

May 2017



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



The International Treaty
ON PLANT GENETIC RESOURCES
FOR FOOD AND AGRICULTURE

Item 2 of the Provisional Agenda
INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE
SECOND MEETING OF THE SCIENTIFIC ADVISORY COMMITTEE ON THE GLOBAL INFORMATION SYSTEM
Rome, Italy, 13 – 14 June 2017
Report on the Operations of the Programme of Work

I. INTRODUCTION

1. This document summarises the major activities undertaken under the Programme of Work on the Global Information System (PoW-GLIS) since the first meeting of the Scientific Advisory Committee on the Global Information System.
2. Following the Programme of Work and the advice and the recommendations provided at the first meeting by the Committee, the Secretariat is reporting on four major areas:
 - i) update on financial support and training;
 - ii) the update of the Guidelines for the optimal use of the Digital Object Identifiers as permanent unique identifiers for Plant Genetic Resources for Food and Agriculture (Guidelines);
 - iii) the development of the web-based Platform for the registration of Digital Object Identifiers (DOIs), and;
 - iv) the advocacy, collaboration and partnership activities in support of developing countries for the implementation of the Global Information System (GLIS).
3. Since the first meeting of the Committee, major efforts have also been made in the strengthening and development of partnerships for the development of the GLIS Portal and the implementation of the PoW, some of which are reported here. Furthermore, this document provides an overview of some considerations on access to and use of information.
4. The Committee is invited to advise the Secretariat on various aspects of the development of the web-based Platform and on any other relevant matter not specifically covered under agenda items 3, 4 and 5.

II. UPDATE ON THE OPERATIONS OF THE PoW-GLIS

II.1 Financial Support for the Implementation of the PoW-GLIS

5. In adopting the PoW-GLIS, the Governing Body did not make provision for its implementation in the Core Administrative Budget for the current biennium, such that the implementation of the activities on GLIS relies on extra-budgetary contributions. Since the last

This document is printed in limited numbers to minimize the environmental impact of FAO's processes and contribute to climate neutrality. Participants are kindly requested to bring their copies to meetings and to avoid asking for additional copies.

meeting of the Committee, the Federal Ministry of Food and Agriculture (BMEL) of Germany has made a financial contribution of USD\$1.1 million to fund a project in direct support of the PoW-GLIS. The activities covered by the project include the review and publication of the guidelines and the development of the web-based Platform. It also contains a range of activities on training and capacity strengthening in the Near East and North Africa Region and the countries affiliated with the Southern African Development Community.

6. The contribution enabled the organization of a regional workshop in Egypt to promote the use of common standards and tools to facilitate the registration and identification of PGRFA material in the Global Information System.¹ The event was organized in collaboration with the National Genebank of Egypt (NGE), the Agricultural Genetic Engineering Research Institute (AGERI) of Egypt and with the support of the FAO Regional Office for the Near East and North Africa. The workshop was held in Cairo from 9 to 11 May 2017, with the participation of 31 experts on documentation and information exchange from fifteen countries and partner organizations of the Near East and North Africa Region, including genebank curators, plant breeders, geneticists, *in situ* experts, bioinformaticians and information specialists.

7. As part of the activities of the project, the Secretariat undertook a regional assessment of the status of national genebank documentation systems. The exercise took into account the notification of material available in the Multilateral System and the use of the Standard Material Transfer Agreement of the International Treaty. The participants provided information on ten different documentation systems of which the main strengths and weaknesses were analysed.

8. Several countries indicated that their documentation systems are obsolete and that they needed support to upgrade and connect them to the work of plant breeders and farmers. The main results of the evaluation will soon be made available by the Secretariat.

9. Additionally, the participants became more familiar with the tools developed by the Capfitogen training programme of the International Treaty,² the monitoring of the Global Plan of Action on the conservation and sustainable use of PGRFA,³ the GRIN-Global genebank documentation system⁴ and the Genesys database.⁵ The Eurisco portal was also presented as an example of a coordinated product generated from regional cooperation.⁶

10. The experts also elaborated a short list of recommendations for further strengthening regional coordination and networking through the Programme of Work on the Global Information System on topics of mutual interest, tools, standards, and on training and individual and institutional capacity strengthening. Among the recommendations, is the necessity to revamp existing networks on plant genetic resources in collaboration with the Association of Agriculture Research Institutions in the Near East.

II.2 Update of the Guidelines for the Optimal Use of DOIs

11. At its first meeting, the Committee reviewed the document, *Data required for the assignment of Digital Object Identifiers in the Global Information System - v.1.1*; and *Guidelines for the optimal use of Digital Object Identifiers as permanent unique identifiers for Plant Genetic Resources for Food and Agriculture - v.2*.

¹ See the programme at <http://www.fao.org/plant-treaty/meetings/meetings-detail/en/c/853576/>.

² See <http://www.fao.org/plant-treaty/initiatives/capfitogen/en/>.

³ See <http://www.fao.org/agriculture/crops/thematic-sitemap/theme/seeds-pgr/gpa/monitoring0/en/>.

⁴ See <http://www.grin-global.org/>.

⁵ See <https://www.genesys-pgr.org/>.

⁶ See <http://eurisco.ipk-gatersleben.de>.

12. At the same meeting, the Committee “recommended to continue testing and improving the guidelines with users”. Since then, the Secretariat incorporated some of the immediate feedback received from the members of the Committee and circulated the revised version for comments through official notification and email dispatch.⁷

13. The Secretariat compiled and analysed all the comments received by email in a new version with a summary of the major suggestions and comments received. Additional feedback was received following the presentations made to plant breeders and genebank staff at various meetings. The analysis is contained in document IT/GB-7/SAC-2/17/4, *Review of the Guidelines for Digital Object Identifiers (DOIs)*.

14. The Committee is invited to consider the relevant documentation and provide further advice on the Guidelines.

II.3 Progress with the Development of the GLIS Portal

15. The web-based Platform and the Integration Toolkit are the foundation for the GLIS System to facilitate the connection of systems and data stores and to deliver online services. The Platform is conceived as a global entry point to information and knowledge and as a connector of datasets from distributed systems. Since the last meeting, the Secretariat has established a collaboration with the Information Technology Division of FAO (CIO) for the development and launch of the Platform, which will allow the registration of DOIs as well as the development of the Integration Toolkit. The activities described under this section correspond with Objective 1 of the Programme of Work.

a) The Web-based Platform

16. In January 2017, the Secretariat finalized a service agreement with CIO including (i) the deployment of the Platform to the FAO server infrastructure and (ii) the implementation of the Integration Toolkit.⁸ The development of the GLIS Platform continues as planned with improvements applied to the workflow according to modifications in the project documents resulting from consultation with stakeholders.

17. One of the most important value-added services of GLIS is the modelling of relationships among PGRFA as a directed graph through an advanced, intuitive graphic interface for its exploration. The interface will offer sophisticated filtering capabilities to prune the graph’s visualization while interactively navigating along the edges looking for interesting relationships among PGRFA.⁹

18. GLIS supports extensive query and harvesting functionalities through an advanced query API, offering the GLIS Descriptors in XML or JSON formats.¹⁰ In collaboration with GBIF, Darwin Core Archive¹¹ (with the germplasm extension)¹² and JSON-LD¹³ are now also available.

⁷ Notification GB7 – 017 – GLIS – DOIs, available at <http://www.fao.org/plant-treaty/notifications/detail-events/en/c/846711/>.

⁸ The GLIS Integration Toolkit is a lightweight, easily deployable application facilitating the adoption of the GLIS XML Integration Protocol by participating institutions that are unable or unwilling to develop their own integration solution.

⁹ Pruning consists in hiding nodes and edges of a graph to display only those matching some search conditions. Pruning can also be obtained by limiting the graph visualization to nodes that are within a given distance (i.e. a given number of edges or “hops”) from a specific root node. This allows the user to obtain a simplified representation of the graph and more easily identify features of interest.

¹⁰ See <http://www.fao.org/3/a-br574e.pdf>.

¹¹ See <http://rs.tdwg.org/dwc>.

¹² See <https://journals.ku.edu/jbi/article/viewFile/4095/4064>.

¹³ See <http://rs.tdwg.org/dwc/terms/guides/rdf/index.htm>.

Additional formats, such as BRAPI¹⁴ and RDF¹⁵ are being considered to further expand the integration options available to third-party systems.

19. The Secretariat is exploring a possible collaboration with re3data initiative that maintains a registry of research data repositories.¹⁶ The integration with re3data will allow GLIS users to obtain information on the repositories such as access terms and conditions, integration protocols and contact details. This information would be a particularly useful complement to the links to websites recorded in GLIS.

b) The Integration Toolkit

20. According to the project documents provided by the Secretariat and after extensive consultation, CIO recommended the adoption of WSO2,¹⁷ a powerful, open-source middleware designed to connect systems through a rich set of modules and services using standard formats and protocols.

21. In March 2017, a first version of the Integration Toolkit was successfully deployed at the International Rice Research Institute (IRRI) in the framework of the Indonesia Benefit-sharing Fund Project supporting registration of PGRFA in GLIS and providing valuable information to improve the transactions between the web-based Platform and third-party systems.¹⁸

22. The next release will support two additional services: (i) the update of descriptors associated to a PGRFA already registered in GLIS and (ii) integration with the transfer workflow.¹⁹ All services can be activated independently letting stakeholders choose which parts of the workflow to adopt.

II.4 Advocacy, Collaboration and Partnerships

23. The development and implementation of GLIS is a complex task that requires communication and interactions with a large number of organizations, initiatives and projects dealing with plant genetic resources conservation and use, but also in the field of information management and informatics. While document IT/GB-7/SAC-2/17/5 provides detailed information on partnerships and collaborations, this sections offers a synopsis on some of the most recent interactions for the web-based Platform.

a) Advocacy and Training

24. With the support of FAO's Partnerships, Advocacy and Capacity Development Division (OPC), a collaboration with the Global Open Data for Agriculture and Nutrition (GODAN)²⁰ initiative has been established to promote the adoption of DOIs among their stakeholders and networks. The collaboration will increase the visibility of DOIs and GLIS in the large GODAN community and will allow the Secretariat to join forces in their advocacy initiatives.²¹

¹⁴ See <http://brapi.org>.

¹⁵ See https://en.wikipedia.org/wiki/Resource_Description_Framework.

¹⁶ See <http://www.re3data.org>.

¹⁷ See <http://wso2.com/platform>.

¹⁸ The Benefit-sharing Fund Project led by Indonesia aims at testing the GLIS workflow and the associated XML integration protocol in a real-world scenario. The Integration Toolkit will connect participating institutions in Asia and Africa with the collaboration of IRRI as technical partner.

¹⁹ As explained in the Guidelines (see <http://www.fao.org/3/a-bq549e.pdf>), assignation of a new DOI to the material once incorporated in the Recipient's collection is not mandatory but strongly recommended.

²⁰ See <http://www.godan.info>.

²¹ <http://aims.fao.org/fr/activity/blog/guidelines-optimal-use-digital-object-identifiers-germplasm-samples-0>.

25. A similar collaboration, also with the support of with FAO's OPC, is being established with the Research Data Alliance (RDA)²² to promote data sharing and exchange in the context of the Global Information System.

26. Following the advice of the first meeting of the Scientific Advisory Committee, the Secretariat has explored synergies with the CGIAR's Excellence for Breeding Platform, the Plant Production and Protection Division of FAO, the Global Crop Diversity Trust in relation to Genesys, DataCite, the European Cooperative Programme for Plant Genetic Resources (ECPGR), the CBD Secretariat, the Association of Agricultural Research Institutions in the Near East and North Africa (AARINENA) and ICARDA, among others.

27. The Secretariat promoted the Programme of work on the Global Information System and the use of DOIs at a Regional Seminar of the Latin America and the Caribbean Region (GRULAC) on the implementation of the International Treaty on PGRFA held in Montevideo, Uruguay, in April 2017.²³

28. In addition to the workshop organized for the Near East and North Africa region, the Secretariat is exploring opportunities for a similar workshop to be organized in the Southern African Development Community (SADC) Region.

b) Online Documentation and Resources

29. The Secretariat has further promoted the work on GLIS and DOIs in the website of the International Treaty through the development of a dedicated web section containing the documentation on the work of GLIS.²⁴ In the webpage 'Selected documentation and links' interested users can watch two videos on the DOIs, information on consultations and surveys with experts and stakeholders and reports from other meetings.

30. The section also includes a page with Frequently Asked Questions (FAQs) on matters related to the DOIs, concepts and the benefits of using common documentation standards and tools. The web section also contains the latest versions of both the descriptors and the guidelines.

III. OTHER UPDATES

31. Regarding the component of the PoW dealing with transparency of rights and obligations of relevance to accessing, sharing and using PGRFA associated information within the Global Information System, the Secretariat has continued monitoring relevant developments in order to facilitate dialogue with the Working Group on the enhancement of the functioning of the Multilateral System. It has also gathered potential users' requests and started devising practical terms of access and use for the GLIS web-based Portal. Detailed information is provided in the document, IT/GB-7/SAC-2/17/5.

32. At its Sixth Session, the Governing Body requested the Secretary to invite DivSeek stakeholders to report on the implications, for the objectives of the International Treaty, of the technologies underlying the DivSeek Initiative.

33. At its first meeting, the Scientific Advisory Committee listed the DivSeek Initiatives as one of the potential collaborations and partnership in the context of the Global Information System.

34. As requested, the DivSeek Initiative, in March 2017, sent a report in three sections: conservation, sustainable use and the fair and equitable sharing of the benefits arising out of the

²² See <https://www.rd-alliance.org>.

²³ See <http://www.fao.org/plant-treaty/news/detail-events/en/c/883841/>.

²⁴ Available at: <http://www.fao.org/plant-treaty/areas-of-work/global-information-system/en/>.

use of PGRFA. The Secretary circulated the report to all Contracting Parties through a notification and has also made it available as part of the documentation for this meeting.²⁵

35. Following the guidance received from the Bureau and the Scientific Advisory Committee, the Secretariat is now engaging with the DivSeek Initiative with a view to defining the scope and content of a *memorandum* of understanding that would form the basis of a relationship between the International Treaty and the Initiative. The Committee is invited to provide advice on possible elements of the scope and content of the memorandum.

IV. ADVICE SOUGHT

36. The Scientific Advisory Committee is invited to take into consideration the information provided in this document and advise on the development of the GLIS Portal, in particular on the web-based Platform and the Integration Toolkit and any other relevant element for the implementation of the Programme of Work on the Global Information System of the International Treaty.

²⁵ NCP GB7-019 DivSeek Report, available at: <http://www.fao.org/plant-treaty/notifications/detail-events/en/c/852956/>