Sharing in Collaborative Innovation

— 2026 —

white paper





Dutch stakeholder perspectives on international developments in access and benefit-sharing

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Sharing in Collaborative Innovation

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Executive summary

In light of international developments in access and benefit-sharing (ABS), particularly around digital sequence information (DSI) on genetic resources, a consultative group was established to assess these developments and provide recommendations for their advancement. The result of this exercise is this white paper, which takes position related to current developments while also serving as the basis for further inputs to the Dutch and international ABS policy landscapes.

The white paper elaborates on the group's joint vision, which is to maintain and strengthen a system in which access to genetic resources remains possible, innovation is stimulated, and benefits - both monetary and non-monetary - are shared fairly and equitably. The white paper then proceeds with four chapters that are summarised here.

1 Chapter 1 introduces international ABS instruments and associated legal complexity, and presents key actors for the conservation and sustainable use of genetic resources and their type of interactions, with particular attention paid to public-private collaborations.

2 In Chapter 2, the consultative group discusses two key attention points for improving the coherence and mutual supportiveness between international ABS instruments, with the aim to enhance legal clarity and reduce administrative burdens for users.

3 Chapter 3 details the consultative group's vision on ABS and policy recommendations for five cross-cutting themes: the complexity of national and international legislation; digital sequence information and its use in public-private collaborations; social concerns and distributional questions, particularly related to the disbursement of monetary benefits through dedicated funds; non-monetary benefit-sharing and data governance; and effective communication surrounding ABS in general and in targeting the private sector as contributors to the Cali Fund.

4 Finally, Chapter 4 presents some policy recommendations for direct uptake in the ongoing negotiations of the Convention on Biological Diversity over ABS and DSI. It also contains a forward-looking statement for building a Dutch framework for additional support for technical capacity-building and conservation of genetic resources.

Glossary

Acronyms:

ABS	Access and Benefit-Sharing
AHTEG	Ad Hoc Technical Expert Group
BBNJ	Biodiversity Beyond National Jurisdiction (Agreement)
CARE	Collective Benefit, Authority to Control, Responsibility, Ethics
CBD	Convention on Biological Diversity
CGN	Centre for Genetic Resources, the Netherlands
CGRFA	Commission on Genetic Resources for Food and Agriculture
CSR	Corporate Social Responsibility
DSI	Digital Sequence Information
ESG	Environmental, Social and Governance
EU	European Union
FAIR	Findable, Accessible, Interoperable, Reusable
FAO	Food and Agriculture Organization of the United Nations
GBIF	Global Biodiversity Information Facility
GSD	Genetic Sequence Data
INSDC	International Nucleotide Sequence Database Collaboration
IPLCs	Indigenous Peoples and Local Communities
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
KMGBF	Kunming–Montreal Global Biodiversity Framework
MAT	Mutually Agreed Terms
MLM	Multilateral Mechanism for the Sharing of Benefits from the Use of Digital Sequence Information on Genetic Resources
MLS	Multilateral System (under the ITPGRFA)
NVWA	Netherlands Food and Consumer Product Safety Authority
PABS	Pathogen Access and Benefit-Sharing (System)
PGRFA	Plant Genetic Resources for Food and Agriculture
PIC	Prior Informed Consent
PIP	Pandemic Influenza Preparedness Framework
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environment Programme
WHO	World Health Organization

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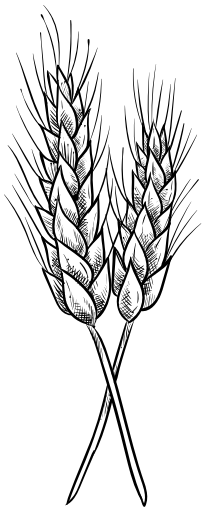
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Introduction

Genetic resources form the foundation of our food system, agriculture, and green living environment. They are, quite literally, the sources of our existence. At a time when climate change, biodiversity loss and societal expectations regarding sustainability are becoming increasingly urgent, awareness is growing that genetic diversity is indispensable for a resilient and sustainable future. The Netherlands therefore endorses the objectives of international frameworks such as the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) and the Convention on Biological Diversity (CBD), in which conservation, sustainable use of genetic resources and the fair and equitable sharing of benefits arising from their use are central foci.

The strength of collaboration

The strength of the Netherlands lies in public-private partnerships. For decades, industry, knowledge institutions, public research institutes, the Dutch genebank (the Centre for Genetic Resources, the Netherlands; CGN), civil society organisations and government have worked closely together on research and innovation in the green life sciences, such as in plant breeding. Collaboration is a cornerstone of Dutch innovation's success and aligns with the broader vision articulated in the Dutch Technology Strategy: moving forward together, based on trust, knowledge sharing, and shared responsibility. Particularly in the domain of genetic resources, the Netherlands demonstrates that public and private interests can reinforce one another.



Seed sector of the Netherlands
The international growth and leading position of the Dutch plant breeding sector are a direct result of close collaborations with the government and public research institutions. The sector has grown through the exchange of material and knowledge within clear legal frameworks. Plant breeders' rights play a crucial role in this regard: they protect innovation while enabling further breeding and access to genetic material. This system has contributed to a culture of openness and mutual trust, in which progress is achieved through sharing rather than through restricting access.

A joint Dutch vision

Against this background, a consultative group has been established in the Netherlands, with representatives from various sectors, to jointly formulate a vision on the sustainable use of genetic resources, particularly plant genetic resources, as well as on their conservation and the sharing of benefits arising from their use. The consultative group has formulated ambitions to strengthen this vision and thereby contribute to and provide direction for current international developments, linking them to ongoing developments within the ITPGRFA and the CBD. In doing so, the focus is not solely on economic accountability or financial payments, but, above all, on the conviction that collaboration, trust, and shared ambitions lead to more sustainable and broader societal benefits. This white paper aims to provide direction to that joint commitment, now and in the future.

This white paper is written by a consultative group composed of representatives from the Dutch seed sector, research organizations, biodiversity databases, the national genebank and from civil society. The writing process was facilitated by the Ministry of Agriculture, Fisheries, Food Security and Nature of the Netherlands. Although the context of the white paper may be specific at times, its implications are relevant at a broader level in the Netherlands. Moreover, the white paper can serve as inspiration for stakeholders in other countries to interpret, assess and contribute to the implementation and development of access and benefit-sharing (ABS) policies and multilateral decisions on digital sequence information (DSI) on genetic resources. In order to advance the above stated vision, we, the members of the consultative group, invite others to engage with us to enrich and develop the white paper’s perspectives further.

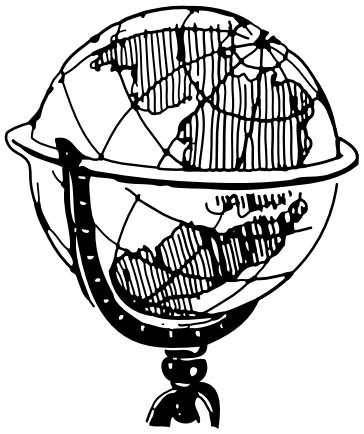
1 International and Dutch ABS landscapes

1.1. History and status of (international) policy frameworks

Over the past decades, the international ABS landscape has become increasingly complex, with a range of international ABS instruments each with their own background (the forum in which it was developed), scope, and rules. There are currently six instruments in force while a seventh is under negotiation (shown in Table 1: p. 9-10).

The CBD, as the first instrument, entered into force in 1993 and formally established countries' national sovereignty over genetic resources, and introduced key frameworks for the protection of associated traditional knowledge. Soon, other instruments followed, some to further operationalize principles in the CBD, such as the Nagoya Protocol (2014), others to address specific subsets of genetic resources, such as: the Multilateral System (MLS) under the ITPGRFA (2004), the framework convention for the conservation and sustainable use of plant genetic resources, and Farmers' Rights; the Pandemic Influenza Preparedness Framework (PIP Framework, 2011); and the Pathogen Access and Benefit-Sharing (PABS) System (still under negotiation). While these instruments govern genetic resources under countries' national sovereignty, the Biodiversity Beyond National Jurisdiction (BBNJ) Agreement (2026) covers marine genetic resources and traditional knowledge that are found in areas beyond national jurisdiction.

Although the term 'Digital Sequence Information' (DSI) has no internationally agreed definition, the Multilateral Mechanism for the Sharing of Benefits from the Use of Digital Sequence Information on Genetic Resources (MLM) was established to address concerns of countries that the use of DNA sequences and other types of genomic data would lead to reduced use of genetic resources and thus less sharing of benefits. DSI is also addressed in the BBNJ Agreement, while benefit-sharing under the PIP Framework and the PABS system also covers Genetic Sequence Data (GSD). Negotiations on the inclusion of DSI/GSD in the ITPGRFA have not yet resulted in an agreement.



In view of their different scopes, the instruments were or are developed in different fora: the CBD, Nagoya Protocol, and MLM in the United Nations Environment Programme (UNEP), the ITPGRFA in the Food and Agriculture Organization of the United Nations (FAO), the PIP Framework and the PABS System in the World Health Organization (WHO), and the BBNJ Agreement in the United Nations Convention on the Law of the Sea (UNCLOS).

With respect to the character of the instruments, a main distinction is that between bilateral and multilateral instruments. In bilateral instruments, such as the CBD and the Nagoya Protocol, access has to be granted by the authorities of the provider country and benefits are shared bilaterally and directly with countries and/or providers. In multilateral systems, such as the ITPGRFA, the PIP Framework, the MLM, and the BBNJ Agreement, users have access to a common pool of genetic resources and/or DSI, and benefits are shared through a fund from which all providers can benefit.

The Netherlands is a Party to the CBD, Nagoya Protocol, ITPGRFA and PIP Framework, and is in the process of becoming a Party to the BBNJ Agreement. For the MLM, there is no formal ratification, but CBD parties are invited to take measures to encourage users to contribute to the Cali Fund. Ratification of the PABS System is not yet possible.

Of these, in total, seven ABS instruments, the CBD, the Nagoya Protocol, the ITPGRFA and the MLM are directly relevant to the stakeholders within the scope of this white paper and are therefore discussed primarily.

Table 1

Instrument	In force	Scope	Developed within	ABS	Netherlands	Remarks
Convention on Biological Diversity (CBD)	1993	All genetic resources (excluding human genetic material)	United Nations Environment Programme (UNEP)	Bilateral negotiations between the provider country and the user	Party since 10 October 1994	Established national sovereignty over genetic resources
International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)	2004	Plant Genetic Resources for Food and Agriculture (PGRFA)	Food and Agriculture Organization of the United Nations (FAO)	Access through a Multilateral System (MLS) based on a standard contract. Benefit-sharing via a multilateral fund.	Contracting Party since 16 February 2006	Negotiations on the inclusion of “DSI/GSD” have failed so far
Pandemic Influenza Preparedness Framework (PIP Framework)	2011	Potentially pandemic influenza viruses	World Health Organization (WHO)	Access through a multilateral system based on standard contracts Benefit-sharing through ‘partnership contributions’ from companies and making countermeasures available	Party when the PIP Framework was adopted by the World Health Assembly of the WHO on 24 May 2011	Benefit-sharing also covers Genetic Sequence Data
Nagoya Protocol	2014	All genetic resources (excluding human genetic material).	United Nations Environment Programme (UNEP)	Bilateral negotiations between the provider country and the user	Party since 17 November 2016	Supplementary agreement to the CBD

Table 1 (continued)

Instrument	In force	Scope	Developed within	ABS	Netherlands	Remarks
Multilateral Mechanism for the Sharing of Benefits from the Use of DSI on Genetic Resources (MLM)	2024	'Digital Sequence Information' (DSI) on genetic resources	United Nations Environment Programme (UNEP)	Access to DSI in public databases remains open; companies are encouraged to contribute to an international fund (the 'Cali Fund'), intended for conservation and sustainable use of biodiversity in developing countries. All users of DSI are expected to engage in non-monetary benefit-sharing.	There is no formal ratification; CBD Parties are invited to take measures to encourage users to contribute to the Cali Fund	Instrument under the CBD The term 'DSI' is not defined and is used as a placeholder
Biodiversity Beyond National Jurisdiction (BBNJ) Agreement	2026	Marine genetic resources from areas beyond national jurisdiction and DSI derived from them	United Nations Convention on the Law of the Sea (UNCLOS)	Mandatory notification of collection activities Benefit-sharing through a 'financial mechanism' to be developed, decoupled from access	In the process of becoming a Party	The term DSI is not defined in the BBNJ Agreement
Pathogen Access and Benefit-Sharing (PABS) System	Not yet	Potentially pandemic pathogens and sequence information derived from them	World Health Organization (WHO)	Still under negotiation	Ratification not yet possible	Will form part of the Pandemic Agreement agreed in 2025

1.2. Roles and ambitions of actors in the Netherlands

Genetic resources hold value for a diverse range of actors, each with distinct roles, responsibilities, and ambitions. These actors are introduced below. Together, they form a closely interconnected ecosystem in which public and private interests are largely aligned, and where collaboration is key to achieving both national and international objectives regarding the conservation and sustainable use of genetic resources. The consultative group recognizes the subjective nature of its views and is eager to exchange thoughts and perspectives with other actors, especially those from other regions.

Public research and genebank infrastructure

At the core of the Dutch landscape of actors is the Centre for Genetic Resources the Netherlands (CGN), which is responsible for conserving and documenting plant, animal, forest and aquatic genetic resources. CGN manages nationally important collections, contributes to the Multilateral System (MLS) of the ITPGRFA, and ensures that genetic resources remain accessible for research and breeding. Its position is that of a trusted public custodian, operating under international agreements and national mandates. Its ambition is to further strengthen both in situ and ex situ conservation, improve data availability (including DSI on its held genetic resources), and enhance the usability of collections for breeding and research. As part of the CGN, the Dutch ABS Focal Point provides information to users of genetic resources across six active ABS instruments.

Alongside CGN, Naturalis Biodiversity Center is the custodian of the Dutch national natural history collection. Whereas the genebank of CGN conserves living, propagable material that breeders can use directly, Naturalis holds preserved specimens that are not intended or suitable for propagation. These specimens are nonetheless a source of genetic information of potential value: techniques such as DNA barcoding, ancient-DNA analysis and genome skimming increasingly allow DSI to be extracted from them, including from historical material with incomplete provenance.

Depending on their origin and date of collection, many accessions fall within the scope of the CBD and the Nagoya protocol. As a public knowledge institution and data steward operating reference data resources, Naturalis' ambition is to understand, identify and monitor biodiversity worldwide through collaborative research and public outreach. This work is inherently international: building the reference libraries on which identification depends - including identification of species that are new to, or invasive in, the Netherlands - requires specimens and sequence data sourced worldwide, much of it originating from biodiversity-rich provider countries.

In relation to DSI, this leads Naturalis to advocate keeping biodiversity reference data openly accessible while supporting a proportionate interpretation of ABS obligations that distinguishes identification markers (DNA barcodes, e.g. as used in eDNA-based monitoring) from functional sequences with commercial potential. This distinction concerns the type and use of the DSI, not the exemption of the underlying material from ABS scope.



Other relevant genetic resource collections (not part of the consultative group) include the Westerdijk Fungal Biodiversity Institute, as well as various botanical gardens, university- and privately-held collections. Dutch universities, such as Wageningen University and Research and Utrecht University, play a complementary role by bridging fundamental science and the applied green life sciences, often in collaboration with both CGN and the private sector. Their ambition is to advance fundamental knowledge, sustainable applied innovations, support global food security and contribute to equitable benefit-sharing through research partnerships.

Private plant breeding sector

The trade organisation Plantum represents over three hundred members active in breeding, propagation, cultivation and trade. The companies range in size from small and medium-sized enterprises to multinationals. Its members operate within international ABS frameworks and rely on access to diverse germplasm for innovation. Their contribution is substantial: they invest heavily in research and development, develop improved plant varieties that contribute to food security, climate adaptation and reduced environmental impact, and facilitate the exchange of genetic material within established legal frameworks such as plant breeders' rights. In addition, many companies engage in non-monetary benefit-sharing, including knowledge transfer, capacity building and long-term partnerships with countries of origin.

Their ambition is to maintain open and predictable access to genetic resources, to promote workable and harmonised ABS systems (preferably multilateral), and to ensure that benefit-sharing mechanisms are effective, proportionate and supportive of innovation.

Civil society organisations

Non-governmental organisations, such as Oxfam Novib, represent societal interests related to equity, biodiversity conservation, and the rights of countries and local and indigenous communities over genetic resources. Their position is that of critical stakeholders and advocates, stressing the need to protect traditional knowledge and Farmers' Rights to (re)use, save, exchange and trade plant genetic resources. Their contribution lies in raising awareness, monitoring practices and holding stakeholders accountable, supporting capacity building in developing countries and advocating for fair and equitable benefit-sharing. Their ambition is to ensure that ABS frameworks deliver tangible benefits to provider countries and, in particular, to local and indigenous communities, that such communities are involved in decision-making processes, and that biodiversity conservation is effectively supported.

They insist on: stronger implementation of international agreements such as the CBD, the Nagoya Protocol and the ITPGRFA; call for fair and equitable benefit-sharing, particularly for monetary benefit-sharing to be strengthened and enforced, paired with broadening further access; and a separate fund for the use of public DSI in all ABS instruments.

Government and regulatory authorities

The Dutch government plays a dual role as policymaker and regulator. It is responsible for implementing international agreements within national and European legal frameworks. Authorities such as the Netherlands Food and Consumer Product Safety Authority (NVWA) oversee compliance with ABS obligations, including due diligence requirements under European Union (EU) Regulation 511/2014. The government's contributions include developing clear policies, representing the Netherlands in international negotiations and supporting public-private collaboration.

Its ambition is to promote scientific cooperation and workable, transparent and aligned ABS frameworks, that balances access, compliance and innovation, while safeguarding both biodiversity and the competitiveness of the Dutch breeding sector.

Financial institutions and investors

Financial institutions, including (development) banks and (impact) investors, are an increasingly relevant but often less visible group of actors. Their position is to enable and steer investments in sustainable agriculture, biodiversity conservation, ABS, and innovation. Their contributions include financing commercial green life sciences activities, supporting international sustainable partnerships and linking funding conditions to sustainability and compliance criteria. Their responsibility in implementing Decision 16/2 is to integrate biodiversity and ABS considerations into investment strategies and CSR/ESG reporting frameworks, support long-term value creation and contribute to global sustainability goals, including those related to biodiversity and climate resilience.

The public and consumers

Finally, the broader public plays an indirect but important role. The public's position is that of a stakeholder in and beneficiary of biodiversity conservation and technological innovation. In the Netherlands, foundations and also increasingly local groups are involved in conserving and developing genetic diversity for future generations. Furthermore, society at large shapes the political and ethical context in which science is conducted and technologies are developed by holding both companies and governments accountable. Consumers drive market demand for sustainable, diverse and responsibly produced products. ABS frameworks, such as the Cali Fund under the MLM with its associated certificate of contribution, offer opportunities in this regard.

A shared ambition

Across these actors in the Netherlands, a shared ambition emerges: to maintain and strengthen a system in which access to genetic resources remains possible, innovation is stimulated, and benefits - both monetary and non-monetary - are shared fairly and equitably. The Dutch model demonstrates that collaboration, trust and a balanced distribution of roles can create a robust and forward-looking ABS landscape, capable of addressing both national interests and global challenges, while we acknowledge diverging viewpoints and different practices at the international level.

While this paper proposes ways to enhance coherence and mutual supportiveness of ABS instruments, to both stimulate innovation and safeguard conservation and sustainable use of genetic resources, the consultative group acknowledges the polarized international debate on this topic and the diverging viewpoints and approaches different stakeholders hold - which are also reflected within the consultative group itself. And whereas this white paper predominantly reflects a user (country) perspective, the group acknowledges and appreciates perspectives from provider countries and groups and other existing perspectives - and subscribes to the need for fair and equitable benefit sharing arising from the use of genetic resources. The group also acknowledges the historical and institutional context of global economic inequalities and the resulting lack of a level playing field, which adds complex issues of social and economic justice to the debate. Observing the existing legal complexity of the growing ABS landscape and its current inability to both improve access to genetic resources as well as to safeguard effective and equitable benefit sharing, this paper pragmatically seeks practical, balanced, and workable ways forward.

2 Policy developments

Key points

2.2. The gradual increase in international ABS instruments, with some now also governing DSI on genetic resources, causes administrative complexity and legal uncertainty for researchers and companies as users of genetic resources and DSI. The Netherlands should strive to promote coherence between international ABS frameworks, ensure proportionate and practical benefit-sharing obligations that align with open science and innovation practices, and aim for a fair international level playing field through harmonized compliance.

2.1. Context of recent developments

As set out in section 1.1, the international policy landscape on biodiversity conservation and ABS has become extensive and complex. As of the time of writing, an important recent development is the establishment of the MLM in 2022 and its associated Cali Fund in 2024. At the same time, discussions on expanding or adapting the MLS under the ITPGRFA have not yet reached consensus, especially regarding the inclusion of DSI/GSD.

In parallel, the Nagoya Protocol continues to be implemented and further operationalised at the national level, often with diverging interpretations, particularly on whether and how DSI falls within its scope. These developments are taking place against a backdrop of increasing political attention to biodiversity finance, equity and the role of the private sector. In general, there is a clear trend towards expanding benefit-sharing obligations while maintaining, in principle, open access to genetic information.



For the Netherlands, with its strong, internationally oriented green life sciences sector and its tradition of open innovation, these developments could create opportunities; however, many significant challenges remain.

2.2 Elements with attention points

Scope of the treaties

One of the main challenges lies in the differing and sometimes overlapping scopes of international ABS instruments. The CBD and the Nagoya Protocol apply broadly to genetic resources, with national sovereignty and bilateral agreements governing their use. In contrast, the ITPGRFA provides through the MLS a common pool for a defined list of crops, enabling facilitated access under standard conditions, tailored specifically for the complexity of plant breeding.

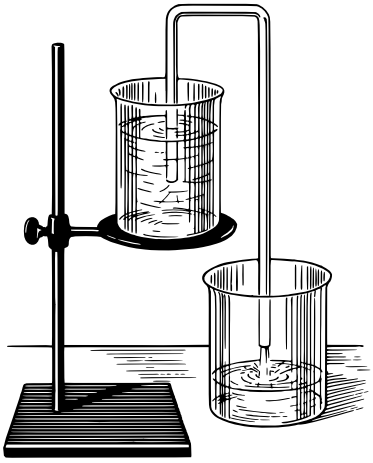
The emergence of DSI as a policy issue cuts across these frameworks. While DSI is not explicitly defined in most agreements, it is increasingly treated as a separate object of governance. Under the CBD, the newly agreed MLM introduces benefit-sharing obligations linked to the use of DSI without, in principle, restricting access. Within the ITPGRFA, despite yearlong negotiations, no agreement has yet been reached on how to address DSI/GSD, creating uncertainty for users and providers (countries, indigenous peoples and local communities) of plant genetic resources, and resulting in erosion of mutual trust.

This fragmented scope creates practical difficulties because companies and research institutions often work simultaneously with material and DSI that may fall under different regimes (e.g. MLS material, non-MLS material, and publicly available DSI), each with its own conditions and expectations. Determining which rules apply in which situation is increasingly complex and may require significant legal and administrative effort. Furthermore, we recognize persistent challenges in the monetary benefit-sharing component of these ABS instruments.



Coherence and mutual supportiveness among instruments

Mutual supportiveness among the different ABS frameworks is crucial, though not yet certain. While the CBD, the Nagoya Protocol and the ITPGRFA share common objectives, their operational mechanisms differ substantially. The Nagoya Protocol relies on bilateral negotiations and case-by-case agreements, whereas the ITPGRFA promotes multilateral access and standardisation. The new DSI mechanism under the CBD introduces yet another layer, combining open access data infrastructures with global benefit-sharing obligations.



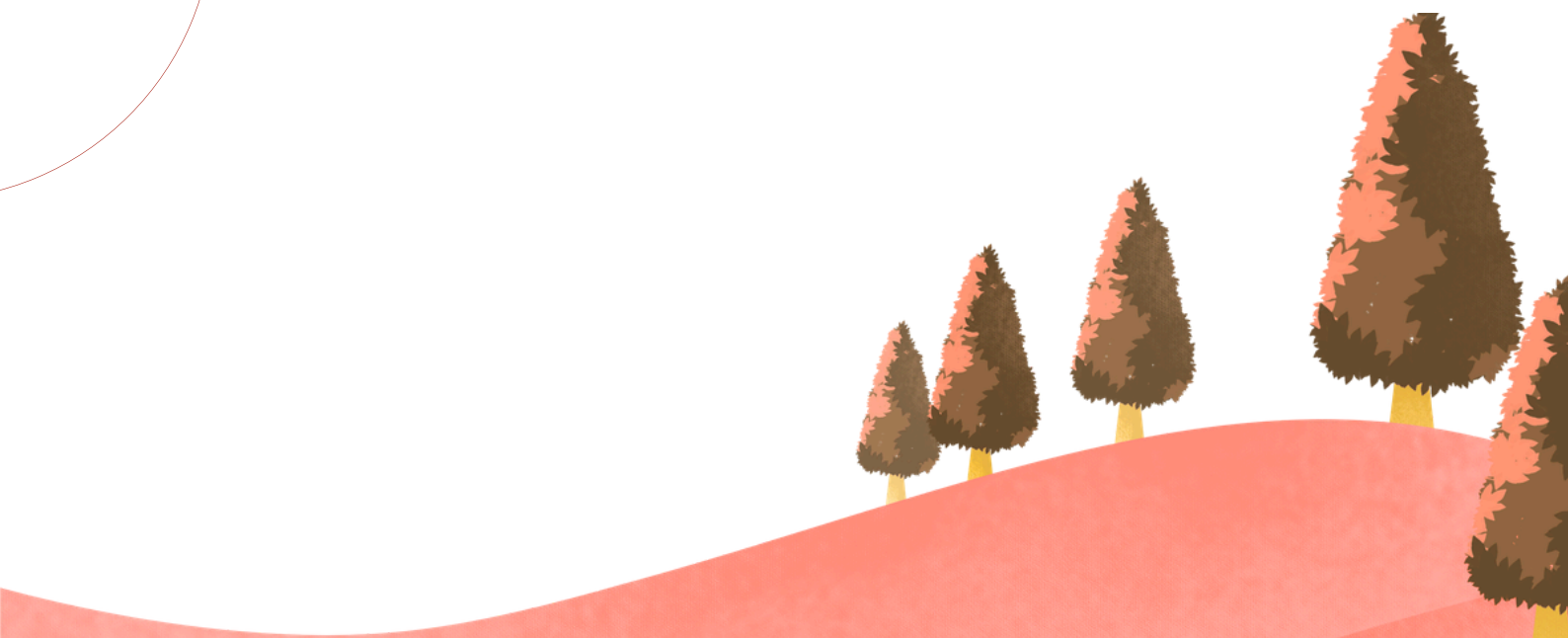
The lack of coherence leads to several bottlenecks, which may concern collaborative research projects, including public-private partnerships and co-financed PhD trajectories. In such collaborations, genetic resources and associated DSI are frequently shared among partners, often across borders and sectors. Under the emerging DSI framework, the use of such data may trigger financial contributions to the Cali Fund, even if the data were generated within collaborative, publicly funded research. This raises questions about double obligations, proportionality and the distribution of costs between public and private partners.

Similarly, companies that invest in long-term research and innovation may face uncertainty about future financial obligations linked to DSI use, while at the same time already contributing through non-monetary benefit-sharing, capacity building and partnerships. For smaller companies and knowledge institutions, the administrative burden and legal uncertainty may act as a barrier to participate in international collaborations. Another point of attention is the interaction between open science policies and ABS requirements. Dutch universities and research institutes strongly promote open access to data, including genomic data, in part due to the guidelines of European Union and Dutch research agencies. However, if sharing DSI leads to downstream financial obligations through participation in public-private partnerships, this could create tension between open science principles and compliance with ABS frameworks.

Not all countries are equally engaged in or bound by the same frameworks, and implementation varies widely. This can result in an uneven playing field with competitive disadvantages for actors operating under stricter compliance regimes, such as those in the European Union.

Conclusion

Overall, while recent policy developments aim to strengthen fairness and increase benefit-sharing, they also risk adding complexity and uncertainty. For the Netherlands, a key priority is therefore to promote greater coherence between frameworks, to ensure proportional and workable obligations, and to safeguard the balance between access, innovation and fair and well-functioning benefit-sharing. Greater coherence will also safeguard continued stakeholder support for multilateral cooperation in general and ABS in particular. Equally strict compliance is a priority to build a fair international level playing field. Therefore, it is important to support capacity building for compliance agencies, emphasize the principle of mutual access and for governments to engage in regional initiatives to share lessons learned and coordinate shared elements of their legislation.



3 Vision on improvements and bottlenecks

Key points

3.1. The ABS landscape is getting ever more complex, which raises administrative burdens for organizations and companies. Despite assurances that open access to DSI remains in the MLM, its practical implementation in user contexts raises concerns over data sharing and allocation of ABS obligations, particularly in public-private partnerships. Practical guidance for transparency and alignment with business reporting frameworks increase companies' willingness to contribute to funding mechanisms of ABS instruments. Multilateral cooperation to clarify and communicate exemptions for MLM certificate-holders from benefit-sharing obligations under bilateral ABS legislation for the use of DSI is welcomed. By enhancing legal clarity such measures would boost broader sectoral adoption of the Cali Fund.

3.2. Cooperation across the funding mechanism of ABS instruments avoids overlap in target areas and enables complementary support for the conservation of genetic resources, inter alia by genebanks, farmers and indigenous peoples and local communities. The coming years provide a unique opportunity to shape the Cali Fund, particularly in relation to strengthening genetic diversity in the implementation of the KMGBF and the stewardship of biodiversity by indigenous peoples and local communities. Early engagement with scientists in recipient countries to identify bottlenecks in research and development ensures that funds are spent effectively and with a long-term view to develop sustainable technologies.

3.3. Step-by-step alignment of open data infrastructures with the CARE data principles alignment and pragmatic approaches to data provenance are advised to implement CBD Decision 16/2. Public research institutions invest substantial time in aggregating, curing data and preparing for their open access publication, while incurring significant costs in operating databases. These activities should therefore be recognized as non-monetary benefit-sharing under the MLM. A harmonised approach to developing indicators across the CBD, the ITPGRFA, WHO PABS and BBNJ, combined with systematic reporting of existing capacity building and collaboration, would strengthen the coherence and visibility of these efforts. Existing multi-actor collaborations in the Netherlands can serve as examples to develop indicators further (p.34-36).

3.4. For effective outward company engagement, funding mechanisms must translate complex ABS concepts into clear, business-oriented language that aligns with CSR, ESG, and SDG reporting frameworks, while at the same time keeping reporting requirements feasible and proportionate for companies to implement and sufficiently clear and verifiable for public authorities to monitor and enforce. Funding mechanims under international ABS instruments should clearly position themselves in the biodiversity funding landscape around their distinctive features. By aligning their mandate with the technical expertise, innovation capacity, and sectoral strengths of companies, funding instruments can unlock biodiversity impacts and shared value beyond financial contributions. Creative and sector-specific formulation of projects grants a degree of ownership to companies, with opportunities for long-term engagement and synergies with non-monetary benefit-sharing.

3.1. ABS and DSI governance: ever more complex

Increasing legislative complexity

The current ABS landscape is characterised by a high level of legal and administrative complexity, resulting from the interaction between multiple international frameworks - including the CBD, the Nagoya Protocol and the ITPGRFA - as well as their national implementations and compliance requirements. The Nagoya Protocol's bilateral, case-by-case approach gives effect to the sovereignty of provider countries and communities over their genetic resources - the recognition the Protocol was created to secure - but it also carries real transaction costs for users and providers alike, and procedures can be lengthy and hard to predict. The MLS established under the ITPGRFA reduces this per-transaction burden, although it covers only a limited set of crops, leaving much of the breeding sector dependent on bilateral arrangements.

Altogether, this creates a fragmented system in which users must operate cautiously and navigate a combination of bilateral and multilateral approaches. For Dutch stakeholders in particular, the complexity translates into legal uncertainty, administrative burdens and, in some cases, reduced or discouraged access to genetic resources. Smaller actors, including small- and medium-sized enterprises and public research groups, are disproportionately affected, as they often lack the legal capacity to navigate complex ABS requirements. This may ultimately limit innovation, reduce international collaboration and hinder the effective use of genetic diversity for addressing societal challenges. At the same time, the Dutch stakeholders recognize that achieving operational and predictable mechanisms for monetary and non-monetary benefit-sharing is still lacking.

Seeking clarity in DSI benefit-sharing obligations

The emergence of DSI as policy issue adds a new layer of complexity to an already fragmented system. While access to DSI remains largely open, new benefit-sharing expectations under the CBD, particularly through the MLM and the Cali Fund, introduce financial and non-financial obligations that are not yet fully aligned with existing frameworks such as the Nagoya Protocol and the ITPGRFA.

For Dutch stakeholders, the main bottleneck lies in the interaction between physical access to genetic resources and use of DSI. Research and commercial activities increasingly rely on a seamless flow between genetic material and associated sequence data, yet governance systems treat these elements differently, creating uncertainty about when and where obligations arise, especially in collaborative settings. This raises concerns about proportionality, potential double obligations and how to allocate costs incurred by monetary contributions and non-monetary benefit-sharing activities between companies and academic partners. More broadly, the current trajectory risks creating unintended disincentives for data sharing and collaboration, particularly if obligations are perceived as unclear or disproportionate, while there is broad recognition among Dutch stakeholders of the importance of fair and equitable benefit-sharing.

Our vision is therefore to develop a coherent and workable system that maintains open access to both physical material and DSI for innovation, while ensuring that a predictable benefit-sharing mechanism supports conservation and indigenous peoples and local communities (IPLCs) in a transparent and proportional manner. Governments are encouraged to clarify exemptions from bilateral legislation through various CBD channels, including the Cali Fund. To this end, the Netherlands is an early and active member of the Friends of the Cali Fund. This coalition of Parties aims to promote political support, coherence, and effective implementation of the multilateral mechanism's provisions on benefit-sharing by encouraging private sector contributions, fostering dialogue and collaboration among stakeholders, supporting legal and policy clarity, and ensuring alignment across relevant international processes. To improve the workability of benefit-sharing mechanisms, practical guidance, transparency on fund allocation, and alignment with CSR/ESG reporting are more effective than repeatedly emphasising incentives.

3.2 Addressing social concerns and distributional questions

The implementation of the MLM for DSI under the CBD, together with the objectives of the ITPGRFA, raises key social concerns and distributional questions linked to the conservation and sustainable use of genetic resources. Central is how benefits from both physical material and associated data can be shared fairly, particularly with the countries of origin and IPLCs. Genebanks (both regional, national and local), research institutes, IPLCs and the private sector play an essential role in the conservation of genetic diversity, but also as facilitators of access to genetic resources. At the same time, the global objectives of biodiversity conservation and ABS frameworks must align with the context of open science, public databases and international collaboration. This section explores how fair distribution, conservation goals and practical implementation can be balanced across stakeholders in relation to the Dutch context.

Actor roles in conservation and use of genetic resources

Genebanks, specimen collections, the private sector and academic institutions

Genetic resources must be both conserved and made accessible for use. Globally, genebanks play a central role in this process by professionally maintaining ex situ collections and by supporting and monitoring in situ genetic resources. In addition, they facilitate the utilization of these resources by providing direct access to ex situ collections and by acting as intermediaries between potential users and in situ resources managed by other stakeholders. Specimen collections as maintained by natural history and biodiversity institutes are, similarly, custodians of material from which DSI is increasingly derived, in an era of rapidly advancing molecular techniques.

Ongoing activities for the collection of in situ genetic resources are strategic components for academic institutions, genebanks and specimen collections. They contribute to long-term, standardised and verifiable collections of genetic material and associated sequence data, enabling reliable access for research and innovation. This infrastructure is essential for analysing pathogens, crop diversity, metabolic pathways, immune responses, and gene–function relationships, allowing scientists to track mutations, compare variants, identify species, and develop evidence-based science.

Consistent access to these genetic resources directly supports the development of vaccines, diagnostics, resilient crop varieties and rapid outbreak response capacities. For scientific research, genebanks and specimen collections are fundamental, e.g. for safeguarding global health, food security and scientific progress.

In the plant sector, farmers are the ultimate users of genetic resources, as they are responsible for food production. However, the genetic resources conserved in genebanks are rarely suitable for direct use and generally require selection, recombination, multiplication, and further development before they can meet farmers' needs. For commercially oriented, high-input farming systems, such as those prevalent in the Netherlands, this process is largely undertaken by breeding companies and the seed industry. In contrast, the connection between farmers and ex situ genetic resources is far less developed in less capital-intensive and alternative agricultural sectors, despite the fact that these sectors account for more than one-third of global food production.

Properly organizing the conservation of and access to genetic resources within internationally coordinated public institutions, while enhancing the ability of intermediary actors to make these resources available to farmers or, where applicable, farmers' direct access to genebank materials for further selection and multiplication, is essential. Strengthening these foundations should therefore be a central objective of discussions and actions concerning genetic resources.



Support for and engagement of of indigenous peoples and local communities

One of the outcomes of COP16 is the recognition of the crucial role that indigenous peoples and local communities play in conserving biodiversity. CBD Decision 16/2 stipulates that at least half of the resources from the Cali Fund must benefit their self-identified needs. The Cali Fund's support extends to women and youth within local communities. This allocation can take place through government agencies or through direct payments to institutions designated by IPLCs.

According to scientific literature, this approach is conducive to biodiversity conservation. Studies show that when IPLCs themselves manage biodiversity-related funds, the impact per dollar invested can be up to three times higher, owing to local knowledge, cost efficiency and long-term stewardship. The Kunming-Montreal Global Biodiversity Framework (KMGBF) explicitly recognises these essential contributions in Targets 22 and 23, which respectively seek the full and effective participation of IPLCs and gender equality in biodiversity decision-making.

The Netherlands is not home to indigenous peoples in the sense of the CBD, which raises other questions about how social and equity-related principles under the CBD framework are applied in a national context. This includes considerations beyond the CARE principles, such as benefit-sharing, participation and recognition of contributions within research and conservation systems. A positive development is that Dutch universities are actively investigating how to include (better) indigenous peoples in participatory conservation and climate resilience research.

The Netherlands does not regulate access to genetic resources under its jurisdiction through prior informed consent (PIC) and mutually agreed terms (MAT), but Dutch users remain subject to countries' legislation and EU and national compliance obligations when utilising genetic resources and associated traditional knowledge.

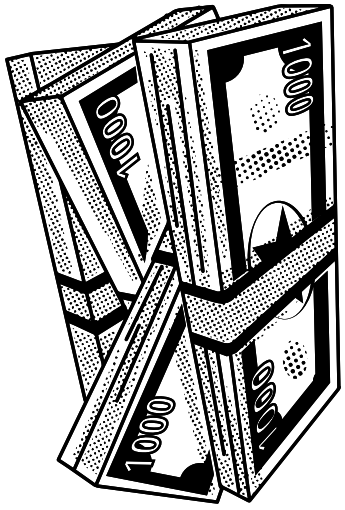


Funding mechanisms: allocation criteria, distribution principles and effective disbursement

Under the CBD and the Nagoya Protocol, the sharing of benefits is bilaterally arranged, usually in the mutually agreed terms concluded between the provider and the user of the genetic resources concerned. Therefore, the types of benefits shared and the allocation and distribution principles can vary widely. A list of possible monetary and non-monetary benefits is included as an annex in the text of the Nagoya Protocol. In the ITPGRFA and the MLM, the other two instruments directly relevant to the interest group (the multilateral approach of the BBNJ is still being operationalised), benefits are not shared bilaterally and directly with individual providers, but through a fund from which all (potential) providers can benefit: the Benefit-Sharing Fund in the ITPGRFA and the Cali Fund in the MLM. The allocation criteria and distribution principles for these two funds, and our recommendations for their further development are discussed here.

Benefit-sharing Fund of the ITPGRFA

According to Art. 13.3 of the ITPGRFA, benefits arising from the use of PGRFA that are shared under the multilateral system should flow primarily, directly or indirectly, to farmers in all countries, especially in developing countries, and countries with economies in transition, who conserve and sustainably utilize plant genetic resources for food and agriculture. Therefore, the Benefit-sharing Fund of the ITPGRFA supports projects in developing countries for small-scale farmers with the aim of improving livelihoods, food security, and adaptation to climate change.



The fund is open for grant applications from governmental or non-governmental organizations, genebanks, research institutions, and regional and international organizations, based in developing countries that are Contracting Parties to the ITPGRFA. Eligibility criteria for proposals include direct contribution to the objectives of the ITPGRFA and alignment with the priorities established by the Treaty's Governing Body.

Eligible pre-proposals are screened by an Independent Panel consisting of 14 experts (two from each of the FAO regions), based on their socioeconomic, agricultural, and policy impacts. The Panel ranks the proposals and provides a recommendation to the Standing Committee on the Funding Strategy, which makes the final funding decisions. Since its establishment in 2009, the Benefit-sharing Fund has, in five project cycles, funded 108 projects in 78 developing countries, with a total funding of 35 million USD. In practice, the fund has relied more on voluntary contributions than on user-based revenue from the MLS. Of the user-based income received to date, 99% was paid by two Dutch breeding companies (Nunhems Netherlands and Bejo Zaden).

Cali Fund of the MLM

The allocation system envisaged for the Cali Fund is different from the system described above for the ITPGRFA. According to CBD Decision 16/2, funding will be disbursed directly to CBD Parties via a designated national entity, which will distribute it transparently on the basis of projects developed in countries or through community-driven processes. At least half of the funding of the global fund should address the self-identified needs of IPLCs, either through government authorities or by direct payments through institutions identified by them. Part of the funds may be set aside to support capacity building related to the generation, access, use, and storage of DSI, as well as capacity development efforts targeting developing countries.

In the Decision, it was stated that the distribution of resources from the Cali Fund is to be based on an indicative list of criteria (Enclosure 2):

- Biodiversity richness of the recipient country;
- Geographical origin of the genetic resources from which DSI is derived;
- Capacity needs for the conservation and sustainable use of biodiversity.

An Ad Hoc Technical Expert Group (AHTEG) on Allocation Methodology was established to develop an allocation formula based on these and possible other criteria, which will be submitted to CBD COP17 in October 2026 for approval.

Effective and efficient disbursement from the Cali Fund

Fast and effective results help maintain company engagement in the Cali Fund. So while the Allocation Methodology is being developed, it is essential to keep an eye on how the Cali Fund achieves and reports on-the-ground impacts.

According to its Terms of Reference, the Cali Fund contributes to achieving the objectives of the CBD and supports the implementation of countries' National Biodiversity Strategy and Action Plans. The protection of genetic diversity is covered in Target 4 of the KMGBF. For a long time, however, genetic diversity was overlooked in both National Biodiversity Strategy and Action Plans and other nature conservation policies. New scientific research at the interface of conservation genetics and policy is rapidly filling this gap.

The Cali Fund provides an excellent opportunity to complement Target 4 of the KMGBF. To safeguard genetic resources relevant to food security, for instance, the Cali Fund could align itself with the strategic frameworks set out in the Global Plans of Action of the Commission on Genetic Resources for Food and Agriculture (CGRFA) under the FAO. To target the conservation of genetic diversity of wild populations, the Cali Fund can take directions from concepts such as genetic hotspots and microbial biodiversity hotspots, which at the same time hold valuable genetic information for research and innovation. Alternatively, and in combination with non-monetary benefit-sharing activities, it can support capacity-building for integrating genetic diversity in countries' conservation management, for instance through establishment of gene conservation units (GCUs).

Due to current challenges with filling the Fund ('money in'), projects should also consider how to maximize the impact of limited resources. As an example, transferring sequencing machines to countries as a form of technology transfer may, on paper, strengthen capacities for generating DSI. However, this does not necessarily lead to increased biodiversity sequencing and research if researchers lack access to affordable reagents, sufficient funding for maintenance, or adequately trained personnel.

Therefore, the steering committee must evaluate projects on whether they address country-specific bottlenecks in biodiversity research and research and development that is relevant to the implementation of the KMGBF (e.g. sustainable use). Early engagement with scientists in recipient countries, for instance through the envisioned match-making platform, together with co-creation approaches, can help identify these bottlenecks and foster long-term collaborations. Investment in regional scientific initiatives that support the KMGBF, as well as broader cost-reduction synergies, is also encouraged.



3.3 Data governance and non-monetary benefit-sharing

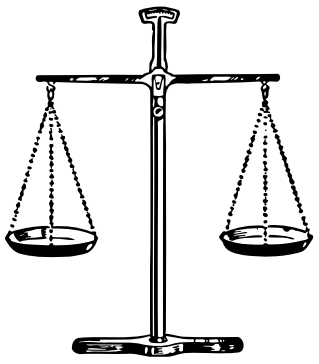
The implementation of CBD Decision 16/2 raises important questions for entities operating databases about how to combine open access to DSI with increasing expectations around Indigenous data governance, data provenance and fair and equitable benefit-sharing. The following sections explore several of these interrelated issues, including the relationship between the FAIR and CARE data principles, provenance metadata requirements, non-monetary benefit-sharing, and the continued importance of maintaining sustainable open-access data infrastructures that support both scientific progress and the objectives of the KMGBF. The last section presents three case studies that highlight opportunities for equitable participation in the global DSI ecosystem and that could serve as examples for operationalizing non-monetary benefit-sharing.

Resolving tensions between open access and data sovereignty

FAIR and CARE as complementary frameworks: a conceptual challenge

Implementation of the CBD decision 16/2 requires public databases to take both the FAIR and CARE principles into consideration. A fundamental tension arises here, however. The FAIR principles (Findable, Accessible, Interoperable, Reusable) are widely implemented across the scientific community and support open access to data. By contrast, the CARE principles (Collective benefit, Authority to control, Responsibility, Ethics), developed specifically for Indigenous data governance, emphasise the right of communities to exercise control over data that concern them.

The "A" in CARE (Authority to Control) sits uneasily with the principle of open access in databases. There is no central authority that can manage or enforce access rights for Indigenous data in globally aggregated databases. The international workshop for database managers in March 2025 concluded that full application of CARE is not immediately feasible for all DSI databases, although unethically obtained data should be removed or withdrawn.



Full operationalisation of CARE in globally aggregated biodiversity databases is challenging, especially where data are already public, provenance is incomplete, or no recognised decision-making body is known. Initial practical measures that databases can take in order to act in the spirit of CARE include:

- Transparency about data provenance: displaying relevant metadata such as collection permits or Biocultural Labels that reflect community expectations;
- Inclusive governance: involving representatives of IPLCs in advisory boards, steering groups or discussions on data accessibility;
- Reactive measures: developing and enacting procedures for removing or withdrawing data found to have been obtained or shared unethically.

The Indigenous Data Governance Task Group of the Global Biodiversity Information Facility (GBIF), provides a platform for exploring the compatibility of fully open biodiversity platforms with the application of CARE principles, and could review the above reinterpretation. Likewise, Dutch public research institutions and entities operating databases are recommended to pursue a staged approach toward CARE alignment.

Metadata on provenance: limitations and exceptions

Decision 16/2 indicates that databases should require those who submit data to provide, where known, information on the country of origin of the genetic resources from which the DSI is derived, as well as on the potential use of associated traditional knowledge. This is not only a technical requirement but also a social one: it makes the origin of genetic information visible and forms the basis for a fair and equitable distribution.

In practice, however, there is great variability. Of the 307 million sequences available in the International Nucleotide Sequence Database Collaboration (INSDC), only 17% contain information on the geographic location of collection. Although INSDC has required provenance information for new submissions since March 2023, a historical and practical gap remains. For some data, such as aggregated databases or worldwide-occurring species, assigning a specific origin is either scientifically meaningless or practically infeasible. The same goes for secondary databases that aggregate data from multiple sources that cannot be attributed to a single country.

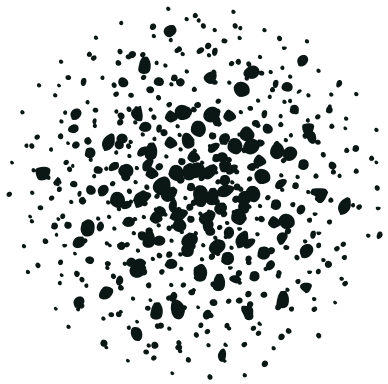
There are also legitimate reasons not to make provenance data fully public. Two key exceptions to full disclosure include: protection of endangered or sensitive species from poaching and privacy restrictions that apply to human data.

Natural history collections

The scope of Dutch institutions such as Naturalis is not confined to material of Dutch origin. Naturalis' aim in (meta)barcoding and related techniques is to understand and identify biodiversity globally, and the reference libraries that make identification possible, including of Dutch and invasive species, are necessarily built from internationally sourced specimens and data, a substantial part of it from biodiversity-rich regions, some with recognized IPLCs. A differentiated approach is therefore warranted for Dutch public research institutions, contextualized to the provenance of the material: stronger attention to social and CARE-related considerations for internationally sourced material, and proportionate implementation for material collected within the Netherlands, where there are no IPLCs in the sense of the CBD.

The value of an open data structure

Without large, FAIR-compliant DSI databases, many genetic and taxonomic studies would be impossible, as they rely on comparing newly generated sequences with existing reference data. This global data infrastructure also enables the use of computational models and genomic tools for the development of biotechnology innovations, products and services.



The openness of current database practices is what allows the broader DSI ecosystem to operate at scale. It supports millions of daily queries, enables downstream applications through interconnected databases, tools and models, and ensures that researchers - including those in public institutes, CGN, government programmes, private breeding companies and international partners - can access DSI without major technical or financial barriers.

These benefits are not confined to users in the global research system. Open access also returns value to provider countries and communities: it gives their own researchers and institutions barrier-free access to data derived from their biodiversity, supports the repatriation of associated data and knowledge, and underpins the biodiversity monitoring and capacity through which providers can derive value from their own genetic resources.

Generating DSI, curating, and hosting it in sustainable open databases requires substantial funding upfront and continuous investment. Global DSI databases cost their funders tens of millions of dollars annually to operate and maintain. Maintaining an open access infrastructure is costly and requires skilled personnel. For these reasons, many biological databases are discontinued each year.

Together, these activities represent a considerable investment of resources and expertise, generates scientific and societal value, and directly supports the objectives of the KMGBF. Open provision is a substantial benefit in its own right; its value to provider countries and communities is greatest, however, where it is paired with meaningful provenance, usability, capacity support and equitable attribution, and with mechanisms through which providers and IPLCs can identify their own needs. These enabling conditions are what turn open availability into shared benefit, and progressively strengthening them is itself part of the non-monetary benefit-sharing agenda rather than a precondition that open data must already satisfy.

The explicit recognition in CBD decisions 15/9 and 16/2 of the importance of open access infrastructure provides an opportunity to mobilise broader stakeholder support and to strengthen capacity building for sustainable investment, including initiatives such as those of the Global Biodata Coalition. Non-monetary benefit-sharing activities can support wide participation in this global DSI ecosystem and efforts need to be undertaken to match the above services with the self-identified needs of IPLCs. Carefully designed agreements can help protect traditional knowledge and ensure that it is passed on to younger generations rather than disappearing over time.



The policy framework for non-monetary benefit-sharing

Expectations for public research regarding non-monetary benefit-sharing

Public databases, academic institutions and public research organisations are exempt from monetary contributions to the Cali Fund. This is a crucial recognition of their role in the DSI ecosystem: they maintain the infrastructure and knowledge ecosystem that makes global open access to DSI possible. As with all users of DSI under CBD Decision 16/2, they are expected to share non-monetary benefits in a fair and equitable manner.

CBD Decision 16/2 states explicitly that all users of DSI should share non-monetary benefits. This non-monetary benefit-sharing should support self-identified capacity and technical development needs, including but not limited to:

- Capacity building for generating, accessing, using, analysing and storing DSI;
- The self-identified needs of indigenous peoples and local communities, including women and youth within those communities;
- Knowledge exchange and the showcasing of ongoing non-monetary activities.

The sharing of non-monetary benefits will be facilitated through an existing clearinghouse under the CBD, which primarily provides information on demand for capacity building, knowledge exchange and the reporting of ongoing activities.

Governments, companies and research organizations collaborate in many bilateral and multilateral initiatives that boost scientific cooperation. The CBD is recommended to liaise with other United Nations bodies on addressing general barriers to scientists (e.g. access publishing fees) and barriers specific to biodiversity science in developing countries.

Case studies of non-monetary benefit-sharing and the need for indicators

Open access data provision, capacity building, joint research, and shared infrastructure enable equitable use of genetic resources across stakeholders. This includes IPLCs' facilitated access to gene bank materials, the establishment of farmer-researcher networks, and participatory plant breeding initiatives.

Researchers and companies cannot be expected to contribute effectively to non-monetary benefit-sharing if there is no clear and shared understanding of what constitutes such a contribution. Ambiguity around the concept creates uncertainty, hampers reporting and evaluation, and may discourage participation. Clear definitions, examples and indicators are therefore essential to support consistent implementation of Decisions 15/9 and 16/2 and meaningful engagement. Examples of practical indicators for Dutch public research institutions are provided in Annex II of this white paper (p. 43-44).

Non-monetary benefit-sharing indicators are not intended to impose additional burdens on database managers, but rather to highlight existing contributions of databases to the DSI ecosystem and to encourage feasible voluntary actions within their current staffing and financial capacities. The indicators are only feasible if supported by third parties. These examples could inform the ongoing development of indicators for non-monetary benefit-sharing under the ITPGRFA, the Nagoya Protocol and MLM.

Farmer communities, the International Potato Centre and the private sector

The Dutch potato breeding company HZPC collaborates with the International Potato Center (CIP) and Andean farming communities in Peru through the AGUAPAN Association to link potato breeding with the conservation of native varieties.

- *Benefit-sharing*: The initiative ensures that farmers who preserve native potato biodiversity receive financial returns for their role as custodians.
- *Support for farmers*: It recognizes and supports small-scale growers who maintain traditional crops under challenging conditions.
- *Use of genetic resources*: The diversity conserved by these farmers is used to develop specialty potato varieties.
- *Market development*: These native varieties are introduced to European markets, for example under the Perupas brand.

In this collaboration, farmers and CIP provide genetic resources and local knowledge, while HZPC contributes breeding expertise and market access, ensuring that Peruvian growers benefit from their agricultural stewardship.

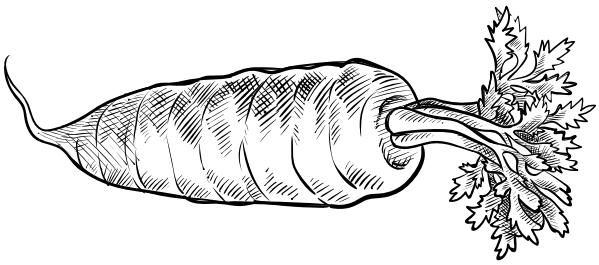
Plant genebank and the private sector

The private breeding sector supports the Centre for Genetic Resources, the Netherlands (CGN) in various ways.

- *Financial support*: Breeding companies contribute to research projects and public–private partnerships that help characterize, evaluate, and utilize the genetic resources conserved by CGN.
- *Knowledge and expertise*: Breeders share expertise on trait evaluation, breeding methods, and emerging industry needs, helping CGN prioritize activities that increase the value of genebank collections.
- *Provision of germplasm*: Companies donate obsolete varieties for long-term conservation, enriching the national collection.
- *Collaborative research*: The sector works with CGN in trait-discovery projects, generating data on genetic resources that benefit both conservation and crop improvement.
- *Advocacy and utilization*: By actively using genetic resources from the genebank, breeders demonstrate the importance of maintaining well-funded, accessible collections and support policies that promote genetic resource conservation.

In this partnership, CGN provides the long-term conservation infrastructure and public genetic resources, while the breeding sector contributes expertise, materials, research capacity, and practical applications that enhance the value and impact of the collections.





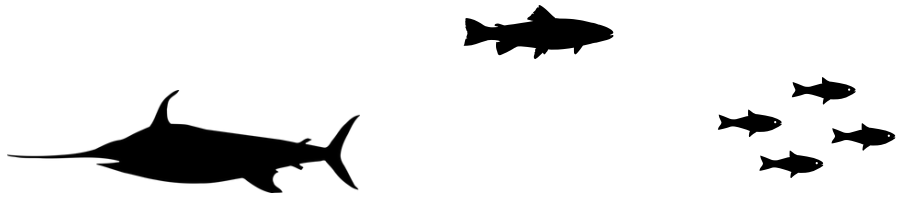
Naturalis Biodiversity Center

Researchers at Naturalis are engaged in data aggregation and curation and contribute to leading international databases.

- *DNA barcoding reference data*: The BOLD database contains DNA barcode reference sequences that are essential for taxonomic identification. Naturalis makes globally obtained barcode data available through a European mirror, a facility that shortens access times for European researchers, provides redundancy as well as data security and sovereignty, and supports national (e.g. ARISE) and European research infrastructures (e.g. BGE, DiSSCo, GBIF).

- *Metabarcoding data and applications*: DNA barcode and metabarcode data (i.e. amplicon data from eDNA and bulk samples) are used primarily for taxonomic identification, not for commercial applications such as product development. These identification markers differ in character from sequences of functional genes with direct commercial potential. Making these reference data available supports biodiversity monitoring and inventory, environmental DNA (eDNA) studies, and ecological research and nature conservation

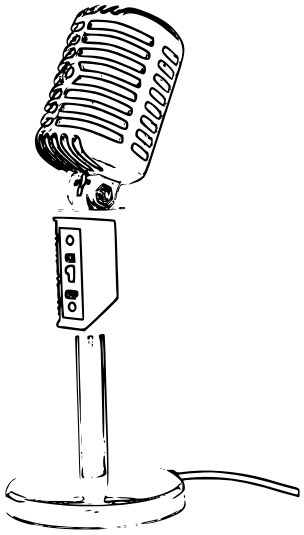
- *International collaborations*: Through participation in GBIF, DiSSCo, BGE, and other international infrastructures, Naturalis contributes to a global network of biodiversity data that provides researchers worldwide - including those in biodiversity-rich developing countries - with access to essential reference data.



3.4 Effective, collaborative and rewarding communication

Language that the community understands

A central issue is the mismatch between policy language and the real world. Often the challenge is to carefully follow the agreed-upon language, limiting communicative flexibility. Many decisions are often technical and lack clear definitions, such as the decisions on DSI from the CBD, which makes them difficult to translate into practice. The repeated emphasis on "complex language" can be reduced to one core point: communication must be adapted to the audience.



A dual approach would help with precise legal language within agreements, and accessible, audience-oriented language for outreach, linked to Environmental and Social Governance (ESG), Corporate Social Responsibility (CSR) and the Sustainable Development Goals (SDGs). Within the CBD clear and visualized differentiation of obligations under the MLM in the public-private research and development (R&D) cycle is recommended. Engagement with reporting agencies can boost familiarity with the Cali Fund and integrate Goal C and Target 13 of the KMGBF directly into companies' existing sustainability practices.

Corporate volunteering, wherein companies allow their employees to work on charitable causes, can significantly contribute to the non-monetary benefit-sharing obligations of companies while at the same time boosting employee satisfaction and CSR exposure. In particular, linking companies to beneficiaries of the Cali Fund through the matchmaking platform can open up collaboration and investment opportunities and boost capacities to valorize genetic diversity in the bioeconomy.

A focus on achievements and collaboration

The link between ABS and biodiversity conservation depends on credibility and while ABS is presented as an incentive for conservation, this claim is not always convincing or supported in communication. Repetition of this narrative without clear (scientific) evidence risks scepticism. Communication should therefore focus on concrete outcomes, such as the conservation of genetic diversity or specific DSI-related capacity building, and clarify how this complements existing mechanisms e.g. under the ITPGRFA. Clear positioning avoids overlap and strengthens the case for contributions.

In the Dutch context, although collaboration between government, companies and knowledge institutes is relatively strong, communication gaps remain. Stakeholders are often unaware of each other's initiatives unless they are directly involved in a shared project. This limits synergies and leads to fragmentation, even within a well-organised system. Improving transparency and information exchange at the national level would strengthen alignment and increase the visibility and effectiveness of ABS-related efforts. The updated policy note ‘Genetic Resources 2026: Foundation for Resilient Food and Ecosystems’ provides a framework for enhanced coordination and collaboration.

A clear and communicable mission statement for the Cali Fund

For some companies, the biodiversity-focused nature of the Cali Fund may weigh more importantly than ABS principles. As there are various ways to support nature, the Cali Fund therefore has to stand out with a unique character, which could centre on the fact that 50% of funds are allocated to IPLCs, or on its central role in enabling equitable bioinnovation in the 21st century with a clear connection to both biodiversity conservation and rapidly increasing the amount of publicly available DSI. For carving out this niche and exploring opportunities for pooled financing, the Cali Fund should consider that the conservation of agrobiodiversity is addressed by the ITPGRFA’s Benefit-Sharing Fund and the Crop Trust, and the conservation and sustainable use of marine genetic resources by the BBNJ Agreement. The Cali Fund can build on communication resources and lessons learned from the Benefit-Sharing Fund and additionally complement individual initiatives from companies that support agrobiodiversity. In these projects, companies often also use non-monetary benefit-sharing mechanisms to maximize the impact of each euro donated.

Decreasing reputational risks

The United Nations Road Safety Trust Fund, also hosted by the MPTFO, received private sector contributions by companies and company foundations (e.g. Pirelli and Michelin Corporate Foundation). Companies wishing to make anonymous contributions can do so under the "Private Sector" contributor category. This MPTFO functionality could decrease reputational risk for frontrunners of the Cali Fund.

Granting degrees of ownership for contributors to the Cali Fund

Companies which are involved with CSR that make contributions to the Cali Fund not only seek impact but may also require some degree of ownership over projects. This is particularly interesting to smaller companies as setting up large projects internally for CSR purposes is disproportionately expensive. These projects are ideally in their sector of interest (e.g. pharmaceuticals contributing to One Health, plant breeders to small-holder farmers). This is not the case now. Since recipient countries and IPLCs decide how they use the disbursed funds, this limits the ability of companies to formulate their priorities (even though private sector representatives take part in the steering committee). To resolve this tension, the Cali Fund website could formulate sector-specific projects in line with an agreed-upon allocation formula that fully respects the agency of beneficiaries and the steering committee decisions. This way, companies know what they contribute to from the start. Finally, showcasing contributors on the Cali Fund and media channels of the CBD, and pre-made communication materials will be a key motivator for frontrunners.

How sector-specific projects would look like

Presently, the Cali Fund receives contributions until sufficient funding is available for projects. This creates uncertainty among potential contributors regarding the start date of projects and when CSR benefits follow. Similar to philanthropic foundations, the Cali Fund could offer contributors a portfolio of predefined and sector-specific project options based on the to-be-adopted allocation formula. This would enable contributors to identify projects aligned with their sectoral interests, increase confidence that their contributions will have an immediate impact, and offer greater visibility and recognition where projects are fully financed by one or more contributors. Allowing companies to see the funding required for each project (akin to the Conservation Challenges platform of Wise Ancestors), would make it clear when a project has secured sufficient funding to commence. The development of such an interface, in turn, could encourage companies to collaborate with others in their sector or value chain to collectively complete and claim CSR benefits from a project.

4 From commitments to action

4.1. Policy recommendations on ABS and DSI

Stakeholders in the Netherlands, including green life science companies, research institutes, CGN, specimen collection holders, NGOs, financial actors and government, collectively recognise the need for a coherent and workable ABS system. A key priority is reducing fragmentation between the CBD, the Nagoya Protocol and the ITPGRFA, ensuring better alignment with emerging approaches to digital sequence information and with the practical realities of genetic resource use, while strengthening benefit-sharing.
A shared emphasis is placed on proportionality and operational simplicity. ABS rules should avoid unnecessary administrative burden, prevent double obligations and remain workable for SMEs, public research organisations and collaborative arrangements such as co-financed PhD programmes. Proportionality also entails differentiating between categories of DSI according to their use. At the same time, open science and data sharing should be safeguarded, while new financial mechanisms are designed in a way that does not unintentionally discourage cooperation or innovation.

There is also broad recognition of the importance of non-monetary contributions, including data infrastructures, training and capacity building, as essential elements of fair benefit-sharing. The aggregation, curation and open provision of biodiversity data should be recognized as a non-monetary benefit in its own right, and not as consideration offered in return for exemption from monetary payments. Stronger international acknowledgement of these contributions would better reflect how value is created and distributed within the Dutch ecosystem and across borders.



Social and CARE-related obligations should likewise be applied proportionately and keyed to the provenance of the material, with stronger attention for internationally sourced material, including from regions with recognized IPLCs, and lighter-touch implementation for material of domestic origin. For historical material with incomplete provenance, a reasonable-efforts standard and clear transitional arrangements are warranted, recognizing that retrospective attribution of country of origin is often neither feasible nor scientifically meaningful. Differentiated treatment of DSI types under the MLM for identification markers (DNA barcodes, metabarcodes) distinct from functional sequences with commercial potential could be considered.

The Netherlands has taken proactive steps to communicate the implications of Decision 16/2 to different stakeholders, particularly through the website of the ABS Focal Point. It furthermore is aiming to request the national tax service to assign the Cali Fund the status of Public Benefit Organization whereby contributions can be deduced from tax filings. This would serve as an incentive for companies to contribute. Lessons from the application (Appendix 1.2: p. 45), that is ongoing, are shared with EU Member States.

Finally, stakeholders highlight the need for a clearer and more accessible framing of ABS objectives, understandable for key target groups like industry, finance, IPLCs and the wider public. A shared and simplified mission focused on access, innovation and fair benefit-sharing would strengthen trust, engagement and effective implementation.



4.2. Proposal for a Dutch framework for additional support for conservation of genetic resources

To enable long-term support for public-private partnerships through a stable and predictable financing mechanism a Dutch financial and technical instrument is proposed, called the Genebank Development Programme, aimed at strengthening genebanks and genetic resource systems worldwide. The initiative responds to a growing global need: while plant genetic resources are essential for food security, biodiversity conservation, and climate resilience, many genebanks face persistent challenges in capacity, infrastructure, expertise, and accessibility. Building on the strong Dutch international position in plant breeding, seed systems, development cooperation, and biodiversity science, the Genebank Development Programme introduces a structured, demand-driven approach to support partner countries and institutions.

Inspired by the success of the Plants Variety Protection Development Program, the Genebank Development Programme provides a flexible “toolbox” that combines policy support, technical assistance, and partnership development. The Genebank Development Programme focuses on strengthening the full genebank value chain, from conservation and regeneration of genetic materials to their characterization, documentation, and distribution. It supports institutional development, enhances scientific and technical capacities, and promotes digitalisation and data accessibility (relevant also in the context of non-monetary benefit-sharing). A central element is the facilitation of public-private partnerships, enabling collaboration between genebanks, research institutions, the private sector, civil society and communities to ensure both innovation and long-term sustainability. Efforts will be made to strengthen linkages between genebanks and community seed banks which connect ex-situ conservation and in-situ management.

By strengthening genebank systems globally, the Genebank Development Programme aims to increase the availability and use of genetic resources, enhance international collaboration, and contribute to more resilient and sustainable agricultural systems.

Appendix

Annex I: Practical indicators for Dutch institutions

Direct data contributions

Indicator	Description	Data source
Number of DSI entries	Sequences contributed to public databases	INSDC, BOLD
Provenance breakdown	Percentage of data with country-of-origin metadata	Database metadata
Sample-level metrics	Number of biological samples from which DSI was generated	BioSamples

Use and impact

Indicator	Description	Data source
User statistics	Number of unique users, broken down by country	Anonymised IP data
Download statistics	Volume of data downloads	Server logs
Citations	Publications citing DSI records	DOI tracking, literature databases

Appendix

Capacity-building

Indicator	Description	Data source
Training activities	Number of courses, workshops, webinars	Institutional reports
Teaching materials	Available manuals, tutorials	Database websites
Collaborative projects	Joint research projects with partners from low/middle-income countries	Project administration

Infrastructure and interoperability

Indicator	Description	Data source
API integrations	Number of connections with other databases	Technical documentation
Frameworks adherence	Implementation of FAIR, CARE and TRUST principles	Self-assessment
Open-source contributions	Software and tools made available	GitHub, repositories

Appendix

Annex II: Fiscal stimulus: lessons learned

Following conversations between European Union Member States over the fiscal character of contributions to the Cali Fund, the Dutch Ministry of Agriculture, Fisheries, Food Security and Nature, the ABS competent national authority, has taken active steps to explore fiscal incentives for contributions by legal entities in the Netherlands. The Dutch Tax and Customs Administration can designate entities in the Netherlands as Algemeen Nut Beogende Instelling (ANBI), and entities abroad as Public Benefit Organization (PBO), whereby expenses can be used for tax deduction. Any organization can apply for ANBI/PBO status, which is granted when it meets a strict list of criteria, and provided that it publishes certain budgetary information on its website.

Corporate gifts by private limited companies to ANBIs and PBOs can lead to tax deduction of up to 50% of the profit and a maximum total of EUR 100.000. While this amount seems limited at face value, it constitutes one percent of EUR 10 million, meaning entities which meet one of the Cali Fund's thresholds of USD 5 million in profits (para 3 – Annex of Decision 16/2) can fully deduct contributions upwards to a profit of EUR 10 million in line with the indicative rate. Therefore, a designation of the Cali Fund as ANBI could serve as a major catalyst for contributions.

The Ministry of Agriculture, Fisheries, Food Security and Nature supported the MPTFO in filing an application for the designation of the Cali Fund as PBO. This application may have wider benefits for resource mobilization for the KMGBF, as the Kunming Biodiversity Fund is also managed by the MPTFO. Necessary information for the application was sourced from the Cali Fund's financial statements, Terms of Reference and Memorandum of Understanding between the CBD and UNDP. To satisfy key requirements for a successful application, the Ministry requested the Cali Fund Secretariat and MPTFO to provide additional information over email.

The Ministry stands ready to share lessons learned with other CBD (Non-)Parties.

