

APPLYING THE MITIGATION HIERARCHY AT THE LANDSCAPE LEVEL

Key differences between landscape and project application

This document is a Supplementary Resource to the report 'Fauna & Flora International (FFI) (2021). Coordinated and collaborative application of the mitigation hierarchy in complex multi-use landscapes in Africa. A conceptual framework integrating socioecological considerations'. Available from the FFI website.

The mitigation hierarchy is a framework designed to help users limit and mitigate negative impacts. In the context of biodiversity and ecosystem services, it is utilised by developers to support their sustainable management of biodiversity and ecosystem services through the application of systematic measures of avoiding impacts, minimise and restoring impacts and offsetting residual impacts.

The application of the mitigation hierarchy at the landscape level is premised on the fact that many impacts from development have wide-reaching implications for species and ecosystems, often beyond the immediate footprint of an activity and often contributing to the impacts of other activities in the landscape. Applying the mitigation hierarchy at a landscape level therefore takes into account the receiving environment at a system scale and integrates the project-level mitigation actions within broader (ecosystem-based) groupings and aligns the contribution of mitigation actions to jurisdictional- and ecosystem function-level targets and outcomes.

The following table provides a non-exhaustive list of key differences between landscape and project level application of the mitigation hierarchy.

MITIGATION HIERARCHY	LANDSCAPE LEVEL	PROJECT LEVEL
	Key characteristics	Key characteristics
Mitigation hierarchy framework	 Ensures the consideration of ecosystem scale implications of project impacts Takes consideration of implications of development beyond project spatial and temporal boundaries as set in traditional Environmental and Social Impact Assessment (ESIA) and Strategic Environmental Assessment (SEA) approaches Ensure the consideration of project impacts in the context of cumulative impacts of other projects in the landscape, specifically focusing on accumulation of impacts on ecosystem function, health and integrity and thus includes ecosystem services in the landscape Supports the nested approach to integrating project-level mitigation actions into broader ecological units Actions are complementary conservation and restoration activities, increasing the likelihood of their success Application is linked to impacts in a broader landscape context Focused on targets of what is desired for conservation, restoration or development at the national or jurisdictional level, taking into account the positive or negative contribution to ecosystem status of an individual project's impact (and can take into account the losses and gains of individual projects) Requires multi-stakeholder collaboration and partnerships to identify target areas and priority actions, and to drive and support implementation of actions Places the measures to avoid, reduce and restore biodiversity and ecosystem services in the context of ecosystem integrity and resilience and highlights this importance for land use planning Supports the decision-making required to implementation of international commitments and processes to halt biodiversity loss and land degradation, deforestation and climate change 	 Supports sustainable management of biodiversity and ecosystem services within project area of influence (e.g. project footprint, concession area, management areas) Application is associated with project-induced impacts Losses and gains to biodiversity and ecosystem services are relative to the baseline conditions of impacted biodiversity and ecosystem services at a specific point in time, usually before the project impact has occurred Can be applied by the project alone in its simplest form, but benefits from expert and stakeholder consultation throughout, and collaboration on implementation to secure outcomes Application of the mitigation hierarchy framework is improved it is applied to achieve a measurable no net loss or net gain objective for specified biodiversity

Avoidance actions

- Land use planning to identify those areas in a landscape that are of particular conservation concern and significance and where land uses that are compatible with conservation should be planned, while others which are likely to have adverse impacts on biodiversity values should be avoided.
- Identify areas to avoid exploration, infrastructure
 development and project activities in areas of
 importance to biodiversity and ecosystem services (e.g.
 during license application phase) or areas where
 cumulative impacts will have compounding effect (e.g.
 strategic siting of infrastructure corridors to avoid
 important areas for biodiversity and ecosystem services)
- Designating 'no-go' areas that are excluded from concessions and/or established as protected conservation areas (e.g. identifying critical biodiversity areas in conservation planning exercise)
- Developing legislation to support the implementation of avoidance measures at the national and jurisdictional scale (e.g. no sector development in Protected Area network, ESIA requirements, Reducing Emissions from Deforestation and Degradation (REDD+) strategies) or at the project-level (e.g. in riparian buffers, on steep slopes, or vulnerable soils)

Influential stakeholders

Avoid

- Government: Establish the enabling conditions which permit development (and that protect ecosystems and species). Drive land use planning and integration across agencies that need to be involved.
- Regulatory agency: Able to define and review the requirements for impact assessments in ESIA legislation and review the relevant enabling conditions for development (such as adherence to protected species laws). Review of applications and adherence of legislation and conditions for exploration and development

Avoidance actions

- Site selection and spatial design within the concession area (e.g. relocating the project site or components away from an area important for biodiversity and ecosystem services)
- Reducing the size of the impact footprint through project design
- Scheduling of activities to avoid significant and adverse impacts (e.g. timing of activities to avoid disturbance during species breeding season)
- Establishing conservation zones within concession for protection and avoidance of all project (and non-project) impacts

Influential stakeholders

- Project¹: Able to commit to avoidance measures in ESIA and Environmental Management Plans (EMP). Project planning and engineering team often important collaborators in exploring avoidance measures
- Regulatory agency: Review the requirements for impact assessments in ESIA legislation and ensure adherence to the relevant enabling conditions for development (such as adherence to protected species laws); monitor legal compliance and fulfilment of Environmental Compliance

¹ Project includes both stakeholders from the Project and the Corporate level, and may involve individual and/or collective project stakeholders (e.g. a single agribusiness or farm, or a cooperative)

- Jurisdictional authorities: Undertake land use planning at the sub-national level in addition to implementing and aligning with national priorities and regulations
- Traditional authorities: Governance of land and natural resources at relevant scales within the landscape; the active free, prior and informed inclusion of local and traditional authorities and their consent
- Conventions: avoidance activities can contribute to targets and goals established under commitments of signatory countries to conventions, such as Land Degradation Neutrality (LDN) targets, Aichi targets, Sustainable Development Goals (SDG), Bonn Challenge, etc.
- Sector organisation: Government can apply best practice standards within a sector at a jurisdictional-level, such as avoidance of important biodiversity and ecosystem services through jurisdictional High Conservation Value approaches
- NGOs/CBOs: Can catalyse, support or coordinate priority setting for identifying sensitive or important biodiversity and ecosystem services values in the landscape where development and land uses that are incompatible with biodiversity and ecosystem services objectives should not occur
- Civil society: Engage in the identification and prioritisation of biodiversity and ecosystem services values and areas that should be avoided in the landscape, ensuring that respective rights, dependencies and values relating to land, biodiversity and ecosystem services are incorporated into planning and decisionmaking processes to maximise benefits to socioecological system and anticipate and address potential conflicts and trade-offs

Benefits of application

- Decisions are scientifically and empirically based, and supported through stakeholder consensus
- Supports protection within and outside protected areas of the most important areas for biodiversity and ecosystem services

- Plan and other relevant conditions of permitting, and implement penalties for contravention
- Sector organisation and certification standards/schemes:
 Operators can subscribe to best practice standards, such as avoidance of significant biodiversity and ecosystem services (e.g. World Heritage Convention or High Conservation Values)
- Financial institutions: Mandatory requirement in the environmental and social safeguards of specific lending institutions, if funded
- Traditional authorities: The active free, prior and informed inclusion of local and traditional authorities and their consent
- Non-Governmental Organisations (NGOs)/ Community Based Organisations (CBOs) and civil society: Engage in decision making as experts (scientific and traditional knowledge), rights holders, and/or as affected parties (impacted by the project and/or avoidance measures).
 May play important role in supporting the identification and implementation of avoidance areas, especially if zoned and protected

Benefits of application

- Significant, effective and immediate reduction in residual impact is possible
- Tangible evidence of benefit to communicate with stakeholders to reduce reputational risk, facilitates participatory engagement

- Able to incorporate a wider variety of parameters that integrate ecosystem composition and function and the relationships between biodiversity and ecosystem services across a wider area when identifying and prioritising avoidance areas and declaring 'no-go' areas
- Contributes to national or regional retention and sustainability targets (e.g. LDN, climate-related commitments)
- A coordinated approach improves the implementation and assurance of many project level avoidance mitigation actions (e.g. riparian vegetation buffer areas as avoidance across all sector developments) as they are supported across the broader landscape, rather than isolated actions within a concession
- Avoidance can deliver multiple benefits for biodiversity, ecosystem services and for those that depend on them
- Avoidance areas could deliver longer-term and sustainable economic returns through management and utilisation (e.g. ecotourism), rather than land conversion for a single or shorter-term return (e.g. mining extraction)
- Avoidance actions can be assessed and implemented without having to be related to an impact, therefore can be integrated in National Biodiversity Strategies and Action Plans, SEA or other land use planning activities
- Cumulative impacts can be more readily assessed and incorporated into decision making for avoidance areas at the landscape level

- One-off costs for avoidance measures, often more cost effective than minimisation, restoration and offsetting measures
- A landscape-scale study informs project-level avoidance

Minimisation actions

Minimise (or reduce)

- Support the delivery of national strategies and commitments to sustainable development and land use, incorporating cross-sectoral consideration of management plans and implications for delivery across ecosystems at a landscape scale.
- Land use planning (i.e. spatial planning) to optimise land use and minimise the impact or trade-off with extant biodiversity and ecosystem services
- Legislation that requires projects to implement mitigation measures that aim to minimise unavoidable impacts (e.g. policies that require minimisation measures

Minimisation actions

- Implement activities to reduce the severity and duration
 of impacts after all possible avoidance measures have
 been considered and/or implemented (e.g. physical
 controls to consider the spatial placement of
 infrastructure such as minimising footprint of ancillary
 works; reduce biodiversity and ecosystem services
 exposure to an impact such as fencing to protect against
 collisions)
- Reduce the risk of adverse outcomes to biodiversity and ecosystem services by implementing measures and controls to ensure impacts do not increase in severity,

- such as acceptable emission limits or requirements for bird flappers on transmission lines)
- Policies and programmes that minimise induced impacts from development or unregulated drivers of impacts (e.g. facilitating the shared use of infrastructure between projects to minimise fragmentation, programmes that support socioecological adaptations in a developing landscape to minimise cumulative induced impacts)

intensity, duration and magnitude (e.g. maximum safe limits to dusts and noise and lighting; minimal use of agrochemicals; regulating personnel to ensure protocols are adhered to)

Influential stakeholders

- Government: Develop policies and legislation to impose mandatory requirements for protocols and penalties for non-compliance
- Regulatory agency: Monitor compliance and implement fines for contravention. Coordination and support of large-scale minimisation activities that are managing impacts (e.g. waste minimisation and recycling programmes, nurseries that provide locally- appropriate and indigenous seedlings for restoration)
- NGOs/CBOs: Catalyse, support or coordinate minimisation activities at an ecological or jurisdictional scale, such as water catchment area or sub-provincial. Can interact with more pressures and impacts than those that arise from development (e.g. invasive species control)
- Jurisdictional certification standards/schemes: Standards promoting jurisdictional approaches (e.g. the Roundtable on Sustainable Palm Oil) or certification schemes targeting multiple individual operators within a landscape (e.g. in smallholder agriculture)

Benefits of application

- Input to inform assessment of optimal configurations of future land uses, taking into account likely impacts of different sectors and their ability to apply preventative mitigation
- Screening process (of land use plan or concession application) can identify cumulative or compounding

Influential stakeholders

- Project: Able to commit to minimisation measures in ESIA and EMP. Project planning and engineering team often important collaborators in exploring minimisation measures. Management of personnel and subcontractors through protocols and contracts
- Government: Develop policies and legislation to impose mandatory requirements for protocols
- Regulatory agency: Monitor compliance with ECP and relevant permits and protocols, and implement penalties for contravention
- Financial institutions: Mandatory requirement in the environmental and social safeguards of specific lending institutions, if funded
- Sector organisation and certification standards/schemes:
 Operators can subscribe to best practice standards (e.g. Initiative for Responsible Mining Assurance, Aluminium Stewardship Initiative) or smallholder certification schemes)

Benefits of application

- Mitigation measures often more noticeable than avoidance measures as they are often physical actions or activities that stakeholders can realise
- Minimisation measures are applied to both the source of the impact (e.g. reducing machine noise severity) and

- impacts that may occur and in turn trigger requirements for operations to incorporate minimisation measures
- Standardised protocols or legislation can be established to ensure consistent application of minimisation measures across all sectors and projects
- Enables implementation of complementary programmes to further promote the certainty of minimisation measures that have a wider impact, such as alien invasive species control plans and fire management protocols on utilised non-operational land (e.g. farming land, road verges)
- the response of the affected biodiversity and ecosystem services (e.g. habituation of species to noise)
- Minimisation measures are implemented throughout the lifecycle of the operation and promote adaptive management of impacts to biodiversity and ecosystem services

Restoration actions

- Restoration of ecological function and resilience within landscapes as identified across sectoral management plans (e.g. Agriculture Strategy, Climate Strategy, National Forestry Strategies etc. which all exist but need cohesion and recognition across sectors in order to deliver
- Land use planning to identify and prioritise areas of restoration potential that meet objectives related to social, biodiversity, land degradation and climate targets (e.g. Decade of Ecosystem Restoration, LDN, Bonn Challenge)

Assessment of ecosystems and habitats that are responsive to different types of restoration and the development of indicators and protocols for restoration (e.g. habitat corridors or riverine systems)

 Informing 'no-go' areas that are excluded from concessions and/or established conservation areas due to the inability of the high value biodiversity and ecosystem services to be effectively restored

Influential stakeholders

 Government: Develop policies and legislation to impose mandatory requirements for restoration of impacts attached to the license and closure commitments. Can integrate restoration outcomes into the decision making considerations for identifying future avoidance areas for biodiversity and ecosystem services

Restoration actions

- Restoration (or remediation with restoration outcomes) of project-induced impacts within the project impact area
- Needs to occur in addition to the application and implementation of all possible avoidance and minimisation measures and often continues after the cessation of the impact (and often after project closure)

Examples of application

- Re-seeding and protection of regrowth in areas previous cleared for development
- Leaving set asides in the concession area that will act as vectors for facilitating restoration, such as providing seedlings or propagation materials of indigenous flora species
- Buffering avoidance areas and managing these habitats to facilitate passive regeneration following indirect impacts

Influential stakeholders

- Government: Develop policies and legislation to impose mandatory requirements for restoration of impacts attached to the license and closure commitments
- Project: able to implement restoration measures on impacted sites and ability to go beyond compliance with objectives and outcomes of restoration

Restore (or reverse)

- Regulatory agency: Enforce, coordinate and monitor restoration efforts and outcomes. Coordination and support of strategic application of restoration finds where industry contribution is required by law as a condition of permitting
- Conventions: Restoration activities can contribute to targets and goals as commitments of signatory countries to conventions, such as LDN targets, Aichi targets, SDG
- Sector organisation: Government can apply best practice standards within a sector at a jurisdictional-level, such as restoration of significant biodiversity and ecosystem services through jurisdictional High Conservation Value approaches
- NGOs/CBOs: Catalyse, support and/or engage in setting objectives for restoration outcomes and identifying priority areas in the landscape for implementing restoration activities. Can support and coordinate restoration activities and monitoring, and promote adaptive management
- Traditional authorities: Responsible for the governance of land and resources; the active free, prior and informed inclusion of local and traditional authorities and their consent in the determination of priorities in the context of their dependencies
- Civil society: Engage in the identification of restoration opportunities and priority setting to ensure that respective rights, dependencies and values relating to land, biodiversity and ecosystem services are incorporated into decision-making processes, that delivery of multiple benefits are maximised and potential conflicts and trade-offs are anticipated and mitigated

Benefits of application

- Legislative requirements attached to license can ensure that there are consistent outcomes of recovery of an impacted site
- Decisions are scientifically and empirically based and outcomes contribute to improving the understanding of restoration ecology
- Contributes to national or regional restoration and improvement targets

- Financial institutions: Mandatory requirement in the environmental and social safeguards of specific lending institutions, if funded
- NGOs/CBOs and civil society: Can engage in setting objectives for restoration outcomes. Can support and coordinate restoration activities and monitoring

Benefits of application

- Straightforward to measure once indicators and monitoring plan are established, in addition to often requiring decreasing levels of management as restoration continues over time (i.e. active restoration moving to passive or natural regeneration)
- Can generate new enterprise opportunities, resulting in the creation of livelihoods and sustainable industries (e.g. indigenous plant nurseries) and provide important

- Landscape approach and multi-stakeholder engagement can aid identification of social and political opportunities for delivering outcomes from restoration
- Can generate new enterprise opportunities, resulting in the creation of livelihoods and sustainable industries (e.g. indigenous plant nurseries)
- Restoration outcomes can deliver multiple benefits for biodiversity, ecosystem services, climate and social systems
- Can be integrated into the categorisation of areas and biodiversity and ecosystem services that need to be avoided across the landscape due to the difficulty or inability to restore following development impacts

- contributions to the project's social management plan when applied in an integrated way to deliver multiple benefits
- Can deliver visible and evident outcomes to stakeholders over time
- Management is within impact area, which is aligned with the concession area over which the project has full management control over

Offset/compensation actions

Offset

(compensate²)

- Identifying at a coarser scale offset receiving areas that deliver protection for irreplaceable or priority biodiversity or that would serve to improve degraded or underrepresented biodiversity
- A variety of actions that can either contribute to national protection and retention targets or work to reverse previous and/or unregulated impacts to biodiversity and ecosystem services
- Establish national guidelines and policies for offsets across sectors, including quantification tools and implementation models
- Establish the limits to offsets, based on decisions such as decisions the value of the biodiversity and ecosystem services or the significance of impacts that cannot be mitigated and offset

Offset/compensation actions

- Compensation actions that deliver measurable gains to impacted biodiversity that have a residual impact following the application of mitigation actions in the mitigation hierarchy. Offset actions are typically either restoration offsets that are active measures to improve previously degraded biodiversity (e.g. re-creating habitat or improving habitat condition with active restoration activities) or protection (averted loss) offsets that are active measures to protect and manage biodiversity that is undergoing imminent or projected degradation and losses to ensure it is retained in the future (e.g. managing an area that is being deforested by unregulated drivers of loss such as illegal deforestation)
- Often implemented outside of the concession area and area of impact
- Offset outcomes typically aim for a 'no net loss' or a net gain to biodiversity and ecosystem services, compared to a reference scenario
- As not all residual impacts can be offset, offsets must be considered early in the project planning process and

² Taken from the Business and Biodiversity Offset Programme <u>Clossary</u> (2012), 'compensation is a recompense for some loss or service, and is something which constitutes an equivalent to make good the lack or variation of something else'. In terms of biodiversity, compensation involves measures to restore, create, enhance, or avoid loss or degradation of a biodiversity component in order to satisfy and compensate the residual impacts. As opposed to a biodiversity offset, compensation includes actions such as payment in lieu of biodiversity offsetting, bio-banking or another compensation scheme when national policy allows.

Influential stakeholders

- Government: Develop policies and legislation with provision for and/or mandatory requirements for offsets attached to the license
- Regulatory agency: Can coordinate, approve (with conditions) and monitor offset plans, actions and outcomes
- Conventions: Offset activities can contribute to targets and goals as commitments of signatory countries to conventions, such as LDN targets, Aichi targets, SDG
- Project: Can undertake pre-feasibility of offsets linked to projected impacts, which can help inform the possibilities of offsetting and decision-making for offset receiving areas
- NGOs/CBOs: Can engage in setting objectives for restoration and protection outcomes and identifying priority areas in the landscape for implementing offset activities. Can support and coordinate offset activities and monitoring
- Civil society: Engage in the identification and prioritisation of offset options to ensure that respective rights, dependencies and values relating to land, biodiversity and ecosystem services are incorporated, that benefits are maximised and potential conflicts and trade-offs are anticipated, mitigated and fully compensated.

Benefits of application

• Identification of offset receiving areas (i.e. priority biodiversity areas) across the landscape does not have to be linked to residual impacts and can be incorporated in residual impacts that cannot be offset need to be prioritised for avoidance

Influential stakeholders

- Project: Able to commit to offsets in ESIA and EMP. Will either implement and manage offsets directly and in collaboration with other entities, or will support offset implementation through financial measures
- Regulatory agency: Reviews ESIAs and EMPs, collaborates with project to locate and implement offsets, establishes conditions, reporting requirements and outcomes attached to license.
- Sector organisation: Operators can subscribe to best practice standards, such as offsetting of residual impacts to significant biodiversity and ecosystem services (e.g. International Petroleum Industry Environmental Conservation Association)
- Financial Institutions: Mandatory requirement in the environmental and social safeguards of specific lending institutions, if funded
- NGOs/CBOs: Can engage in setting objectives for restoration and protection outcomes and identifying priority areas in the landscape for implementing offset activities. Can support and coordinate offset activities and monitoring
- Traditional authorities: The active free, prior and informed inclusion of local and traditional authorities and their consent in the determination of priorities and activities in the context of their values and dependencies
- Civil society: Engage in the identification and prioritisation of offset options to ensure that respective rights, dependencies and values relating to land, biodiversity and ecosystem services are incorporated, that benefits are maximised and potential conflicts and trade-offs are anticipated and mitigated.

Benefits of application

 Pre-feasibility offset assessments can be conducted prior to an impact assessment, which can help inform whether offsets are feasible if a residual impact exists

- land use planning processes. Avoidance and restoration priorities across the landscape can inform potential offset receiving areas
- Landscape approach and multi-stakeholder engagement can aid identification of social and political opportunities for delivering outcomes from offsets
- Landscape application supports the consistent application of national offset policies for qualifying developments
- Important contribution to meeting targets and goals of conventions, such as SDGs and national protection targets
- Can facilitate aggregated offsets across multiple projects and/or sectors to deliver greater gains to biodiversity and ecosystem services at both the site and landscape level

- and can provide guidance on the data and information required to quantify residual impacts
- Offsets are able to contribute gains that support the attainment of no net loss or net gain objectives for a project

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