

## Progress towards a regional data platform of West and Central African Herbaria (Benin, Côte d'Ivoire, Guinea Conakry, Togo, and Cameroon)

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**Programme:** BID

**Project ID:** BID-AF2020-040-REG

**Project lead organization:** GBIF TOGO, University of Lome

**Project implementation period:** 1/4/2021 - 31/3/2023

**Report approved:** 17/5/2023

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### Final Narrative Report

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#### Executive Summary

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As indicated in the proposal, the project identified by BID-AF2020-040-REG has previously planned to involve 5 countries mainly Benin, Côte d'Ivoire, Guinea, and Togo from West Africa and Cameroun from Central Africa. Gabon, which was planned to participate in the project by bringing its experience in using the software from the BID project (BID-AF2015-0038-NAC), with feedback on advantages, difficulties, and ideas for improvement, becomes a partner as the 5 countries listed in the proposal. Then 6 countries constituted the project consortium.

Moreover, the project was supported by the PatriNat Unit in the French National Museum of Natural History. This partner brings technical support from GBIF France, as well as its experience in data validation, biodiversity assessment, and in decision support.

Two computer engineers were solicited for the design and implementation of the platform's computer model.

#### Approach taken

The FAIR approach has been adopted to facilitate data mobilization and their incorporation into the regional platform which addresses the following issues:

- share quality and up-to-date data & analysis from several West and Central African countries, at the regional and global scale (including within GBIF)
- enhance South/South research collaboration
- improve regional involvement in international communities (eg GBIF, LA)
- enrich the regional LA platform and GBIF.org with an automatic workflow fetching data from national databases
- reinforce the involvement of scientists in decision-making at the national & regional scales
- provide policy-makers with efficient tools for environment data management/use
- contribute to sustainable development by integrating biodiversity data into environmental policies.

#### Key achievements and impact

- data mobilized: 168,742 occurrences (instead of 100,000 scheduled)
- setting up of the regional data mobilization platform: website and data portal with documentation for Benin, Cameroon, Côte-d'Ivoire, Gabon, Guinea, and Togo Herbaria; available on
  - + <http://riha.african-herbaria.org>
  - + <http://riha.african-herbaria.org/accueil-referentiel>
  - + <http://riha.african-herbaria.org/phototheque>
- 1) the RIHA data management platform is now useable for the administration of herbarium data from each partner country of the project. The same data management environment relies on country-specific databases to ensure their ownership and security.
- 2) the LA Portal which is a replication of the data, for query/display purposes, is installed for the region: the 6 partners and pilot countries enjoy priority from then on.
- 3) a converter is developed from the existing application data model to DwC
- 4) an automatic workflow, using the converter, to plug the data of the different local installations is installed, and functional.

#### Other achievements

- training of Herbaria participants staff on data management on the new platform (May 2022 workshop in Togo),
- training on LA tools, information, and live recorded training on data quality, data papers writing and

publishing & technical tools, belonging to LA community (publishing, Map and data papers editing),

\* Regional workshop (May 2022) & National workshop was done in Côte d'Ivoire, Gabon, Guinea, and Togo

- Outreach session with representatives from Participants Partners University staff and Ministries partners (Ministry of Higher education and Research, and Ministry of Environment) done in Cameroun, Côte d'Ivoire, Gabon, Guinea, Togo.

Key lessons learned and best practices

- Regional project requests patience, strategy, and well-known from the coordinator to let involved all partners of the consortium
- Honest partnership is requested from each participant
- Information sharing at all levels
- Collegial decision making

Additional objectives

The first kernel of National herbaria as platform members are Togo HNT (coordinator), Benin HNB, Côte d'Ivoire CNF, Guinea HNG, and Cameroon HNC. Gabon HNGa, which was planned to share its experience in using the platform at the national scale, has been added as a sixth member of the consortium.

Unexpected challenges

Nothing to describe

Post-project activities

- The management of the platform, the updating of the country collections (direct recording of herbarium specimens),
- the taxonomic and bibliographic repository updating,
- the identification of funding windows for the extension of the project and the platform to other partner countries (Senegal, DRC, and Burkina Faso are already candidates to join the consortium by adding their collections to the platform).
- the support, maintenance, and upkeep of the platform.
- setting up of the Association called "Consortium des Herbiers d'Afrique Centrale et d'Afrique de l'Ouest" (CHACAO) initiated in Lomé during the regional workshop, for the sustainability of the project's achievements for the benefit of the herbaria in Africa.

The use of social communication networks (WhatsApp, zoom, skype) to hold monthly meetings between the partners and weekly meetings between the technical team, the engineering consultant, and the project coordinator.

## Progress against milestones

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**Has your project completed all planned activities?: Yes**

**Has your project produced all deliverables: Yes**

## Report on Activities

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### Summary of the implementation of the project activities

All activities described in the project proposal are made. See the percentage, period, and sources of verification on the document attached and titles "activities"

### Completed activities

**Activity: Establish and strengthen the African Herbaria Network to support long-term data mobilization and data sharing among institutions**

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**Description:** Inventory (Documentation on the specifications of the regional platform), updating and validation (correcting inconsistencies) of RIHA and BRAHMS data in the partner herbaria (preparatory

phase)

**Start Date - End Date:** 1/1/2022 - 22/1/2023

**Verification Sources:** <http://riha.african-herbaria.org>

<https://www.gbif.org/dataset/13e7190a-2767-4a25-8529-f4d7032b850c>

### **Activity: Biodiversity data mobilization for sustainable development**

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**Description:** Specify the needs, needed functionalities and responsibility of each participant in the management and maintenance of the platform (July 2021- September 2021) Digitization (with off the shelf cameras, smartphone), cleaning of specimens of validated priority botanical families (July 2021-December 2022) Production and enrichment of the taxonomic repository of priority families online via several interfaces: taxonomy, library (essays, thesis, impact studies, scientific articles, etc.), type, protection status, etc.) based on Lebrun and Stork (July 2021-December 2022) Production and publication of a regional checklist of priority families (conservation species, protected species with all statuses) (July 2021-December 2022) Establishment of an IT platform for data management and a regional LA portal for herbaria in West and Central Africa: (October 2021-December 2022) -Data management platform -LA portal installation (regional + national) + automatic workflow -GBIF interfacing Test of the platform's functionalities after integration of data from the herbarium of the institution carrying out the project (January-December 2022).

**Start Date - End Date:** 1/7/2021 - 20/3/2023

**Verification Sources:** \*\* Journal télévisé (Télévision Nationale) <https://www.youtube.com/watch?v=KUpTbIneJIU&t=432s>

\* Journal privé en ligne : <https://togotopnews.com/2022/02/02/togo-les-specialistes-des-herbiers-de-lafrique-de-louest-et-du-centre-reunis-a-lome/>

\* Journal privé : [https://togotopnews.com/2022/02/02/togo-les-specialistes-des-herbiers-de-lafri que-de-louest-et-du-centre-reunis-a-lome/](https://togotopnews.com/2022/02/02/togo-les-specialistes-des-herbiers-de-lafri-que-de-louest-et-du-centre-reunis-a-lome/)

\*Service Communication Université de Lomé : <https://univ-lome.tg/science-les-responsables-dherbiers-en-concertation-lome>

### **Activity: Regional workshop**

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**Description:** Regional Workshop: Herbarium staff capacity enhancement (harmonization on the project approaches)

\* Identification and Selection of priority botanical families for each partner country for scanning (specimens, illustrations, images), and validation

\*Identification and selection of the regional research concerns for analysis: medicinal plants as identified on the herbarium sheets/labels.

**Start Date - End Date:** 31/1/2022 - 5/2/2022

**Verification Sources:** \*\* Journal télévisé (Télévision Nationale) <https://www.youtube.com/watch?v=KUpTbIneJIU&t=432s>

\* Journal privé en ligne : <https://togotopnews.com/2022/02/02/togo-les-specialistes-des-herbiers-de-lafrique-de-louest-et-du-centre-reunis-a-lome/>

\* Journal privé : [https://togotopnews.com/2022/02/02/togo-les-specialistes-des-herbiers-de-lafri que-de-louest-et-du-centre-reunis-a-lome/](https://togotopnews.com/2022/02/02/togo-les-specialistes-des-herbiers-de-lafri-que-de-louest-et-du-centre-reunis-a-lome/)

\*Service Communication Université de Lomé : <https://univ-lome.tg/science-les-responsables-dherbiers-en-concertation-lome>

<http://riha.african-herbaria.org>

<https://www.gbif.org/dataset/13e7190a-2767-4a25-8529-f4d7032b850c>

### **Activity: Regional workshop on the platform setting up**

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**Description:** Specify the needs, needed functionalities and responsibility of each participant in the management and maintenance of the platform.

\* Digitization (with off the shelf cameras, smartphone), cleaning of specimens of validated priority botanical families.

\* Production and enrichment of the taxonomic repository of priority families online via several interfaces: taxonomy, library (essays, thesis, impact studies, scientific articles, etc.), type, protection status, etc.) based on Lebrun and Stork.

**Start Date - End Date:** 1/5/2022 - 31/5/2022

**Verification Sources:** <https://www.gbif.org/dataset/13e7190a-2767-4a25-8529-f4d7032b850c>

<http://riha.african-herbaria.org/phototheque>

### **Activity: Compliance of the regional platform with the needs expressed by the partners**

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**Description:** Establishment of an IT platform for data management and a regional LA portal for herbaria in West and Central Africa:

- Data management platform
- LA portal installation (regional + national) + automatic workflow
- GBIF interfacing

Test of the platform's functionalities after integration of data from the herbarium of the institution carrying out the project.

**Start Date - End Date:** 31/5/2022 - 23/1/2023

**Verification Sources:** <http://riha.african-herbaria.org>

<https://www.gbif.org/dataset/13e7190a-2767-4a25-8529-f4d7032b850c>

### **Activity: Integrating biodiversity information into policy and decisionmaking processes**

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**Description:** Workshop per country : Training of users: technicians, PhD students, researchers, decision-makers (ministry officials) and capacity enhancement of the project's herbarium partners + outreach session (October 2022- February 2023)

**Start Date - End Date:** 1/10/2022 - 24/2/2023

**Verification Sources:** \*<https://afriquerevelation.tg/universite-de-lome-atelier-de-restitution-la-plateforme-regionale-des-herbiers-dafrique-de-louest-et-dafrique-centrale-presentee/>

\*<http://www.african-herbaria.org>; <https://afriquerevelation.tg/universite-de-lome-atelier-de-restitution-la-plateforme-regionale-des-herbiers-dafrique-de-louest-et-dafrique-centrale-presentee/>

\*<https://afriquerevelation.tg/universite-de-lome-atelier-de-restitution-la-plateforme-regionale-des-herbiers-dafrique-de-louest-et-dafrique-centrale-presentee/>

\*<http://www.african-herbaria.org>

### **Activity: Integrating biodiversity information into policy and decisionmaking processes**

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**Description:** \* Data analysis of priority families: checklist of the regional medicinal plants

\* Data paper production: evaluation, improvement, and submission of data papers

**Start Date - End Date:** 15/11/2022 - 31/7/2023

**Verification Sources:** on going on ARPHA platform

### **Activity: Integrating biodiversity information into policy and decisionmaking processes**

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**Description:** Launching of the regional West and Central Africa Herbarium portal (October 2022- February 2023)

- October 2022 (Côte d'Ivoire)
- January 2023 (Guinea)
- February 2023 (Gabon)
- February 2023 (Togo)
- Regional launching all partners (28/03/2023)

**Start Date - End Date:** 28/10/2022 - 19/3/2023

**Verification Sources:** <https://afriquerevelation.tg/universite-de-lome-atelier-de-restitution-la-plateforme-regionale-des-herbiers-dafrique-de-louest-et-dafrique-centrale-presentee/>;

<http://www.african-herbaria.org>

### Deliverables - Summary

Title: IT regional data mobilization platform

Description:

setting up of the IT regional data mobilization platform (website and data portal with documentation for Benin, Cameroon, Côte-d'Ivoire, Gabon, Guinea, and Togo Herbaria with the following steps 1) The RIHA data management platform from previous BID Gabon and SEP2D Congo projects was used for the administration of herbarium data from each partner country of the project. The same data management environment relies on country-specific databases to ensure their ownership and security. 2) We install an LA portal for the region (+ 6 national portals, sharing the same backend). The LA Portal is a replication of the data, for query/display purposes. 3) We, also develop a converter from the existing application data model to DwC 4) and we install an automatic workflow, using the converter, to plug the data of the different local installations a. to GBIF.org b. to the regional LA Portal

Sources of verification:

<https://www.gbif.org/project/BID-AF2020-040-REG/progress-towards-a-regional-data-platform-of-west-and-central-african-herbaria> ;  
<http://riha.african-herbaria.org>

Datasets linked to GBIF

<https://www.gbif.org/project/BID-AF2020-040-REG/progress-towards-a-regional-data-platform-of-west-and-central-african-herbaria#datasets>

Conference abstract published: Connecting West and Central African Herbaria Data: A new Living Atlases regional data platform

Source of verification: <https://biss.pensoft.net/article/74362/>

Data paper ongoing

Title: Regional checklist of plants with usages in West and Central Africa

Description: The data paper describes not only the medicinal plants coming from the label of the partner's herbaria but rather the plants having any use shown on the labels of the specimens.

Source of verification: <https://docs.google.com/document/d/1X2nDJMaQhXmt0bjxD72DV2TaC-HZyDbUAF-0AMTKbQE/edit#>

Journal of publication: Biodiversity Data Journal

### Deliverables produced by the project

#### Dataset deliverables

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##### Regional checklist of medicinal plants

**Dataset type:** Checklist

**Dataset scope:** Regional checklist of plants with usages coming from Benin, Cameroon, Cote d'Ivoire, Gabon, Guinea, and Togo's herbaria. Data existing on RIHA & BRAHMS databases, cleaned and updated.

**Number of records:** 743

**Data holder:** GBIF Togo

**Data host institution:** [www.gbif.org](http://www.gbif.org) ; Université de Lomé

**% complete:** 100%

**Status update:** <https://www.gbif.org/dataset/13e7190a-2767-4a25-8529-f4d7032b850c>

**DOI:** 10.15468/7a53w8

**Expected date of publication:**

##### Herbaria specimens & images

**Dataset type:** Occurrences

**Dataset scope:** Regional dataset providing by the 6 partners countries linking to

<https://www.gbif.org/dataset/b2df52a4-6143-46d5-8727-f808d8e25feb> •Updating of new datasets to the regional data portal <http://www.african-herbaria.org> \* DOI 10.15468/tn8tu9

**Number of records:** 168,568

**Data holder:** Regional platform <http://www.african-herbaria.org>; GBIF:

<https://www.gbif.org/dataset/b2df52a4-6143-46d5-8727-f808d8e25feb>

**Data host institution:** [www.gbif.org](http://www.gbif.org); Université de Lomé

**% complete:** 100%

**Status update:** First version published. Cleaning, and updating on going

**DOI:** 10.15468/tn8tu9

**Expected date of publication:**

## Other deliverables

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### Conference abstract

**Description:** Data paper published with a title "Connecting West and Central African Herbaria Data: A new Living Atlases regional data platform" on Biodiversity Information Science and Standards (BISS). This paper describes the work done at the first stage of the project. Then, we are working on defining the information technology (IT) architecture and selecting the tools that we will be using to achieve our goals. In the talk, we present our conclusions through architecture schemas and tools demonstrations.

**% complete:** 100%

**Status update:** End

**Sources of verification:** \* <https://doi.org/10.3897/biss.5.74362> \* <https://www.gbif.org/project/BID-AF2020-040-REG/progress-towards-a-regional-data-platform-of-west-and-central-african-herbaria>

### IT Regional Data Mobilization Platform

**Description:** Title: IT regional data mobilization platform Description: an IT regional data mobilization platform (website and data portal with documentation in French) for Benin, Cameroon, Côte-d'Ivoire, Guinea and Togo Herbaria 1) The RIHA data management platform is currently used for the administration of herbarium data from each partner country of the project. The same data management environment is rely on country-specific databases to ensure their ownership and security. 2) ALA portal for the region is installed sharing the same backend for query/display purposes. 3) a converter from the existing application data model to DwC was developped 4) an automatic workflow is installing, using the converter, to plug the data of the different local installations a. to GBIF.org <https://www.gbif.org/project/BID-AF2020-040-REG/progress-towards-a-regional-data-platform-of-west-and-central-african-herbaria#datasets> b. to the regional LA Portal <http://www.african-herbaria.org>

**% complete:** 100%

**Status update:** Done

**Sources of verification:** \* <https://www.gbif.org/project/BID-AF2020-040-REG/progress-towards-a-regional-data-platform-of-west-and-central-african-herbaria#datasets> \* <http://www.african-herbaria.org>

### Data paper

**Description:** Data paper on writing is entitled "Regional checklist of plants with usages in West and Central Africa". It describes the dataset (<https://www.gbif.org/dataset/13e7190a-2767-4a25-8529-f4d7032b850c>) completed by the specimens list with other usages.

**% complete:** 67%

**Status update:** On going with identification of the journal (Biodiversity Data Journal) via ARPHA system on which the writing is ongoing. Expected date of publication: June 2023

**Sources of verification:** \* <https://docs.google.com/document/d/1X2nDJMaQhXmt0bjxD72DV2TaC-HZyDbUAF-0AMTKbQE/edit#>

## Events

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### National workshops

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**Dates:** 2022-10-28 - 2022-10-28

**Organizing institution:** CNF Côte d'Ivoire

**Country:** Côte d'Ivoire

**Number of participants:** 27

**Comments:** Participants : lecturers, PhD students, researchers.

Insistent question: when Fungi in the region will be integrated on the regional platform?

This concern will be taken into account in the near future if the consortium get an other funds to pursue the project, and to extend it to new partners.

**Website or sources of verification:** <https://www.gbif.org/project/BID-AF2020-040-REG/progress-towards-a-regional-data-platform-of-west-and-central-african-herbaria> ; <http://www.african-herbaria.org>

## Events

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### Capacity enhancement workshop

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**Dates:** 2022-05-16 - 2022-05-26

**Organizing institution:** GBIF Togo

**Country:** Togo

**Number of participants:** 30

**Comments:** Demonstration of the platform, capacity enhancement on the platform functionalities. Participants : head/curator of the partner's herbaria + national herbarium technicians + trainers (advisory node team,, engineer consultant

**Website or sources of verification:** <https://www.gbif.org/project/BID-AF2020-040-REG/progress-towards-a-regional-data-platform-of-west-and-central-african-herbaria> ; <http://www.african-herbaria.org>

## Events

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### National workshop

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**Dates:** 2022-12-22 - 2022-12-23

**Organizing institution:** Guinea National Herbarium (HNG)

**Country:** Guinea

**Number of participants:** 11

**Comments:**

**Website or sources of verification:** <https://www.gbif.org/project/BID-AF2020-040-REG/progress-towards-a-regional-data-platform-of-west-and-central-african-herbaria>

## Events

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### National workshops

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**Dates:** 2023-01-31 - 2023-02-01

**Organizing institution:** Herbier National du Gabon IPHAMETRA

**Country:** Gabon

**Number of participants:** 47

**Comments:** Many national institutions participated and appreciated the initiative of this regional platform

**Website or sources of verification:** <https://www.gbif.org/project/BID-AF2020-040-REG/progress-towards-a-regional-data-platform-of-west-and-central-african-herbaria>

## Events

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### BID Project Launching

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**Dates:** 2022-02-01 - 2023-02-05

**Organizing institution:** GBIF Togo

**Country:** Togo

**Number of participants:** 11

**Comments:** This event brings together for the first time all partners of the project including the advisory node team and the consultant of the project.

That is the first physical meeting in COVID-19 period.

**Website or sources of verification:** <https://www.gbif.org/project/BID-AF2020-040-REG/progress-towards-a-regional-data-platform-of-west-and-central-african-herbaria>

## Events

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### National workshops

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**Dates:** 2023-02-24 - 2023-02-24

**Organizing institution:** GBIF Togo

**Country:** Togo

**Number of participants:** 30

**Comments:** Participants: academicians, PhD students, researchers, policy-makers.

Question: Possibility to integrate Fungi's Phylum.

**Website or sources of verification:** <https://www.gbif.org/project/BID-AF2020-040-REG/progress-towards-a-regional-data-platform-of-west-and-central-african-herbaria> ; <http://www.african-herbaria.org>

## Events

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### Global launching

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**Dates:** 2023-03-28 - 2023-03-28

**Organizing institution:** GBIF Togo

**Country:** Togo

**Number of participants:** 14

**Comments:** The virtual meeting brought together partners, herbaria staffs, guests (taxonomists) around the following points: 1. General restitution of the project: the achievements, results obtained, data sets published, 2. Presentation of the platform: RIHA, ALA, duty to continue to feed the platform

and RIHA 3. the CHACAO association and 4. AOB

**Website or sources of verification:** <https://filesender.renater.fr/?s=download&token=60255704-55e6-4f5b-9525-589a82411b44>

## Events

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### First regional meeting (physical meeting)

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**Dates:** 2022-02-01 - 2022-02-04

**Organizing institution:** GBIF Togo

**Country:** Togo

**Number of participants:** 11

**Comments:** Description: - Meeting done from February 1st to 4, 2022 in Lomé, Togo. - Participants: Bénin, Cameroun, Côte d'Ivoire, Gabon, Guinea, Togo - Objectives : \* Herbarium staff capacity enhancement \* Harmonization on the project approaches \* Identification and Selection of priority botanical families for each partner country for scanning (specimens, illustrations, images), and validation \* Identification and selection of 2-3 regional research or conservation concerns for analysis

Many media cover the event.

Togo National TV <https://www.youtube.com/watch?v=KUPTblneJIU&t=432s> - Online Journal : <https://togotopnews.com/2022/02/02/togo-les-specialistes-des-herbiers-de-lafrique-de-louest-et-du-centre-reunis-a-lome/> - Other private Journal: <https://togotopnews.com/2022/02/02/togo-les-specialistes-des-herbiers-de-lafrique-de-louest-et-du-centre-reunis-a-lome/> - University Communication Service: <https://univ-lome.tg/science-les-responsables-dherbiers-en-concertation-lome> GBIF TOGO web site:

**Website or sources of verification:** <https://www.youtube.com/watch?v=KUPTblneJIU&t=432s>

## Communications and visibility

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All documents produced in the framework of this project are available on:

- <https://www.gbif.org/project/BID-AF2020-040-REG/progress-towards-a-regional-data-platform-of-west-and-central-african-herbaria>
- <http://www.african-herbaria.org>
- <http://riha.african-herbaria.org>
- [www.gbif.fr](http://www.gbif.fr)
- [www.gbif.org](http://www.gbif.org)

- Journal télévisé (Télévision Nationale) <https://www.youtube.com/watch?v=KUPTblneJIU&t=432s>
- Journal privé en ligne : <https://togotopnews.com/2022/02/02/togo-les-specialistes-des-herbiers-de-lafrique-de-louest-et-du-centre-reunis-a-lome/>
- Journal privé : <https://togotopnews.com/2022/02/02/togo-les-specialistes-des-herbiers-de-lafrique-de-louest-et-du-centre-reunis-a-lome/>
- Service Communication Université de Lomé : <https://univ-lome.tg/science-les-responsables-dherbiers-en-concertation-lome>

<https://afriquevelation.tg/universite-de-lome-atelier-de-restitution-la-plateforme-regionale-des-herbiers-dafrique-de-louest-et-dafrique-centrale-presentee/>

## Monitoring and evaluation

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### Final Evaluation

All the planned activities are carried out with a very satisfactory percentage. The platform is functional with the presence of the 6 participating countries. The article being finalized requires the pre-agreement of funding for publication costs and a request has been sent to the IDB project coordination team for this purpose.

The leadership of the platform, which remains the major concern, will be assumed by all participating countries with GBIF Togo as the booster point and with GBIF France's technical support.

### Best Practices and Lessons learned

- Regular sharing of information
- Real partnership and collaboration between partners and the advisory team
- Collegial decision (between the coordinator and the partners) to carry on the activities and the finance of the project, using social media communication: WhatsApp, zoom, skype, google\_docs, google-drive



## Post Project activities

The consortium is proud to achieve the objectives of the project. Thanks to GBIFS and the BID coordination team.

### Perspectives

Extension of the consortium to Senegal, DRC, Burkina, and Congo Brazzaville which are already candidates to share their herbarium data via the functional regional data platform.

The consortium requests the support of GBIFS to obtain additional funds from other funding agencies, in particular from the JRS Foundation

## Sustainability

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### Sustainability Plans

The work of capturing the herbarium data remains a permanent task. Before this project, each participating country managed its database on its own computer facilities, with all the risks of loss that can be linked to all types of hazards (the case of Gabon which has seen its herbarium vandalized and burned). With the results of this project, the 6 participating countries now manage their database online, via a dedicated server, to continue to capture their data. They will decide at their convenience, the periodicity of updating the sharing of the new data collected.

Moreover, the updating of the taxonomic repository becomes easy and when it is carried out on a species, a genus, or a botanical family, by one country, it becomes commonly beneficial to all participating countries.

The impact of the project can also be measured by the importance of the use of the platform by students, researchers, and policy-makers.

It will be measured in the short term by the increase in the number of data published by each of the 6 countries of the consortium. It will also be measured with the support of future funding for the extension and the increase in the number of participating countries and the management of the platform.

## Impact of COVID-19 pandemic on project implementation

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Covid has delayed the start of the project activities for several months, especially its launch. Financially, the costs of PCR tests have negatively impacted the budget, especially the budgets for international meetings.

The delays were quickly made up for and the activities were well carried out with the will of the participating countries and the technical team of GBIF France as well as the consultant engineer solicited for the project.

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GBIF leads the Biodiversity Information for Development (BID), a programme funded by the European Union. The programme provides supplementary support for activities addressing the needs of regional researchers and policymakers through mobilization and use of biodiversity data.

