

THE **ABS**  
CAPACITY  
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INITIATIVE



L'INITIATIVE DE  
RENFORCEMENT  
DES CAPACITES  
POUR L'**APA**

Webinar Report:

“Consideration of Digital Sequence Information  
in the CBD and other UN Fora”

Tuesday, 28 April 2023 – 12.00 to 14.00 UCT

## Introduction

### Suhel al-Janabi, ABS Capacity Development Initiative

Suhel al-Janabi explained that this global webinar was designed to take stock of recent decisions and ongoing negotiations on DSI in different fora such as CBD, UNCLOS BBNJ, WHO and FAO. After an introductory presentation, a panel of experts would offer insights on the implications of decisions made and consider the prospects for implementing a set of global governance mechanisms for information-based research and development, in particular regarding the following questions:

- How to deal with non-monetary benefits in a multilateral system?
- How to organise monetary benefit-sharing?
- How to link capacity development to the DSI system?
- How to realise a DSI system that spans the different international fora?

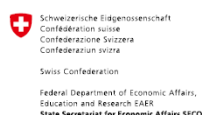
The webinar was held in English with simultaneous interpretation into French and Spanish. The chat was enabled for questions as well as technical and conceptual contributions by the participants. The latter are documented in an anonymised manner in the annex to this report.

## Official welcome remarks

### Gaute Voigt-Hanssen, Ministry of Climate and Environment, Norway

Gaute Voigt-Hanssen welcomed the participants and explained that the webinar was organised by the South African-Norway Bilateral Partnership. The Partnership had been established in 2019 to foster informal exchanges and increase the knowledge base on DSI, and had contributed to the adoption of the Kunming-Montreal Global Biodiversity Framework and the decision on DSI. He highlighted that implementation of the GBF and the DSI decision has just started, and that discussing the status of and approaches to DSI in the various fora was a great point of departure.

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## Stock-taking on DSI-decisions and negotiations in international fora

### Hartmut Meyer, ABS Capacity Development Initiative

Hartmut Meyer gave a brief overview of the ABS Capacity Development Initiative: It is a multi-donor initiative hosted by the German government and implemented by GIZ. The ABS initiative exists since 2006 and is now in its fifth phase. It accompanied the negotiations on the Nagoya Protocol and is now supporting its implementation in selected countries in Africa, the Caribbean and the Pacific. In addition, it contributes to the international discussion, e.g. on the development of ABS indicators for the GBF, and supports the informal dialogue and capacity building processes around DSI.

The ABS Initiative has been convening global DSI capacity development activities since 2019. Main events were the two Global DSI Dialogues in 2019 and 2021, as well as the Informal Global DSI Retreat in 2022 to support ABS negotiators in preparing for the DSI negotiations at CBD COP 15. That COP finally decided to establish a multilateral system for sharing the benefits arising from the use of DSI, including a DSI fund. DSI and related benefit-sharing is also dealt with in other international fora (for details see presentation in Annex 2):

- WIPO: adoption of a standard on DSI in patent applications
- UNCLOS: conclusion of the Biodiversity Beyond National Jurisdiction agreement on marine GR and DSI benefit-sharing
- WHO: Pandemic Treaty (negotiations on pathogen and genomic data benefit-sharing) and Pandemic Influenza Preparedness Framework (negotiations inclusion of DSI in definition), adoption anticipated in 2024
- FAO ITPGRFA and CGRFA: studies and proposal for inclusion of DSI in the SMTA of the IT, further work on DSI until the 10<sup>th</sup> Meeting of the IT Governing Body in 2024

Recommendations for modalities of the CBD multilateral system for DSI benefit-sharing will be developed in an intersessional process until COP 16 in late 2024. The ABS Initiative will continue to work on DSI capacity development, thus contributing to the international governance processes for the use of sequence information of biological molecules and resource mobilisation for the conservation and sustainable use of biodiversity.

## Panel discussion

Panellists (acting in their personal capacity and not expressing views and opinions on behalf of the respective institutions):

**Margo Bagley**, Emory University School of Law in Atlanta, GA, USA

**Daniel Kachelriess**, Expert on oceans, fisheries, wildlife law and policy, Vienna, Austria

**Suerie Moon**, Forum on Global Governance for Health, Harvard University, MA, USA

**Daniele Manzella**, Plant Treaty Secretariat, FAO, Rome, Italy

Moderation: **Timothy Hodges**

Four questions were addressed to the panellists. In the answering rounds, the panellists replied in alternating order.

### Question 1: Who should share monetary benefits and how could the system work nationally and internationally?

**Margo Bagley:** It seems fair that those who benefit monetarily should share monetary benefits from DSI utilisation. However, the focus on utilisation that results in commercialisation is overly narrow and likely to result in under-sharing of benefits as it doesn't collect from downstream beneficiaries or entities that impose negative externalities on biodiversity. Everyone probably benefits from DSI to some extent, and everyone definitely benefits from the conservation of biodiversity, particularly that in which indigenous peoples and local communities (IPLCs) are engaged, and there need to be incentives for that. Yet figuring out the right trigger for benefit-sharing – that line between 'too remote'

and 'not too remote' utilisation and resulting benefit-sharing obligations – tends to lead to inefficiencies, high transaction costs, and to companies trying to stay on the side of the line that avoids an obligation to share benefits. A better approach would be for countries to share monetary benefits on an aggregate basis, decoupled from access to DSI, taking into consideration, as proposed by the African Group, the development status for setting the level of contributions as well as exemptions. Those countries could then collect funds from their domestic users and industries, based on nationally defined criteria, perhaps focusing on certain industrial sectors. So, they would collect funds in a way that expands the contributor base to include not only direct commercial users, but also those whose negative externalities contribute to the erosion of biological diversity. Users and non-parties should also be able to make contributions and share benefits.

**Daniele Manzella:** Negotiations for the revision of the Multilateral System of Access and Benefit-Sharing under the International Treaty of Plant Genetic Resources for Food and Agriculture (or the "Plant Treaty" for short) will resume this year. Besides the existing single access system, where benefits are collected once value is generated from accessed genetic resources, a so-called subscription system will be considered, which implies upfront payments based on the overall revenue generated by crop sales. In both cases benefits go into a global common pool. The funds are used to support selected projects that are aimed at increasing capacities in member countries, within the overall scope of the Plant Treaty and its objectives linked to food security and sustainable agriculture. Voluntary *ex ante*-contributions can also be made by users and by member countries in the respective jurisdictions. These payments may also reflect the use of information, including sequence data, generated from material accessed through the multilateral system. Exemptions may also be considered, for instance, for small breeding companies, public sector research institutions, and family farmers and national institutions may play a role in triggering such exemptions.

**Suerie Moon:** The scale of monetary benefits in the health sector can be enormous and dwarf some of the numbers seen elsewhere. The discussion in this sector revolves mostly around commercial versus non-commercial benefit-sharing, not so much about monetary versus non-monetary. Money, royalties and other kinds of financial contributions do matter, as we've seen in the negotiation of the Pandemic Influenza Preparedness (PIP) Framework, which focuses on physical samples and does not yet include DSI. For public health and national economies, however, the key interest lies in access to vaccines, drugs and diagnostics, which are not monetary per se but are usually commercial products. Under the PIP Framework, companies pay an upfront participation fee that gives them access to influenza viruses of pandemic potential. These fees have been very important for the entire system to function, and they are certainly an important source of benefit-sharing. Some have argued that the latter could be channelled through governments. For now, what has been working well in this system are the direct fees from companies, before and after benefits are being realised.

**Daniel Kachelriess:** The Treaty on Biodiversity Beyond National Jurisdiction (BBNJ), adopted in March 2023, includes monetary benefit-sharing provisions for marine genetic resources (MGR) and related DSI. Once the treaty enters into force, developed countries will initially share monetary benefits in the form of flat rate payments. These will not be directly coupled to the value of commercialised MGR and DSI, but be based on the contributions those countries are already making to the core budget of the BBNJ Treaty. The BBNJ COP will later review and assess these monetary benefit-sharing provisions every two years, with the first review to take place no later than five years after the agreement enters into force. The COP can then decide on other modalities, which may include changing the types of payments – such as milestone payments, percentages of revenues from product sales or a tier system – and/or redefining which countries are subject to benefit-sharing obligations.

**Question 2: How to best deal with non-monetary benefits in a multilateral system and who should be the recipients of such benefits?**

**Daniele Manzella:** Non-monetary benefits, such as information exchange, technology transfer and capacity building, are essential to reflect public value and meet equity challenges. Using the monetary benefit-sharing mechanism of the Plant Treaty to realise non-monetary benefit-sharing may improve the overall functioning of the system. However, benefits of collective nature that are generated at the

global level require careful mediation for re-nationalising or re-individualising such benefits. The Benefit-sharing Fund aims to strengthen co-ordination and co-operation between countries, stakeholders and their activities for the delivery of non-monetary benefits, to address the various existing interdependencies related to plant genetic resources for food and agriculture. Recipients should primarily be farmers, especially in developing countries and economies in transition.

**Suerie Moon:** Under the PIP Framework companies supply, for example, 10% of their vaccine production globally to WHO in the event of a pandemic, and WHO then decides where to send those vaccines or other products to protect the most vulnerable. Another very important collective benefit is surveillance. The rapid and widespread sharing of DSI on pathogens is a classic non-monetary benefit: If governments and scientists can track the evolution and spreading of pathogens, the entire world benefits. In addition, for researchers who generate DSI in their labs, academic credit, appropriate authorship on papers, participation and research collaborations, opportunities for training etc. are important non-monetary benefits. It is very important to identify, track and encourage this kind of benefit-sharing, and the related international systems in the health sector can still be improved.

**Daniel Kachelriess:** Besides general provisions on capacity building and technology transfer, the BBNJ Treaty addresses non-monetary benefit-sharing related to DSI in the MGR section of the text. The non-monetary benefits listed there include, for example, access to DSI in general, open access to findable, accessible, interoperable and reusable scientific data, and open access to the information from the BBNJ notification system. For example, the pre-cruise notification includes opportunities for scientists, in particular from developing countries, to be involved in a project. The post-cruise notification includes information on where DSI is deposited, and attaches a standard BBNJ batch identifier that allows following the information through the chain of custody. The COP can also establish new forms of benefit-sharing down the line. A clearinghouse mechanism serves as a central open access platform to provide and disseminate information. One of its functions is to match capacity building needs with available support, which allows Parties to monitor, review and provide continuous guidance on the implementation of the provisions.

**Margo Bagley:** Non-monetary benefit-sharing is a particularly appropriate way for academic researchers and other users whose work may not result in or directly lead to a commercial product to share benefits. There is so much that such users can provide to IPLCs and other providers, including educational knowledge, technical capacity, building equipment, infrastructure and more. But so far, in existing ABS systems, non-monetary benefit-sharing tends to be fairly ad hoc. It often lacks longevity and consistency and is not sustained. It also lacks metrics for evaluating success. A clearinghouse would definitely be a useful tool, as it would allow for transparency and accountability, would contribute to standardisation and the development of best practices, and would make transparent the wide variety of non-monetary benefits that are being shared. There should be multiple recipients for both monetary and non-monetary benefits, including IPLCs who steward 80% of the world's remaining biodiversity, researchers, environmentalists and citizens, particularly in low and middle-income countries, who are tasked with the conservation and sustainable use of biodiversity.

**Question 3: How can DSI benefit-sharing be linked to capacity development and research and development and international co-operation?**

**Suerie Moon:** Capacity building and international co-operation are definitely a major concern in the ongoing negotiations of the WHO Pandemic Treaty and the parallel negotiations for the amendment of the International Health Regulations, i.e. the set of rules that preceded the COVID-19 pandemic. The capacity of countries to detect, prevent and respond to outbreaks is already at the core, and it's increasingly recognised that the ability of countries to generate DSI – or genomic sequencing data (GSD), as we call it in the health sector – is crucial. The ability of countries to generate, analyse and use that data is of high concern, not only to the countries themselves, but to the global community. Obligations to finance capacity building are key to ensure that this actually happens and indeed, international collaborations that build capacities are often seen as a benefit. Strong scientific collaborations require trust building between researchers, and the willingness to share quickly.

**Daniel Kachelriess:** The monetary benefits from using MGR and DSI are not directly shared with countries, but go to a special fund of the BBNJ Treaty that foresees a narrow range of activities, all of which directly aim at accomplishing the treaty objectives as a whole. They include capacity building, e.g. training related to the transfer of marine technology, assisting developing state parties to implement the agreement more generally, and supporting conservation and sustainable use programs by IPLCs. The types of capacity building specified in the Capacity Building and Technology section of the treaty explicitly cover things like strengthening institutional capacity, improving infrastructure, and research programs. The fact that there will be a dedicated committee to oversee this work is another opportunity to make sure that needs are reflected.

**Margo Bagley:** DSI utilisation creates the obligation to share benefits. The multilateral mechanism should provide guidance on how to share benefits and provide a wealth of opportunities to partner with disadvantaged groups in building capacity, including basic education. When you educate children, you change the trajectory, or at least you potentially change the direction of a generation. We need to dramatically increase the capacity of researchers in low- and middle-income countries to use DSI effectively. Research shows that, for example, women are more likely to invent solutions for problems that women face, including health issues. Researchers on the African continent are often more likely to develop solutions to African problems, than those who are remoter from and unfamiliar with those problems. So in any given regions if the capacity isn't there, then there are a lot of problems that are not going to be addressed.

**Daniele Manzella:** We know that inclusive research and innovation depends not only on being part of the research process or on determining permission protocols for sharing data, but also on infrastructure and the development of human capital. A study on infrastructure needs for genomic research, commissioned by the Plant Treaty Secretariat in 2017, showed that some researchers saw a need for high-cost infrastructure, while others were more in favour of a low-cost model in which genomics research and innovation could be conceived as a relatively low barrier for researchers and students, including in developing countries. One option for international co-operation in this area would be to pursue a research and education approach, where low-cost and high-cost infrastructure are two ends of a continuum and infrastructure needs are flexible depending on the actual research objectives..

**Question 4:** Do you have a vision for a truly global multilateral DSI benefit-sharing system? If so, could you briefly outline it and address the question of how such a system can attain multiple policy objectives?

**Daniel Kachelriess:** The CBD's decision on DSI in December 2022 and how it would interact with BBNJ benefit-sharing provisions was a key question ahead of and during the final BBNJ negotiation session. The compromise represented in the text reflects an appetite by states to reflect the CBD DSI decision and not to create incompatible systems. Scientists and technical advisors stressed that current scientific practice does not distinguish between different sources of DSI. However, there were different starting points for the discussion. In the CBD, the jurisdictional question was clear: DSI is under national jurisdiction. In the BBNJ context, some delegations were of the view that MGR and DSI from areas beyond national jurisdiction fall under freedom of the high seas, while others argued that they fall under common heritage of mankind. The text specifies that the agreement shall be interpreted and applied in a manner that does not undermine relevant other agreements. It also requires Parties to promote the objectives of the agreement and to co-operate to achieve them under other relevant bodies. There is also a process in which the BBNJ COP could adopt a mechanism adopted by the CBD.

**Margo Bagley:** Developments in machine learning portend a future where we may no longer even need access to sequence information because of the predictive power of artificial intelligence (AI). Requiring labelling of DSI for benefit-sharing purposes, as opposed to taxonomic purposes, is not only inconsistent with the way DSI is used now, but also with where we're heading in the future. With that in mind, I envision a single multilateral mechanism that would be effective across all of the different fora where DSI benefit-sharing is being discussed. It would have a variety of non-monetary benefit-sharing programmes, and a clearing house with accountability, standards and metrics built in. It needs

to be sustainable and regenerative, involving people and knowledge transfer both ways, as well as infrastructure development, equipment and more, along with a robust and well-endowed monetary fund that distributes monies through various streams. A transparent system and a fund that's easy to contribute to and receive money from would also allow for recognition of IPLC traditional knowledge based claims. It would extend to benefit-sharing from the use of genetic resources for countries who choose to forego the bilateral approach in exchange for assured streams from the fund. Importantly, it would not require tracking or tracing of DSI utilisation to operate effectively. I think such a mechanism could attain multiple policy objectives by reducing barriers to technology development and to using DSI and genetic resources, including by the most disadvantaged in our global society. In addition, it would allow for reversing some negative effects of climate change by facilitating the creation of sustainable use approaches and inventions by researchers, including in provider countries who would now have increased capacity to harness the benefits of DSI based technologies in the service of local or global problems.

**Daniele Manzella:** I see a multilateral DSI benefit-sharing system as a decentralised federated system of networks and communities with multilevel governance. These networks and communities would increase the collective capacities of all actors within global initiatives and support co-operation in the pursuit of the wider public interest. The system should focus on governance by creating and fostering networks as stable horizontal articulations of interdependent but operationally autonomous actors. These would interact with one another within a regulatory framework, but also set self-regulating limits, thus jointly contributing to the production of public purpose. A second element of my vision of a functioning global multilateral DSI benefit-sharing system that attains multiple policy objectives, is that it has to integrate responsible research and innovation into global governance frameworks: responsible research and innovation focuses on the inclusion of broader economic, ethical and social considerations, not only in decision-making about innovations, but also *ex ante* by shaping and steering the research and innovation process. This avoids treating science as apolitical and detached from social and cultural contexts. It would be beneficial to integrate this perspective into global governance frameworks and contribute to democratising science and innovation.

**Suerie Moon:** Sharing intellectual property and technology through technology transfer is of major concern in the health sector – and a tricky issue in the ongoing negotiations. This is a key element of capacity building that is not just about money or products, but about trying to build into the benefit-sharing framework the obligation or incentives to share technologies. In the health sector, in the wake of the COVID pandemic, this concern about transferring technologies for vaccine development and production is very high on people's minds. One aspect is speed, given the tremendous interdependencies that we've seen between countries with a rapidly-spreading respiratory infection. There are very difficult ethical, in fact life or death questions around who gets access to health technologies, which are tremendously important for restoring normal social and economic life. The scale of the money involved dwarfs what we see in many other sectors. We are talking about tens or even hundreds of billions of dollars in products and intellectual property value alone, not to mention the implications for national economies. Therefore, I don't think one size can fit all. Rather, I very much support the vision of a network or federated approach where different systems effectively meet the needs of a variety of sectors. And, I wonder whether there is a role for the CBD in bringing together the global ABS community to facilitate that kind of learning across such federated networks.

## Questions from the chat

Questions in the chat addressed the following key issues (a chat summary is provided in the annex):

- Participation of IPLCs and their role as potential beneficiaries
- The scale of monetary benefits generated and the use of benefits shared
- The need for a definition of DSI
- How to deal with already existing use of DSI
- The link between artificial intelligence and DSI, and what are the implications for a global multilateral benefit-sharing system

Panellists responses to selected questions:

- Regarding the scale of benefit-sharing, **Suerie Moon** pointed to the huge profits generated in the health sector. **Daniel Kachelriess** estimated that under the current provisions of the BBNJ Treaty fund will probably be in a single digit million number, which is obviously not enough for the capacity building needs of the treaty.
- Regarding the definition of DSI **Suerie Moon** highlighted the need for governance mechanisms to update definitions as technology advances: Neither DSI nor GSD is covered by the PIP Framework, and, as pointed out by Margo Bagley, AI may render DSI obsolete. She added that there is a need to ensure flexible governance mechanisms, to avoid recurrent debates every five to ten years on new terms or new technological realities.

## Closing reflections

Suhel al-Janabi, ABS Capacity Development Initiative

- The presentation where the different I dealing with DSI stand will be shared with the report and the video of the webinar on the ABS Initiative website ([ABS Biotrade: Digital Sequence Information on Genetic Resources \(abs-biotrade.info\)](https://abs-biotrade.info) ).
- Thanking the panellists, the moderator and participants for the extremely useful contributions providing food for thought for all and guidance to the ABS Initiative regarding the topics for further capacity development and exchange.
- He pointed to the short video [DSI simply explained](#) and the [DSI Primer](#), which will be updated in due time before the 1<sup>st</sup> meeting of the OEWG on DSI in October 2023.

## Annex 1: Chat contributions clustered by topics

*Chat contributions listed as bullet points are direct responses of participants (or panellists) to questions raised by other participants.*

### Definition of DSI

AHTEG 1 on DSI reached consensus in 2018 that DSI was “not an appropriate term” and would be used without prejudice to alternative terms. Obviously, the latter did not happen. AHTEG 1 on DSI has entered the memory hole.

Please can you say something about definition of DSI. Thank you.

- We should also consider the appropriateness of DSI as a term. The 2018 AHTEG on DSI determined that it was not an appropriate term and its use should not prejudice the use of alternative terms. The latter has not happened as we see in the COP-commissioned studies and the webinar series. DSI has been reified.

Following up on a previous question on definitions, in CBD and BBNJ there is no definition of DSI. In the WHO CA+ there is a reference to ‘genomic sequencing.’ We often see also the use of the wording ‘genetic’ sequencing data in legal provisions: what are the implications of the two terms ‘genomic’ v. ‘genetic’—does it make a difference to use one or the other, and if so, what is it? Is one preferable to the other in the context of international law, and if so, why?

Negotiators at CBD COP decided, not to discuss on the definition of DSI including searching for new expressions. The decided to work on a „political solution“ – technical, scientific and legal details for the functioning of the multilateral DSI benefit-sharing system should be worked out in the intercessional process.

The discussion on the DSI definition is here (AHTEG report 2020):

<https://www.cbd.int/doc/c/ba60/7272/3260b5e396821d42bc21035a/dsi-ahteg-2020-01-07-en.pdf>.

And a study that deals with definition amongst others: Houssem et al. 2020. Digital Sequence Information on Genetic Resources: Concept, Scope and Current Use. Study published by the Secretariat of the Convention on Biological Diversity

<https://www.cbd.int/doc/c/c5f4/3855/ce31213aea2ec29bb43588f5/dsi-ahteg-2020-01-03-en.docx>.

The definition of DSI presumes that DSI is the appropriate term. Submissions of views on the term were withering and studiously ignored, as was the 2018 AHTEG on DSI that reached consensus that DSI was not an appropriate term.

The cart is not only before the horse, but of sight. First a term which is broad and discriminating. DSI is not it.

If DSI will be defined as nucleus acid and protein sequences, than the use of DSI was involved in the development of products, now sold for billions of USD per year, quite a pot

### Participation and role of IPLCs

One of the benefits of DSI is a traditional relationship with families of life. How do these Convention mandate bodies support Indigenous Peoples’ relationship as protector of biodiverse families of life? How do these UN bodies support Indigenous Peoples’ benefit of managing human interaction with biologically diverse species participating with them in their ecosystems? Where are the opportunities for the benefit of making and implementing protection decisions to maintain traditional relationships? How do Indigenous Peoples’ participate with CBD, UNCLOS or WHO?

The Mechanism should ensure that ‘royalty’ payments based on products derived from traditional knowledge can occur – i.e. not necessarily only biodiversity conservation or capacity development benefits, but also monetary benefits directly to the knowledge holders.

How can Indigenous Peoples maintain and access ecological benefits of DSI? Why has the UN monopolized Indigenous Peoples’ markets with their UN financial instruments? Why is the financial



economy the only economy discussed with CBD? Can that be changed to include efforts to strengthen non-financialized ecological economies?

Are the activities that will be funded by the benefits from the ITPGRFA “non-fungible” public goods, meaning that they are activities that would not have been funded without the benefits? Indeed, is fungibility even a criterion in the selection of public-good projects to be funded?

How can Indigenous Peoples protect biodiversity from this militarily forced financialization and monetization of DSI of biologically diverse families of life that Indigenous Peoples have successfully nurtured for so long? Those who wish to access DSI of biodiverse species living with Indigenous Peoples’ ecosystems do not show respect for biodiversity by forcing their financial instruments into Indigenous Peoples’ markets and forcing these species to be monetized.

How can Indigenous Peoples work for peaceful resolution of this UN aggression of biodiverse life and the Indigenous Peoples who protect them? What are the procedures, protocols, and processes to resolve this and other conflicts initiated by the militarily-backed presumption that those who have destroyed biodiversity are the authorities on how to protect biodiversity?

Thank you Margo, for your great contribution of IPLCs who could be priorities for benefit. Seems companies are the primary for monitoring benefit. It seems such major groups remain suppression. How is possible to increase the ABS capacity building activities in South Asia?

#### Scale and types of benefits to be shared

We need to bear in mind that because the intention is to allow open access to DSI, existing ‘permit’/contractual relationships between a developer and the country of origin may be undermined, so the benefit-sharing mechanism should be able to absorb existing royalty payments.

“Who should share monetary benefits?” must first answer “How much will there be?” Without economic rents from a Global Multilateral Benefit-Sharing Mechanism (GMBSM), there will not be much to share. Royalties are as low as 0.1% in the 2015 Brazilian ABS Law. If this is the case, “Who should share?” is answered by another question, albeit bad form, “Why bother?”

The \$56 billion are the “exchange value” that Pfizer earned and not the “use value”, which is probably ten times greater. Yet royalty percentages are referenced from what is observed in the “exchange value” of genetic resources in the bilateral approach, where competition among Providers can drive the royalties down to marginal cost, i.e. the 0.1% cited in my previous comment.

- I agree, the ‘exchange value’ does not capture the full value, and royalties have not been the main approach to benefit-sharing linked to influenza virus sharing in the health sector.

Non-monetary ABS never works in the present system – it is all about money from the companies.

Discussion of non-monetary benefit-sharing has an opportunity cost: discussion of monetary benefit-sharing. The COP has not discussed “economic rents” to be levied on products where value added to genetic resources has enjoyed “economic rents” through limited-in-time intellectual property. This question of rents is broad and deep for ABS. Decision 9/12 raised the issue of rents as a question to be raised, but never has from COP10 to COP15. Why not?

How to maximize the benefits that are shared? Aren’t we kind of assuming that benefits will flow to the multilateral system? How do we ensure legal certainty on sharing of benefits?

- At least in India there is a very transparent mechanism on benefit-sharing so I am not too concerned about legal certainty. However, I somehow believe that the whole concept of applying benefit-sharing for DSI is flawed and that isn’t appropriately addressed anywhere.
- Thank you for your response: <https://twm.my/title2/health.info/2023/hi230301.htm>

When do you see BBNJ coming into force? When will first phase practically pass out? When will the real users, apart from governments, start to pay? Are we assuming the technology relating to the use of genetic resources is going to be static without change until then? Will the same modes of benefit-sharing work then?

- BBNJ will enter into force 120 days after the 60<sup>th</sup> country ratifies. Some hope it will be possible to reach this number by the 3<sup>rd</sup> UN Ocean Conference in Nice in 2025. In terms of when will users pay; this will depend on how governments will implement their obligations for monetary benefit-sharing. The obligation is on states, not individuals.

Vision for benefit-sharing system: In terms of biodiversity conservation (not so much biomedical) what about a website/database, similar to GBIF (Global Biodiversity Information Facility) that summarizes the world's \*genetic\* diversity in a way that is accessible to students, researchers and protected area managers? Such a website would include a capacity development component to train users in the use of DSI for biodiversity studies, but would also include, on the backend, powerful bioinformatic pipelines that would allow analysis of the data for users without access to high-throughput computing.

How can we be sure that the benefits are legally shared with producers not totally absorbed by big multilateral enterprises and only peanuts left to local people.

#### Utilisation of benefits

Are the activities that will be funded by the benefits from the ITPGRFA “non-fungible” public goods, meaning that they are activities that would not have been funded without the benefits? Indeed, is fungibility even a criterion in the selection of public-good projects to be funded?

How do the monetary benefits from marine “DSI” for the BBNJ UNCLOS, incentivize reduction of selective pressures against marine biodiversity (e.g. acidification from CO<sub>2</sub> emissions)?

Switzerland, for example, has greatly reduced its CO<sub>2</sub> emissions which helps to reduce ocean acidification---a leading threat to marine biodiversity. Could a land-lock country receive benefits from ABS of marine genetic resources?

To Margo's comment: Building a school sounds great but is that not the existing role of government? This returns to my question of fungibility (to Host and Panellists). Projects should be public goods which would not be financed anyway.

The state machineries may be efficient in collecting the monetary shares from benefits. But there are hardly any mechanism to identify the real benefit owners or to share the benefits

#### Intellectual property rights

DSI being a value-added product, who are/is the benefit holders? Who hold the rights to share the material?

- I agree with you about the value-added product.

I still do not get a clear answer on my question: if I use a published amino acid sequence from a bioresource in Brazil which is available in a public database, and use it to codon optimize in silico, and eventually chemically synthesized the codon optimized DNA sequence in India, do I necessarily have to pay an ABS? The publisher of the original amino acid sequence would have eventually worked out his/her intellectual property protection matters. I will anyway access the amino acid sequence only after due diligence of the freedom to operate.

#### Implications for DSI data banks

In light of ABS on DSI, what is the expected change in the operation of global DNA data repositories like GenBank, ENA or DDBJ?

Open access to sequence data is clearly stated in CBD documents. DDBJ/ENA/GenBank (i.e. INSDC) introduced its spatio-temporal policy on DSI this March: <https://www.insdc.org/news/insdc-spatiotemporal-metadata-missing-values-update-03-04-2023/>.

- Does it not necessitate every country to maintain their own repositories to enable abs on DSI?

- Genetic sequences should not be separately placed to check their similarities. Every country can refer to INSDC identifiers (accession numbers) to keep their priorities or rights.

### Scope of a GMBSM

@Suerie, I would be interested in your perspective on the OneHealth implications of DSI/GSD benefit-sharing? Many of your examples focus on medical countermeasures like vaccines and diagnostics that are pathogen-specific and rely on a relatively narrow slice of viral (or potentially bacterial) biodiversity that one might be able to define (given enough late nights of negotiation 😊). Yet, we also know that environmental reservoirs and human-animal-plant-environment interactions have large (often hidden) impacts on global health. Should the pandemic treaty also consider benefit-sharing from OneHealth-related commercial and non-commercial research that might have direct impacts on the next pandemic?

As long as biodiversity continues to be the sovereign right of respective nation-states and access is restricted by individual state legislations, GMBSM may be a pipe dream.

Many countries, such as Switzerland and Japan, have insisted that dematerialized genetic resources are out of scope. If DSI is not dematerialized “genetic resources”, then why is there any discussion about DSI? If DSI is dematerialized genetic, then why is there a separate Multilateral Mechanism proposed? Article 10 of the Nagoya Protocol is titled “Global Multilateral Benefit-Sharing Mechanism.

How do we ensure that an already increasingly complex legal and regulatory architecture (multiple and different national and regional ABS regimes; potential for different international DSI approaches according to sectors/forums; a pressing need to implement the Nagoya Protocol; an existing MS under the FAO ITGRFA) facilitates and enables much needed research and development in multiple industrial/commercial sectors and in academia in general, and ensures research does not become negatively affected by broadening regulatory attempts expressed in ABS and now potential “DSI” regime(s)? Is there a risk for negative enclosures through these attempts? All of these converging on (in essence), directly or indirectly, a common informational asset – however defined? Should we take pause and re think ABS ?

On this too, re academic benefits – unlevel playing fields re pay-to-publish for researchers from developing world.

Opinions on the Article 10 of NP is summarized here: <https://www.cbd.int/doc/meetings/abs/abs-a10em-2016-01/official/abs-a10em-2016-01-03-en.pdf>.

Non-monetary benefit-sharing is an evidence from use of DSI because of possible non-existing of commercial issue; but multilateral mechanism is another issue to be considered: are there any good lessons and practices from ITPGRFA?

If everyone’s essentially using the same global databases, but for different purposes, [how] should benefits be divided between different worthy causes – biodiversity conservation, public health, food security?

- INSDC functions as an index of genetic sequences in the world. Associated information (proteins, functions, and so on) are handled by downstream databases for different purposes. There are already thousands of such databases.

Tim modified the Multilateral Benefit Multilateral Mechanism for DSI with the word “global”. Hence, we will have a global Multilateral Benefit Multilateral Mechanism for DSI, which is not the Global Multilateral Benefit-sharing Mechanism, Article 10 of the Nagoya Protocol. However, it could become the latter through proposals for an “opt-in”. Should Providers somehow be convinced that DSI is not dematerialized genetic resources, they might think that they are getting something for nothing, and thus be more inclined to those 0.01% royalties for the “opt-in”. This has the contours of “bait and switch”, which I develop in my submission on Decision 15/9 “Economics Affords Powerful Abstraction: A Bauplan Exists for the Isomorphic Global Multilateral Benefit-Sharing Mechanism”, Observer #6. <https://www.cbd.int/notifications/2023-003>.

On page 2 of this pre-BBNJ policy brief, we tried to illustrate what a global DSI benefit-sharing system might look like: [https://www.iucn.org/sites/default/files/2023-02/bbnj\\_icg5bis\\_policy\\_brief\\_global\\_benefit\\_sharing\\_1.pdf](https://www.iucn.org/sites/default/files/2023-02/bbnj_icg5bis_policy_brief_global_benefit_sharing_1.pdf).

GMBSM can be a success only if CBD adopts an explicit legal measure, to bring genetic resources and traditional knowledge associated with genetic resources under an Open Access system where materials could be easily accessed. <https://www.cbd.int/abs/submissions/Art10/2019/Prathapan-Priyadarsanan.pdf>.

Crandall, E. D., Toczylowski, R. H., Liggins, L., Holmes, A. E., Ghoojarei, M., Gaither, M. R., Wham, B. E., Pritt, A. L., Noble, C., Anderson, T. J., Barton, R. L., Berg, J. T., Beskid, S. G., Delgado, A., Farrell, E., Himmelsbach, N., Queeno, S. R., Trinh, T., Weyand, C., Toonen, R. J. (n.d.). Importance of timely metadata curation to the global surveillance of genetic diversity. *Conservation Biology*, n/a(n/a), e14061. <https://doi.org/10.1111/cobi.14061>.

#### Other topics:

The pre-print paper that Margo mentioned can be found here:

<https://zenodo.org/record/7788492#.ZCa-l4RByUk>. Please note this manuscript is currently under peer review and a final, revised, post-peer-review version will be forthcoming in the next few months.

How DSI works GR in microbiome? How is IPLCs, women, youth and girls can participate on the process of DSI.

194 countries in the multi-lateral system. Difficult to really talk about sharing monetary or non-monetary benefits without fundamentally changing capitalistic business models of the private sector companies in the “West” with regards to access to genetic resources and the especially more so in DSI. Everything else looks too superfluous and hard to figure way forward without addressing those fundamentals.

In the context of benefit-sharing related to the DSI, how can the value chains from access to the genetic resource to sequencing be monitored, taking into account the many partnerships that exist between biotechnology laboratories and knowing that not all of them produce benefits? What are the implications in terms of compliance with the Nagoya Protocol, particularly in terms of ABS contracts?

Can Prof. Bagley please elaborate on her statement that AI and machine learning may make DSI superfluous? It’s the first time I hear something like that and it could undermine the whole ABS philosophy! Thank you.

- I join the request to Prof Bagley to elaborate on the suggestion that AI may render DSI obsolete and imagine with us how that could be possible as a hypothetical matter.
- Do other panellist share Margo’s point linking AI and DSI (AI might imply that DSI do not need to be accessed anymore)?
- AI needs data to learn!
- AlphaFold’s Deepmind AI tool can predict protein structures and is being used to accelerate drug discovery through prediction, not sequencing (though of course it was trained on sequence data at some point). See <https://www.deepmind.com/research/highlighted-research/alphafold>. We are not to that point yet, but researchers are getting there, developing rules that facilitate prediction. See also <https://www.bakerlab.org/>, Dr. David Baker is involved in this work. Special thanks to Dr. Marcel Jaspers (Edinburgh) who I originally learned about this development from and who has provided examples of progress in this area (including Dr. Bakers’ lab) over the years. <sup>1</sup>

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<sup>1</sup> Margo Bagley inserted this response to the question directed at her after the end of the webinar.

@Suerie on particularities of health sector. We must also remember about the nature of genetic materials from which DSI is extracted. Kevin Esvelt, a Massachusetts Institute of Technology biotechnologist who helped develop the pioneering gene-editing technology known as CRISPR, told members of Congress in December 2021 that posting the genetic sequences of viruses could lead to a global pandemic: [https://www.washingtonpost.com/investigations/interactive/2023/virus-research-risk-outbreak/?itid=hp-top-table-main\\_p001\\_f001&s=08](https://www.washingtonpost.com/investigations/interactive/2023/virus-research-risk-outbreak/?itid=hp-top-table-main_p001_f001&s=08).

Would the Co-Chairs Norway and S. Africa have any update on the timetable and sequence of the negotiations for the multilateral mechanism in the CBD?

Tent to twenty million dollars is less than what was spent to host one of these COPs! The question “Why bother?” becomes rhetorical.

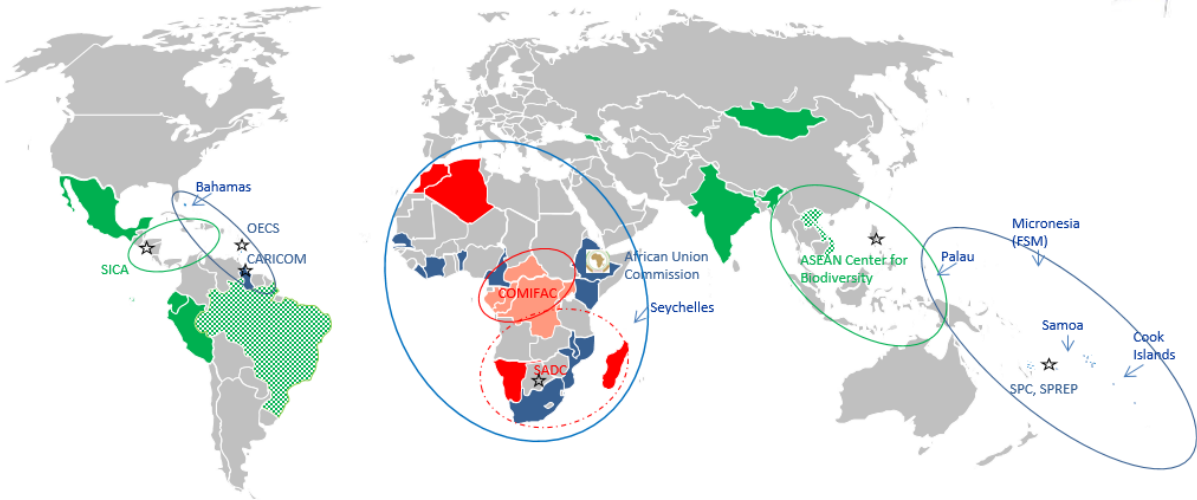
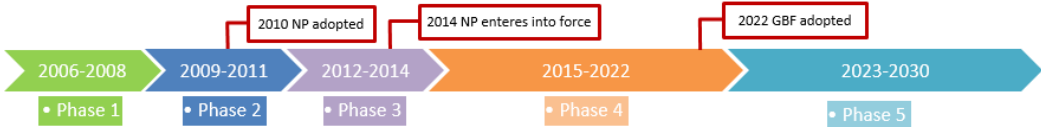
Annex 2: Presentation “Stock-taking on DSI-decisions and negotiations in international fora” by Hartmut Meyer

**Stock-taking on DSI-decisions and negotiations in international fora**



- **Hartmut Meyer**  
 ABS Capacity Development Initiative,  
 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

**ABS Capacity Development Initiative**



**ABS Initiative working directly in ACP countries**  
**ABS Initiative working in the context of German bilateral development cooperation in ACP countries**  
**ABS Initiative advising German bilateral development cooperation on ABS outside of ACP**

# ABS Capacity Development Initiative

## DSI-activities in the CBD informal process



- **DSI Introductory Guide** (Aug 2019)
- **Studies:** Fairness, equity and efficiency for CBD / NP incl. case studies (Nov 2021); national approaches to DSI (Feb 2022)
- **Video** DSI Simply Explained (Dec 2020)
- **10 Webinars** (with SCBD, AUC) on the outcomes of the formal DSI process, the role of IPLC, DSI capacity development, commercial uses of DSI (Dec 2020 – Jul 2022)
- **1st Global DSI Dialogue** identifying five options for DSI benefit-sharing and points for consideration with regards to assessing them (Nov 2019)
- **2nd Global DSI Dialogue** describing the convergences and remaining divergences with regard to DSI benefit-sharing options (Jun – Jul 2021)
- **Informal Global DSI Retreat** discussing main features of DSI benefit-sharing before COP 15 (Nov 2022)

# International DSI Process



## CBD / Nagoya Protocol

- COP 13 2016: the big “DSI bang” with decision on information gathering and studies on general issues
- COP 14 2018: negotiations with decision on “how to address DSI in the context of the post-2020 GBF” and studies on specific topics
- AHTEG 2 2020: options for operational terms and identification of key areas for capacity-building
- COP 15 2022: Decision on multilateral system for DSI benefit-sharing

## Other Fora

- WIPO standard on DSI in patent applications
- UNCLOS BBNJ agreement on marine GR and DSI benefit-sharing
- WHO Pandemic Treaty (negotiations on pathogene and genomic data benefit-sharing)
- FAO ITPGRFA and CGRFA (studies, proposal for inclusion of DSI in the SMTA of the IT)

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- FAO ITPGRFA and CGRFA (studies, proposal for inclusion of DSI in the SMTA of the IT, **further work on DSI until the 10<sup>th</sup> Meeting of the IT Governing Body in 2023**)

# DSI-Agreements



## CBD, UNCLOS & WHO on objectives & definition of DSI

| CBD DSI   | UNCLOS BBNJ  | WHO CA+  |
|---|--|--|
| <p><u>No objective</u> but agreement on:</p> <ul style="list-style-type: none"> <li>• fair and equitable sharing of benefits arising from the use of DSI</li> <li>• benefit-sharing should support conservation and sustainable use of biological diversity and ... benefit indigenous peoples and local communities</li> </ul> | <ul style="list-style-type: none"> <li>• fair and equitable sharing of benefits arising from activities with respect to MGR and DSI</li> <li>• capacity building and development</li> <li>• generation of knowledge, scientific understanding and technological innovation</li> <li>• development and transfer of marine technology</li> </ul> | <ul style="list-style-type: none"> <li>• prevent pandemics, save lives, reduce disease burden and protect livelihoods</li> <li>• multilateral, fair, equitable and timely system for sharing of ... pathogens with pandemic potential and genomic sequences, and benefits arising therefrom</li> </ul> |
| No definition of DSI  | No definition of DSI   | “genomic sequences” means the order of nucleotides identified in a molecule of DNA or RNA. They contain the full genetic information that determines the biological characteristics of an organism or a virus;   |

18.04.2023

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# DSI-Agreements



## CBD, UNCLOS & WHO on sharing of non-monetary and monetary benefits

| CBD DSI                          | UNCLOS BBNJ  | WHO CA+   |
|----------------------------------|--|---|
| Non monetary BS: to be discussed | <ul style="list-style-type: none"> <li>Governed by ABS Committee</li> <li>Access to samples, DSI and scientific data</li> <li>Transfer of marine technology</li> <li>Capacity-building, including by financing research programmes and partnerships</li> <li>Increased technical and scientific cooperation</li> </ul> | <ul style="list-style-type: none"> <li>Governed by Standard MTA</li> <li>access by WHO to 20% of the production of pandemic-related products, as diagnostics, vaccines etc</li> <li>10% as a donation and 10% at affordable prices to WHO</li> <li>distribution, in particular to developing countries, according to public health risk and need and national plans that identify priority populations</li> </ul> |
| Monetary BS: to be discussed     | <ul style="list-style-type: none"> <li>Contributions by Member States</li> <li>Milestone payment</li> <li>contribution based on commercialization of products, including percentages of revenues from product sales</li> </ul>   | Not mentioned   |

# DSI-Agreements



## CBD, UNCLOS & WHO on funds and further process

| CBD DSI  | UNCLOS BBNJ  | WHO CA+   |
|--|--|---|
| <ul style="list-style-type: none"> <li>Establishment of a global fund</li> <li>Details to be discussed</li> </ul>  | <ul style="list-style-type: none"> <li>Establishment of a funding mechanism, incl. a special fund receiving monetary benefits</li> </ul> | <ul style="list-style-type: none"> <li>No provisions</li> </ul>   |
| <ul style="list-style-type: none"> <li>Open-ended working group on DSI benefit-sharing and advisory committee on resource mobilization make recommendations on modalities of DSI fund until COP 16 in late 2024</li> </ul> | <ul style="list-style-type: none"> <li>Agreement still needs to be adopted</li> <li>Entry into force after 60th ratification</li> </ul>  | <ul style="list-style-type: none"> <li>Agreement under negotiation</li> <li>Adoption at 77th World Health Assembly, May 2024</li> <li>Entry into force after 30th ratification</li> </ul> |