

UN Biodiversity Lab
(UNBL) Global Biodiversity
Framework (GBF)
Mapping Project

POLICY NOTE FOR DECISION MAKERS

Enabling Implementation of
NBSAP and KMGBF Targets
in Malawi



Photo credit: Randall Brummett, 2002



Project aim

Malawi's commitments to the implementation of its National Biodiversity Strategy and Action Plan (NBSAP) and the Kunming-Montreal Biodiversity Framework (KMGBF) under the Convention on Biological Diversity (CBD) necessitate monitoring, reporting, and evaluation activities that can directly contribute to the achievement of national biodiversity targets and the global KMGBF targets.

Spatial planning is essential for the achievement of a large proportion of NBSAP and KMGBF targets in Malawi. In particular, KMGBF Targets 1, 2 and 3 – which aim to spatially plan and manage all areas to reduce biodiversity loss; restore 30% of all degraded ecosystems; and conserve 30% of land, waters and seas – depend on the use of geospatial data for identifying areas for sustainable management, restoration and protection. Implementation of KMGBF targets 4-12 and 14 can also be bolstered by spatial planning, [according to a report released by the International Union for the Conservation of Nature \(IUCN\)](#). In this context, the **UNBL-GBF Mapping Project**, led by the Environmental Affairs Department (EAD) within the Ministry of Natural Resources and Climate Change, in collaboration with the Malawi University of Science and Technology (MUST) and the South African National Biodiversity Institute (SANBI) Technical Support Centre, used the [UN Biodiversity Lab \(UNBL\)](#) spatial data platform and its [Essential Life Support Area \(ELSA\)](#) methodology to implement a gold-standard integrated spatial planning approach that employs core principles of systematic conservation planning (SCP) to deliver an **ELSA priority action map** as a key output for guiding nature-based policy action in Malawi. The project also provided foundational support around the **use of spatial data for monitoring and development of the Seventh National Report (7NR) to the CBD**.

ELSA priority action map to implement the NBSAP and KMGBF

How was it developed?

The ELSA priority action map to support actions to achieve the spatial NBSAP and KMGBF targets was developed through five distinct project steps. These steps are designed around a holistic, context-specific, and adaptive approach to integrated spatial planning, centered on the whole-of-society and whole-of-government approaches.



Figure 1. Five steps for creating an ELSA priority action map to support action towards NBSAP and KMGBF targets (Images adapted from Rice et al.)

Step 1 of the integrated spatial planning process involves engaging experts with relevant knowledge and stakeholders with vested interest or influence in the outcome. Engaging these groups to become leaders in the co-design and application of the spatial planning process is essential, because it ensures that the resulting spatial plan is credible, trusted, and applicable in policy making. In Malawi, EAD acted as the convening partner to identify members of the core working group undertaking the spatial prioritization mapping exercise, in close coordination with the UNDP Country Office. These included: various government departments, including the Department of Fisheries, the Department of National Parks and Wildlife (DNPW), the Department of Land Resources Conservation, the Forestry Research Institute of Malawi (FRIM) under the Department of Forestry; and experts from the National Herbarium and Botanical Gardens of Malawi (NHBG), the Wildlife and Environmental Society of Malawi (WESM); and academic institutions, including: Lilongwe University of Agriculture and Natural Resources (LUANAR), Malawi University of Business and Applied Sciences (MUBAS), Mzuzu University (MZUNI), and the University of Malawi (UNIMA). Together with the UNBL team, the core working group met regularly to ensure the project's implementation.

Step 2 involves developing a national vision through a series of stakeholder engagement sessions that focus specifically on national policy commitments aligned with the NBSAP and KMGBF. In Malawi, these sessions emphasized national goals to develop an ELSA priority action map that identifies priority territories where the implementation of distinct nature-based actions can best contribute to the achievement of NBSAP Targets 1, 2, 3, 5, 9, 12, and 13 and KMGBF Targets 1-4, 8, and 10-12.

Step 3 involves gathering spatial datasets to support the qualitative elements of NBSAP Targets 1, 2, 3, 5, 9, 12, and 13 and KMGBF Targets 1-4, 8, and 10-12. These are the policy targets in Malawi which could be spatially mapped with available national and global data. The final data stack used in the spatial prioritization analysis for the identification of priority action areas in the output map is a carefully collated mix of 21 national datasets on biodiversity, climate change, and sustainable development, which each map to a single KMGBF target. Many KMGBF targets are mapped by several datasets to increase representativity.

1 Rice, W.S., Sowman, M.R., and Bavinck, M. (2020). Using Theory of Change to improve post-2020 conservation: A proposed framework and recommendations for use. *Conserv Sci Pract* 2, e301. <https://doi.org/10.1111/csp2.301>.

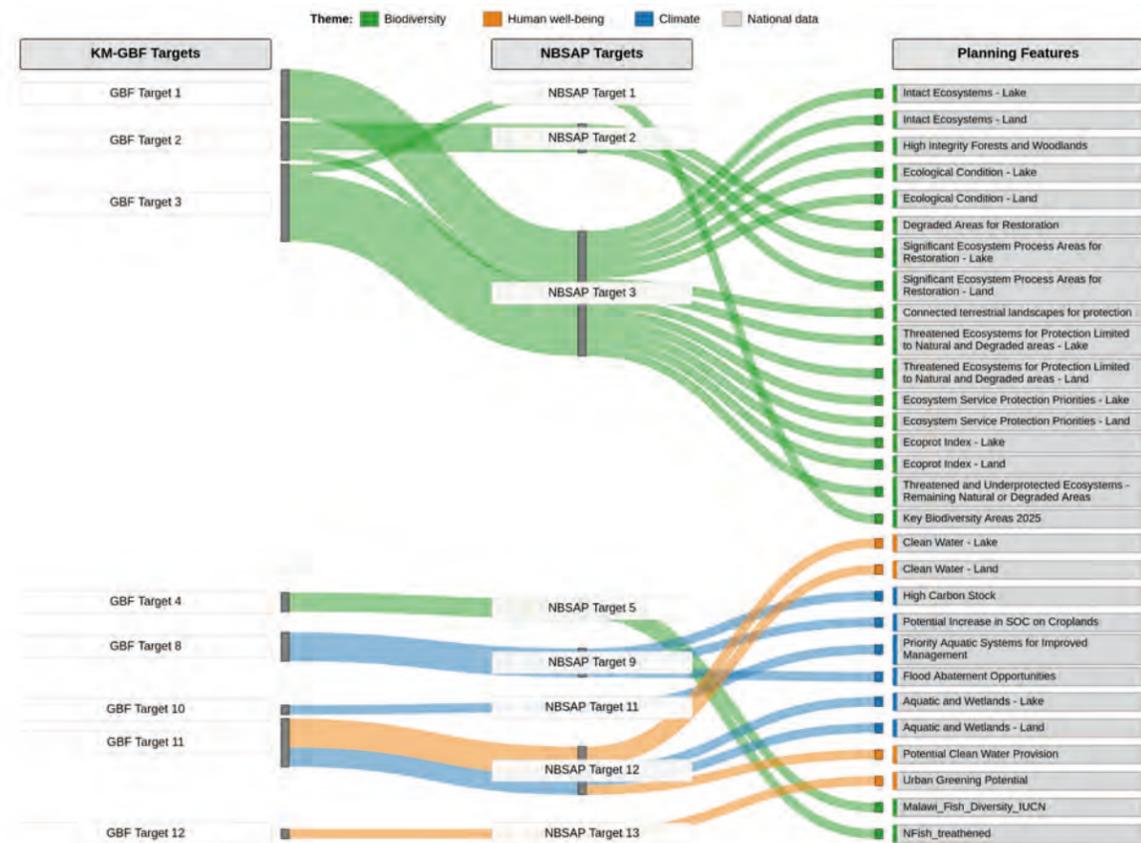


Figure 2. NBSAP and KMGBF targets and planning features selected for inclusion in the analysis to map priority action areas in Malawi

Step 4 uses principles of **Systematic Conservation Planning (SCP)** to analyze multiple actions and outcomes to generate an initial ELSA priority action map. SCP was used to run a **spatial prioritization analysis** to analyze all nature-based action zones and datasets at once, thus **capitalizing on spatial synergies** across all NBSAP and KMGBF targets when identifying priority areas for NBSAP and KMGBF implementation in Malawi.

Step 5, which is the final step, involves a **co-creation session with national stakeholders** in which the final ELSA priority action map is generated. Using Malawi's **ELSA Integrated Spatial Planning Tool configuration on UNBL**, a series of **iterative online workshops** were held in which national experts and stakeholders **weighed datasets** based on national priorities and **evaluated trade-offs** across different spatial prioritization scenarios. The final ELSA priority action map is a product that best meets the diverse objectives of national stakeholders in Malawi to meet the national vision developed in step two.

This map was created through an extensive consultation process with national experts, yet it should not be viewed as a static product that is inflexible to future updates. Since the methodology enables decision makers to undertake new iterations of the process through the ELSA Integrated Spatial Planning Tool, new alternate and updated scenarios going beyond the one explored in this project could be developed. This may include updating datasets and running new scenarios using the ELSA Tool.



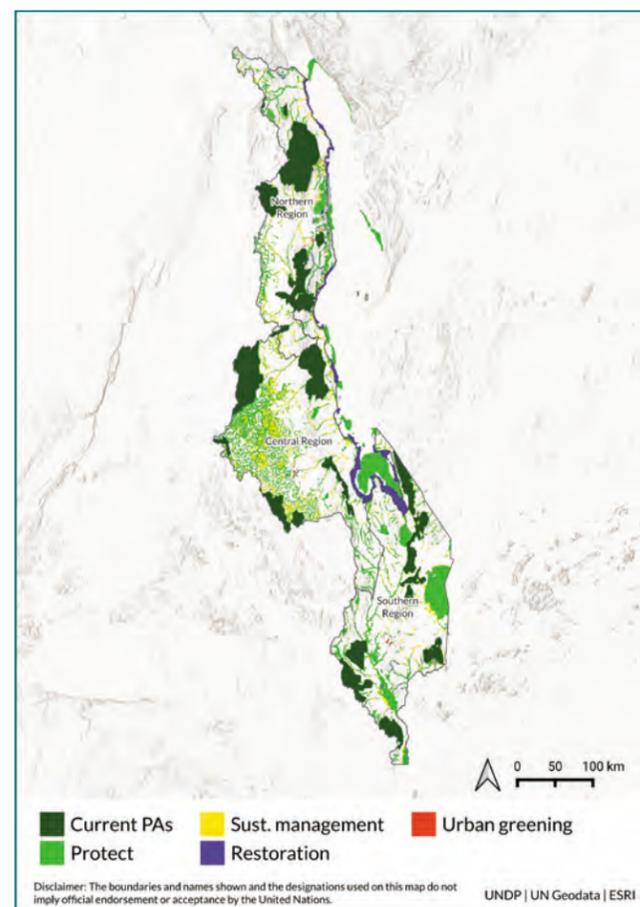


Figure 3. Spatial prioritization map identifying where achieving 30% protection, 2.5% restoration (30% of degraded areas), 5% management and 0.1% urban greening (30% of urban extent) in Malawi will maximize the combined representation across all planning features. Planning features are mapped using 21 national spatial datasets for biodiversity, climate change and human well-being, which were selected using guidance from the qualitative elements of the NBSAP and KMGBF. This map has been produced at a 375m resolution.

MAP APPLICATION: This nationally endorsed ELSA priority action map to support NBSAP Targets 1,2, 3, 5, 9, 12 and 13 as well as KMGBF Targets 1, 2, 3, 4, 8, 10, 11 and 12 shows where actions can most effectively achieve the greatest impact across all planning features while minimizing unacceptable tradeoffs of integrated spatial planning. It can also support the implementation of the Land Degradation Neutrality (LDN) response hierarchy under the UN Convention to Combat Desertification (UNCCD). The LDN response hierarchy is a structured approach to achieve neutrality by prioritizing prevention, minimizing ongoing degradation, and restoring degraded land. This spatial prioritization map outlines an ambitious expansion of protected areas, from 14.47% of the land area covered by existing protected areas, to 30%. This enhancement in protection could come from new protected areas or recognition of other effective area-based conservation measures (OECMs). It also outlines critical areas to pursue sustainable management practices (5% of land area), ecosystem restoration (2.5% of land area), and urban greening (0.1% of land area) to achieve multiple environmental, climate, and sustainable development outcomes. This map shows a strategic, national-level perspective on important places to take action to protect, manage, restore or urban green. Before implementing actions, however, further ground truthing and engagement with local rights holders and relevant stakeholders is needed.

MAP ACCESS: This image file for the final map can be accessed [here](#). The underlying GIS file created using the ELSA Integrated Spatial Planning Tool can be accessed [here](#). This map should be cited as:

Environmental Affairs Department & UN Biodiversity Lab 2025. Technical Report for the UNBL-GBF Mapping Project in Malawi. ELSA priority action map created using spatial data and the UNBL Essential Life Support Area Integrated Spatial Planning Tool on 12 December 2025.

MAP UPDATES: This map can be further updated, and complemented with additional optimization runs for different scenarios, through use of the ELSA Integrated Spatial Planning Tool configuration for Malawi. Please see Annex 3 for detailed guidance on accessing and using the tool.



What does the ELSA priority action map show?

The ELSA priority action map for Malawi shows priority areas for nature-based actions to achieve national policy commitments for Malawi's NBSAP and the KMGBF. This map is intended to support EAD to identify where concrete action could be taken. The different zones correspond to specific types of nature-based actions, and their spatial distribution within the map identifies a solution in which the combined representation across all input datasets used to map the spatial NBSAP and KMGBF targets will be maximized, leading to optimal outcomes across all spatial targets.

ELSA zone	Definition	National coverage
Protection	Under KMGBF Target 3, Parties undertake to conserve 30% of land, waters, and seas by 2030. The ELSA priority action map identifies areas where expansion of protected areas and/or OECMs could most effectively contribute to NBSAP Target 3 and KMGBF Target 3.	30% of Malawi's land area is allocated towards the protection action, in line with NBSAP Target 3 and KMGBF Target 3.
Restoration	Under KMGBF Target 2, Parties undertake to restore 30% of all degraded ecosystems. The ELSA priority action map identifies areas where restoration actions could alleviate degradation processes and thereby most effectively contribute to NBSAP Target 2 and KMGBF Target 2.	2.5% of Malawi's land area is allocated towards the restoration action. This proportion represents 30% of the national area covered by degraded lands in Malawi, in line with NBSAP Target 2 and KMGBF Target 2.
Sustainable management	Under KMGBF Target 10, Parties undertake to enhance biodiversity and sustainability in agriculture, aquaculture, fisheries, and forestry. The ELSA priority action map identifies areas where sustainable management actions could most effectively contribute to NBSAP Targets 5, 9 and 13 and KMGBF Target 10.	5% of Malawi's land area is allocated towards the sustainable management action. This is in line with expert opinions received from the core project team and review by national implementing partners and stakeholders.
Urban greening	Under KMGBF Target 12, Parties undertake to enhance green spaces and urban planning for human well-being and biodiversity. This ELSA priority action map identifies areas where urban greening actions in urban areas could most effectively contribute to NBSAP Target 12 and KMGBF Target 12.	0.1% of Malawi's land area is allocated towards the urban greening action. This proportion represents 30% of the total urban extent in Malawi. This is in line with expert opinions from the core project team, alignment with KMGBF Targets 2 and 3, as well as final review by national implementing partners and stakeholders.
Existing Protected Areas	Existing Protected Areas, unlike all other categories, are not intended to recommend any nature-based action. However, they are "locked in" to the priority area for protection and thereby make up an existing proportion of the 30% of land area allocated to the protection action. Overlaying existing Protected Areas over the ELSA priority action map allows for a differentiation between priority areas for protection that are already recognized as officially protected areas, and priority areas for protection that are not yet recognized as officially protected areas.	14.47% of Malawi's land area is currently covered by existing Protected Areas. Since 30% of the total land area is allocated towards the protection action in the ELSA priority action map, this means that 15.13% of the land area represents priority areas for protection that are not recognized as officially protected areas in Malawi.

How can the ELSA priority action map be evaluated by individual stakeholders based on national priorities?

The project additionally delivered a set of derivative products that are designed to be used hand-in-hand with the original ELSA priority action map to assist stakeholders in Malawi to evaluate the coverage of priority action zones in the final spatial prioritization scenarios for particular regions.

These come in the form of heatmaps disaggregated by each nature-based action. These heatmaps identify important locations for achieving NBSAP Targets 1, 2, 3, 5, 9, 12, and 13 and KMGBF Targets 1, 2, 3, 4, 8, 10, 11 and 12. They are the normalized sum of each individual dataset's values in each map cell, multiplied by the weights given to each dataset. Important areas (where more datasets used in the spatial prioritization analysis occur, adjusted for weighting) are shown in a range of colors from green to yellow, with those in bright yellow being the most important. Heatmaps can be used to identify areas where the overall contribution of spatial datasets – each one representing a distinct policy target - to NBSAP Targets 1, 2, 3, 5, 9, 12, and 13 and KMGBF Targets 1, 2, 3, 4, 8, 10, 11, and 12 is greatest.

By evaluating heatmaps, national experts can view the aggregated stakeholder-weighted dataset's data to determine if the patterns for each nature-based action match their expectations and personal knowledge of the region. If a particular region which national stakeholders believe is particularly important for the implementation of protected areas is showing up as 'cold' within the heatmap relating to the protect action, then stakeholders could utilize the ELSA Integrated Spatial Planning Tool to increase the weight of planning features affected by the protect action that are present in this region to reflect a 'warmer' presence in the heatmap, and therefore increase the likelihood of this region being allocated the 'Protect' action in future spatial prioritization scenarios yielding ELSA priority action maps.



Photo credit: Mtisunge Mngoli, 2015

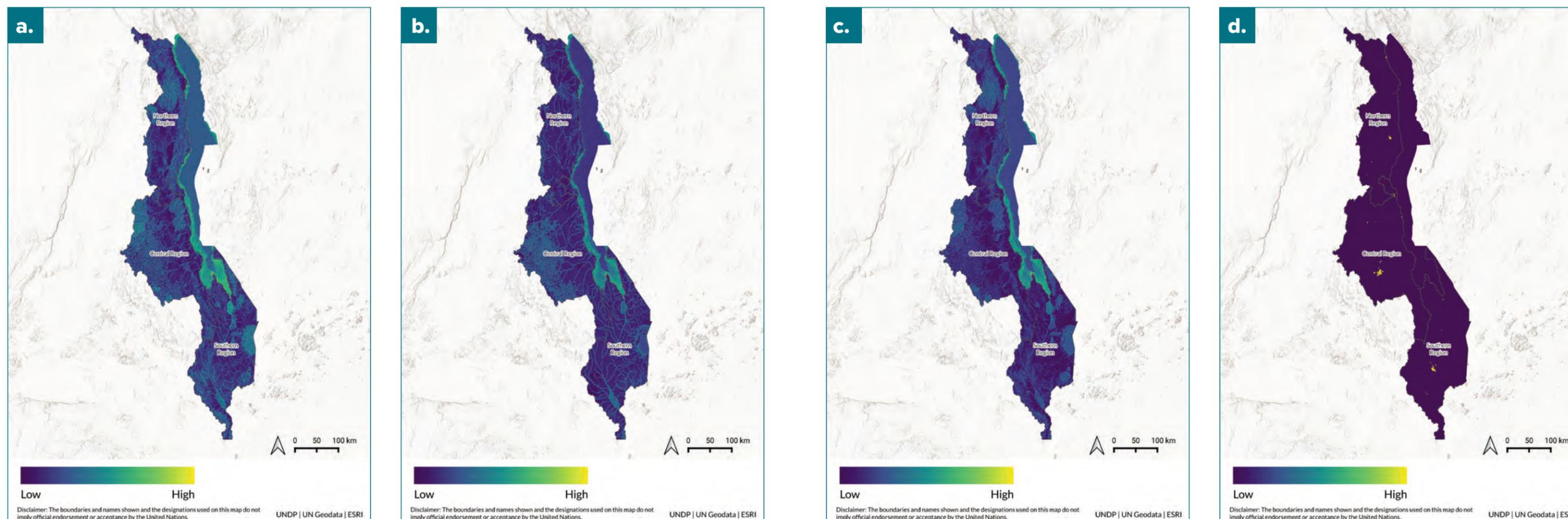


Figure 4. Heatmaps for a) protection, b) restoration, c) sustainable management and d) urban greening, depicting cold areas (dark purple) where the lowest number of planning features affected by the respective action overlap, and hot areas (yellow) where the largest number of planning features affected by the respective action overlap.

MAP APPLICATION: National stakeholders in Malawi could use these heatmaps to compare the extent to which areas identified as important for achieving NBSAP and KMGBF targets related to each nature-based action reflect their understanding of particular regions and therefore use these heatmaps as tools to evaluate the accuracy of the ELSA priority action map (Figure 3) and iterate additional, well-informed spatial prioritization scenarios using the ELSA Integrated Spatial Planning Tool.

MAP ACCESS: The image files for the heatmaps can be accessed [here](#). The underlying GIS file for all heatmaps created using the ELSA Integrated Spatial Planning Tool can be accessed [here](#). These maps should be cited as:

Environmental Affairs Department & UN Biodiversity Lab, 2025. Technical Report for the UNBL-GBF Mapping Project in Malawi. Heat maps created using spatial data and the UNBL Essential Life Support Area Integrated Spatial Planning Tool on 12 December 2025.

MAP UPDATES: These maps can be further updated, and complemented with additional optimization runs for different scenarios, through use of the ELSA Integrated Spatial Planning Tool configuration for Malawi. Please see Annex 3 for detailed guidance on accessing and using the tool.

How can the ELSA priority action map and ELSA heat maps be used?

The ELSA priority action map and heatmaps are best used for strategic planning and prioritizing achievement of NBSAP and KMGBF commitments at a national level. They can also be used as a resource to support Malawi's finalization of the 7th National Report (7NR) to the Convention on Biological Diversity (CBD). Specifically:

- The map directly supports NBSAP Targets 2, 3, 11, and 13, and additionally contributes to Targets 1, 5, 9, and 12.
- The map directly supports KMGBF Targets 2, 3, 10, and 12, and additionally contributes to Targets 1, 4, 8, and 11.
- The nature-based actions in the map align functionally with actions of the Land Degradation Neutrality (LDN) response hierarchy supported under the UN Convention to Combat Desertification (UNCCD) – 'Protect-Manage-Restore' from the KMGBF is equivalent to 'Avoid-Reduce-Reverse' from the LDN response hierarchy.

Importantly, before implementing any specific actions prescribed in the ELSA priority action map, and any derivative products of the ELSA priority action map, further ground truthing and engagement with local rights holders and relevant stakeholders is needed. This is especially true within the lake ecosystems of Malawi, where more detailed planning might be required to determine the most suitable mix of site level restoration actions and protection measures. Moreover, some areas that are restored through improved management might later be evaluated for formal protection.



Photo credit: Ulemu Nkhoma, 2021

Other key outcomes of the project

Alongside the co-creation of the ELSA priority action map, national stakeholders in Malawi also took part in various ad-hoc monitoring activities designed to enhance the use of the UNBL platform for monitoring and reporting on NBSAP and KMGBF Targets in their country. These activities included: (1) creating a central repository for national data in Malawi's UNBL workspace; (2) executing capacity building and training on UNBL to enable national stakeholders to utilize features most relevant to action around the KMGBF; and (3) as well as the update of a national indicator on Ecosystem Protection Level.

What support does the UNBL workspace offer to Malawi?

Malawi's national workspace on UNBL offers a stable central repository to review national data relevant to NBSAP implementation, increase the visibility of Malawi's national data used around reporting on NBSAP and KMGBF targets, and bolster its effectiveness by allowing it to be viewed in tandem with over 1,000 global-scale data layers on biodiversity, climate change, and human well-being available on UNBL. Through the UNBL-GBF Mapping Project, national datasets identified as important for NBSAP and KMGBF implementation were added to Malawi's national workspace on UNBL and made available for external viewing and sharing. Each national dataset was tagged using the format 'KMGBF/NBSAP Target X' to allow users and stakeholders to easily filter and view national datasets based on the relevant policy target which they are used as proxies for. In total, 28 national data layers were uploaded to UNBL. To request access to the workspace, please see the further information section.

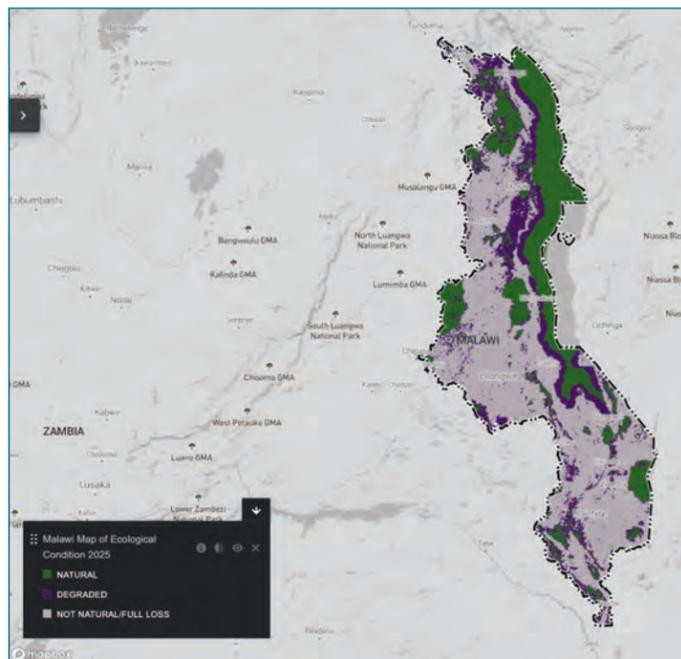


Figure 5. National datasets for Malawi on UNBL. The map shows the national Malawi Map of Ecological Condition 2025, uploaded to Malawi's secure workspace

What capacity building and training resources are available?

The capacity building offerings developed in partnership with EAD and provided to technical experts were designed to support handover of the Malawi workspace on UNBL and the ELSA spatial prioritization data, tool, and outputs to facilitate ownership and use throughout the implementation period of the NBSAP and the KMGBF. For further information on these trainings, including recordings of the sessions, please see the project [technical report](#).

How was the Ecosystem Protection Assessment updated, what are the key findings, and how can it be used for policy implementation and reporting?

The Malawi Ecosystem Protection Assessment evaluates how effectively Malawi's 69 ecosystem types are represented within the country's protected area network, aligning with the KMGBF target of conserving at least 30% of each ecosystem type by 2030. This approach follows the UNEP-WCMC and SANBI guidelines for assessing ecosystem protection levels. The assessment calculates the proportion of each ecosystem's intact area within protected areas, excluding non-natural lands for accuracy. Ecosystems are mapped and classified into four protection levels (Figure 6) based on the proportion of the 30% target met in protected areas:

- Not Protected: Zero or less than 5% of the target met
- Poorly Protected: 5% or less than 50% of the target met
- Moderately Protected: 50% or less than 100% of the target met
- Well Protected: 100% or more of the target met

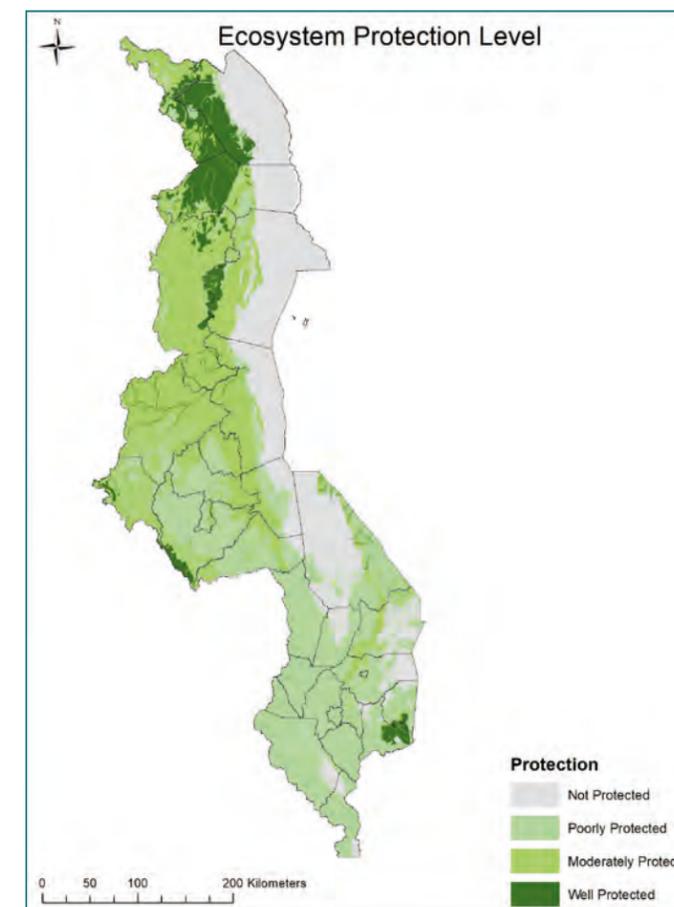


Figure 6. Map showing ecosystem protection levels based on the proportion of each ecosystem type protected relative to the 30% NBSAP and KMGBF Target

The assessment relies on three key datasets: the Map of Ecosystem Types (detailing the spatial extent of 69 ecosystem types, including 14 lake ecosystems), the Map of Protected Areas (including legally gazetted protected areas and Other Effective Area-based Conservation Measures), and the Map of Ecological Condition (classifying land as natural, semi-natural, or not natural).

The updated assessment shows that out of 69 ecosystem types, 19 types or 42% are not effectively represented in any protected area and are 'Not Protected'. A further 18 types are 'Poorly Protected' with less than half of their targets met. Only 13 ecosystem types (mostly terrestrial ecosystems in the north) have their full 30% target met; with another 9 types being 'Moderately Protected' with at least half their target met. Lake and wetland ecosystems, such as those of Lake Malawi and Elephant Marsh Wetlands, are especially underprotected. Terrestrial ecosystems generally have better coverage, though key types like Terminalia sericea woodland remain largely unprotected. Some montane and miombo woodlands have met protection targets, while river ecosystems show mixed protection levels.

The assessment highlights urgent needs for expanding protected areas, particularly for wetlands and lakes, and recommends integrating these findings into national spatial planning and development projects.

Next steps

EAD and MUST are now equipped to continue using the ELSA Integrated Spatial Planning Tool configuration for Malawi on UNBL and further train national stakeholders to undertake new iterations of the spatial prioritization analysis to create new ELSA priority action maps. EAD and MUST are also able to utilize its UNBL workspace as well as other UNBL functionalities to support monitoring and reporting on the NBSAP and KMGBF.

Building on this foundation, EAD plans to directly use the results of the UNBL-GBF Mapping Project maps to finalize and officially launch the new National Biodiversity Strategy and Action Plan (NBSAP III) in 2026. This ensures the results contribute to national goals related to KMGBF Targets 1, 2, and 3 following a specific national timeline. This established capacity, developed through dedicated training with technical experts from key ministries and institutions, is vital for the effective implementation of the NBSAP III and for the preparation of Malawi's Seventh National Report (7NR), ensuring the sustainable, evidence-based management of the country's natural capital moving forward.



Photo credit: Traveling Otter, Flickr, 2013

Further information

- **Technical Report:** This document provides a detailed technical description of methods and data used to generate spatial prioritization map, as well as the results of this work.
- **UNBL Workspace for Malawi:** Please contact Tiwonge Gawa (tgawa@must.ac.mw), with a copy to support@unbiodiversitylab.org to request access. As a member of the Malawi workspace on UNBL, you will be able to access national and global data relevant to NBSAP and KMGBF implementation, view the ELSA priority action map, and use the ELSA integrated spatial planning tool for Malawi to iterate and update the ELSA priority action map.
- **User Guide: ELSA Integrated Spatial Planning Tool:** Technical guide to support national stakeholders to generate new iterations of the ELSA priority action map.
- **User guides: UNBL Public Platform & UNBL Workspaces:** Technical guide to support national stakeholders to use the various features of UNBL and Malawi's workspace on UNBL.



Photo credit: Billy Dodson, 2025

