SUBMISSION OF VIEWS AND NEW INFORMATION ON POLICY APPROACHES, OPTIONS OR MODALITIES FOR DIGITAL SEQUENCE INFORMATION ON GENETIC RESOURCES

Ref: SCBD/NPU/TS/CGA/AC/89861

September 30, 2021

Elizabeth Maruma Mrema
Executive Secretary Secretariat of the Convention on Biological Diversity
United Nations Environment Programme
413 Saint-Jacques Street, Suite 800 Montreal,
Quebec, Canada H2Y 1N9

Dear Mrs Elizabeth Maruma Mrema

Greetings from International Indigenous Forum on Biodiversity – IIFB.

IIFB submitted its views attached, on options or modalities on how to address digital sequence information on genetic resources under the Convention and the Nagoya Protocol, for the consideration preparation of work and documents for the next meeting of the Open-ended Working Group on the Post-2020 Global Biodiversity Framework.

Sincerely,

Lucy Mulenkei
Co-Chair
IIFB

Francisco Ramiro Batzin Chojoj
Co-Chair
IIFB

SUBMISSION OF VIEWS AND NEW INFORMATION ON POLICY APPROACHES, OPTIONS OR MODALITIES FOR DIGITAL SEQUENCE INFORMATION ON GENETIC RESOURCES

Explanatory Note

This submission responds to CBD Notification 2021-063 by providing views of the International Indigenous Forum on Biodiversity ("IIFB"), as well as new or additional approaches, options or modalities, on how to address digital sequence information on genetic resources under the Convention on Biological Diversity and the Nagoya Protocol, based on but not limited to the information and elements contained in document CBD/WG2020/3/4 "Digital sequence information on genetic resources".

Background

- Indigenous peoples generally view the living world and nature, including genes, as sacred. As information derived from genetic material, digital sequence information ("DSI"), needs to be more precisely labeled as digital genetic sequencing information (DGSI) and should be accorded respect as a gift from Mother Earth. This holistic worldview and understanding should be given due consideration in DGSI policy options and criteria, particularly for DGSI derived from genetic material taken directly from or linked to biodiversity from, lands, territories and waters. Under the United Nations Declaration on the Rights of Indigenous Peoples and the Nagoya Protocol, Indigenous Peoples have the right to control access to their traditional knowledge and genetic resources, which includes DGSI, and requires their free, prior and informed consent (FPIC).

- It is well established that Indigenous Peoples and Local Communities ("IPLCs") have a vital role in maintaining and enhancing biodiversity. This is confirmed in the latest IPBES Global Assessment Report, in the 5th edition of Global Biodiversity Outlook (GBO 5), Local Biodiverity Outlooks (LBO), and many other technical and scientific assessments and reports. It is this rich biodiversity where genetic resources ("GRs") and DGSI come from. Traditional knowledge ("TK") constitutes prior knowledge and prior art in the transformation of genetic material to genetic resources by providing essential information about proven uses of genetic material. Therefore, TK is integral to GRs and DGSI through embedded or embodied TK.

The IIFB does not agree with the AHTEG conclusion (SCBD, 2020) that TK is not a part of the DSI regime. There are two major ways in which TK may be associated with genetic information. In the case considered by the AHTEG, external knowledge may be applied to DSI, providing leads to targets for genetic sequencing (Kidane, Y.G. et al., 2017). TK may also be embedded or embodied in the original sample directly through breeding (McLean-Rodríguez, F.D. et al., 2021). Indigenous Peoples have contributed with their management to the improvement of seeds, as is also recognised in International Union for the Protection of New Varieties of Plants (UPOV), and of animals and other species. It may be integrated or incorporated through countless generations of environmental or habitat modification or plantings and movements of species, and sustainable and cultural use of plants, animals, and marine resources by IPLCs (Caetano-Andrade, V.L. et al. 2020; Ke, Y.-C. and Chen, J.H., 2020; Parra, F. et al., 2021). The relationship between TK and DSI is clear. Our ancestors and ourselves have been conserving, protecting, domesticating and diversifying the genetic resources that have been taken for research, accessed, converted to DSI, and published. Special and distinct considerations should be made for embedded / embodied TK.

> *The dependence of certain plants for the survival and maintenance of a people expressed itself in many ways. Among the Pueblo, corn, squash, pumpkin and beans became the primary staple foods that gave rise to social and community expressions of Pueblo societies. The relationship of the Pueblo farmer to corn is especially noteworthy. To Pueblo people, corn is a sacrament, a representation, an embodiment of the essence of the Earth Mother's life. Corn provided not only food, but also a symbolic entity that cradled the entire psyche and spiritual orientation of Pueblo people. Pueblo farmers developed an intimate understanding of the life of corn and through that understanding, developed techniques, technologies and strains of corn adapted to various growing conditions in Southwestern environments. They developed a practical technology and understanding of basic genetics, plant behavior and communities based on their special relationship with corn. This helped them understand the nature of evolution and natural selection among plants* (Cajete, 1994, p. 103).

- Indigenous peoples in their knowledge and lifeways see and understand life in its relationships and interconnectedness. In contrast, DGSI as currently practised is fragmented and disconnected. Once DGSI is placed in databases, it is regarded as disconnected from the GRs and TK of origin and this provides justification for use of DGSI without consent or benefit-sharing, which constitutes the unlawful appropriation of traditional knowledge, and genetic resources and a violation of the culture and customary law of Indigenous Peoples. In the Indigenous worldview, TK is connected to different organisms from which genetic resources was extracted, and these connections should be maintained as part of any utilisation expressed digitally.

> *Protected Traditional / Indigenous Knowledge: Knowledge of current use, previous use, and or potential use of plant and animal species, as well as soil and*

*minerals, knowledge of preparation, processing or storage of useful species; knowledge of formulations involving more than one ingredient; knowledge of individual species (planting methods, care for, selection criteria, etc.); knowledge of ecosystem conservation (methods of protecting or preserving a resource that may be found to have commercial found, although not specifically used for that purpose or other practical purposes by the local community or the culture); biogenetic resources that originate (or originated) on indigenous lands and territories; cultural property (images, sounds, crafts, arts and performances) and classificatory systems of knowledge, such as traditional plant taxonomy (*Battiste & Youngblood, 1996, p 176-77*)*
https://www.youtube.com/watch?v=nFeNIOgIbzw (Dr. Gregory Cajete)

- DGSI directly associated with IPLCs or containing embodied TK has been placed in open-access databases without IPLCs free, prior and informed consent. This constitutes a loophole that allows continued open access to DSI derived from the genetic resources of IPLCs without safeguards and precautionary mechanisms (Bond, M.R. and Scott, D., 2020). This may lead to the commercialisation outside of the ABS principles of the CBD and Nagoya Protocol. Allowing continued open access to DGSI of IPLCs is a new form utilisation, a form of "dematerialised access" that bypasses obligations in ABS regimes that require consent for access and benefit-sharing. This occurs in violation of Indigenous Peoples' rights established in the United Nations Declaration of Indigenous Peoples Rights (UNDRIP, 2007: Article 31) and the Nagoya Protocol.

- We need consensus on a fair and equitable solution for including DGSI in the Post-2020 GBF because the status quo is not acceptable. The solution should balance administrative costs with prospective benefits and should clarify the concept of open access. Open research and applications must be balanced with reasonable limitations, regulation, precautionary mechanisms, criteria, and safeguards depending on the source of the DGSI and accordance with the respect of Indigenous Peoples' rights.

- The recent UNESCO Recommendations on Open Science (UNESCO, 2021), whilst stating that access to scientific knowledge should be as open as possible, it also acknowledges access restrictions which are proportionate and justified, on the basis of the protection of human rights, national security, confidentiality, the right to privacy and respect for human subjects of study, legal process and public order, the protection of intellectual property rights, personal information, of sacred and secret indigenous knowledge, and of rare, threatened or endangered species.

With respect to traditional knowledge, Open Science lives up to international human rights norms and standards respecting knowledge sovereignty and governance and recognising rights of knowledge holders to receive a fair and equitable share of benefits that may arise from its utilisation. Acknowledged are the United Nations Declaration on the Rights of Indigenous Peoples and the principles for Indigenous Data Governance, such as for example the CARE data principles covering: Collective Benefit, Authority to

Control, Responsibility, and Ethics (Carroll, S.R. et al., 2020). The issues on Open Science that concern Indigenous Peoples are related to the comments on open DGSI databases, and are wider than considerations of "mere information," but include construction of histories, interpretation and property (Reardon, J. and TallBear, K.; Woodward, E. et al., 2020). Incorporating TK into DGSI under the CBD and Nagoya Protocol, if done in in a way that respects Indigenous Peoples' values and rights can promote data sharing and reduce uncertainty as opposed to leaving these issues unresolved (Ambler, J. et al., 2021).

Views on Policy Approaches, Options and Modalities

- DGSI is properly a subject matter of the Convention on Biological Diversity and the Nagoya Protocol. The original source of sequence information is the genetic material of living beings, a modality of biodiversity.

- The Post-2020 Global Biodiversity Framework must address DGSI in Goal C, its milestones, Target 13, and other ABS-related targets.

- The CBD should recognise the role of IPLCs, particularly women and TK in biodiversity and DGSI, and the integral link between TK and DGSI, as part of the criteria for selection of policy options on DGSI.

- The CBD must recognise the contribution and practices of indigenous women's traditional knowledge on biodiversity and the transmission of this knowledge to youth and the right to protect their DGSI derived from their biodiversity.

- The IIFB is particularly concerned with Element (a) that establishes the recognition that any approach to address DGSI should not prevent access to digital genetic sequence information or significantly hinder scientific research and innovation. In their current form, the current practices do not ask for the disclosure of origin of deposited sequence information, neither at the country level nor where it has been originally collected, including the lands, territories, waters and coastal seas of Indigenous Peoples (Oldham, P., 2020). As non-human DGSI is derived from genetic resources that fall under the CBD, the Nagoya Protocol and UNDRIP Article 31. The underlying non-human genetic resources of biodiversity have not been considered to be in the public domain or the common heritage of humankind since entry into force of the Convention in December, 1993 for new acquisitions. This necessitates an outcome that brings practice into compliance with all relevant instruments. This disassociation of DGSI from origin will be compounded through time as an increasing number of unsourced innovations are made by researchers, machine learning and artificial intelligence techniques.

- The IIFB is willing to work with Parties on a more qualified statement that upholds principles of access and benefit-sharing and balances open research with reasonable limitations, precautionary mechanisms and safeguards. DGSI research and development carries risks as well as benefits for IPLCs and society at large that should be objectively evaluated, and reasonable limitations and safeguards should exist to evaluate DGSI in these contexts. Safeguards should be instituted as part of good governance that is just for IPLCs and stakeholders.

- The IIFB does not believe this is an either-or choice. In the clearest case, where DSI is derived directly from samples taken from IPLC lands, territories and waters, the regime should follow Option 1, with full integration with the CBD and Nagoya Protocol, including prior informed consent ("PIC") and mutually agreed terms ("MAT"). There are cases that may not be localisable or traceable (Bagley, M. and Perron-French, F., 2021). Many historical contributions of Indigenous Peoples' and local communities' genetic resources and associated traditional knowledge (e.g., corn, native tobacco) are extremely widespread today. The IIFB strongly supports for fair and equitable sharing of benefits for these kinds of cases. They must be carefully defined, and multilateral benefit sharing cannot be used in cases of identifiable sources of DSI. There must be due diligence for monitoring and tracking where feasible. Considerable challenges remain in determining criteria and thresholds from moving from a bilateral approach requiring PIC and MAT to a multilateral benefit sharing approach (Syam, N. and Romero, T., 2021).

- Open access should be balanced with reasonable limitations, precautionary mechanisms, and safeguards, including a requirement to exercise due diligence and follow a code of ethics.

- FPIC or PIC shall be required for access to GRs and TK associated with GRs, as well as DGSI. Inclusion in DGSI databases should be based on free, prior and informed consent of Indigenous Peoples.

- For DSI already in open-access databases, a global multilateral benefit-sharing mechanism can be a solution, provided that simplified and culturally appropriate mechanisms for direct access to monetary and non-monetary benefits by IPLCs is in place, and access to products developed through DGSI is ensured.

- Capacity building is important - DGSI is a highly technical process and needs considerable translation into indigenous and local languages and understandable terms for IPLCs to provide meaningful input and make informed decisions. There is a priority need to create plain-language text, visual and other culturally appropriate materials to explain DSI to IPLCs and to relevant stakeholders. Capacity building and the development of materials should be led by IPLCs. Because DGSI and related information is contained in a myriad of databases, there also needs to be technology development for more efficient tracking and tracing and IPLC capacity building for the use of such technology.

- IIFB recognises the contributions of modern science to conservation and sustainable use of biodiversity including genetic resources. However, we need to build dialogues to find the best way to address DGSI that respects indigenous rights and contributes to nature conservation.

References:

Ambler, Jon; Diallo, Alpha Ahmadou; Dearden, Peter K.; Wilcox, Phil; Hudson, Maui; Tiffin, Nicki (2021). Including digital sequence data in the Nagoya Protocol can promote data sharing. Trends in Biotechnology 39(2): 116-125.

https://www.sciencedirect.com/science/article/abs/pii/S0167779920301736

Bagley, Margo; Perron-Welch, Frederic (2021). Study to Identify Specific Cases of Genetic Resources and Traditional Knowledge Associated with Genetic Resources that Occur in Transboundary Situations or for Which it is Not Possible to Grant or Obtain Prior Informed Consent. CBD/SBI/3/15/Add.1. Secretariat of the Convention on Biological Diversity (SCBD), Montreal.
https://www.cbd.int/doc/c/c850/cee6/e368619e14ae3e3fb4d84de9/sbi-03-15-add1-en.pdf

Battiste, Marie; Henderson, James Youngblood (Sa'ke'j) (2000). Protecting Indigenous Knowledge and Heritage: A Global Challenge. University of British Columbia Press, Vancouver. 336 pp.
https://press.uchicago.edu/ucp/books/book/distributed/P/bo70016072.html

Provides a characteriation of traditional / indigenous knowledge from an Indigenous Peoples' point of view.

Caetano-Andrade, Victor Lery; Clement, Charles Roland; Weigel, Detlef; Trumbore, Susan; Boivin, Nicole; Schöngart, Jochen; Roberts, Patrick (2020). Tropical trees as time capsules of anthropogenic activity. Trends in Plant Science 25(4): 369-380.
https://www.sciencedirect.com/science/article/pii/S1360138519303358

Reconstructed human activity since the Late Pleistocene recorded in the population structure of species that reflects Late Holocene climatic oscillations and natural forest disturbances, as well as past changes in human land use and management practices. This is partially contained in genetic information about land management indicating histories of the suppression of trees (deforestation) and the promotion of trees (tree planting and seed movement). See fig. 3, p. 374.

Cajete, Gregory (2004). Look to the Mountain: An Ecology of Indigenous Education. Kivaki Press, Durango. 243 pp.

Citation presents indigenous knowledge of pueblo peoples as understood and managed as integrated systems. This holistic way of viewing natural and cultivated systems is consistent with a view emerging from omics research on the co-evolution of multiple interacting genomic and environmental systems (or symbiomes) within in anthropogenic biomes (anthromes).

Carroll, Stephanie Russo; Garba, Ibrahim; Figueroa-Rodríguez, Oscar L.; Holbrook, Jarita; Lovett, Raymond; Materechera, Simeon; Parsons, Mark; Raseroka, Kay; Rodriguez-Lonebear, Desi; Rowe, Robyn; Sara, Rodrigo; Walker, Jennifer D.; Anderson, Jane; Hudson, Maui (2020). The CARE Principles for Indigenous data governance. Data Science Journal 19(1): 43.http://doi.org/10.5334/dsj-2020-043

Ke, Yi-Chia; Chen, Jiun-Hong (2020). Interrelationship between genetic resources and traditional knowledge - An example from earthworm fibrinolytic enzyme Biotechnology Law Report39: 440-451.
https://www.liebertpub.com/doi/pdf/10.1089/blr.2020.29190.yk

Kidane, Yosef G.; Mancini, Chiara; Mengistu, Dejene K.; Frascaroli, Elisabetta; Fadda, Carlo; Pè, Mario Enrico; Dell'Acqua, Matteo (2017). Genome wide association study to identify the genetic base of smallholder farmer preferences of durum wheat traits. Frontiers in Plant Science 8: 1230.https://doi.org/10.3389/fpls.2017.01230

McLean-Rodríguez, Francis Denisse; Costich, Denise Elston; Camacho-Villa, Tania Carolina; Pè, Mario Enrico; Dell'Acqua, Matteo (2021). Genetic diversity and selection signatures in maize landraces compared across 50 years of in situ and ex situ conservation. Heredity 126: 913-928.
https://www.nature.com/articles/s41437-021-00423-y.pdf

Oldham, Paul (2020). Digital Sequence Information - Technical Aspects. European Commission on technical aspects of digital sequence information. 87pp.
https://ec.europa.eu/environment/nature/biodiversity/international/abs/pdf/Final_Report_technical_aspects_of_DSI.pdf

Parra, Fabiola; Casas, Alejandro; Begazo, Domingo; Paco, Amalia; Márquez, Eusebia; Cruz, Aldo; Segovia, Jorge; Torres-García, Ignacio; Zarazúa, Mariana; Lizárraga, Luis; Torres-Guevara, Juan (2021). Natural and cultural processes influencing gene flow among wild (atoq papa), weedy (araq papa and k'ipa papa), and crop potatoes in the Andean Region of Southern Peru. Frontiers in Ecology and Evolution
https://www.frontiersin.org/articles/10.3389/fevo.2021.617969/full

SCBD (2020). Ad Hoc Technical Expert Group on Digital Sequence Information on Genetic Resources, Montreal, Canada, 17-20 March 2020. CBD/DSI/AHTEG/2020/1/7, Secretariat of the Convention on Biological Diversity, Montreal.

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

Reardon, Jenny; TallBear, Kim (2012). "Your DNA Is our history": Genomics, anthropology, and the construction of whiteness as property. Current Anthropology 53(12): S233-S245.
https://www.journals.uchicago.edu/doi/full/10.1086/662629

Provides examples from human DNA research, but the issues apply to non-human genetic biodiversity as well.

Syam, Nirmalya; Romero, Thamara (2021). Misappropriation of Genetic Resources and Associated Traditional Knowledge: Challenges Posed by Intellectual Property and Genetic Sequence Information. Research Paper 130. The South Centre, Geneva. 59pp.
https://www.southcentre.int/wp-content/uploads/2021/04/RP-130.pdf

UNESCO (2021). UNESCO Recommendation on Open Science. United Nations Educational, Scientific and Cultural Organization, Paris. 17 pp.
https://en.unesco.org/science-sustainable-future/open-science/recommendation

Woodward, Emma; Hill, Rosemary; Harkness, Pia; Archer, Ricky (eds.)(2020). Our Knowledge Our Way: Indigenous-led approaches to strengthening and sharing our knowledge for land and sea management caring for Country. CSIRO, Clayton. 127 pp.

https://www.csiro.au/en/research/indigenous-science/indigenous-knowledge/our-knowledge-our-way