37. Medical waste was appropriately segregated at source into the prescribed categories (clinical, infectious, pathological and pharmaceutical) in all 30 sites. All four level 1 and 2 clinics visited had clearly labelled and color-coded bins for the segregation of the different categories of medical waste. In three of the four clinics visited, medical waste was properly incinerated, but in one clinic OIOS observed partially burnt items such as vials, ampules, cartridges and broken glass that were not properly incinerated. This happened because staff had not received training on how to operate the incinerator and properly dispose of the resultant ashes. The Mission took action to train the staff in July 2019, and therefore, OIOS did not make a recommendation.

38. In 8 of the 30 sites visited, hazardous waste such as used batteries, tires, oil filters and used petroleum, oil and lubricants (POLs) was appropriately segregated and placed on plastic pallets, metal drums placed on concrete platforms or in sea containers to prevent ground contamination. However, there was soil contamination in 22 sites visited due to inappropriate storage of hazardous waste. Used oil filters were kept in a cardboard box in one site, and the storage container for used oil filters in another site was overflowing, resulting in more than a hundred of them being kept on the ground. Also, at one site, used batteries were stored on wooden pallets, not suitable to contain leaks of battery acid.

39. The above occurred because Mission management did not prioritize construction of concrete floors to store POLs, and the Engineering Section did not establish a suitable collection and storage facility to properly dispose of used oil filters at some sites. As a result, there was substantial soil contamination from hazardous waste at some sites, requiring soil rehabilitation measures.

(6) UNMISS should: (a) provide suitable facilities for the collection, segregation and storage of hazardous and non-hazardous waste at all sites; and (b) take necessary action to rehabilitate contaminated soil at affected sites.

UNMISS accepted recommendation 6 and stated that it had adapted the conceptual guidelines from United Nations Headquarters for waste management yards issued in February 2019 and plans to pilot its implementation in six locations. UNMISS sections that work with oil and lubricants will be provided suitable collection and storage facilities. Recommendation 6 remains open pending receipt of evidence that: (a) suitable facilities and measures for the collection, segregation and storage of hazardous and non-hazardous waste have been provided at all sites; and (b) action has been taken to rehabilitate contaminated soil at the affected sites.

Need to ensure appropriate disposal of non-hazardous waste

40. UNMISS is required to dispose of all types of waste in an environmentally friendly manner to mitigate environmental and reputational risks.

41. UNMISS established four contracts for waste disposal services during the period under review and obtained approval from the local authorities to dispose of general non-hazardous waste in specific disposal sites. Hazardous waste such as used batteries, tires and specific non-hazardous waste such as electronic waste and scrap metal were transported to an approved disposal site in Uganda because there were no suitable local facilities. Used POLs were exchanged for new POLs by the fuel supplier for recycling and transported out of the country by a sub-contractor.

42. However, UNMISS had not established an adequate mechanism to verify that contractors disposed of waste only at government approved sites in the country and abroad. The Mission solely relied on daily truck movement logs issued to the contractors by the government approved landfill sites in the country, without independently verifying the volume of the waste transported to the landfills. Also, the Mission had not carried out the annual site visit to the contractor's disposal site in Uganda during 2018; and had not verified transportation of waste to the site for disposal. Furthermore, OIOS observed the following during site visits:

- At all sites visited, segregated general waste was indiscriminately combined during collection by contractors for subsequent transportation to the final disposal sites;
- Waste from eight field offices was transported to dump sites in open trucks causing scattering during transportation and attracting children to jump onto the moving trucks to rummage;
- General waste, including plastic bottles, tin and aluminum cans, pieces of wood, cardboard, and sponges was burned openly at three contingent sites; and
- At three sites, general waste (aluminum cans, plastic bottles, soap wrappers, etc.) were discarded behind ablution facilities and the perimeter fence.

43. The above had resulted because of inadequate oversight by EEU environmental officers and the Facilities Management Unit to ensure proper waste disposal by contractors, and to sensitize contractors and contingents on waste handling and disposal.

44. Additionally, UNMISS had accumulated 12 sea containers of recyclable plastic and glass waste from across the Mission as at April 2019. The Mission had launched the process to procure a shredder and

a crusher for plastic and glass waste in April 2019 and was awaiting delivery, but due to competing priorities, UNMISS had not procured services of a contractor for recycling shredded plastic and glass. As a result, there was a potential for degradation of plastic materials preventing them from being recycled, which posed health and environmental risks.

(7) UNMISS should: (a) implement measures to monitor that contractors dispose of waste only at government approved sites; and (b) sensitize and monitor contractors and contingents to properly transport and dispose waste.

UNMISS accepted recommendation 7 and stated that measures will be implemented to monitor and confirm that contractors appropriately dispose of waste at government approved sites. The Mission will continue to sensitize contractors and contingents about responsible waste transportation and disposal. Recommendation 7 remains open pending receipt of evidence that measures are implemented to monitor that: contractors appropriately dispose of waste only at government approved sites; and contractors and contingents properly transport and dispose of waste.

(8) UNMISS should prioritize the acquisition of the services of a contractor for recycling shredded plastic waste.

UNMISS accepted recommendation 8 and stated that the statement of work, bill of quantities and technical evaluation clearance will be submitted to the Procurement Section for review before initiating solicitation of contractor for recycling shredded plastic waste. Recommendation 8 remains open pending receipt of a copy of the contract for recycling services for plastic waste.

D. Energy management

Energy management plan was not based on actual consumption data

45. To effectively and efficiently manage its energy demand, UNMISS is required to conduct a comprehensive energy production and consumption analyses and establish a Mission-specific energy management plan.

46. The Mission conducted an energy production analysis and estimated that of the 320 UNOE generators, 202 primary and secondary operational generators were able to produce 26,300 kwh. UNMISS had also undertaken energy production optimization. For example, it completed right-sizing and synchronization of generators at 7 of its 11 civilian sites. The remaining generators were yet to be synchronized because generators of matching type and capacity were in different locations, and their relocation was still in progress. Also, UNMISS installed solar powered streetlamps in Juba and double roofing for approximately 10 per cent of the accommodation facilities, purchased solar farm equipment costing $10.1 million to substitute its diesel power generation and was in the process of installing it.

47. UNMISS developed an energy management plan to take effect from July 2019. However, the plan was not informed by an energy consumption analysis because 150 UNOE and 228 COE generators, did not have meters to provide reliable power consumption data. Also, readings from generators with installed meters were not systematically collected and verified prior to submission. As a result, there was no assurance that UNMISS adequately managed its energy demand to ensure optimal use of energy.

(9) UNMISS should: (a) allocate resources to procure and install meters on all generators to monitor efficient use of energy, conduct a comprehensive energy consumption analysis

and, based on the analysis, review and update its energy management plan; and (b) expedite the rightsizing and synchronization of generators in all locations.

UNMISS accepted recommendation 9 and stated that acquisition of energy meters for the main power plants in 14 power generation hubs is underway. Installation is expected to be completed before 31 December 2019. Also, the right sizing and synchronization of generators as per the reconfiguration plan will continue and be finalized by 31 December 2019. Recommendation 9 remains open pending receipt of evidence of the meters installed for all primary power generators, an updated energy management plan based on a comprehensive energy consumption analysis, and completion of the right sizing and synchronization of primary power generators in all locations.

E. Wider impact

Need to conduct assessment of current environmental conditions

48. UNMISS is required to conduct environmental baseline studies (EBS) for all new Mission locations to identify environmental issues prior to setting up sites in the location.

49. The Mission conducted EBS for only 3 of its current 18 locations. These EBS comprehensively assessed and documented the topographical conditions, natural, historical and wildlife features and relevant environmental risks of wastewater, solid and hazardous waste. Of the 15 locations where EBS had not been conducted, 12 were from the former United Nations Mission in Sudan and 3 were established by UNMISS. The Mission believed that the combination of all environmental site inspections conducted by EEU, EMOSHU, COE Unit, field engineers and environmental focal points would compensate for the lack of EBS. However, these site inspections did not use consistent methodology for EBS and did not cover important elements such as the topographical, hydrological and geological features of the site, soil type, vegetation, wildlife, natural resources, and water bodies. The absence of such baseline information would not enable accurate environmental impact assessment at time of liquidation or site closure.

(10) UNMISS should assess current environmental conditions at the locations where the baseline studies had not been conducted to document their initial environmental status.

UNMISS accepted recommendation 10 and stated that it will establish environmental risk profiles for locations that have not been formally subjected to environmental baseline studies to document all risk factors and potential impact receptors on and off-site. Recommendation 10 remains open pending receipt of evidence that environmental risk profiles have been established for the locations where the baseline studies had not been conducted in the past.

UNMISS engaged with local communities to leave a positive environmental impact

50. UNMISS implemented the ban on the use of plastic shopping bags, which was issued by the Government of South Sudan in 2017. OIOS visits to 30 sites indicated that the Mission personnel were using biodegradable bags in the Mission's supermarkets and restaurants instead of plastic bags. The Mission established a team comprising different stakeholders across mission pillars, providing guidance and communication campaign focusing on reuse. As a result, UNMISS reported 100 per cent compliance with the ban in all locations.

51. The Mission also undertook some initiatives to benefit local communities. For example, UNMISS provided training on environmental reporting to local journalists to raise environmental awareness, and together with other United Nations agencies, provided training and supplied used cardboard and shredded

paper to internally displaced persons (IDPs) for creating fire briquettes as an alternative fuel source. It undertook clean up drives at four locations identified for returning IDPs, implemented water infrastructure rehabilitation project and improved access to drinking water and sanitation at one location. Also, UNMISS distributed 5,000 seedlings of indigenous plants for tree planting initiatives throughout the Mission area. OIOS concluded that, in the audit period, UNMISS implemented initiatives aimed at leaving a positive environmental impact with the local communities.

IV. ACKNOWLEDGEMENT

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

(*Signed*) Eleanor T. Burns
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ANNEX I

STATUS OF AUDIT RECOMMENDATIONS

Audit of implementation of the environmental action plan in the United Nations Mission in the Republic of South Sudan

Rec. no.	Recommendation	Critical[1]/ Important[2]	C/ O[3]	Actions needed to close recommendation	Implementation date[4]
1	UNMISS should ensure that: (a) environmental committees are regularly convened to assess and recommend measures to mitigate environmental risks; and (b) all measures required to enhance the Environmental Management System are implemented in a timely manner.	Important	O	Receipt of evidence that environmental committees are regularly convened to function effectively, EMS has been formally approved by senior management, and the planned EMS actions are implemented in a timely manner.	31 March 2020
2	UNMISS should: (a) strengthen quality control over environmental inspection reports to ensure recommendations are specific, measurable and time bound; and (b) establish a mechanism to monitor the implementation status of environmental recommendations.	Important	O	Receipt of evidence of: quality controls ensuring that environmental recommendations are specific, measurable and time bound; and a mechanism to monitor implementation status of these recommendations.	30 September 2019
3	UNMISS should establish a monitoring mechanism to verify the accuracy and completeness of the performance data reported in the Mission's Environmental Action Plan.	Important	O	Receipt of evidence of a monitoring mechanism established to verify the accuracy and completeness of the MEAP performance data.	31 December 2019
4	UNMISS should: (a) develop a comprehensive water conservation programme; (b) install water meters across the Mission to accurately measure water consumption and identify any water wastage; and (c) install groundwater extraction meters/monitors at all boreholes.	Important	O	Receipt of a comprehensive water conservation programme and of evidence that meters have been installed to monitor water consumption and groundwater extraction.	a) 31 August 2019 b) 30 June 2020 c) 30 December 2020
5	UNMISS should: (a) expedite the installation of additional wastewater treatment plants; and (b) improve repair and maintenance activities of wastewater treatment plants and septic tanks.	Important	O	Receipt of evidence that WWTPs have been installed and are operational.	30 April 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 UNMISS

ANNEX I

STATUS OF AUDIT RECOMMENDATIONS

Audit of implementation of the environmental action plan in the United Nations Mission in the Republic of South Sudan

Rec. no.	Recommendation	Critical[5]/ Important[6]	C/ O[7]	Actions needed to close recommendation	Implementation date
6	UNMISS should: (a) provide suitable facilities for the collection, segregation and storage of hazardous and non-hazardous waste at all sites; and (b) take necessary action to rehabilitate contaminated soil at affected sites.	Important	O	Receipt of evidence that: (a) suitable facilities and measures for the collection, segregation and storage of hazardous and non-hazardous waste have been provided at all sites; and (b) action has been taken to rehabilitate contaminated soil at the affected sites.	a) 30 June 2020 b) 31 December 2019
7	UNMISS should: (a) implement measures to monitor that contractors dispose of waste only at government approved sites; and (b) sensitize and monitor contractors and contingents to properly transport and dispose waste.	Important	O	Receipt of evidence that measures are implemented to monitor that: contractors appropriately dispose of waste only at government approved sites; and contractors and contingents properly transport and dispose of waste.	31 December 2019
8	UNMISS should prioritize the acquisition of the services of a contractor for recycling shredded plastic waste.	Important	O	Receipt of a copy of the contract for recycling services for plastic waste.	31 March 2020
9	UNMISS should: (a) allocate resources to procure and install meters on all generators to monitor efficient use of energy, conduct a comprehensive energy consumption analysis and, based on the analysis, review and update its energy management plan; and (b) expedite the right-sizing and synchronization of generators in all locations.	Important	O	Receipt of evidence of the meters installed for all primary power generators, an updated energy management plan based on a comprehensive energy consumption analysis, and completion of the right sizing and synchronization of primary power generators in all locations.	31 December 2019
10	UNMISS should assess current environmental conditions at the locations where the baseline studies had not been conducted to document their initial environmental status.	Important	O	Receipt of evidence that environmental risk profiles have been established for the locations where the baseline studies had not been conducted in the past.	31 March 2020

[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.
[7] C = closed, O = open

APPENDIX I

Management Response

To: Mr. Daeyoung Park
Chief, Peacekeeping Audit Service
Internal Audit Division, OIOS

DATE: 9th August 2019

REF: OIOS-2019-633-07

FROM: Victoria Browning
Director of Mission Support
United Nations Mission in the Republic of South Sudan

SUBJECT: **Response to Draft report on the audit of implementation of the environmental action plan in the United Nations Mission in the Republic of South Sudan (Assignment No. AP2018/633/10)**

1. UNMISS acknowledges receipt of the draft report referenced OIOS-2019-633-07 and dated 27 July 2019 on the audit of implementation of the environmental action plan in the United Nations Mission in the Republic of South Sudan. Please find attached UNMISS comments on the audit recommendations in Appendix 1.

2. Also, the Mission would like to suggest the following changes to the evidence required to close out some recommendations, in order to set realistic and achievable timelines:
   a. Recommendation 1 – the report states that "*recommendation 1 remains open pending receipt of evidence that environmental committees are regularly convened to function effectively, and the planned Environmental management System (EMS) actions are implemented in a timely manner*". Considering that the EMS actions included in the Mission Environmental Action Plan (MEAP) template are suggestions only, therefore not mandatory, the Mission is not required to implement them all. The Mission is in the process of drafting its environmental management system, tailored to its needs and specific conditions. The Mission's EMS will include some of the suggested actions and others that will foster continuous improvement of the environmental performance. The EMS will be the key environmental management guidance document for the Mission, and the benefits of its implementation will be reported in subsequent MEAP editions. Therefore, the Mission suggests that the evidence required to close out the recommendation is changed to the following: "*recommendation 1 remains open pending receipt of evidence that environmental committees are regularly convened to function effectively, and the mission environmental management system is formally approved by the Mission senior management*";

   b. Recommendation 5 – the report states that "*recommendation 5 remains open pending receipt of evidence of WWTPs being installed and operational, improved repair and maintenance activities for WWTPs and septic tanks, and the frequency of wastewater/sludge removal increased*". Our experience in the Mission is that it is not possible to accurately and directly measure the improved repair and maintenance activities of WWTP and septic tanks. Also, it must be noted that the frequency of wastewater/sludge removal has already been increased to avoid overflows and that the frequency may be further increased if required. It should also be noted that the Mission already reports to the

United Nations Headquarters on the progress of the Wastewater Risk Mitigation Plan on a quarterly basis. Therefore, the Mission suggests that the evidence required to close out the recommendation is changed to the following: "*recommendation 5 remains open pending receipt of evidence of WWTPs being installed and operational*";

c. Recommendation 8 – the report states that "*recommendation 8 remains open pending receipt of a copy of the contract for recycling services*". Recommendation 8 refers to "the acquisition of the services of a contractor for recycling shredded plastic and glass waste" There are currently no recycling options available for the recycling of glass in South Sudan. Also, considering that glass is not a hazardous waste or a significant environmental hazard, the Mission suggests to take the word "glass" out of the recommendation and to change the evidence required to close out the recommendation to the following: "*recommendation 8 remains open pending receipt of a copy of the contract for recycling services for plastic waste*";

d. Recommendation 9 – the report states that "*recommendation 9 remains open pending receipt of evidence of the meters installed for all generators, an updated energy management plan based on a comprehensive energy consumption analysis and completion of the right-sizing and synchronization of generators in all locations*". Considering that many of the generators installed at the Mission are backup generators and therefore seldom used, the Mission proposes prioritizing the installation of meters on the primary power generators and the synchronization of this type of generators. Therefore, the Mission suggests to change the evidence required to close out the recommendation to the following: "*recommendation 9 remains open pending receipt of evidence of the meters installed for all primary power generators, an updated energy management plan based on a comprehensive energy consumption analysis and completion of the right sizing and synchronization of primary power generators in all locations*";

e. Recommendation 10 – the report states that "*recommendation 10 remains open pending receipt of evidence that initial environmental status has been established and documented for the locations where the baseline studies had not been conducted*". It should be noted that initial environmental status cannot be assessed and established retrospectively. The environmental risk profiles will account for the environmental baseline conditions that exist when the profile will be established and will account for the current topographical conditions, natural, historical and wildlife features. Therefore, the Mission suggests changing the evidence required to close out the recommendation to the following: "*recommendation 10 remains open pending receipt of evidence that environmental risk profiles have been established for the locations where the baseline studies had not been conducted in the past*".

3. Thank you for your consideration and support.

cc: Mr. Timothy Crowley, Deputy Director of Mission Support, UNMISS
Mr. Qazi Ullah, Chief, Service Delivery, UNMISS
Mr. Rahul Batra, Chief Engineering, UNMISS

Ms. Gulen Muftuoglu, Chief, Business Analytics and Compliance section and Audit Focal Point, UNMISS
Mr. Thierry Tremblay, Chief, Environmental and Occupational Safety & Health Unit, UNMISS
Mr. James Suglo, Chief Resident Auditor, OIOS, IAD-UNMISS
Ms. Cynthia Avena-Castillo, Professional Practices Section, IAD, OIOS

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Management Response

Audit of implementation of the environmental action plan in the United Nations Mission in the Republic of South Sudan

rec. no.	Recommendation	Critical[1]/ Important[2]	Accepted? (Yes/No)	Title of responsible individual	Implementation date	Client comments
1	UNMISS should ensure that: (a) environmental committees are regularly convened to assess and recommend measures to mitigate environmental risks; and (b) all measures required to enhance the environmental management system are implemented in a timely manner.	Important	Yes	Chief Environmental Management and Occupational Safety and Health Unit	31 March 2020	a) The Mission Environmental Management Committee will meet twice a year and the Terms of Reference will be changed accordingly for this more realistic meeting frequency. Environmental Committees will be reinstated at all main field locations and they will all meet before the implementation date. b) The Mission is in the final stage of drafting its Environmental Management System. This new system will allow the Mission to streamline and prioritize the planning, implementation and monitoring of the environmental actions.
2	UNMISS should: (a) strengthen quality control over environmental inspection reports to ensure recommendations are specific, measurable and time-bound; and (b) establish a mechanism to monitor implementation status of environmental recommendations.	Important	Yes	Chief Environmental Management and Occupational Safety and Health Unit	30 September 2019	a) The Mission will issue instructions to all stakeholders who conduct environmental inspections to ensure that recommendations are specific, measurable, achievable, realistic and timely. b) The Mission will establish a formal implementation

[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.

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Audit of implementation of the environmental action plan in the United Nations Mission in the Republic of South Sudan

rec. no.	Recommendation	Critical[1]/ Important[2]	Accepted? (Yes/No)	Title of responsible individual	Implementation date	Client comments
						monitoring mechanism to keep track of the status of implementation of the recommendations
3	UNMISS should establish a monitoring mechanism to verify the accuracy and completeness of the performance data reported in the Mission's Environmental Action Plan.	Important	Yes	Chief Environmental Management and Occupational Safety and Health Unit	31 December 2019	A formal mechanism will be established to verify the accuracy and completeness of the performance data reported in the MEAP template.
4	UNMISS should: (a) develop a comprehensive water conservation programme; (b) install water meters across the Mission to accurately measure water consumption and identify any water wastage; and (c) install groundwater extraction meters/monitors at all boreholes.	Important	Yes	Chief Environmental Engineering Unit	a) 31 August 2019 b) 30 June 2020 c) 30 December 2020	a) A comprehensive water conservation program / document is being developed. b) Water meters are installed in all civilian camps, preparing solicitation for Troop Contributing Countries camps meters. c) United Nations Global Support Center has completed the first of three phases for borehole extraction monitoring, second phase involves monitoring of boreholes using the cameras, and the third phase is the acquisition and installation of the monitoring devices based on their studies.
5	UNMISS should: (a) expedite the installation of additional wastewater treatment plants; and (b) improve repair and maintenance activities of wastewater treatment plants and septic tanks.	Important	Yes	Chief Environmental Engineering Unit	a) 30 April 2020 b) 30 April 2020	a) Installation of wastewater treatment plants will resume in the dry season (after November 2019) when groundwater tables are lower.

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Management Response

Audit of implementation of the environmental action plan in the United Nations Mission in the Republic of South Sudan

rec. no.	Recommendation	Critical[1]/ Important[2]	Accepted? (Yes/No)	Title of responsible individual	Implementation date	Client comments
						b) Wastewater treatment plant maintenance records are being kept and manufacturer recommended schedules are being followed. Spare parts have been ordered in May 2019. Too frequent desludging interrupts the biological degradation process.
6	UNMISS should: (a) provide suitable facilities for the collection, segregation and storage of hazardous and non-hazardous waste at all sites; and (b) take necessary action to rehabilitate contaminated soil at affected sites.	Important	Yes	a) Chief Environmental Engineering Unit & Chief Property Disposal Unit b) Chief Environmental Management and Occupational Safety and Health Unit	a) 30 June 2020 b) 31 December 2019	a) Environmental Engineering Unit has adapted the conceptual guidelines from United Nations Head Quarter for Waste Management Yards issued in February 2019 and plan to pilot implementation in 6 locations as the Systems Contracts to be developed by United Nations Head Quarter for the equipment required are not yet in place. Hazardous waste is being collected and stored in Property Disposal Unit yards b) UNMISS sections that work with oil and lubricants will be guided to provide suitable collection and storage facilities.
7	UNMISS should: (a) implement measures to monitor that contractors dispose of waste only at government approved sites; and (b) sensitize and monitor contractors and contingents to properly transport and dispose waste.	Important		Chief Environmental Management and Occupational Safety and Health Unit	31 December 2019	a) Measures will be implemented to monitor and confirm that contractors appropriately dispose waste at government approved sites b) The Mission will continue to sensitize contractors and contingents about the

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Audit of implementation of the environmental action plan in the United Nations Mission in the Republic of South Sudan

rec. no.	Recommendation	Critical[1]/ Important[2]	Accepted? (Yes/No)	Title of responsible individual	Implementation date	Client comments
						responsible waste transportation and disposal
8	UNMISS should prioritize the acquisition of the services of a contractor for recycling shredded plastic and glass waste.	Important	Yes	Chief Environmental Engineering Unit	31 March 2020	Statement of work, Bill of quantities, and Technical Evaluation Clearance submitted to Procurement for review before initiating solicitation of contractor for recycling shredded plastic waste.
9	UNMISS should: (a) allocate resources to procure and install meters on all generators to monitor efficient use of energy, conduct a comprehensive energy consumption analysis and, based on the analysis, review and update its energy management plan; and (b) expedite the right-sizing and synchronization of generators in all locations.	Important	Yes	Chief Environmental Engineering Unit /Engineering Operations Unit	31 December, 2019	(a) Acquisition of energy meters for the main power plants in fourteen power generation hubs is underway, installation is expected to be completed before 31 December 2019. (b) Right sizing and synchronization of generators as per the reconfiguration plan will continue as planned and be finalized by 31 December 2019.
10	UNMISS should assess current environmental conditions at the locations where the baseline studies had not been conducted to document initial environmental status.	Important	Yes	Chief Environmental Management and Occupational Safety and Health Unit	31 March 2020	The Mission will establish environmental risk profiles for locations that have not been formally subjected to environmental baseline studies, in order to document all risk factors and potential impact receptors on and off-site.