

Conseil scientifique de l'Institut écologie et environnement (INEE)

Recommandation sur l'extension du mécanisme « Accès et Partage des Avantages » aux Digital Sequence Information.

Le conseil scientifique de l'InEE a pris connaissance de la volonté de la Conférence des Parties (COP) de la Convention sur la Diversité Biologique (CBD), de débattre de l'extension du mécanisme « Accès et Partage des Avantages » (APA, Protocole de Nagoya) aux données de séquençage issues des ressources génétiques (DSI pour 'Digital Sequence Information'). Ceci concerne les séquences d'ADN et d'ARN, mais éventuellement aussi (discussion encore en cours sur la définition et les limites des DSI) la structure des protéines et les composés biochimiques, non couverts par le Protocole de Nagoya.

Actuellement la recherche publique internationale produit, diffuse et utilise les ressources génétiques et leurs dérivés selon les deux principes « open access » (libre diffusion) et « FAIR » (Findable, Accessible, Interoperable, Replicable). Le CS de l'InEE souhaite alerter la communauté scientifique, en particulier celle produisant et utilisant ce type de données, et l'ensemble des instances de décision sur le fait que l'application de l'APA aux données moléculaires issues de la ressource génétique, en mettant un frein considérable à leur accès libre et gratuit, aurait un impact négatif fort sur toutes les recherches publiques, menées dans de nombreux domaines scientifiques (y compris dans les domaines de l'écologie et de l'environnement), réalisées avec ce type de données.

Le CS de l'InEE souhaite que la France défende le maintien des conditions actuelles dans les négociations à venir. Cette position correspond à l'option 0 ou « statu quo » dans les différentes options proposées par le groupe de travail « WILDSI project ». Si ce statut quo s'avérait impossible, l'option la moins pénalisante, et à négocier impérativement pour la recherche publique, serait l'option 2 » (voir les différentes options en cours de négociation en pièce jointe) qui prévoit le paiement d'une adhésion annuelle uniquement dans le cadre d'une utilisation commerciale (et non pour la recherche académique) qui abonderait un fond commun international.

Patricia GIBERT
Présidente du CSI INEE

Recommandation adoptée le 18 Janvier 2021 :
23 votants : 22 oui, 0 non, 1 abstention

Destinataires :

- Mme Frédérique VIDAL, ministre de l'enseignement supérieur, de la recherche et de l'innovation ;
- Mme Barbara POMPILI, ministre de la transition écologique ;
- Mme Bérangère ABBA, secrétaire d'état auprès de la ministre de la transition écologique, chargée de la Biodiversité ;
- M. Antoine PETIT, président directeur général du CNRS
- M. Alain SCHUHL, directeur général délégué à la science du CNRS
- Mme Anne LARIGAUDERIE, secrétaire exécutive de la Plateforme intergouvernementale sur la biodiversité et les services écosystémiques (IPBES)

Copie :

- Mme Stéphanie THIEBAULT, Directrice de l'Institut écologie et environnement du CNRS
- Mme Amber HARTMAN-SCHOLZ, Directrice adjointe de la DSMZ-Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH
- Mesdames les présidentes et messieurs les présidents des conseils scientifiques d'Institut du CNRS
- Mme Dorothée Berthomieu, présidente du Conseil scientifique du CNRS

Annexes à la Recommandation sur l'extension du mécanisme « Accès et Partage des Avantages » aux Digital Sequence Information.

Description des 5 options WiLDSI dans le rapport :

https://www.dsmz.de/fileadmin/user_upload/Presse/WILDSI/Final_WiLDSI_White_Paper_Oct7_2020.pdf

OPTION 1 MICRO-LEVY

Option 1 separates access to DSI from monetary benefit-sharing and instead **collects funds earlier in the R&D process by charging micro-levies on DSI-related charges**. Micro-levies are small charges on high-volume purchases that should not impact the behavior of the purchasing customer. The DSI micro-levy could for instance be linked to aspects of DSI generation and be applied, for example, to DNA sequencing/synthesis services, laboratory reagents, or equipment. Option 1 is **very simple**, is likely to generate significant funding relatively quickly, and completely leaves the status quo open access system intact. **However, micro-levies require national legislation to implement and can be unpopular domestically**. Also, for some Parties, access and benefit-sharing might be perceived as too disconnected.

OPTION 2 MEMBERSHIP FEES

Option 2 would require annual “membership” fees for users of the global DSI dataset **that have sales/income above a specified threshold**. This would mean that **academic (non-commercial) users would generally not pay a membership fee. Access to DSI is NOT behind a paywall – a financial barrier that precedes/prevents access**. Instead, the conditions of use of the databases (e.g. INSDC) would remind users of potential monetary obligations and any monetary payments would be collected by a separate entity. Compliance could be supported by use of the patent disclosure system where DSI is already listed and disclosed. It would not be important to track and trace these sequences but rather it provides **a yes/no check if DSI was used**. Option 2 reflects benefit-sharing discussions under the IPTGRFA. Option 2 is a relatively **simple, easy-to-understand system already discussed by other international fora**, however compliance mechanisms are somewhat weak and negotiating the monetary obligation threshold would likely be contentious.

OPTION 3 CLOUD BASED FEES

In option 3, a **new cloud-based platform for DSI** would be offered **for users seeking legal certainty and “power user” services**. This new system would be **offered on top of the core DSI infrastructure**. The cloud platform would offer **advanced services (e.g. storage, analytics, sector-specific workbenches, etc.) for fees based on, for example, the amount of DSI use or storage or access to specialty features**. The **normal (status quo) open access to DSI via INSDC would remain in place** but cloud portals would additionally offer users full legal certainty and advanced features that are otherwise cost-inefficient for users to build by themselves. A cloud-based system is scalable, responsive, and fees can be directly tied to usage. However new infrastructure costs are likely which would need to be recaptured and non-commercial users might pay proportionally more in this option than in others.

OPTION 4 COMMONS LICENSES FEES

In option 4, Parties could require DSI producers and users to associate a **standardized license to any DSI placed in an open-access database**. A small set of standardized licenses based on open-software commons licenses would be negotiated and direct users on their ABS obligations. Databases would

need to allow licenses to be associated with DSI and **users themselves would need to track and trace DSI** used during utilization and adhere to the conditions in the license. Monetary benefits could be triggered at the point of access for certain users or at the time of commercialization. **Alternatively, a commons license could require users to upload DSI to cloud-based infrastructures (option 3).** Commons licenses are widely proven to work in the field of open-source software development and an entire ecosystem (bigger than ABS) runs on these licenses. However, this option requires the users to track and trace the use of their DSI which, would be challenging. Furthermore, negotiating standardized licenses at the international level might be challenging.

OPTION 5 METADATA & BLOCKCHAIN

Option 5 uses **blockchain technology** not on DSI itself but rather **on the associated legal and scientific metadata -- a “hybrid blockchain” option.** While the DSI itself would continue to be submitted to the core database infrastructure, **certain scientific and legal metadata which would be put into a blockchain layer of records and access would be monitored and controlled,** thus allowing the **tracking of events of data access.** Monetary benefits could be triggered at defined points in the R&D process if events are registered in the blockchain system. Option 5 requires **significant upfront technological investment and costs,** while generation of funds is unknown and likely to be longterm creating a possible imbalance in operating costs. **Option 5 responds to calls for tracking and tracing and bilateralism, but has not yet been proven for use in ABS.**

Le tableau comparatif des options WilDSI :

Table 1. Comparison of key aspects of the 5 policy options

Policy option	1. Micro-levy	2. Membership Fees	3. Cloud-based fees	4. Commons Licenses	5. Blockchain
<i>What DSI is affected?</i>	no effect	All non-human DSI; the whole dataset	All non-human DSI in the database imposing cloud-based fees	All DSI would be tagged with 1 of 4 licenses including retroactively on DSI already in the databases	DSI-associated metadata from Parties claiming sovereign rights
<i>Tracking/tracing required?</i>	No	No	No	Yes	Yes
<i>Jurisdiction shopping possible?</i>	Yes if unevenly implemented	No	No	Yes	Yes
<i>Changes to open access</i>	No. Fees are paid upstream in the DSI generation and research process.	For users below an income threshold, open access use is unchanged. For users above threshold, fees apply.	Status quo access option offered in parallel to a fee-based cloud option that offers legal certainty and advanced user services	Minimally. Licenses with conditions would be applied to all DSI.	Normal open access to DSI offered in parallel to blockchain on legal/scientific metadata
<i>Multilateral or bilateral</i>	Multilateral	Multilateral	Multilateral	Bilateral with multilateral opportunities to standardize licenses	Bilateral with multilateral opportunities to standardize (legal) conditions
<i>Who pays? When?</i>	"Consumers" of particular DSI-related products/services	Annual membership fee paid by users above an income threshold	User pays depending on data use (pay as you go)	Depends on intended use of DSI defined in license option(s)	Defined by the terms in the legal agreements
<i>Legal certainty</i>	Through receipt on payment of micro-levy on DSI products/services	Through membership annual payment	Through use of cloud platform	Established in 4 standardized licenses	Provided by a blockchain layer of records and access management system through identifiers, audit logs and smart contracts.
<i>Compliance</i>	Proof of payment of micro-levy	Monitoring activity likely needed	Monitoring activity likely needed	Monitoring activity likely needed	Through registering transactions in blockchain, smart contracts
<i>Who receives funds?</i>	Multilateral fund for biodiversity and infrastructure	Multilateral fund for biodiversity and infrastructure	Multilateral fund for biodiversity and infrastructure	Individual Parties (depending on contracts)	Individual Parties (depending on contracts) or a multilateral fund for biodiversity and infrastructure
<i>How long until funds accumulate?</i>	Short-mid-term	Short-mid-term	Mid-term	Long-term	Long-term
<i>Opt-in GR possible?</i>	Yes	Yes	No	Yes	Maybe
<i>Simplicity</i>	Simple	Simple	Complex	Simple	Complex