



# LEGAL REPORT

## PROTECTING INDIGENOUS AND COMMUNITY ECOLOGICAL SOLUTIONS THROUGH INTELLECTUAL PROPERTY LAW IN SENEGAL AND THE AFRICAN INTELLECTUAL PROPERTY ORGANIZATION REGION (OAPI)

By Mamadou Dit Socé Diouf, Legal Expert in Economic Law

As part of the project  
“Research, Protection and Dissemination of Senegalese Climate Solutions”  
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Translated from the original French version  
by Orianne Mbaka & Taman Mhoumadi



**African Loop  
Consulting**



**HEINRICH BÖLL STIFTUNG**  
**DAKAR**  
Sénégal



**A COMMON THREAD  
OF CLIMATE  
SOLUTIONS**

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# List of acronyms and abbreviations

**TRIPS/ADPIC:** Agreement on Trade-Related Aspects of Intellectual Property Rights

**CPA:** Paris Agreement on Climate (2015)

**ASPIT:** Senegalese Agency for Industrial Property and Technological Innovation

**CBD:** Convention on Biological Diversity

**CNDST:** National Centre for Scientific and Technical Documentation

**PVP:** Plant Variety Protection Certificate

**CSE:** Ecological Monitoring Centre (Senegal)

**FAO:** Food and Agriculture Organization of the United Nations

**GI:** Geographical Indication

**INPI:** French National Institute of Industrial Property (frequent OAPI partner)

**Nagoya:** Nagoya Protocol on Access to Genetic Resources and Fair and Equitable Benefit Sharing (2010)

**OAPI:** African Intellectual Property Organization (Organisation Africaine de la Propriété Intellectuelle)

**WTO:** World Trade Organization

**WIPO:** World Intellectual Property Organization

**IP:** Intellectual Property

**SODAV:** Senegalese Society for Copyright and Related Rights

**ITPGRFA:** International Treaty on Plant Genetic Resources for Food and Agriculture

**UNESCO:** United Nations Educational, Scientific and Cultural Organization

**UPOV:** International Union for the Protection of New Varieties of Plants

**Zaï:** Traditional soil conservation farming technique used in Sahelian zones

# Foreword

Indigenous and community ecological know-how is one of the most underused levers of modern climate action. On every continent, communities have managed to preserve their environment through knowledge that has proven its worth over generations.

This knowledge must not disappear. It is a heritage to be collectively protected, and an opportunity to create economic value and jobs. Agriculture, energy and many other sectors could build lasting innovation on the basis of this knowledge, in both urban and rural settings.

But for these solutions to scale up, we must ensure that this knowledge and the communities that hold it are properly protected. Without that, we risk falling into an extractive logic. One that draws on this knowledge without fairly valuing it, or even without respecting it.

This is the purpose of this report: to take stock of the existing legal framework for the protection of indigenous and community knowledge, and to open a wider conversation about strengthening these mechanisms in order to accelerate climate action.

This work is part of our program 'A Common Thread of Climate Solutions', with the ambition of spotlighting high-potential climate solutions and contributing to the development of a strong African green economy.

## **Taman Mhoumadi**

Climate Innovation Strategist and Speaker

Founder & Director, African Loop Consulting

The privatization of nature is advancing. Often quietly, but with constant inventiveness. As the ecological crisis deepens, new mechanisms keep emerging to monetize the environment. From carbon credits to patents on living organisms, at the risk of sidelining those who depend most directly on functioning ecosystems. This is not a marginal trend: it reflects a profound shift in our relationship to the world, where what was once shared is progressively becoming appropriable.

In many societies, including Senegal, a very different relationship with nature has long prevailed. Social norms, transmitted knowledge and collective practices have allowed communities to regulate the use of shared resources and ensure their long-term sustainability. Today, however, these balances are increasingly fragile. Inherited rules are often bypassed or forgotten in favour of intensive exploitation. Against this backdrop, indigenous and community ecological solutions (agroecology, local seed practices, vernacular architecture, community management of water and fisheries...) offer a powerful counter-narrative. They are grounded in collective knowledge, rooted in specific territories and social practices, and passed down from generation to generation. They demonstrate that a different way of inhabiting the world is not only possible, but already underway.

Yet this knowledge is itself under threat today. Threatened by its invisibilization, by its marginalization in favour of models deemed more 'modern' or 'profitable', and by outright appropriation. What is collective, oral and evolving does not fit easily within classical intellectual property frameworks. Patents, trademarks,

copyright, these instruments are built on logics of individualization, exclusivity and commercial valorization. They struggle to recognize, let alone protect, knowledge that belongs to communities. A central question therefore arises: how can collective knowledge be protected without being privatized?

The Heinrich-Böll-Stiftung is committed to the concept of the commons: an approach in which biodiversity, climate and knowledge are treated as shared goods, governed by the principles of access, participation and justice. From this perspective, the aim is not to reject property rights wholesale, but to rethink how they are used, including as a defensive tool. To document knowledge, prevent its appropriation by outside actors, and strengthen communities' capacity to assert their rights. Because protecting does not necessarily mean excluding. The goal is to 'protect without privatizing' in order to recognize knowledge as a common good, to treat communities as legitimate rights-holders, and to affirm that the ecological transition cannot be built without them.

This report is part of that ambition. It explores the tension between protection and appropriation, between recognition and commodification. It analyses the existing legal frameworks and identifies the persistent challenges, including the absence of clear definitions of collective rights and community ecological solutions.

Protecting indigenous and community ecological solutions is, ultimately, far more than a technical or legal issue. It is a societal choice. A choice between appropriation and sharing. A choice, finally, about how we want to inhabit this world together.

**Fabian Heppe**

Director, Heinrich Böll Stiftung Dakar

# African Loop Consulting & Heinrich Böll Stiftung

## About Us



African Loop Consulting (ALC) is a consultancy firm specializing in climate innovation. We offer training, workshops and advisory missions for leaders and their teams, and we produce artistic content to spotlight climate initiatives.

We also design innovation programs, including 'A Common Thread of Climate Solutions', which led to the launch in 2025 of its first project "Research, Protection and Dissemination of Senegalese Climate Solutions" in partnership with Heinrich Böll Stiftung Dakar - the project through which we produced this legal report.

Operating on a 360 degree-basis, our mission is clear : supporting the development of an African green economy.



The Heinrich Böll Foundation is a green political foundation affiliated with the ecological movement in Germany. We are at once a think tank, a facilitation hub and an international network of citizen diplomacy, promoting green ideas and mutual understanding between societies. We work towards an ecological transition, social justice and a participatory, pluralist and inclusive democracy. We operate through a network of more than thirty offices worldwide.

## INTRODUCTION

Everyone aspires to a healthy, sustainable and balanced environment. This ideal affirmed by the Rio Declaration on Environment and Development of 1992 and the Paris Agreement on Climate of 2015 is a global imperative. In Senegal and across the other OAPI member states, this aspiration translates into a growing reliance on community ecological solutions, many of which draw on traditional knowledge and time-tested local practices. These solutions make a significant contribution to both climate adaptation and mitigation.

Practices such as the zaï technique and traditional agroforestry, atmospheric water harvesting, clay construction, traditional salt-barrier dykes and lowland management techniques all illustrate the capacity of communities to develop local responses to climate challenges and land degradation.

Yet this ideal runs up against a complex reality when set against the existing legal instruments for protecting traditional knowledge and the rights of local communities. Despite their effectiveness and deep historical roots, these solutions remain legally vulnerable primarily due to the absence of appropriate protection mechanisms.

This situation points to a central concern: **do the legal frameworks of Senegal and OAPI genuinely and effectively protect community ecological solutions?**

Answering this question requires clarifying the key concepts involved. While the terms **‘protection’** and **‘community ecological solutions’** are central to this analysis, they cannot be understood in isolation from related notions such as **‘intellectual property’**, **‘traditional knowledge’** and **‘collective rights’** which are concepts that carry both legal and doctrinal complexity.

The term **‘protection’** can be understood broadly as the full range of legal, social, cultural or environmental instruments designed to preserve, valorize and regulate the use of a resource, a body of knowledge or an innovation whether tangible or intangible. It aims to ensure the long-term sustainability of the resource, respect for the communities that hold it, and a balance between transmission and use. Several protection systems may apply to community ecological solutions: **environmental, cultural and human rights-based**. This study, however, focuses primarily on **intellectual property**, which, despite its limitations, offers tools for recognizing the value of innovations, governing their use and supporting their transmission.

The notion of **‘intellectual property’**, while it has no universally agreed definition, generally refers to the body of rules and principles governing the acquisition, exercise and loss of rights over intangible assets that may be used in commerce. Article 2(viii) of the Convention Establishing the World Intellectual Property Organization (WIPO) provides an indicative list of the different categories of rights, ranging from copyright and patents to trademarks, designs, geographical indications, utility models and plant variety protection certificates. Within the OAPI space, the Bangui Agreement as revised in 2015 constitutes the applicable reference framework for member states, including Senegal.

As for **‘community ecological solutions’**, no specific legal definition exists. Intellectual property law and international and regional instruments such as OAPI instead refer to the broader category of traditional knowledge. For the purposes of this study, community ecological solutions can be understood as a subset of traditional knowledge: the collective practices, innovations and know-how developed by local communities to address environmental and climate challenges. They include, in particular: sustainable soil management techniques, resilient agroecological practices, agroforestry, water conservation, assisted natural regeneration and traditional approaches to biodiversity preservation. Their defining characteristic is that they are collective, intergenerational and embedded in the cultural and socio-economic fabric of the communities that hold them. These solutions are not static: they evolve and reinvent themselves over time, which makes the gap between their living nature and the inadequacy of the current legal framework all the more apparent.

On the concepts of **‘traditional knowledge’** and **‘collective rights’**: the **Agreement on the Protection of Traditional Knowledge, additive to the Bangui Agreement and adopted in Niamey on 26 July 2007**, defines traditional knowledge as ‘any knowledge originating from an indigenous or traditional community, resulting from intellectual activity and sensibility in a traditional context’. This definition encompasses know-how, practices, techniques and innovations applicable to fields as diverse as agriculture, medicine and ecology. Traditional knowledge therefore constitutes a collective intangible heritage, transmitted across generations and inseparable from the cultural identity of the communities that hold it. It also carries a dimension of **collective rights**, in that it belongs to communities as a whole rather than to individuals, expressed through the recognition of customary property regimes, the valorization of communities’ role in resource preservation, and their legitimate right to benefit from the use of their knowledge.

In the current context, traditional knowledge cannot be marginalized. It carries identity, economic and technological significance alike. Its valorization is part of a global and contemporary momentum that aligns with effective ecological transition.

The relationship between **intellectual property and the protection of community ecological solutions (traditional knowledge)** is the subject of ongoing and sometimes contentious debate in many international, regional and national forums. Developing countries, and African states that are members of OAPI in particular, are at the heart of this discussion. Their growing engagement reflects a dual awareness: on one hand, the strategic value of this collective knowledge both as intellectual capital and as an essential resource for addressing climate change; and on the other, the need to put an end to decades of dispossession marked by unlawful appropriation, abusive exploitation and the marginalization of communities whose knowledge is oral, dynamic and originally non-commercial in nature.

The difficulty lies in bridging two very different systems: legal frameworks built on an individualist and market-oriented logic (classical intellectual property) and community practices rooted in collectivity, non-commercialism and intergenerational transmission. While classical IP rights (patents, copyright, trademarks, geographical indications, plant variety certificates, etc.) offer certain points of entry, their individualist and commercial logic sits uneasily with the collective, oral and evolving nature of traditional knowledge. The absence of precise and harmonized definitions of ‘community ecological solutions’ and ‘collective rights’ adds further complexity.

Against this backdrop, effective IP protection for these practices remains a difficult undertaking but several avenues have emerged: some rely on **positive mechanisms** (granting exclusive rights to communities), others on **defensive mechanisms** (aimed at preventing undue appropriation by third parties). OAPI member states have gradually introduced, through the Bangui Agreement and its additive instruments, specific provisions on the protection of traditional knowledge and cultural expressions. But these frameworks, while significant, often remain incomplete, partial or ill-suited to the realities of communities and to contemporary threats such as ecological biopiracy.

A series of questions therefore arises: **do the legal frameworks of Senegal and OAPI guarantee effective protection of community ecological solutions? What are their contributions, and more importantly, their limits? To what extent could complementary mechanisms, whether sui generis or inspired by comparative experiences from Latin America or Asia for example, offer more effective and equitable protection?**

The analysis that follows examines these questions. It begins **with the national, regional and international legal framework (I)**, before showing that the **protection of these solutions through classical IP mechanisms faces significant obstacles (II)**. It then makes the case for **exploring alternative, adapted or innovative mechanisms grounded in the recognition of collective rights and community governance models (III)**.

## I. Legal Foundations for Protecting Community Ecological Solutions through Intellectual Property Mechanisms

The legal framework for climate-related indigenous solutions sits within a very broad normative environment, encompassing texts on environmental law, land law, commercial law, civil law, customary law and biodiversity. These texts provide the general context for this analysis, though they are not its primary focus. This study takes intellectual property as its central lens, treating it as a strategic lever for the recognition, valorization and protection of these solutions.

### A. The National Legal Framework in Senegal and the Institutions in Charge

The legal framework governing community ecological solutions in Senegal draws on a composite set of norms, at the intersection of intellectual property law, environmental law, land law and customary law. These texts define the space within which traditional knowledge and local innovations can be recognized, valorized and protected.

#### 1. Intellectual Property Law

Senegal has developed an internal framework for the protection of intellectual creations and local knowledge.

**In the area of copyright and related rights, Law No. 2008-09 of 25 January 2008** is the primary reference. It extends protection to works drawn from intangible heritage such as expressions of folklore and oral creations which often carry endogenous knowledge relating to the environment and biodiversity. The Senegalese Society for Copyright and Related Rights (SODAV) is responsible for the collective management of these rights.

**On industrial property**, Senegal primarily operates within the framework of OAPI. At the national level, the Senegalese Agency for Industrial Property and Technological Innovation (ASPIT) plays a central role: it receives and processes applications for protection titles before forwarding them to OAPI, raises awareness among inventors and businesses about the importance of protection, and supports the valorization of research outputs and technological innovations.

#### 2. Environmental Law and Natural Resources

Senegal's legal framework also recognizes the need to preserve natural resources and the associated local knowledge.

**The Environmental Code (Law No. 2023-15 of 02 August 2023)** enshrines biodiversity conservation and the sustainable management of natural resources. These provisions form an essential normative foundation for protecting traditional ecological knowledge linked to ecosystem preservation.

**Law No. 2022-20 of 14 June 2022**, which repeals the 2009 Biosafety Act, governs the use of genetically modified organisms (GMOs) and the management of genetic resources. Designed to prevent the risks associated with biotechnologies, this law also addresses the need to protect indigenous knowledge against biopiracy and unlawful appropriation.

### 3. Land Law and Customary Practices

Land tenure is a key determinant in the emergence and transmission of community ecological solutions.

The National Domain Code (Law No. 64-46 of 17 June 1964) governs the allocation and use of rural land — the primary setting for community agroecological practices such as agroforestry and traditional soil management.

**Alongside written law, customary law** retains a predominant role in governing access to land and natural resources. In many cases, customary rules are precisely what ensures the intergenerational transmission of ecological knowledge and sustainable local land management practices.

### 4. National Institutions and Actors

The implementation of these texts rests on a range of institutions with complementary mandates. Beyond the bodies specifically charged with managing intellectual property, other national institutions play a direct or indirect role in protecting and valorizing community ecological solutions:

- **SODAV** manages copyright and related rights collectively, including works drawn from oral tradition and local knowledge.
- **ASPIT (the Senegalese Agency for Industrial Property and Technological Innovation)**, a public body under the Ministry of Industry, is responsible for promoting industrial property and supporting inventors and innovators in their protection and valorization processes.
- **The National Biodiversity Management Committee coordinates** efforts on the conservation and valorization of genetic resources.
- **Research institutions** (universities, EBAD, CNDST, specialist institutes) contribute to the formalization and dissemination of traditional knowledge and community innovations.
- **The Directorate for Climate Change, Ecological Transition and Green Finance.**

## B. The Regional Legal Framework within the OAPI Space

The African Intellectual Property Organization (OAPI), established by the Bangui Agreement of 2 March 1977 (revised in 1999 and 2015), constitutes a unique regional framework for the protection of intellectual property in Francophone Africa. Its fundamental objective is to pool the resources of member states in order to establish a uniform, effective and centralized system for the protection and management of intellectual property rights.

### 1. The Institutional Architecture of OAPI

OAPI currently brings together 17 member states, primarily Francophone, which have transferred their normative sovereignty over intellectual property to a shared system. The headquarters is located in Yaoundé, Cameroon. The organization rests on three main bodies:

- **The Board of Directors:** the decision-making body, composed of representatives of the member states.
- **The Director General:** the executive body, responsible for administration, the granting of titles and the management of procedures.
- **The Superior Board of Appeal:** adjudicates appeals arising from the rejection of applications for protection titles, requests for maintenance or extension of protection, requests for restoration, and decisions on oppositions (Article 33.2 of the revised Bangui Agreement).

- The Board is composed of three members selected by lot from a list of persons designated by the member states, one representative per state.

## 2. The Unified Rights Protection System

OAPI's distinctive feature is the creation of a single intellectual property title that is valid across all member states, without any need for national registration. This mechanism:

- promotes the harmonization of protection rules;
- simplifies procedures for innovators, creators and businesses, and;
- reduces the costs associated with multiple national filings.

A patent, trademark or geographical indication filed with OAPI therefore takes effect automatically in all member states.

## 3. Key Developments in the Bangui Agreement

### a) The 1999 revision

The 1999 revision adapted intellectual property law to the requirements of globalization and the TRIPS Agreement (1994). Key advances included the **recognition of geographical indications** as protected IP rights, the **integration of plant variety protection, alignment with WTO and WIPO standards**, and the **creation of new valorization mechanisms** (compulsory licenses, assignments, technology transfer agreements).

### b) The Niamey Additional Act of 26 July 2007

Adopted in Niamey on 26 July 2007, the additional act to the Bangui Agreement marked a major step forward by formally recognizing, within the OAPI system, **the legal protection of traditional knowledge, genetic resources and expressions of folklore**. This instrument was designed to fill a **normative gap** left by earlier versions of the Agreement, which only covered individual industrial or artistic creations, without accounting for the richness of Africa's collective heritage.

The 2007 Act builds on international commitments made by member states, notably the **Convention on Biological Diversity (CBD, 1992)** and the **Nagoya Protocol (2010)** on access to genetic resources and benefit-sharing. It explicitly recognizes that **traditional knowledge** - including knowledge related to biodiversity, traditional medicine, sustainable agriculture and community resource management - forms part of African peoples' **intangible heritage** and deserves specific protection.

Its core contribution lies in establishing a **regional framework for legal recognition and protection**. It enshrines:

- State sovereignty over genetic resources and associated knowledge;
- The requirement of Prior Informed Consent (PIC) from holder communities before any use of their knowledge or resources;
- The principle of fair and equitable benefit-sharing arising from the commercial or scientific exploitation of those resources;
- The right of local communities to claim collective ownership of their traditional knowledge.

The 2007 Additional act thus paved the way for a more inclusive approach to intellectual property, integrating **cultural, social and environmental** dimensions. However, its application remains largely contingent on the adoption of **national implementing legislation** and the establishment of **community governance bodies** capable of effectively defending these collective rights.

### c) The 2015 revision: modernization of the framework and expansion of protection

The **Bamako Additional Act of 14 December 2015** marked a further step in modernizing the IP framework within OAPI. Its primary aim was to align the regional framework with international WIPO and WTO standards while addressing the demands of economic competitiveness and technological innovation.

The revision did not directly modify the traditional knowledge provisions already established in the 2007 Act, but introduced significant changes in other areas:

- **restructuring the Agreement's annexes** to clarify filing and registration procedures; **strengthening the geographical indications regime**, notably by recognizing producer groups as collective rights-holders and introducing quality control mechanisms;
- updating the legal framework for **patents, industrial designs, trademarks and trade names** to ensure TRIPS Agreements (1994) compliance;
- acknowledging the growing role of intellectual property in regional economic development, in connection with innovation, education and industrialization policies.

The 2015 Additional Act thus reflects a political commitment to strengthen regional governance of intellectual property while facilitating its integration into the development policies of member States.

## 4. The Limits and Challenges of the OAPI Regional Framework

Despite the significant advances of the successive reforms of 1999, 2007 and 2015, the OAPI system continues to face several **structural and operational challenges** that limit its effectiveness in protecting and valorizing intellectual property rights, particularly those relating to indigenous knowledge and local innovations.

### a) Still insufficient ownership at the national and community levels

One of the main challenges lies in the lack of awareness among local stakeholders (artisans, rural communities, small businesses, and researchers) regarding the scope and economic value of intellectual property. Many holders of traditional knowledge or local innovations are still unaware of their rights, or lack the financial and technical means necessary to assert them.

Moreover, the institutional capacities of national industrial property offices remain uneven across member States, creating imbalances in the implementation and monitoring of rights registered with OAPI.

### b) The difficulty of implementing collective rights

The recognition of collective rights related to traditional knowledge raises both legal and sociological challenges. Intellectual property law, grounded in an individualistic and territorial logic, does not easily align with the community-based and intergenerational nature of endogenous knowledge. The absence of a clear framework for community governance or of recognized representative organizations makes the management of rights, the negotiation of benefits, and the monitoring of prior informed consent particularly complex.

### c) Still limited integration into development policies

The OAPI system also suffers from weak alignment with national rural, agricultural, and environmental development policies. Yet, the valorization of endogenous knowledge, geographical indication products, or local resources can only be fully effective if embedded within an integrated territorial strategy involving public actors, local authorities, and communities.

Likewise, funding for research and documentation on traditional knowledge remains insufficient, hindering the development of databases and monitoring tools comparable to those existing in India (TKDL) or Peru.

### d) Towards an inclusive institutional reform

In light of these limitations, several experts advocate for an evolution in OAPI's role from a mere registration authority to a regional agency for the development of African intangible heritage. This would involve strengthening:

- inter-institutional cooperation (with ministries of environment, culture, and research);
- the participation of local communities in the formulation of intellectual property policies;
- and the training of legal professionals, public officials, and producers in protection and valorization mechanisms adapted to the African context.

Thus, while OAPI has made it possible to establish a harmonized legal framework recognized at the international level, the consolidation of this system will now depend on its ability to embed itself in the economic and cultural realities of member States, and to become a genuine lever for the continent's intellectual and ecological sovereignty.

## C. International Instruments Ratified by OAPI and Senegal

The framework for protecting community ecological solutions cannot be fully understood through the lens of domestic or regional law alone. Both OAPI and Senegal are embedded within a dense international legal order, made up of multilateral conventions on intellectual property, the environment, biodiversity and traditional knowledge. These instruments shape states' legal obligations and guide national policies on protecting and valorizing indigenous knowledge.

### 1. Multilateral Intellectual Property Conventions

As a specialized organization, OAPI is a member of the World Intellectual Property Organization (WIPO) and has acceded, on behalf of its member states, to several fundamental international conventions:

- **The Paris Convention for the Protection of Industrial Property (1883):** establishes the principles of union protection, right of priority and national treatment for patents, trademarks and designs.
- **The Berne Convention for the Protection of Literary and Artistic Works (1886):** guarantees authors the recognition and protection of their rights across member states.
- **The TRIPS Agreement (1994),** integrated into the WTO framework, which imposes minimum standards of IP protection and enforcement, covering patents, plant variety protection and geographical indications.
- **The Patent Cooperation Treaty (PCT, 1970):** facilitates the filing and examination of patents at the international level.
- **The Lisbon Arrangement (1958) and the Geneva Act (2015)** on appellations of origin and geographical indications: key instruments for the protection and valorization of local products.

## 2. Instruments on Biodiversity and Traditional Knowledge

The question of community ecological solutions is particularly shaped by international environmental and biodiversity law, of which Senegal is a party:

- **The Convention on Biological Diversity (CBD, 1992)**: recognizes state sovereignty over genetic resources and promotes the fair and equitable sharing of benefits from their use.
- **The Nagoya Protocol (2010)** on access to genetic resources and benefit-sharing, which provides a legal framework for the use of traditional knowledge associated with biological resources.
- **The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA, FAO, 2001)**: promotes the conservation and sustainable use of local seeds and varieties, which are essential to farming communities.
- **The UNESCO Convention of 2003 for the Safeguarding of the Intangible Cultural Heritage**, which includes within its scope certain traditional practices and knowledge relating to the environment.

## 3. The Articulation Between International Commitments and OAPI Standards

OAPI's accession to these international instruments entails their direct and uniform application across all member states. Senegal, as an OAPI member and signatory to several international conventions, therefore benefits from a dual anchorage:

- a **regional one**, through the automatic incorporation of these commitments via the revised Bangui Agreement;
- and a **national one**, through the ratification and incorporation of international conventions into its domestic legal order.

This dual articulation helps ensure coherence between IP protection mechanisms and the imperatives of preserving traditional knowledge and climate-related indigenous solutions.

## 4. Scope and Limits for Community Ecological Solutions

While these instruments provide a robust normative base, their implementation faces several challenges:

- Low awareness among local communities of these international mechanisms;
- Tensions between the protection of individual rights (patents, plant variety certificates) and the recognition of communities' collective rights;
- The absence of a fully operational framework within OAPI for managing traditional knowledge, despite the progress made under the 2015 revision.

Ultimately, the articulation between international, regional and national instruments opens significant opportunities for the protection and valorization of community-based ecological solutions. The challenge, however, lies in translating these commitments into practical mechanisms that are accessible and adapted to local realities.

# II. The Limits of Classical Intellectual Property Mechanisms

## A. Available legal mechanisms that remain insufficient and ineffective

While certain IP tools offer some protection possibilities, their practical application to community ecological solutions remains limited.

- **Patents (Annex I, Bangui Agreement 2015):** protect new inventions involving an inventive step and capable of industrial application. Traditional knowledge, which is generally already known and widely shared, does not meet these criteria. It belongs to a collective and cumulative heritage rather than to any individual inventor.
- **Copyright and related rights (Annex VII, Bangui Agreement 2015):** applicable to original expressions (texts, drawings, music, etc.), but not to oral and collective practices, which do not always meet the requirement of material fixation.
- **Product and service marks, and collective marks (Annex III, Bangui Agreement 2015):** these allow products or services to be distinguished and create economic value around a distinctive sign. Some communities or cooperatives may register a collective mark to promote their products (for example in craft or agri-food sectors). However, this mechanism protects commercial identity, not the underlying knowledge itself.
- **Utility models (Annex II, Bangui Agreement 2015):** protect minor technical inventions (practical innovations or improvements to tools). In theory, they could apply to instruments or processes developed through community ingenuity (for example, an improved agricultural tool). In practice, the technical formalization requirements and filing costs severely limit accessibility.
- **Geographical indications (Annex VI, Bangui Agreement 2015):** a promising mechanism for valorizing certain products derived from local practices (e.g. 'Ziama coffee' in Guinea or 'Penja pepper' in Cameroon), but one that only covers a narrow portion of traditional knowledge and requires a well-structured collective organization.
- **Plant variety protection certificates (Annex X, Bangui Agreement 2015):** protect new and distinct varieties, but do not recognize traditional local varieties that have been collectively selected and refined by communities over time.
- **Traditional knowledge databases:** established in some countries to document knowledge and prevent unlawful appropriation (biopiracy), these serve primarily as a defensive tool rather than as a genuine mechanism for economic valorization.

## B. Conceptual and Normative Mismatch

The foundations of classical intellectual property law are deeply rooted in an individualist and time-limited conception of creation. This legal framework is built on the recognition of a single, identifiable author or inventor who holds exclusive rights for a fixed period in exchange for an original creative contribution. This conception, shaped by liberal thought and the needs of the market economy, sits poorly with the collective, cumulative and evolving nature of community ecological knowledge.

Traditional knowledge does not result from a single creative act but from a continuous process of intergenerational transmission, observation and adaptation to the natural environment. It expresses a collective intelligence built over time, in which the distinction between creator and user loses all relevance. Several points of friction arise between these two normative worlds:

- **Ownership of rights:** classical IP identifies a specific rights-holder, an author or inventor. Whereas traditional knowledge belongs to shared, often diffuse, community property. Designating a single titleholder is therefore ill-suited to the reality of collective knowledge.
- **The novelty and originality requirement:** a cornerstone of patentability and copyright protection and this requirement presupposes a new creation. Community ecological knowledge, by contrast, is based on ancient, locally known practices that are constantly updated in response to evolving ecological and social contexts.
- **The duration of protection:** IP law provides for a limited term, after which the work enters

the public domain. Traditional knowledge, by contrast, perpetuates itself indefinitely within communities, following no logic of expiry.

This **conceptual and functional mismatch** leads to the legal marginalization of local knowledge within modern protection systems. It calls for a reconfiguration of the legal framework with one capable of recognizing the specific nature of collective knowledge, its cultural dimension and its role in preserving ecosystems.

### C. Practical and Institutional Gaps within the OAPI space

Beyond the conceptual and normative limitations, the OAPI space faces a number of structural difficulties:

- **Low community awareness:** the majority of communities are unaware of the existence and potential of IP mechanisms.
- **Limited access to procedures:** the costs and technical complexity of filing applications (patents, GIs, PVP certificates) represent a major barrier.
- **Incomplete institutionalization of traditional knowledge protection:** despite the advances introduced by the revised Bangui Agreement of 2015, notably Book VII on traditional knowledge and expressions of folklore, the implementing mechanisms remain embryonic.
- **Absence of equitable benefit-sharing mechanisms:** local communities rarely receive any economic return from the use of their knowledge.
- **Lack of coordination between sectoral policies** (environment, agriculture, research, trade) and IP institutions, which weakens the integrated valorization of indigenous solutions.

In short, while intellectual property offers a strategic lever for recognition and valorization, its classical framework is inadequate for capturing the specific nature of community ecological solutions. These limitations make a strong case for the adoption of positive mechanisms, adapted to local realities and respectful of communities' collective rights.

## III. The Need to Explore More Effective, Adapted or Innovative Mechanisms

An examination of classical IP mechanisms quickly reveals their limits when applied to community ecological solutions. These solutions do not always take the form of standardized products: they frequently consist of agricultural, forestry or water management practices transmitted across generations. Protecting them requires going beyond patents and copyright to design instruments suited to their cultural specificity and collective value. Two broad and complementary approaches have emerged: defensive mechanisms, which prevent unlawful appropriation, and positive (or *sui generis*) mechanisms, which grant specific rights to holder communities.

### A. Defensive Mechanisms

Defensive mechanisms constitute the first line of protection for traditional ecological knowledge against the growing risks of **biopiracy** and **undue privatization**. Their purpose is not the commercialization or economic valorization of knowledge, but rather the preservation of its integrity, the **prevention of unlawful appropriation**, and the **recognition of holder communities** as the rightful custodians of this knowledge. In this sense, defensive mechanisms function as instruments of heritage safeguarding: they rely on the documentation, controlled disclosure and dissemination of knowledge in order to prevent its diversion by external actors, particularly through the patent system.

**India's Traditional Knowledge Digital Library (TKDL)** is the most emblematic example: a digital database cataloguing thousands of formulations from Ayurvedic, Unani and Siddha medicine. Accessible to the world's main IP offices, it allows patent examiners to quickly identify whether an application is based on already-existing knowledge, thereby preventing abusive filings. This initiative has led to the cancellation of numerous patent applications filed on traditional knowledge, particularly in the pharmaceutical field.

In **Africa**, analogous initiatives are emerging at a more local scale. Documentation programs for **traditional pharmacopoeia** - notably in **Mali** and **Cameroon** - aim to catalogue medicinal plants and their uses, while preserving community confidentiality and requiring the informed consent of knowledge holders. These databases serve both the **preservation of indigenous knowledge** and its **legal protection** against non-consensual appropriation.

The international framework was further strengthened by the **Nagoya Protocol**, adopted in 2010, which represents a major advance in the global governance of biodiversity and associated knowledge. The Protocol establishes two fundamental principles:

- **Prior Informed Consent (PIC)** of indigenous and local communities before any use of their resources or knowledge;
- **Fair and Equitable Benefit-Sharing (ABS)** arising from such use, whether monetary (royalties, partnerships) or non-monetary (technology transfer, capacity-building).

Defensive mechanisms thus operate within a logic of **prevention and recognition**: preserving peoples' intangible heritage while strengthening their capacity to negotiate within a balanced ethical and legal framework.

## B. Positive (Sui Generis) Mechanisms

Alongside defensive instruments, a number of states and regional organizations have developed sui generis mechanisms for the protection of traditional knowledge and community innovations. These frameworks, adapted to the collective, oral and intergenerational nature of this knowledge, seek to fill the gaps left by classical IP regimes. They are grounded in a logic of cognitive justice and legal recognition of holder communities, guaranteeing both control over their knowledge and a fair share of the benefits arising from its use.

**Panama** was the first country to adopt specific legislation in this field, with **Law No. 20 of 26 June 2000** on the special intellectual property regime for indigenous peoples' collective knowledge. This text explicitly recognizes the collective character of traditional knowledge and establishes a registration and protection system managed by the communities themselves, under the oversight of a competent national authority. Its dual objective is to prevent biopiracy and to ensure that indigenous peoples benefit from any commercial use of their knowledge, whether in pharmacopoeia, crafts or sustainable agriculture.

**Peru** followed with **Law No. 27811 of 24 July 2002**, establishing a sui generis regime for the protection of the collective knowledge of indigenous peoples derived from biological resources. The law introduces a **national traditional knowledge register** and governs **access and benefit-sharing (ABS)** contracts in accordance with the Convention on Biological Diversity (CBD) of 1992. Holder communities thus have a right to prior consent and a right to economic compensation whenever their knowledge is used for scientific or commercial purposes.

In Africa, this regional adaptation dynamic was reinforced by the Niamey **revision of the Bangui Agreement** on 26 July 2007, which led to the adoption of an **additional act on the protection of traditional knowledge**. This text marks a significant step forward within the OAPI space. It recognizes traditional knowledge as a form of collective intellectual creation, originating from indigenous or local communities, and grants it legal

protection against unlawful appropriation. Through this instrument, OAPI affirms an integrated approach that combines the cultural, economic and environmental dimensions of traditional knowledge valorization.

These sui generis regimes reflect a growing recognition of the role played by communities in preserving biodiversity and addressing climate change. They seek to strike a balance between the protection of collective rights, the promotion of sustainable development and the equitable valorization of indigenous resources within the global knowledge economy.

## C. Inspiring Cases of Community Ecological Solutions Protected through Intellectual Property

### a) Africa: From Community Recognition to Legal Valorization

On the African continent, several ancestral agroecological practices illustrate the richness of indigenous knowledge and its climate adaptation potential.

**The zaï technique in Burkina Faso** is a compelling example. This traditional practice consists of digging small holes in degraded soils and filling them with compost to promote water retention and land regeneration. Although it is not protected by patent, the zaï has been valued through scientific documentation and **integration into international development programs**, notably by the International Fund for Agricultural Development (IFAD) and the Food and Agriculture Organization of the United Nations (FAO). This constitutes a form of **defensive protection**: by publicly recognizing the community origin of the knowledge, it effectively prevents its exclusive appropriation by third parties.

The Penja pepper in Cameroon represents a reference case for the economic valorization of local knowledge through classical IP tools. In 2013, it became the first African product to obtain a **Geographical Indication (GI)** under the OAPI system. An internationally recognized label that links a product to its territory and specific know-how. This recognition provides legal protection against counterfeiting while ensuring an equitable **redistribution of benefits** to local producers. The Penja pepper case demonstrates the potential for coexistence between intellectual property law and the preservation of community knowledge.

### b) Latin America: Peru's Pioneering Approach

In **Latin America, Peru** stands out for its innovative legal framework on the protection of traditional knowledge. **Law No. 27811 (2002)** establishes a sui generis regime that recognizes the collective rights of indigenous communities over their ancestral knowledge.

A concrete example of its application is the protection of **Andean terrace farming**: thousand-year-old agricultural systems designed to prevent erosion and optimize irrigation, which have been **integrated into national traditional knowledge protection programs**. Communities now benefit from a **right to recognition and compensation whenever their knowledge is commercially exploited** by outside actors. The Peruvian model illustrates a successful articulation of **legal protection, environmental conservation and social justice**.

### c) Asia: India and Active Defense Against Biopiracy

In **India**, the approach to protecting traditional knowledge combines documentation, prevention and legal recognition. Beyond the Traditional Knowledge Digital Library (TKDL), several **community ecological practices** such as mixed cropping, collective water resource management (the panchayat system) and the medicinal use of neem, have been **catalogued and protected** against abusive patent applications.

**The Neem case** became emblematic: a European company had filed a patent on the antifungal properties of neem, yet these had been widely known and used for centuries in Ayurvedic medicine. Through a joint effort

by researchers, lawyers and Indian communities, the patent was **overturned** on grounds of **lack of novelty**, thereby recognizing the anteriority of the traditional knowledge. This outcome validated the effectiveness of defensive mechanisms and highlighted the relevance of collaborative approaches between science, law and tradition.

#### d) Towards a Hybrid Approach to Protection

These different experiences from Africa, Asia and Latin America alike converge on a single conclusion: the **protection of traditional ecological knowledge** cannot rest exclusively on classical IP tools, which were designed for individual and material innovations. It requires a **hybrid approach**, combining:

- **Legal recognition** of communities as holders of collective rights;
- **Preventive documentation** and controlled access to knowledge to prevent biopiracy;
- **Fair economic valorization**, ensuring an equitable sharing of the benefits generated by the use of this knowledge.

The protection of traditional ecological knowledge is now emerging as a **lever of environmental and cultural justice** combining the safeguarding of intangible heritage with the development of a more inclusive knowledge-based economy.

## Conclusion

This analysis has highlighted the inherent limitations of the classical intellectual property paradigm when applied to community ecological knowledge. Grounded in an individualist, market-oriented and temporally bounded logic, this system proves inadequate to the richness, continuity and collective character of traditional practices. Patents, copyright, plant variety protection certificates and geographical indications are valuable instruments for recognizing human creativity, but they rely on criteria of novelty, originality and exclusive ownership that cannot easily be transposed to knowledge transmitted orally, in constant adaptation and rooted in collective heritage.

That said, notable developments, particularly within the framework of the **Additional Agreement to the Bangui Agreement, ratified in 2007**, reflect a growing determination to integrate African specificities into IP protection regimes. This revision introduces provisions on the protection of traditional knowledge, expressions of folklore and genetic resources, opening the door to more inclusive and contextualized instruments. It marks a turning point towards the normative recognition of indigenous knowledge systems, which until then had been largely sidelined in positive law.

At the same time, **comparative experiences** from Africa, Latin America and Asia demonstrates the feasibility of hybrid mechanisms that combine **defensive protection** (databases, community inventories, traditional registers) and **positive protection** (sui generis regimes, geographical indications, collective marks, equitable benefit-sharing arrangements). These innovations confirm that it is possible to design a legal architecture that respects local traditions while enabling their integration into contemporary economic circuits.

The question of protecting community ecological solutions therefore cannot be reduced to a technical IP matter. It raises broader questions of **cultural sovereignty, cognitive justice** and **ecological transition**. Legally recognizing the value of community knowledge means not only preserving a collective memory and sustainable practices, but also affirming an alternative development model grounded in the complementarity between scientific innovation and traditional wisdom.

Ultimately, the future of intellectual property in the African context and beyond will depend on its capacity to reinvent itself: to become a tool in the service of sustainability, equity and ecological resilience, rather than a simple vehicle for the private appropriation of living organisms and knowledge.

## Recommendations

To ensure more effective and equitable protection of community ecological solutions, a multidimensional approach is needed. One that combines legal instruments, technical mechanisms, economic valorization, capacity-building and international cooperation.

### 1. Strengthening the Regional Legal Framework

The first requirement lies in consolidating the African normative framework for the protection of traditional knowledge. In this regard, it is appropriate **to accelerate the operationalization of the Additional Agreement to the Bangui Agreement**, adopted in Niamey on July 26, 2007, dedicated to the protection of traditional knowledge and expressions of folklore. This instrument, although adopted, remains largely unapplied, even though it provides a coherent framework for the legal recognition of communities' collective rights.

Furthermore, the development of an **African sui generis regime** appears to be an essential step. Such a regime would make it possible to move beyond the constraints of imported intellectual property systems by explicitly enshrining community rights, traditional governance modes, and customary transmission mechanisms. This approach should be harmonized with international commitments, particularly the **Nagoya Protocol (2010)** on access to genetic resources and the fair and equitable sharing of benefits arising from their utilization, in order to ensure the consistency and complementarity of standards.

### 2. Developing Defensive Protection Mechanisms

The establishment of **defensive mechanisms** is a priority for preventing the misappropriation of knowledge. To this end, the creation **of an OAPI regional database of traditional knowledge**, inspired by the model of the Traditional Knowledge Digital Library (TKDL) in India, would make it possible to document, classify, and make relevant traditional knowledge accessible. This approach would help strengthen transparency and facilitate patent examination in order to prevent cases of biopiracy.

At the same time, the promotion of **participatory community documentation** must be encouraged. By involving knowledge holders in the collection and formalization of their ecological practices, particularly in agriculture, forestry, water resource management, and biodiversity, this approach fosters local ownership and the legitimacy of the protection process.

### 3. Economic and Sustainable Valorization of Ecological Knowledge

Legal protection cannot be separated from the **economic valorization** of community ecological knowledge and practices. In this regard, **geographical indications (GI)** offer a particularly relevant lever for linking cultural preservation to economic competitiveness. They can help promote products derived from sustainable ecological practices, while ensuring a fair **financial return** to the holding communities.

It is also important to integrate this knowledge into sustainable value chains, in connection with national agricultural, forestry, and environmental policies. Such mechanisms would help transform traditional knowledge from a mere heritage to be protected into an economic resource to be valorized in an ethical and sustainable manner.

### 4. Building Institutional and Community Capacity

The effectiveness of the protection framework is closely dependent on the **institutional capacities** of the actors involved. It is necessary to train **national intellectual property offices** in the specificities of traditional knowledge and benefit-sharing mechanisms.

Likewise, **local communities** must be equipped with the legal and organizational tools needed to actively participate in negotiations concerning the research, exploitation, or commercialization of their knowledge. **NGOs and local associations play**, in this regard, a decisive mediation role between communities, researchers, and businesses, facilitating dialogue and fair contractualization.

## 5. Promoting South-South and International Cooperation

Finally, strengthening **South-South cooperation** is a strategic priority for developing home-grown protection models. Africa would benefit significantly from **sharing good practices** with regions that have greater experience in this area, particularly **India** (with its digital documentation system and community regimes) and **Latin America** (with its mechanisms for protecting indigenous resources and sharing benefits).

Moreover, the creation of **regional platforms for experience exchange** between communities, researchers, lawyers and policy-makers would foster collective learning and support the development of shared African standards. These dynamics should be accompanied by **strengthened advocacy** in international forums such as WIPO, the CBD and the Conferences of the Parties on biodiversity to secure greater recognition of traditional ecological knowledge as an essential component of the world's intangible heritage.

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