

REVIEW OF LEGISLATION ON INVASIVE ALIEN SPECIES IN NAMIBIA

The report prepared for: Namibian Invasive Alien Species Working Group

By: Emilia N. Nanyeni

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Table of contents

Executive Summary	3
1. Introduction	5
1.1 Objective	5
1.2 Scope.....	5
1.3 Significance	5
2. Background	6
2.1 Global Context	6
2.2 Namibia's Unique Ecosystem.....	7
2.3 Historical Context	7
3. Methodology	8
3.1 Literature Review	8
3.2 Legislative Analysis	8
3.3 Stakeholder Engagement	9
3.4 Comparative Analysis.....	9
3.5 Evaluation and Gap Analysis.....	9
4. Legislative Review	10
4.1 Table of Legislation.....	10
4.2 Assessment of Import Prevention Measures.....	10
4.3 Assessment of Spread Prevention Measures	11
4.4 Assessment of Management and Control Measures.....	11
5. Comparative Analysis	12
5.1 Case Studies:.....	12
5.2 Adaptable Practices:.....	13
5.3 International Collaboration:	13
6. Recommendations	13
6.1 Unified Legal Framework:	13
6.2 Risk Assessment:	14
6.3 Stakeholder Engagement & Public Awareness:	14
6.4 Enhanced Enforcement and Penalties:	15
6.5 Research & Development:.....	15
7 Conclusion.....	16
8 Bibliography	18
9 Annexes	20

Executive Summary

This report examines the legislative framework pertaining to alien and invasive alien species within the Republic of Namibia. The document aims to provide the Namibian Invasive Alien Species Working Group with an in-depth analysis of existing laws, regulations, and policies relevant to the management and control of alien and invasive species. It further seeks to identify potential gaps and areas for improvement in the legal framework.

The report is the culmination of an extensive review of Namibia's legislative landscape concerning invasive alien species. Through meticulous research, stakeholder consultations, and comparative analyses with global best practices, the report seeks to provide a holistic view of the nation's current legal arsenal against this ecological challenge.

Key findings

Global Context: Invasive species are a worldwide menace, imperilling biodiversity, agriculture, and local communities. As globalisation accelerates, the movement of these species across borders has become more frequent and harder to control.

The ecosystems of Namibia, spanning from the arid expanses of the Namib Desert to the fertile floodplains of the Zambezi region, possess a distinct and unparalleled character. These regions, which serve as habitats for numerous indigenous species, exhibit a heightened susceptibility to invasive threats. Consequently, the stakes are exceptionally elevated for Namibia due to the exceptional ecological significance of these areas.

Legislative Fragmentation: An Assessment of Namibia's Approach to Invasive Alien Species

The legislative approach adopted by Namibia in addressing the issue of invasive species, while founded on good intentions, exhibits a state of fragmentation. Within the current legal landscape, numerous laws, bylaws, and regulations address invasive species; however, a distinct lack of cohesion prevails. This prevailing fragmentation within the legal framework engenders the potential for regulatory gaps, overlaps, and inconsistencies, ultimately diminishing the overall effectiveness of the legislative regime established to combat invasive alien species.

International Best Practices Alignment: An analysis of global best practices indicates that Namibia can benefit immensely from adopting certain strategies implemented by countries like Australia, New Zealand, and South Africa. However, these strategies need to be adapted to Namibia's unique ecological and socio-economic context. The crux of this report lies in its recommendations. Drawing from international best practices, insights from stakeholders, and a deep understanding of Namibia's unique context, the report proposes a series of actionable steps. These recommendations aim to harmonise the existing legislation, plug gaps, and ensure a proactive, coordinated, and efficient response to the invasive species threat.

In essence, this report not only shines a spotlight on the pressing issue of invasive species in Namibia but also charts a course for the nation's future - a future where its ecological integrity is preserved and its people continue to thrive in harmony with nature.

1. Introduction

1.1 Objective

Namibia, a beacon of biodiversity and cultural richness in Africa, is currently on the front lines battling the detrimental impact of invasive alien species. As these non-native species progressively encroach upon the nation's pristine landscapes, the urgency to counteract their spread cannot be overemphasised. The primary aim of this report is to critically evaluate the existing legislative framework in Namibia that addresses invasive alien species. Through this evaluation, the report endeavours to identify potential loopholes, ambiguities, and inefficacies within the present laws and regulations. Furthermore, it aspires to provide actionable recommendations that can strengthen Namibia's legislative response to this flourishing environmental crisis. In doing so, this document hopes to lay down a robust legal blueprint that can safeguard Namibia's ecosystems against invasive threats in the decades to come.

1.2 Scope

The scope of this review is multifaceted. It encompasses national laws, regulations, and bylaws that directly or indirectly pertain to the management, control, and eradication of invasive alien species. Furthermore, this report looks into international agreements and conventions to which Namibia is a signatory, ensuring that local legislative recommendations are congruent with global best practices.

1.3 Significance

The importance of addressing the threat of invasive alien species cannot be understated. From an ecological standpoint, these species, by overpowering native flora and fauna, can cause irreversible harm to Namibia's biodiverse ecosystems. They disrupt natural food chains, degrade habitats, and can even push indigenous species to the brink of extinction.¹ The ripple effect of such ecological disturbances can be felt deeply in the economic fabric of the nation. For instance, Namibia's tourism industry, which significantly contributes to its Gross Domestic Products, thrives on its natural landscapes and wildlife. Invasive alien species, by altering these landscapes, can deter tourism, thereby impacting the livelihoods of thousands.

¹ Williams, D., Pettoelli, N., Henschel, J.R., Cowlishaw, G., & Douglas, C. (2014). Impact of alien trees on mammal distributions along an ephemeral river in the Namib Desert. *African Journal of Ecology*, 52, 404-413.

Moreover, invasive alien species can afflict agricultural lands, reduce yields, and burden farmers with increased control costs.² The social ramifications of such economic impacts can be profound, especially for communities that rely predominantly on agriculture. Furthermore, certain invasive species, by monopolising water resources, can exacerbate the challenges of water scarcity in this predominantly arid country.³

In essence, the management of invasive alien species is not just an environmental imperative; it is an economic necessity and a social responsibility. This report, through its findings and recommendations, highlights this very significance, aiming to pave the way for a future where Namibia's natural and cultural heritage remains undiluted and unharmed.

2. Background

2.1 Global Context

It is important to note that the threat of invasive alien species is not just a local challenge for a country of Namibia alone; it is a global concern with repercussions felt across continents.⁴ In recent decades, with increased global trade, tourism, and transportation, the accidental (and sometimes intentional) movement of species beyond their native habitats has amplified.⁵

Worldwide, invasive species have left indelible marks on biodiversity. Natural habitats, once diverse and balanced, are being progressively monopolised by these invaders, leading to a significant decline in native species.⁶ Therefore, ecosystems, shaped by millions of years of evolution, are being altered within mere decades.

Moreover, apart from biodiversity loss, the global agricultural sector bears a heavy economic burden due to invasive species. According to the Food and Agriculture Organisation (FAO), invasive pests

²FAO, 2019. Impact of Invasive Pests on Agriculture and Food Security.

³ Bethune, S., Ndeilitunga, L., & Mutota, P. (2022). The Battle Against Invasive Alien Species in Namibia. Conservation and the Environment in Namibia.

⁴ Jubase, N., Shackleton, R. T., & Measey, J. (2021). Public Awareness and Perceptions of Invasive Alien Species in Small Towns. *Biology*, 10(1322). DOI: 10.3390/biology10121322.

⁵ Padayachee, Ashlyn & Irlich, Ulrike & Faulkner, Katelyn & Gaertner, M. & Procheş, Şerban & Wilson, John & Rouget, Mathieu. (2017). How do invasive species travel to and through urban environments?. *Biological Invasions*. 19. 1-14. 10.1007/s10530-017-1596-9.

⁶ Global Invasive Species Database, 2021. Biodiversity losses due to invasive species across continents.

cause losses of hundreds of billions of dollars annually, affecting crops, livestock, and forests.⁷ For farmers, especially those in developing nations, these losses translate to food insecurity, debt, and diminished livelihoods. Local communities, particularly indigenous groups, are severely impacted. In many places, invasive species affect the plants and animals they rely upon for food, medicine, and cultural practices.⁸ The deep cultural and spiritual connections these communities share with their environments are disrupted when invasive alien species transform their ancestral lands.

2.2 Namibia's Unique Ecosystem

Namibia is a land of contrasts, home to some of the world's most unique and diverse ecosystems. From the beautiful Namib Desert, the world's oldest desert, to the rich floodplains of the Zambezi region, Namibia's landscapes are as varied as they are vast.

These ecosystems are not just scenic wonders; they are biodiverse reservoirs. The Namib Desert, for instance, while seemingly inhospitable, houses numerous indigenous species that have evolved remarkable adaptations to survive its harsh conditions.⁹ Similarly, the wetlands in the north east are a haven for migratory birds, making them crucial nodes in global bird migration pathways.¹⁰ However, the very uniqueness of Namibia's ecosystems also makes them vulnerable. Invasive alien species, with their adaptive advantages, can potentially outcompete native species, many of which have evolved in very specific ecological niches.¹¹ Once an invasive species establishes itself in such ecosystems, the ripple effect on the food chain can be catastrophic.

2.3 Historical Context

The roots of the invasive alien species challenge in Namibia can be traced back to the colonial era. Historical records indicate the introduction of several non-native species, both intentionally and accidentally, during the late 19th and early 20th centuries.¹² For instance, *Prosopis*, now a notorious invasive plant in Namibia, was initially introduced for shade and fodder purposes.¹³

⁷ FAO, 2019. Impact of Invasive Pests on Agriculture and Food Security.

⁸ World Conservation Union (IUCN), 2020. * Indigenous communities and their battle against invasive species.

⁹ Lancaster, J., 2017. * "Adaptations of Fauna in the Namib Desert." Journal of Desert Ecology.

¹⁰ BirdLife Namibia, 2022. * "Migratory Patterns and the Importance of Namibian Wetlands.

¹¹ Bethune, S., Ndeilitunga, L., & Mutota, P. (2022). The Battle Against Invasive Alien Species in Namibia. Conservation and the Environment in Namibia.

¹² Rohde, R. F., & Hoffman, M. T. (2012). The Historical Invasion of Alien Plants in Namibia. Biodiversity & Ecology, pp. 28-30.

¹³ Bethune, S., Ndeilitunga, L., & Mutota, P. (2022).

Namibia's initial responses to invasive alien species were somewhat fragmented.¹⁴ While there were efforts at localised control and eradication, a cohesive national strategy was missing. Over the years, as the magnitude of the problem became evident, there were concerted efforts to formulate policies and regulations.¹⁵ However, gaps persisted, prompting the need for a comprehensive review like the present one.

3. Methodology

3.1 Literature Review

As part of the study methodology, a comprehensive literature review was undertaken to establish a strong foundation for the study. This involved a systematic collation of academic research papers, government reports, publications from international environmental bodies, books, and other relevant documents that address the issue of invasive alien species both globally and within Namibia. The chosen literature spanned over the last two decades, ensuring a comprehensive overview of evolving challenges and solutions.

Sources: The primary sources of information included Namibia's National Biodiversity Strategy and Action Plan (NBSAP2),¹⁶ publications from the Ministry of Environment, Forestry & Tourism, articles from scientific journals, books on ecological management and biodiversity conservation, and reports from international bodies like the United Nations Convention on Biological Diversity (CBD) and the World Conservation Union (IUCN). This array of sources provided a multi-dimensional perspective on the subject, integrating both local insights and global contexts into the analysis.

Evaluation Criteria: The literature was critically examined based on its relevance, credibility, timeliness, and contribution to understanding the broader issue of invasive alien species in Namibia.

3.2 Legislative Analysis

This phase of the review involved a thorough compilation of all relevant Namibian legislation pertinent to invasive alien species. The resulting comprehensive table serves as an invaluable

¹⁴ Ruppel, O.C., & Ruppel-Schlichting, K. (Eds.). (2022). Environmental Law and Policy in Namibia. 4th Edition.

¹⁵ Bethune, S., Ndeilitunga, L., & Mutota, P. (2022).

¹⁶ Ministry of Environment, Forestry and Tourism. (2013). Namibia's Second National Biodiversity Strategy and Action Plan, 2013-2022.

reference tool, summarising key legal provisions and their implications for the management of invasive species. This table thoroughly categorises legislation into Acts, ordinance, regulations, and Bylaws, encompassing both those explicitly addressing invasive alien species and those indirectly related.

A number of relevant acts, ordinance, regulation, and bylaw in Namibia was scrutinised. The focal point was not just on laws directly addressing invasive species but also on legislation that indirectly impinged upon habitat protection, agriculture, and trade.

3.3 Stakeholder Engagement

Recognising the significance of on-ground insight, a multi-pronged strategy was crafted to engage with various stakeholders.

Identification: A list of pertinent stakeholders was developed, including governmental agencies, NGOs, and environmental experts.

3.4 Comparative Analysis

To draw insights from countries that are considered to have successful invasive alien species management models, a comparative analysis was undertaken.

Country Selection: Countries like Australia, New Zealand, and South Africa were chosen based on their commendable legislative frameworks against invasive alien species, geographical or ecological similarities to Namibia, and their historical success in managing such challenges.

Criteria Metrics: Each country's legislation was analysed based on comprehensiveness, clarity, effectiveness, enforcement mechanisms, and adaptability to change.

3.5 Evaluation and Gap Analysis

The central point of the review was to understand the current legislative environment's efficacy and identify areas for improvement.

Effectiveness Assessment: Existing legislation was assessed on its ability to meet its stated objectives, clarity of mandates, implementation challenges, and resultant on-ground impacts.

Gap Identification: Through contrasting Namibia's legislative tools against global best practices and stakeholder feedback, gaps, redundancies, and areas of Improvements were pinpointed.

With this methodological approach, the review sought to provide a comprehensive, objective, and actionable analysis of Namibia's legislative mechanisms to tackle invasive alien species. This framework ensured a holistic understanding, combining academic rigour with on-ground realities.

4. Legislative Review

The comprehensive assessment of Namibia's legislative landscape concerning invasive alien species entails a multi-faceted analysis, beginning with a detailed examination of the existing laws and regulations. This section provides an overview of the critical components of the legislative review, encompassing the creation of a catalogued table of legislation, assessment of import prevention measures, evaluation of spread prevention measures, and scrutiny of management and control measures.

4.1 Table of Legislation

The key focus lies in the extraction and succinct summarisation of pivotal sections from each piece of legislation. This process accentuates the relevance of these provisions in the context of preventing, controlling, and managing invasive species. Furthermore, to ensure a comprehensive evaluation, the review cross-references Namibian legislation with international standards and agreements. This comparison enables an assessment of the alignment and compliance of Namibian laws with international treaties and conventions governing invasive alien species.

4.2 Assessment of Import Prevention Measures

In-depth scrutiny of existing legal provisions governing the prevention of invasive alien species' importation into Namibia revealed significant inadequacies. Key findings underscored the presence of legal loopholes and inefficiencies that undermine the nation's biosecurity efforts.

Namibian legislation lacks clear, explicit provisions for the prevention of invasive alien species' importation. In many instances, regulations addressing this critical issue either do not exist or are ambiguously defined. This legal ambiguity poses substantial risks, as it allows potentially invasive alien species to enter the country without rigorous scrutiny.

To address these shortcomings, this review recommends the introduction of more stringent laws and regulations. These new legal instruments should specifically target the importation of potentially invasive species, setting out explicit guidelines for risk assessment. Moreover, the review calls for enhanced monitoring mechanisms at all points of entry, coupled with rigorous enforcement measures. This includes the imposition of penalties for non-compliance, fostering a culture of responsibility among importers.

4.3 Assessment of Spread Prevention Measures

The legislative analysis related to the internal control and prevention of invasive species' spread within Namibia revealed a fragmented and disjointed legal framework. Current legislation lacks the cohesiveness and comprehensiveness required to effectively curb the spread of invasive alien species within the country.

One of the critical issues identified in the review pertains to the inconsistency in enforcing existing laws. The absence of unified oversight mechanisms further deepens this problem, leading to non-compliance and the unchecked spread of invasive alien species.

To address these shortcomings, the review recommends the development of unified national guidelines for controlling the spread of invasive alien species. These guidelines should encompass clear roles and responsibilities for landowners, accompanied by enforceable regulations. It is imperative to institute mechanisms that promote compliance, which can be achieved through comprehensive awareness campaigns and educational programs.

4.4 Assessment of Management and Control Measures

The evaluation of the current legislative framework governing the management and control of invasive alien species within Namibia illuminated several significant challenges. These challenges include ineffectiveness in addressing established invasive alien species, limited coordination among various governmental departments and agencies responsible for managing invasive alien species.

Namibia's current laws and policies demonstrate inadequacies in their capacity to effectively manage and eradicate established invasive alien species. The absence of a cohesive, integrated approach hampers successful control efforts, resulting in the ongoing degradation of native ecosystems and biodiversity.

To rectify these issues, the review proposes multifaceted enhancements to the legislative framework. These encompass the development of integrated management plans, increased allocation of funding and resources for control efforts, and the fostering of better inter-agency collaboration. By addressing these challenges, Namibia can significantly bolster its capacity to manage and control invasive alien species.

5. Comparative Analysis

In the area of invasive alien species management, a comparative analysis of strategies and practices employed by different nations is indispensable for informed decision-making. This section provides a comparative analysis of invasive alien species management strategies employed by Australia, New Zealand, and South Africa. It explores adaptable practices for Namibia and emphasises the significance of international collaboration in enhancing Invasive alien species management. The goal is to gather insights for the development of effective invasive alien species management strategies in Namibia.

5.1 Case Studies:

Australia:

Australia is often heralded for its robust biosecurity measures, having deployed a Risk Return Resource Allocation (RRRA) model to prioritise and allocate resources optimally. However, it has grappled with some significant challenges, such as managing extensive land areas and confronting species like the red fox and rabbits which have established pervasive populations.

New Zealand:

New Zealand, combating invasives like possums, adopts a community-involved approach towards invasive alien species management, mobilising local populations in control and eradication efforts. A potential shortcoming is their struggle with implementing biocontrol initiatives due to concerns regarding non-target species impacts.

South Africa:

South Africa's Working for Water programme is lauded globally, prioritising not just biological control but also focusing on social and economic upliftment through job creation in invasive alien species management activities. However, the nation wrestles with enforcing compliance and adherence to management directives among private landowners.

5.2 Adaptable Practices:

- **Regulation and Surveillance:** Adopting Australia's stringent regulatory framework and surveillance can fortify Namibia's borders against new invasives.
- **Community Engagement:** New Zealand's success with community involvement offers a blueprint for mobilising Namibian communities, entwining invasive alien species management with local ecological and economic interests.
- **Integrated Socio-Economic and Environmental Approach:** South Africa's model of merging social, economic, and environmental objectives could guide Namibia in establishing programmes that are not only ecologically beneficial but also socio- economically rewarding.

5.3 International Collaboration:

- **Joint Research Ventures:** Namibia could delve into joint research initiatives with the studied nations, mutually enhancing knowledge and developing contextually applicable solutions.
- **Capacity Building:** Leveraging the expertise from nations like Australia in surveillance and early detection could augment Namibia's capacity in pre-emptive and rapid response actions.
- **Biological control Collaborations:** Engaging with South African entities could facilitate sharing of biological control agents¹⁷ and strategies, adapting them to Namibia's ecosystems.
- **Policy and Legislation Development:** Engaging with these nations on a policy level could aid Namibia in sculpting legislation that is not only robust but also practically enforceable, blending rigid regulatory frameworks with flexible, ground-up approaches.

6. Recommendations

6.1 Unified Legal Framework:

- **Integration:** This framework should encompass prevention, early detection, control, and eradication of invasive alien species.

¹⁷ A biological control agent (BCA) has been defined as 'an organism [used] to reduce the population density of another organism.

- **International Compliance:** It must align with global conventions like the Convention on Biological Diversity.
- **Legislative Amalgamation:** The framework will unify existing laws, ordinances, and acts, creating a cohesive legal approach to invasive alien species management.

6.2 Risk Assessment:

- **Standardised Protocols:** Development of uniform methodologies to assess invasive alien species risks, ensuring consistency across evaluations.
- **Prioritisation Criteria:** Focus on species that pose significant risks to biodiversity, economic stability, and human health.
- **Decision Support:** Utilise comprehensive risk assessments to inform decisions regarding species importation and management.
- **Ongoing Review:** Establish a body to regularly update and review risk assessment procedures, keeping them current with scientific advancements.

6.3 Stakeholder Engagement & Public Awareness:

- **Inclusive Participation:** Actively involve local communities, non-governmental organisations (NGOs), and the private sector in the decision-making processes related to invasive alien species management. Ensuring diverse perspectives and solutions are considered fosters broader support for invasive alien species management strategies.
- **Awareness Campaigns:** Utilise diverse media platforms, including social media, television, radio, and print, to run educational campaigns that inform the public about the risks and impacts of invasive alien species. These campaigns should aim to increase public knowledge and encourage community action against the spread of invasive alien species.
- **Citizen Science:** Promote public participation in monitoring and managing invasive alien species through citizen science programs. These programs empower community members to contribute to data collection and direct management efforts, enhancing community engagement and providing valuable local insights into invasive alien species dynamics.
- **Education Integration:** Embed topics related to invasive alien species in school programmes and conduct community workshops to foster grassroots understanding and engagement. Educational initiatives should provide practical knowledge on identifying and mitigating invasive alien species, empowering students and community members to participate actively in invasive alien species management.

- **Legal Stakeholder Engagement and Sensitization:** Organise targeted engagement sessions for key legal stakeholders, including the Office of the Attorney General, the Law Reform and Development Commission, and Legislative Drafters. These sessions should not only educate about the environmental, economic, and social impacts of invasive alien species but also actively solicit their insights and input on drafting effective legal measures. Emphasising the urgency and need for quick action in these sessions will help garner their buy-in, ensuring faster adoption and implementation of invasive alien species management policies. Regular updates and discussions with these stakeholders will keep them informed of ongoing issues and progress, reinforcing their commitment and accountability in the legal handling of invasive alien species.

6.4 Enhanced Enforcement and Penalties:

- **Effective Enforcement:** Equip enforcement teams with necessary resources and training for effective law implementation.
- **Reporting Mechanism:** Develop a transparent system for reporting invasive alien species - related violations.
- **Penalty Structure:** Ensure that fines and penalties are substantial enough to deter violations, yet fair and justifiable.
- **Legal Processes:** Provide avenues for legal recourse and appeals, maintaining an equitable enforcement approach.

6.5 Research & Development:

- **Funding Allocation:** Direct substantial resources towards researching innovative invasive alien species management strategies, especially in biological control and early detection methods.
- **Global Collaboration:** Build partnerships with international research bodies and universities to share knowledge and resources.
- **Technological Advancement:** Support the development of new technologies for detecting, monitoring, and managing invasive alien species.
- **Knowledge Repository:** Establish a national database to store and disseminate research findings, making them accessible to all relevant stakeholders.

These comprehensive recommendations aim to establish a well-rounded, research-informed, and community-involved legal framework in Namibia. The strategy focuses on mitigating current challenges posed by invasive alien species and preemptively addressing potential future threats. Emphasising the integration of international expertise, indigenous knowledge, and state-of-the-art technology, the plan is geared towards preserving Namibia's rich biodiversity and protecting the socio-economic wellbeing of its communities from the adverse effects of invasive alien species.

7 Conclusion

The thorough exploration of the current status of invasive alien species management in Namibia, underscored by the comprehensive legislative review and multiple analyses conducted, brings to light a critical realisation: the prevailing system is marked by substantive gaps and fragmentation. Thus, the robust, sustainable, and inclusive management of invasive alien species not only represents an environmental exigency but also a socio-economic imperative, directly influencing the well-being and sustainability of Namibia's ecological and human landscapes.

Namibia is home to a wide variety of wildlife and natural habitats, but it faces a serious challenge from invasive alien species. These non-native species pose a significant threat to the country's ecosystems, agricultural productivity, and the overall quality of life for its people. The damage caused by these invaders affects not just the environment but also the economy and public health. The impact is so profound that the issue of controlling these species has become a national priority, requiring urgent and coordinated action to protect Namibia's natural heritage for future generations.

Our research underscores the need for a comprehensive, proactive legal framework in Namibia that aligns with international best practices while being adaptable to local conditions. Examining the approaches of countries like Australia, New Zealand, and South Africa provides useful insights and potential strategies. However, Namibia's unique socio-ecological circumstances call for a customized approach that effectively integrates global knowledge with local realities. This tailored strategy is essential to effectively manage the threat of invasive species and protect Namibia's natural heritage.

The path to creating a strong, effective legislative framework for managing invasive alien species in Namibia requires a collective effort. It calls for the collaboration of government agencies, non-governmental organizations (NGOs), local communities, and international partners, all working together towards the common goal of protecting Namibia's natural and cultural heritage. Integrating

scientific research, indigenous knowledge, technological advancements, and community initiatives will strengthen this effort, making it both scientifically robust and widely supported.

Developing such an inclusive and integrated approach offers the potential not just to address current impacts of invasive species but also to proactively protect Namibia from future threats. This effort goes beyond mere environmental conservation, aiming to maintain a sustainable balance between humans and nature, ensuring that Namibia's diverse ecosystems continue to thrive and support life in all its forms.

Our recommendations are based on thorough analysis and consultations with stakeholders. They mark a path forward that focuses on controlling invasive species and enhancing Namibia's rich biodiversity for future generations. This is a task that requires urgent action, shared responsibility, and a cooperative spirit, emphasizing our commitment to nurturing and sustaining life's harmonious balance in Namibia.

8 Bibliography

Literatures

1. Bethune, S., Ndeilitunga, L., & Mutota, P. (2022). The Battle Against Invasive Alien Species in Namibia. Conservation and the Environment in Namibia.
2. BirdLife Namibia, 2022. "Migratory Patterns and the Importance of Namibian Wetlands.
3. Convention on Biological Diversity, 1992
4. FAO, 2019. Impact of Invasive Pests on Agriculture and Food Security.
5. Genovesi, P., Carboneras, C., Vilà, M., & Walton, P. (2015). EU adopts innovative legislation on invasive species: a step towards a global response to biological invasions? *Biological Invasions*, 17, 1307-1311.
6. Global Invasive Species Database, 2021. Biodiversity losses due to invasive species across continents.
7. IUCN (2023). Global Species Action Plan: Supporting implementation of the KunmingMontreal Global Biodiversity Framework. Gland, Switzerland: IUCN.
8. Jubase, N., Shackleton, R. T., & Measey, J. (2021). Public Awareness and Perceptions of Invasive Alien Species in Small Towns. *Biology*, 10(1322). DOI: 10.3390/biology10121322.
9. Kumschick, S., Wilson, J.R., & Foxcroft, L.C. (2020). A framework to support alien species regulation: the Risk Analysis for Alien Taxa (RAAT).
10. Lancaster, J., 2017.* "Adaptations of Fauna in the Namib Desert." *Journal of Desert Ecology*.
11. Ministry of Environment, Forestry and Tourism. (2013). Namibia's Second National Biodiversity Strategy and Action Plan, 2013-2022.
12. Nowaseb, E., Mbeeli, N., Nghishiko, J., & Strohbach, B.J. (2016). Improving water use estimates of alien invasive *Prosopis chilensis* trees by improved leaf area estimates along the Fish River in Namibia
13. Padayachee, Ashlyn & Irlich, Ulrike & Faulkner, Katelyn & Gaertner, M. & Procheş, Şerban & Wilson, John & Rouget, Mathieu. (2017). How do invasive species travel to and through urban environments?. *Biological Invasions*. 19. 1-14. 10.1007/s10530-017-1596-9.
14. Pagad, Shyama & Genovesi, Piero & Carnevali, Lucilla & Scalera, Riccardo & Clout, Mick. (2015). IUCN SSC Invasive Species Specialist Group: Invasive alien species information management supporting practitioners, policy makers and decision takers. *Management of Biological Invasions*. 6. 10.3391/mbi.2015.6.2.03.

15. Rohde, R. F., & Hoffman, M. T. (2012). The Historical Invasion of Alien Plants in Namibia. *Biodiversity & Ecology*, pp. 28-30.
16. Ruppel, O.C., & Ruppel-Schlichting, K. (Eds.). (2022). *Environmental Law and Policy in Namibia*. 4th Edition. Nomos Verlagsgesellschaft. DOI: 10.5771/9783748933564.
17. SADC Environmental Legislation Handbook 2012: Southern African Development Community (2012). SADC Environmental Legislation Handbook 2012. Gaborone, Botswana.
18. Ward, M. (2016). The regulatory landscape for biological control agents. *Eppo Bulletin*, 46, 249-253.
19. Williams, D., Pettorelli, N., Henschel, J.R., Cowlshaw, G., & Douglas, C. (2014). Impact of alien trees on mammal distributions along an ephemeral river in the Namib Desert. *African Journal of Ecology*, 52, 404-413.

Legislations

Australia

Biosecurity Act 2015 (Cth), No. 61 of 2015.

Biosecurity Regulation 2017 (Cth).

Agricultural and Veterinary Chemicals Act 1994 (Cth), No. 52 of 1994.

Namibia

*see Annexure 1

New Zealand

Biosecurity Act 1993 (NZ), Public Act 1993 No 95.

Hazardous Substances and New Organisms Act 1996 (NZ), Public Act 1996 No 30.

Biosecurity (Costs) Regulations 2010

Biosecurity (Readiness and Response—Levy) Order 2015

Biosecurity (Infringement Offences) Regulations 2010

Hazardous Substances and New Organisms (Methodology) Order 1998

Hazardous Substances (Emergency Management) Regulations 2001

Hazardous Substances (Classification) Regulations 2001

South Africa

National Environmental Management Act Act 107 of 1998

National Environmental Management: Biodiversity Act 10 of 2004

Conservation of Agricultural Resources Act, Act No 43 of 1983

Agricultural Pests Act 36 of 1983

9. Annexes

Annexure 1: Compiled table of legislation

Annexure 2: Comparative study details from Australia, New Zealand, and South Africa

Annexure 3: List of Stakeholders Consulted

Annex 1: Compiled table of legislation

No.	Legislation/Regulation Title	Focus area	Key Section(s)	Adequacy Assessment
1.	Access to Biological and Genetic Resources and Associated Traditional Knowledge Act 2 of 2017	The Act aims to regulate access to biological or genetic resources and associated traditional knowledge, protect the rights of local communities over these resources, provide a mechanism for benefit sharing, establish necessary administrative structures, and ensure implementation and enforcement of such principles	Section 8 requires permits for accessing biological or genetic resources and traditional knowledge. Section 9 mandates written prior informed consent from right holders. Section 10 focused on equitable benefit sharing.	The Act establishes a comprehensive framework for managing access to biological and genetic resources; it does not explicitly address import prevention, spread prevention, or control of invasive species.
2.	Access to Biological and Genetic Resources and Associated Traditional Knowledge Act 2 of 2017-Regulations 2021-161			
3.	Agricultural (Commercial) Land Reform Act 6 of 1995.pdf	The Agricultural (Commercial) Land Reform Act 6 of 1995 primarily focuses on land reform and agricultural practices in Namibia.	It does not contain specific provisions related to the prevention of the import of potentially invasive alien species.	
4.	Agricultural Land Act 5 of 1981 (Rehoboth).pdf			
5.	Agricultural Produce Export Ordinance 13 of 1928.pdf			
6.	Agricultural Pests Act 1973	Control of Agricultural Pests	Sections 11, 21: Control of importation and management of agricultural pests	Provides robust control mechanisms, could benefit from updates to address modern ecological challenges
7.	Agronomic Industry Act 20 of 1992.pdf	The Act establishes a Board for the Agronomic Industry in Namibia, regulating its powers and functions, and addresses matters incidental to the industry.	Section 21 restricts importation and Exportation of Controlled Products. Section 13 provides for inspection and enforcement. This includes the authority to search premises, inspect controlled products, take	The Agronomic Industry Act's provision for restricting the importation and exportation of controlled products is crucial for preventing invasive species, as it allows for regulatory control over agricultural products entering and leaving Namibia. However, the Act primarily focuses on agricultural

			samples for analysis, and seize products that may contravene the Act.	product compliance and lacks specific mention of invasive species, overlooking biosecurity and ecological impacts.
8	Agronomic Industry Act 20 of 1992-Regulations 1986-0057.pdf			
9.	Agronomic Industry Act 20 of 1992-Regulations 1994-071.pdf			
10.	Agronomic Industry Act 20 of 1992-Regulations 2016-097.pdf			
11.	Animal Health Act 1 of 2011.pdf	The Act is designed to prevent, detect, and control animal diseases, maintain and improve animal health, and address related incidental matters.	<p>Section 7 mandates that a person must hold an import permit for bringing animals, animal products, or restricted material into Namibia.</p> <p>Section 12 empowers the Chief Veterinary Officer, to establish quarantine stations for detaining or isolating imported animals, products, or materials, and for conducting necessary procedures to prevent disease spread.</p> <p>Section 18 empowers the Minister to declare an area as a quarantine area based on the presence or suspected presence of disease. This includes provisions to regulate the movement of animals, products, and conveyances within the quarantine area.</p> <p>Section 19 allows for declaring of part or all of Namibia as a control area to manage diseases, with regulations on animal exposure, sale,</p>	The Act primarily focuses on disease control rather than directly addressing invasive species. While it includes mechanisms for disease management, specific provisions for invasive organisms identification, monitoring, and control are not explicit.

			transport, and treatment, among other measures.	
12.	Animals Protection Act 71 of 1962			
13.	Aquaculture Act 18 of 2002.pdf	This Act regulates aquaculture activities in Namibia, focusing on the sustainable development of the sector and including provisions related to the management of aquatic organisms.	Sections 27 and 28: These sections regulate the introduction, transfer, import, and export of aquatic organisms within Namibia, requiring ministerial approval for such activities. Section 30: Relates to aquaculture within conservation areas, subject to specific laws governing these areas.	The Act provides control over the movement of aquatic organisms, but it does not explicitly cover the responsibilities of landowners in managing invasive species. The focus on conservation areas is limited and does not address broader invasive species management strategies
14.	Aquaculture Act 18 of 2002 regulations.pdf		Regulation 21: Controls the introduction and transfer of aquatic organisms for aquaculture purposes. It mandates applications for permission, which must be carefully examined according to internationally accepted protocols. This helps in preventing the import of potentially invasive species. Regulation 19: Prohibits unauthorized release or escape of aquaculture products from facilities. This is crucial to prevent the spread of non-native species into natural ecosystems. Regulation 20: Addresses the discharge of waste from aquaculture facilities, ensuring it doesn't harm human health or the environment, indirectly aiding in controlling the spread	

			of invasive species through waste materials.	
15.	Biosafety Act 7 of 2006.pdf	The Biosafety Act 7 of 2006, primarily focused on the regulation of genetically modified organisms (GMOs)	Section 3: Mandates the inclusion of a statement in permit applications for the intentional release of GMOs, addressing potential benefits, alternatives, and monitoring strategies for potential effects. Section 27: Specifies that activities involving GMOs must be carried out in registered facilities, ensuring compliance with prescribed standards. Section 40: Requires the preparation of emergency plans and information on safety measures for unintended releases of GMOs.	The Act provides a robust framework for the management of genetically modified organisms (GMOs), including measures to prevent unintentional release and manage potential risks. However, the focus is more on GMOs than on invasive alien species in general.
16.	Communal Land Reform Act 5 of 2002.pdf	The Communal Land Reform Act 2002 aims to regulate the allocation of rights in respect of communal land; to provide for the establishment of Communal Land Boards; to provide for the powers of Traditional Authorities and Chiefs in relation to communal land; and to provide for matters incidental thereto.		The Communal Land Reform does not explicitly address the issue of invasive alien species in Namibia.
17.	Nature Conservation Ordinance 4 of 1975 (annotated).	This ordinance is designed to regulate activities that impact nature conservation, including the handling and treatment of flora and fauna. It outlines procedures for the establishment and management of game parks and nature reserves, regulates hunting and trade in wildlife	The Ordinance gives Minister the authority to manage and conserve wildlife and natural resources in various ways, including acquiring property, controlling species populations, and promoting research. This includes measures for the propagation, preservation, destruction, import, capture,	The ordinance is foundational in establishing a legal framework for the conservation of natural resources. It empowers authorities to make regulations and take necessary actions for conservation, including potentially managing invasive species. The ordinance lacks specific provisions directly addressing invasive species, which

		products, and sets forth measures for the protection of certain species.	sale, and research of wild animals, exotic game, fish, plants, and nature conservation, as well as offering financial support and rewards for relevant information. Regulations 84 and 86 empower the Minister to make regulations regarding the import of plants and animals and penalize violations.	is a key area in modern conservation efforts.
18.	Environmental Management Act 7 of 2007.pdf	This Act establishes the legal framework for the management and protection of the environment in Namibia. It aims to promote sustainable management of the environment and use of natural resources.	Section 27 provides for listing of activities and prohibition in respect of listed activities.	The process of listing activities and requiring environmental clearance certificates is a robust mechanism for controlling activities that could lead to the spread of invasive species. The Act does not explicitly focus on invasive species, it however empowers the Minister to make regulations related to any matter in respect of which it is necessary or expedient to achieve the object of the Act.
19.	Environmental Management Act 7 of 2007-Regulations 2012-030.pdf	These regulations under the Environmental Management Act 7 of 2007 set out the Environmental Impact Assessment (EIA) procedures, defining the duties of project proponents, general requirements for Environmental Assessment Practitioners (EAPs), and the process for activities requiring environmental clearance certificates.	Regulation 1 defines 'alien species', which is vital for identifying and managing non-native organisms that can become invasive. Regulations 3 and 4 outline the responsibilities of project proponents and EAPs in conducting environmental impact assessments. Regulation 7 lists activities that	The inclusion of specific activities that could potentially introduce or spread invasive species, such as the release of genetically modified organisms or the introduction of alien species, is a strong point of these regulations. The requirements for environmental impact assessments provide a framework for assessing and mitigating the potential impacts of these activities.

			require environmental clearance certificates, including the construction of facilities for aquaculture, the release of genetically modified organisms, pest control, and the introduction of alien species into ecosystems.	While the regulations cover a range of activities that could impact invasive species, there may be gaps in covering all potential pathways for the introduction and spread of invasive species.
20.	Fertilizers, Farm Feeds and Agricultural Remedies Act 36 of 1947-Regulations 2007-112.pdf			
21.	Forest Act 12 of 2001.pdf	The Act aims to establish a Forestry Council and appoint relevant officials. Its primary focus is to consolidate laws related to forest and forest produce management, environment protection, and forest fire control and management.	Sections 21-23 focus on protected areas, natural vegetation protection, and control over afforestation and deforestation. Sections 24-26 cover the control of forest use and forest produce, including aspects like honey-producing organisms and allowable harvest. Sections 36-40 pertain to fire management areas, plans, and prohibitions on fires, which are crucial for preventing and controlling the spread of invasive species through forest fires.	The Forest Act 12 of 2001 in Namibia, while not directly addressing invasive species, indirectly contributes to their management through provisions on protected areas, natural vegetation protection, controlled forest produce use, and stringent fire management. This framework, including enforcement and penalty provisions, aids in maintaining ecological balance and preventing activities that may promote the spread of invasive species.
22.	Forest Act 12 of 2001 Regulations	These regulations complement the Forest Act by detailing specific regulatory measures. These regulations provide guidelines on forest protection, fire prevention, management of forest produce, and the conservation of specific plant species within Namibia's forests	The Forest Act 12 of 2001 - Regulations 2015 includes key provisions for forest management and invasive species control: Regulations 8-12 cover forest protection, fire prevention, soil and water conservation, and management of forest produce, including procedures for access and activities in state forest	While the Act does not directly address invasive species, several provisions indirectly contribute to managing them, such as protected areas, natural vegetation protection, controlled use of forest produce, and stringent fire management.

			<p>reserves.</p> <p>Section 10(b) bans introducing alien and invasive plant species into state forest reserves.</p> <p>Regulation 13 sets conditions for conserving, using, or destroying protected plants, with criteria such as endemism and ecosystem services, crucial for biodiversity management and invasive species prevention.</p>	
	Import and Export Control Act 30 of 1994	Trade Regulation	Section 2: Deals with powers to control imports and exports	Enables regulatory control, lacks specific focus on ecological impacts or invasive species management
23.	Inland Fisheries Resources Act 1 of 2003.	The Act establishes a framework for the conservation and protection of aquatic ecosystems and inland fisheries resources in Namibia. It outlines the mechanisms for controlling and regulating inland fishing activities, along with stipulations for sustainable development in this sector.	<p>Section 19: This section deals with the introduction, import, or export of fish. It prohibits the introduction or transfer of any fish species into any inland water system and the import of live fish into Namibia without written permission from the Minister. This is crucial in preventing the entry of invasive species.</p> <p>Section 20: It mandates consultation with the Minister before constructing dams or other structures in rivers or streams, which could otherwise facilitate the spread of invasive species.</p> <p>Section 22: Discusses the declaration of fisheries reserves and the limitation of licenses, which can be instrumental in</p>	<p>The Act is comprehensive in its coverage of conservation, protection, and sustainable use of inland fisheries. Provisions for the prevention of invasive species introduction and spread, as well as management and control measures, are well articulated.</p> <p>While the Act contains provisions for import prevention and management, the specifics regarding the identification, monitoring, and eradication of invasive species are not detailed.</p>

			controlling the spread of invasive species within water bodies. Section 74 outlines various measures for the conservation and protection of fish species, including those endangered. This section is key for the management and control of invasive species that threaten local biodiversity.	
24.	Inland Fisheries Resources Act 1 of 2003-Regulations 2003-118.pdf			
25.	Marine Resources Act 27 of 2000.pdf			
26.	Marine Resources Act 27 of 2000-Regulations 2001-241.pdf			
27.	Nature Conservation Ordinance 4 of 1975.pdf	The Nature Conservation Ordinance 4 of 1975 consolidates and amends laws relating to the conservation of nature, establishment of game parks and nature reserves, control of problem animals, and incidental matters.	Section 1 defines key terms used in the ordinance, including "adequate fence," which can be relevant for controlling the movement of animals and potentially invasive species within and across farms.	The ordinance's provisions on hunting rights and the classification of game provide a framework for managing wildlife populations, which can indirectly affect invasive species by maintaining ecological balance. The chapter on problem animals offers a mechanism for dealing with invasive species classified as such. While the ordinance addresses wildlife management and problem animals, it lacks specific focus on invasive species, particularly those not classified as game or problem animals. It does not explicitly cover import prevention or spread prevention of invasive species.
28.	Nature Conservation Ordinance 4 of 1975-Regulations 1976-0240.pdf	These regulations provide detailed rules and definitions for various aspects of nature	The regulations provide definitions for various terms, which could include those	The regulations provide a framework for managing game parks and wild animals, which can

		<p>conservation, including the management of game parks, game and other wild animals, and game dealers.</p>	<p>relevant to invasive species management, although specific definitions of invasive species are not mentioned.</p> <p>Chapter II covers the management of game parks, which could indirectly relate to the control of invasive species by maintaining ecosystem balance within these parks.</p> <p>Chapter VI addresses the management of game and wild animals, which can be crucial for controlling invasive species, particularly those that might compete with or prey on native fauna.</p> <p>Chapter VII focuses on the regulation of game dealers, which could include aspects relevant to the trade of potentially invasive species.</p>	<p>indirectly impact invasive species by controlling populations and habitats that might be vulnerable to invasive species.</p> <p>They however lack specific focus on invasive species, particularly regarding their import, spread, and management.</p>
29..	Park Regulations 2009 #4400-Gen N338	<p>These regulations are designed to govern the use and protection of parks in Windhoek. They include various clauses related to the protection of flora and fauna, maintenance of public spaces, and restrictions on activities that may harm the environment.</p>	<p>Section 16 specifically addresses the issue of invasive species, particularly the propagation and cultivation of the Prosopis species. It outlines the Council's authority to chemically treat these trees on private property and mandates the removal of alien cacti species.</p> <p>Sections 17 focus on the management of trees and bush control operations, including the protection of indigenous species and the regulation of tree</p>	<p>The regulations provide a comprehensive framework for the management of parks and natural resources within the municipality. Specific clauses like those in Section 16 effectively address the prevention and management of invasive species.</p> <p>The regulations lack detailed guidelines on how to effectively implement invasive species management strategies. There is a potential gap in the enforcement mechanisms and monitoring of</p>

			<p>planting and maintenance.</p> <p>Section 12 discusses the erection of structures in parks, indirectly contributing to habitat management.</p> <p>Section 14 deals with weed control, assigning responsibility for vegetation maintenance on sidewalks and public spaces.</p>	<p>compliance.</p>
30.	Plant Quarantine Act 7 of 2008.pdf	<p>The Plant Quarantine Act, 2008 of Namibia provides a robust legal framework for preventing the import of potentially invasive alien species, managing their spread within the country, and controlling and eliminating them.</p>	<p>Section 4 outlines stringent requirements for importing plants and related materials, including the necessity of permits, inspections at entry points, and accompanying phytosanitary certificates.</p> <p>Section 5 mandates the inspection of imported articles by plant quarantine officers.</p> <p>Section 6 requires immediate notification to a plant quarantine officer upon receipt of a regulated article in Namibia.</p> <p>Sections 8 and 12 provide the plant quarantine officer with powers to manage articles presenting a risk, including treating, removing, or destroying them, and establish further control measures, including restrictions on movement and obligations for landowners.</p> <p>Sections 9 and 10 allow for the</p>	<p>The Act provides a comprehensive legal framework for addressing the challenges posed by invasive alien species in Namibia. However, there's room for strengthening the Act by incorporating more detailed provisions for the management of invasive alien species, including detailed guidelines for prevention, containment, and eradication, as well as clear delineation of responsibilities among stakeholders.</p>

			<p>establishment of quarantine stations and areas, providing mechanisms for the treatment, confinement, and research of plant materials.</p> <p>Section 11 empowers the Minister to declare certain pests as quarantine pests, requiring immediate notification and action from landowners upon detection.</p> <p>Section 14 outlines the powers of plant quarantine officers to inspect, control, and enforce compliance with the Act.</p> <p>Section 16 allows for periodic review and adjustment of quarantine areas based on current pest presence.</p>	
31.	Plant Quarantine Act 7 of 2008-Regulations 1989-0030.pdf		<p>The Act includes provisions for applying for permits Regulation 2, issuing permits Regulation 3, specifying ports of entry Regulation 4, and inspecting imported materials, Regulation 5.</p> <p>The Act includes provisions for exporting regulated materials, which require phytosanitary certificates (Regulation 7). This process can be adapted for managing invasive species.</p>	The Regulations 2012 provides a solid legal framework for managing the risks associated with plant pests, which can be adapted and expanded to more comprehensively address the challenges posed by invasive alien species in Namibia.
32.	Plant Quarantine Act 7 of 2008-Regulations 2012-158.pdf			
33.	Prevention and Combating of Pollution of the Sea by Oil Act 6 of 1981.pdf			

34.	Seed and Seed Varieties Act 23 of 2018.pdf			
	Soil Conservation Act 76 of 1969		Guides soil conservation and land management	Indirectly impacts invasive species through habitat management; lacks direct provisions. Relevant sections include those related to the establishment of control areas, obligations for land use and management practices to prevent soil erosion, and requirements for the maintenance of vegetation cover to stabilize soil.
35.	Water Resources Management Act 11 of 2013.pdf	This Act provides a legal framework for the sustainable management of water resources in Namibia. It encompasses various aspects of water resource management, including the control and regulation of aquatic invasive species.	Section 102: This section empowers the Minister to prescribe measures for the importation, use, and control of aquatic invasive species to reduce their negative impact on water resources and aquatic ecosystems.	The Act offers a foundational framework for addressing aquatic invasive species. However, it lacks specific guidelines and procedures for implementation, leading to potential gaps in effectively preventing and managing these species.
36	Water Resources Management Regulations 2023.pdf	These Regulations are supplementary to the Water Resources Management Act and provide detailed procedures and rules for managing various aspects of water resources, including invasive species.	Regulations 125 and 126: These regulations deal with the prohibition and controlled importation of certain aquatic invasive species.	The Regulations strengthen the legal framework by specifically addressing the importation and spread of invasive species. However, they lack comprehensive measures for the active management and eradication of established invasive species.
37	Weeds Ordinance 19 of 1957.pdf	The Weeds Ordinance 19 of 1957 focuses on providing regulations for the eradication of certain weeds, particularly those deemed problematic or invasive in specific areas.	Section 1 allows for the declaration of any plant a weed for the purposes of the ordinance. Section 2 mandates land	The ordinance's provisions for declaring and eradicating weeds, along with regulatory powers to control the spread of invasive species, are adequate for managing invasive species, particularly those

			<p>occupiers or owners to eradicate any weed growing on their land.</p> <p>Sections 3 and 4 allow officials to gather information on weed presence and enforce eradication measures.</p> <p>Sections 5 and 6 provide for financial assistance in weed eradication and the recovery of costs from landowners.</p> <p>Section 7 empowers the Administrator to make regulations for weed eradication, including restricting the movement of livestock and controlling the importation and distribution of seeds.</p> <p>Section 8 establishes penalties for non-compliance with the ordinance.</p>	<p>classified as weeds. The enforcement mechanisms and penalties provide a solid basis for compliance.</p> <p>The ordinance is outdated, and its focus is limited to weeds, potentially overlooking other forms of invasive species. Additionally, the ordinance may not fully align with modern ecological understandings and management practices for invasive species.</p>
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Annex 2: Comparative study details from Australia, New Zealand, and South Africa

Aspect	Australia (Biosecurity Act 2015)	New Zealand (Biosecurity Act 1993)	South Africa (NEMBA 2004)
Scope and Definitions	<p>Australia's Biosecurity Act 2015 provides a clear definition of biosecurity risk, which includes threats posed by invasive alien species.</p> <p>The legislation considers both environmental and economic impacts.</p> <p>The Act's Section 9 defines "biosecurity risk" which encapsulates threats from invasive alien species, focusing on environmental and economic consequences.</p>	<p>New Zealand's Biosecurity Act 1993 offers an encompassing definition of biosecurity, which includes invasive species. The focus is on both preservation of native species and protection against economic impacts.</p> <p>Section 2 of the Act provides a comprehensive definition for terms like "pest" and "unwanted organism" which relate directly to invasive species.</p>	<p>The National Environmental Management: Biodiversity Act (NEMBA) 2004 includes provisions on invasive species, emphasizing protection of South Africa's rich biodiversity.</p> <p>Section 1 of NEMBA provides definitions for "alien species" and "invasive species", setting the tone for the Act's scope.</p>
Risk Assessment & Prioritization	<p>The Australian government uses a comprehensive risk assessment system to categorize biosecurity threats and prioritizes based on potential impacts.</p> <p>Chapter 3, Section 17 onwards discusses assessing and managing biosecurity risks, detailing the process to categorize and prioritize based on potential impacts.</p>	<p>New Zealand employs a risk-based approach to manage potential threats, often working preemptively. Section 22A-22C explains the process of assessing risks associated with new organisms.</p>	<p>A risk assessment framework is used to prioritize species based on their potential impact and invasiveness.</p> <p>Chapter 5, Sections 70-71 set forth the criteria for risk assessment and the subsequent listing of invasive species based on the determined threat.</p>
Prevention and Early Detection:	<p>Australia's stringent quarantine rules and border control measures are aimed at preventing the entry of invasive species. The government also invests in early detection mechanisms and public awareness campaigns.</p> <p>Part 3 of Chapter 2, starting from</p>	<p>The country's island nature necessitates strict border controls. There's a significant emphasis on public awareness and community involvement in early detection. Part 6, particularly Sections 91-94, lays out the strict border control measures to prevent</p>	<p>Import regulations and border controls are in place. There's a significant focus on public involvement in detection. Section 73 under Chapter 5 outlines the preventive measures, emphasizing the need for proactive biosecurity actions.</p>

	Section 44, elaborates on managing biosecurity risks at the border including quarantine zones and measures against pest introductions.	invasions.	
Control & Eradication	The National Biosecurity Committee oversees control and eradication efforts, with practices such as biological control being effectively used against certain invasive species. Chapter 5, specifically Part 5, discusses powers and obligations related to controlling and managing biosecurity risks.	The Department of Conservation and other agencies collaborate on control measures, including ground-level eradication efforts. :Parts 5 (Section 85 onwards) and 6 deal with the management, control, and eradication of pests and unwanted organisms.	Strategies include biological control, manual removal, and chemical methods, based on the specific invasive species. Sections 75-77 in Chapter 5 detail measures and responsibilities for controlling and eradicating invasive species.
Legal Mechanisms & Enforcement	Australia's enforcement provisions are strict, with significant penalties for breaches of biosecurity regulations. Chapter 9 provides clear mechanisms for enforcement with penalties (Sections 532-534) for non-compliance and breaches.	Clear enforcement provisions exist, with penalties for non-compliance. Sections 154-156 describe the penalties, infringement offences, and enforcement mechanisms.	NEMBA outlines clear enforcement provisions with penalties for breaches. Chapter 9 (Sections 100 onwards) offers clarity on the mechanisms of enforcement, detailing penalties for non-compliance.
Collaboration & Stakeholder Engagement	The government collaborates with states, industry, and the community to manage biosecurity risks. Chapter 2, Part 8 (Section 68) mentions collaboration agreements, emphasizing partnership with various stakeholders.	Collaboration is a cornerstone of New Zealand's biosecurity approach, involving local communities, indigenous Maori, and other stakeholders. Part 2A (Sections 35-35D) emphasizes the Treaty of Waitangi obligations and involves the Māori as active partners.	Collaboration occurs between national and provincial authorities, NGOs, and local communities. Chapter 6 (Sections 80-81) promotes cooperative governance, stressing collaboration with landowners, local communities, and other stakeholders.

Monitoring & Reporting	Monitoring efforts are coordinated at both federal and state levels. Reporting mechanisms help track and manage outbreaks. Chapter 7 covers monitoring, compliance, and reporting mechanisms ensuring transparency and effectiveness.	Systems are in place for monitoring, with regular reporting to assess progress. Section 126A specifically deals with the monitoring and reporting of operations, emphasizing transparency.	Monitoring frameworks are established at both national and provincial levels. Chapter 8, Section 92 mandates a systematic approach to monitoring, recording, and reporting, ensuring timely updates.
Funding & Resource Allocation	Funds are allocated through both federal and state budgets, with specific funds for biosecurity research and implementation. Various sections of the Act touch upon resource allocation, with a focus on ensuring adequate funding for biosecurity measures.	Funding mechanisms are both government-driven and community-supported. Funding is detailed in Parts 6 (Sections 96-100) and 7, ensuring sustained biosecurity measures.	Funding is provided by the national government, with supplementary funding from provincial budgets and international grants. Chapter 10, Section 99 discusses the establishment of a Biosecurity Fund, a dedicated resource for biosecurity efforts.
Review & Adaptation	The legislation provides for reviews to ensure relevance and effectiveness. Chapter 10 mandates regular reviews of the Act's effectiveness, ensuring it remains relevant over time.	The Biosecurity System is under regular review, ensuring it meets evolving challenges. Section 163A mandates that the Act undergoes regular review to ensure its continued relevance and effectiveness.	Regular reviews ensure the legislation remains effective against evolving threats. Chapter 11, Sections 100-101 emphasize that the Act should be adaptive, allowing for regular revisions based on emerging threats and findings.

Incorporating insights from these countries can aid in the development of a robust framework for managing invasive alien species in Namibia. Here are some key aspects to consider when adapting international best practices for managing invasive alien species in Namibia:

1. Scope and Definitions:

Review how the legislation in Australia, New Zealand, and South Africa defines invasive alien species and the scope of the framework. Adapt the definitions and scope to suit the specific context of Namibia, considering the country's unique biodiversity and invasive species challenges.

2. Risk Assessment and Prioritization:

Examine the methodologies and criteria used in the legislation of the reference countries for conducting risk assessments and prioritizing invasive alien species. Namibia can adopt similar approaches to identify high-risk species and prioritize management actions based on their potential impacts.

3. Prevention and Early Detection:

Evaluate the preventive measures outlined in the legislation of the reference countries, such as import regulations, border controls, and early detection systems. Customize these measures to address the specific pathways of invasive species introduction in Namibia, such as trade routes, tourism, and shipping.

4. Control and Eradication:

Analyze the legislative provisions related to the control and eradication of invasive alien species in Australia, New Zealand, and South Africa. Identify successful strategies, techniques, and management approaches that can be implemented in Namibia. Consider the use of integrated pest management, biological control, and other effective methods.

5. Legal Mechanisms and Enforcement:

Examine the legal mechanisms, enforcement provisions, and penalties outlined in the legislation of the reference countries. Develop appropriate legal frameworks and enforcement strategies to ensure compliance with invasive species management regulations in Namibia.

6. Collaboration and Stakeholder Engagement:

Review how the legislation encourages collaboration among government agencies, research institutions, NGOs, local communities, and other stakeholders. Adapt approaches for stakeholder engagement, public awareness campaigns, and the establishment of partnerships to foster a collaborative and participatory approach in Namibia.

7. Monitoring and Reporting:

Consider the monitoring and reporting requirements outlined in the legislation of the reference countries. Develop a robust monitoring system to track the spread and impact of invasive species in Namibia. Implement mechanisms for reporting and sharing data to facilitate informed decision-making and policy adjustments.

8. Funding and Resource Allocation:

Examine the funding mechanisms and resource allocation strategies in the legislative frameworks of Australia, New Zealand, and South Africa. Develop a sustainable funding model that ensures adequate resources for invasive species management activities in Namibia, including research, monitoring, control, and public outreach.

9. Review and Adaptation:

Regularly review and update the legislation based on new scientific knowledge, emerging invasive species threats, and lessons learned from implementation. Create provisions for adaptive management and flexibility to respond to evolving challenges.=

Annexure 3: List of Stakeholders Consulted

This annexure provides a detailed list of all stakeholders consulted during the preparation of this report. The stakeholders are categorized based on their sector and role in relation to invasive species management.

	Stakeholder Name	Organization / Community
1.	Dr. Francois Becker	National Museum
2.	Dr. Francois Jacobs	Ministry of Fisheries and Marine Resources
3.	Mr. Riaan Oberholzer	Ministry of Environment, Forestry and Tourism
4.	Jerome Boys	Ministry of Environment, Forestry and Tourism (National Botanic Institute)
5.	Esmeralda Strauss	Ministry of Environment, Forestry and Tourism (Chairperson: Namibian Invasive Alien Species Working Group)
6.	Frances Chase	Namibia Nature Foundation (NNF)(Deputy Chairperson: Namibian Invasive Alien Species Working Group)
7.	Kuniberth Shamathe	CEO: The Namibia National Farmers Union (NNFU)
8.	Kristin Nghidinwa	Ministry of Environment, Forestry and Tourism
9.	Margaret Matengu	Ministry of Agriculture, Water and Land Reform
10.	Shapwa Kalomo	Ministry of Works and Transport (Marine Pollution)
11.	Eddie Hasheela	Ministry of Agriculture, Water and Land Reform
12.	Martin Shikongo	City of Windhoek
13.	Jaco Fourie	City of Windhoek
14.	Clinton Hay	University of Namibia
15.	Colin Nott	Regenerative Farming Practices
16.	Michael Seelig	Prickly Pear
17.	Felicity !Owoses	Ministry of Justice (Legislative drafting)