**template for Peer Review comments**

**Study Related to Article 10 of the Nagoya Protocol**

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| **Title of document reviewed:** | 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 |
| **Comments on the study on traceability and databases** |
| **Page #** | **Para #** | **Comment** |
| **0** | **0** | **General comments**This scoping study on Article 10 NP will have relevance for the political discussions on benefit sharing and, the potential regulation of Digital Sequence Information (DSI) and considerations on Global Multilateral Benefit Sharing Mechnisms. The aim of the study was to provide information on specific cases which may support the need for a global multilateral benefit-sharing mechanism that are not covered under the bilateral approach, accompanied by an explanation as to why such cases cannot be covered under the bilateral approach set out in the Nagoya Protocol. * **Qualitative aspects**The study mandate was to identify “specific cases”, but it does not address the question The current text lacks methodological clarity and mixes topics and lists several examples with little or no information why such cases could not be covered under existing instruments. The arrangement of the text in many places is confusing and it difficult to apply a general methodology evenly to all examples. Instead, individual examples are often presented in isolation and seem to lack own research. There seems to be a strong focus on ex situ collections, while private ex situ collections or ex situ ex situ collections held by commercial bodies with direct R&D interest are barely mentioned. Further, other relevant GR in ex situ situations such as crops or domesticated animals, outside FAO programmes like the ITPGRFA or for example the Svalbard Global Seed Vault are not mentioned at all. This is a major weakness of this study, which would benefit from evaluating presented examples more closely.
* **Qualitative aspects**While the study identifies “specific cases”, it fails to quantify them. It would be useful to have a quantitative assessment of the amount of GR of unknown origin, and to which extent these are used for commercial R&D. If this cannot be provided, it would seem appropriate to reduce the space in the document given to this topic. Currently, it remains unclear if and to which extend use of ex situ genetic resources would fall into different categories. This reflection however seems crucial to understand (potentially far-reaching) implications on any potential GMBSM that might be considered by the Parties.
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| 0 | 0 | (continued)* **Application of the results**The authors are referring to ex situ collections in many places in this study. Such collections are held worldwide, not just in the global North, even though the examples seem to indicate this. However, scientists visiting collections of SPNHC Members come from all over the world. Therefore, it would be helpful if the authors could explain how the term ex situ collection has been used in this study, what it entails (i.e. which types of GR) and which main types of ex situ collections were investigated for this study (and which were not included). If there would be sector specific differences how ex situ collections or material housed in them are used, it might be worth noting such characteristic differences where appropriate. This might be useful and would improve comparability of the results.
* **Scope of study**We are not sure if the deliberations on a global multilateral benefit sharing mechanisms (GMBSM) are entirely within the scope of this study. Even though we recognise and appreciate the intentions of the authors, the exclusive focus on the potential GMBSM seems rather narrow. At the same time, the study fails to recognise the already existing delivery of non-monetary benefit sharing of the non-commercial public ex situ collections under the instruments of the NP, and their important contributions to the objectives of the CBD. Not only have these resources been maintained for centuries and are still accessible to scientists around the world, but they are a core tool to implement the CBD’s Global Taxonomy Initiative. We would thus appreciate examination of non-monetary benefit sharing and would kindly request to the CBD secretariat for commissioning of additional studies to safeguard a sound base for further political discussion and possible steps ahead.
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| 0 | 0 | **Misconceptions of Biological concepts and conflicting CBD definitions** Even though we recognise that the use of some specific terms is closely related to the language of the CBD and NP, some formulations seem less helpful in a biological context and should not be used interchangeably. * **Ecosystem**An “ecosystem” describes the interrelationship of different organismals or groups of organisms (e.g. animals, plants, lichen and athropods) in a given habitat or biotop. The equilibria of ecosystems are not constant over time and are influenced by intrinsic and external factors. from this perspective, it is difficult to imagine how ‘ecosystems’ could be transboundary. In the context of this study, it seems more appropriate to refer to “habitats” – an area with its biota – which frequently exceed national borders and are shared among countries (e.g. savannah or rainforest habitats).
* **Country of Origin**This term is widely used to refer to the geographic origin of GR, but what is actually meant is the Provider Country. The ‘country of origin’ is not necessarily the country from which a GR was obtained and which should be considered in benefit sharing arrangements. We suggest careful adjustment of the entire text.
* **Species and genetic Resource**The term “species” is frequently used as equivalent expression of “genetic resource”. A “species’ is a concept and not regulated under the CBD or the NP. A GR can only come from an individual organism, which cannot occur in neighbouring countries at the same time (e.g. p4:19). Further, the the scientific name of aspecies is subject to taxonomic change according to scientific research or revisions undertaken by taxonomists. Equation of ‘species’ with “genetic resources” introduces an artificial concept which finds no reference in the CBD and introduces legal uncertainty where there has been none. It would challenge the definition of ‘genetic resource’ and thus overturn the fundamentals of Access and Benefit Sharing, which likely is not within the scope of this study. We suggest a careful review and adjustment of the current text to improve its clarity.
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| 0 | 0 | (continued)* **Genetic Resources of untraceable origin**The study repeatedly states that genetic resources curated in public Natural History Collections lack proper provenance (e.g. (5:12; 5:16; 7:16; 17:24; 19:17; 20:7, 9; 34:32). This implies, that this seems to be a major issue in such collections that hinders delivery of benefit-sharing (while it remains unclear for which kind of benefit sharing). The authors present no evidence that would support this assertion and that such materials without passport data is frequenly used or requested for commercial R&D. Collections curated by SPNHC members contain over a billion specimens; such requests are rare and not the norm. Further, even though the authors identified historic samples with seemingly incomplete provenance data from a public database (p. 21), additional information is usually held in the collections without been digitised (especially on historic specimens like the Livingston material the authors referred to). The presented examples refer to historic pre-CBD specimens, which raises the general question why it has been placed under the subheading ‘genetic resources of untraceable origin’ (which seems to exclusively discuss pre-CBD material instead of GR of untraceable origin – even though there would surely be relevant examples worth analysing).
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| 5 | 20 and ongoing | Please carefully check the term “country of origin” and replace with ‘Providing Country’ if reference is to be made to provenance and/or geographical origin of GR. |
| 4 | 19-21 | Equation of “species” with “genetic resource” (examples for the first subgroup); please adjust as appropriate(see general remarks).  |
| 4 | 22-25Alsop. 9, lines 16-19 | It is unclear how “more legitimate claims” can be deduced from Art. 10 NP or the NP as such. To our understanding, there are no sovereign rights to authorise access and negotiate sharing of benefits for species; instead sovereign states exercise already now (with existing instruments of the NP) rights to grant access to GR occurring on their territory. Legally compliant sampling and sequencing of GR from a migratory species (e. g. monarch butterfly in USAdoes not require permits from Mexico, even if the ‘species’ hibernates and thus occurs for a specific time of the year in this country. |
| 5 | 3 | “shared amongst” should be replaced with “occur in” (would this imply that countries have to share sovereign rights on genetic resource accessed within their territories as well?) |
| 5 | 8 | “resources found in the global commons” – what is meant with this exactly? DSI? Please specify. |
| 5 | 5-7 | “…would not reward all those involved in the conservation …” What is meant with “reward” in this context (especially since the exact spawning grounds of the European Eel are still unknown, it even would be unclear which countries should be considered). |
| 5 | 14-15 | Additional explanaitons would be useful to understand this grouping, especially since it seems unclear why ‘DSI’ is included in group 2c (wouldn’t this contradict lines 11-12 on page 4?). Also, there is currently no consent that DSI’ falls under the CBD or NP, so it is difficult to follow the reasoning for the groupings. |
| 5 | 11-12 and 16-18 | Lines 11-12 in conjunction with lines 16-18 seem to imply that the majority of samples in ex-situ collections lacks provenance data (which would make them useless for scientific research). Moreover, it seems unclear why GR held in ex situ collections are discussed here at all; they may be pre-CBD, but do the authors really want to imply that their origin untraceable without providing quantitative data supporting this assertion and casting a bad light on ex situ collections? We would appreciate rephrasing of this section. |
| 5 | 20-21 | This statement apparently suggests that GR from ex-situ collections would be frequently used for commercial R&D. The authors do not provide any evidence for this. Maybe this section explicitly refers to commercial users but not non-commercial ex situ collections? |
| 5 | 39 | Steviol glycosides are not GR but derivatives of GR |
| 6 | 18-21 | The groupings are unclear; could the authors please clarify especially since for some of the items it is possible to negotiate MAT and BBNJ is outside the scope of the CBD? |
| 6 | 24ff | it would be helpful if the ‘Methodology’ could detail how sources were analysed and how the results were compiled. |
| 7 | 11-15 | Please replace ‘shared ecosystem’ with “habitat”. |
| 8 | 16-1823-27 | Many species are cosmopolitan (global distribution) or are migratory; what are the implications for the NP / Art. 10? Further, should “migration over centuries” and “genetic resources [that] are now found outside the habitats where they developed their essential characteristics” be understood to include “domesticated or cultivated species, in the surroundings where they have developed their distinctive properties” (CBD Art.2). What would be the implications for the NP? |
| 9 | 1 | Individual genetic resources cannot be shared in ecosystems (see general comments); please adjust. |
| 9 | 8 | Not only genes, allels and pathways for protein biosysnthesis are shared widely among organisms, including humans, but also microbes and pathogens. This is a widely accepted fact. The following examples in this paragraph however deal with ‘distribution of species’ and not with shared common genetic components in organisms. It would be helpful to revise this section and to add relevant data on shared common genetic components. |
| 9 | 2, 5, 7, 12 | Species cannot be endemic to more than one country; it seems “native” is meant; please adjust the text to avoid confusion. |
| 9 | 10-16 | If the concept of *in situ* and especially *ex situ* transboundary situations – as presented by the authors – is applied evenly and equally as described on page 8 lines 23-27, it would have to include all genetic resources occurring outside the areas to which they have been originally native. This implies that domesticated crops and animals worldwide (and their introduction to other countries) would have to be included under the benefit sharing regimes under the NP – a fact that is not being discussed by the authors despite its high relevancy.If this assertions is intended by the authors, it would be helpful if the authors could analyse possible consequences for such a case (cf. scenario 4). Also, broad and equal application of the proposed concept would raise some fundamental questions that might be worth discussing:* How would inclusion of e.g. cultivated plants like coffee or tea in (monetary?) benefit sharing systems affect the economies especially in Developing Countries ?
* How would be joint research efforts improve the resilience e.g. of cultivated crops to cope with dryer climates or resits new pathogens be affected?
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| 9 | 19 | It seems the formulation “several countries may have a claim of origin” confuses (tangible) genetic resources with (intangible) ‘species’ (as a concept – see general comment above), and ‘providing countries’ with ‘countries of origin’ (see general comments). It remains also unclear why several countries simultaneously could have the same claim, as this would decouple “access” rights from the sovereign rights where the genetic resources are sampled, and thus challenge the NP as such. Perhaps the authors wanted to say “where several countries claim sovereign rights”? |
| 11 | Footnote 33 | Please replace “indigenous” with “native”. |
| 13 | 20 | The rosy periwinkle cannot be “endemic” in Madagascar and in India at the same time – please replace with “native”. |
| 14 | Section 2.3. | This section seems to suffer from the confusion of ‘species’ with genetic resources as commented above; it would be helpful if the authors could carefully review this section to improve clarity. |
| 14 | Section 2.3. | Some of the examples in this section are weak to support the well-intended linkage of benefit sharing mechanisms with conservation/management costs.* Even though Monarch butterflies migrate over long distances, this migration involves several generations and not same individuals. Further, it seems not intuitive why money from non NP-Parties should be redirected to Mexcio (where the species only hibernates) instead of protecting the breeding and nursing habitats of this species which are vital for its survival.
* Mallards are largely stationary and usually do not migrate over long distances; it is not intuitive why in this specific case conservation measures in countries which are visited occasionally by mallards should be considered (compared to conservation measures to improve/protect habitats of the resident populations).
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| 15 | 8-9 | We question the usefulness of this example: the USA and most EU Member States do not restrict access to GR occurring within their national territories, Bermuda – a British Overseas Territory – doesn’t seem to do so either, and the exact breeding groups of the European eel in the Sargasso Sea are still unknown. This examples seems to be less helpful and partially misleading. |
| 16-17 |  | The Mallard duck (*Anas platyrhynchos*) example seem less helpful and we suggest deletion (see above). If the GR used for the mentioned patents were accessed in full legal compliance with applicable law, it seems unclear why other countries should be “rewarded” (especially in this specific case – perhaps there are better ones?). |
| 18 | 21 | “he” should be “The” |
| 17 | Section 2.4.7-20 | BBNJ is being discussed at UNCLOS / UNGA and should be omitted. |
| 17 | 24-27 | This sections contains general statements without providing a clear concept on “untraceable origin” (or explaining why the presented cases are ‘untraceable’) or explaining how “parameters of temporal and subject matter scope” could be applied to the following examples. As stated earlier, the authors list examples which seem incomplete and which lack specific analysis. |
| 18 | 1ff | It is unclear why objects stored in Natural History Collections are covered under the subheading “Temporal scope and retroactivity for ex situ collections”. Most objects collected since ratification of the CBD (and earlier) are accompanied documents such as collection, research, and export permits, or PIC and MAT were access laws require this. For pre-CBD materials, PIC is not required, a fact, that seems to be ignored repeatedly. Further, ‘temporal scope’ is not covered in Art. 10 NP. Even though the authors raise the question of temporal scope (p. 5), they give no rationale why it has been covered in this study at all. The storage of natural history objects in collections is not a "cross-border situation", nor does it raise “questions on temporal scope”. Moreover, the authors to not analysis or discuss the implications if ex situ materials – as such – would be covered, and which implications this would have for the NP (see earlier comments in this regard).Instead, this section could be understood that objects in Natural Histoy Collections usually have insufficient provenance information (if at all), or would those this critical information which determines its scientific value, when transferred e.g. from orphaned collections into the curatorship of larger institutions. Publicly funded collections provide taxonomic expertise and lay the basis for the goals of the CBD and associated programmes like the post-2020 biodiversity targets or the SDGs. They rarely engage with commercial R&D, so it is not intuitive why – besides their enormous contributions – they “appear to be good candidates for a global multilateral benefit-sharing mechanism”. Perhaps the authors could explain why this should be the case.  |
| 18 | 13-16 | It would be helpful if the authors could further elaborate on “treaty obligations do apply to any ‘situation’ which has not ceased to exist – that is, to any situation that arose in the past, but continues”. What are the implications if ‘temporal scope’ is applied as broadly as suggested by the authors ? Would this for example be also applicable to plants which were transposed for commercial purposes into other countries to be grown there? If this argument applies to progeny in Botanic Gardens, it surely applies to soy-beans, potatoes or rice as well. It would be helpful if the authors could address this, also with regard to the time lines associated with their example on page 17:11 following, including implications for domestication of species and other acquired cultural techniques, and for the CBD and NP as such. |
| 19 | 20-21 | It remains unclear why pre-CBD materials held in Natural History Collections is an ‘issue’ or could pose one, and it might be helpful if the authors could add more details why this could cause problems. Maybe the authors wanted to say that this could be a (sector specific) problem for some (commercial or private) ex situ collections, however, these are neither mentioned nor are potential ‘issues’ discussed. The strong focus (again) on public collections might be worth explaining in more detail, especially since exactly those institutions and the networks they engage pioneered in developing instruments like IPEN of the CETAF Code of Conduct), which are particularly committed to the objectives of the CBD and the NP.  |
| 19 | 20-21 | It might be worth considering a distinction between publicly-funded collections (which are open to researchers from all over the world) and ex situ collections held by private bodies and largely run to support R&D and commercial interests. Please rephrase. |
| 19 | 22 | Replace “country of origin” witch “Providing Country” |
| 20 | 2-5 | The EU Regulation has not only relevance for ex situ collections in EU Members States, but also for scientists utilising ex situ GR they bring from abroad into the EU for utilisation. |
| 20 | 4 | “Col**u**mbia” should be Col**o**mbia? |
| 20 | 5-7 | Theoretically the case „For countries requiring benefit-sharing for utilization of genetic resources in *ex situ* collections, a problem arises for specimens deposited without country of origin information, or deposited prior to the CBD or Nagoya Protocol such that PIC, if now required, was not granted“ could be possible, but are there relevant examples? |
| 21 | 9 | We have doubt that this is a good example at all for the following reasons:1. The full [dataset](https://ecbot.science.kew.org/read_ecbot.php?catno=49302&search_term=gomphocarpus&search_type=name) not only gives the provenance more accurately with Zambia (instead of just “Africa”), John Kirk’s travel rout surely could be further investigated if the travel routes are further researched and the data set explicitly refers to the Manganja tribes and for what purpose they used this plant.2. National borders in “Africa” in April 1859 (not 1860) less likely resemble country borders in Africa today.So it seems, this data set includes all relevant information that would be desired. |
| 21 | 15-16 | Usually, microorganisms (bacteria, protozoa, algae and fungi) and viruses are treated differently (and not subsumed under ‘microorganisms’ (even though in some instances this might be the case) |
| 22 | 19-20 | Replace “country of origin” with “provider country”. |
| 22 | 23 | Even though there may be potential for ‘commercial uses’, are there any data supporting this assertion? |
| 22 | 23-25 | Are there any examples of commercialisation from DNA extracts of historic herbarium sheets? Given the (usually strong degradation) of the DNA in such historic specimens, fresh material usually is preferred (especially for genomic sequencing which requires large amounts of unfragmented DNA).Moreover, the research focus of herbaria – which are usually associated with universities or other research institutes and less often with Botanic Gardens - is on education and conservation.  |
| 24 | 6 | Is there any specific reason for the logical combination of “botanical gardens” and “culture collections”, especially since the second half continues with “herbaria”, which are held by neither of the former? This sentence should be rephrased to improve clarity. |
| 24 | 12 | It might be helpful to rephrase the title to “3.2. Utilization and Screening of Geographically Diverse Samples sourced from different regions and countries.” to increase clarity. |
| 24 | 14 | Please delete “species” and adjust this sentence accordingly (see general remarks above). |
| 24 | 14-15 | It would be indicated to adjust this sentence to “However, **in commercial research and R&D** it is not uncommon…” as it apparently intents to refers to commercial research. |
| 25 | 2 | The “but possible” seems to be a leftover of an earlier formulation? |
| 25 | 3 | Replace “country of origin” with “provider country”. |
| 25 | 27-31 | It would be helpful if the authors of the study would recognise that the majority of datasets in INSDC are human DNA and/or related to countries which do not restrict access to their GR (or ‘DSI’). Morevoer, the combined study 2&3 seems to indicate that most ‘DSI’ datasets in the INSDC comes from the Global North which are frequently used by scientists from the Global South for their own research. If a GMSBM could be helpful to facilitate benefit sharing, would this imply that researchers from Developing Countries should contribute to a GMSBM to access such datasets? What would be the implications in this case for research activities in the Global South? |
| 26 | 2-19 | The authors do not seem to sufficiently acknowledge The availability and maintenance of this crucial infrastructer for scientists worldwide requires enormous investments and scientific input from basic (non-commercial) research which is not reflected or acknowledged by the authors in this section. Knowledge on biodiversity itself is a precondition for the the CBD as such and all related programmes such as the post-2020 Biodiversity Targets, Aichi Targets, SDGs, specific conservation measures, etc.  |
| 26 | 20 | Replace “country of origin” with “provider country”. |
| 26 | 22-23 | The assertions that only 16% of all INSDC datasets would have passport data is incorrect; as scoping study 2&3 on ‘DSI’ clearly indicates it is 56% of INSDC datasets with CBD-relevance. This sentence ismisleading and should be adjusted. |
| 26 | 24-25 | What do the authors mean with “each country from which a sequence originated”? Does this refer to the Providing Country or the country in which the samples were sequenced? |
| 26 | 29 | Please replace “metadata” with passport data which seems to be a more appropriate term (metadata can have all sorts of different meanings). |
| 27 | 17 | Delete extra “.” |
| 27 | 14-24 | We are not sure if this example (referring to a not non-peer-reviewed source) rests on solid ground and it would be helpful if the authors could analyse the settings on the original access to the GR and their subsequent use more closely. Besides the clear emphasis on monetary aspects in this example, it seems that the authors did not investigate the huge amount of non-monetary benefit sharing associated with this examples thoroughly. As this is an often seen example and surely is an interesting case to be investigated in the light of Art. 10 NP, it would be interesting to compare the expected (realised?) commercial potential with shared non-monetary benefits and direct (monetary) efforts to mitigate this Ebola outbreak. It would be worth considering in such an analysis direct research collaborations and capacity building as well (e.g. under the umbrella of WHO). |
| 29 | Footnote 119 | Replace “country of origin” with “provider country”. |
| 29 | 22 | Please replace species with **organisms** (see general comments above). |
| 30 | 7 | It would be helpful if the authors could clarify what they mean with “significant numbers of diverse species”. |
| 30 | 3-5 | Isn’t this statement applicable to traditional breeding and propagation in animals or plants in general, where it is impossible to identify “each individual input sequence” from the parent population? It seems this example is not adding any new insights. It would be interesting however, to analyse the potential implications if measures would be considered Art. 10 (see earlier comments to this respect) |
| 31 | 2 | Delete “and detergents” or add space and additional adjective. |
| 32 | 4 | Delete “,” after “diverse” |
| 34 | Section 5 | It would be helpful if the authors could elaborate in their conclusion how the existing instruments, tools and mechanisms provided by the NP to handle GR an TKAGR occurring in transboundary situations would be suited to handle presented case (or not), which specific problems or implications could arise (or how these could be avoided). Currently, the conculsion lacks such information and discussed potential for a GMBSM instead. This surely may be useful but it would require a more comprehensive picture to fully understand the potential implications or issues arising from an introduction of such mechanisms. Referring to our earlier comments and with all due respect, we do not concur with the authors that introduction of a GMBSM – based on the analysis of this study – would not have (potentially severe) implications of the NP and the CBD as such. |
| 34 | 29 | Please delete “shared ecosystems” and rephrase as appropriate (see general comments above). |

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