

ETHIOPIA'S ACCESS AND BENEFIT-SHARING FRAMEWORK: LEGAL FOUNDATIONS, BIO-TRADE OPPORTUNITIES, AND GOVERNANCE CHALLENGES

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ABSTRACT: Ethiopia's Access and Benefit-Sharing (ABS) framework, grounded in Proclamation No. 482/2006 and Regulation No. 169/2009, represents a national effort to assert sovereignty over genetic resources while promoting community rights, equitable development, and biodiversity conservation. This article provides a comprehensive analysis of Ethiopia's ABS regime, examining its legal provisions, institutional implementation, enforcement mechanisms, and potential to drive sustainable bio-trade. Drawing on international benchmarks including the Nagoya Protocol and experiences from Brazil, India, and South Africa; it identifies key gaps in clarity, enforcement, community participation, and inter-agency coordination. Case examples highlight how Ethiopia's rich biodiversity could serve as a foundation for climate-resilient development and inclusive growth if ABS is effectively operationalized. The article concludes with strategic recommendations to enhance legal clarity, decentralize ABS governance, strengthen community involvement, improve transparency and compliance monitoring, and integrate ABS into national development and climate agendas.

Keywords: Access and Benefit-Sharing, Bio-piracy, Bio-trade, Nagoya Protocol, Traditional Knowledge

INTRODUCTION

Ethiopia's biodiversity is both a national heritage and a global asset. From endemic medicinal plants to indigenous food crops like *teff* and *enset*, the country's biological resources are deeply intertwined with the livelihoods, identities, and traditional knowledge of its people. As a party to the Convention on Biological Diversity (CBD, 1992) and its Nagoya Protocol, Ethiopia has

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sought to codify access and benefit-sharing (ABS) principles in national law; notably through Proclamation No. 482/2006 and Regulation No. 169/2009. In general, ABS refers to legal mechanisms by which benefits derived from the use of genetic resources and associated traditional knowledge are shared equitably with the provider country and local communities (CBD, 1992; Nijar, 2011). For biodiversity-rich countries like Ethiopia, an ABS framework has a dual purpose: conserving biological diversity while creating economic opportunities through sustainable use (i.e. bio-trade).

Ethiopia's ABS framework is often praised as progressive on paper but faces significant operational challenges. Key issues include centralized implementation, legal ambiguities, low community participation, and limited capacity for monitoring and enforcement. This paper critically examines the strengths and weaknesses of Ethiopia's ABS system and explores how it can better support sustainable biotrade, biodiversity conservation, and equitable development. The analysis draws on Ethiopia's laws and policy documents, empirical studies, and lessons from other countries. It argues that Ethiopia needs to move toward a more decentralized, transparent, and community-inclusive ABS governance model to realize its objectives.

The finding and analysis section assess the doctrinal architecture of Ethiopia's ABS laws, identifies operational gaps, and links those gaps to unrealized bio-trade opportunities and governance constraints, with particular focus on transparency, monitoring, and enforcement. It also distills comparative lessons and feasible implementation options. Besides, in the given section presents prioritized legal and institutional recommendations.

Guiding questions are: (1) why has Ethiopia's ABS framework underperformed despite comparatively progressive legal provisions? (2) Which legal and institutional reforms are most feasible in the short and medium term to convert Ethiopia's biodiversity endowment into compliant biotrade and measurable community benefits? The central thesis is that underperformance is primarily structurally rooted in centralized administration, weak inter-agency interfaces (customs, intellectual property, research governance), and limited transparency rather than a lack of substantive legal principles.

MATERIALS AND METHODS

This article uses qualitative doctrinal and policy analysis. Primary sources include Proclamation No. 482/2006, Regulation No. 169/2009, and relevant policy and institutional documents. Secondary sources include peer-reviewed literature, technical reports, and comparative guidance under the CBD and the Nagoya Protocol.

The analysis combines (i) doctrinal assessment of rights, obligations, and legal definitions (PIC, MAT, benefit-sharing, derivatives, and IPR-related provisions) with (ii) governance assessment of operational capacity, transparency, and enforcement interfaces, including customs controls, patent examination processes, and post-access monitoring.

As part a comparative approach Brazil, India, and South Africa were selected as comparators because they are biodiversity-rich, have established ABS implementation experience, and illustrate distinct institutional models: Brazil's digital registration and compliance system (SISGEN), India's multi-tier governance with local biodiversity committees and patent-related clearance, and South Africa's mature benefit-sharing practice in commercial biotrade cases (e.g., Rooibos and Hoodia).

The study is based on document analysis and does not include primary fieldwork, interviews, or permit-file audits. Accordingly, the article prioritizes legal and institutional design issues and triangulates implementation claims through published studies and official reports, while acknowledging that some compliance dynamics may vary across regions and sectors.

FINDINGS AND ANALYSES

Legal Foundations and Gaps

This subsection distinguishes Ethiopia's ABS regime's normative commitments; sovereign rights over genetic resources, community entitlements, and benefit-sharing obligations from the operational compliance chain required making those commitments enforceable in practice. In ABS governance, legal rights are not self-executing: they depend on workable permit conditions, verifiable PIC and MAT, monitoring and reporting systems (including functional registers), checkpoint/customs and IP linkages, and accessible remedies for breach. Using this lens, the following section maps the core legal architecture of Proclamation No. 482/2006 and Regulation No. 169/2009 and identifies areas where ambiguity, centralization, and inter-agency fragmentation predictably weaken compliance and benefit capture.

Proclamation No. 482/2006 (Access to Genetic Resources and Community Knowledge, and Community Rights)

Ethiopia's ABS law is one of the most detailed in Africa. It affirms national sovereignty over genetic resources and explicitly recognizes the rights of local communities to their traditional knowledge. The proclamation attempts to balance biodiversity conservation, commercial utilization, and community benefits; an ambitious triad that has proven difficult in practice.

Drawing on principles of the CBD and the African Union's model law, the proclamation establishes key definitions and procedures shaping ABS in Ethiopia.

Notably, the law defines "*genetic resource*" broadly to include both the material itself and its "*derivatives*," such as extracts, oils, resins, and proteins (Proclamation 482/2006, Art. 2(3)–(6); FDRE, 2006). By explicitly covering derivatives, Ethiopia's law goes further than some ABS frameworks that focus only on raw biological materials. In principle, this means that downstream products and innovations (for example, a pharmaceutical compound derived from an endemic plant) should also be subject to benefit-sharing obligations. The proclamation also defines *community knowledge* as the collective knowledge, practices, and innovations of local communities developed over generations (Art. 2(14)), thereby establishing a legal basis for communities' rights over their traditional knowledge. However, the law does not create a specific intellectual property mechanism for protecting this collective knowledge, which limits the enforceability of those community rights outside Ethiopia's jurisdiction (Birhanu, 2010).

The proclamation requires Prior Informed Consent (PIC) of the concerned local community and Mutually Agreed Terms (MAT) as prerequisites for access to any genetic resource or associated community knowledge. Any bio-prospector or entity (domestic or foreign) seeking access in Ethiopia must obtain PIC from the local community and an access permit from the state (Art. 6, 12). The law mandates that at least 50% of monetary benefits from an ABS agreement go to the community that provided the resource or knowledge (Art. 9(2); Art. 18(1)), underscoring the equity goal. It also provides for non-monetary benefits (technology transfer, training, etc.) through MAT. Significantly, the law prohibits the granting of intellectual property rights (e.g. patents or plant breeders' rights) on genetic resources or community knowledge without the prior

consent of the state and the relevant community (Art. 17). In theory, if an invention is developed from Ethiopian genetic resources, the inventor must renegotiate benefit-sharing before seeking a patent. However, this provision lacks detailed implementation mechanisms and has not been effectively enforced in practice, as discussed later (Mirete, 2010; Ejara, 2022).

Despite its strong provisions, the proclamation adopts a highly centralized approach. It designates a federal institution; originally the Institute of Biodiversity Conservation, now the Ethiopian Biodiversity Institute (EBI) as the *competent authority* to administer ABS permits and agreements (Art. 4, 13, 27). Local/regional authorities are given only limited advisory or facilitating roles. Thus, a law intended to empower communities is implemented via top-down structures, contributing to gaps between principle and practice. The proclamation does include criminal penalties for violations (e.g. up to 12 years imprisonment and fines for accessing genetic resources without a permit or failing to share benefits) (Art. 35), signaling the legislature's intent to treat bio-piracy as a serious offense.

The Proclamation provides an advanced normative platform particularly on derivatives, community entitlements, and benefit-sharing but its enforceability depends on operational rules and inter-agency checkpoints that were not fully embedded in the legal and institutional ecosystem.

Regulation No. 169/2009 (Council of Ministers Regulation for ABS)

To operationalize the proclamation, Ethiopia enacted Regulation 169/2009, which provides detailed procedures for ABS access applications, permit issuance, and benefit-sharing contracts (FDRE, 2009). The regulation prescribes how an access application is submitted to EBI, evaluated, and approved. It introduces standardized forms (e.g. a permit application form in an

Annex) and defines roles of various actors in more detail. For instance, once EBI receives a complete application, it should publish a public notice of the intended access, allowing any objections or claimants to come forward (Art 3–5). The regulation also outlines how *community consent* is obtained: rather than each community negotiating directly, local government bodies (woreda or zonal councils) are to act on behalf of communities in PIC deliberations (Art. 12, 21–23). This was meant to streamline the process, but effectively bureaucratizes community consent by inserting government intermediaries, potentially diluting direct community agency.

Importantly, the regulation mandates the creation of an *Access Register*; a public registry of all access permits and agreements (Art 6, 24) to promote transparency. It also obliges EBI to coordinate with customs authorities to control exports of genetic resources and with other relevant institutions (e.g. sectoral agencies) to ensure compliance (Art 25–30). In principle, this envisions a cross-sector monitoring system. In practice, however, these coordination mechanisms have remained largely on paper. The access register has not been effectively implemented, and inter-agency cooperation has been weak (Jallela, 2021; Mihretu, 2018).

The regulation attempts to differentiate access for purely academic research versus commercial purposes, but in reality both follow similar permitting processes, and benefit-sharing clauses are included regardless of intent. Crucially, the regulation does *not* delegate substantive decision-making authority to regional states or local institutions, despite Ethiopia's federal system.

While the proclamation (under Art. 29) assigns regional/local conservation bodies and kebele administrations concrete compliance tasks; i.e preventing access without permits, checking permits, seizing unlawfully accessed resources, the core legal gap is that, despite assigning regional/local bodies compliance duties the regulation is silent to establish a mandatory,

institutionalized EBI–regional bureau coordination framework (mandates, reporting, data-sharing, accountability), leaving cooperation largely discretionary and ad hoc.

Gaps and Ambiguities in the Legal Framework

Ethiopia’s ABS laws cover key concepts with admirable breadth: sovereign ownership of genetic resources, community rights and consent, derivatives, benefit-sharing (monetary and non-monetary), and penalties for violations. The objectives of conservation, sustainable use, and equity are clearly stated (Proclamation Art. 3). However, several gaps in detail undermine effective implementation. For example, while “derivative” is defined and theoretically covered, there is no clear procedure for tracking or valuing derivatives once genetic material leaves Ethiopia. Users might obtain a permit for a raw plant sample, then develop a derivative product (like an extract or drug) and argue it falls outside the original agreement; a loophole Ethiopia aimed to close on paper, but without a monitoring mechanism or patent disclosure requirement, it remains difficult to enforce (Mulesa and Westengen, 2020; Ejara, 2022).

Similarly, although the law forbids IPRs without consent, Ethiopia’s Intellectual Property Office currently has no routine process to check ABS compliance when reviewing patent applications. Patent examiners do not ask for evidence of PIC or an ABS permit, and there is no legal requirement in Ethiopia’s patent law for disclosure of genetic resource origin (Gebbru, 2018). This lack of linkage means a company could potentially patent an invention based on Ethiopian genetic material without Ethiopian authorities or communities being aware (Mirete, 2010; Phillips, 2016).

Another ambiguity lies in community representation and benefit distribution. The law says communities “own” their traditional knowledge and must consent and share benefits, but it

provides few details on how communities should organize for negotiations or how benefits should be managed at the local level. In practice, PIC has often been treated as a one-time formality rather than a continuous dialogue, and benefits (if any) are usually paid into local government accounts or trust funds with limited transparency (Ameha et al., 2014). If benefits don't reach the intended grassroots beneficiaries, the spirit of ABS is defeated.

In summary, Ethiopia's ABS legislation is comprehensive in scope and strong in intent, but gaps in operational detail; especially regarding derivatives, IP coordination, community representation, and inter-agency enforcement have left it under-implemented. The next sections explore how these legal gaps manifest in practice and affect bio-trade potential and compliance.

Table 1. Key legal and governance gaps and their practical consequences

Legal / governance gap	Why it matters	Practical consequences	Targeted fix (legal or administrative)
a. Derivatives tracing and valuation	Benefit-sharing is triggered by utilization, including downstream products; without traceability, derivatives become legally "invisible".	Users can commercialize extracts/compounds without renegotiation; Ethiopia cannot verify benefit obligations or challenge misuse.	Define downstream notification triggers in MAT; require periodic utilization reports; integrate IRCC identifiers into export and research documentation.
b. Patent and IPR linkage (disclosure/clearance)	Article 17 restrictions are ineffective without a screening checkpoint at the patent office and plant variety protection procedures.	Patents or plant breeders' rights may be granted without PIC/MAT verification; disputes arise late, after commercialization.	Introduce disclosure of origin and evidence of ABS compliance in IP procedures; create a domestic checkpoint between EBI and the IP authority.

c.	Community representation and benefit management	Community rights require legitimate representatives and auditable benefit flows to prevent elite capture.	PIC becomes a one-off formality; benefits may not reach customary holders; mistrust undermines cooperation.	Establish community ABS committees or trusts; require community signatures/receipts; publish benefit delivery summaries (non-confidential).
d.	Transparency and access register	A functioning register is the backbone of verification for customs, research governance, and public accountability.	Limited oversight; weak deterrence; duplication and inconsistent decisions; communities lack information.	Deploy a national ABS portal and register; publish permit summaries; integrate with the ABS Clearing-House and issue IRCCs routinely.
e.	Centralization and weak field monitoring	Centralized permit issuance is mismatched with field realities in a federal system; monitoring must be proximate to collection sites.	Delayed processes; low detection of unauthorized access; limited follow-up on reporting obligations.	Designate regional focal units; empower trained inspectors; standardize escalation and reporting to EBI.
f.	Emerging issues (DSI and synthetic biology)	Value extraction may occur without physical access; Ethiopia needs policy alignment with evolving global ABS rules.	Potential exclusion from benefits tied to genomic utilization; regulatory uncertainty for users and regulators.	Develop national DSI policy positions and contract clauses; align with CBD/Nagoya decisions; build data governance capacity.

Bio-trade Potential and Implementation Challenges

Biodiversity can be a strategic asset for Ethiopia's development if utilized sustainably and fairly.

Bio-trade refers to the commercialization of goods and services derived from native biodiversity in line with sustainability and equity principles (UNCTAD, 2012, 2016). Ethiopia's rich ecological diversity; an estimated 6,000 higher plant species (about 12% endemic) alongside

diverse ecosystems (Demissew, 2021; Fashing et al., 2022) provides a strong foundation for a biodiversity-based economy. An effective ABS regime can ensure that when biodiversity is used for commercial gain, a share of the benefits supports conservation and local livelihoods.

From a legal and governance perspective, bio-trade potential becomes realizable only when value chains are anchored in ABS instruments: collection and access must be based on PIC; utilization pathways and reporting duties must be specified in MAT; and benefit-sharing must be structured (monetary and non-monetary) with verifiable delivery mechanisms. Without these operational linkages, sectoral “potential” remains economically speculative and legally unenforceable.

Several sectors in Ethiopia have high bio-trade potential:

- a) Ethiopia’s flora includes many medicinal plants with documented healing properties. For example, *Lippia adoensis* (a traditional antifungal and antimicrobial herb), *Artemisia afra* (used for malaria), and *Moringa stenopetala* (a nutrient-rich tree) have attracted interest from researchers and pharmaceutical companies (Zemedet et al., 2024). Compounds and essential oils from *Lippia adoensis* (koseret) have demonstrated antifungal activity in laboratory studies. If commercialization occurs, monetary and non-monetary benefits (e.g., royalties) may be shared with Ethiopia and, where traditional knowledge is involved, with the relevant right-holders through mutually agreed terms in line with the Nagoya Protocol and Ethiopia’s ABS framework (Gemedet et al., 2015; Nagoya Protocol, Art. 5).
- b) Essential oils, resins, and plant extracts are another promising area. Species like *Aloe* spp. (skincare gel), *Boswellia* (frankincense resin), and *Commiphora* (myrrh resin) have long been harvested in Ethiopia for their aromatic and therapeutic properties and are in demand in

global fragrance and wellness markets. Likewise, aromatic herbs like black cumin (*Nigella sativa*) and *Lippia adoensis* (koseret) are used in cosmetics and soaps (Tadesse, W.et al., 2007). By embedding ABS into these value chains; for instance, requiring buyers to obtain permits and agree on benefit-sharing, so that Ethiopia can secure fair compensation for communities cultivating or wild-harvesting these resources. This also encourages sustainable harvesting practices (so that, for example, frankincense trees are not over-tapped) by making local stakeholders direct beneficiaries of long-term resource health.

- c) Ethiopia is the center of origin for important food crops such as teff (*Eragrostis tef*) and enset (*Ensete ventricosum*). Teff, a gluten-free grain, has gained international popularity in health food markets, and enset (the “false banana”) is a drought-resilient starch staple with potential for wider cultivation in a climate-stressed future (Kefalew & Sintayehu, 2018; Belete et al., 2020). Ethiopia’s crop genetic diversity (including wild relatives of crops like coffee and sorghum) is of global interest for breeding climate-resilient varieties. For example, wild *Coffea arabica* populations in Ethiopian forests have genes for disease and drought tolerance that major coffee-growing companies might want for developing new coffee cultivars. Through ABS, Ethiopia can allow research on these genetic resources under agreements that, if a valuable new crop variety is developed, Ethiopia and the source communities receive benefits (such as royalties or improved seeds). This turns Ethiopia’s agricultural heritage into an economic opportunity while incentivizing the conservation of crop wild relatives and traditional landraces (Mulesa and Westengen, 2020). Indeed, with climate change threatening agriculture, the global value of Ethiopia’s genetic resources for food security is increasing.

d) When local communities have a stake in bio-trade enterprises, ABS can align economic development with conservation. A study on *Lippia adoensis* in southern Ethiopia demonstrated that local communities depend on this plant for spices, food flavoring, traditional medicine, preservatives, and income generation (Seifu et al., 2019). The valuation showed that 98.3% of respondents were willing to pay for its use values, and over 80% were willing to pay for its conservation. Such findings illustrate that communities recognize both the economic and ecological importance of the species. By informing ABS negotiations with evidence of the plant's direct and indirect use values, valuation studies help ensure that future benefit-sharing arrangements reflect the true contribution of communities to conservation and sustainable use. In this way, biodiversity becomes a managed livelihood asset rather than an undervalued open-access resource.

Despite significant potential, Ethiopia's bio-trade sector faces challenges. Many initiatives are still small-scale pilots; scaling them up requires a supportive ecosystem. Key hurdles include lack of access to finance for bio-entrepreneurs, weak market linkages (e.g. difficulty for cooperatives to directly reach international buyers), and limited technical capacity for product development and quality control (UNCTAD, 2017). Communities venturing into bio-trade often need support to organize effectively (ensuring inclusive governance so benefits are shared fairly within the community) and to navigate regulatory requirements (such as obtaining ABS permits and certifications like organic or fair-trade labels). ABS laws alone cannot address all these issues, but they can be part of a broader strategy by providing legal certainty and by channeling resources (through benefit-sharing funds) into capacity-building.

Another challenge is ensuring that local communities truly benefit. Without strong ABS enforcement, there is a risk that foreign or domestic companies utilize Ethiopian genetic resources through informal channels (biopiracy), and local people receive no compensation. Historical instances of biopiracy such as foreign patents on Ethiopian teff varieties in the 2000s have bred distrust and highlight the need for vigilance (Bernard et al., 2005, as cited in Mulesa & Westengen, 2020). A robust ABS regime, well-publicized among stakeholders, can deter such practices by making legal access the norm and illegal appropriation harder.

In essence, Ethiopia's rich biodiversity presents substantial bio-trade opportunities in pharmaceuticals, cosmetics, agriculture, and other sectors. ABS provides the legal framework to ensure these opportunities are realized in a sustainable and equitable way. However, for ABS to truly facilitate bio-trade, it must be effectively implemented: clear rules for access, reliable enforcement, and genuine involvement of communities as partners. Absent these, bio-trade could degenerate into unsustainable exploitation where communities see little benefit; a scenario Ethiopia must avoid if it wants biodiversity to fuel green development. The next sections delve into the governance and compliance gaps currently hindering Ethiopia's ABS implementation.

Transparency and Monitoring Gaps

Transparency is an ex-ante accountability mechanism: it reduces information asymmetry by making permits, authorized uses, and benefit obligations visible and traceable before harm occurs and before disputes emerge (Fung et al., 2007).

One major weakness in Ethiopia's ABS governance is the lack of transparency and accessible data regarding permits, users, and benefit outcomes. Although the law envisages a public ABS *database* or register, none is operational. Basic figures like how many ABS permits have been

issued, for which resources, and the status of benefit-sharing are not published (EBI, 2024). This opacity makes external oversight difficult; Parliament, researchers, and civil society cannot easily evaluate whether ABS is working or whether resources are being misused. It also means local communities have no simple way to find out if genetic resources from their area have been accessed and what was agreed.

Additionally, there is virtually no systematic reporting on benefit-sharing outcomes. When ABS agreements are signed, it remains unclear in practice whether the promised benefits (monetary or non-monetary) have been delivered to the communities. For example, if a company agreed to pay royalties or support a community project, there is no public tracking of those commitments. Without data on benefits, policymakers cannot assess if ABS is achieving its equity goals, and communities may not even be aware of what they are entitled to. The Ethiopian Biodiversity Institute's reports have generally emphasized the number of permits issued rather than the benefits generated (Mihretu, 2018). This focus on the *permit* stage rather than follow-up reflects a broader issue of weak post-access monitoring.

ABS record-keeping also lacks detail that could help adaptive management. Ideally, an ABS database would indicate which types of resources are most accessed (e.g. medicinal plants, agricultural seeds, microbial samples) and from which regions. Such information could highlight patterns for instance, if most permits involve medicinal plants from Oromia, training and enforcement could be prioritized there. At present, however, such granular data is largely confined to internal files and not synthesized for policy use (Jiren et al., 2018). The absence of an organized, transparent information system for ABS is a significant governance gap.

Another transparency issue involves information feedback to the communities themselves. Often, once an ABS permit is granted, local communities do not receive a copy of the agreement or even a summary of its terms (Mihretu, 2018). Community members might only learn that research was conducted or resources collected in their area after the fact, and they may have little idea what was agreed regarding benefits or use of their knowledge. This lack of communication breeds mistrust. In some documented cases, communities have felt “in the dark” about ABS deals supposedly made on their behalf, fueling suspicions that benefits are captured by others (Ameha et al., 2014). Ensuring that communities are given accessible information (in local language) about ABS agreements and follow-up would greatly improve credibility. It would also empower communities to demand their share of benefits if promises are not kept.

Improving transparency is relatively low-hanging fruit in ABS reform. Setting up a publicly accessible ABS registry or online database would not be very expensive and could be modeled on systems in countries like South Africa or India, which post summaries of ABS permits and agreements (including the resource, the user, intended use, and agreed benefits). Ethiopia has started uploading some permit information to the CBD’s ABS Clearing-House (an international database) (CBD, 2023), but the coverage is incomplete. A dedicated national ABS portal, updated in real time, would allow customs officials, patent examiners, and others to verify legality quickly. It would also allow communities, journalists, and researchers to scrutinize ABS activities, creating public accountability. In a governance environment where trust is often lacking, “sunlight” can be a powerful disinfectant: if communities see what permits are being issued and what benefits are due, it becomes much harder for corruption or negligence to hide.

In conclusion, the lack of transparency and data in Ethiopia's ABS implementation undermines accountability and stakeholder confidence. Addressing this gap should be a priority. By building a transparent monitoring system from permit issuance through benefit delivery; Ethiopia would not only fulfill its own legal mandate (Regulation 169/2009's registry requirement) but also strengthen compliance (users would know their actions are visible) and community engagement (locals could see ABS working for them). Transparency is fundamental to converting ABS from an abstract concept into a credible contract between the state, communities, and resource users.

Enforcement and Compliance Strategy

Enforcement is an ex-post compliance function triggered when non-compliance is detected and requiring corrective measures (e.g., suspension, sanctions, remedies, or dispute processes). Within this logic, the single most important transparency reform is the establishment of a national ABS information portal. (OECD, 2014). Conceptually, Ethiopia's ABS enforcement gap has three interlocking dimensions: (i) institutional (mandates, staffing, and coordination among EBI, regional bodies, research institutions, and courts); (ii) technical and informational (traceability tools, registries, reporting formats, and identifiers that travel with samples and derivatives); and (iii) international (use of IRCCs, checkpoints, and cooperation with user-country authorities). This framing clarifies why strong legal sanctions alone are insufficient if detection, verification, and cross-border interfaces are weak.

Ensuring compliance with ABS agreements; both within Ethiopia and abroad has been one of the greatest challenges. Ethiopia's ABS laws carry strong penalties for violations, but detection and enforcement mechanisms have been weak. A combination of institutional, technical, and legal

factors has contributed to a *compliance gap* where many genetic resource uses are unmonitored and potential benefits go uncollected.

At the heart of enforcement challenges is the institutional setup. EBI, as the central ABS authority, is tasked with everything from permits to follow-up, yet it has limited manpower and resources to monitor what happens after a permit is issued (Jalleta, 2021). Regional and local bodies, who might observe genetic resource collection on the ground, have no clear mandate or authority to enforce ABS rules. This centralization means enforcement is effectively based out of Addis Ababa, far from field sites. Local communities are nominally empowered by law (they are even assigned a role in monitoring access on their lands, Proclamation Art. 28), but in reality they often lack the awareness or legal support to play a watchdog role. Expecting under-resourced rural communities to police bioprospectors is unrealistic (Mihretu, 2018). The result is that unauthorized access can happen with little chance of detection; for instance, a foreign researcher could collect plant samples during fieldwork and take them out of the country without anyone knowing it needed ABS approval.

Customs controls illustrate this weakness. Legally, customs officers should ensure no genetic resource leaves Ethiopia without an ABS permit (Proclamation Art. 30). In practice, without an ABS database or training, customs officials rarely identify such cases (Mihretu, 2018). Biological samples may be misdeclared or simply not recognized as genetic material subject to ABS. For example, seeds or dried plant specimens might pass through airports labeled as “research samples” without scrutiny. The lack of clear guidelines and coordination between EBI and customs means an important line of defense against biopiracy is effectively idle.

Another enforcement gap is post-access monitoring. ABS agreements often require the user to submit periodic reports on research findings or to inform EBI of any commercialization (Proclamation 482/2006, Art. 14). However, Ethiopia does not have a system to track whether users actually comply with these obligations (Mihretu, 2018). Once a permit is given, there is an “information black hole” years may pass and EBI might not know if the research led to a publication, a patent, or a product. Without monitoring or an obligation for users to disclose outcomes (e.g. through a patent disclosure requirement), Ethiopia is unlikely to notice a successful foreign patent based on its resources in time to claim benefits. Many benefits (like royalties) would only accrue *if* a product is developed, often years later, making long-term follow-up essential yet currently absent.

Judicial enforcement has also been negligible. While Ethiopia has the legal provisions to prosecute biopiracy, there have been virtually no court cases. Several barriers explain this. First, detecting a violation in order to prosecute is rare for the reasons above. Second, even when a possible violation is known, bringing a case is complicated by technical evidence issues; linking an end product back to a genetic resource and proving it was obtained without a permit can be difficult without clear documentation or disclosure (Zostiet, 2021). Third, Ethiopia’s courts and prosecutors are not specifically trained in ABS, so such cases may not be prioritized or may flounder due to unfamiliarity. As a result, the deterrent effect of Ethiopia’s harsh penalties has not materialized; many potential violators likely perceive little risk of being caught or punished.

One of the paradoxes of Ethiopia’s ABS enforcement is underutilization of communities. Communities have the most to gain from benefit-sharing and are the eyes and ears on the ground, but current practice gives them minimal role. PIC processes have often been handled through

local government surrogates, and communities may not even know the details of permits granted in their area. This disempowerment means a key incentive for enforcement; local interest in ensuring outsiders follow the rules is lost. If communities were more directly involved (for instance, if they co-signed agreements and received copies, and if they had local ABS committees to discuss ongoing uses of their resources), they could be important allies in detecting unauthorized activities or in pressuring authorities to enforce compliance. When communities feel ABS is something done *for* them rather than *with* them, they are less likely to actively engage in monitoring or reporting issues (Ameha et al., 2014). Strengthening community agency in the ABS process (for example, through legal awareness trainings or by establishing community biodiversity registers that log local genetic resources and knowledge) could enhance compliance simply by virtue of more local oversight and pride of ownership.

ABS enforcement inherently has an international dimension, since users of genetic resources (companies, researchers) may operate in foreign jurisdictions. Ethiopia's accession to the Nagoya Protocol in 2014 provides some avenues to address this, but they have yet to be fully exploited. Under the Nagoya Protocol, Ethiopia can issue an Internationally Recognized Certificate of Compliance (IRCC) for each permit it grants, and user countries are supposed to check for IRCCs when resources from abroad are utilized. To date, Ethiopia has not systematically issued IRCCs or registered all its permits in the ABS Clearing-House, which undermines its ability to later track or prove legal access (Greiber, 2012; Lachenmeier et al., 2024). If, for example, a European patent office examines an application on an Ethiopian plant, it will search the ABS Clearing-House for an IRCC. If none is found (because Ethiopia didn't register it), the patent could be granted without any flag, and Ethiopia might miss the window to assert its rights. A straightforward step for Ethiopia is therefore to always post its permits/IRCCs

to the international database essentially, “leave a paper trail” that other countries’ checkpoints can find.

The Nagoya Protocol also encourages Parties to designate *checkpoints*; authorities like patent offices or research funders to monitor compliance. Ethiopia itself should designate domestic checkpoints (for instance, requiring its national patent office to screen for ABS clearance in relevant applications, or mandating research institutes to ensure ABS permits for any international collaborations). More importantly, Ethiopia can engage diplomatically so that major user countries of its biodiversity (UK, Canada, US (not a Party to Nagoya), etc.) establish effective checkpoints. Some countries have implemented such measures; India’s patent law, for example, requires proof of NBA approval for biological resources used in patents (Richerzhagen, 2014). Brazil’s system generates certificates that must be presented for product registration. South Africa has liaised with the EU to recognize traditional knowledge rights (Bagley, 2018). Ethiopia could learn from and join these efforts, pushing for a norm that if a company is using Ethiopian genetic resources, it must show an Ethiopian permit. This would greatly extend the reach of Ethiopia’s enforcement beyond its borders.

Bilateral cooperation is another avenue. Ethiopia could seek specific agreements or MoUs with countries where its genetic resources are known to be held or used (such as genebanks or botanical gardens in Europe or the U.S.). These agreements could facilitate information exchange for instance, notifying Ethiopia if a resident company files a patent involving Ethiopian material or even legal assistance in case of disputes. Enforcing ABS across borders is complex, but not impossible especially under the Nagoya Protocol’s framework of cooperation (Secretariat CBD, 2011). Given Ethiopia’s capacity constraints, partnering with international organizations

(like the ABS Capacity Development Initiative) or regional bodies (African Union) to pursue violators abroad can amplify its efforts.

Bridging the gap between ABS law and practice will require a multifaceted strategy. Domestically, Ethiopia should establish a dedicated ABS compliance unit (or strengthen EBI's existing team) with the mandate to monitor permits, follow up on benefit-sharing, and investigate any reports of misuse. This unit could liaise with customs (e.g. integrate ABS permits into the customs declaration system) and with the Intellectual Property Office (instituting an internal rule that examiners check with EBI for any patent involving biological materials). Investing in modern tools such as an ABS permit tracking database linked to customs and patent systems would enable automated checks (Lachenmeier et al., 2024). Training a cadre of environmental inspectors or rangers to recognize bioprospecting and ask for permits in the field (perhaps building on wildlife or forestry enforcement networks) could improve on-the-ground surveillance.

Empowering communities is also key strategy. Providing communities with knowledge of their rights and perhaps even legal support (through NGOs or pro bono initiatives) would allow them to act if they suspect illegal access. Something as simple as a community hotline to EBI to report suspicious activities could yield leads. Likewise, if communities know that a share of any benefits must come to them, they have motivation to ensure any researcher in their area is actually authorized.

In the short term, Ethiopia might focus on prevention rather than punitive enforcement; making it easy for well-intentioned users to comply (clear info on how to get a permit, reasonable timelines, etc.), while increasing the likelihood that non-compliance will be detected (through

transparency and coordination). Over the longer term, a couple of well-publicized enforcement actions (e.g. catching a illicit exporter or challenging a patent in a foreign jurisdiction) would send a strong signal and set precedents (Ejara, 2022; Mihretu, 2018).

In sum, Ethiopia's enforcement of ABS needs strengthening on multiple fronts: institutional coordination, capacity, community engagement, and international cooperation. By implementing these measures, Ethiopia can transform ABS from a largely theoretical regime into a functional system that deters bio-piracy and ensures that when its genetic resources fuel innovation, Ethiopian communities and conservation efforts benefit in return.

Comparative Lessons and International Strategy

Ethiopia's ABS experience can be contextualized by looking at how other biodiversity-rich countries have addressed similar challenges. Countries like Brazil, India, and South Africa have longer histories with ABS and offer lessons in governance, compliance, and benefit-sharing that is instructive for Ethiopia.

As noted, the Nagoya Protocol provides tools for cross-border compliance. Countries vary in how actively they use them. For example, many EU countries have designated checkpoints (e.g. research funding agencies require grant recipients to declare ABS compliance), and the EU has regulations obliging users to exercise "due diligence" to ensure genetic resources were accessed legally (EU Regulation No. 511/2014). Brazil, after joining Nagoya, set up an electronic system (SISGEN) where all users must register their access to genetic heritage, and it issues certificates automatically (Brazil Ministry of Environment, 2016). This has created a large database that can be cross-checked by authorities when products are developed. Ethiopia could aim to emulate such electronic compliance monitoring to catch violations early. The lesson here is that investing

in administrative systems and requiring self-reporting by users can greatly enhance compliance oversight.

Brazil: Historically, Brazil had a complex ABS regime; it reformed its laws in 2015 to reduce bureaucracy and involve stakeholders through a multi-stakeholder council (CGEN) (Cunha, 2019). Brazilian states like Amapá and Amazonas even have their own ABS regulations aligned with the federal law, allowing more local control while feeding into the national system (Laird & Wynberg, 2018). A key takeaway for Ethiopia is the value of decentralization with coordination. Brazil's multi-level approach shows that engaging state governments and local communities in decision-making can improve legitimacy and monitoring, provided national standards are maintained. However, Brazil also learned that overly onerous procedures (lengthy permit processes, too many approvals) can backfire by discouraging compliance; something Ethiopia should be wary of when strengthening its system. The balance to strike is between rigor and user-friendliness.

India: India integrated ABS into its Biological Diversity Act (2002), which established Biodiversity Management Committees (BMCs) at the village level, State Biodiversity Boards, and a National Biodiversity Authority (NBA) (Prip et al., 2010). This three-tier structure empowers communities through BMCs that prepare People's Biodiversity Registers documenting local resources and knowledge. Any application to access Indian biological resources by foreigners requires NBA approval, and benefits (usually monetary) flow into a National Biodiversity Fund, with a significant share directed to the local level.

Moreover, India's patent laws require patent applicants to disclose if they used Indian biological material and, if so, show they obtained NBA clearance (Richerzhagen, 2014). India's model

demonstrates robust devolved governance and integration with IP law. The heavy involvement of local committees in ABS decisions could inspire Ethiopia to give a formal role to community institutions (e.g. obligating that a community representative co-sign ABS agreements). India's patent disclosure requirement is a concrete measure Ethiopia could adopt to close the loophole of undetected inventions. On the flip side, India's system is administratively complex and sometimes slow, due in part to the multiple levels of scrutiny (Singh, 2020). Ethiopia, with less capacity, may not replicate the full Indian model but can incorporate elements like community funds and mandatory patent clearance.

South Africa: South Africa's ABS regulations (under its Biodiversity Act) are notable for proactive enforcement and benefit-sharing arrangements in high-profile cases. The Hoodia case (an appetite-suppressant succulent traditionally used by the San people) and the Rooibos tea case involved benefit-sharing agreements with Indigenous communities that were facilitated by government and industry cooperation (Wynberg, 2017). South Africa created community trusts to receive benefit funds and has pushed companies to contribute a percentage of sales to these trusts for broadly-used resources like Rooibos (UNEP, 2020). It also has taken enforcement actions, including seizing illicitly collected biological samples at airports and prosecuting non-compliance. South Africa emphasizes stakeholder engagement: it worked with industry associations (like the South African Rooibos Council) to get buy-in for ABS, turning what could have been conflict into collaboration.

The lesson for Ethiopia is the importance of bringing the private sector and communities to the same table early. By identifying a few key bio-industries (perhaps coffee, herbal medicine, or essential oils in Ethiopia) and developing model ABS agreements with broad participation,

Ethiopia could jump-start ABS implementation. South Africa also shows that having electronic permit systems and active inspections can yield compliance dividends. However, one challenge they faced is complexity in distributing benefits when many communities or traditional knowledge holders are involved ensuring fair allocation can be tricky (Wynberg, 2017). Ethiopia, which thus far has few benefit-sharing cases, can prepare by establishing clear guidelines for benefit distribution (for instance, creating community development funds at woreda levels to receive ABS money).

Cross-Cutting Lessons:- Across these country experiences, several common themes emerge:

a) Decentralization and Participation

Engaging local structures (communities, states) in ABS leads to greater legitimacy and compliance. Ethiopia's highly centralized approach is an outlier; moving toward at least some devolution (e.g. regional ABS liaison offices or community ABS committees) could improve effectiveness and trust.

b) Legal Integration

Tying ABS to other legal processes (particularly patents and research permitting) is critical. India's patent disclosure and Brazil's integration of ABS registry with product approval processes underline that ABS cannot function in isolation. Ethiopia should create checkpoints in its IP and export control systems as a matter of priority.

c) Balancing Stringency with Clarity

Users are more likely to comply when rules are clear, processing times are reasonable, and incentives (like access to funding or partnerships) exist. While Ethiopia should tighten

enforcement, it should also simplify procedures (perhaps through online applications and clear guidelines) to encourage researchers to go through legal channels rather than avoid them.

d) Benefit-Sharing Implementation

Actually, delivering benefits to communities is just as important as securing them on paper. India's experience shows the need for mechanisms to channel funds to communities, and South Africa's shows the importance of identifying beneficiaries and managing expectations. Ethiopia should establish transparent benefit management systems (such as community trusts or funds) in advance, so that when benefits materialize they can be distributed without delay or dispute.

Comparative lessons should be adapted to Ethiopia's administrative realities. A pragmatic sequencing in short-term; establish an operational ABS register/portal; formalize customs and IP checkpoints; standardize MAT templates and reporting; issue IRCCs routinely; and build training for customs, patent examiners, and research institutions.

Medium to long term; deepen decentralization through regional ABS units; embed disclosure and compliance requirements in IP and product-approval laws; strengthen judicial remedies and specialized capacity; and invest in national research and value-add chains to increase non-monetary and domestic benefits.

In conclusion, by learning from others, Ethiopia can accelerate the maturation of its ABS framework. Internationally, leveraging Nagoya Protocol tools will extend Ethiopia's enforcement reach. Domestically, adopting best practices in governance and legal integration will address many current shortcomings. While Ethiopia's context is unique, the fundamental challenges of ABS; aligning conservation with development and national sovereignty with global

scientific exchange are shared. The experiences of Brazil, India, South Africa and others provide a menu of strategies that Ethiopia can adapt and implement in its next phase of ABS reforms.

CONCLUSIONS AND RECOMMENDATIONS

Ethiopia's ABS framework, as embodied in Proclamation 482/2006 and Regulation 169/2009, is grounded in laudable objectives: safeguarding the country's genetic resources and associated traditional knowledge, ensuring that communities receive fair benefits, and using those benefits to promote conservation and development. The laws established Ethiopia as a pioneer in Africa in asserting community rights and expanding ABS to derivatives and traditional knowledge. However, the analysis above makes clear that **serious implementation gaps** have prevented Ethiopia from realizing the full potential of ABS.

Nearly two decades since the ABS law was passed, there have been few success stories. Communities who are supposed to be key stakeholders often remain marginal to actual ABS deals. Permits have been issued, but systematic monitoring of what happens afterward is lacking, so Ethiopia may not know if benefits should be forthcoming. Researchers or companies have at times bypassed the ABS system entirely; whether due to unawareness, cumbersome procedures, or willful misconduct; meaning genetic resources leave the country with little or no oversight. Meanwhile, valuable traditional knowledge continues to be recorded in publications or used in product research without clear arrangements to share benefits with the custodians of that knowledge. In short, the current ABS regime is **strong in principle but weak in effect**: it has not yet delivered significant tangible benefits to local communities nor demonstrably contributed to conservation funding. This undermines trust in the system; if ABS is seen as merely a

bureaucratic hurdle with no local returns, it will not garner the necessary support among communities and officials.

The good news is that Ethiopia has a solid foundation to build upon. The legal framework does not need to be scrapped; rather, it needs to be *reformed and activated* through a series of strategic interventions. Below are key recommendations for transforming Ethiopia's ABS framework from paper to practice:

1. Legal clarity and legal integration

Ethiopia should close key legal loopholes by amending the ABS Regulation (169/2009) or the Proclamation (482/2006) to require disclosure of origin in patent and plant breeder's rights applications (Prip et al., 2010; Richerzhagen, 2014). This would align the mandate of EBI with that of the Ethiopian Intellectual Property Authority (EIPA) to prevent unauthorized commercialization. Furthermore, Article 17 of the ABS Proclamation, which restricts the grant of IP rights on materials accessed unlawfully, needs to be clarified and made operational to enhance enforceability. Ethiopia should also update the legal framework to address Digital Sequence Information (DSI) and other emerging issues in accordance with international best practices (Laird and Wynberg, 2018; Adler Miserendino et al., 2022).

2. Decentralize ABS Governance

EBI should initiate decentralization through cooperative arrangements with Regional States by designating accredited regional ABS focal institutions (e.g., regional environment/forest bureaus or local universities) to serve as first-line implementation nodes. Consistent with Proclamation No. 482/2006, these focal institutions can support preliminary application screening, coordinate

PIC facilitation with local communities, and conduct field monitoring and periodic reporting as “relevant institutions”. As shown in Yami and Mekuria (2022), local empowerment is crucial to ensure compliance and accountability. Regional units should be trained in ABS procedures and negotiation to act as culturally sensitive and timely entry points, while still reporting to EBI.

3. Strengthen Monitoring and Enforcement Mechanisms

A dedicated compliance and enforcement unit within or parallel to EBI should be established. This unit would maintain a central ABS permit database, conduct follow-ups on benefit-sharing obligations, and coordinate cross-agency alerts with customs and IP authorities (Ejara, 2022; Wynberg, 2017). Regular audits, permit status tracking, and targeted inspections should be institutionalized. Ethiopia should also train a cadre of ABS inspectors from existing enforcement agencies to detect bioprospecting violations and support legal prosecutions.

4. Improve Transparency and Data Management

Establishing a public ABS information portal is essential. This portal should publish non-confidential details about issued permits, accessed species, community participation, and reported benefits. Article 18 of Regulation 169/2009 requires reporting obligations, which should be operationalized via annual public reports. Communities involved in ABS must be informed of their rights and should receive copies of relevant agreements and benefit disbursement updates. Transparent systems create incentives for both users and providers to honor ABS terms.

5. Empower Communities and Recognize Traditional Knowledge Holders

ABS agreements should require documented community consent through representative structures such as Community Biodiversity Committees. These groups, including elders, women,

and youth, would formalize community engagement and decision-making. A sui generis system for Traditional Knowledge (TK) protection, as outlined in the African Model Law (OAU, 2000), could supplement contract-based ABS by allowing TK holders to register their knowledge and defend against misappropriation. Ethiopia might also allocate a portion of ABS revenues to community legal and technical capacity-building (Ameha et al., 2014).

6. Leverage International Support and Cooperation

Ethiopia should actively use platforms like the ABS Clearing-House and leverage the Nagoya Protocol's capacity-building funds (UNDP, 2020). Bilateral agreements with major user countries and research institutions can establish shared compliance responsibilities. Engaging in African Union frameworks can further amplify Ethiopia's voice on global forums dealing with disclosure of origin, user compliance, and DSI governance (Nijar, 2011; African Union Commission, 2015).

7. Integrate ABS with National Development and Climate Initiatives

Mainstreaming ABS into Ethiopia's Climate Resilient Green Economy (CRGE) strategy and the Sustainable Development Goals (SDGs) By showing how ABS contributes to poverty reduction (SDG1), industry innovation (SDG9), reduced inequalities (SDG10), life on land (SDG15), etc. It can elevate its political relevance. Specific targets related to benefit-sharing, community adaptation, and biodiversity-based enterprise should be embedded in national development planning. Linking ABS to climate resilience and innovation especially in agriculture and health can unlock international finance and demonstrate ABS as a cross-sectoral development tool.

In conclusion, EBI must spearhead a coordinated, multi-level reform agenda that links policy, law, and practice. By prioritizing decentralized implementation, legal modernization, and robust monitoring, Ethiopia can realize the full value of its genetic resources and reposition ABS as a pillar of sustainable development.

A functional ABS regime will attract more responsible research and bio-investment into the country, as companies and institutions gain confidence in clear rules and streamlined procedures. Ethiopian communities will begin to see real benefits; monetary and non-monetary from the use of their resources and knowledge, incentivizing them to conserve biodiversity and maintain traditional practices. Instances of biopiracy will be deterred or confronted, ensuring Ethiopia's sovereignty is respected. Over time, ABS could evolve from a little-known legal concept into a pillar of Ethiopia's approach to sustainable development, contributing to livelihoods, scientific capacity, and ecosystem health.

Ultimately, an effective ABS regime should be understood as sovereignty-in-action: a practical governance system that translates constitutional and statutory ownership into measurable conservation outcomes, fair economic participation, and accountable utilization of biodiversity. If Ethiopia couples its strong legal foundations with interoperable information systems, domestic checkpoints, credible monitoring, and community-centered benefit delivery, ABS can shift from a compliance obligation to a development instrument that protects national interests while enabling responsible innovation.

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CONFLICT OF INTEREST

The author declares that he has no conflict of interest.

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