



Food and Agriculture  
Organization of the  
United Nations

4<sup>th</sup> Meeting of the  
**Regional Soil Laboratory  
Network for Africa**  
(AFRILAB)

18-19 October 2022

**The Global Soil  
Laboratory Network  
(GLOSOLAN)**

Ms. Lucrezia Caon, GSP Secretariat FAO



**AFRILAB**  
AFRICAN SOIL LABORATORY NETWORK





# WHY?

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...if you can not measure it, you can not manage it...

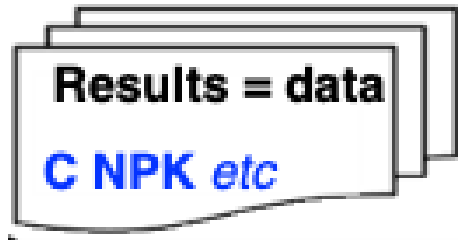
To be successful in global soil management,  
**Global Soil Laboratory Network is essential.**

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**Laboratories:**  
*'factories'*  
producing data

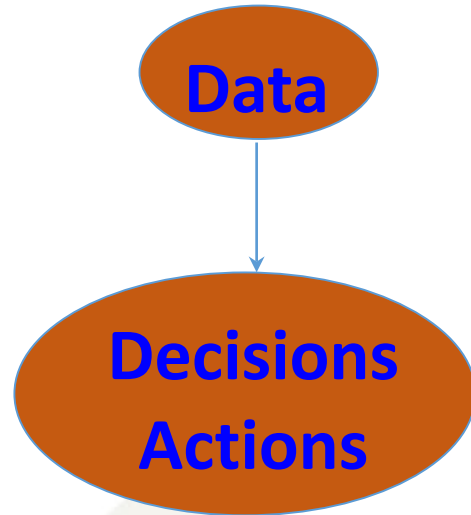
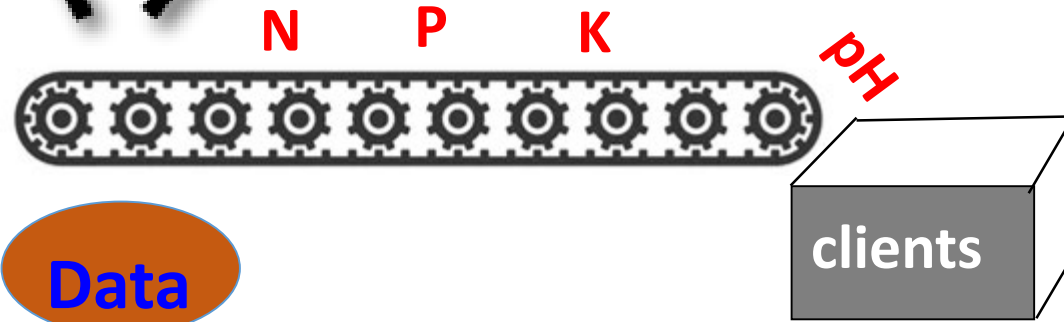
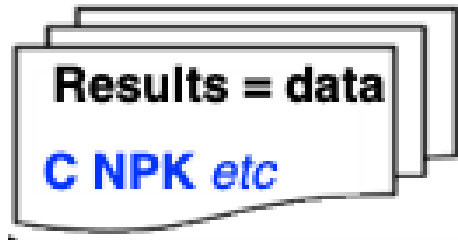


N P K PH



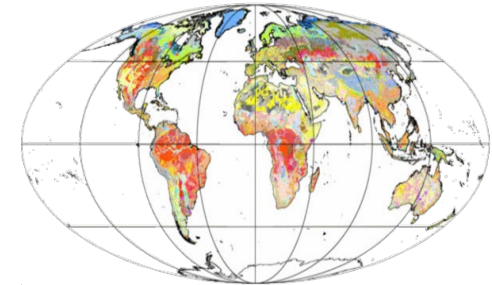
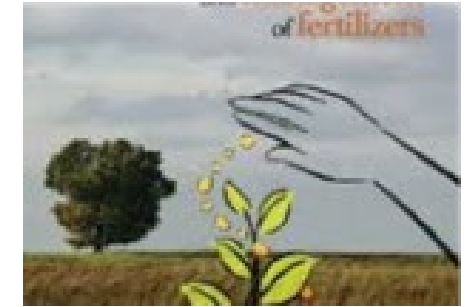


**Laboratories:**  
*'factories'*  
producing data



Traditionally

- Fertilisation
- Mapping

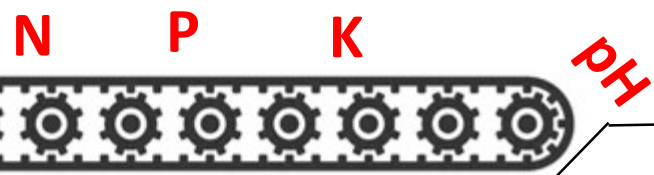




**Laboratories:**  
*'factories'*  
producing data

Results = data  
C NPK etc

Quantifying  
ODD Targets  
Ecosystem  
services

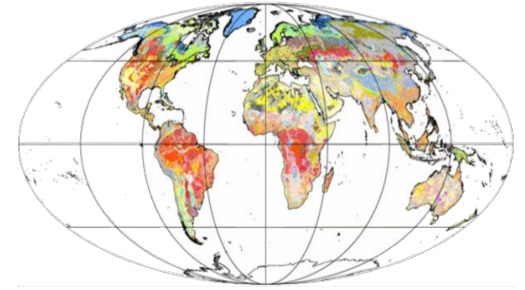


Traditionally

- Fertilisation
- Mapping

Nowadays

- Scientific conclusions
- Payment for ecosystem services



**Data**

**QUALITY**



**RELIABLE**

**Decisions  
Actions**

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**Data**

**QUALITY**



**RELIABLE**

**Decisions  
Actions**

**Evaluation... of our work...**

**Soil characteristics**

**Decisions/Actions**

**C**arbon

**C**limate change

**N**itrogen

**F**ood security/  
**e**nvironment pollution

**P**hosphorus



**Global Proficiency Testing  
(PT) 2021-22**

**240 labs**  
**110 countries**

4<sup>th</sup> Meeting of





...focusing on soil **carbon**...

How much carbon is in this soil sample?



## Wet chemistry

Walkley & Black **C<sub>WB</sub>**



## Dry combustion

Dumas **C<sub>Dum</sub>**





100 g soil

## Walkley & Black



ORGANIC carbon

3.04 g C

3.51 g C

## Dumas



TOTAL carbon

carbon quantified depends on  
the method

different carbon types!

GLOSOLAN objective is to improve harmonization  
and **help making data comparable**

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GLOBAL SOIL  
PARTNERSHIP

To make scientific conclusions,  
**uncertainty** is essential



## Walkley & Black



**3.04 g**

**+/- 1.0 g**

**3.51 g**

**+/- 0.3**

## Dumas



95% of the labs will conclude that  
carbon is ranging between

**2 and 4 g**

**3.2 and 3.8 g**

**...uncertainty is currently too large  
to detect changes in soil carbon content...**

# Conclusions

Uncertainty is currently too large to monitor changes, to make scientific conclusions or for a payment of carbon storage



With GLOSOLAN support, all labs can improve their performances:

- using SOPs and applying good laboratory practices
- implementing internal and external quality control
- training their staff and managers
- etc...

GLOSOLAN is able to identify reference values for different soil properties, including C content => in the future, labs everywhere in the world could calibrate their analyzes on GLOSOLAN reference samples



If you can not measure it, you can not manage it...

**better soil data, for better soil management!**

Harmonization of methods, units, data and information is critical to:

- ✓ provide reliable and comparable information between countries and projects;
- ✓ allow the generation of new harmonized soil data sets;
- ✓ support evidence-based decision making for sustainable soil management.

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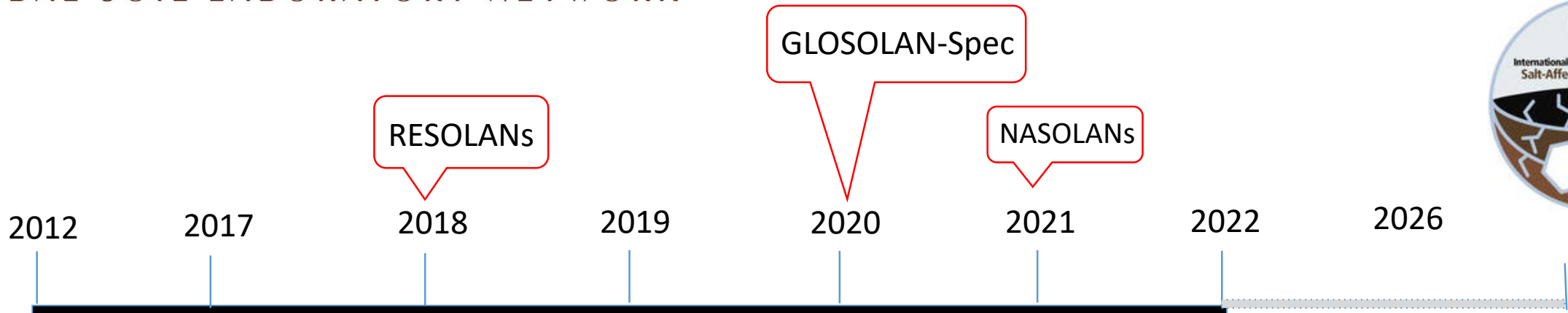
Materials and activities are open access to anybody  
and aim to improve global analytical performance,  
**success will be faster**  
**with the support of national governments,  
resource partners and GSP Focal Points!**

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# GLOSOLAN

GLOBAL SOIL LABORATORY NETWORK



GSP

GLOSOLAN

PT Asia  
PT LAC  
In person training  
1<sup>st</sup> Global assessment

GLO\_PT  
5 SOPs  
In person training

GLO\_PT  
10 SOPs  
2<sup>nd</sup> Global assessment  
Spectroscopy assessment  
SIMPLE

GLO\_PT  
12 SOPs  
16 webinars  
**Procurement to 16 labs**

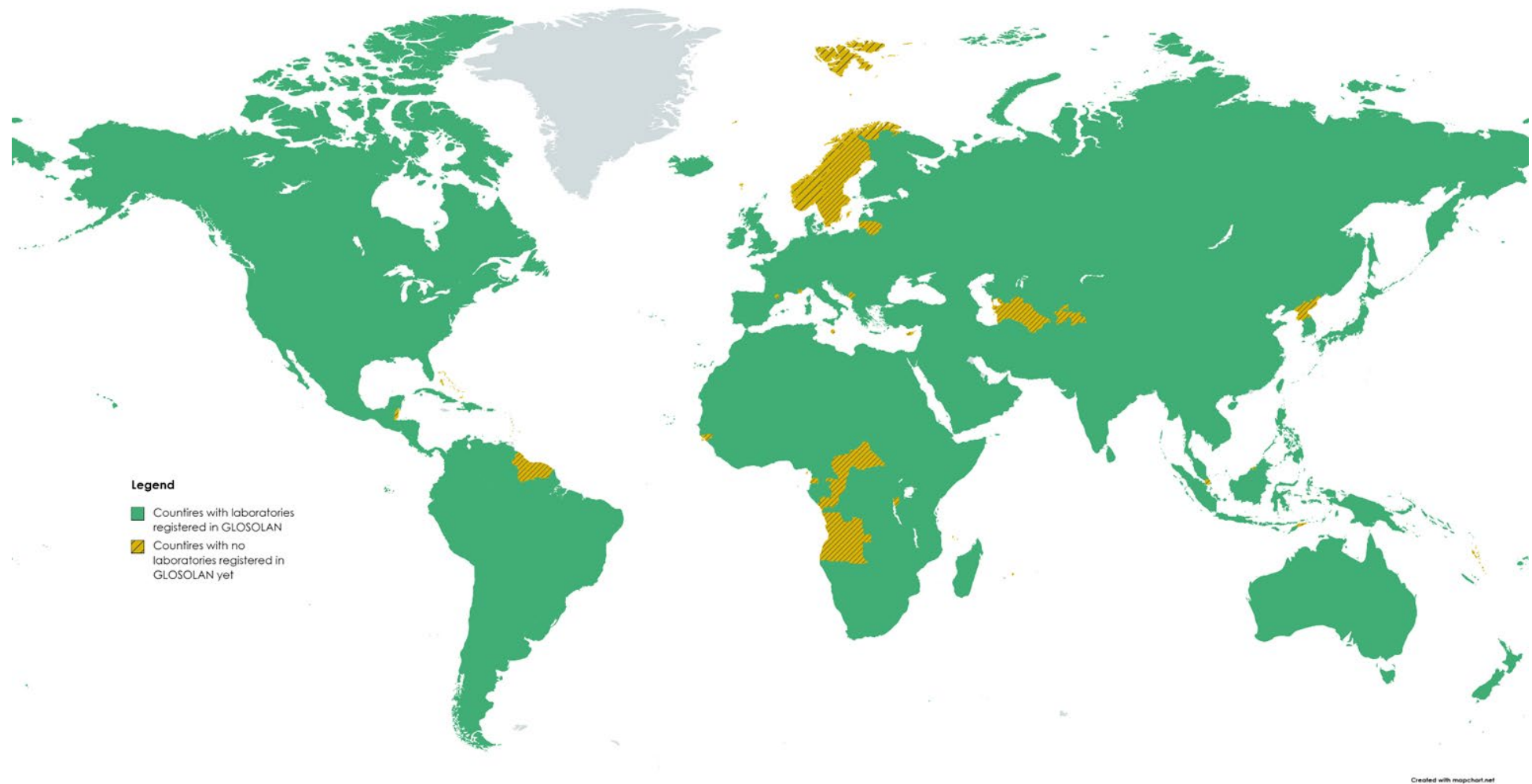
GLO\_PT  
14 SOPs  
7 webinars in the agenda



of the Regional Soil La



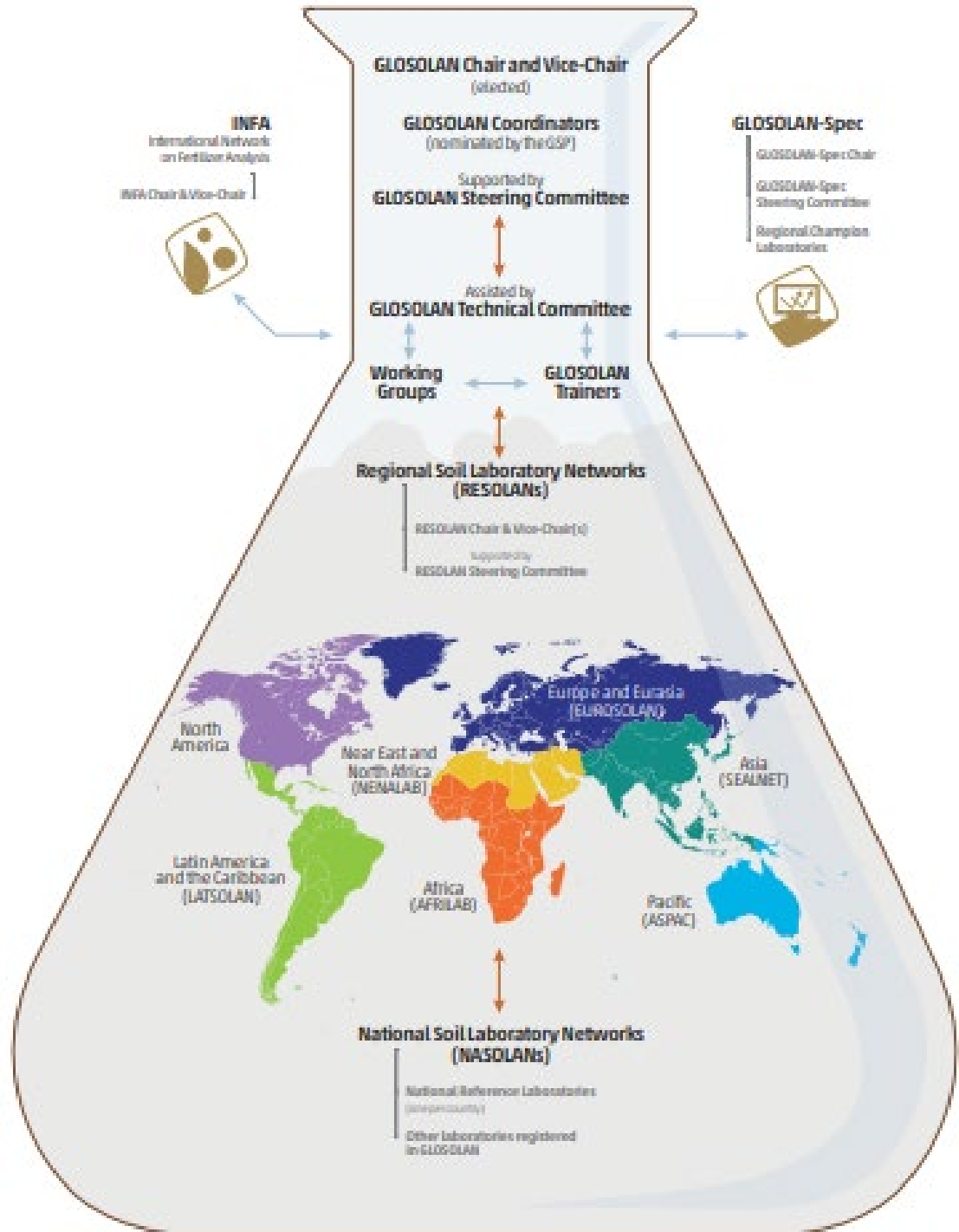
# On September 2022, the network had 885 laboratories registered



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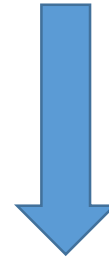




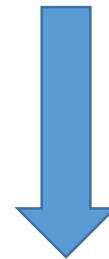


**We operate at all levels...**

**GLOBAL**



**REGIONAL**



**NATIONAL**

**work for Africa (AFRILAB) | 18-19 October 2022**



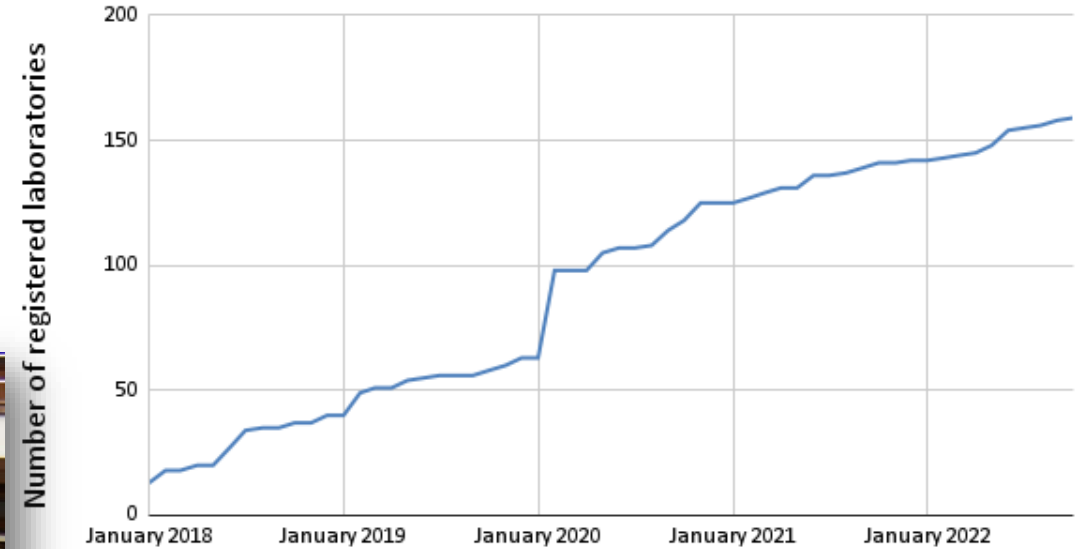
# The African Soil Laboratory Network (AFRILAB)

## A network of 163 laboratories from 39 countries

*Benin, Botswana, Burkina Faso, Cameroon, Cape Verde, Chad, Cote d'Ivoire, Democratic Republic of Congo, Djibouti, Eritrea, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Namibia, Niger, Nigeria, Republic of Guinea, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Somalia, South Africa, South Sudan, Tanzania, Togo, Uganda, Zambia, Zimbabwe*



## AFRILAB network growth



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# National Soil Laboratory Networks (NASOLANs)

- **Established:**  
Examples: Botswana, Ghana, Nigeria, Zimbabwe
- **Under establishment**  
Examples: Niger
- **Not established yet (different reasons/conditions)**  
We can help you
  - Low number of laboratories operating in the country
  - Communication problems
  - Lack of knowledge
  - Need of financial resources

## Global Soil Partnership

[Home](#) [Overview](#) [Partners](#) [Regional partnerships](#) [ITPS](#) [Technical networks](#) [Areas of work](#) [Resources](#)



GLOSOLAN homepage
Soil Analysis
Capacity development
Equipment
Regional Soil Laboratory Networks
<b>National Soil Laboratory Networks</b>
SIMPLE - Soil Import Legislation

### National Soil Laboratory Networks

The success and impact of the Global Soil Laboratory Network (GLOSOLAN) strongly relies on the work and commitment of its member laboratories and on their ability to up and downscale GLOSOLAN activities and harmonized protocols. Regional Soil Laboratory Networks (RESOLANs) facilitate downscaling at the regional level. However, only the establishment of National Soil Laboratory Networks (NASOLANs) able to break down language and cultural barriers can make a difference at the country level.

Each NASOLAN represents the lowest network level of GLOSOLAN. They allow all soil laboratories in a country to interact with each other, overcome common challenges and help each other to build their capacity in soil analysis. Their tasks are described in [NASOLAN's Terms of Reference \(AR|EN|ES|FR|RU\)](#).

It is the responsibility of each National Reference Laboratory (see [Terms of Reference \(AR|EN|ES|FR|RU\)](#)) to lead the establishment of their NASOLAN and to coordinate the implementation of GLOSOLAN activities at the country level. To assist the National Reference Laboratories in this task, GLOSOLAN has prepared [Guidelines on how to establish a National Soil Laboratory Network](#) including case studies, and has created a NASOLAN webpage for each country.

Each webpage contains the following information:

- Status of the establishment of the network. Established/under establishment/not established
- Name of the network and number of members in the network
- Brief history of the network with a focus on the steps taken by the laboratories to establish it, the obstacles faced and potential supporters.
- Information on the activities implemented and meetings organized by the network. In this section, meetings material and outcome documents of the activities implemented by the NASOLAN will be published.
- Main needs and challenges of the network
- Main needs and challenges of the network's laboratories
- Information on the National Reference Laboratory
- Information on the soil laboratories belonging to the NASOLAN
- A map showing the geographic distribution of soil laboratories within each country

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## National Soil Laboratory Networks (NASOLANs)

**Please inform us on progresses in establishing your NASOLAN or in the activities implemented or under implementation in your NASOLAN.**

**Please encourage all the laboratories in your national network to register in GLOSOLAN, so they can be informed on the global activities**



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Organization of the  
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AFRICAN SOIL LABORATORY NETWORK

Thanks for your attention!

