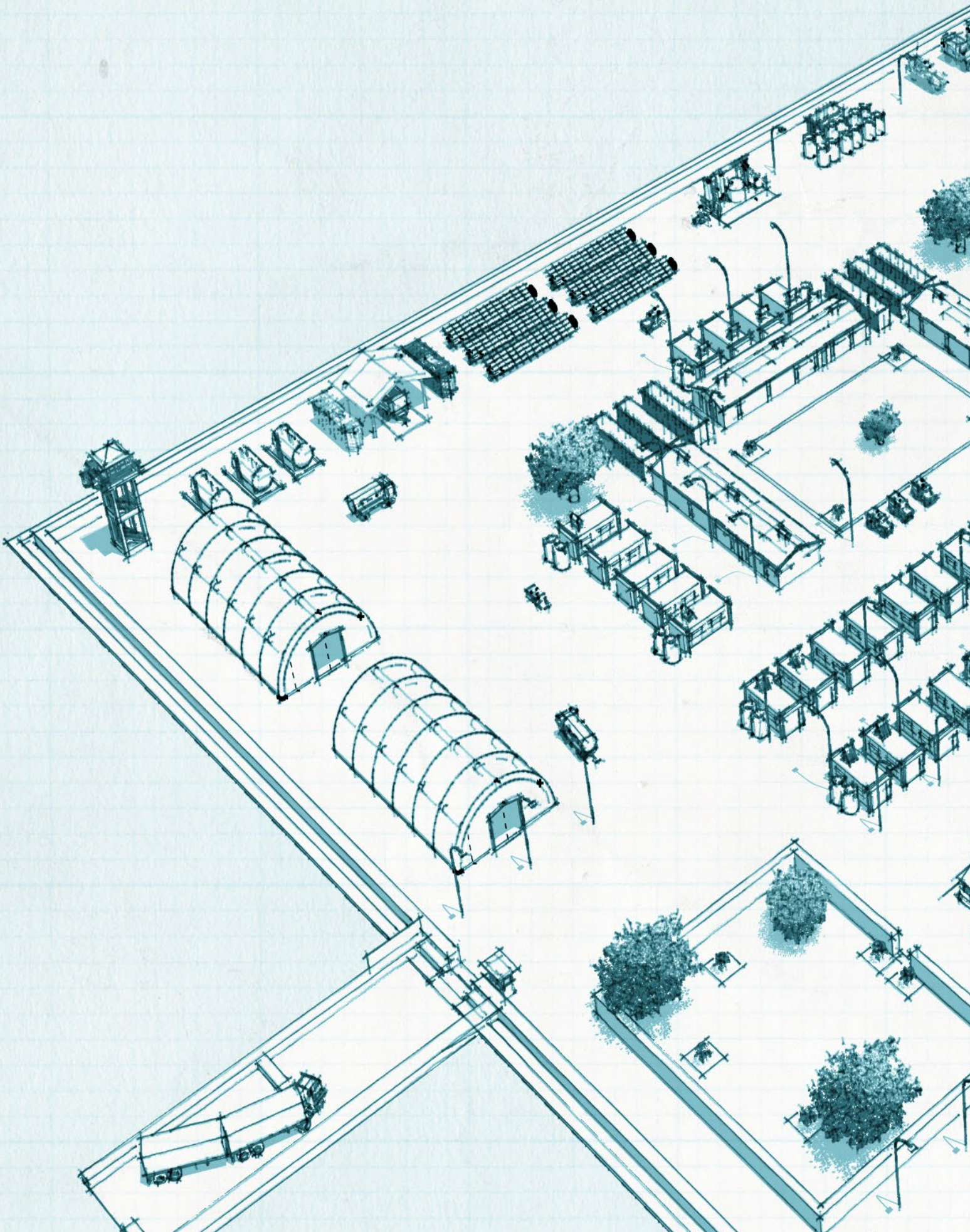
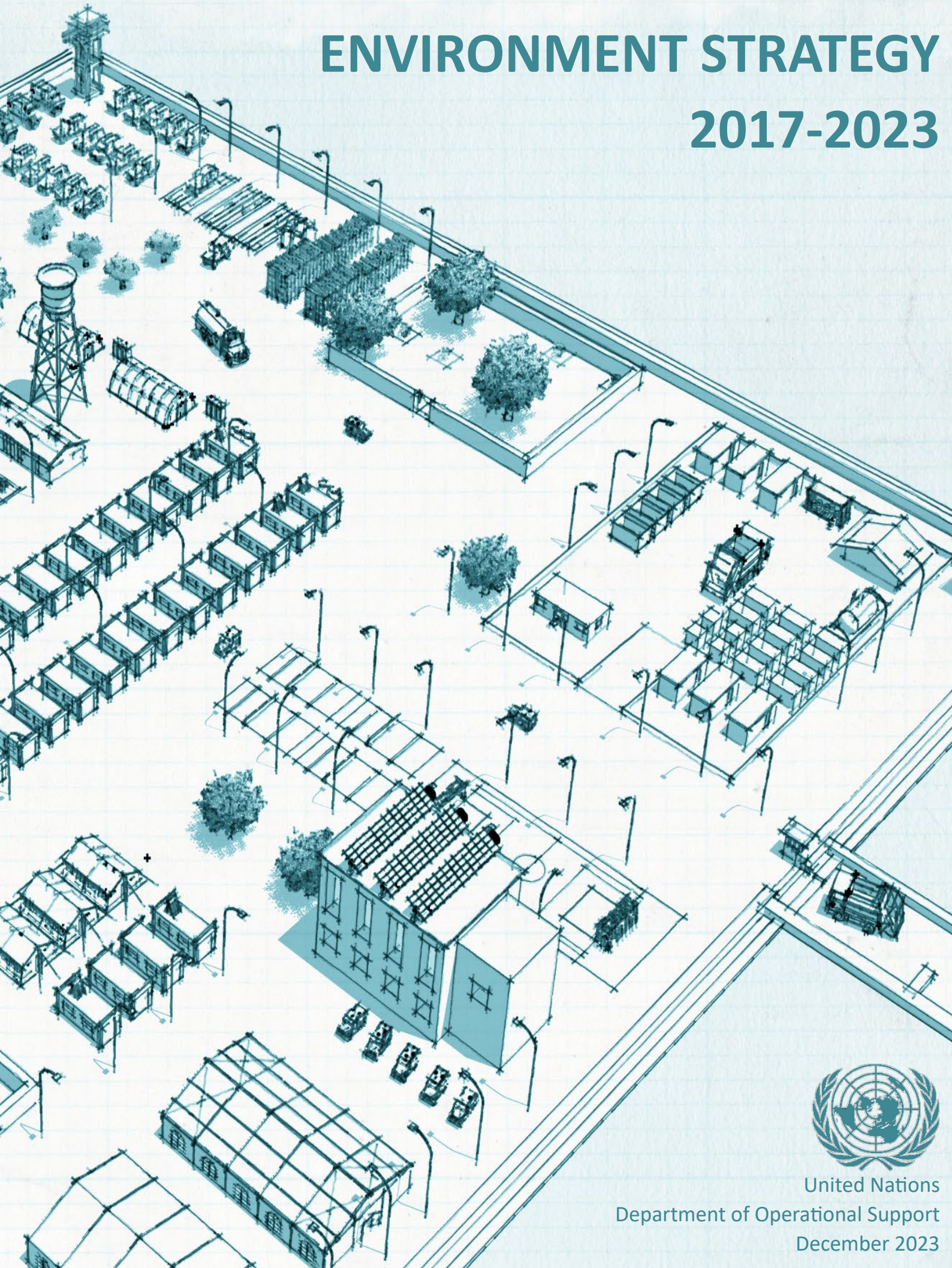
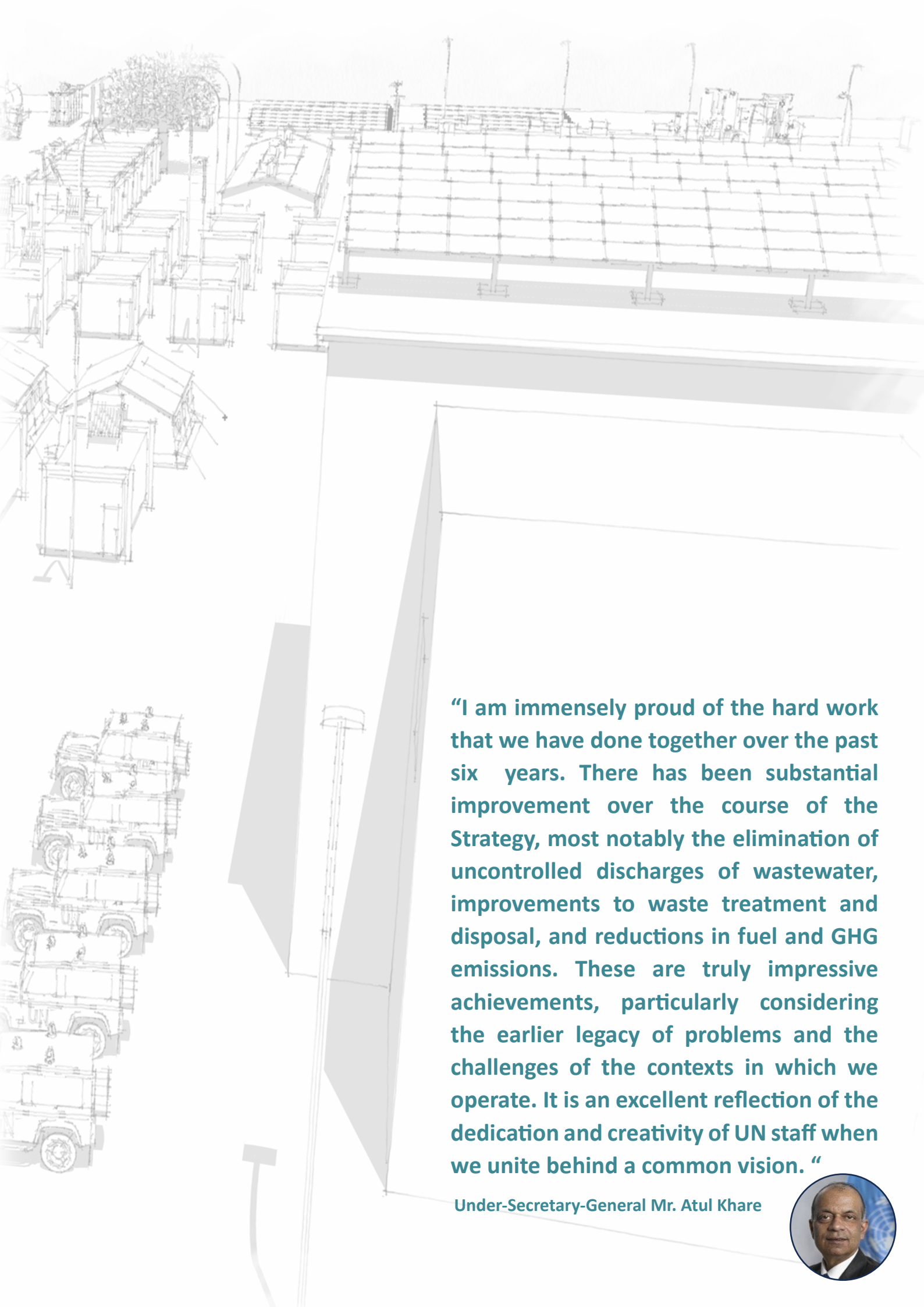


REVIEW OF THE ENVIRONMENT STRATEGY 2017-2023



United Nations
Department of Operational Support
December 2023



“I am immensely proud of the hard work that we have done together over the past six years. There has been substantial improvement over the course of the Strategy, most notably the elimination of uncontrolled discharges of wastewater, improvements to waste treatment and disposal, and reductions in fuel and GHG emissions. These are truly impressive achievements, particularly considering the earlier legacy of problems and the challenges of the contexts in which we operate. It is an excellent reflection of the dedication and creativity of UN staff when we unite behind a common vision. “

Under-Secretary-General Mr. Atul Khare

Executive Summary

This report provides an analysis of the Environment Strategy 2017-2023[1], originally implemented by the Department of Field Support, now the Department of Operational Support, which focused on peacekeeping missions and other peace operations with a field presence.

This internal review concentrates on the aspects of the Strategy implemented by DFS/DOS and the results in terms of overall mission performance. It does not provide comprehensive reporting on all of the very many activities undertaken by missions over the 6 years of the Strategy. These details have been provided in annual performance reporting by missions, and in a series of best practice case studies[2] collated yearly by DOS.

As this report outlines, DOS, through close engagement and feedback from missions, has facilitated the implementation of centralised support structures and processes to support mission activities, and has developed a range of technical solutions to manage risks and deliver operational efficiencies.

With this support, missions have successfully mitigated key areas of risk, and are in the process of deploying more efficient infrastructure in line with mission action plans and investment programmes. There has been substantial improvement in the majority of KPIs over the course of the Strategy, most notably the elimination of uncontrolled releases of wastewater, improvements to waste treatment and disposal, and reductions in fuel and GHG emissions. This has been achieved despite a range of operational challenges, not least being the impact of COVID-19 on supply chains, logistics and operations.

Reflecting the successes of the Strategy, missions, DOS and Member States have requested that a strategic focus on the important area of environmental management continue, and have committed to sustaining progress, raising ambition, and leaving a legacy for host countries.

Achieving these objectives will be built on the foundations established under the 2017-2023 Strategy, outlined and reviewed in this document.

[1] See https://operationalsupport.un.org/en/environment

[2] https://operationalsupport.un.org/en/sharing-best-practice

I Introduction

The Environment Strategy 2017-2023 was implemented in support of General Assembly and other Member State mandates to reduce the overall environmental footprint of missions. It recognised that not all past practices were aligned with expectations and reflected a desire to significantly improve performance, in particular, to reduce environmental, operational and reputational risks.

In recognition of unique environmental considerations that are distinct from other Secretariat entities, the Strategy was applied to peacekeeping operations (PKOs) and relevant special political missions (SPMs)[3], in close alignment with UN System and Secretariat initiatives[4].

The Strategy ran in two phases between 2017-2020 and between 2020-2023. The Strategy documents may be accessed on the environment homepage of the Department of Operational Support[5].

This review is organised around the original vision of the Strategy, which was to achieve "*responsible missions that achieve maximum efficiency in their use of natural resources and operate at minimum risk to people, societies and ecosystems; contributing to a positive impact on these wherever possible*". It looks at the key structures, processes, and logistical support enabled by DOS, and the results achieved by missions against these objectives.

II Summary of the key activities

A) Implementation structures and technical support

The Strategy was governed by the Senior Leadership Team in DOS, a Field Advisory Committee on the Environment, and a Group of Friends (Leading on Environmental Management in the Field), comprising Departmental Heads, Directors of Mission Support, and Member States respectively.

At the working level, communities of practice were established around the five Strategy pillars of Energy, Water and Wastewater, Solid Waste, Wider Impact / Positive Legacy, and Environmental Management Systems. Members ranged from mission Environmental Officers and Chief Engineers, through to field operatives (such as generator and fuel technicians, water and sanitation teams, waste and property disposal units) and HQ counterparts (Supply Chain, Logistics, Procurement). These working groups met frequently (initially monthly) and provided a platform for:

- Field missions to share best practices and operational challenges.
- HQ to seek guidance and input from the field on strategic initiatives.
- Delivery of technical training on a variety of topics.
- Updates / knowledge sharing on progress of the Strategy.

A key intangible outcome—relayed by field colleagues in their feedback—was the creation of a sense of community for personnel that are oftentimes the only representative of a particular function in their respective mission. The working groups gave them renewed direction and drive in progressing environmental activities in the field and they were particularly helpful during the COVID-19 pandemic.

One of the main success factors in delivering the Strategy was the creation of centralised specialised technical support resources. This started with the establishment of the Environment Section in the Office of the Under-Secretary-General to take forward and oversee the implementation of the Strategy. The Environment Section solicited Member State engagement and strategic direction, supported internal communications on doctrine, best practices, lessons learned and progress, and implemented and maintained the systems, resources and supporting processes for managing and reporting on environmental performance. The Environment Section also facilitated the provision of technical support resources to missions through the establishment of the "REACT"[6] facility—developed by UNEP and implemented by UNOPS, REACT comprises a rapidly deployable team of environmental scientists and engineers. A dedicated Environmental Technical Support Unit (ETSU) was also established in the UN Logistics Base, Brindisi, to lead the environmental technical advice and assistance to missions, and to coordinate the working groups and technical training initiatives.

These resources provided a wealth of desktop support, but crucially, hands-on assistance to missions on the ground. Despite a hiatus during COVID-19, more than 100 deployments were made, with more than 1300 days spent in the field.

[3]That is, missions that have operational control over power generation, waste disposal or wastewater treatment. Where the terms missions, field missions, or peace operations are used in this document, it refers to these entities. Aggregate figures presented in this document comprise all PKOs, the following SPMs: UNAMA, UNAMI, UNIOGBIS, UNVMC, UNSOM, UNSMIL, and RSCE and UNSOS. AMISOM/ATMIS is not included, though data is collected and shared.

[4]See https://www.greeningtheblue.org

[5]https://operationalsupport.un.org/en/environment. To obtain a reference in this review that is not on this home page, contact dos-ousg-envs@un.org.

[6]Rapid Environment And Climate Technical facility

Recognising the cross-cutting nature of the initiatives, Environment Section coordinated with a range of internal stakeholders, including Office of Supply Chain Management (particularly Logistics and Procurement Divisions), Office of Information and Communication Technology, Capacity Development and Operational Training Service, and the Office of Internal Oversight Services, amongst others. Examples of the DOS-wide collaboration include the development of bespoke environmental Action Planning and Performance software (eAPP) and Field Remote Infrastructure Management (FRIM) by OICT—with both products now adopted by other UN agencies, the issuance of Environmental Policy awareness videos by CDOTS, the incorporation of the Environment Strategy components into OIOS assessments in missions, and the creation of rosters for key environmental functions. DOS also provided technical assistance to troop contributing countries (TCCs) in the scoping and implementation of investments in renewable energy systems.

B) Policy, procedures, guidance, training and awareness

Another area of collaboration was with both DPO and DPPA on a range of matters, including the issuance of a revised joint *Environmental Policy* in 2022. The policy is a significant update on the 2009 iteration and provides clear operational expectations for field missions to ensure adherence to Member State mandates and Secretariat requirements. Recognising the importance of Troop Contributing Countries to the Strategy, an *Environmental Management Handbook for Military Commanders* was issued by DPO in 2021. Working with Member States also led to improvements and clarifications to the contingent owned equipment (COE) reimbursement arrangements, agreed through the 2017, 2020 and 2023 COE working groups.

A wealth of procedures, guidance, manuals, and technical advisory notes specific to environmental issues have been updated, or created, and made available to missions on the UN Secretariat Knowledge Gateway (Environment). In addition, a wide array of DOS/DPO/DPPA documents have incorporated environmental considerations.

Reflecting calls from Member States for increased strategic planning on environmental initiatives, a series of SOPs and planning templates were developed. Technical assistance was provided to missions to complete the plans, which clearly outline the anticipated results and resources required to achieve environmental objectives.

An array of training activities have taken place, both in the field and in support centres, online and in person. Examples range from joint Engineering and Environment workshops (2017, 2019, and 2023), regular working groups and communities of practice, and in person demonstration of techniques in the field. Of course, the vast majority of training is provided in mission by the Integrated Mission Training Centres and Environmental Officers (often in camp), who brief and train civilian and uniformed components respectively. With training completion rates consistently above 90%, this translates to in the order of 100,000 personnel briefed annually on environmental matters and obligations. Training needs assessments were conducted in 2021-2022 (civilian) and 2022-2023 (uniformed) with funding secured to develop new content and programmes for delivery beyond 2023.

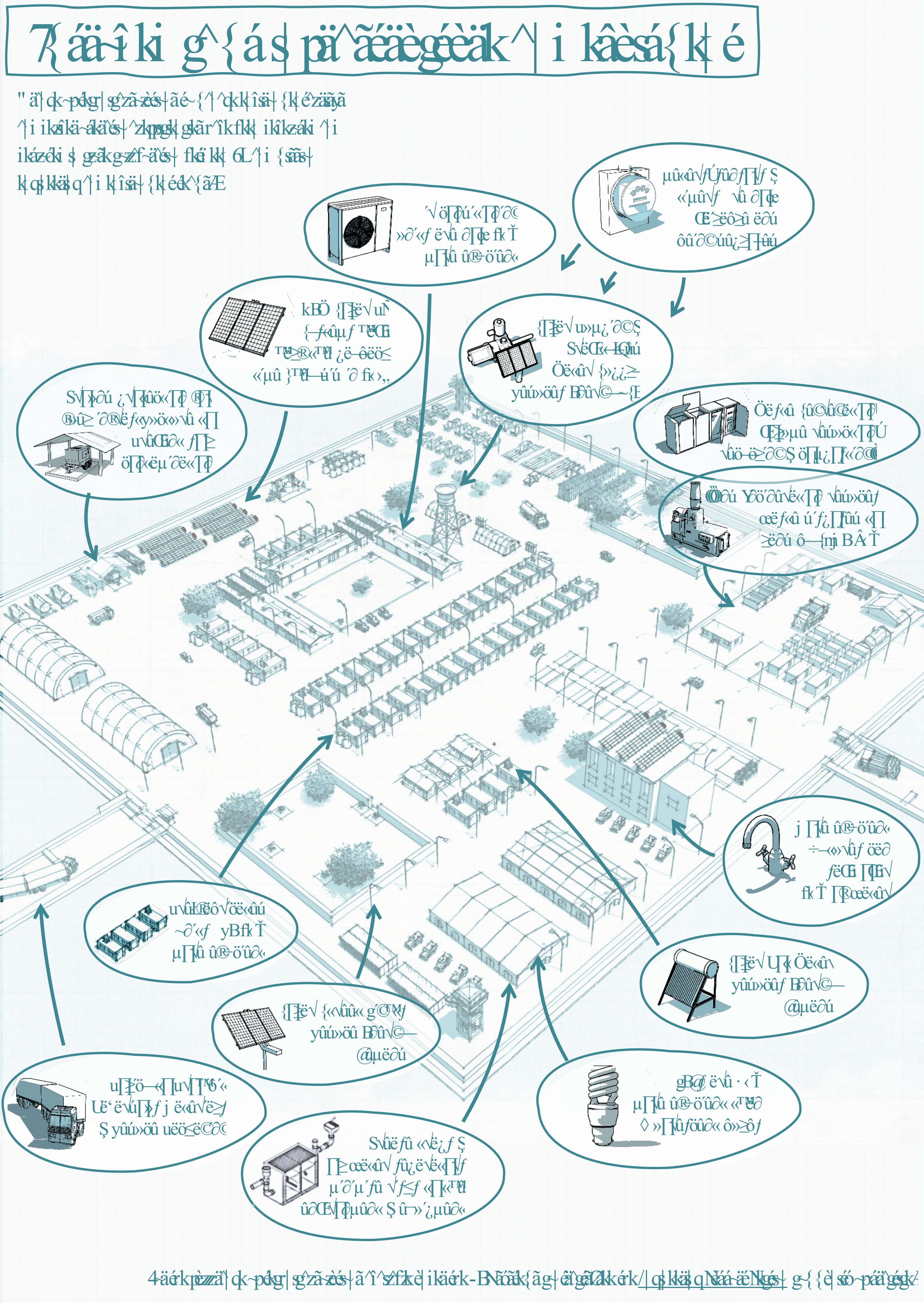
In recognition that a significant component of environmental protection is in the behaviours of personnel, including the uniformed components, in addition to the above briefings, efforts were supported through the creation of awareness materials (e.g. the "say yes to less" campaign). Missions also undertake events throughout the year, usually timed with various UN environment days.

C) Availability of equipment and services that reduce environmental risks

In line with the Environment Strategy vision to operate at minimum risk to people, societies and ecosystems, upgrades to various contracts for strategic goods were made, and in some cases entirely new equipment was specified. In addition, many local initiatives were developed by mission engineering and environmental teams, supported by specialised centralised technical resources, that are not listed here. Equipment now available at the global level to reduce environmental risks includes:

- An upgraded wastewater treatment systems contract to allow greater flexibility in design, enabling low complexity, energy efficient solutions in addition to various options for more complex rapidly deployable modularised plants.
- Incinerators of various capacities capable of reducing the volumes of waste by some 90%, while meeting stringent emission standards together with various waste equipment, such as balers, shredders, woodchippers and composting systems to aid waste volume reduction, reuse, and recycling.

A global contract for e-Waste is also now in place, and clear policy requirements are provided on ground protection for fuel installations in the *Fuel Management Guideline* and *Environmental Policy*.



D) Availability of resource efficient equipment and services

Supporting the vision to achieve maximum efficiency in the use of natural resources, upgrades to the technical specifications of various strategic goods were made. Equipment now more efficient than at the outset of the Strategy includes:

- Air conditioning units, which are estimated to represent up to 50% of electricity use in missions, are now up to 30% more efficient. Payback time is usually in the order of 1 year.
- Lighting, considered to represent 10-15% of electricity use, now have options that are 50% more efficient, with a payback time of around 6 months.
- New prefabricated accommodation units with better insulation are 30% more efficient, contributing to reduced cooling demands. Given the high cost of these units, the payback time of replacement is more than ten years, therefore replacement is generally conducted when existing units have reached the end of their useful life.
- Renewable energy solutions now deliver double the renewable power per dollar than at the outset of the Strategy, with the payback time dropping to between five to two years depending on the fuel cost and solar insolation at a given site.
- Water saving fixtures are now over 30% more efficient than those available at the start of the Strategy.

Recommended standard text for the minimisation of packaging has also been provided for incorporation into relevant goods contracts to reduce waste and transport volumes.

E) Contributing to a positive impact

The approach to positive legacy was to mainstream the concept within the respective environmental and engineering pillars and to collect data and case studies. Some aspects of mainstreaming included:

- Integration into the Energy, Water & Wastewater and Waste technical areas to ensure consideration of co-benefit and/or positive legacy aspects in infrastructure development and handover. Data collection and monitoring was also integrated into the reporting systems.
- Incorporation into a range of documents, ranging from environmental policy to management plan templates and guidance. Most recently, the Engineering Manual considers positive legacy aspects.
- A focus on the opportunities for the positive legacy of renewable energy infrastructure was subject to a dedicated joint project ("UN Energy Transitions: Renewable Energies in Support of Sustaining Peace") funded by the UN Transitions Project (a partnership between UNDP, DPO, DPPA and DCO). This brought together DOS, UNDP and four pilot missions (MONUSCO, MINUSMA, UNSOS and UNMISS) to assess the potential for renewable energy projects to provide secondary benefits to local communities / host countries in order to strengthen the transition from a Peacekeeping to post-Peacekeeping UN presence. A key element of the initiative was to draw together in-country UN agency counterparts and other key partners.

F) Performance monitoring and accountability systems

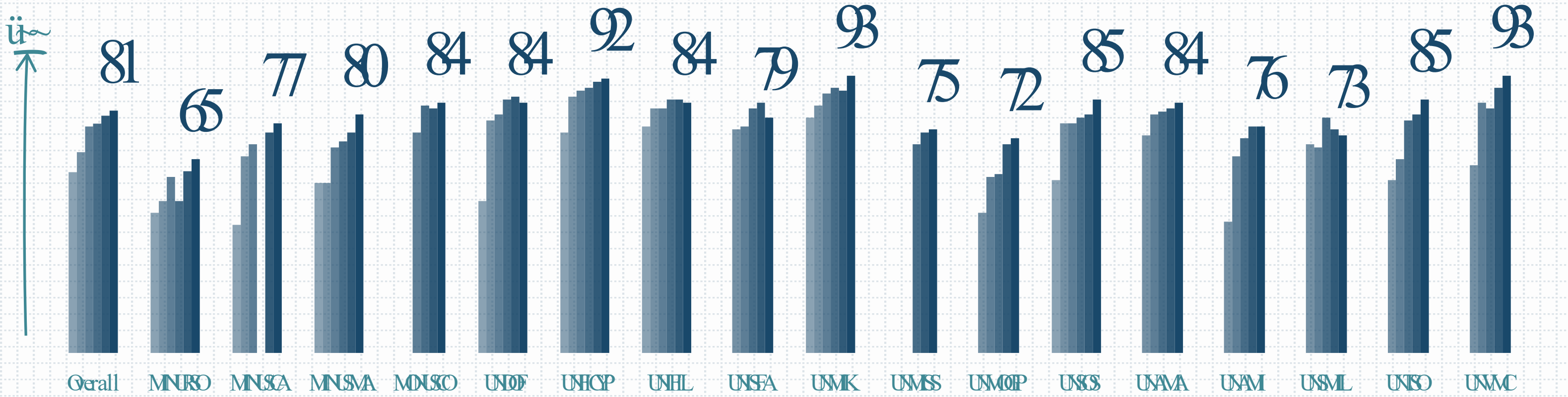
At the outset of the Strategy, only limited resource use data (the exception being fuel) was collected and risk assessment was not consistently applied or available centrally. Field operations are now regularly providing key environmental performance information in a controlled and consistent manner using software developed by OICT that is specifically tailored to field mission contexts.

The environmental information gathered is used to report on performance under the Results Based Budgeting process and is made available to Member States. In addition, Heads of Missions are accountable for environmental performance, with the inclusion of both continual improvement in performance, and adherence to environmental requirements, as components of their Senior Compacts with the Secretary General.

III Results

A) Operating at minimum risk to people, societies and ecosystems

As noted in Section II, equipment to reduce environmental risks is now available to missions and is progressively being deployed in line with risk assessment and prioritisation. Together with other measures, such as frequent risk assessment, risk management plans, senior leadership commitment, and in-field technical assistance by specialised centralised technical resources, all infrastructure and management practices are now assessed to not present a significant risk of harm to people, societies or ecosystems.



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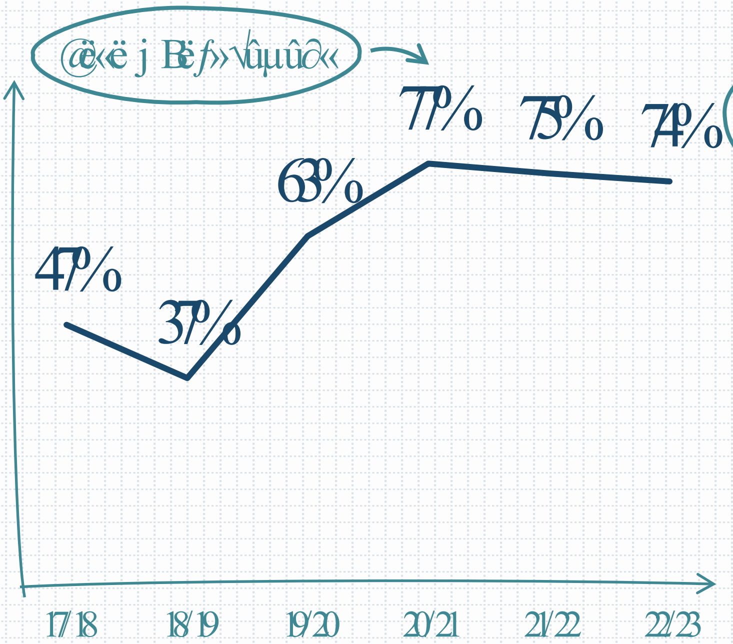

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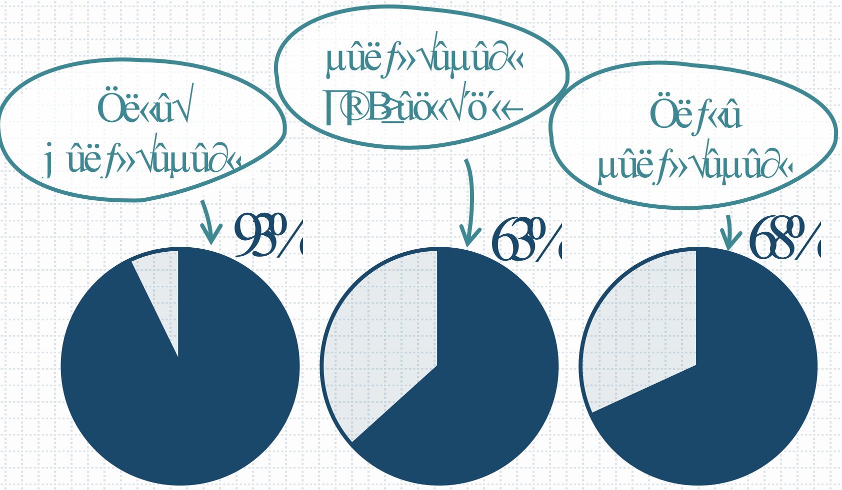

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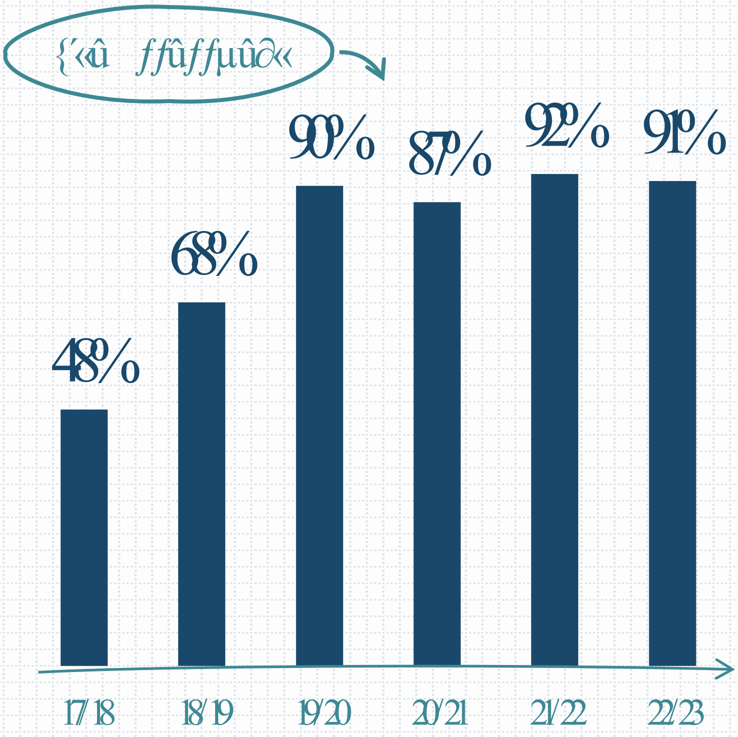

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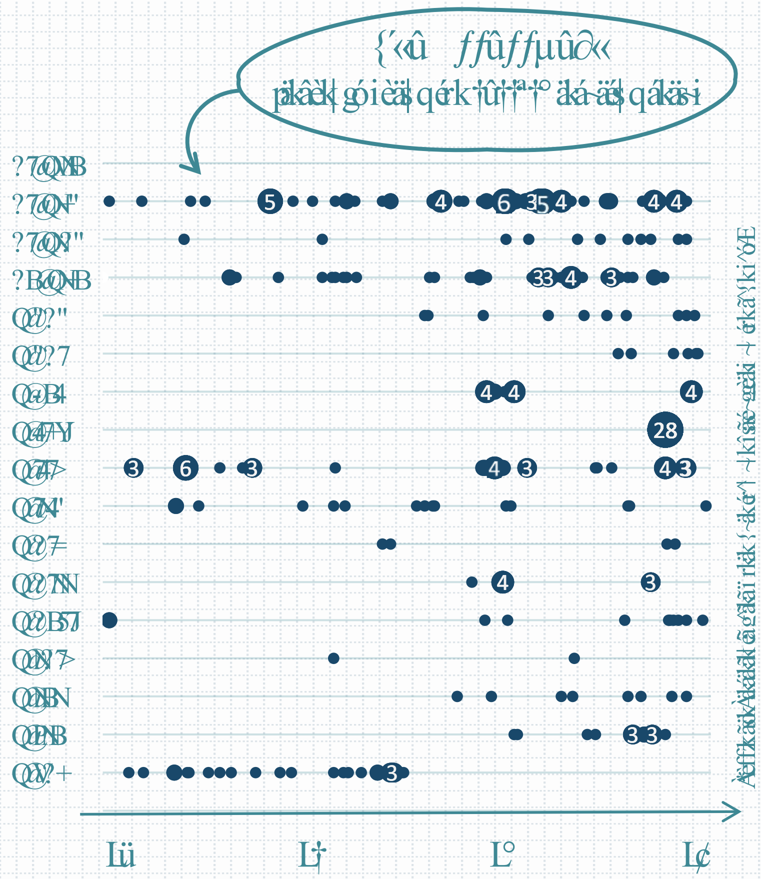

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Fourteen sites, initially identified as not meeting requirements, have now been upgraded, leading to zero uncontrolled discharges since the 2021/22 reporting period. An example of the remedial activities undertaken at five sites in MINUSCA is provided in **Case Study 1**.

Throughout the Strategy period there have been zero reported releases of hazardous wastes to air, land and water, through appropriate segregation, treatment and disposal. In many cases, missions (correctly) segregated and stockpiled such materials: deployments of technical experts, particularly at mission draw-down, have supported their appropriate treatment and disposal.

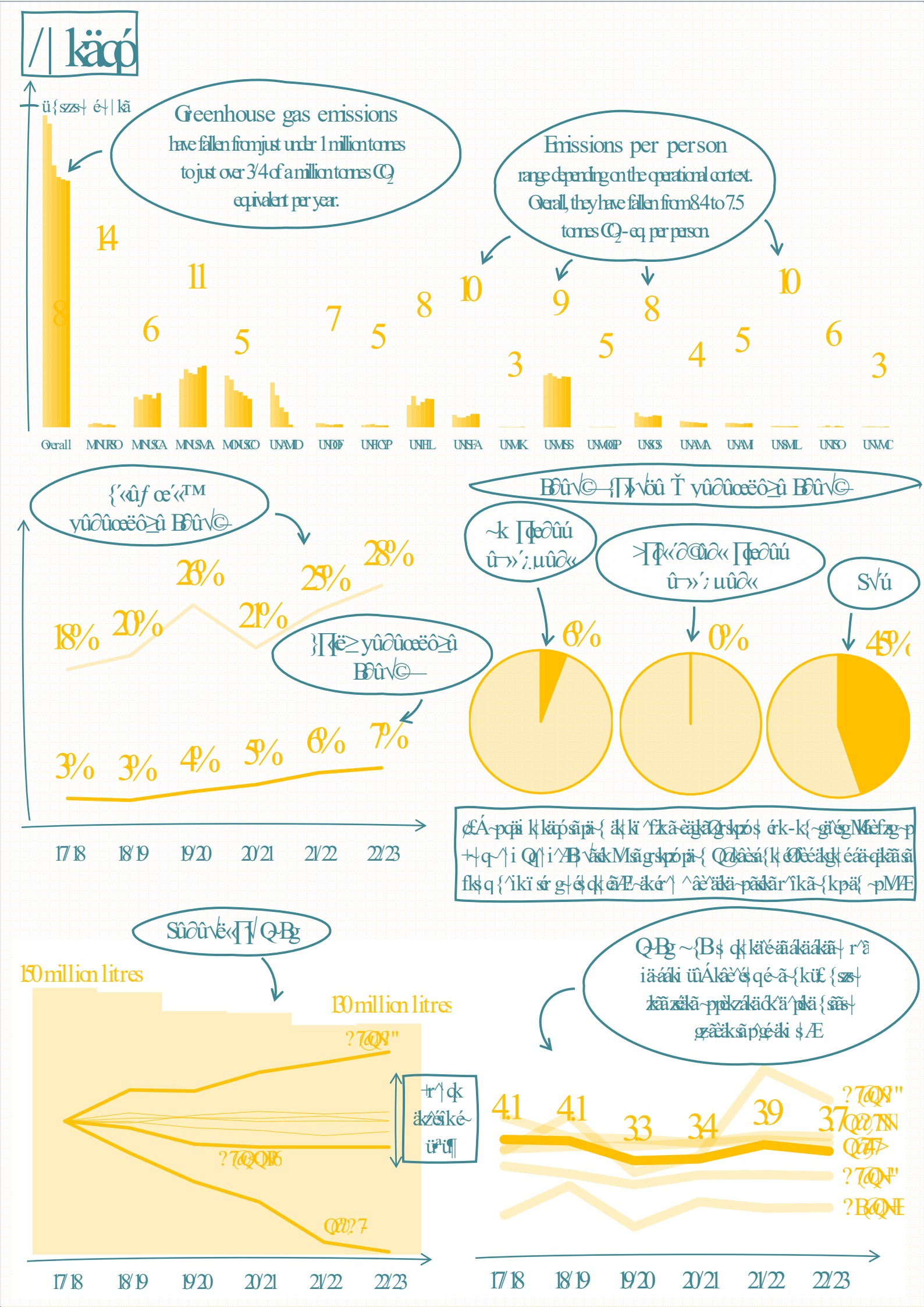
Achieving the vision of minimum risk will require the deployment of the new equipment available, together with minor engineering works, to the remaining sites requiring improvement. As of June 2023, deployment rates of this equipment, and their relative contribution to reduced risk of environmental and social impact, are:

- 70% of sites (some 300 of 450 locations) have fit-for-purpose wastewater treatment systems, deemed to be at "minimum risk". This is double the number of sites at the outset of the Strategy. Missions are progressing improvements tailored to the site context, with an emphasis on passive and low-tech solutions where feasible, to greatly reduce the likelihood of uncontrolled discharges of untreated wastewater.
- Fit-for-purpose waste treatment systems greatly reduce the volume of waste disposed and the risk of environmental releases. While missions have made substantial progress (around two thirds of wastes are now composted, recycled, properly incinerated, or sent to engineered landfill), some 300 sites still require improvement. Fortunately, at the remaining (mostly smaller) sites, "barrel incinerators" are relatively low cost and easy to deploy. Extending appropriate treatment to all sites and achieving close to zero disposal of waste to un-engineered landfill will require the further deployment of a range of equipment at an estimated cost of USD6-10 million excluding ongoing service contracts. An example of the development of such waste management in UNAMI is provided in **Case Study 2**.
- Around half of fuel and generator infrastructure has appropriate containment to prevent spills and discharges that lead to soil contamination, which is an improvement from around one third. Soil requiring, or under active, remediation, is estimated to be over 2,500 cubic metres. An example of MONUSCO's approach to proactive soil remediation can be found in **Case Study 3**.

B) Efficiency in the use of natural resources

More resource efficient goods are now available to missions and are progressively being deployed, either in line with turnover / useful asset life rates or accelerated where supported by total cost of ownership analysis. Achieving the vision of maximum efficiency will require the full deployment of these goods in a staged manner. As of June 2023, deployment rates are summarised below, and their relative contribution to reduced resource use are provided in the various accompanying case studies.

- More than three quarters of water points have efficient fixtures, and the use of alternative water sources in missions hosted in water stress countries has increased from 16% to 39%. An example of re-use of treated wastewater in UNDOF is provided in **Case Study 4**.
- Around two thirds of air conditioning units are now of the more efficient split system type. Replacement of old units with new units from the new global contracts would require the deployment of some additional 20,000 units (at an approximate cost of USD20 million). Approximately 2,000 top efficiency units are already in stock and ready to be installed and USD0.8 million is budgeted in 2023/24. See **Case Study 5**: Substitution of old inefficient air conditioning units with higher efficiency units at HQ Naqoura, UNIFIL.
- Almost two-thirds of lighting fixtures now have efficient LEDs installed. Full roll out would require deployment of some 45,000 units (at an approximate cost of USD2 million). Around USD0.5 million is budgeted for 2023/24. See **Case Study 6**: LED lights replacement in Goma, MONUSCO.
- Improved insulation standards are met in more than half of buildings. This value represents fixed wall buildings and turnover of prefabricated units to higher efficiency models at the end of their useful life, as well as low-tech enhancements, such as shading. Noting the long payback period for the new units described in Section II, further progress will be incremental in line with their useful life. See **Case Study 7**: Prefabricated building upgrade in Abyei, UNISFA.
- While well over half of applicable generators are synchronised, less than a quarter are considered "rightsized". Efficiency improvements can be significant, but are highly case dependent, and may involve centralisation, increased voltage of distribution, and integration with PV, as described in **Case Study 8** in UN House—Juba, UNMISS.


Greenhouse gas emissions have fallen from just under 1 million tonnes to just over 3/4 of a million tonnes CO_2 equivalent per year.
Emissions per person range depending on the operational context. Overall, they have fallen from 8.4 to 7.5 tonnes CO_2-eq per person
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- The percentage of renewable electricity has been growing at roughly 1% per annum to the current 7%, of which 4% is from renewable grids, chiefly in Democratic Republic of Congo and Uganda. More than a quarter of all camps have some renewable systems, providing a resilient energy source in case of fuel or grid supply disruptions. Examples of self-build of renewable energy systems and of grid connections to renewable grids are found in **Case Studies 9 and 10**. A flagship power purchase agreement (PPA) project is summarised in the Positive Legacy information sheet.

The long lead times in the turnover to more efficient equipment means it will take some time for these measures to be fully reflected in the results. Meanwhile other measures, such as staff awareness campaigns, have made a more immediate contribution. Results to June 2023 are described in the various graphs provided in this document. In summary:

- Fuel use (in generators) has fallen from 150 to 130 million litres, with mission closure a significant factor. Fuel use per person (per day) has also dropped from 4.1 L (2017/18) to 3.7 L (2022/33) and was as low as 3.3 L during COVID-19. The difference between 4.1 L and 3.7 L per person per day (10%) equates to some 15 million L less fuel per year. (Noting that while the per capita figure is less affected by mission closure than the absolute value, the results may still be affected: closure of a low efficiency mission will improve the results, and vice vera, even if all other missions have not changed).
- Likewise, overall water consumption also dropped by over 450 million litres. Although the current figure of 133 litres per person per day is less than the 138 L in 17/18, this is likely within the margin of measurement error, with water use hovering around the 130 L per person per day mark. Water use is highly variable between missions (reflecting the respective mix of offices vs accommodation, logistics bases and so on), and is very context dependent[7]. For this reason, water data is best analysed on an individual site basis.
- Waste generation is consistent at 1.6 kilograms per person per day. This may reflect that generation is relatively low and impervious to change given the logistical hurdles in supplying materials, but is most likely a reflection of the relatively high levels of estimation undertaken in quantification. When we look at the means of disposal, methods have substantially improved: in 2017/18 some 57,000 tonnes was disposed to non-engineered landfill or open burned; today it's around 20,000 tonnes, roughly a third of what it was at the start of the Strategy.

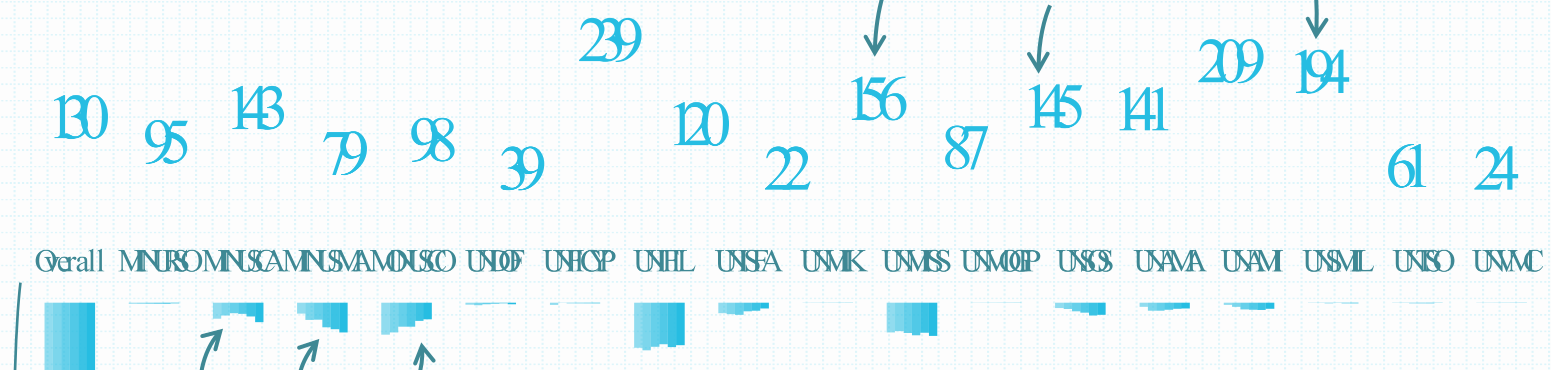
C) Positive legacy

Collation of information has yielded a wealth of positive impact case studies. In summary, these can be typified as:

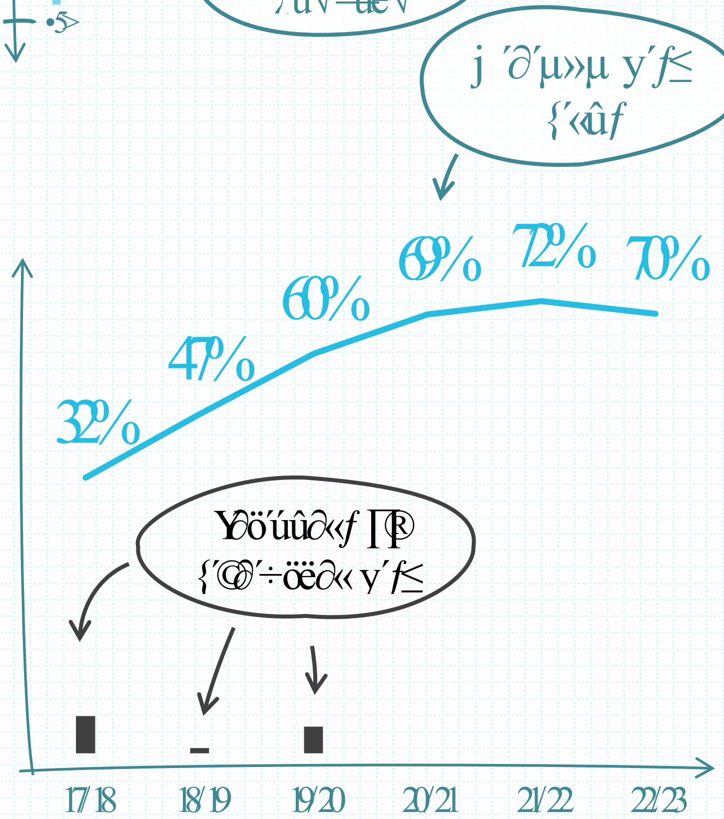
- Site infrastructure and assets, including energy, water/wastewater, or waste management infrastructure, identified for potential handover at site closure (in some cases designed with this in mind).
- Rehabilitation/construction of host government infrastructure critical in supporting the operation of the mission in the implementation of its mandate, while providing co-benefits to host communities during and post-mission operation—such as roads, bridges, airstrips, flood protection, boreholes etc.
- Upgrading municipal facilities and services in order to meet the mission's operational needs (and environmental standards), utilising mission funding and expertise to establish or improve a municipal public service, which also brings significant host community co-benefits.
- Outsourcing (renewable) energy supply to external providers, resulting in lower GHG emissions for the mission as well as acting as a bridgehead for the providers to explore opportunities to increase clean energy access and quality of service for host communities.
- Hiring, contracting and building capacity and expertise of local and national enterprises and staff/contractors.
- Various initiatives from tree planting and beach cleanup days through to sophisticated large scale reforestation efforts (e.g., seed-ball drops by drone).

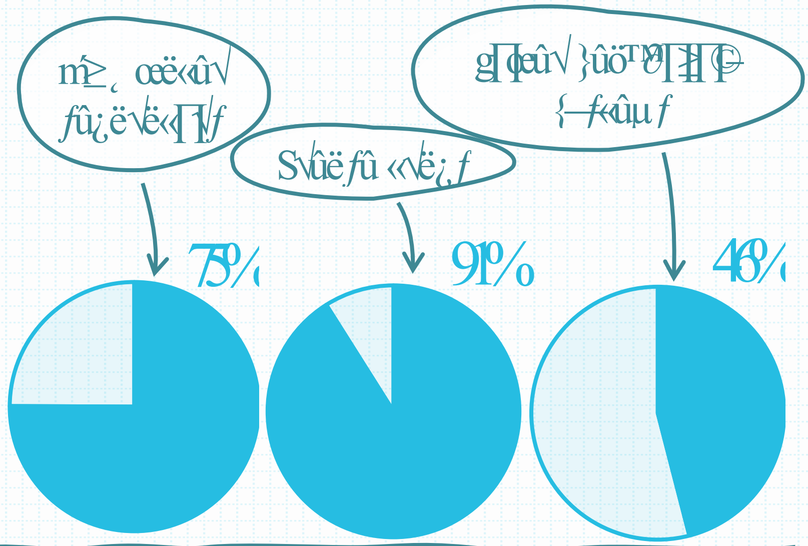
Of course the founding condition for positive legacy is not leaving a negative one. One of the most important contributions of the support structures implemented under the Strategy was the availability of specialised central resources to assist with drawdown. With missions (rightly) segregating and stockpiling hazardous materials until suitable solutions can be found, these stockpiles represented a key environmental risk at mission closure.

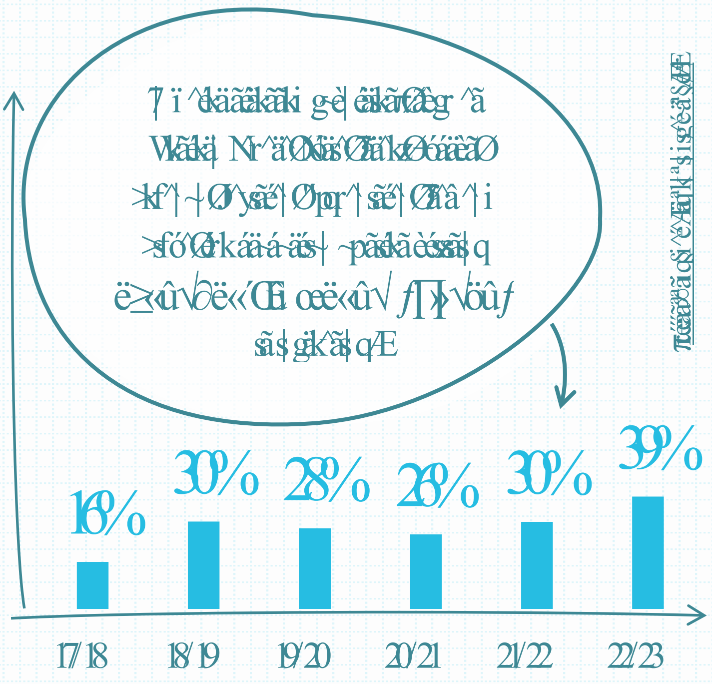
[7]Some missions are located in highly water stressed countries, while others are not (noting that some missions are in arid environments that are not considered "water stressed" due to either the absence of irrigated agriculture or to high regional variations in water accessibility, e.g. Mali and Somalia). Further, the use of water is oftentimes a reputational issue rather than an environmental / technical one: the impression of profligate use of water may be more relevant than the actual environmental impact which may be benign (such as extraction from deep, well characterised, aquifers—as opposed to shallow wells used by locals, or for potable uses which may be several orders of magnitude less than local extraction for agriculture).

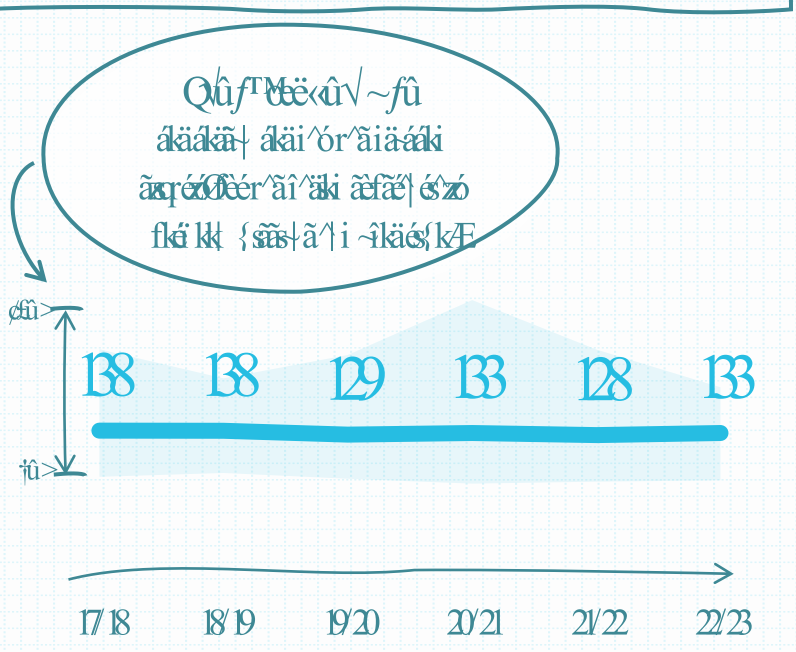


*The term "freshwater use" is used to account for unavoidable treatment losses which are not actually consumed by personnel. It includes water abstracted from ground and water sources, less treatment losses, and water sourced from alternative sources, such as rainwater, treated wastewater and in some cases, melted snow. Conversely, the withdrawals shown in the bar chart represent the volume of water abstracted from ground or surface waters (including via municipal supply), and does not account for treatment losses.









Hands-on assistance was provided in UNMIL, MINUJUSTH, and UNAMID to chemically neuter and encapsulate chemicals and other materials, export certain hazardous wastes for treatment at certified facilities abroad, and to remediate contaminated soils (amongst many other activities). This capacity will clearly be needed for the foreseeable future.

D) Progress against performance indicators

The 2017-2023 Strategy has been tracked using a series of KPIs, with progress reported in narrative and tabular format in the annual overview reports. The KPIs have been provided in a series of figures throughout this document. A larger suite of performance indicators was also collected and presented annually within the individual missions' environmental scorecards.

E) Strategic analysis

The collaboration with missions, technical problem analysis, market intelligence gathered on available solutions, development of policy, procedures, guidance and training, and review of performance results and lessons learned, has established the broad strategic approach to the key challenges, as summarised below.

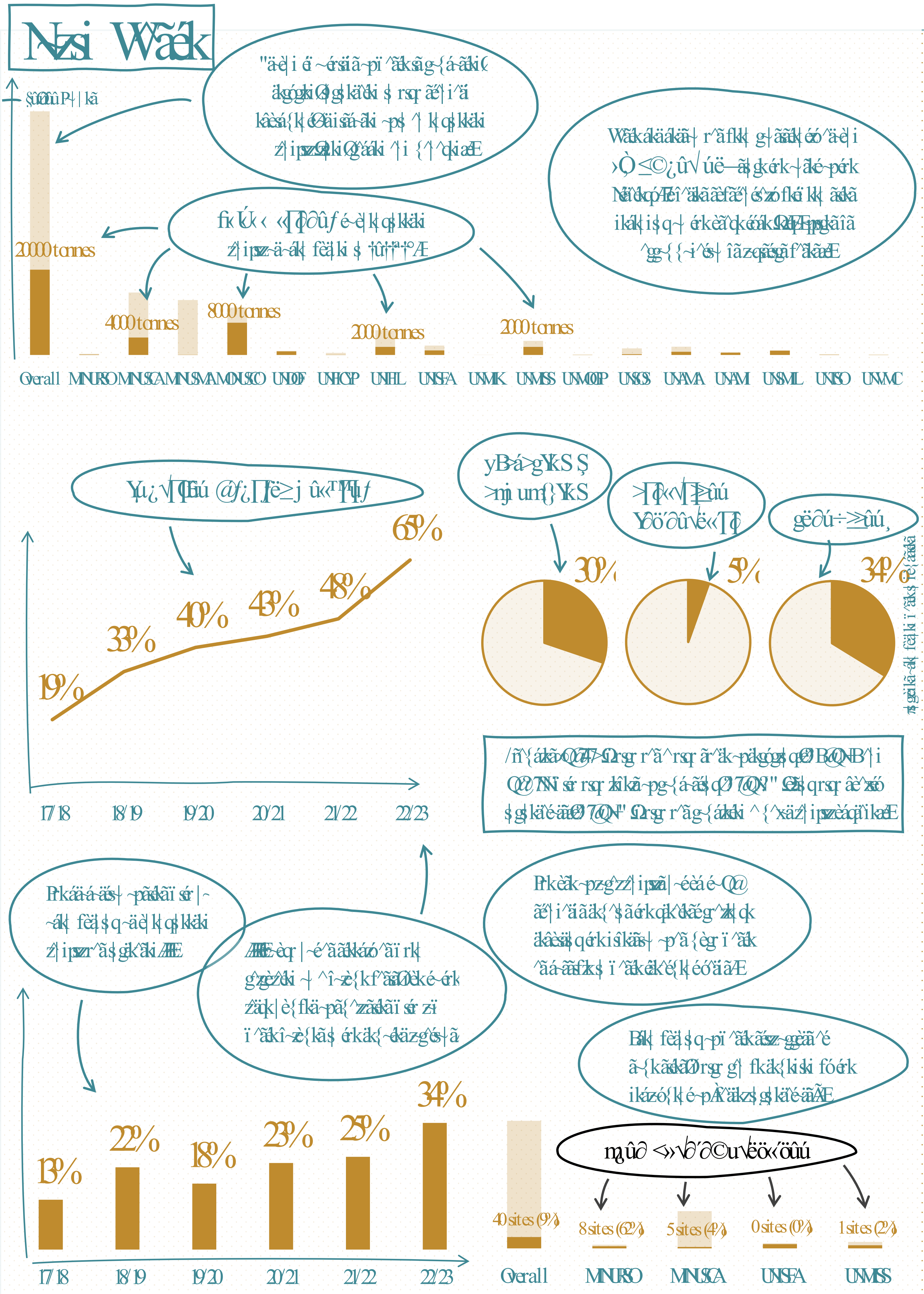
While missions can be commended for their commitment to quickly addressing wastewater treatment concerns, the approach, involving deployment of complex modular equipment, has resulted in several issues. Firstly, the equipment is expensive (some USD100 million has been spent on equipment), with substantial ongoing operating costs due to high energy use, requirements for regular oversight and maintenance by competent personnel, and the need for regular (and expensive) spare parts. The complexity of the equipment also results in a relatively short useful life and mitigates their utility for host countries at handover—even when competent local authorities are available, ongoing maintenance costs and availability of spare parts may be problematic. Worst case scenario is the units continue to be used but provide ineffective treatment, exacerbating the risk to local communities. Partly for these reasons, none have been successfully handed over to non-UN partners at mission liquidation. Going forward, missions will prioritise energy efficient, lower technology, or larger scale built in place systems modelled on traditional wastewater utilities. Modular plants using membrane bioreactor (MBR) technology would still be used when other options are not suitable. The new wastewater systems contract allows for a variety of solutions, with upgrades systematically under way across missions in line with the respective Wastewater Management Plans of each mission.

Waste disposal options have been limited: either through open burning / burying on site, or transporting to a local landfill or dumpsite that in most cases does not meet UN expectations. Few recycling options are available. Efforts to upgrade local landfills have proved to be expensive and can leave problematic legacy issues. The appropriate solution is to divert as much waste as possible from landfill by removing organics (composting), establishing recycling where possible, and incinerating the remainder in units that meet strict emissions standards. These methods can reduce waste volumes by over 90% and more readily enable the encapsulation of residual materials to prevent releases to the environment. All these options are now available to missions and are being rolled out in accordance with the respective Waste Management Plans of each mission. Hazardous wastes are generally well managed, but often result in stockpiling until solutions can be found. The Strategy has enabled the development of guidance and the provision of hands-on training to enable missions to adequately treat and dispose some of these wastes. The remainder still require dedicated solutions from the private sector, with such contracts now available.

Missions have progressed energy efficiency initiatives, following an initial focus on generator efficiencies, staff awareness, and deployment of more efficient equipment in line with asset turnover. Fuel use for power generation in missions is down on both an absolute and per capita basis. Only modest progress has been made on renewable energy, partially a result on focusing on higher return-on-investment activities (energy efficiency). But this also reflects the relatively high technical complexity, novel technology, and constrained capital investment budgets (with multiple year payback periods). A range of solutions are thus required depending on the mission context, ranging from:

- UN-owned or Contingent-owned renewable energy systems installed and/or operated by either the UN, contingents, or contractors;
- sourcing of renewable energy from (often involving the establishment of connections to), renewable systems in national/local grids (where available); or
- enabling the development of renewable systems owned by public or private providers by leveraging the scale of the mission's energy needs, either solely for the mission or for multiple beneficiaries.

Although the latter has the advantage of not requiring upfront capital investment by the UN, it may require entry into long-term agreements that can place future liabilities on the UN. Various models to overcome these issues have been identified, and DOS is currently determining the



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40 sites (9%)
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5 sites (4%)
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most appropriate financial and contractual mechanisms through negotiations with vendors during the solicitation process. Meanwhile, missions have clear investment plans under their respective Energy Infrastructure Management Plans, but as these are limited by their operational budgets, progress is expected to be slow and steady, with a power purchase or leasing model likely the best option to achieve significant scale should the contractual liability issues be able to be unlocked.

Looking at the positive legacy of missions through the lens of expenditure, of the USD360 million spent yearly on Facilities & Infrastructure, spending on local utilities (USD19 million), leases (USD32 million), construction works (USD120 million) and service contracts (USD60 million) could be assumed to contribute to positive legacy, as these expenditures add to the local economy and stimulate job creation. For example, monthly utility payments allow companies and municipalities to ensure O&M of their networks, expand, and improve the quality of service delivery to other clients. Construction works that rehabilitate government infrastructure (e.g., roads, bridges, airports) to meet mission operational needs also provide significant co-benefits. In addition, employment of national staff, totalling over USD400 million per annum, contributes to the economy as well as capacity and skill development. During mission drawdown and handover, quite substantial amounts of equipment may be handed over. This occurs primarily where the residual asset value is low (or transportation costs high), or where disposal to an intergovernmental organization, a government or governmental agency or some other non-profit organization serves the interests of the United Nations.

Over the course of the Strategy, missions have been documenting a wide range of activities that contribute to the host country: from “quick impact projects” such as provision of water bores, through to handover of environmental infrastructure. It has been the projects where co-beneficiaries are involved in the design process (e.g. wastewater treatment plants managed by the local utility supported or rehabilitated through the technical engineering expertise of the mission), that offer the highest likelihood of long-term sustainable outcomes. Going forward, improved planning for low-tech, cost-effective, and long-lived mission infrastructure is essential if the interests the United Nations over the longer term are to be served, particularly in the areas of renewable energy, water and wastewater facilities, and waste management infrastructure.

IV Challenges and operational issues

A) Budgetary

Although missions have substantial operating budgets, the majority of the spend is fixed: for personnel (uniformed and civilian) and materiel reimbursement for contingent owned equipment. Calls from Member States on missions to reduce overall mission budgets therefore falls on non-fixed operational support costs, with facilities and infrastructure being a key one. Although many environmental initiatives have resource efficiency benefits, these accrue over time, and the initial capital outlay is often not able to be made due to other pressing operational requirements.

A case in point is greenhouse gas reductions. Due to the operational and technological difficulties in the land and air transport emissions sources, achieving science-based reduction targets in line with Paris Agreement's long-term temperature goal would require an increase in renewables to around 80% by 2030. This would necessitate the transition of more than 350 GWh of electricity generation from diesel to renewables, requiring the deployment of some 200 MW of Solar capacity and related energy storage (at a cost of some USD500 M). Currently USD11.5 million are budgeted in 2023/24, which combined with the USD11.6 million already spent on projects which are under development, would double the renewable energy share. An additional 9% increase is also expected to come from a number of ongoing Renewable Energy Power Purchase Agreement projects, which do not involve an upfront cost. As can be seen, significant upfront outlays are required (or novel contractual mechanisms need to be developed) in order to meet 2030 targets. Going forward, DOS will support missions to provide costings for projects that are able to meet ambitious targets as part of budgetary preparations, in order to facilitate informed discussions.

B) Sourcing and logistics

Professionalising the approach to environmental management has required the specification, sourcing, acquisition and deployment of new equipment. In some cases, this has taken longer than anticipated[8]. As such, the benefits for certain initiatives will be realised post June 2023. Furthermore, some of the newest technologies have only recently been deployed—we anticipate some time for these to be adopted wholesale within the standard operating practices of missions.

[8]For example, while the technical specifications for the waste management equipment were first developed in Q4 2017, the contract was not signed until Q4 2021. Development of the Wastewater Treatment Solutions contract began in Q1 2021, and was awarded in Q4 2023.

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C) The COVID-19 Pandemic

As in all countries and sectors, COVID-19 significantly affected peacekeeping and the implementation of the Environment Strategy. The areas most keenly affected were in:

- Logistics and sourcing (delays in the delivery of equipment, as well as problems in the sourcing phase of new contracts due to price escalations, restrictions on prototype inspection visits, etc.).
- Progress of various mission environmental projects, particularly when outsourced.
- Site inspections, due to constraints on inter-mission transport for environmental teams (advice was provided on use of remote assessment techniques).
- In-field technical assistance from REACT (with remote assistance provided in lieu).

The pandemic, and subsequent Ukraine war, also highlighted other problems related to the reliance on fuel, ranging from unbudgeted price increases, to severe operational constraints due to fuel supply issues.

Additionally, the impact was felt in the performance data, resulting in a "false" impression of improvement during the pandemic (e.g. reduced travel leading to GHG emissions reductions). Nevertheless, with most uniformed and civilian personnel remaining in-mission (and corporate travel making up only a relatively small proportion of the total), peacekeeping's operational footprint remained relatively stable when compared to other UN entities.

Fortunately, the early adoption of virtual networks under the Strategy greatly assisted in the continuation of environmental activities, and provided valuable support for personnel during a challenging period. Technical assistance on the COVID-19 response was provided on hygiene and waste management by the water and waste experts—guidance subsequently adopted in other UN agencies.

D) Start-up, sustainment, and drawdown

Effective environmental management is complicated by the dynamic nature of missions in accordance with operational needs and changes to the mission's mandate, with surges and drawdown in uniformed components, and relocations of force strength, associated with opening, closing or reconfiguration of sites.

Initial deployment is often rapid, with the modus operandi generally being self-sustainment by contingents until mission support can deploy the needed infrastructure, primarily in the form of containerized and prefabricated systems. There is often little option in the selection of sites, and locations can be less than ideal from an environmental perspective (e.g., low lying sites, prone to seasonal inundation, or located far from city centres), resulting in environmental engineering challenges and limiting the options for the development of sites in a way that will suit future end-users. During the subsequent sustainment phase, the mission has a chance to make improvements and prepare the site as part of early transition planning, but usually under budgetary and logistical constraints.

Site closure can be equally problematic, particularly as at this time the mission is drawing down on the personnel needed to effectively oversee logistics and environmental cleanup activities. Sustaining the gains of the Strategy will require concerted efforts long in advance of and during mission closure to ensure that a) no environmental risks remain for the local population and b) the UNs reputation is enhanced (or at least not damaged) to better facilitate the transition to a new UN presence.

E) Performance Data

With the exception of fuel, little of the information required in support of the Strategy was available, requiring the development of data collection and reporting systems. Furthermore, existing platforms did not readily "talk" to one another—e.g. the sites in the Electronic Fuel Management System (EFMS) do not always match those in the Geographic Information System. While bulk fuel records are considered reliable in the EFMS, breaking this down to the site and asset level to understand fuel efficiencies has in most cases proved to be problematic. A significant issue has been the unavailability of kWh (electricity output) information from many generators, principally contingent-owned (now rectified in the COE Manual with all generators requiring kWh meters by June 2024). Problematic too has been information on personnel numbers at some sites, particularly as they may change over time. Many areas of data integration remain pending.

As a result, obtaining the information needed to plan for enhancements and to then demonstrate the efficiency improvements, requires substantial and ongoing efforts from very many personnel, including the manual gathering of data (some 500 parameters) from remote sites in challenging operating contexts. Although sensors are progressively being deployed, this is taking longer than expected due to a range of issues, ranging from calibration and technical specification problems to the availability of

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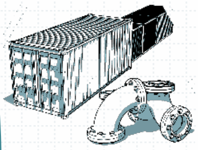

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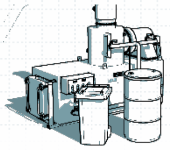

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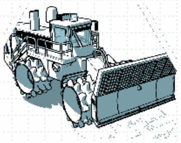

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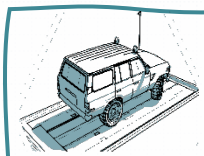

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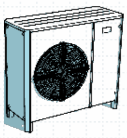

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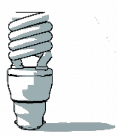

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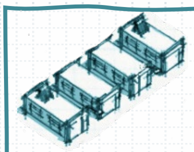
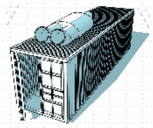
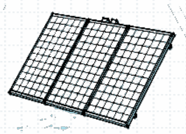
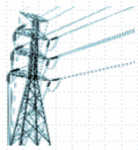








connections and so on. In the meantime, the focus going forward is to rationalise the data collection by focusing on core requirements (particularly as many of the Strategy initiatives are either completed or are sufficiently mainstreamed into standard practices) and by making use of estimation methods in order to minimise the resource cost of collection. Reliability of data remains an ongoing challenge requiring dedicated resources assigned to error checking and verification.

The dynamic nature of mission operations means comparison of data across time is problematic. For example, the footprint under consideration of the Strategy has reduced with the closure of MINUJUSTH and UNAMID during the period, with drawdowns and surges occurring in other missions. Even when accounted for on a per person basis, the results are still affected: a KPI could be improved simply due to the closure of a poorly performing mission / site and vice versa, even when all other missions have not changed. Performance is best assessed on a site-by-site basis, rather than in aggregate.

Finally, the utility of some KPIs vs the intrinsic nature of the uncertainty in measurement is an issue. For example, due to the inherent difficulties in measuring waste generation, assessing and demonstrating the results of material reduction activities in the supply chain is unlikely to discernible under this KPI due to the margin of error, and other measures may be more appropriate (e.g., the resulting packing rates in transportation).

F) Mission and contractor capacity

Improved environmental practices often require the use of new equipment, technologies or approaches. To effectively operate and maintain this equipment, the capability of mission personnel and contractors needs to be upgraded through training and mentorship. Transition to a standard system of operation will take time and require continued monitoring to ensure shortfalls are identified and corrected. Consistency across all mission sites (whilst acknowledging the occasional need for local deviations for specific contexts) will greatly assist in building the required capacities. It will take repeated and ongoing field visits and mentorship to firmly embed the required technologies and practices.

G) Inter-agency and host country co-ordination

As a general rule, mission operational support functions are not particularly well integrated with the other UN developmental actors present in the host country. In addition, the operational support side of the mission does not usually engage with host governments, as this is domain of the political function. Despite substantial evidence of the linkage between environmental issues and conflict dynamics, or as drivers of development, stabilisation and resilience[9], political engagement on the topics of water, energy and waste is not common in missions. Headway has been made under the auspices of the Strategy, for example, through the Energy Transitions project (described earlier) and the Energy Compact: an initiative bringing together SRSG's, host countries, UN agencies, and supportive Member States[10]. DOS will continue its support to missions and SRSG's on this topic at both the strategic and field levels.

V Consultations on the way forward

In their resolution adopted by the General Assembly on 29 June 2022, Member States noted the progress made in the implementation of the Strategy and requested that the Secretary-General develop, in consultation with Member States, a way forward to ensure continuity in his efforts after the ending of the Strategy in 2023, and to report thereon in the context of his next overview report.

A) Member States

The consultation with Member States, through the Leading on Environmental Management in the Field Group of Friends, recognised the success of the Strategy in a range of areas, but noted room for improvement. They emphasised the need for a more ambitious succeeding Strategy or mechanism to be put in place, linked to the 2030 Agenda. And, for this reason, to set out goals for 2030, with user-friendly "status reports" on progress. It was suggested that missions' performance data and environmental plans be placed online, with more visibility to projects and good practices in the field, and to communicate the efficiencies and cost savings to be achieved with the implementation of environmental measures to allow for a more robust consideration of mission budgets. They emphasised the need to invest in sustainable infrastructure, with a positive legacy, and the importance of enhancing the use of renewables in field operations to demonstrate United Nations leadership in the battle against climate change. But they also noted that relying on the budgets of individual missions is not enough and requested that the Secretariat further explore new partnerships with the private sector and host governments as well as new financing measures.

[9] See https://peacekeeping.un.org/en/conflict-and-natural-resources

[10] See https://operationalsupport.un.org/en/new-partnership-renewable-energy-peacekeeping-announced-un-energy-summit

B) Internal Stakeholders

Internal feedback (ranging from some 80 practitioners through to eleven SRSG's) strongly endorsed the supporting and enabling mechanisms implemented by DOS under the Strategy, namely: centralised specialist support teams with a rapidly deployable mandate, cross-mission and cross-departmental committees and working groups, clear operational policies and guidance, and a performance and accountability framework. They also requested that missions set their own targets that are ambitious, while reflecting local operational challenges and budgetary constraints.

VI Evaluation and conclusions

The success of the Strategy may be assessed against its original vision: "responsible missions that achieve maximum efficiency in their use of natural resources and operate at minimum risk to people, societies and ecosystems; contributing to a positive impact on these wherever possible", and the pillar objectives detailed in **Table 1**.

Missions have demonstrated commitment to ensuring personnel are aware of expectations and their impact on the environment and natural resources. However, achievement of the vision of "maximum efficiency" is difficult to assess. While technologies exist for achieving this (and have been made available to missions through global contracts), the payback time for their deployment can range from within a year to over 10. And while accelerated turnover of assets can make sense from an ongoing operational cost perspective, there are serious logistical and human resource constraints, not to mention environmental costs associated with disposal of assets during their useful life. On balance, missions have adequately progressed improvements to infrastructure in accordance with these constraints and the respective mission contexts, and have developed detailed management plans to assess the efficiency benefits and costs. Going forward DOS will be assisting missions to incorporate these analyses into budget discussions to better inform decision making on meeting efficiency objectives.

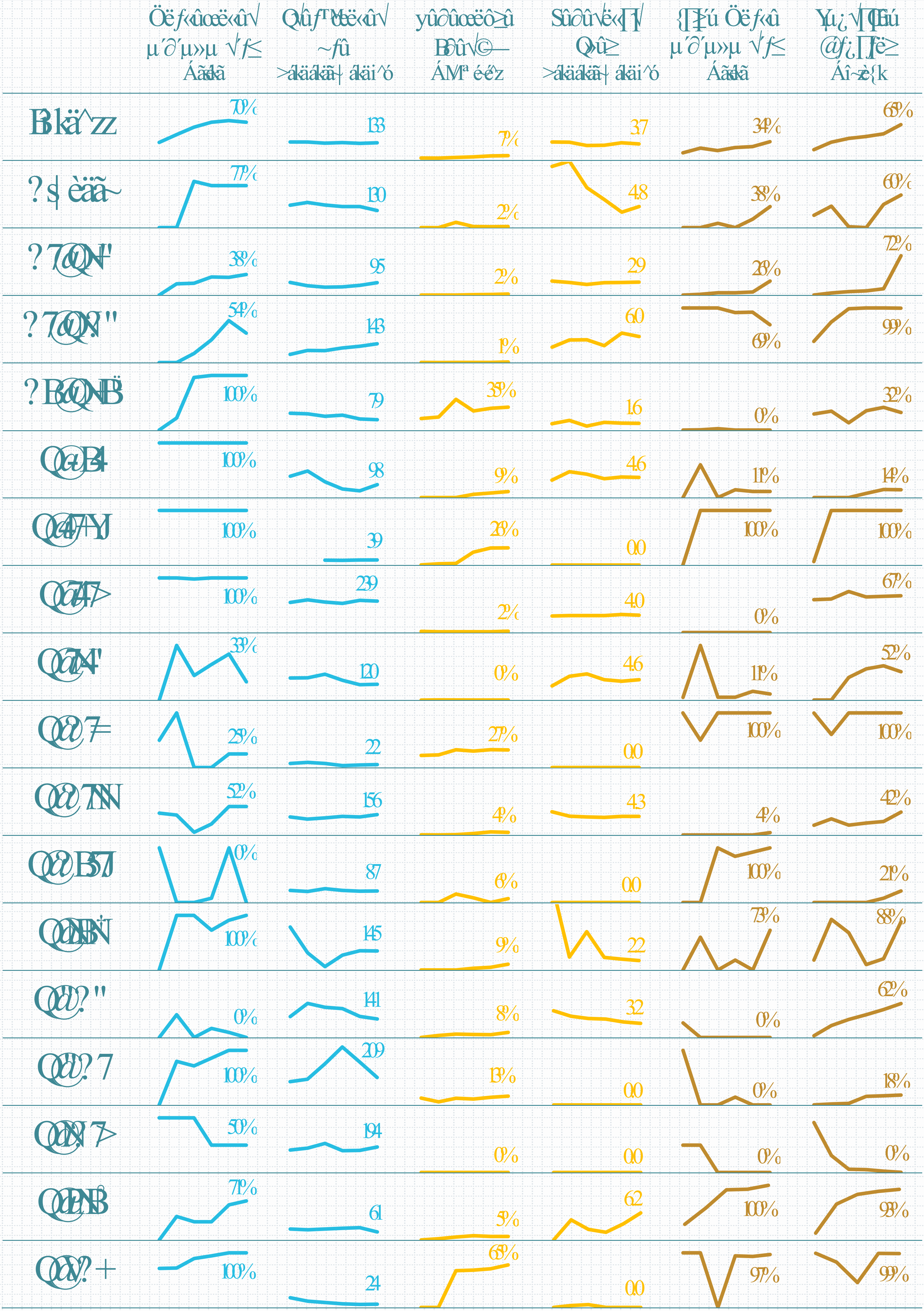
On the aspect of minimising risks: All wastewater discharged now meets health and environmental standards and any instances of uncontrolled discharges are adequately contained and quickly remedied such that there is no risk of impacts to host communities or the environment. Hazardous wastes have always been appropriately segregated, and there are now capacities in place to deal with them appropriately. Risks are not yet at minimum levels, though a pathway for achieving that objective is clear. Energy risks are manyfold: environmental, safety and security risks to personnel in delivery and handling of fuel, financial and operational risks in fuel supply chains, and peacekeeping's own contribution to climate change. While progress has been made, it would be fair to state that efforts so far on energy use has not reflected the highest possible ambition, even in light of the differentiated responsibilities, capabilities, and circumstances of the peacekeeping context. Achieving minimum environmental risks will require ongoing vigilance as well as substantial upgrade to many facilities, most notably the upgrade to renewables, low tech and energy efficient wastewater systems and appropriate waste technologies. By and large, these are progressing in line with the operational constraints mentioned above.

On achieving a positive impact: the founding condition for positive legacy is not leaving a negative one. In addition to the risk mitigation measures discussed above, the availability of specialised central resources to provide hands-on assistance during drawdown and deliver training during sustainment enabled the appropriate treatment of wastes and remediation of sites. This is supplemented by dedicated global contracts to deal with certain hazardous wastes. There is ample evidence, drawn from very many case studies from missions, of positive benefits in both the sustainment and drawdown phases. The best examples are where co-benefits are realised during mission operation as these are most likely to be sustained after the mission leaves. Opportunities for co-benefits during the sustainment phase, as well as planning mission sites with their anticipated civilian end use in mind, should receive increased focus, reflecting calls from Member States for more progress in this area. Positive legacy intentions may or may not come to fruition during drawdown due to the political and security climate at the time of liquidation. Therefore, early coordination on planned end-use, focused on building local ownership, enabling co-benefits from shared facilities, and ensuring that the operation and maintenance of systems and infrastructure is led by those who are expected to operate these after the mission's life, are key aspects of facilitating greater levels of positive legacy going forward.

Overall, this review demonstrates very significant progress while acknowledging that there is still more to do. Pleasingly, the commitment is still there at all levels, both within peacekeeping and from its stakeholders, to sustain progress, raise ambition, and leave a legacy for host countries. Achieving these objectives will be built on the foundations established under the 2017-2023 Strategy.

Table 1: Assessment of Strategy objectives

Pillar	Objective	Assessment
EMS	*To introduce and maintain a system to mitigate adverse environmental impacts and enhance environmental performance in line with the UN's objectives.*	Comprehensive system, processes and resources in place. Requires ongoing support to yield accurate performance information and to address issues identified.
Water & Wastewater	*To optimise the use of resources for water and wastewater operations while managing risk to personnel, local communities and ecosystems.*	Awareness raising and training in place on water use. Equipment available and optimised where water resources are scarce. Wastewater risks managed, but not eliminated.
Energy	*To reduce the overall demand for energy through efficiencies, increase the proportion of energy sourced from renewables and reduce GHG emissions.*	Awareness raising and training in place on energy use. Energy demand and GHG decreasing on an absolute and per capita basis. Renewables increasing modestly.
Solid Waste	*To minimise solid and hazardous waste generation and improve waste management, reducing the level of risk to personnel, local communities and ecosystems.*	Focus has been on waste management as waste minimisation is largely optimised and difficult to measure. Risks reduced, but still some cases of open burning and use of unlined landfills in smaller, remote sites.
Wider Impact/ Positive Legacy	*To ensure that operational requirements are met in a way that takes account of environmental impact and to increase the extent to which the footprint leaves a positive legacy.*	Policies and guidance on minimising environmental impacts in place and assessments regularly undertaken. Substantial economic and capacity building benefits identified during sustainment and handover of assets at end of mission. Legacy of environmental assets in particular could be enhanced through partnerships in the design phase.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77% 130 2% 4.8 38% 60%
38% 95 2% 2.9 28% 72%
54% 143 1% 6.0 69% 99%
100% 79 35% 1.6 0% 32%
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100% 39 26% 0.0 100% 100%
100% 239 2% 4.0 0% 67%
33% 120 0% 4.6 11% 52%
25% 22 27% 0.0 100% 100%
52% 156 4% 4.3 4% 42%
0% 87 6% 0.0 100% 21%
100% 145 9% 2.2 73% 88%
0% 141 8% 3.2 0% 62%
100% 209 13% 0.0 0% 18%
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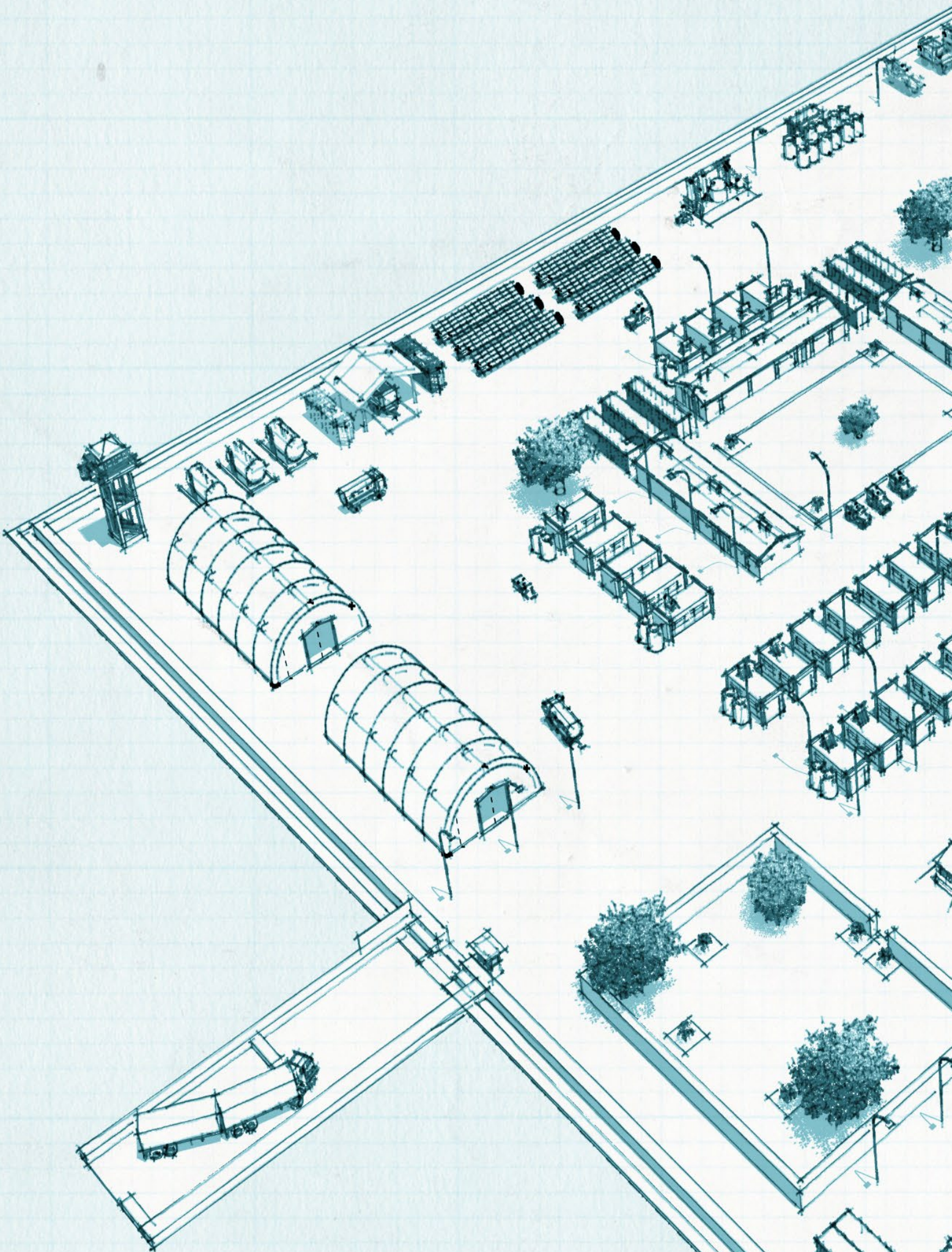
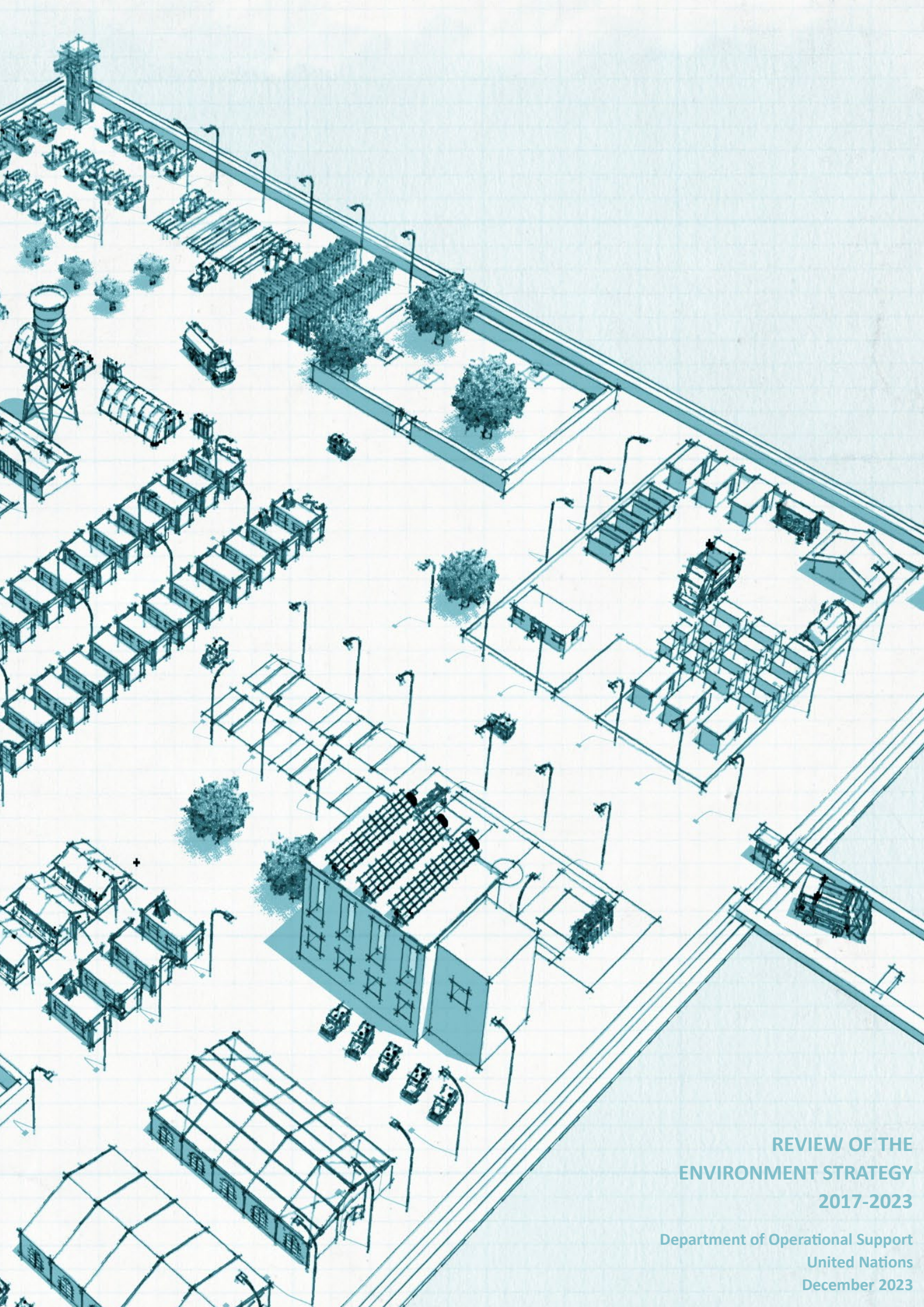
71% 61 5% 6.2 100% 93%
100% 24 65% 0.0 97% 99%





REVIEW OF THE ENVIRONMENT STRATEGY 2017-2023

Department of Operational Support
United Nations
December 2023