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POUR L'**APA**

Webinar Report:

“Reflecting on the First African Science-Policy Dialogue on DSI”

Thursday, 13 June 2024 – 12.00 to 14.00 UTC

Agenda

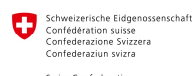
- Welcome remarks
- Rationale and Programme of the Dialogue
- Technical inputs
 - Creation and use of DSI in research and development Open Access & Benefit-Sharing options
 - DSI from Scientific and Policy Angles
- Recommendations resulting from the Dialogue
- Panel discussion
- Questions from the chat to the panellists
- Closing reflections and remarks

Welcome Remarks

Leah Wanambwa Naess, Directorate of Sustainable Environment and Blue Economy, African Union Commission:

Leah Wanambwa Naess welcomed participants to reflect on the outcomes of the first African Science-Policy Dialogue on DSI. The event highlighted the importance of integrating science with policy-making, especially within the African Union Commission. The Dialogue aimed to address enhanced coordination at continental, regional, and national levels, requiring adequate financing for participation, delegations, and training. A database of experts is being developed to offer guidance and advice. Political support is crucial, and efforts are ongoing to engage political leaders and achieve buy-in from Heads of State and ministers. Capacity building for staff and continuous learning are essential as science and policies evolve. The commitment to support this process and build on the existing work was reaffirmed.

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Federal Department of Economic Affairs,
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Rationale and Programme of the Dialogue

Suhel al-Janabi, ABS Capacity Development Initiative:

The first African Science-Policy Dialogue was delayed by COVID-19 since 2022 but now brought together 40 participants, including negotiators and scientists from various disciplines. The dialogue aimed to bridge the gap between African scientists' need to understand international negotiations on Digital Sequence Information (DSI) and policymakers' interest in African scientific realities.

The first day provided technical introductions to DSI, lab visits, and initial discussions between scientists and negotiators. The second day focused on the internationally agreed criteria for a multilateral benefit-sharing mechanism, followed by a panel discussion on ideal and killer criteria for scientific practice, and presentations on existing ABS instruments under different fora and their implementation. The third day addressed areas of convergence and divergence between science and policy, with hands-on sessions on DSI databases.

The event concluded with reflections on key questions and the development of recommendations and priorities for future action.

For more details see presentation in Annex 2 of this report.

Creation and Use of DSI in R&D – Open Access and Benefit-sharing Options

Hartmut Meyer, ABS Capacity Development Initiative:

An input during the African Science-Policy Dialogue highlighted the two distinct worlds of DSI usage. One world involves DSI generated and used under an ABS contract, where benefits return to the country of origin. The other world is multilateral, with DSI available in open-access databanks, not linked to countries of origin and without benefit-sharing obligations.

The process starts with accessing and sampling genetic resources in the country of origin, typically requiring Prior Informed Consent (PIC) and an ABS contract specifying research and benefit-sharing terms. DNA/RNA sequencing creates DSI, which is then uploaded to international databases. The ABS contract, however, cannot be uploaded, making other databank users unbound by it. Most existing DSI lacks country tags, but newer entries are now tagged with their countries of origin.

In the multilateral world, open-access DSI databanks allow anyone with internet access to download and use sequences for research and development without prior registration. New sequences, including those generated by AI, can be uploaded, with research done both non-commercially and commercially. This use currently does not require benefit-sharing. Recent international decisions, such as those from the BBNJ and CBD, call for a multilateral benefit-sharing system covering DSI usage.

A live exercise demonstrated open access by searching the International Nucleotide Sequence Database (INSDC) for elephant nucleotide sequences, yielding over 76,000 entries. A BLAST analysis showed identical and similar sequences across different species. The exercise illustrated the database's use for various research purposes.

In addition two examples of DSI scientific use were briefly presented: a South African study on gecko taxonomy using DNA databank records and a Tunisian study on plant breeding analysing *Vicia faba* sequences to identify pathogen resistance genes.

For more details see presentation in Annex 3 of this report.

DSI from Scientific and Policy Angles

Pierre du Plessis, ABS Capacity Development Initiative:

The first part of the input discussed the scientific considerations around the DSI debate, while the second part addressed policy considerations.

Scientific Considerations:

- Genetics relies on comparing genomes, making extensive, detailed databases crucial for scientists.
- Tracking and tracing the origins and uses of the vast number of sequences uploaded daily is impractical, leading scientists to prefer minimal administrative burdens.
- Legal and practical limitations exist on controlling access to publicly available DSI.
- The multilateral benefit-sharing system agreed at COP 15 aims to address these issues.
- Genetic resources accessed under ABS contracts involve confidentiality provisions, common in the private sector.
- The INSDC integrates databases from the US, Europe, and Japan, with open access as a foundational principle.
- Open access to DSI is crucial for comparative genetic research, academic publication requirements, and scientific ethics.
- Restrictions on open access data would hinder national research, especially for African scientists who need global data for comparative studies.
- The interconnectedness of databases enhances the value of DSI for both academic and commercial research.
- Secondary databases specialize in specific biodiversity subsets and often integrate with INSDC.
- Scientists need academic credit for their work, support, capacity development, and opportunities for collaborative research.

Policy Considerations:

- DSI has transformed ABS based on national sovereignty over natural resources.
- The CBD's third objective, fair and equitable benefit-sharing, aims to drive sustainable use and conservation.
- Bilateral ABS systems have struggled due to widespread free access to genetic resources.
- A multilateral benefit-sharing mechanism for DSI was agreed upon to address ongoing access and use.
- Open access to DSI, decoupled from benefit-sharing, was key to the COP 15 agreement.
- The focus is now on developing a multilateral mechanism under the CBD, with access decoupled from benefit-sharing.
- DSI supports Africa's Agenda 2063 goals and other priorities like resource mobilization and technology transfer.
- Africa proposes a 1% retail charge on biodiversity products (or all retail sales, which would be simpler to administer) to mobilize significant funds for conservation.
- Policymakers must consider DSI's impact on traditional knowledge and farmers' rights.
- Africa's strength in international negotiations lies in unity and coordination, but there is a current lack of coordination in DSI-related negotiations.
- Better scientific understanding among policymakers and negotiators is needed.
- Creative solutions are needed for traditional knowledge, non-monetary benefit sharing, capacity development, and technology transfer.
- Unified approaches in policy and science are essential for success.

For more details see presentation in Annex 4 of this report.

Recommendations from the Dialogue

Andreas Drews, ABS Capacity Development Initiative:

The recommendations were developed by participants during group work and plenary discussions, prioritizing actions for African national governments, pan-African institutions, and negotiators to advance a functional multilateral DSI benefit-sharing system. Key recommendations addressed the following points:

- **Political and technical leadership** by the AUC and ACMEN and support for the African COP 16 proposal by national governments.
- **Continued dialogue** at national level across relevant sectors as well as collaboration between pan-African institutions to coordinate positions in international negotiations (CBD, FAO, WHO).
- **Mobilization of funding** by pan-African institutions to support negotiation processes and implementation of decisions as well as by national governments to ensure adequate representation in parallel negotiation processes at CBD COP 16 and other relevant fora.

Additional prioritised recommendations included

- to identify key stakeholders and raise awareness among policymakers and to provide funds for targeted capacity building.
- to ensure that DSI policies align with African development priorities and Agenda 2063 to support sustainable development goals and regional integration efforts.
- to facilitate consultation with scientists and stakeholders involved in DSI, while providing mentorship opportunities for emerging negotiators to enhance their understanding and participation in DSI-related discussions and decision-making processes.

For taking the dialogue process forward participants recommended:

- Secure funding and continue dialogue at both African and national levels.
- Ensure reporting and availability of information and documents.
- Maintain Pan-African leadership in the dialogue process.
- Purpose of Dialogues: Raise awareness, improve understanding of DSI generation and use to build common understanding, and develop common positions among providers, users, and policymakers across government departments beyond the biodiversity sector.

For more details see Annex 5 of this report. For a full account of the recommendations and the prioritisation by the participants please refer to Annex 14 of the Workshop Report. https://www.abs-biotrade.info/fileadmin/user_upload/Report_ASPD_on_DSI_final_20240501.pdf

Panel discussion

The panellists were requested to reflect on three rounds of specific questions to provide guidance and improve understanding as a basis for making progress at the relevant formal meetings later this year.

Christian Tiambo, *Lead Cellular Resources, Functional Genomics Tools and Biotechnologies Programme, International Livestock Research Institute (ILRI), Nairobi, Kenya*

Jessica da Silva, *Principal Scientist, South African National Biodiversity Institute (SANBI), Cape Town, South Africa*

Mphatso Kalemba, *Chief Environmental Officer Biodiversity Environmental Affairs Department, Lilongwe, Malawi, and Co-chair of the CBD DSI Working Group.*

Ossama Abdel-Kawy, *Professor of Pharmaceutical Science, Atomic Energy Authority, Cairo, Egypt*

Moderation: **Pierre du Plessis**

Question 1: What were your main impressions and the key takeaways from the dialogue, particularly in the context of your research sector?

Mphatso Kalemba emphasized the significance of maintaining an ongoing dialogue between policymakers and the scientific community. Key points included:

- Continuous dialogue is essential to ensure that the needs of the science community are not overlooked in policy-making processes.
- The dialogue helped policymakers to understand the operations of scientific work and the impacts of policies on the scientific community.
- There is a need for a structured process at the African level to facilitate regular dialogues, create discussion platforms, and address capacities and resource requirements for effective collaboration.

Jessica da Silva stressed the critical need for continued dialogue, mutual understanding, and supportive frameworks to advance equitable policies on DSI in Africa:

- The discussions revealed diverse perspectives among stakeholders and policymakers on DSI, underscoring the necessity for ongoing dialogue.
- Participants recognized varying levels of understanding on concepts like open access and the distinction between data and information.
- There was unanimous support among participants for the principle of benefit-sharing from the use of DSI, including endorsement of the "African proposal" (1% charge on retail products).
- Participants emphasized the importance of support for negotiators involved in DSI discussions at all levels to ensure informed decision-making and impactful representation of African interests.

Christian Tiambo expressed gratitude to the organizers, facilitators, and participants of the Dialogue. He underscored the importance of effective leadership, balanced policies, and continued engagement between scientists and policymakers to advance discussions and decisions related to DSI in Africa:

- The dialogue effectively demonstrated how science is conducted in Africa and highlighted the contributions of scientists in the realm of genetic resources to support development.
- There was consensus among participants on the importance of political and technical leadership at both national and pan-African levels. This leadership is crucial to support African negotiators in ensuring that negotiations benefit research efforts on the continent.
- Discussions emphasized the necessity of maintaining simplicity and consistent open-access policies to facilitate research and development. At the same time, there was recognition of the importance of respecting national sovereignty and the rights related to indigenous peoples and local communities (IP&LC).
- Policymakers expressed enthusiasm for visiting labs and gaining firsthand insight into why DSI and open access, alongside a multilateral system, are significant topics of discussion.

Ossama Abdel-Kawy underscored the complexities of DSI, the importance of benefit sharing linked to biodiversity products, and the need for informed policies that respect traditional knowledge and promote equitable sharing of benefits derived from genetic resources. He emphasized two significant takeaways from the discussions:

- Understanding DSI and open-access: There is widespread advocacy for open-access, but there remains a lack of understanding regarding what open-access entails and what constitutes DSI. DSI encompasses a broad spectrum of data derived from genetic sequences, including raw data, processed data, annotated data, and contextual information such as traditional knowledge associated with genetic resources. This

complexity underscores the importance of clarity and education regarding DSI and Open Access policies.

- Linking multilateral benefit-sharing to biodiversity products: Ossama supports the African position of linking a multilateral benefit-sharing mechanism to all biodiversity products. This linkage is crucial because tracking and tracing genetic resources can be challenging, especially when traditional knowledge is involved as metadata. As industries increasingly move towards genetic engineering and synthetic biology for efficient production of bio-active compounds, there is a need to ensure that benefit-sharing is integrated with DSI under frameworks like Article 10 of the Nagoya Protocol.

Question 2: With the commitment to a multilateral benefit-sharing mechanism achieved, DSI benefit-sharing should soon be implemented Africa. Which aspects of this DSI implementation would benefit most from a coordinated African approach and why?

Jessica da Silva emphasized the need for coordinated mechanisms to facilitate industry contributions, build trust within communities, and enhance the generation of DSI in Africa while addressing regulatory challenges. These efforts aim to promote equitable benefit-sharing and support sustainable development across the continent:

- There is a strong interest from various industries to contribute financially towards initiatives that promote social responsibility and benefit-sharing. However, currently, there is no mechanism in place to facilitate such contributions. She highlighted the importance of establishing a coordinated mechanism across Africa to enable industries to contribute effectively.
- It is crucial to build structures and mechanisms that foster trust within communities regarding benefit sharing. This involves understanding specific needs and preferences of local communities to ensure that benefits derived from genetic resources are meaningful and valued.
- A coordinated effort to increase the generation of DSI in Africa is urgently needed. This would involve agreements or mechanisms that allow countries with limited infrastructure to access sequencing facilities in major hubs across Africa. Bioinformatics training would also be integral to this effort. However, challenges such as over-regulation of genetic resources and disparities in regulations between countries need to be addressed to facilitate this process.

Mphatso Kalemba emphasized the potential benefits of coordinated approaches to implementing multilateral mechanisms and ABS instruments at global, regional, and national levels. These efforts are crucial for enhancing scientific capabilities, reducing administrative burdens, and promoting equitable benefit sharing from DSI and genetic resources. She highlighted two key areas where a coordinated approach could yield significant benefits:

- Implementing a multilateral mechanism for benefit-sharing at global, regional, and national levels could greatly enhance capacity building and technical/scientific capabilities. By coordinating efforts across these levels, countries can leverage shared resources, expertise, and infrastructure to strengthen their scientific capacities. This would facilitate more effective participation in international discussions and ensure that benefits from DSI are equitably shared.
- There are numerous ABS instruments being developed across different international fora. At the national level, she emphasized the importance of coordinating the implementation of these instruments in a mutually supportive manner. This approach aims to streamline administrative processes, reduce duplication, and develop harmonized legislation or supporting instruments that facilitate compliance with ABS requirements. Coordination is essential to ensure that national efforts align with international standards and commitments, thereby enhancing transparency and effectiveness in benefit-sharing.

Ossama Abdel-Kawy highlighted the importance of unity in negotiations, adopting a holistic approach to DSI, and addressing ethical considerations to support biodiversity conservation and sustainable development across Africa and globally:

- He emphasized the necessity for Africa to speak with a unified voice in international negotiations on DSI. This unity can enhance Africa's influence and steer negotiations toward outcomes that benefit African countries and promote biodiversity conservation.
- Unlike ineffective sectoral approaches, a holistic strategy for DSI is essential. DSI spans multiple sectors such as pharmaceuticals and agriculture, necessitating a unified approach to effectively preserve nature and promote sustainable development.
- Addressing ethical concerns related to the access and use of genetic resources and DSI is crucial. Many resources were collected before the Nagoya Protocol and CBD without consent or benefit-sharing with countries of origin. It is imperative to focus on ethical issues, integrate conservation principles, and ensure equitable benefit-sharing through multilateral mechanisms.

Christian Tiambo emphasized the importance of equitable benefit sharing from DSI, advocating for both monetary and non-monetary benefits. He highlighted Agenda 2063's focus on biotechnology and stressed the need for African countries to build capacity in using DSI for sustainable development. He underscored the importance of benefits supporting biodiversity conservation and reaching local communities, ensuring simplicity and clarity in the benefit-sharing process.

Questions from the chat to the panellists

Discussions in the chat focused on issues mentioned by the panellists in their statements (a chat summary is provided in Annex 1).

1st question from the chat: Considering that there is no international consensus regarding the definition and scope DSI as well as the discussions around the difference between information and data, for example. To what extent is it useful to have a definition of DSI?

Ossama Abdel-Kawy stressed the need for pragmatism in benefit-sharing approaches, leveraging existing CBD infrastructure, and avoiding prolonged debates over definitions to expedite conservation efforts and scientific progress:

- He cautioned against spending too much time defining DSI due to its rapid evolution. Instead, focusing on generating immediate benefits is more critical than agreeing on a complex definition that could take years.
- He acknowledged that some level of ambiguity in legal matters surrounding DSI may persist, suggesting that overly precise definitions could hinder progress.
- He advocated for simplicity in benefit sharing mechanisms, such as the African proposal of a 1% retail levy. This approach would provide accessible and easily monitored funding for conservation efforts.
- He highlighted the importance of utilizing CBD Clearing Houses to enhance open access and track information usage. Proposing that users provide feedback on their utilization of sequences and information could facilitate transparency and non-monetary benefit sharing, such as sharing summaries of research conducted.

Pierre du Plessis emphasized the value of recording non-monetary benefits and maintaining a register for transparency. The African proposal for benefit-sharing avoids the need for a complex DSI definition.

Mphatso Kalemba stressed the importance of maintaining focus on broader objectives rather than getting caught up in minor details. This perspective encourages practical solutions and clear strategies in discussions about DSI and benefit-sharing.

2nd question from the chat: In the chat, the development of an own African database for depositing and curating own genetic information deriving from African genetic resources was proposed as a key non-monetary benefit. To what extent do you see this as a value added? Would such a database be open to scientists from the rest of the world?

Christian Tiambo highlighted that ILRI stores samples, metadata, and DSI internally, collaborating with partners like the Kenyan Agricultural Research Organisation. Controlled access is given to national partners. He noted that on the other hand, most donors and investors require open access to research outputs they support.

Regarding an African database, Christian stressed the high maintenance costs, citing estimates of 50 million USD annually for global databases. He questioned whether establishing a pan-African database is an immediate priority given capacity constraints.

In the African BioGenome Project, capacity building and data generation were goals, but challenges with platforms, human resources, and capacities hindered the planned sequencing of endemic species.

Ossama Abdel-Kawy emphasized the need to prioritise the utilization of DSI in Africa to generate benefits and profits, given the limited funds available. He cautioned against hastily setting up an expensive database, noting that technology becomes obsolete quickly and funds spent without the ability to use the data effectively may have little impact.

Ossama suggested that the initial focus should be on building capacities to effectively use DSI for economic development. Once benefits are being generated from the data, then consideration can be given to investing in an African database to expand information and product development capabilities.

Closing reflections and suggestions for the way forward from the panellists

Jessica da Silva highlighted the importance of gathering diverse perspectives on the types of benefits needed at various levels—national, African, and community levels. She emphasized the value in dissecting these perspectives to understand how best to address them effectively.

Christian Tiambo emphasized the importance of building on these recommendations to tackle existing challenges effectively. He highlighted the need to establish a unified position among African negotiators to enhance influence at international fora, such as CBD COP. Additionally, he stressed the engagement of national and pan-African policymakers to garner support from the AUC and/or AUDA-NEPAD. Collaborating with partners, particularly through initiatives like the ABS Capacity Building Initiative, was also underscored as crucial for advancing the agenda on DSI in Africa.

Before closing the panel discussion **Pierre du Plessis** responded directly to a question posted in the chat by highlighting the prioritization of IP&LC in benefiting from the use of DSI, as outlined in the African proposal. He emphasized that these communities are designated as primary recipients of benefits under this proposal, a principle that has been acknowledged in the COP decisions. He underscored the importance of supporting these communities not only due to their traditional knowledge but also because of their crucial role as custodians of biodiversity.

Closing

Hartmut Meyer, ABS Capacity Development Initiative:

Hartmut Meyer expressed gratitude to all participants for their contributions during the event, emphasizing how their insights will inform future work on the topic. He thanked the panellists for their valuable perspectives and ILRI for hosting the event in Nairobi, including the informative lab tour showcasing sequencing technologies and their support for governmental health services. He

also acknowledged the AUC for co-hosting the webinar and noted the recommendations received for further support in the policy process.

Looking ahead, he mentioned upcoming events on DSI by the ABS Capacity Building Initiative leading up to CBD COP 16 in Cali, where decisions on a future multilateral system for benefit-sharing are expected. He directed attendees to the ABS Capacity Building Initiative's website (www.abs-biotrade.info) for additional information on DSI and related ABS topics.

Annex 1: Chat contributions clustered by topics

Chat contributions listed as bullet points are direct responses of participants to questions or comments from other participants.

Country tags in databases

I don't understand what you mean when you say most sequences already in databases don't have countries of origin. When you deposit your sequence into a database, you fill out a very comprehensive form with your name and all other identifying information. Can that not be used to trace origin of the sequence?

Please kindly explain further how the sequence was deposited into the database without source of origin ?

- If I can attempt a response...While the location of the specimen is part of the form it was not a mandatory field in the past. This is changing. Also, the origin of the DSI does not always equate to the origin of the specimen. So simply using the details of the depositor does not necessarily mean the correct details will be assign to the specimen. But as I mentioned, this is improving and certain databases are more stringent.
- Thank you for the response. Please kindly elaborate based on the scenario of no origin tag, how shall the benefits be handled?
- Thank you for the response, but in terms of discussing ABS, this information can be used as a starting point for the discussion of who to share benefits with, if one is actually interested in sharing benefits. The assumption that there is absolutely no way of attributing origin in sequences that are already in the databases is what I am in disagreement with.
- That is an issue. It is not simple and I don't have an answer, but Pierre's talk now might help explain things further.
- With regard to country tags and benefit-sharing: Due to the lack of country tags in most older DSI entries and the vast amount of DSI used in a single research project, the CBD decided that benefit-sharing from the use of DSI accessed in databanks should not/ cannot follow the bilateral approach of the CBD but should be organized in a multilateral system.
- Thank you for the clarifications.
- And currently it is being negotiated how this multilateral system could work and how the benefits could be distributed, the next round of negotiations will happen in August in Montreal

Benefit-sharing under a multilateral mechanism

How can we have all these benefits!??

I think one key non-monetary benefit we as Africa should be working towards is the development of our own database for depositing and curating our own genetic information.

Comment mettre en place un mécanisme de partage des avantages si les banques de données de l'ISN sont libres? How can a benefit-sharing mechanism be put in place if the ISDN databases are free?

Comment les détenteurs de savoir traditionnel vont bénéficier des avantages issus de l'ISN. How traditional knowledge holders will benefit from the advantages of DSI.

- This question is one of the big ones which need to be addressed in the next round of negotiations! There are no solutions yet.

Other topics:

Great inputs from Pierre, please kindly explain further on how policy makers, technocrats and scientist can quickly adjust and realign with the current scenarios for inclusiveness in the DSI interfaces?

Policy implications: Decision 15/9 on which the work of the WGDSI is based was endorsed by Decision NP-4/6 under the Nagoya Protocol, which also requests the WGDSI to report to the Conference of the Parties serving as the meeting of the Parties to the Nagoya Protocol at its fifth meeting. It's important to identify the link between the multilateral mechanism and the NP. I recall that paragraph L of the annex to decision 15/9 mentioned that the relationship with the NP is a matter for further consideration. Of course, this is not an easy question given that the NP advocates a bilateral approach.

I watched the video "DSI-Simply explained" and came across with a statement "defining DSI is difficult at this time..." Don't you think at least a working definition and scope is required for negotiation purposes? Thank you!

- While there is no legal, internationally agreed definition of DSI, scientists and many negotiators understand DSI to be DNA/RNA and protein sequences stored in databanks - the CBD officially sees „DSI“ as a placeholder in the negotiations

We should focus capacity building according to Africa Union Policy.

Data sharing is a very big challenge in Africa. To share fluently data, it's better to have regional projects with the same protocol to collect data. In this case, it's easy to share data.

Annex 2: Presentation “Programme of the First African Science-Policy Dialogue on DSI” by Suhel al-Janabi

THE ABS CAPACITY DEVELOPMENT INITIATIVE

L'INITIATIVE DE RENFORCEMENT DES CAPACITES POUR L'APA

Programme of First African Science-Policy Dialogue on DSI

- held at ILRI in Nairobi from 24 to 26 April 2024 -

Webinar, 13 June 2024

Suhel al-Janabi
ABS Capacity Development Initiative

Funded by:

- Federal Ministry for Economic Cooperation and Development
- Department for Environment, Food & Rural Affairs
- NORWEGIAN MINISTRY OF FOREIGN AFFAIRS
- DFG
- DFG
- DFG

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Workshop Agenda – day 1

24 April 2024: DSI – Introduction to the global developments	
10:00	Opening
10:45	Introduction into the dialogue
11:30	Technical introduction – What is at stake? Video “DSI simply explained” Presentation by Pierre du Plessis, ABS Initiative
12:30	Lunch
13:45	Laboratory visit (ILRI Livestock, CIP Potatoes, ILRI Azizi Biobank)
15:30	Coffee / Tea
16:00	Starting the dialogue: Exchanging questions and answers Group work & interaction between scientists and negotiators
17:30	End of day's programme
17:30	Reception and dinner at ILRI



Workshop Agenda – day 2



25 April 2024: Exchange between Science and Policy	
09:00	Introduction to the day
09:10	Key Guidance on DSI by COP 15: Nine internationally agreed criteria <ul style="list-style-type: none"> • Presentation by <i>Suhel al-Janabi</i>, <i>ABS Initiative</i> • Panel discussion moderated by <i>Pierre du Plessis</i>, <i>ABS Initiative</i> Scientists from 3 different sectors to provide their views on 'ideal practice' and 'killer practice' <ul style="list-style-type: none"> - Biodiversity: <i>Jessica da Silva</i> (SANBI, South Africa) - Agriculture: <i>Christian Tiambo</i> (ILRI, Kenya) - Health: <i>Ossama Abdel-kawy</i> (Egyptian Atomic Energy Authority) • Plenary session
10:30	Coffee / tea
11:00	Impacts on science of working with multiple data bases with different terms & conditions <ul style="list-style-type: none"> • Group work on three criteria for the DSI system <ul style="list-style-type: none"> - Provide certainty and legal clarity for providers and users of DSI - Not hinder research and innovation - Be consistent with open access to data
12:30	Lunch
14:00	Mutually supportive implementation of various ABS instruments Presentations and Q&A <ul style="list-style-type: none"> • Overview of three ABS instruments: main features of the current systems by <i>Claudio Chiarollo</i> (<i>Bioversity, Italy</i>) • Overview of what is on the table at CBD by <i>Mphatso Kalemba</i> (<i>Department of Environmental Affairs, Malawi</i>)
15:30	Coffee / Tea
16:00	How can non-monetary benefit-sharing and capacity development support biodiversity strategies and African development priorities? Fishbowl discussion
17:30	End of day's programme, return to hotel



Workshop Agenda – day 3



26 April 2024: Developing recommendations	
09:00	Key issues: Convergence and divergence Interactive session
10:30	Coffee / tea
11:00	DSI Data / Information Inputs on structures, and practical examples by <i>Hartmut Meyer</i> , <i>Jessica da Silva</i> , <i>Mariem Bouhadida</i>
11:30	Reflection on key open questions in various UN fora Presentation covering relevant UN fora by <i>Hartmut Meyer</i> , <i>ABS Initiative</i>
12:30	Lunch
14:00	Brainstorming and prioritizing recommendations Group work, report back and and plenary discussion
15:45	Evaluation and Closure
16:00	End of dialogue



Annex 3: Presentation “Creation and Use of DSI in R&D - Open Access & Benefit-sharing Options” by Hartmut Meyer

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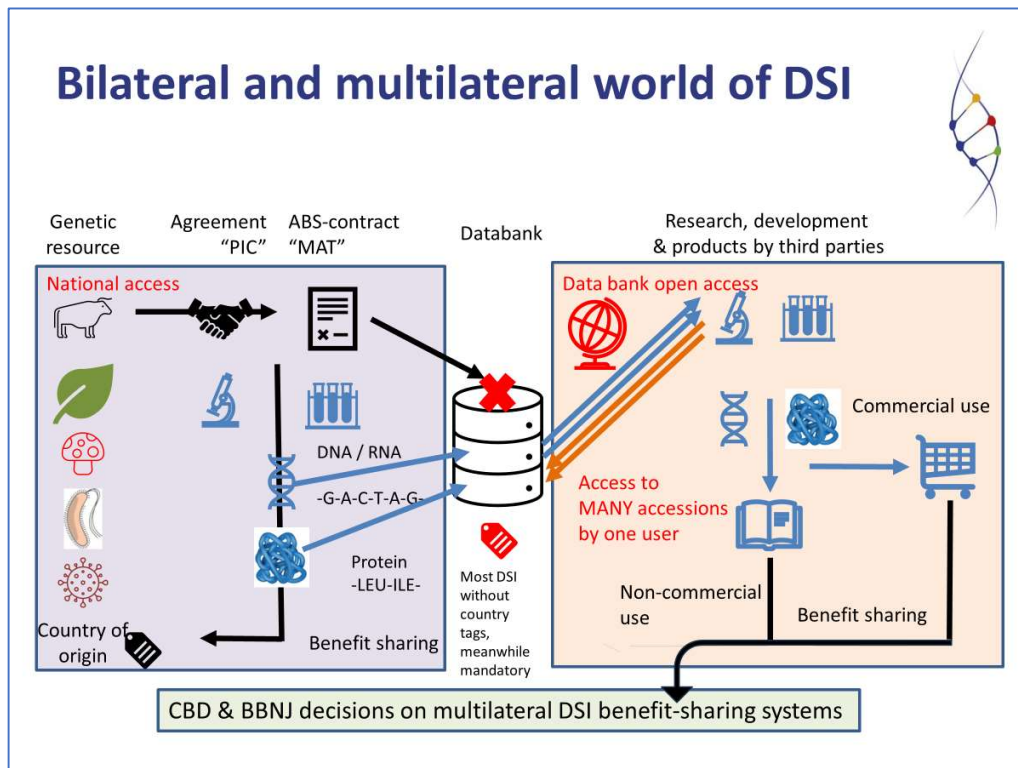
Creation and use of DSI in R&D Open Access & benefit-sharing options

Webinar, 13 June 2024

Hartmut Meyer
ABS Capacity Development Initiative

Funded by: Federal Ministry for Economic Cooperation and Development, Department for Environment, Food & Rural Affairs, NORWEGIAN MINISTRY OF FOREIGN AFFAIRS, BMBWF Bundesministerium für Wirtschaft und Klimaschutz, Administration des Sciences Universitaires (Département de la Recherche et de l'Innovation) - Université de la Côte d'Ivoire, Federal Department of Economic Affairs, Innovation and Research Unit, State Secretariat for Research Affairs BMD

Implemented by: giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH



What does „open access“ mean in practice?



GenBank of the U.S. National Institute of Health as part of International Nucleotide Sequence Database Collaboration

- <https://www.ncbi.nlm.nih.gov/genbank/>
- Search nucleotide databank
- Search „Loxodonta“ – African elephant
- Look into sequenced genomes
- Search for „Kenya“ in addition
- Look into sequence
- Conduct sequence comparison (BLAST) with *Elephas maximus* (Asian elephant)

10

Use of DSI in taxonomy

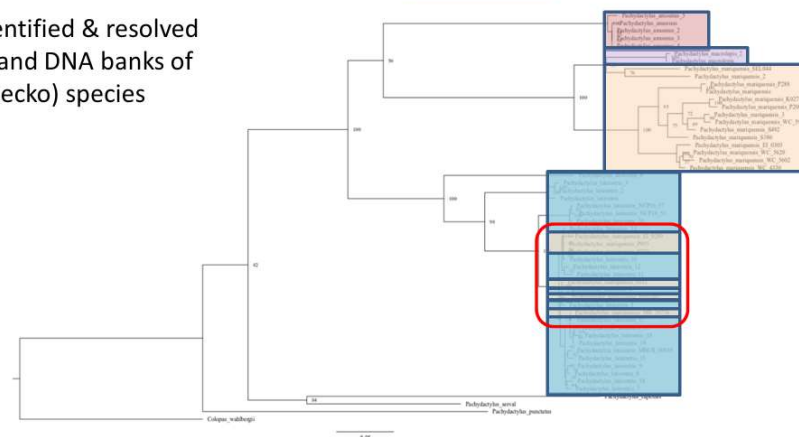


Legend

<i>P. latirostris</i>
<i>P. amoenus</i>
<i>P. mariquensis</i>
<i>P. macrolepis</i>



Misidentifications identified & resolved in museum records and DNA banks of *Pachydactylus* (Gecko) species



From the presentation for the ASPD prepared by Jessica da Silva (SANBI, South Africa)

Example of use of DSI in plant breeding



Assembled transcriptome

Investigate the expression of specific genes (Orobanchol)

Downloaded sequence from public database



Nucleotide database search results for Vigna unguiculata cultivar IT97K-499-35 chromosome 3, ASM411807v1, whole genome shotgun sequence. The sequence is displayed in FASTA format with a 'Target Gene Sequence' label overlaid on the text.

Detection of difference in gene expression (Presence /absence)

```
PRIMER PICKING RESULTS FOR
Template marking not selected
No oligo library specified
Using 5-based sequence positions
OLIGO          21 21 57.99 47.42 0.00 0.00 ACCGAAAGTATGATATTTTTC
LEFT PRIMER    21 21 57.99 47.42 0.00 0.00 ACCGAAAGTATGATATTTTTC
RIGHT PRIMER   21 21 57.99 47.42 0.00 0.00 ACCGAAAGTATGATATTTTTC
SEQUENCE       341
SEQUENCE SIZE  341
INCLUDED SEED  341

PRODUCT SEED: 172, PAIR ANY_28 COMPL: 0.00, PAIR 1_28 COMPL: 0.00
TARGET: 126462_546

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Primer Design (Primer 3)

PCR to check the presence /absence of non-expressed genes in Vicia faba genome

From the presentation for the ASPD prepared by Mariem Bouhadida (National Institute of Agricultural Research, Tunisia)

Annex 4: Presentation “DSI from Scientific and Policy Angles” by Pierre du Plessis

THE ABS
CAPACITY
DEVELOPMENT
INITIATIVE



L'INITIATIVE DE
RENFORCEMENT
DES CAPACITÉS
POUR L'APA

DSI from Scientific and Policy Angles

and some other highlights from the African Science-Policy Dialogue

Webinar, 13 June 2024


Pierre du Plessis
ABS Capacity Development Initiative
with slides borrowed from Dr Amber Hartman Scholz

Funded by

Implemented by

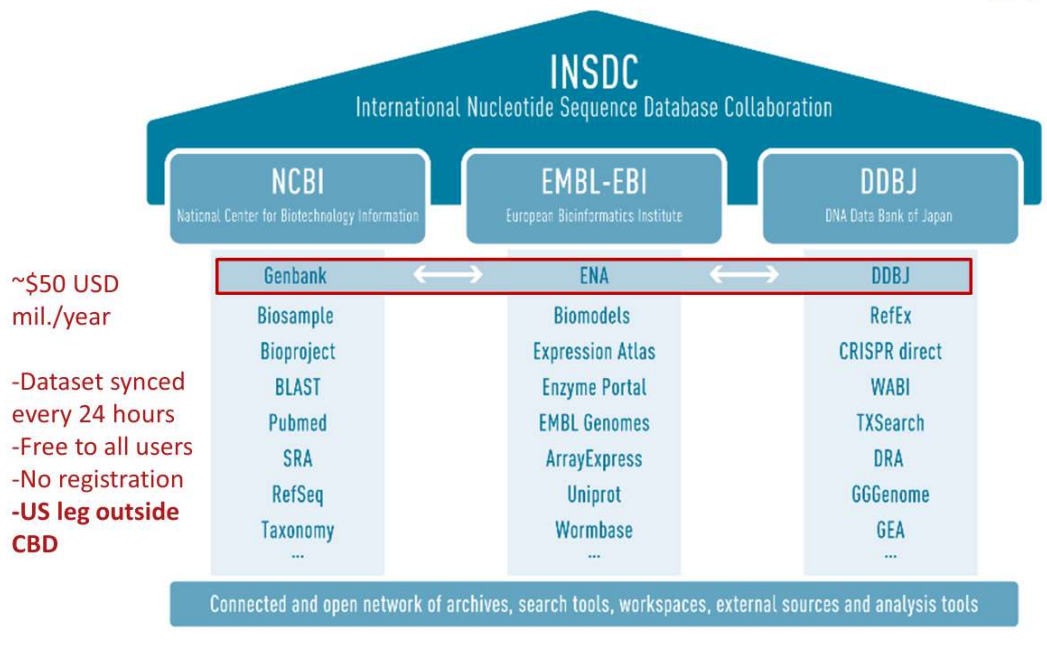
Genetics is a comparative science

The bigger and more detailed the “background” data set, the more useful it is for everyone

- 
- Individual sequences can encode valuable mutations, but these can only be found by comparing them with thousands of other sequences
 - The sheer number of sequences involved makes tracking and tracing difficult and impractical – scientists want to minimise or eliminate administrative burdens and “red tape” associated with accessing DSI
 - No legal basis or realistic prospects for controlling or restricting access to sequences already publicly available
 - Valuable individual **sequences from GR newly accessed with PIC and MAT** can be protected by keeping them confidential or proprietary (as the private sector routinely does)

BUT...

INSDC core infrastructure with dozens of databases & tools



INSDC access and use policy (2002)



Access policy is inherited by downstream databases

1. ...uniform policy of **free and unrestricted access to all of the data** records their databases contain.
2. The INSD **will not attach statements to records that restrict access to the data**, limit the use of the information in these records, or prohibit certain types of publications based on these records. Specifically, **no use restrictions or licensing requirements** will be included in any sequence data records...
3. All **database records submitted to the INSD will remain permanently accessible** as part of the scientific record...
4. ..information displayed on the Web sites maintained by the INSD is **fully disclosed to the public...**

<http://www.insdc.org/policy.html>

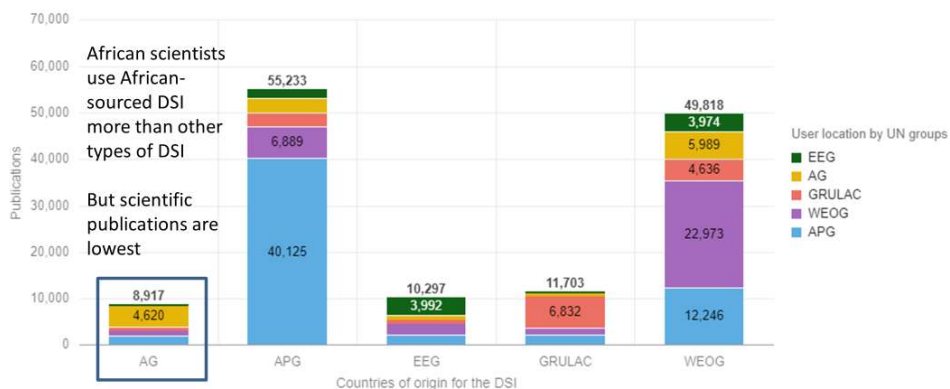
Science 298 (5597): 1333 15 Nov 2002

Why do scientists put their data in public databases for everyone to see and use?



1. **Comparison:** ACGTACGT means nothing without context!
2. **Publishing:** Journals *will not publish* papers unless the data is openly available
3. **Funding:** Grant agencies very often *require* it as a condition of funding
4. **Ethics:** Scientific reproducibility, integrity, data security

Scientists use “local” data more than “foreign” data



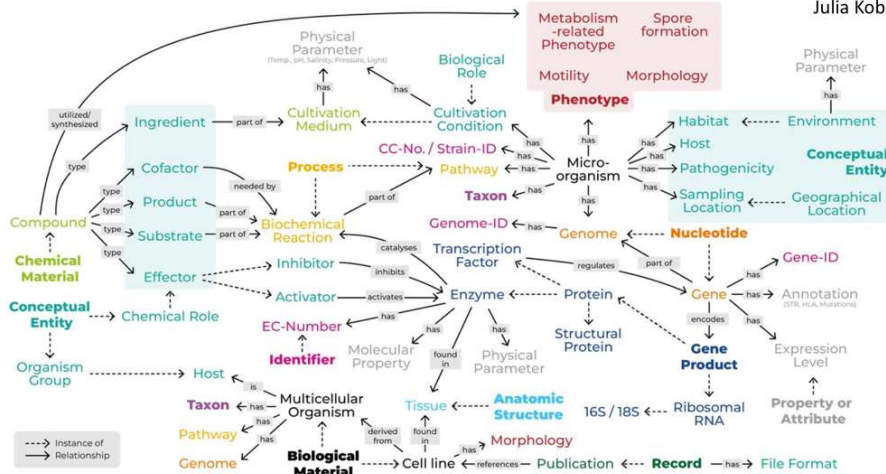
- AG - African Group
- APG - Asia and the Pacific Group
- EEG - Eastern European Group
- GRULAC - Latin American and Caribbean Group
- WEOG - Western European and Others Group

Scholz et al. *Gigascience*. Dec. 2021.
<https://academic.oup.com/gigascience/article/10/12/giab085/6489125>

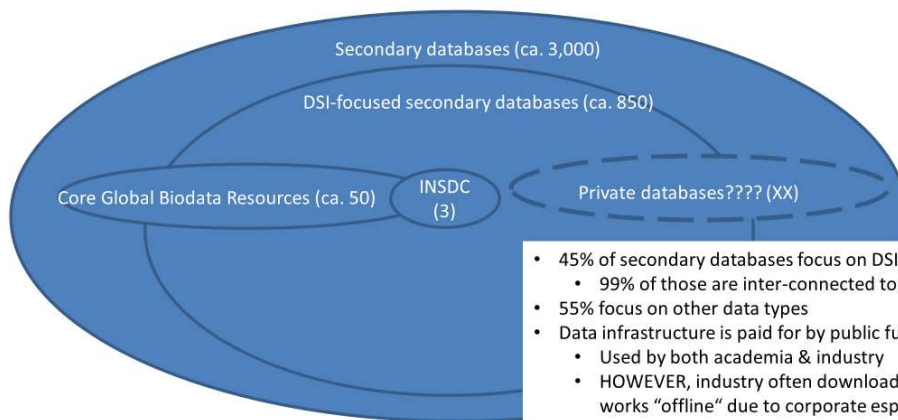
Open, integrated DSI enables scientists to understand how biology works. Understanding leads to more benefit



Julia Koblitz, DSMZ



How many public DSI databases are there?



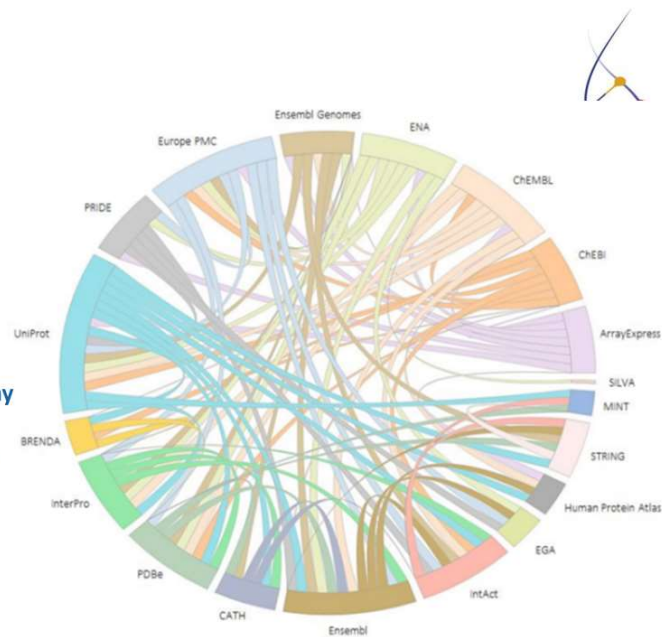
- 45% of secondary databases focus on DSI
 - 99% of those are inter-connected to INSDC
- 55% focus on other data types
- Data infrastructure is paid for by public funding
 - Used by both academia & industry
 - HOWEVER, industry often downloads and works "offline" due to corporate espionage concerns

Open Access = Interoperability: data are free to be sliced, diced, and mixed together

This happens automatically every day
across

- hundreds of millions of sequences
- thousands of databases
- hundreds of data types

The graph here is just 19 (out of
thousands of) databases!

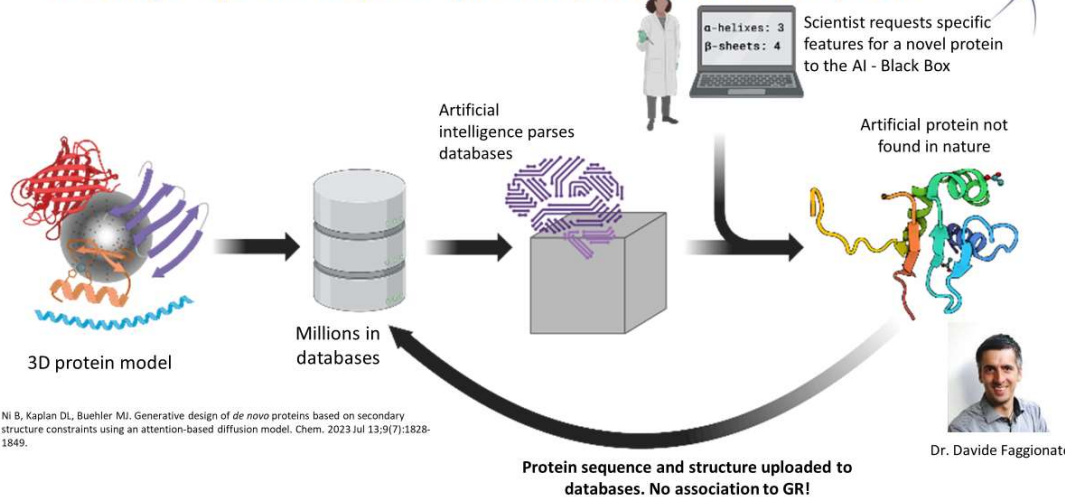


Drysdale R, Cook CE, Petryszak R, et al. The ELIXIR Core Data Resources: fundamental infrastructure for the life sciences. *Bioinformatics* (Oxford, England). 2020 Apr;36(8):2636-2642. DOI: 10.1093/bioinformatics/btz959. PMID: 31950984; PMCID: PMC7446027.

Additional science issues to consider

- Uses of DSI are rapidly evolving, due to sequencing technology and ITC (bioinformatics) advances, with the technical cutting edge in the health sector (single cell multi-omics; AI)
- Rapid advances in ability to manipulate genetic material at molecular level might transform how DSI is used - “design from scratch”
- This represents an opportunity for “technological leapfrogging”
 - „As cell phones enabled Africa to leapfrog beyond the need for fiber-optic cables and wired infrastructure, cheap sequencing technology and cloud servers allow African biologists to leapfrog beyond traditional biology laboratories and expensive server infrastructures.“

Artificial intelligence uses millions of sequences and structures to design “special request” proteins, small molecules, DNA



Additional science issues to consider

- Scientists are more willing to share sequences if they are sure of recognition and credit for their work (e.g. GISAID vs INSDC for Covid genomes); even more important when the work solves problems, discovers something novel, results in inventions that may be eligible for patent protection
- Support needs include Next Generation Sequencing equipment, reliable access to consumables, fast and reliable data connections, more data storage and local computing power for bioinformatics and AI applications, participation in and learning opportunities associated with collaborative research networks/partnerships, ...



Policy considerations

Computers have changed the world

DSI has fundamentally changed “utilisation of genetic resources”; this trend will continue and accelerate



- ABS is a post-colonial response to inequality, based on the principle of “permanent sovereignty over natural resources”
- As the third objective of the CBD fair and equitable benefit sharing was also understood – by developing countries including Africa – as the driver of sustainable use, leading to conservation
- Pairing access with benefit sharing in a bilateral PIC and MAT system has proven to be dysfunctional: there is simply too much free access available
- Africa has consistently opposed this “issue of scope”, e.g.
 - “African proposal” in negotiating the SMTA of the ITPGRFA MLS (and the MLS itself)
 - “New and continuing uses” in the Nagoya negotiations
 - Global Multilateral Benefit Sharing Mechanism (NP Article 10)
 - Multilateral Mechanism for DSI (tbd)

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Sovereignty is not an absolute principle



The Charter of the United Nations, the “international rules-based order”, the MLS of the Plant Treaty, and every multilateral treaty ever are examples of compromises involving qualified use of sovereignty

- Achieving workable compromises requires striking a balance:
 - between rights and obligations
 - between competition and collaboration
 - between positions and interests
- the very nature of DSI – how it is distributed, created, stored, accessed, and used – would suggest limits to the potential role of the sovereign rights of States to control access; accepting open access to publicly available DSI was indeed key to the agreement reached in Montreal

“decoupling access from benefit sharing”

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DSI, Africa’s development & Agenda 2063



DSI has a critical role to play in achieving Agenda 2063 Goals and Priorities

- DSI is closely linked to perennial African priorities like resource mobilisation, capacity development, technology transfer
- Policy makers have a duty to consider (potential) DSI impacts on traditional knowledge and farmers’ rights
- There is an urgent need to develop coherent and coordinated African negotiating positions across different international instruments dealing with DSI – this is currently a weak spot
- A better understanding of scientific considerations shared across sectors compared to those specific to a single sector would help policy makers and negotiators to achieve better outcomes

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State of play in various fora



Mutually supportive implementation of sub-optimal systems will not work to Africa's advantage

- CBD: WG to develop multilateral mechanism by October (!) – main issue seems to be how much decoupling of access from benefit sharing is possible/agreeable
- WHO: INB and WGIHR supposed to complete work by May – but ABS and DSI might be kicked down the road
- FAO CGRFA: so far no consideration of benefit sharing, only conservation and sustainable use
- ITPGRFA MLS WG: DSI identified as “hotspot”, could possibly be compatible with subscription system but complications resulting from expansion of Annex 1 and potential “out of scope” uses

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The African proposal: 1% of retail



Applied to all products of biodiversity, not just DSI

- Only proposal currently on the table that meets all the criteria of CBD Decision 15/9
- If widely implemented could make a transformative difference to **resource mobilisation** for biodiversity (no credible alternatives at scale)
- Can be implemented in parallel with more specialised systems but would work better if designed as one comprehensive solution
- Requires creative solutions for TK, non-monetary benefit sharing, capacity development, tech transfer
- Will succeed if universally supported by African policy makers, negotiators, scientists and stakeholders

Policy to support science
Science to inform policy

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Further presentations in Nairobi:



- On the 9 + 1 criteria for DSI benefit sharing agreed in COP Decision15/9
- On current and under-discussion ABS for DSI systems at FAO, WHO and BBNJ, and how these could impact mutually supportive implementation
- On the finer details of current on-going discussions in the CBD open-ended working group and the informal advisory group on DSI

Too much for a 2-hour webinar – please see the report of the workshop for more information

Annex 5: Presentation “Recommendations from the Dialogue” by Andreas Drews



Methodology

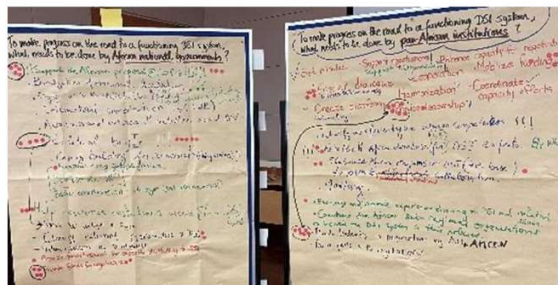
Final group work for developing recommendations for making progress on the road to a functioning multilateral DSI benefit-sharing system

Recommendations should address

- African national governments
- Pan-African institutions
- African negotiators

and propose

- How to take the African Policy-Science Dialogue forward?



Key Recommendations



Political and technical leadership by AUC and AMCEN

- Better coordination of the African Group of Negotiators, specifically regarding appropriate timelines to organise common positions
- National governments to support the African proposal at COP 16 for the multilateral mechanism (MLM) and fund for benefit-sharing from the use of DSI

Dialogue is essential

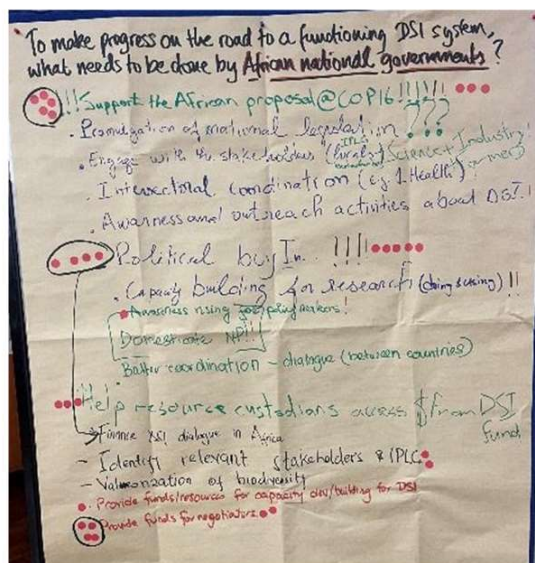
- National governments to establish and provide finance for national dialogues between the relevant sectors, such as biodiversity conservation and sustainable use, agriculture, fisheries, science policy, IPR policy (specifically regarding TK)
- Dialogue between the Pan-African institutions involved in the coordination processes and implementation of DSI related decisions under the CBD, FAO, WHO and WIPO need to ensure consistence in African negotiation positions and subsequent national implementation

Key Recommendations



Mobilise funding

- Pan-African institutions for the coordination during the negotiation process under the relevant international fora and support for the subsequent implementation of the resulting decisions.
- National governments for their delegations to ensure delegations are big enough to be represented in the various parallel negotiation processes at CBD COP 16.



Key Recommendations



Points	What needs to be done by African national governments? Recommendations by the participants of the African Science-Policy Dialogue on DSI
9	Political buy-in and finance for DSI Dialogue in Africa
8	Support the African proposal for COP 16
6	Provide funds for negotiators
3	Help resource custodians access funds from the DSI Fund
2	Identify relevant stakeholders and IP&LCs
1	Awareness raising for policy makers
1	Provide funds /resources for capacity building and development for DSI
Points	What needs to be done by Pan-African institutions? Recommendations by the participants of the African Science-Policy Dialogue on DSI
12	Provide leadership in negotiations, e.g. AUC and AMCEN
4	Mobilise funding
4	Foster dialogue between Pan-African Institutions, but not only
3	Elaborate African programs on DSI (e.g. data base) to promote international collaboration and monitoring
2	Establish African database of/for DSI experts
1	Encourage and promote experience sharing on DSI and related issues
Points	What needs to be done by African negotiators? Recommendations by the participants of the African Science-Policy Dialogue on DSI
12	Better coordination – timelines to organise common positions
4	Take into account African development priorities
3	Consult with scientists frequently and other relevant stakeholders
3	Mentorship of upcoming negotiators
2	Maintain the consistency of the negotiators
1	Sharing experiences
1	Follow processes and negotiation in other for a or multistakeholder processes, e.g. WHO, ITPGRFA, WIPO, BBNJ
1	Engage local communities and bring their issues on board

How to take the dialogue forward?



- Mobilise funding for ('regular') continuation at African and national levels
- Focused reporting and making relevant documents/information available
- Leadership at Pan-African level
- Raise awareness and improve understanding on how and for which purposes DSI is generated and used as basis for building common ground among providers and users as well as policy makers across relevant government departments

Points	How to take the African Policy-Science Dialogue forward? Recommendations by the participants of the African Science-Policy Dialogue on DSI
8	Request meetings to follow up
4	Simple focused reporting (in relation to policy-science dialogues)
3	Network for policy-science – who??? – how?
3	Pan-African institutions to take the lead, e.g. NEPAD
3	Find dedicated funding for the process
2	Unpack and ensure proper understanding of the modalities (ref. Hartmut's summary)
0	Ensure common ground between providers and users of DSI so that it is beneficial for all
0	Mainstreaming DSI dialogue in respective government departments
0	More regular engagement
0	Capacity to deal with emerging issues
0	Supporting institutions provide all relevant documents
0	Centralised repository of all relevant information
0	Improve/create a common communication "language"