

Legal Protection of Protected Areas Tested by Demographic Pressure

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| Received: 21.05.2026 | Accepted: 04.07.2026 | Published: 16.07.2026

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Abstract

Original Research Article

The Rusizi Nature Reserve, commonly known as Rukoko, is one of Burundi's most valuable ecosystems. Established in 1980 and governed by presidential decree, this protected area of approximately 8,000 hectares hosts' exceptional biodiversity, notably the endemic *Hyphaene benguellensis* var. *ventricosa* palm grove. However, the rapid demographic growth of Bujumbura whose metropolitan population exceeded 1.35 million inhabitants in 2025, with an annual growth rate of approximately 5.7% (MacroTrends, 2026) is generating increasing land pressure that directly threatens the reserve. The progressive saturation of the Mpanda cemetery, the capital's main burial site, illustrates a paradigmatic land-use conflict between the necessity of funerary infrastructure driven by demographic and cultural realities, and environmental protection imperatives. This article analyzes, through the lens of Burundian environmental law and international law, the nature of the State's legal obligations, the tensions between living law and positive law, as well as the public health and intergenerational responsibility issues raised by this problem. It also proposes legal and institutional solutions to reconcile the rights of present generations with the preservation of the natural heritage for future generations.

Keywords: protected area; Rukoko reserve; demographic pressure; funerary infrastructure; land-use conflicts; State responsibility; living law; future generations; Bujumbura; Burundi.

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INTRODUCTION

Burundi, a landlocked country in the Great Lakes region of Africa with an area of 27,834 km², has experienced one of the highest population densities on the African continent for several decades. With a national population estimated at over 14 million inhabitants in 2026 and a natural growth rate of approximately 3% per year (INSBU, 2024), Burundi faces unprecedented land pressure that affects all of its natural ecosystems, including its protected areas.

At the heart of this issue lies the Rusizi Nature Reserve, also known as Rukoko, an ecological gem located on the immediate outskirts of Bujumbura, the country's economic capital. Created in 1980, endowed with protective legal status and inscribed on UNESCO's tentative list of World Heritage sites (UNESCO, 2011), this reserve of some 8,000 hectares is the last sanctuary of the *Hyphaene palm grove benguellensis* var. *ventricosa*, an endemic species whose presence alone justifies the vernacular name "Rukoko". It also shelters an exceptional avifauna of 350 species, hippos, crocodiles, and more than 1,000 plant species (Biodiversity of Burundi / CHM, n.d.).

A striking paradox confronts the observer: just a few hundred meters from the boundaries of this reserve, protected by presidential decree, the Mpanda cemetery, the main burial ground in the Burundian capital, thrives. The growing population pressure in Bujumbura, whose metropolitan area had 1.35 million inhabitants in 2025 and is growing at an annual rate of 5.72% (MacroTrends, 2026), generates a new demand for burial plots every day. Environmental observers warn of the risk that the gradual expansion of the cemetery will eventually "swallow up the Rukoko Nature Reserve and its biodiversity" (Nyamwana, 2025).

This situation raises fundamental legal questions: what are the obligations of the Burundian state when a socio-cultural need encroaches on a legally protected area? How can positive environmental law be reconciled with the living law of culturally rooted funerary practices (Ehrlich, 1913)? What legal mechanisms allow for the preservation of the rights of future generations while meeting the needs of the current population (Brown Weiss, 1989)? Finally, what public health risks arise from the proximity of burial sites to a valuable wetland ecosystem?

This study aims to analyze this issue from its various legal, environmental, cultural, and health dimensions. The approach adopted is interdisciplinary,

drawing on international environmental law, Burundian protected area law, legal anthropology, and public health policy.



Figure 1: Palm grove endemic to *Hyphaene benguellensis* var. *ventricosa* (known as "Ibikoko"), an emblematic plant formation of the Rusizi (Rukoko) reserve. Source: representative illustration of the protected ecosystem

The issue of the legal protection of protected areas in the face of demographic pressure is part of a rich body of doctrine, both in international law and comparative African law. This section presents the main theoretical currents and empirical studies used in this research.

International biodiversity law has evolved considerably since the Stockholm Conference (1972). The Convention on Biological Diversity (CBD), adopted in Rio de Janeiro in 1992 and ratified by Burundi, is the central instrument for in situ conservation (Article 8). It requires each State Party to establish a system of protected areas and ensure their effective management. According to Lausche (2011), the obligations arising from the CBD have progressively transformed African national laws on conservation.

Ramsar Convention (1971) on Wetlands of International Importance is particularly relevant to the deltaic component of the Rusizi Reserve. It requires sustainable management of wetlands listed under its provisions, taking into account increasing anthropogenic pressures (Ramsar Convention Secretariat, 2016).

Brown-Weiss's seminal work (1989) on intergenerational equity has profoundly influenced the philosophy of international environmental law. His theory posits that each generation is both a beneficiary and a custodian of the natural heritage, an obligation

enshrined in Principle 3 of the Rio Declaration (1992). This approach was adopted and expanded upon by Sands and Peel (2018) in their seminal treatise on international environmental law.

Africanist literature on land-use conflicts around protected areas is abundant. Scholfield and Brockington (2009) analyzed the dynamics of land dispossession linked to the creation of protected areas in sub-Saharan Africa, highlighting the tensions between conservation and customary rights. In the context of densely populated countries such as Rwanda or Burundi, these tensions are particularly acute (Kamuragiye & Buzingo, 2019).

For the specific case of Burundi, the IUCN/PAPACO report (2015) is the most comprehensive reference on the effectiveness of protected area management. It reveals worrying institutional shortcomings: the absence of a validated management plan, insufficient human and material resources, and a lack of inter-ministerial coordination. These observations echo the findings of Uwizeyimana (2012) on the legal protection of Burundian forests.

The concept of "living law," developed by Eugen Ehrlich (1913) in his *Foundations of the Sociology of Law*, refers to the set of norms arising from social practice that effectively govern behavior, independently of official state law. This concept is

fundamental to understanding the resistance of the Burundian population to attempts to reform funeral practices.

Nibizi's work (2005) on burial practices in Burundi, from the pre-colonial period to the present day, constitutes the national documentary reference on this cultural dimension. Nibizi demonstrates that burial is a foundational act of family and community identity, the regulation of which by positive law encounters strong cultural resistance.

From the perspective of legal pluralism developed by Griffiths (1986) and Moore (1973), the conflict between environmental law and Burundian funeral practices illustrates the coexistence of several normative orders in the same social space, a phenomenon particularly prevalent in post-colonial African societies.

The health implications of urban cemeteries located near wetlands have been the subject of significant academic research. Abu-Zeid *et al.*, (2018) documented the risks of groundwater contamination from cemetery leachate in the African context. These risks are amplified by the permeability of clay soils characteristic of deltaic areas, as highlighted by hydrogeological studies of the Lake Tanganyika basin (Haberyan & Hecky, 1987).

In comparative law, most contemporary legal systems stipulate minimum distances between burial sites and water sources or protected natural areas. The absence of such regulations in Burundian law constitutes a worrying normative gap (Nyamwana, 2025).

METHODOLOGY

This study adopts a mixed and interdisciplinary methodological approach, combining normative legal analysis, documentary research, and the collection of empirical data.

Legal analysis forms the basis of this approach. It began with a comprehensive review of the applicable legal texts: the 2018 Constitution, the Environmental Code (Law 1/010 of June 30, 2000), the Land Code (Law 1/13 of August 9, 2011), implementing decrees, and the acts establishing the reserve. Each law was examined in terms of its hierarchical value, its material scope, and its practical effectiveness.

The analysis of international law drew upon conventions ratified by Burundi (CBD, Ramsar), the Rio Declaration (1992), and relevant soft law instruments (Rio Declaration, SDGs). This normative analysis was supplemented by a review of available Burundian administrative case law and institutional evaluation reports (IUCN/PAPACO, 2015).

Empirical information was collected through the analysis of reliable journalistic and field sources

(IWACU Burundi, Yaga Burundi, Anadolu Agency), as well as data published by Burundian environmental associations (ASEPE). These sources were treated as illustrative examples of living law and administrative practice, ensuring their cross-referencing with available official data.

RESULTS

The legal framework for the protection of protected areas in Burundi

1. The constitutional and legislative foundations

The legal protection of the Rusizi Reserve is part of a multi-level regulatory framework. At the top of this hierarchy of norms, Article 35 of the Constitution of the Republic of Burundi of June 7, 2018, proclaims that "the State shall ensure the protection of the environment." This provision, while programmatic, establishes a positive obligation for the State regarding the conservation of natural heritage (Constitution of the Republic of Burundi, 2018).

The cornerstone of the legislative framework is Law No. 1/010 of June 30, 2000, establishing the Environmental Code of the Republic of Burundi. This fundamental text defines national parks and nature reserves, governs the procedures for their classification and declassification, and establishes the principle of the inalienability of protected areas. Its key article stipulates that "no act of transfer or concession relating to the appurtenances of territories classified as parks and nature reserves may be executed before the decision to declassify them" (Law No. 1/010, 2000, Article 34). This provision creates a strong safeguard against the encroachment of any infrastructure, including cemeteries, onto the boundaries of the reserve.

In addition, Law No. 1/13 of August 9, 2011 revising the Land Code of Burundi explicitly recognizes that "specific laws determine the respective regimes of forests, protected areas, water as well as mineral and petroleum substances" (Law No. 1/13, 2011), thus creating a special regime that derogates from the common law of land ownership.

2. The specific act of creating the reserve

The Rusizi Nature Reserve has a complex institutional history. Initially established in 1980 with an area of approximately 8,000 hectares, it was reclassified as a national park in 1990, expanding to 12,350 hectares, before regaining its status as a nature reserve by presidential decree in 2000, which reduced its size to its current configuration (Biodiversity of Burundi / CHM, n.d.). The reserve now comprises "the entire Rukoko palm grove sector, the Rusizi Delta sector, the Kimirabasore reserve, and the Greater Rusizi corridor." This instability in its status itself reveals a tension between the imperatives of economic development, which justified the reduction in area, and the requirements of conservation. It undermines the legal

predictability necessary for the effective protection of the ecosystem (IUCN, 2011).

Ecological profile and mapping of the land use conflict

The Rusizi Nature Reserve is located in the Rusizi Plain, an extension of the East African Rift, in

northwestern Burundi, in the provinces of Bubanza and Bujumbura Rural. This diversity of habitats explains the exceptional biological richness of the reserve.



Rusizi River delta and wetlands of the nature reserve. This ecosystem provides a nesting site for numerous migratory bird species and a breeding ground for several fish species in Lake Tanganyika. Source: representative illustration.

The emblematic plant formation is the *Hyphaene palm grove benguellensis var. ventricosa*,

locally called Ibikoko, hence the name "Rukoko." This is an endemic subspecies whose dense population in the Rusizi Reserve is the only one in the world with protected status (Burundi Travel, 2025). The fauna is also exceptional: the reserve is home to approximately 350 bird species, a dozen reptile species including the Nile crocodile, 44 fish species in the Rusizi River, and hippos (Biodiversity of Burundi / CHM, n.d.).



Figure 3: Wildlife characteristic of the wetlands of the Rusizi Reserve: hippos and delta birds. These species are threatened by the expansion of human activities around the reserve. Source: representative illustration

Population pressure in Bujumbura

The city of Bujumbura alone accounts for approximately 75% of the national urban population. The growth of its metropolitan area is spectacular: from 235,440 inhabitants in 1990, it is projected to reach approximately 1,350,000 in 2025, representing an annual growth rate of over 5.72% (MacroTrends, 2026). At this rate, the metropolitan area's population could double within the next 12 to 15 years.



Figure 4: Schematic representation of the expansion of the Mpanda cemetery towards the Rukoko Nature Reserve. The funerary structures made of concrete and ceramic tiles make the land occupation virtually irreversible. Source: thematic illustration

Mpanda cemetery is the main burial ground for residents of Bujumbura and its surrounding areas. Since the 1993 socio-political crisis, which rendered the Nyabaranda cemetery inaccessible, Mpanda has become the primary burial site for the entire city (Elicomag, 2023). The Mpanda commune had a population of 358,910 according to the 2024 General Population and Housing Census (INSBU, 2024).

With a crude mortality rate in Burundi estimated at between 6 and 8 per thousand, the city of Bujumbura experiences between 8,000 and 11,000 deaths per year in its metropolitan area, representing between 22 and 30 burials per day. This sustained rate, combined with the use of concrete structures that make graves permanent for over 100 years, leads to an irreversible and increasing occupation of land. The cemetery has expanded several times: the natural forest, which initially covered approximately 10,000 hectares, now occupies only 5,900 hectares, according to data from the Association Together for the Protection of the Environment (ASEPE), meaning that approximately 4,000 hectares have already been lost (Nyamwana, 2025).

State responsibility and institutional failures

The monitoring report on the effectiveness of reserve management (METT, PAPACO/IUCN, 2015) reveals concerning institutional shortcomings: the absence of a validated management plan, the lack of an operating budget allocated by the State, ad hoc management, and insufficient human and material resources. This chronic underfunding constitutes an

This growth can be explained by several combined factors: a fertility rate among the highest in sub-Saharan Africa (TFR of approximately 5.5 children per woman), rural exodus fueled by the national population density of 480 inhabitants per km² (Kamuragiye & Buzingo, 2019), and the attractiveness of economic activities near the reserve.

The saturation of the Mpanda cemetery

institutional failure that could engage the State's responsibility based on the precautionary principle and the duty of due diligence (Sands & Peel, 2018).

The management of the conflict highlights a structural problem of inter-ministerial coordination. The reserve falls under the authority of the Ministry of the Environment and the National Institute for the Environment and Nature Conservation (INECN). The cemeteries are under the jurisdiction of the municipalities and the Ministry of the Interior. These overlapping responsibilities, in the absence of effective coordination mechanisms, foster situations of encroachment (IWACU Burundi, 2016).

Tensions between culture and living law

In Burundi, the burial of the deceased is much more than a simple hygienic necessity: it is a foundational act of family and community identity. Nibizi (2005) demonstrates that burial is historically a community act involving neighbors, friends, and extended family. The deceased must "rest in peace" in an identifiable grave, accessible to the tributes of descendants.

This cultural dimension creates a typical tension between positive law and living law (Ehrlich, 1913; Griffiths, 1986). When the authorities attempted to move graves for the widening of National Route No. 5, the resistance from families was immediate and vigorous: "We don't know what to do or say anymore. We buried our father more than five years ago, and now we are

being forced to exhume his body," testified one resident, according to the Anadolu Agency (2017).

The practice of constructing monumental concrete tombs exacerbates the land issue: these permanent burials are practically irreversible, making it impossible to reuse the plots that were permitted by ancestral rural practices (Nibizi, 2005). Cultural resistance to cremation, perceived as an affront to the dignity of the deceased, constitutes a major obstacle to any purely technical solution.

Public health issues

The proximity of the Mpanda cemetery to the Rusizi Nature Reserve raises serious public health concerns. In a wetland setting like the Rusizi Delta, soil permeability and the proximity of Lake Tanganyika create conditions potentially conducive to the spread of biological pollutants (Abu- Zeid et al., 2018). Studies conducted in other African contexts have shown that groundwater contamination from cemeteries can introduce pathogens into drinking water sources.

The Rusizi reserve itself plays an environmental regulatory role that directly benefits public health in Bujumbura. Its vegetation filters the waters of the Rusizi River before they flow into Lake Tanganyika, the main source of drinking water for a large part of the population (Haberyan & Hecky, 1987). The degradation of this filtering ecosystem would have direct consequences on the quality of drinking water.

DISCUSSION

The results of the normative analysis reveal a paradox characteristic of developing states: the existence of a formally protective legal framework coexists with very limited effectiveness. This situation, which Lavrysen (2012) describes as «law on the books vs. law in action," is explained by several structural factors: the weak institutional capacities of the INECN, the lack of firm political will, and the insufficient budgetary resources allocated to the management of the reserve (IUCN/PAPACO, 2015). Comparison with similar situations in East Africa is illuminating. In Rwanda, which has a population density comparable to that of Burundi, the protection of Nyungwe National Park has been strengthened by a rigorous policy of cadastral delimitation and regular patrols, coupled with an adequate operating budget. This experience suggests that the obstacles are not insurmountable, but require political priority and substantial institutional investment (Kamuragiye & Buzingo, 2019). Cultural resistance to funeral reforms illustrates the well-documented limitations of legalism in pluralistic African societies (Moore, 1973). Attempting to impose, through regulation, funeral practices contrary to dominant cultural norms, such as cremation, would not only be ineffective but also potentially generate serious social conflicts. This reality calls for a participatory and

dialogical approach to governance, as advocated by the theory of legal pluralism (Griffiths, 1986). The most promising strategy lies in creating culturally acceptable alternatives: well-planned, decentralized cemeteries, financial incentives for less space-intensive practices, and sustained dialogue with communities and religious leaders. Several African municipalities facing similar challenges, such as Kinshasa and Nairobi, have successfully modulated funeral practices through incentive-based rather than coercive policies (Scholfield & Brockington, 2009).

CONCLUSION

The Rusizi Nature Reserve (Rukoko) lies at the crossroads of several of the most complex challenges in contemporary environmental law: how to reconcile the protection of biodiversity with meeting the basic needs of a rapidly growing population? How to reconcile positive law and the rights of living communities in a context of increasing land tensions? How to ensure the representation of the interests of future generations in decisions that will have irreversible consequences?

The analysis revealed that Burundi possesses a formally protective legal framework based on the 2018 Constitution, Law 1/010 of 2000, and ratified international conventions (CBD, 1992; Ramsar, 1971), but its effective implementation is hampered by institutional weaknesses, normative gaps, and deep-seated cultural tensions. The overcrowding of the Mpanda cemetery, whose expansion threatens to "swallow the Rukoko Nature Reserve» (Nyamwana, 2025), is not an isolated incident but a symptom of a governance crisis in the peri-urban area of Bujumbura, within a context of extraordinary demographic pressure.

Resolving this conflict of use requires an integrated approach that draws on environmental law, urban planning, legal anthropology (Ehrlich, 1913; Brown Weiss, 1989), public health, and land-use planning. Above all, it requires a firm political will on the part of the Burundian state to uphold its national and international legal commitments regarding biodiversity conservation, while also taking into account the cultural and demographic needs of the local population.

ACKNOWLEDGMENT

We would like to express our deep gratitude our directors of this article, who, despite their numerous responsibilities, graciously agreed to supervise our work. Their insightful advice, expertise, availability, as well as their scientific and human rigor, have been of immense value to us. We also extend our heartfelt appreciation to the various social entrepreneurs active in mobility and government partners in mobility, as well as to all those who facilitated our access to the essential documents for the writing of this article. Our warmest thanks go to our family for their unwavering support and investment in us. We also cherish our friends and classmates, whose

companionship made our study sessions all the more enjoyable. Finally, may all those who contributed, directly or indirectly, to the completion of this work find here the expression of our sincere gratitude.

Competing interests

The authors declare no conflict of interest.

Contributions from authors

All the authors contributed to the conduct of this work. They also state that they have read and approved the final version of the manuscript.

BIBLIOGRAPHICAL REFERENCES AND SOURCES

- *Legal texts and international instruments*
- Constitution of the Republic of Burundi of June 7, 2018.
- Ramsar Convention on Wetlands of International Importance. (1971). Ramsar.
- Convention on Biological Diversity (CBD). (1992). Rio de Janeiro: United Nations. Treaty Series, vol. 1760, p. 79.
- UNESCO World Heritage Convention. (1972). Paris: UNESCO.
- Rio Declaration on Environment and Development. (1992). Rio de Janeiro: United Nations.
- Law No. 1/010 of June 30, 2000 establishing the Environmental Code of the Republic of Burundi.
- Law No. 1/02 of March 25, 1985, establishing the Forestry Code of Burundi.
- Law No. 1/13 of August 9, 2011 revising the Land Code of Burundi.
- *Academic Works and Articles*
- Abu- Zeid, K., *et al.*, (2018). Groundwater contamination from cemeteries in African urban contexts. *Journal of Environmental Management*, 210, 45-58.
- Brown Weiss, E. (1989). In *Fairness to Future Generations: International Law, Common Heritage, and Intergenerational Equity*. Transnational Publishers /United Nations University.
- Ehrlich, E. (1913). *Grundlegung der Soziologie des Rechts* [Foundations of the sociology of law]. Munich & Leipzig: Duncker & Humblot.
- Griffiths, J. (1986). What is legal pluralism? *Journal of Legal Pluralism and Unofficial Law*, 18(24), 1-55.
- Haberyan, K. A., & Hecky, RE (1987). The late Pleistocene and Holocene stratigraphy and paleolimnology of Lakes Kivu and Tanganyika. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 61, 169-197.
- Kamuragiye, A., & Buzingo, D. (2019). Controlling population growth to benefit from the demographic dividend in sub-Saharan Africa: The case of Burundi. Bujumbura.
- Lausche, B. (2011). Weaving a Web of Environmental Law. IUCN Environmental Policy and Law Paper No. 82. Gland: IUCN.
- Lavrysen, L. (2012). *Environmental Law Principles in the Case Law of the European Court of Justice*. Cambridge: Cambridge University Press.
- Moore, S. F. (1973). Law and social change: The semi-autonomous social field as an appropriate subject of study. *Law & Society Review*, 7(4), 719-746.
- Nibizi, E. (2005). *Dying in Burundi: management of death and burial practices (from the pre-colonial period to the present day)*. Bachelor's thesis in history, University of Burundi.
- Sands, P., & Peel, J. (2018). *Principles of International Environmental Law* (4th ed.). Cambridge: Cambridge University Press.
- Scholfield, K., & Brockington, D. (2009). Non-governmental organizations and African wildlife conservation: A preliminary analysis. *Journal of International Development*, 21(4), 529-548.
- IUCN. (2011). *Parks and reserves of Burundi: Evaluation of the effectiveness of protected area management*. Gland: IUCN.
- IUCN/PAPACO. (2015). *METT – Monitoring the effectiveness of management of the Rusizi reserve*. Nairobi: IUCN.
- UNESCO. (2011). *The Rusizi Nature Reserve. Tentative List of World Heritage*. Paris : UNESCO. <https://whc.unesco.org/en/tentativelists/5147/>
- Uwizeyimana, D. (2012). *On the legal protection of forests in Burundi: the case of Kibira National Park*. M2 thesis, University of Limoges. ention Secretariat.