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Online Tool for ABS Applications, Permits and Tracking Utilization of Genetic Resources

COP MOP 3 of the Nagoya Protocol

Sharm el-Sheikh, Egypt, 21st November 2018

Names/Affiliations

funded by



implemented by

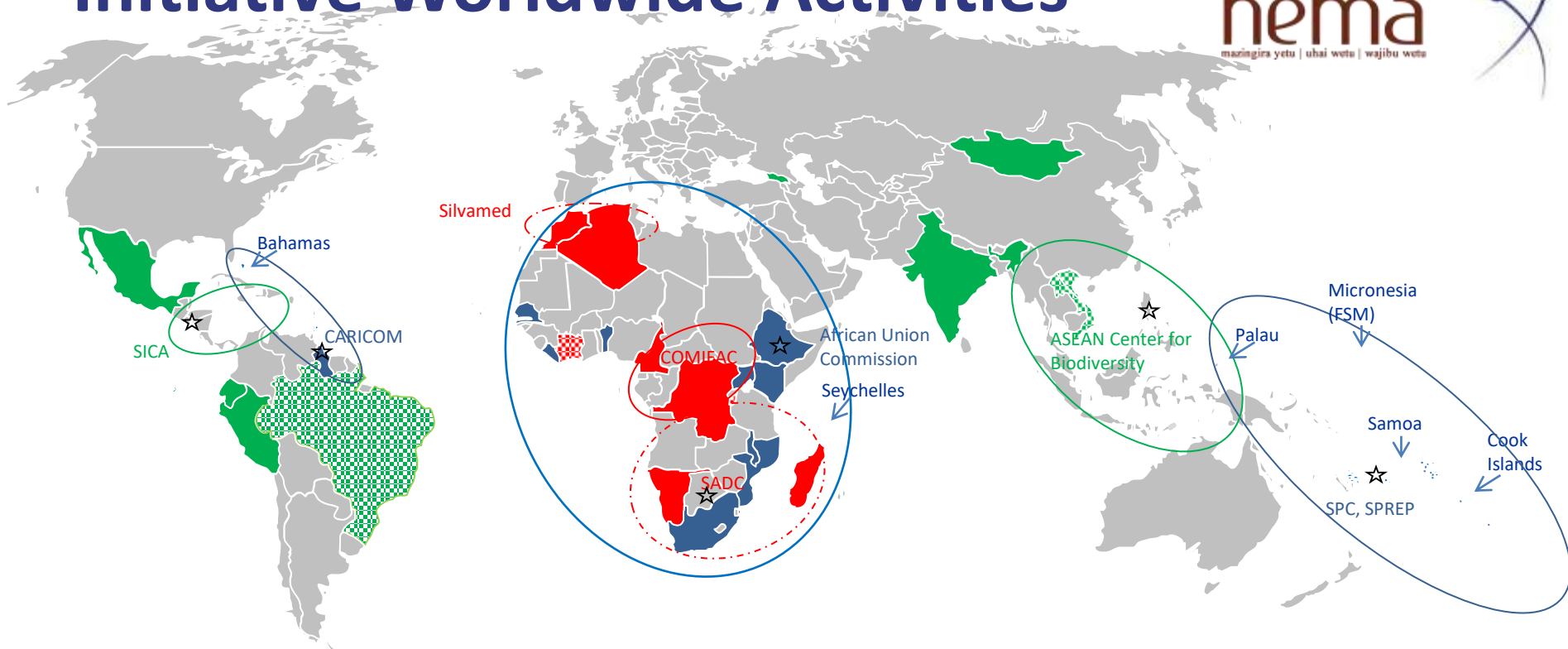


Content



- Introduction
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- Selection of data for tracking
- Approach chosen in Kenya
- Online application modules
- Online permitting modules
- Online tracking modules
- Analysis of R&D landscape
- Lessons learnt

ABS Capacity Development Initiative Worldwide Activities

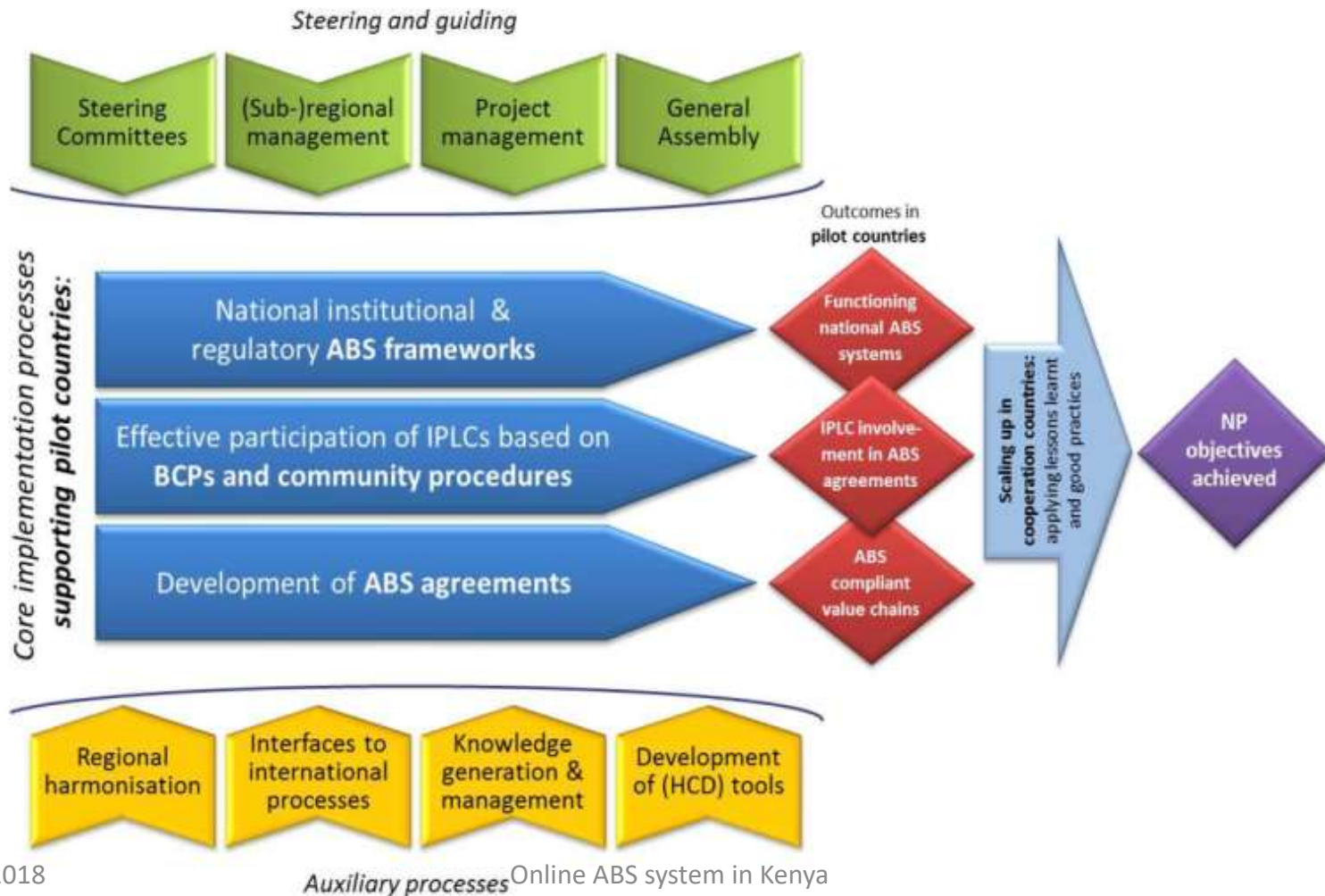


ABS Initiative working directly in ACP countries

ABS Initiative working in the context of German bilateral development cooperation in ACP countries

ABS Initiative advising German bilateral development cooperation on ABS outside of ACP

Process Map of ABS Initiative



Development of basic concept

GEF 4/6 projects for six African Countries & The Bahamas 2012 - 2016



Starting point 1: Paul Oldham/ ABS Initiative developed innovative text mining codes for revealing the use of genetic resources from a specific country in patents or publications

Starting point 2: The research permit system of The Bahamas with up to 100 applications offer a wealth of data on researchers and institutions having accessed genetic resources and undertaken research

The Idea: Using the permit data to screen public data (publications and patents) to follow critical points in the biodiversity-based value chain

The Concept: Using text mining codes and open source software in an automated system combining application and tracking process

The Effect: Increased clarity and transparency for access, increased confidence in and effectiveness of the benefit sharing system

Supporting the implementation of the Nagoya Protocol



- Decision making whether access to GR and aTK falls under the domestic ABS framework
 - ☑ NP Art. 2 Use of Terms, specifically “utilisation” and NP Art. 3 Scope
- Clear and transparent measures and procedures of the domestic access system
 - ☑ NP Art. 6 Access to Genetic Resources, specifically Art. 6 3.
- Decision making about the nature of intended utilisation and the related elements of mutually agreed terms in ABS contracts
 - ☑ NP Art. 8 Special Considerations, specifically Art. 8 (a)

Supporting the implementation of the Nagoya Protocol



- Submitting information to the ABS Clearing-House
 - ☑ Nagoya Protocol Art. 14 The Access and Benefit-sharing Clearing-House and Information-sharing, specifically Art. 14 2. (c)
- Tracking of utilisation of GR and aTK and commercialisation of derived products
 - ☑ Nagoya Protocol Art. 15 Monitoring the Utilization of Genetic Resources
- Reporting to the COP MOP on the status of implementation of the Nagoya Protocol
 - ☑ Nagoya Protocol Art. 29 Monitoring and Reporting

Concept publically available

About The Model - Planning - Schematics Resources

The Nagoya Protocol: A Model Online Research Permit and Monitoring System

This is the project site for a model Online Research Permit and Monitoring System to support national implementation of the [Nagoya Protocol](#).

The idea behind the model is to assist Parties to the [Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization of the United Nations Convention on Biological Diversity](#) with implementing the Nagoya Protocol.

The model focuses on the creation of an online permit and monitoring system to make it easier for governments to administer research permit applications involving genetic resources and traditional knowledge and to monitor compliance under the Nagoya Protocol as well as making it easier to prepare national reports.

Download in Word and PDF

You can download Word versions of the sections in a .zip file [here](#). For pdf versions go [here](#).

You will also need to view the schematics which demonstrate the basic functions of the system. You can view them online from the Schematics menu or download them in [powerpoint](#), [keynote](#) or [pdf](#). The schematics are meant to be viewed as a slide show in presentation mode.

The draft workplan can be downloaded as headings to assist with project planning [here](#).

Who Developed This?

The original model was written by Dr. Paul Oldham as part of work with Hartmut Meyer and Olivier Rukundo on implementation of the Nagoya Protocol in the Bahamas. The updated version is a joint work in progress and much better for it.

Financial Support

The model was developed with the support of [The Bahamas Environment, Science & Technology Commission \(BEST\)](#) of the Government of the Bahamas under the [UNEP/GEF project "Strengthening Access and Benefit Sharing \(ABS\) in the Bahamas"](#) as set out in [Oldham, P \(2015\) Concepts for an Electronic Monitoring Tool. UNEP/GEF project "Strengthening Access and Benefit Sharing \(ABS\) in the Bahamas"](#). The present paper was written with the additional support of the multi-donor [ABS Capacity Development Initiative](#) hosted by the German Federal Ministry for Economic Cooperation and Development (BMZ) and implemented by the [Deutsche Gesellschaft für Internationale Zusammenarbeit \(GIZ\) GmbH](#). We express our sincere thanks to the BEST Commission, UNEP/GEF the ABS Capacity Development Initiative, BMZ and GIZ for their support. The views expressed are solely those of the authors and should not be interpreted as reflecting the views of the Government of The Bahamas, BMZ, GIZ or the ABS Initiative.

Suggested Citation

Oldham, P; Rukundo, O; Meyer, H (2016) An Online Research Permit and Monitoring System to Support National Implementation of the Nagoya Protocol. Concept Paper. [DOI:10.1186/s13047-016-0074-0](#)



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<http://abspermits.net/>

Two aspects of the provider-triggered tracking concept



Starting point 1: Monitoring cases where no attempt has been made to secure permission (PIC – ABS Permit - IRCC) and no ABS agreement exists (MAT), commonly described as biopiracy

➤ **using external data from the public domain**

Starting point 2: Monitoring access and benefit-sharing where a researcher or company has received permission (PIC – ABS Permit - IRCC) and entered into an access and benefit-sharing contract (MAT)

➤ **using internal data from administrative processes**

What are sources for external data?

- Scientific Literature
- Patent Documents
- Products (possibly)
- Samples in ex-situ collections
- DNA sequences in data banks
- Other?



What are sources for administrative data?



- National ABS permits / IRCCs
 - Various permits for researchers to conduct research, collect material and transport the material across borders
 - These administrative data consist of names, addresses, institutions, locations, types of species, sample types etc.
 - These are “dormant” data because they usually not used for systematic monitoring purposes
- **combining tracking results for external and administrative data provides a basis for detecting utilization which is non-compliant with the national ABS framework**

IT-based integrated online application, permitting and tracking system



Approach for implementation in Kenya 2016 - 2019

- A single IT-based system that makes it easy for users to apply for ABS permits and for multiple government authorities to
 - receive, review and decide upon applications,
 - monitor compliance with permit and contract obligations
 - report on the implementation of the Nagoya Protocol
- A modular system that can be implemented in the context of existing permit systems or as a self-standing system
- A cost effective system for tracking publications, patents and products arising from research and development involving genetic resources and/or associated traditional knowledge accessed

Benefits for Kenya



- Supporting the implementation of Art. 69.(1)(a) of the **Constitution of Kenya, 2010**:
*The State shall ensure sustainable exploitation, utilisation, management and conservation of the environment and natural resources, and **ensure the equitable sharing of the accruing benefits***
- Supporting Kenya in using **IT-based tools** for **good governance** systems managing complex institutional systems
- Supporting Kenya in **receiving monetary and non-monetary benefits** as agreed upon in ABS contracts negotiated under the **ABS Regulations, 2006**
- Supporting the implementation of several obligations under the **Nagoya Protocol on Access and Benefit Sharing, 2010**

Benefits for Kenya



- Attracting public researchers and private companies for bioprospecting in Kenya by offering an **enabling administrative environment**
- Increasing chances for **collaborative research**
- Establishing an overview about scientific literatur and patents dealing with biodiversity and traditional knowledge from Kenya and creating a **repository of valuable information and knowledge** for future research and development activities in Kenya

Available administrative data in Kenya



- Research permits, ABS permits, export permits, sanitary permits
- Responsibility for issuing these permits is with six core governmental institutions (NACOSTI, NEMA, KWS, KFS, KEPHIS, DVS)
- Institutions developed various approaches (paper-based, electronic files, partly online, fully online)
- Institutions do not necessarily cooperate in a systematic manner, permits are issued sequentially or independently
- Many users do not have all necessary permits, mainly due to the complex system

Step 1: Online application



The screenshot shows the ABS Kenya website. The browser address bar displays 'https://abskenya.tk'. The website header includes the ABS logo and navigation links: Home, My ABS Permits, My Messages, News, and Support Desk. A large banner image of two rhinos is featured, with the text 'ABS' and 'ABS Registration Permit Application System' overlaid. A 'Read More' button is visible in the bottom right of the banner. Below the banner, the heading 'ABS IT PERMIT APPLICATION SYSTEM.' is followed by a paragraph describing the system's development and purpose. A list of three bullet points highlights key features: 'Expedite Permit Application', 'Improving efficiency', and 'Enforces and Monitors the MAT'. The section 'ABS PERMITS IN KENYA' is introduced with a note that users must read and understand the content before registration. A green bar at the bottom indicates 'Biological resources that require an ABS permit'.

<https://abskenya.tk/>

Personal data

ABS - Harmonized Application

Secure | <https://abskenya.tk/ApplicationForm#step-1>

ABS Permit Application System | Welcome Paul | My Profile | Log Out

ABS Permit Application System

Home | My ABS Permits | My Messages | News | Support Desk

Step 1 Personal | Step 2 Documents | Step 3 Resources | Step 4 Requirements | Step 5 Project Area | Step 6 Research & Samples | Step 7 PIC/MAT Desk | Step 8 PIC/MAT/MTA | Step 9 Payment | Step 10 Finish

Are you a student? *

No

Choose option
Individual
Academic Institution
✓ Company/Research Program
Research Institute
Private Company

ORCHID *:
0000-0002-1013-4390

Other Researcher ID :

Institutional Contact person :
My Contracts Office

Institution Contact person Email
contractsoffice@myorganisation.com

Back | Save & Continue | Finish | Reset

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Samples to be accessed



Specific requirements



ABS | Harmonized Application System

Secure | https://abskenya.ia/ApplicationForm/step-4

ABS Permit Application System | Welcome Paul | My Profile | Log Out

ABS Permit Application System

Home | My ABS Permits | My Messages | News | Support Desk

Step 1 Personal | Step 2 Documents | Step 3 Resources | **Step 4 Requirements** | Step 5 Project Area | Step 6 Research & Samples | Step 7 PCNAT Deal | Step 8 PCNAT/MTA | Step 9 Payment | Step 10 Final

Type of Genetic Resource, Genetic Information or Traditional Knowledge to be collected *

Plant Material

Species name of the Genetic Resource, Genetic Information or Traditional Knowledge to be collected *:

my favourite species

Common/vernacular name of the Genetic Resource, Genetic Information or Traditional Knowledge to be collected *:

my species

Is the project area inside a conservation area, gazetted forest or protected area? *:

Yes

Purpose of collection (Check all that apply)

Species management

Environmental Monitoring

Research

Others

Biomonitoring

Species Survey

Instructional

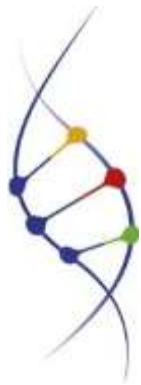
Specify if Other Purpose of genetic resource collection *:

Specify

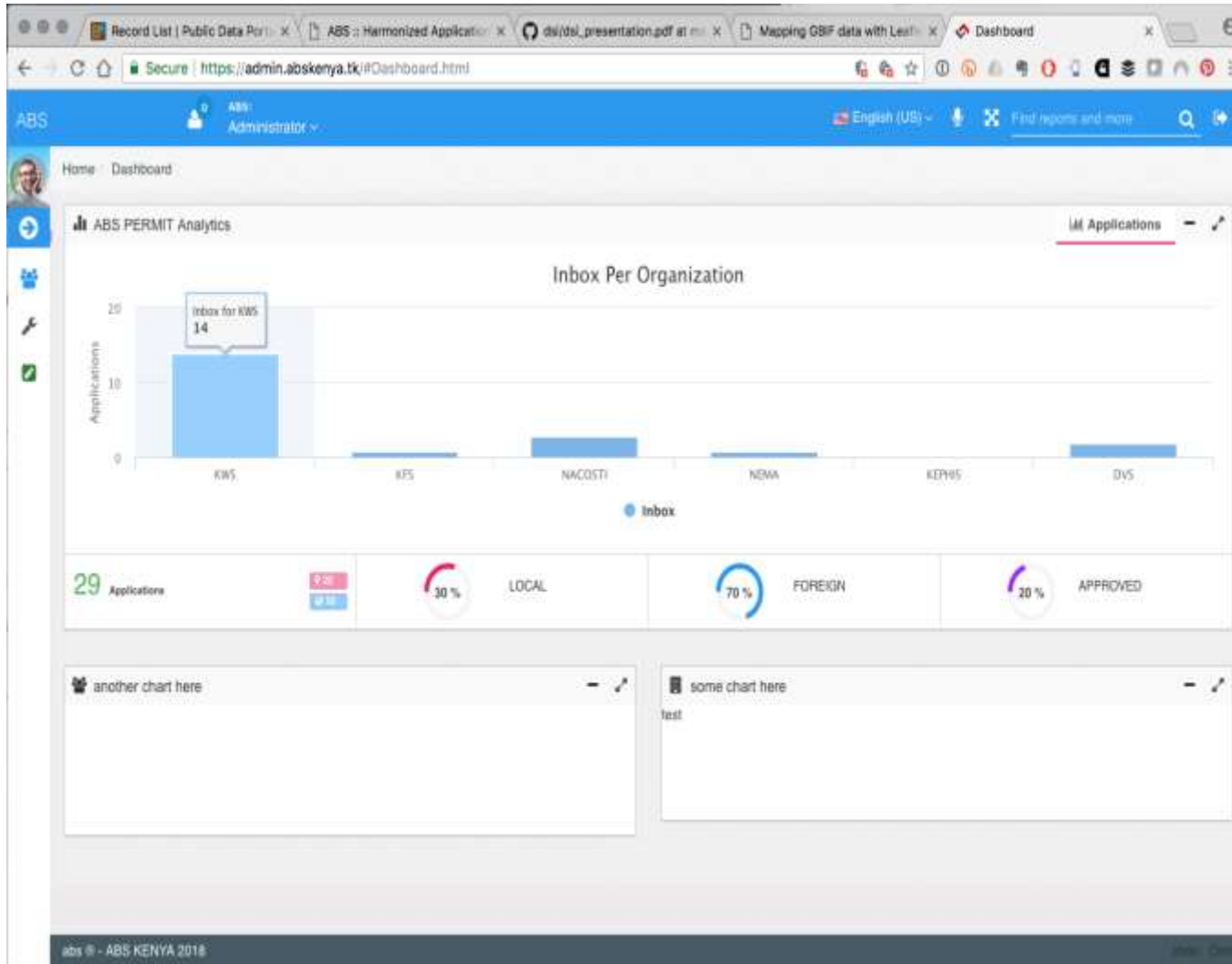
Back | Save & Continue | Finish | Reset

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Location(s) of access



Integrated dashboard overview



Desk Officers at each Authority can view progress and consult inside the system by email

Step 2: Agreed principle on synchronous permit issuing



- Basic agreement of involved institutions:
No permit is issued until all permits are issued
- The previous sequential permit system caused “escapes” of users
- The Unique Identifier e.g. KE20180605
 - appears on all documents and sample labels
 - has to be included in all publications and patent applications
 - is mentioned in the IRCC
- CNA in the country in which utilization will occur will be informed directly by Kenyan CAN
- This basic principle secures legality of access and utilization to the benefit of the provider as well as of the user

Step 3: Linking administrative and external data



- Online system requires an ORCID identifier, now commonly required by research funding agencies and major journals
- ORCID is a public researcher identifier that follows researchers throughout their careers
- Administrative data provided by applicants in the form of names, ORCID ID, organisations, species and locations become the basis for monitoring
- Using a combination of online web services (Application Programming Interfaces / APIs) to automate the retrieval of external data such as publications or patent documents

ORCID system



The screenshot shows the ORCID website interface. At the top, there is a navigation menu with options: FOR RESEARCHERS, FOR ORGANIZATIONS, ABOUT, HELP, and SIGN OUT. Below this is a search bar and a language selector set to English. The main content area displays the profile of Paul Oldham, including his ORCID ID (https://orcid.org/0000-0002-1013-4390) and a list of education records. A green box highlights the 'Biography' section, which is currently empty. The education records include:

- Education (3)**
 - London School of Economics and Political Science: London, London, United Kingdom (1996-05-01 | PhD (Social Anthropology))
 - University of Cambridge: Cambridge, Cambridgeshire, United Kingdom (1989-09-01 to 1990-09-01 | MPhil (Social Anthropology))
 - Lancaster University: Lancaster, Lancashire, United Kingdom (1985-10-01 to 1988-06-01 | BA(Hons) (Religious Studies))

ORCID record of Paul Oldham

R code to screen ORCID records



```

~/Desktop/open_source_master/orcidabs - RStudio
Go to file/function  Addins  orcidabs
kws_test.Rmd  kws_permits  orcid_lookup.R  kws_works
Source on Save  Run  Source
19 #' # retrieve a data table with the researcher works
20 #' oldham_works <- orcid_lookup(given = "paul", family = "oldham",
country = "GB", retrieve_works = TRUE)}
21 orcid_lookup <- function(given = NULL, family = NULL, affiliation =
NULL, keyword = NULL, country = NULL, retrieve_works = NULL){
22 # for build_query, iterate and get_works see zzz
23 query <- build_query(given, family, affiliation, keyword)
24 res <- iterate(query, rorcid::orcid, timer = 3) %>%
25   dplyr::bind_rows()
26 # regularize column names
27 names(res) <- stringr::str_replace_all(names(res), "[.]", "_") %>%
28   stringr::str_replace_all(., "-", "_")
29   res
30
31 # test if more than one entry for a name
32 nrow <- nrow(res)
33 # null country cases
34 if (nrow > 1 && is.null(country)) {
35   message("More than one entry found. No country code provided.
Returning raw data frame")
22:28 orcid_lookup(given, family, affiliation, keyword, country, retrieve_works) : R Script
Console

```


Tracking publications of permit holders



~/Desktop/open_source_master/orcidabs - RStudio

Go to file/function Addins orcidabs

kws_test.Rmd kws_permits orcid_lookup.R kws_works

Filter kiama

work_title_title_value	journal_title_value
Evaluation of the use of <i>Ocimum suave</i> Willd. (Lamiaceae), <i>Plectranthus barbatus</i> Andrews (La...	J Ethnopharmacol
A systematic review of Rift Valley Fever epidemiology 1931–2014	Infect Ecol Epidemiol
Effects of anticancer drug docetaxel on the structure and function of the rabbit olfactory muc...	Tissue Cell
<i>Erythrina abyssinica</i> prevents meningoencephalitis in chronic <i>Trypanosoma brucei brucei</i> mo...	Metab Brain Dis
Medicinal plants used in treatment and management of cancer in Kakamega County, Kenya	J Ethnopharmacol
Anticancer drug vinblastine sulphate induces transient morphological changes on the olfactor...	Anat Histol Embryol
Morphofunctional adaptations of the olfactory mucosa in postnatally developing rabbits	Anat Rec (Hoboken)
Skin shedding and tissue regeneration in African spiny mice (<i>Acomys</i>)	Nature
Ethnodiagnostic skills of the digo community for malaria: a lead to traditional bioprospecting	Front Pharmacol
Medicinal plants used in the management of chronic joint pains in Machakos and Makueni co...	J Ethnopharmacol
Antimalarial herbal remedies of Msambweni, Kenya	J Ethnopharmacol
Effects of opioids in the formalin test in the Speke's hinged tortoise (<i>Kinixys spekii</i>)	J Vet Pharmacol Ther
Recent advances into understanding some aspects of the structure and function of mammalia...	Physiol Biochem Zool
Regional differences in aorta of goat (<i>capra hircus</i>)	Folia Morphol (Warsz)
Structural organisation of tunica intima in the aorta of the goat	Folia Morphol (Warsz)
Traditional antimalarial phytotherapy remedies used by the South Coast community, Kenya	J Ethnopharmacol
Comparative in vitro study of interactions between particles and respiratory surface macroph...	J Anat

Showing 1 to 18 of 27 entries (filtered from 693 total entries)

Console

Results of screening external data (ORCID-linked publications) with administrative data (KWS research permits)

Online system enables analysis of R&D landscapes

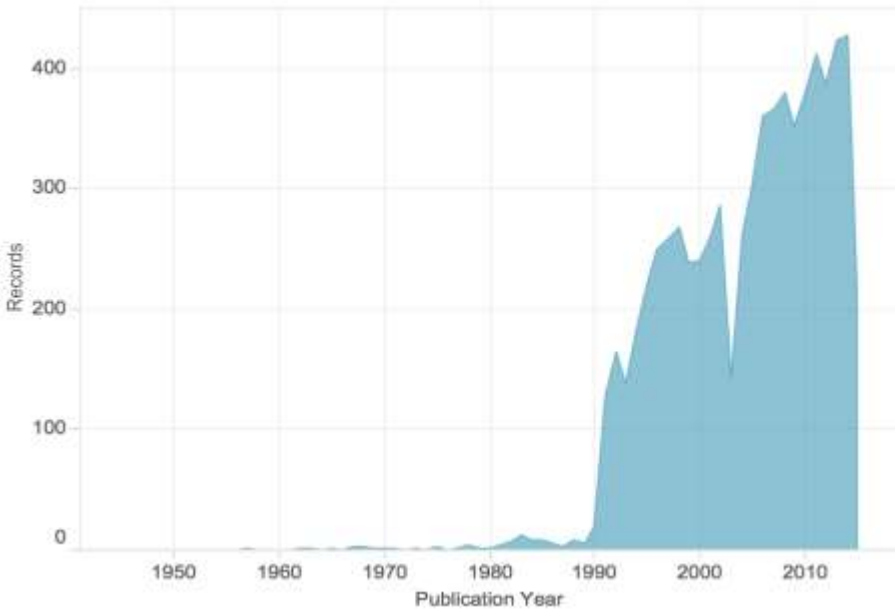


The ability to use web services for scientific literature, patent data, and geographic place names leads to:

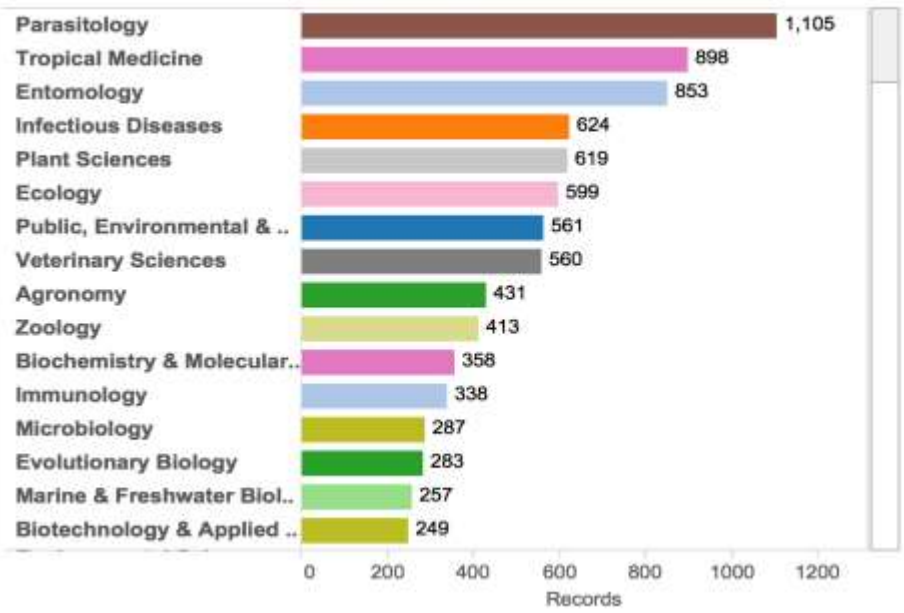
- Overview about ABS compliance and increased trust in the national and international ABS system
- Creation of a national electronic repository of publications about biodiversity in the country
- Increased understanding of the topics and focus of research effort in the country related to biodiversity and traditional knowledge
- Sound data basis for developing science policies and targeting funding



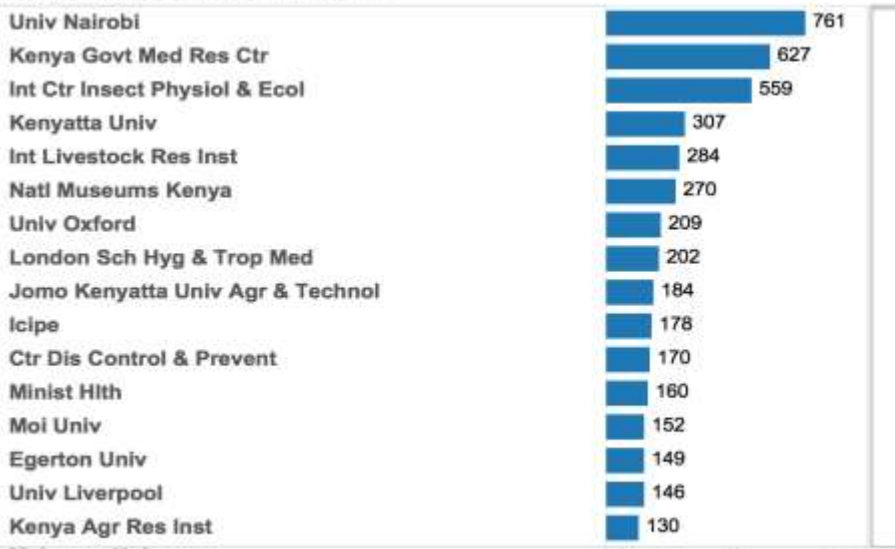
Kenya Species Trends



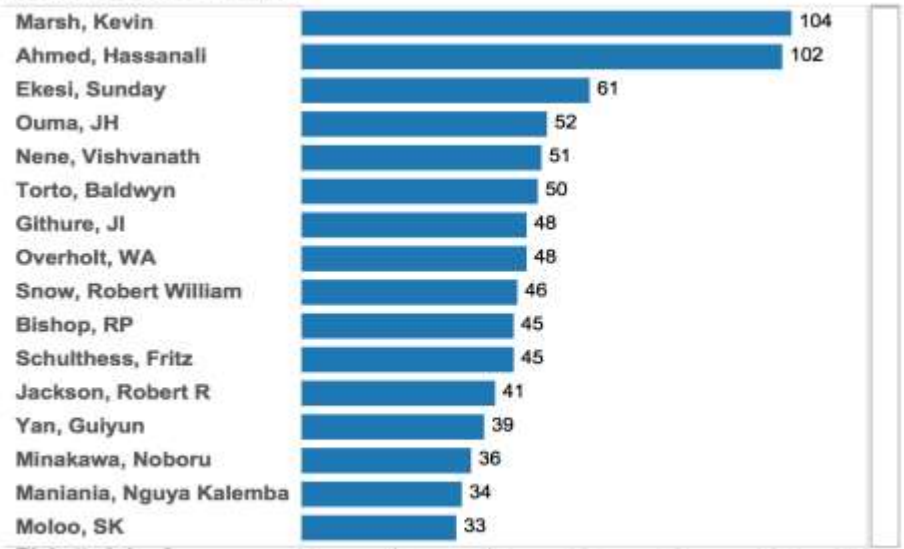
Kenya Species Subject Categories



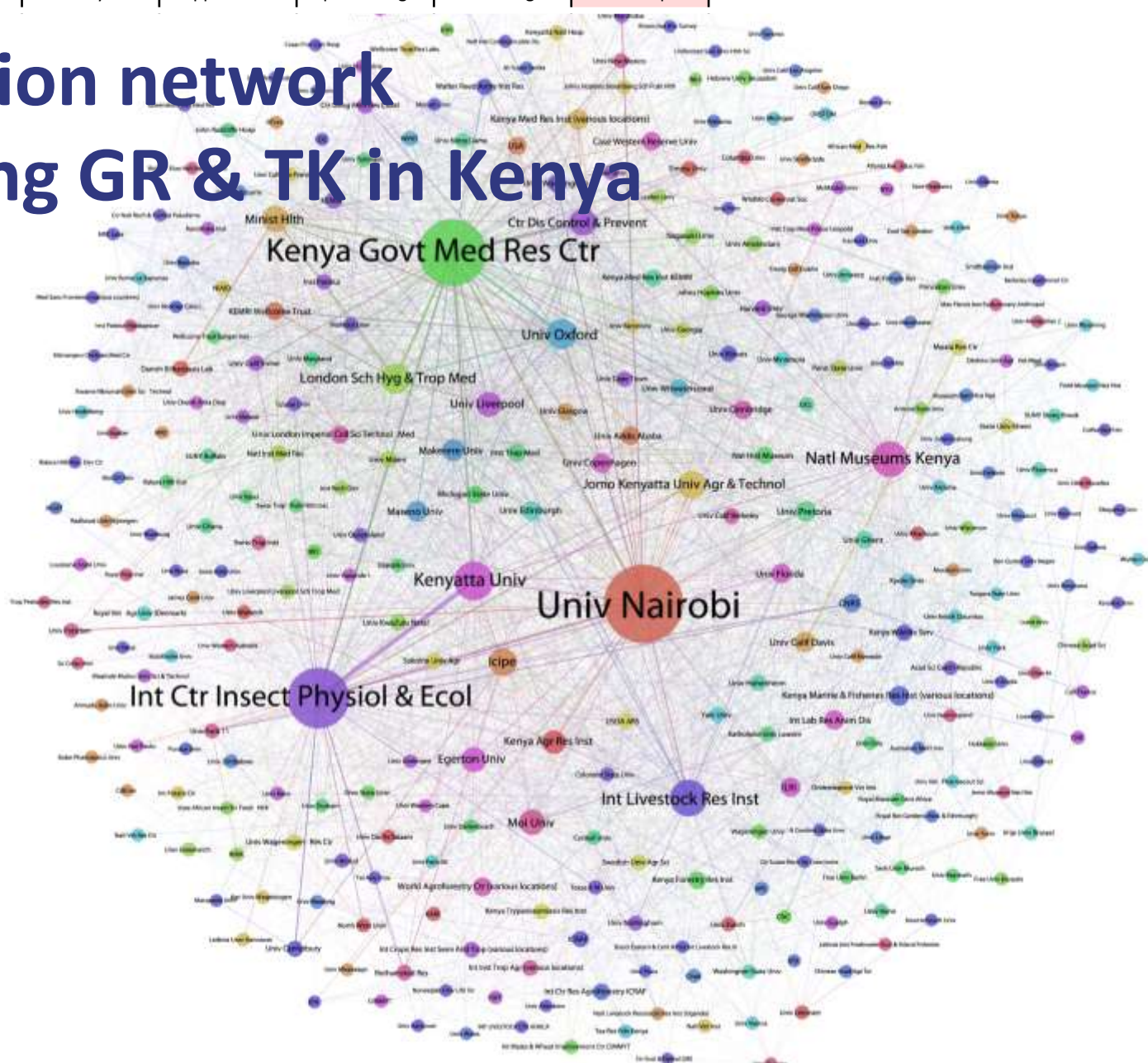
Kenya Species Organisations



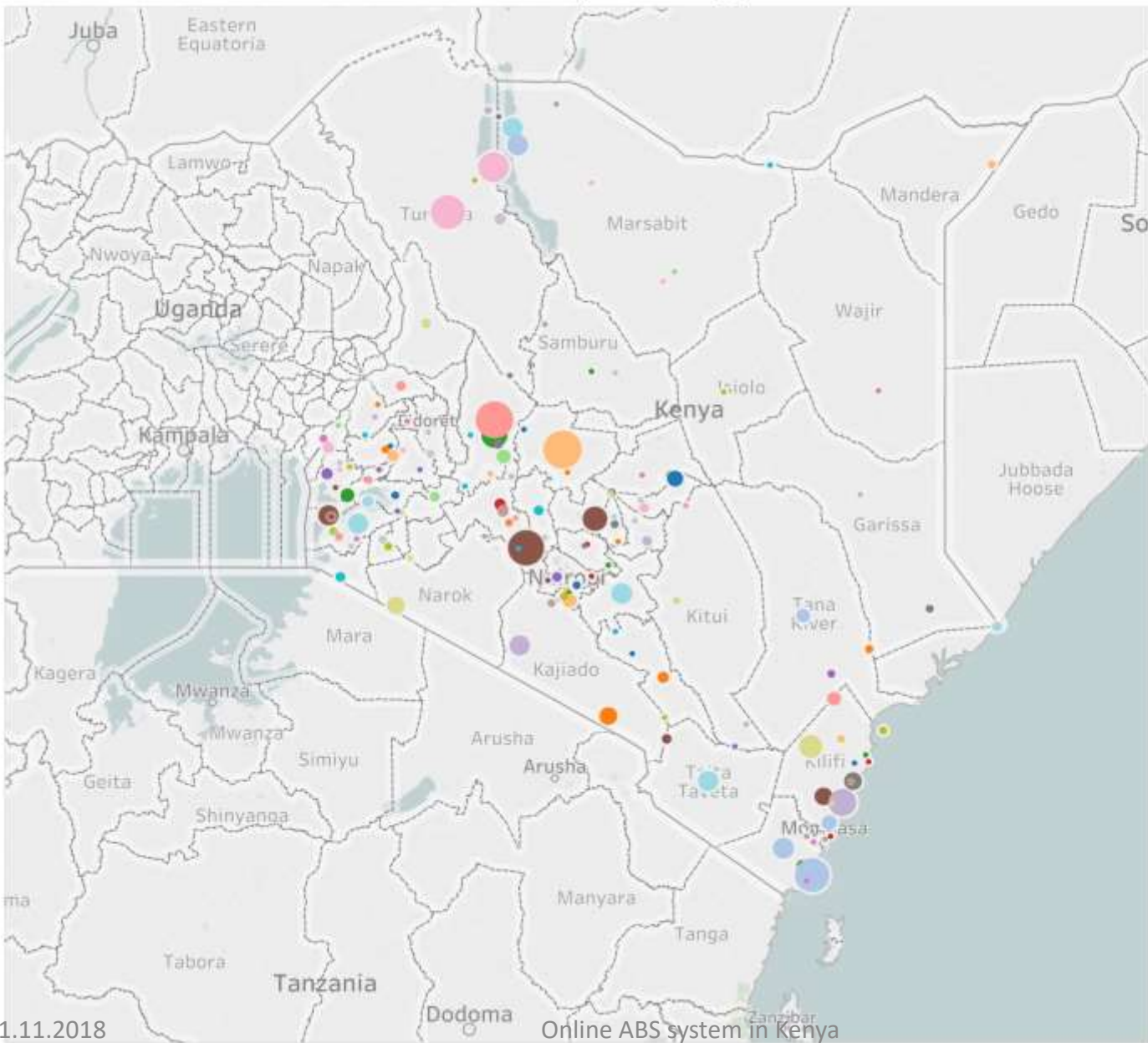
Kenya Species Author



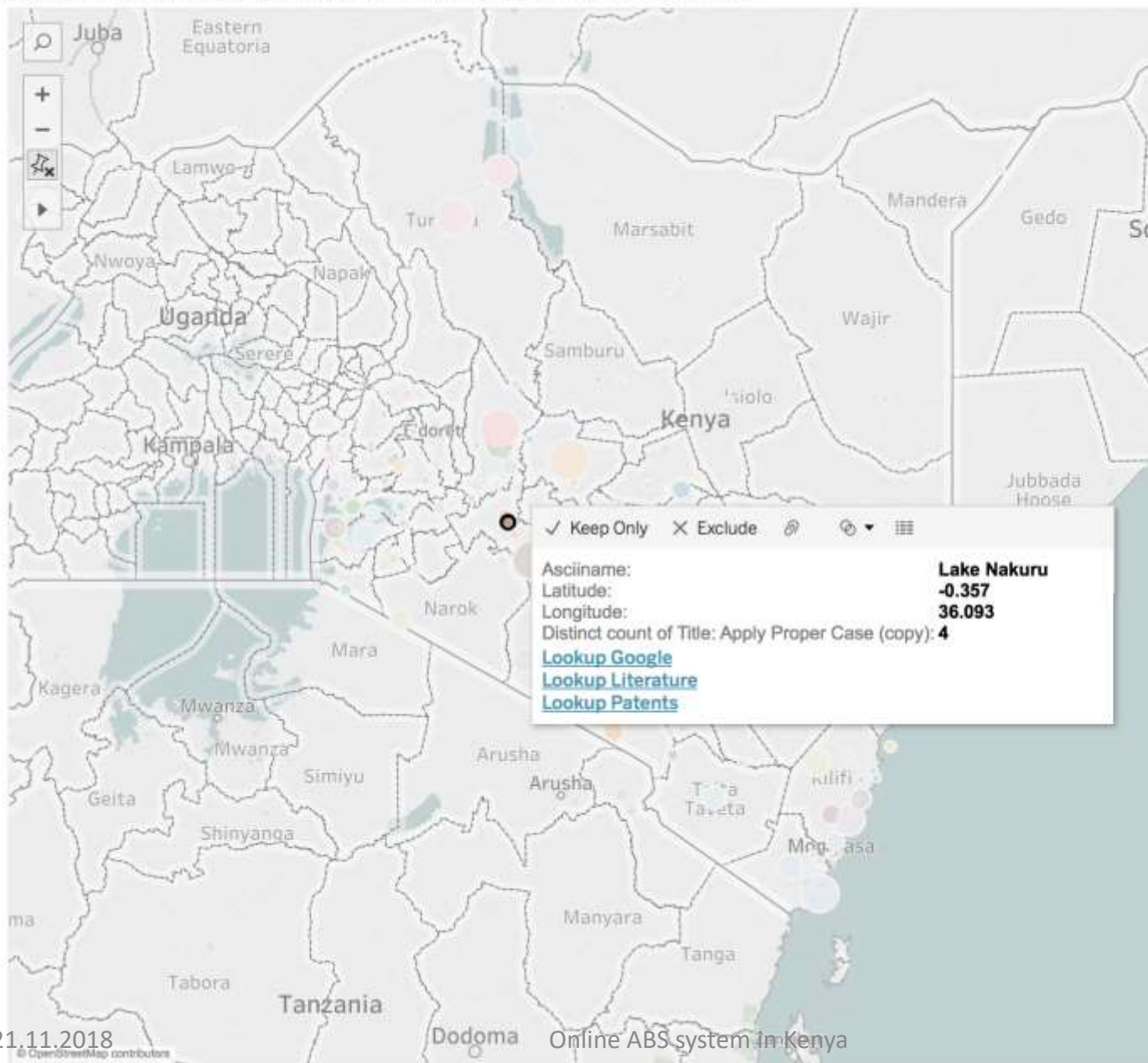
Organisation network researching GR & TK in Kenya



Research Locations Named in the Scientific Literature (draft workings)



Research Locations Named in the Scientific Literature (draft workings)



Places

- Ahero
- Allia Bay
- Amboseli National P..
- Arabia
- Asembo
- Asembo Bay
- Bamburi
- Baringo District
- Bodi
- Bokoli Location
- Bondo District
- Buluk
- Busia
- Busia District
- Central Province
- Chogoria
- Chyulu Hills
- Coast Province
- Crater Lake
- Dar es Salaam
- Eastern Province
- Eldoret
- Elementeita
- Enkare Ronkai
- Enkongu Empakasi
- Fort Teman
- Galana
- Galana Ranch
- Galla
- Garissa District
- Gikumbo
- Gona
- Homa Bay District
- Hurricane
- Ijara District
- Ilkinopop Plateau
- Isiolo District
- Jarabuni

Tracking patents on GR and aTK



The screenshot shows the LENS.ORG website interface. The search results for 'Lake Nakuru' are displayed, showing 40 patent results across 15 families. The results are categorized into Patents and Cited Works. The following table summarizes the visible patent entries:

Patent Title	Publication Date	Family	Cited	Cites	Applicant	Patent Status	Patent Number
Serine Proteases Of Bacillus Species	Apr 21, 2016	3	3	180	Donisco Us Inc	Patent Application	WO 2016/061438 A1
Medicinal Herbal Composition For Treating Infection	Dec 3, 2014	14	0	0	Internat Patent Holdings Llc	Granted Patent	EP 1919490 B1
Compounds And Compositions For Treating Infection	Apr 15, 2014	2	0	5	International Patent Holdings Llc	Granted Patent	US 8697660 B2

Lessons learned so far



- Interagency cooperation is essential through technical working group of ABS and IT officers, continuous information of the hierarchy and CEO involvement at milestone events
- Integrated systems do not change the legal system but aim to facilitate the exercise the mandates of involved institutions through logic processes, automatic notifications and easy communication
- Single-window systems accommodate needs of all players in a multi-institutional system
- A sound analysis of the existing permit systems is key for development of a logic sequence of procedures in the integrated system
- Focus on a method that is good enough and improve later

Final steps in Kenya and beyond



- Approval of the Kenya prototype by the CEOs of the agencies in Nairobi on 29TH May 2018
- Prospects that the system will become the joint research and ABS permit system for Kenya
- Starting discussions on creating templates for ABS contracts and how to integrate them in the online system
- Writing handbook and developing training course for staff
- Documentation of the code in an open access manner to be freely used and adapted by other countries to meet their needs
- Translation into other languages
- Building networks of system developers and system users

Thank you very much for your attention!



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