



**Food and Agriculture
Organization of the
United Nations**



The International Treaty
**ON PLANT GENETIC RESOURCES
FOR FOOD AND AGRICULTURE**

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Item 11 of the Provisional Agenda

NINTH SESSION OF THE GOVERNING BODY

New Delhi, India, 19–24 September 2022

Report on the Implementation of the Global Information System

Executive summary

This document provides an update on the implementation of the Programme of Work on the Global Information System since the last Session of the Governing Body, including on progress in the promotion and use of Digital Object Identifiers, the development of the Global Information System (GLIS) Portal, training and capacity-building activities, mobilization of resources and the strengthening of partnerships and collaborative agreements. The document also summarizes the work undertaken for the development of descriptors for Crop Wild Relatives conserved *in situ*, among other descriptor lists. The document contains elements for a draft resolution that includes the draft revised Programme of Work that the Secretary prepared with the advice of the Scientific Advisory Committee.

Guidance sought

The Governing Body is invited to take note of this progress report and provide any guidance it considers appropriate for further implementation of the Programme of Work on the Global Information System and related activities, taking into account the elements for a possible Resolution, as provided in *Appendix 2* of this document.

I. INTRODUCTION

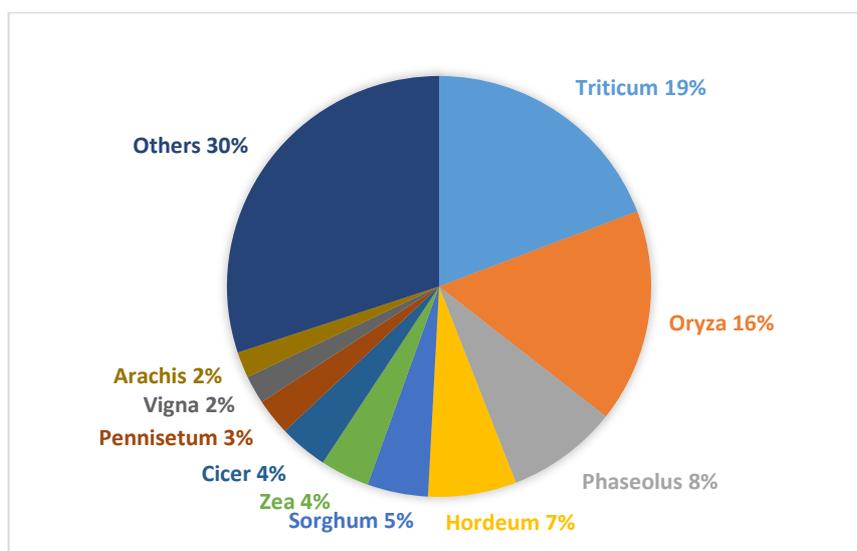
1. This document summarizes the major activities undertaken under the Programme of Work on the Global Information System (PoW-GLIS) since the Eighth Session of the Governing Body.
2. During the past biennium, the Scientific Advisory Committee (Committee) held its fourth meeting virtually on 20 and 21 April 2021 and its report is available as part of the documentation for the session.¹
3. The Committee advised the Secretary on the operations of the GLIS and the updating of the Programme of Work. The draft PoW-GLIS for the period 2023 to 2028 is attached to the draft Resolution for the consideration of the Governing Body (Annex to *Appendix 2*).

II. UPDATE ON OPERATIONS OF THE PROGRAMME OF WORK ON THE GLOBAL INFORMATION SYSTEM

A. Progress in the promotion, registration and use of Digital Object Identifiers

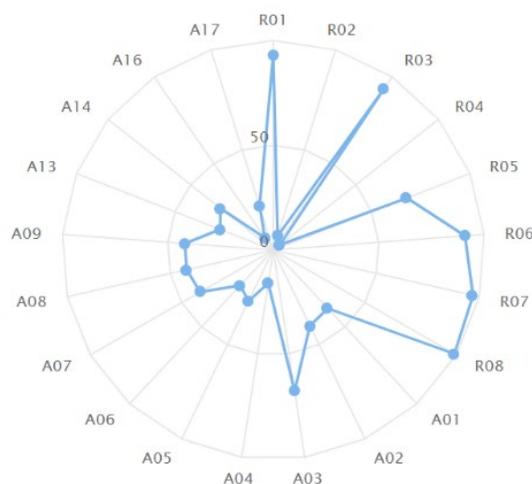
4. Digital Object Identifiers (DOIs) assigned to plant genetic resources for food and agriculture (PGRFA) help users to permanently and accurately identify the resources and inform potential users about the PGRFA available in the Multilateral System of Access and Benefit-sharing (Multilateral System or MLS). The voluntary use of DOIs also facilitates the exchange of information obtained during the research and development of germplasm, so that GLIS can add value to existing datasets and promote their further adoption.
5. At its Eighth Session, the Governing Body requested the Secretary to continue efforts to use the DOIs as an element of GLIS, linking existing information systems and thereby providing pointers from GLIS to PGRFA-related information in other systems. During the intersessional period, the Secretariat approached stakeholders in order to promote DOIs under GLIS. As a result, PGRFA holders from the following countries have begun to register DOIs: Armenia, Latvia, Lithuania, Luxembourg, Slovakia, Uruguay and Yemen.
6. The Secretary received requests for information from national genebanks and other PGRFA holders in non-Contracting Parties, interested in the voluntary application of the DOI standards in their workflow management and information systems.
7. As of 15 May 2022, a total of 1 228 000 PGRFA had been identified and linked with the related datasets in other systems through the registration of DOIs on the GLIS Portal – an increase of 32 percent since the last report. The pie chart in Figure 1 illustrates the percentage of crops for which DOIs have been registered. As of 15 May 2022, *Triticum* and *Oryza* were the genera best represented in the Global Information System, accounting for 35 percent of the DOIs assigned, followed by *Phaseolus* and *Hordeum*. Together, these four genera represent half of the materials documented through the Global Information System. They were followed by *Sorghum*, *Zea* and *Cicer*.

¹ IT/GB-9/SAC-GLIS-4/21/Report, www.fao.org/3/cb5340en/cb5340en.pdf

Figure 1. DOIS registered by genera as of 15 May 2022

Source: GLIS Portal.

8. The amount and quality of the information exposed with the assignment of DOIs also registered some changes in terms of quality. In addition to the mandatory descriptors mainly related to identification of the PGRFA, the number and percentages of other descriptors grew, with more information made available about the MLS status (descriptor R07), biological status (R03), related links (R01), and information about other identifiers (R06). In total, 68 percent of the new records contained information about the PGRFA provenance (A03) and other names (R05), as shown in Figure 2.²

Figure 2. Coverage of descriptors in registered DOIs as of 15 May 2022

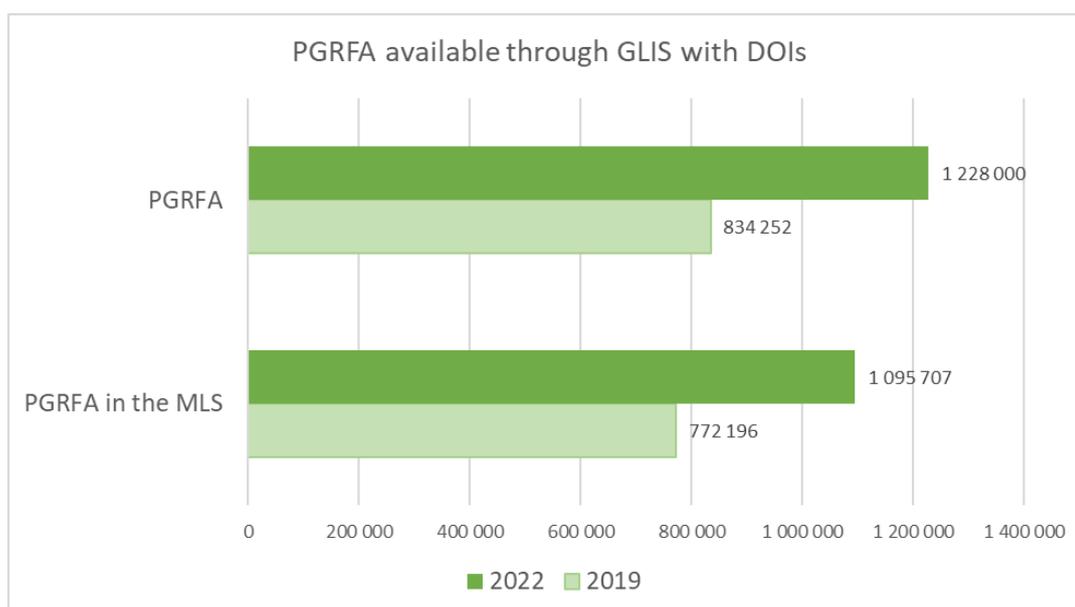
Source: GLIS Portal.

² Descriptors' names and their acronyms can be found at www.fao.org/3/I8840EN/i8840en.pdf

9. Since the last Session of the Governing Body, in 2019, the Secretariat has continued to support both public and private PGRFA holders in assigning DOIs to their PGRFA, and GLIS has continued to offer a stable mechanism for the identification of PGRFA available in the Multilateral System.

10. As of 15 May 2022, the GLIS Portal had provided information on 1 095 707 accessions available in the Multilateral System (a 29 percent increase over the last biennium), including associated information, links and pointers to various data repositories. The amount accounted for 89 percent of all PGRFA reported through GLIS. Figure 3 represents the total number of PGRFA material referenced through the use of DOIs in the Global Information System in relation to the material that is declared as available in the Multilateral System, and its evolution since the last report submitted to the Governing Body in 2019.

Figure 3. Increase of DOIs registration since the Eighth Session of the Governing Body – data as of 15 May 2022



Source: Treaty Secretariat with data from the GLIS Portal.

11. In the intersessional period, the Secretariat also supported INCREASE, a research project funded by the Horizon 2020 programme of the European Union. All project partners adopted the Standard Material Transfer Agreement (SMTA) for the transfer of plant materials within the project and with external entities. The project also adopted DOIs as identifiers of the materials exchanged, as well as new materials developed through the project. INCREASE has conducted a Citizen Science Experiment through an innovative and decentralized approach to seed conservation, multiplication and sharing. As of 15 May 2022, project partners had assigned more than 36 000 DOIs. Of these, over 32 000 were assigned to beans accessions distributed to approximately 5 500 citizens.³

12. Since the last Session in 2019, DOIs assigned to PGRFA material have been referenced by researchers in publications and papers on a larger scale. The links to the publications are available next to the record of the relevant PGRFA on the GLIS Portal. Additionally, the Secretariat has created a new section to allow users to search for publications that cite DOIs, for further testing and enhancement.

13. While many transactions for the registration of DOIs are made through the use of Excel tables, national public genebanks continued using the DOI Toolkit to register new material and update the content of the descriptors associated with existing DOIs. Reportedly, the Toolkit is in operation in

³ More information about INCREASE is available at: www.pulsesincrease.eu

Bangladesh, Bhutan, Brazil, Burundi, Cambodia, India, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Pakistan, the Philippines, Sri Lanka and Zambia.

14. National genebanks and other collection holders registered approximately 180 000 DOIs through the Toolkit, which represents an increase of 34 percent over the past biennium. In total, 20 centres adopted the Toolkit, 8 centres implemented their own connection layer, and one centre used the GRIN-Global version supporting DOI registration. Additionally, NordGen developed an open-source software library for DOI registration with GLIS. In total, 34 institutions from 26 countries received assistance with the registration of DOIs through different methods.

15. Collaboration with Genesys and the European Search Catalogue for Plant Genetic Resources (EURISCO) has continued in the past biennium. In practice, when a new record is added to these systems – or updated – declaring the DOI, the systems notify GLIS to update the record, thus avoiding duplication of efforts. The Secretariat also continued its collaboration with the World Information and Early Warning System (WIEWS), which included the joint elaboration of statistics in conjunction with research groups.

16. The Secretariat collaborated with partners and national focal points to deliver more than 30 presentations in various languages during the intersessional period at online conferences, workshops and virtual meetings. The list of major partners is available on the GLIS Portal.⁴

B. The new GLIS Portal

17. The first version of the GLIS Portal was published online in 2017, to allow users to share information about their PGRFA holdings and to point to information and knowledge available in referenced databases and systems. At its Eighth Session, the Governing Body requested the Secretary, subject to the availability of resources, to establish new infrastructural elements in the GLIS Portal.

18. At the fourth meeting of the Advisory Committee in 2021, the Secretariat presented those elements, including a renewed GLIS Portal homepage, and a new directory of links organized in three major 'channels', namely: Sources of PGRFA, Added Value Chain, and Users' Themes. Each channel page consists of one or more subpages, offering a selection of links to documents, websites and databases related to the specific topic of the channel content. Figure 4 shows the new homepage of the GLIS Portal.

19. The Committee welcomed the new version of the **homepage** and the new **directory** of links and services, and found that the channels presented on the homepage adequately reflected the elements of the GLIS Vision. The Committee encouraged the Secretary to continue developing the Portal and its directory, taking into account the feedback provided at the meeting.⁵

20. Since then, and in addition to the inclusion of new records and the update of the directory, the Secretariat has completed the translation of the content into all official languages.

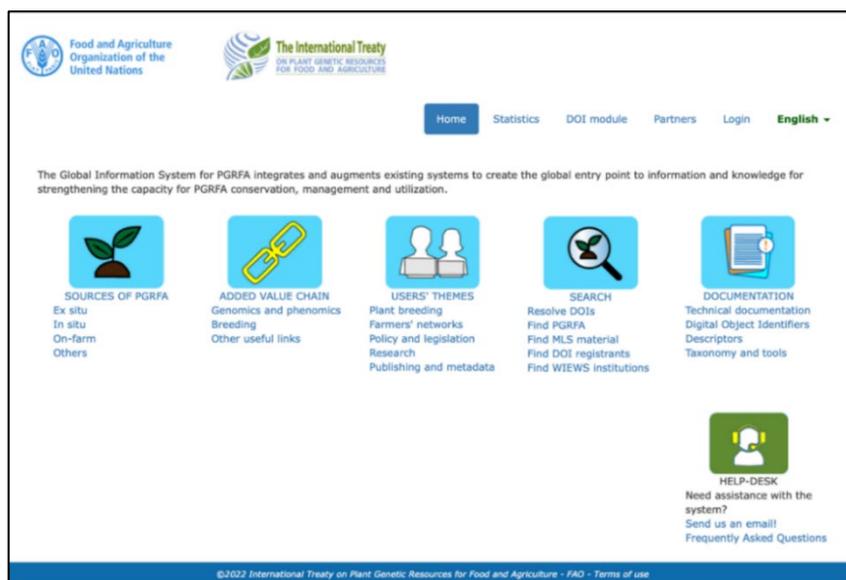
21. Furthermore, the **search function** of the Portal was expanded with the integration of the GRIN Taxonomy. This function facilitates the spelling of taxonomic names and allows users to optionally extend their search to synonyms. The adoption of GRIN Taxonomy has been coordinated with other partners, in particular Genesys, in order to provide coherent taxonomy across the two systems.⁶

⁴ ssl.fao.org/glis/static/en/partners.html

⁵ ssl.fao.org/glis/

⁶ ssl.fao.org/glis/site/doiindex

Figure 4. New homepage of the GLIS Portal, available in six languages



Source: GLIS Portal.

22. Following an assessment of the feedback collected from users through focus interviews, the Secretariat introduced new enhancements to the DOI module, in particular the possibility of downloading **search results in FAO/Bioversity Multi-Crop Passport Descriptor (MCPD) format**.
23. Additionally, the Secretariat strengthened the **integration of GLIS with Easy-SMTA**, allowing the recipients of the Click-wrap SMTAs to download the corresponding passport data of the material transferred in MCPD format when the SMTA Provider lists the DOIs of the material. This feature facilitates SMTA Recipients' operations and improves data quality.
24. Since the last session of the Governing Body, the Secretariat has redesigned the **statistics section** of the Portal and expanded it to include new products. An overview of the content is presented in *Appendix 1*.
25. Besides the increase in DOI registrations, the number of relationships among the DOIs in the graph database exceeded 74 000, representing an increase of 460 percent over the figure provided in 2019.
26. In the past biennium, the Secretariat has developed a prototype graph browser to help users to visualize the relationships created by the DOIs, and it demonstrated this at the meeting of the Scientific Advisory Committee. The Secretariat gathered comments for the further development of the module and its documentation, which is planned for the next biennium, subject to the availability of resources.⁷
27. During the information webinars organized by the Secretariat, on conservation and sustainable use in February 2022, and on the Global Information System in early May 2022, participants requested the Secretariat to make available the Toolbox on Conservation and Sustainable Use of PGRFA through the GLIS Portal. This activity, which is under way, would make the resources of the toolbox available in other official languages, while improving classification and indexing, as well as content search and contribution by users.⁸

⁷ See *Update on the DOI Module*, www.fao.org/3/cb4317en/cb4317en.pdf

⁸ A description of the prototype for the Toolbox is contained in document, IT/GB-9/22/12/Inf.1.

C. Documentation and descriptor lists

28. Through Resolution 3/2015, the Governing Body included the development, implementation and promotion of standards for the documentation of PGRFA in the PoW-GLIS, with the aim of facilitating interoperability among systems. At its Eighth Session, the Governing Body took note of the project, *Development of a Globally Agreed List of Descriptors for in situ Crop Wild Relatives Documentation*.⁹

29. The main outcome of the first phase of the project was the publication of a globally agreed List of Descriptors for Crop Wild Relatives (CWR) conserved *in situ* (CWRI v.1), in February 2021. The list contains an international standard for data exchange, developed and validated worldwide through the project. Its use facilitates the compilation and exchange of data produced and held by different national and international organizations. Its development built on the experiences of the Alliance of Bioversity International and CIAT and on previous work conducted by the International Treaty, as well as on international projects such as the Farmer's Pride project under the Horizon 2020 programme. The development of the list was made possible by an online consultation organized from February to April 2020, involving more than 107 experts from 87 institutions in 48 countries.¹⁰

30. The Secretariat also conducted a testing phase of the CWRI v.1 descriptors against the content of existing catalogues in selected countries of sub-Saharan Africa, the Group of Latin America and the Caribbean, Europe and Asia. The mapping and harmonization of the descriptors facilitate the establishment of national databases of *in situ* CWR. The Secretariat promoted new descriptors at the International Symposium on Genetic Resources of Latin America and the Caribbean (SIRGEAC), held in Colombia, and at other international conferences and training events.

31. With the advice of international experts, the project also undertook an analysis of gaps and possible options for providing support to countries through the development of national inventories on CWR *in situ*. International experts discussed the findings at a virtual workshop in September 2021, where further inputs and views were gathered. The analysis and the collective views of the workshop were presented in the document, *Towards a strategic approach to the development and implementation of national databases of CWR*.¹¹

32. The current phase of the project started at the end of 2021 and will run until 30 June 2023. The Government of Germany, through the Federal Ministry of Food and Agriculture, provided funding for the project, which is supporting Contracting Parties in developing and connecting national databases of CWRI. The project will also further update and promote the international descriptors through workshops and webinars. EURISCO of the European Cooperative Programme for Plant Genetic Resources (ECPGR) adopted the CWRI descriptors. The Southern African Development Community is also promoting them. A new module to facilitate the connection of CWRI data with selected countries is under development, and will be tested during 2022 and finalized in 2023.

33. On the occasion of the International Year of Fruits and Vegetables (2021) and in close collaboration with World Agroforestry (ICRAF) and with the Alliance of Bioversity International and CIAT, the Secretariat developed six strategic sets of characterization and evaluation descriptors for multipurpose tropical fruit tree species conserved *in situ*. The Secretariat makes information related to the descriptors and documentation of PGRFA available to users. The new booklets developed are expected to be particularly helpful to researchers, plant breeders and Contracting Parties.¹²

34. The Secretariat is also joining efforts by the *Avena* Working Group of ECPGR to support the update of oat descriptors published in 1985, and with the University of Philippines to develop

⁹ Resolution 3/2015, www.fao.org/3/bl140e/bl140e.pdf and Resolution 4/2019, www.fao.org/3/nb782en/nb782en.pdf

¹⁰ The List of Descriptors is available at www.fao.org/documents/card/en/c/cb3256en/

¹¹ IT/GB-9/22/11/Inf.1, www.fao.org/3/ni642en/ni642en.pdf

¹² The six descriptor lists include: (1) *Dacryodes edulis*, (2) *Docynia indica*, (3) *Irvingia* spp., (4) *Sclerocarya birrea*, (5) *Strychnos cocculoides* and (6) *Ziziphus mauritiana*

international descriptors for *Canarium ovatum*, known as pili nut. In addition, the Secretariat is supporting development of the *Pisum* descriptors with a group of international experts.

D. Advocacy, training and capacity strengthening

35. During the past biennium, the Secretariat has continued updating the Frequently Asked Questions (FAQs) related to GLIS and its portal, the DOIs and relevant practical issues linked to their application. The related portal section was translated into Chinese and Russian and is now available in all six official languages.¹³

36. During the renewal of the GLIS Portal, the Secretariat created a new section that catalogues all the resources developed so far to support the adoption of DOIs, the use of Excel files for DOI registration, the XML protocol and other technical documentation, together with notes explaining how to reference the GLIS DOIs in publications and scientific datasets. The section also contains helpful resources and references on taxonomy and data management tools developed by other organizations.¹⁴

37. Due to the limitations imposed by the COVID-19 pandemic, in-person capacity development activities were not carried out during the biennium. However, several information and training workshops were organized virtually.¹⁵

E. Other partnerships

38. At its Eighth Session, the Governing Body noted the progress made with the DivSeek International Network and requested the Secretary to explore possible arrangements for further engagement with the Network.

39. The Secretariat prepared a memorandum of understanding, which underwent FAO's internal clearance process, and was signed in May 2022.¹⁶

40. The Secretariat and DivSeek International organized joint webinars on GLIS and the benefits of using DOIs, and participated in DivSeek's webinars. The Secretary invited DivSeek to report on activities relevant to the work of the International Treaty at this Ninth Session.¹⁷

F. Genetic sequence data with respect to PGRFA

41. At its Eighth Session, the Governing Body thanked the stakeholders and users who submitted information on the application of Digital Object Identifiers to digital sequence information/genetic sequence data (DSI/GSD) and requested the Scientific Advisory Committee to continue considering scientific and technical issues of relevance to DSI/GSD and national legislation, as appropriate.¹⁸

42. At its fourth meeting in April 2021, the Committee received an update from the Secretary on relevant policy processes at the Convention on Biological Diversity (CBD). It noted that the information provided was helpful and advised the Secretariat to continue monitoring and informing the Committee. It also noted that providing access to information is a form of benefit-sharing. Additionally, it stressed that the forum for discussing DSI/GSD in relation to PGRFA and benefit-sharing should be the International Treaty through its Governing Body.¹⁹

¹³ www.fao.org/plant-treaty/areas-of-work/global-information-system/faq/en/

¹⁴ ssl.fao.org/glis/static/en/documentation.html

¹⁵ Major training events are listed at www.fao.org/plant-treaty/areas-of-work/global-information-system/externalmeetings/en

¹⁶ IT/GB-9/22/11/Inf.3.

¹⁷ IT/GB-9/22/11/Inf.2.

¹⁸ Paragraphs 8 and 14 of Resolution 14/2019. The term 'digital sequence information' is used interchangeably with 'genetic sequence data', without any prejudice to the possible definition of terminology by the Governing Body.

¹⁹ Paragraph 26 of the Report, www.fao.org/3/cb5340en/cb5340en.pdf

43. After the meeting, the Secretariat continued to follow the consideration of DSI/GSD at the CBD Open-Ended Working Group on the Post-2020 Global Biodiversity Framework. At the online briefings for Contracting Parties in May 2022, the Secretariat presented a synthesis of relevant documentation and outcomes, including on options identified by the Group. In particular, the Secretariat noted that, in the draft recommendations of the Open-Ended Working Group to the CBD Conference of the Parties resulting from the meeting of March 2022, mutual supportiveness of, and adaptability to, other access and benefit-sharing instruments are under consideration.²⁰

44. At the time of preparation of this document, the CBD processes are still ongoing. As requested by the Governing Body in Resolution 13/2019, the Secretary will inform the Governing Body, at this Session, of the state of discussions and outcomes of the related processes in the CBD as they relate to the potential implications of the use of ‘digital sequence information’ on genetic resources for the objectives of the International Treaty.²¹

45. In May 2022, the Secretary issued a notification inviting Contracting Parties to submit inputs on DSI. The received inputs are analysed in the document, *Considerations of Digital Sequence Information in Accordance with Resolution 13/2017 and the Multi-Year Programme of Work*, issued under item 17 of the Provisional Agenda.²²

III. REVISED PROGRAMME OF WORK

46. At the Eighth Session, the Governing Body requested the Secretary to review the PoW-GLIS, with the advice of the Scientific Advisory Committee.

47. At its fourth meeting, the Advisory Committee provided direct feedback on a first draft of the reviewed PoW-GLIS and requested the Secretary to prepare and send a second draft for comments by the Committee. The comments received were integrated into the draft that is contained in the *Annex to Appendix 2* of this document.

48. In summary, the current draft streamlines the activities of the PoW-GLIS around five objectives, instead of six. Some of the activities from the first programme were concluded and were removed, while others were integrated in a more coherent way (e.g. the activities related to capacity development are now grouped together). The five objectives focus on:

1. management and enhancement of the GLIS Portal;
2. promotion of interoperability among existing systems;
3. improved transparency on the rights and obligations for users accessing and sharing PGRFA information;
4. creation and enhancement of opportunities to increase knowledge about and add value to PGRFA; and
5. support for capacity development and technology transfer opportunities.

IV. RESOURCE MOBILIZATION

49. At the Eighth Session, the Governing Body made financial provision for a limited number of activities of the PoW-GLIS within the Core Administrative Budget (CAB). In the past biennium, only one donor contributed to the non-CAB-funded activities of the PoW-GLIS, namely to improve the documentation of Crop Wild Relatives conserved *in situ*.

²⁰ www.cbd.int/doc/recommendations/wg2020-03/wg2020-03-rec-02-en.pdf

²¹ Resolution 13/2019, www.fao.org/3/nb791en/nb791en.pdf

²² Notification [NCP 021](#) and document IT/GB-9/22/17.2

50. Most of the activities that the Scientific Advisory Committee identified for the PoW-GLIS, including, by way of example, support to genebanks in developing countries to digitalize valuable characterization and evaluation information about PGRFA, remain largely underfunded. The delivery of technical support, training and capacity development in collaboration with key partners is dependent on extra-budgetary resources. In this context, the Secretariat remains committed to mobilizing financial resources, including through the development of *ad hoc* projects in support of Contracting Parties.

51. In preparing and adopting the budget for the next biennium, the Governing Body may consider providing funds for the organization of at least one meeting of the Scientific Advisory Committee, should it decide to reconvene it, as well as making financial provision for the maintenance of the help-desk and the core infrastructure and services targeting users.

V. GUIDANCE SOUGHT

52. The Governing Body is invited to consider the elements provided in *Appendix 2* to this document in order to adopt a Resolution on Implementation of the Global Information System, to include the PoW-GLIS for the period 2023–2028.

*Appendix 1***Statistics on PGRFA information made available through the Global Information System²³**

Query	Description
DOI registration overview	<p>Provides an overview of DOI registration activity. Indicators provided include:</p> <ul style="list-style-type: none"> • Top 20 registrants by number of DOIs • Top 10 countries by number of PGRFA conserved • Top 10 genera by number of PGRFA registered <p>It is possible to click on institution names, country names and genera to further explore the results</p>
MLS status, method, biological status and historical Status	Provides information on the biological status of PGRFA registered in GLIS, the method used to obtain them, their status with respect to the Multilateral System of the International Treaty, and whether or not the PGRFA is available for distribution.
Share of DOIs with links by registrant	Provides a list of registrants with the number of DOIs they have registered, those that have links associated, and the share of DOIs with links of the total.
DOI descriptor coverage	Lists all non-mandatory descriptors and provides the number of DOIs that have that descriptor populated out of the total number of DOIs registered.
Provenance	Allows users to select the provenance of PGRFA and lists the genera, the number of DOIs registered, and the holding countries. Optionally, it is possible to restrict the search to CGIAR centers only, and also to specify the status of the PGRFA with respect to the Multilateral System of the International Treaty. Drill-down capabilities are available to further explore the results.
DOIs in projects	Displays the list of Benefit-sharing Fund projects and other projects and the number of PGRFA studied during the project's activity. Click on the project symbol to go to the project detail page or on the number of PGRFA to see a detailed list of the corresponding DOIs.
GLIS DOIs in publications and datasets	Displays the publications and datasets that are currently known to GLIS and that cite GLIS DOIs. Filtering is supported.

²³ The statistics section is available at: ssl.fao.org/glis/stats/index

Example queries

- How many PGRFA has my institution registered? (please log in to activate this query)
 - How many PGRFA have been registered by holders in my country? (please log in to activate this query)
 - [How many PGRFA have been registered by genus?](#)
-
- [How many PGRFA are included in the Multilateral System of the International Treaty and why?](#)
 - [What is the breakdown of registered PGRFA with respect to the biological status?](#)
 - [How were *ex situ* PGRFA obtained?](#)
 - [How many PGRFA are available for distribution?](#)

DRAFT RESOLUTION **/2022**IMPLEMENTATION OF THE GLOBAL INFORMATION SYSTEM****THE GOVERNING BODY,**

Recalling its previous Resolutions and decisions on the Vision and the Programme of Work on the Global Information System (PoW-GLIS), and particularly Resolutions 3/2015, 5/2017 and 4/2019;

Further recalling the contribution of the Global Information System of Article 17 of the International Treaty (GLIS) to the Multilateral System of Access and Benefit-sharing, in particular to the provisions of Article 13.2.a;

Thanking the Government of Germany for the financial support provided for the documentation of Crop Wild Relatives conserved *in situ*;

Thanking the members of the Scientific Advisory Committee on the Global Information System of Article 17 for the advice provided to the Secretary and their inputs to the various work tracks on GLIS;

1. **Takes note** of the progress made in implementation of the PoW-GLIS since the last session of the Governing Body, in particular with the development of the GLIS Portal, and **requests** the Secretary to continue updating the catalogue of resources and tools linked in all the official languages.
2. **Takes note** of the progress made with the promotion of the Digital Object Identifiers (DOIs) and **requests** the Secretary, subject to the availability of resources, to continue promoting their use, on a voluntary basis, and to expand the efforts to build the capacity of relevant stakeholders, especially in developing countries.
3. **Takes note** of the publication of the *Descriptors for Crop Wild Relatives conserved in situ* and the six new lists of characterization and evaluation descriptors for tropical fruit trees and **acknowledges** all the institutions and individuals who have contributed to their accomplishment.
4. **Takes note** of the limited availability of national databases of CWR conserved *in situ* and **invites** the Contracting Parties that have not done so to consider their development with a view to facilitating further research and use. In this context, it **requests** the Secretary, subject to the availability of resources and in partnership with relevant stakeholders, to support Contracting Parties in the documentation of crops and their wild relatives and to support the relevant programmes to increase public awareness about the value and role of CWR in plant breeding;
5. **Takes note** of the ongoing collaboration with Genesys, the World Information and Early Warning System (WIEWS), GRIN-Global, the European Search Catalogue for Plant Genetic Resources (EURISCO) and the SPGRC Documentation and Information System (Web-SDIS), and **requests** the Secretary to continue enhancing cooperation with relevant institutions and initiatives, and to facilitate the exchange of PGRFA information;
6. **Recalls** the opinion of the Scientific Advisory Committee on the usefulness of the voluntary application of DOIs to PGRFA information, and **thanks** the stakeholders and users who have submitted information on the application of DOIs to digital sequence information/genetic sequence data (DSI/GSD), including to link phenotypic and passport data with genomics data;²⁴

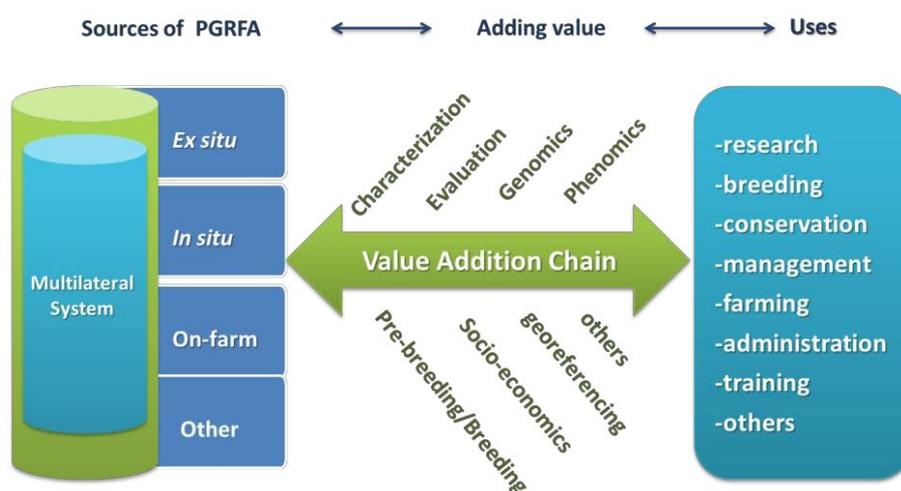
²⁴ The term 'digital sequence information' is used interchangeably with 'genetic sequence data', without any prejudice to the possible definition of terminology by the Governing Body.

7. **Requests** the Secretary to encourage and guide users to link scientific publications and datasets to PGRFA material, and to support users in incorporating such information into information management systems;
8. **Takes note** of the conclusion of the memorandum of understanding and of progress made with the DivSeek International Network, and **requests** the Secretary to update the Governing Body to report on joint activities at the Tenth Session;
9. **Adopts** the revised Programme of Work on GLIS, as contained in the *Annex* to this Resolution;
10. **Decides** to reconvene the Scientific Advisory Committee with the same terms of reference of the previous biennium, subject to the availability of financial resources, to hold at least one meeting in presence and, as necessary, virtually and **requests** the Secretary to continue updating the Committee on progress in the implementation of the PoW-GLIS;
11. **Requests** the Scientific Advisory Committee to continue considering scientific and technical issues of relevance to DSI/GSD, and considering national legislation, as appropriate;
12. **Invites** Contracting Parties, other governments and stakeholders to provide the necessary resources to implement the PoW-GLIS, in particular for the further development of the GLIS Portal, the review of crop ontologies and the support of training and capacity development activities in developing countries;
13. **Requests** the Secretary to follow up on implementation of the recommendations of the Scientific Advisory Committee and to submit a progress implementation report to the Tenth Session of the Governing Body.

*Annex to Appendix 2***Draft****Programme of Work on the Global Information System (2023-2028)**

The Programme of Work (PoW-GLIS) will cover a period of six years. It will be implemented through a phased approach and funded by a combination of core budgetary resources, as may be determined by the Governing Body, and extra-budgetary contributions.

The aim of GLIS is to bridge the gap between the sources of PGRFA, the research and added-value activities and the uses of PGRFA.



The PoW-GLIS has six objectives:

THE GLIS PORTAL**1. To manage and enhance the GLIS Portal**

- to further develop and manage the GLIS Portal, including a directory of links and services;
- to allow quick access to information sources on PGRFA material, in particular material available in the Multilateral System of Access and Benefit-sharing (MLS), at accession level;
- to make reference to all non-confidential information, in particular from research and development carried out on the material received from the MLS, by providing links to information sources storing these data;
- to define use case scenarios for target groups and set up mechanisms to regularly collect users' feedback and experiences.

INTEROPERABILITY**2. To promote and facilitate interoperability among existing systems by providing principles, technical standards and appropriate tools to support their operations**

- to promote the adoption of Permanent Unique Identifiers applied to PGRFA, including the voluntary use of Digital Object Identifiers (DOIs), and the creation of linkages between phenotypic and passport data with genomics data;
- to document and inform about PGRFA documentation standards for data and metadata (e.g. for phenotypic data such as crop-specific descriptors) and promote their dissemination and use;

- c. to establish connections with other initiatives relevant for the adoption of open data and PGRFA documentation standards;
- d. to document and inform about technical standards required for interoperability between GLIS and selected PGRFA information systems, including crop ontologies.

ACCESS TO AND USE OF INFORMATION

3. To promote transparency on the rights and obligations of users for accessing, sharing and using PGRFA-associated information

- a. to inform about rights and obligations of users when accessing information sources in the GLIS Portal and document the related institutional, organizational, policy and legal factors in the context of Articles 12 and 13 of the International Treaty;
- b. to monitor policy developments in international fora of relevance to the GLIS Vision and Programme of Work and document the scientific and technical impacts of national legislation related to accessing and using PGRFA-associated information, including DSI/GSD, in the context of Article 17.²⁵

ADDED VALUE BY INFORMATION AND KNOWLEDGE SHARING

4. To create and enhance opportunities to increase knowledge about and add value to PGRFA

- a. to identify and create tools, mechanisms and opportunities for information exchange among partners and users of the GLIS Portal (research, academia, gene banks, farmers, breeders, private sector, scientific journals, etc.);
- b. to encourage and guide users to link scientific publications and datasets to PGRFA material, and collaborate with reference publishers, dataset repositories and citation agencies;
- c. to raise awareness among stakeholders on traditional knowledge relevant to PGRFA management in accordance with the International Treaty's provisions, and in harmony with other international instruments.

CAPACITY DEVELOPMENT AND TECHNOLOGY TRANSFER

5. To inform about and support capacity development and technology transfer opportunities for the conservation, management and use of information and knowledge associated with PGRFA, paying special attention to the needs of developing countries

- a. to strengthen the capacity of gene banks and other providers to document their holdings, including areas such as taxonomy, information management and bioinformatics in collaboration with relevant partners;
- b. to strengthen the capacity of Contracting Parties to develop national and regional inventories and information systems, including for *in situ* and on-farm material;
- c. to facilitate the transfer of relevant technologies required for the management of PGRFA-associated information, including by convening and supporting regional meetings and scientific conferences;
- e. to provide access to training materials and e-learning products and to design mechanisms to promote training opportunities across institutions.

²⁵ The term 'digital sequence information' is used interchangeably with 'genetic sequence data', without any prejudice to the possible definition of terminology by the Governing Body.