



Food and Agriculture
Organization of the
United Nations

INSII Soil Information Survey Newton Nyapwere

10th Meeting of the
International Network
of Soil Information
Institutions (INSII)

15-16-17 January 2025



Overview

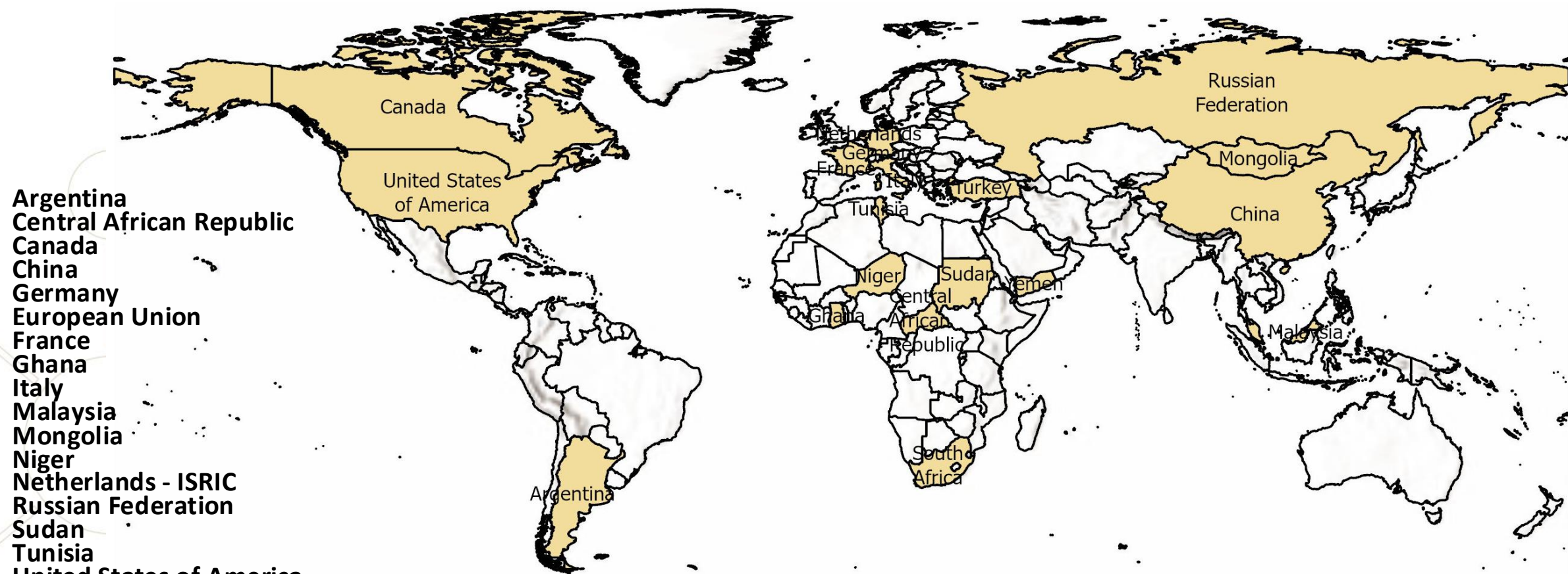
- CountrySIS Survey 2018 vs 2024
- INSII stock-taking-exercise
- GLOSOLAN-INSII data flows

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Countries/Regional Bodies Participation in the Survey

26 submissions from **22** countries



Argentina
Central African Republic
Canada
China
Germany
European Union
France
Ghana
Italy
Malaysia
Mongolia
Niger
Netherlands - ISRIC
Russian Federation
Sudan
Tunisia
United States of America
Türkiye
Yemen
South Africa
*Iceland
*Japan

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CountrySIS Survey 2018 vs 2024

Countries/Regional Bodies participated in both surveys

Yemen
European Union
Niger
Germany
Ghana
Türkiye
Niger
France

16 countries

Sudan
Italy
Tunisia
Russian Federation
Netherlands -ISRIC
Mongolia
Argentina
Canada

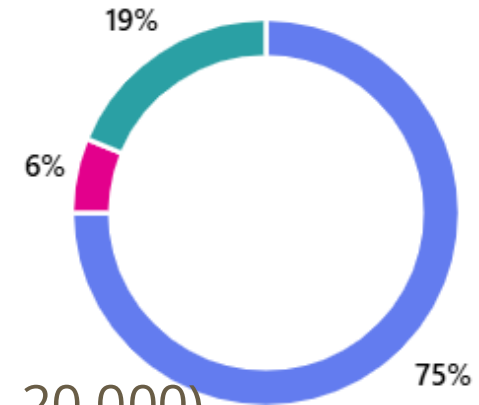
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CountrySIS Survey 2018 vs 2024

Changes to the database/SIS and the nature of the updates since 2018

● Yes, major changes	12
● Yes, minor changes	1
● No changes	3
● Other	0



Changes/Updates

- A jump in the number of soil profiles in the database/SIS (range 150 – 20 000)
- New inventory (2022-2024), change to postgres data base, more plausibility checks.
- Digital soil maps and online based soil information system
- Digitalization of maps and data including legacy soil data, introduction of dry chemistry, digital soil mapping
- New soil property maps produced
- Soil data now more harmonized
- 250m and 100m soil landscape grids have been produced nationwide

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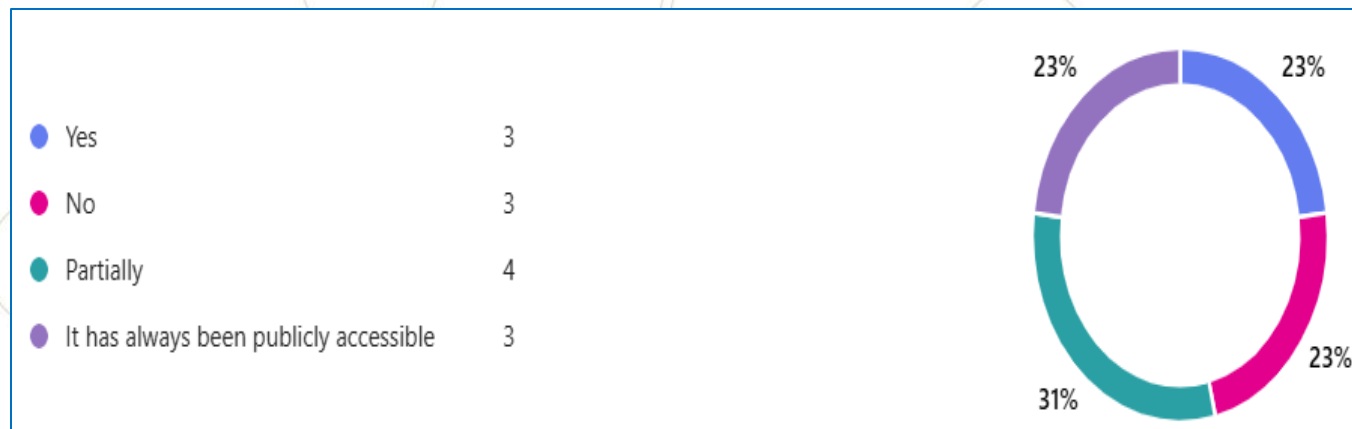
CountrySIS Survey 2018 vs 2024

Challenges Encountered

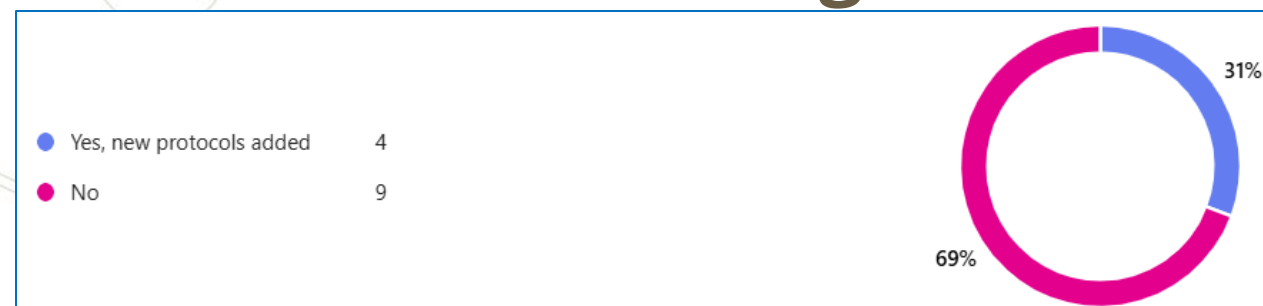
- lack of adequate equipment and facilities (laboratory equipment, good computers, GIS applications and internet)
- Financial support for primary soil data collection
- Lack of soil data specialists
- Insufficient access to data

CountrySIS Survey 2018 vs 2024

Public Accessibility of Soil Data

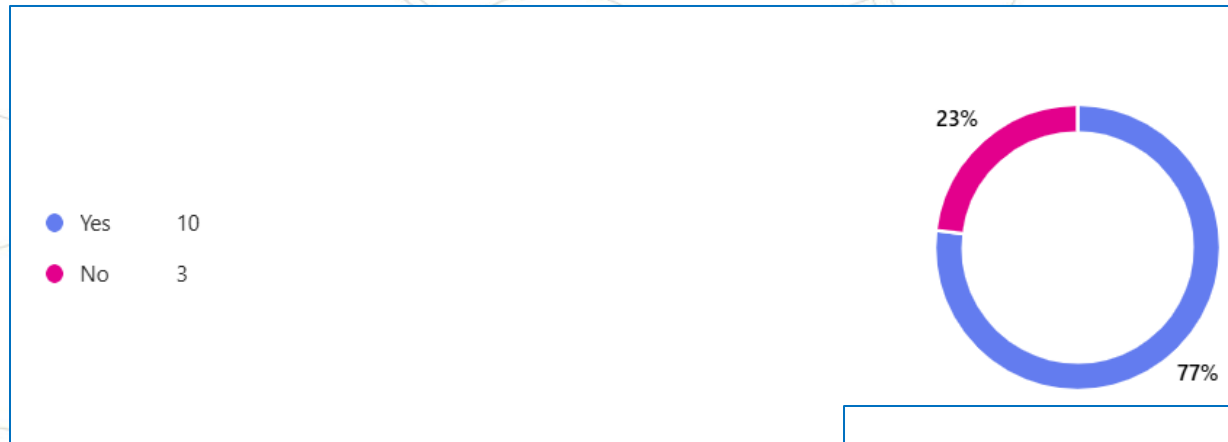


Data sharing Protocols

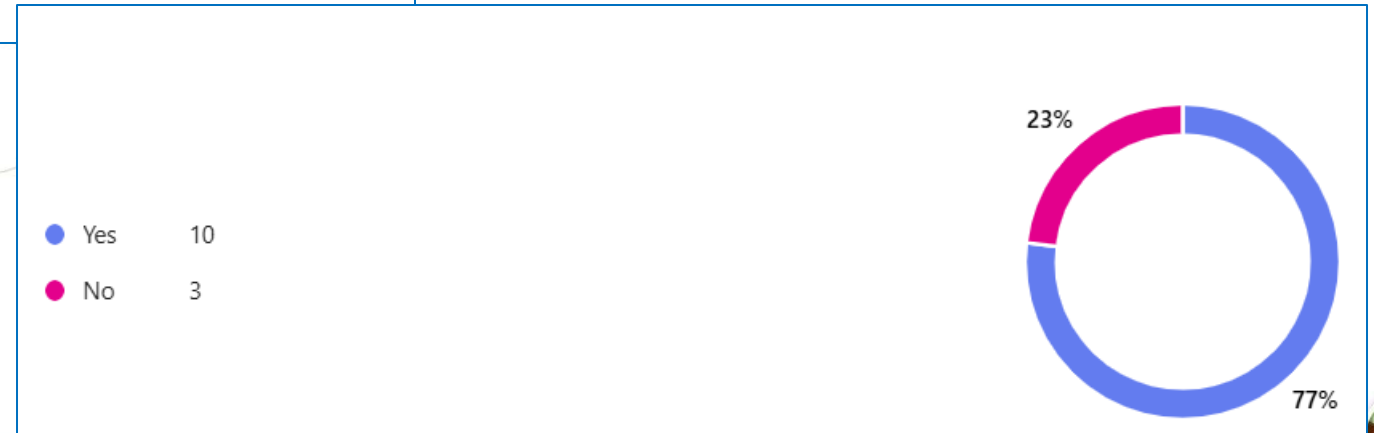


CountrySIS Survey 2018 vs 2024

SIS Integration with additional data (e.g., climate, land use, topography/DEM)



New SIS users/ applications



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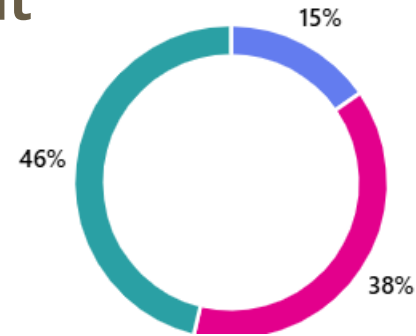


CountrySIS Survey 2018 vs 2024

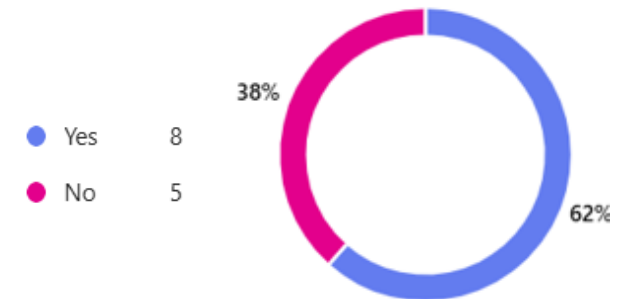


Soil Monitoring System establishment

Yes, new monitoring system	2
Expanded existing system	5
No	6

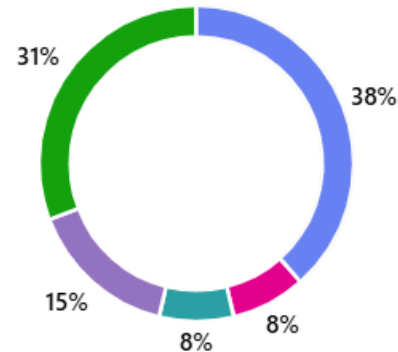


Methods/Technologies Introduced for Soil Monitoring



Soil threat monitored

Soil organic carbon	5
Salinity/alkalinity	1
Contamination/pollution	1
Erosion risk	2
Other	4



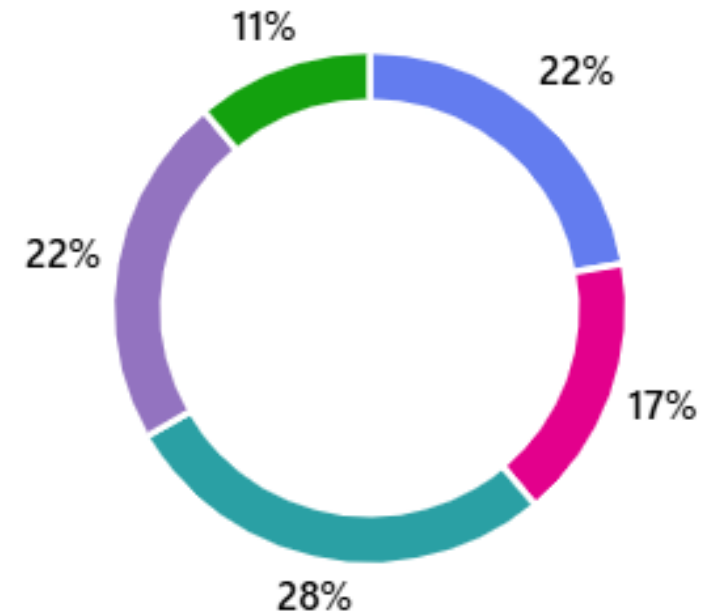
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CountrySIS Survey 2018 vs 2024

Challenged Solved Since 2018

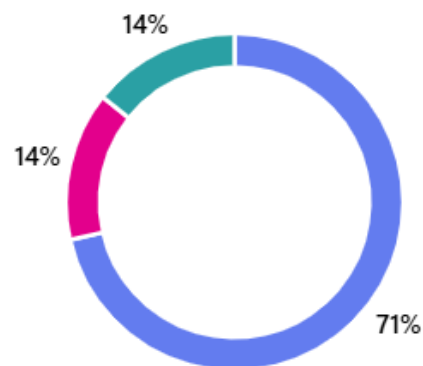
Lack of skilled staff	4
Insufficient equipment supply	3
Lack of communication between organizations	5
Lack of national conceptual model and standards	4
Other	2



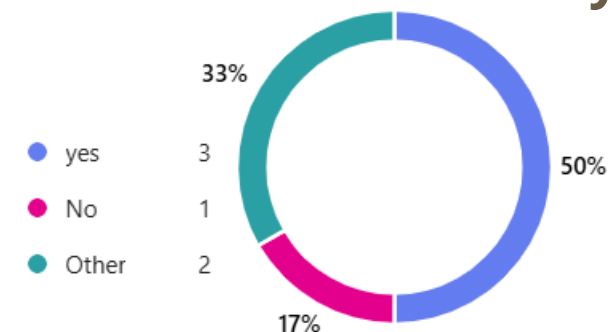
INSII Stocktaking

Soil Database Ownership

Yes	5
No	1
In process of establishing	1

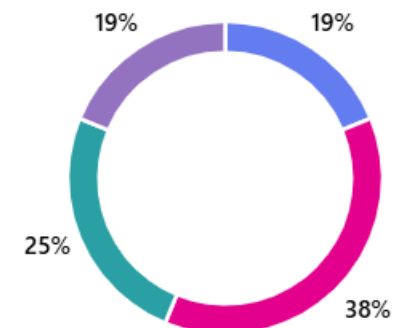


Public Accessibility



Institution/ Database Specialization

Soil choropleth maps of a certain scale	3
Soil profiles	6
hazard maps	4
Other	3



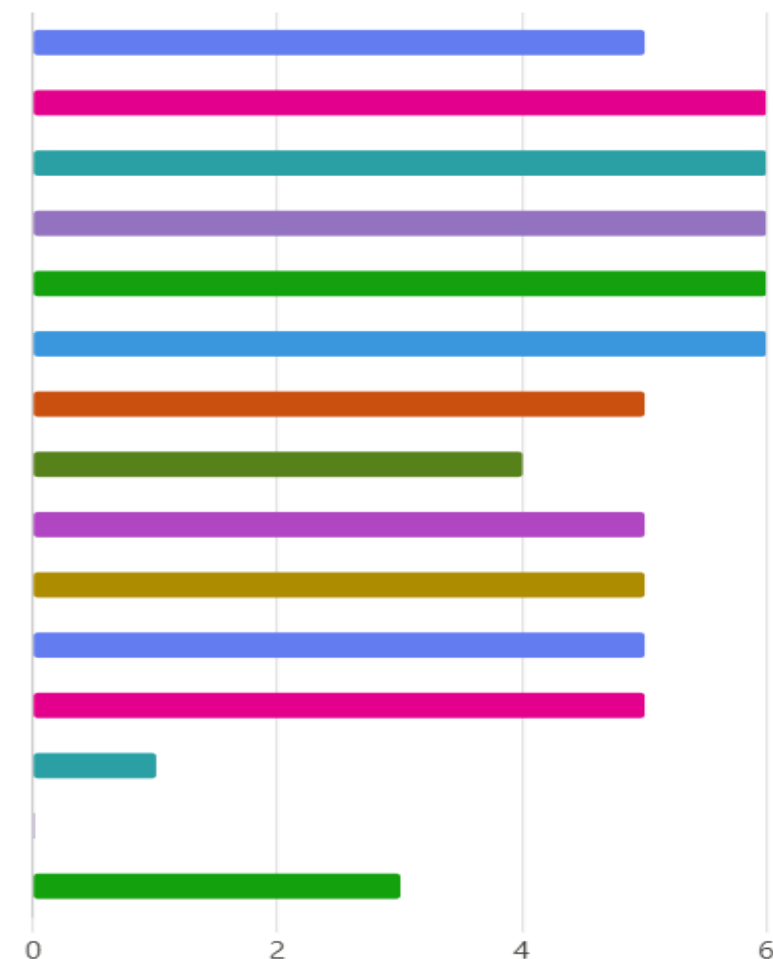
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INSII Stocktaking

General Soil Properties in the Database

Soil type	5
Soil depth	6
Organic matter/carbon	6
Texture class	6
Sand content	6
Clay content	6
Silt content	5
Bulk density (measured)	4
Coarse fragments (stoniness)	5
pH	5
Cation Exchange Capacity (CEC)	5
Water storage capacity	5
Soil biodiversity parameters	1
None	0
Other	3



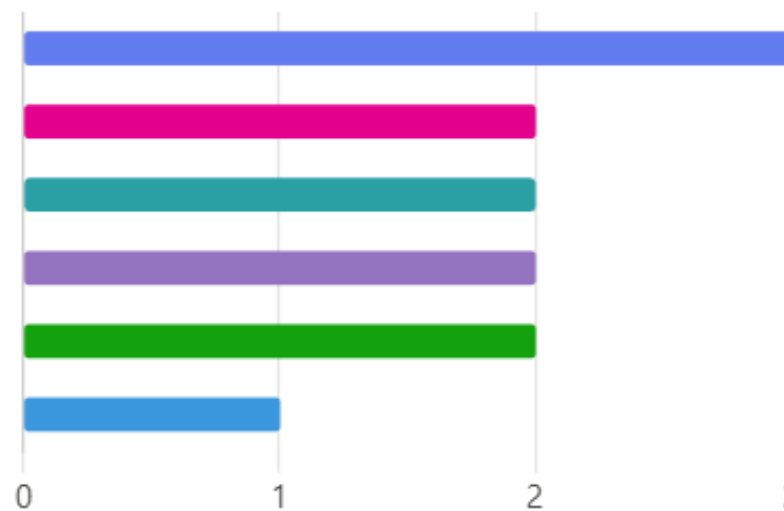
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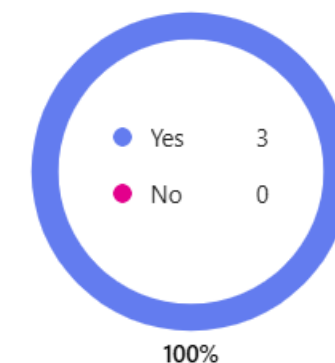
INSII Stocktaking

Components of SIS

● Soil data	3
● Land use / land management data	2
● Supplementary environmental data (land cover, topography, climate, geology, water,...)	2
● Soil threats related data (soil erosion, contamination, acidification, salinization, etc.)	2
● Administrative boundaries	2
● Other	1

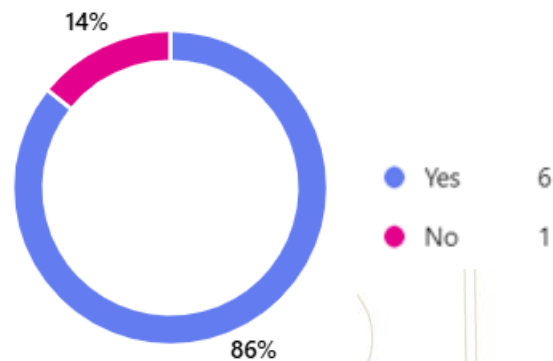


Have data policy?



INSII Stocktaking

Necessity for SIS Development/improvement



Random Remarks

Mon pays ne dispose plus d'un système d'information sur les sols présentement et pourtant l'ORSTOM entre temps avait installé ce système dans mon pays la République Centrafricaine et cela permettait au pays d'avoir des informations sur les propriétés des sols afin de mieux gérer la santé de ces sols. C'est grâce à ces informations données par l'ORSTOM à l'époque sur les états des sols de la République Centrafricaine que beaucoup de sociétés agricoles internationales se sont installées en Centrafrique, exemple de la société COLICO dans la plantation du café Robusta. Donc, il est nécessaire que je puisse participer en présentiel afin de renouer des relations avec les autres partenaires.

We are actively modernizing our current system but the current system is well functioning and popular.

In the process of developing a soil information policy / regulations to assist with the development of a soil information system. Has currently a Natural Resources Atlas for South Africa where all natural resources information can be viewed but a are working on a dedicated soil information system to only focus on soil data and derived soil data for the country

no comments

INSII Stocktaking

The Most Significant Achievements of INSII over the Last 10 years

- GSOC map development
- Helping country members to give information on status of soils at various level of users
- Raise global attention on the importance of soil data and soil information systems through establishing and strengthening soil information systems and improving individual and organizational capacities
- Capacity building, SOPs, regional soil projects, soil erosion, salinity and SOC seq. potential , and conferences, and Action Plans
- Production of global soil products, through country-driven approach
- Upgrading GSOC 1.7 (new version), Black Soil Map, Salinity maps.
- And preparing the 10-years report of World soil state.
- Competitive projects such as the Development of the Soil Atlas of Asia and National Soil Information System (2019-2023) and National Soil Information Systems to support the transformation of Agrifood Systems in AFACI countries (Soil Phase 2)
- Collaboration and support - especially in the development of standardized analytical methodologies for global products

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INSII Stocktaking

Key challenges faced by INSII in Achieving its Objectives During the Past decade

- Formal engagement of data holding institutions
- Training on capacity building and reinforcements were not equally distributed to members because of internet that didn't facilitate the work for many.
- structure change of GSP, covid time, communication
- Not enough information on INSII
- the lack of sufficient resources
- data harmonization from different sources
- data with no reference coordinate and incomplete datasets
- data exchange and property rights, laws in some countries on data exchange
- different levels of knowledge and expertise in soil information tech across INSII

INSII Stocktaking

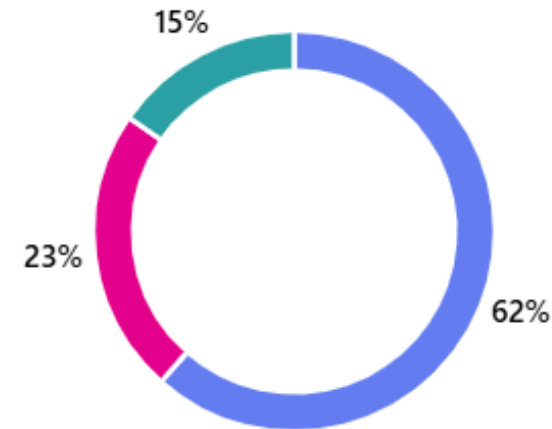
Impact of INSII on soil information and management in the region or globally

- Awareness and stakeholder collaboration in Soil Information System
- Pushing countries to better consider soil data
- NSII has legitimized the application of the digital soil mapping methodologies
- To make soil information open and interoperable

GLOSOLAN-INSII Data Flows

Data Generation through GLOSOLAN?

● Yes	16
● No	6
● Not sure	4



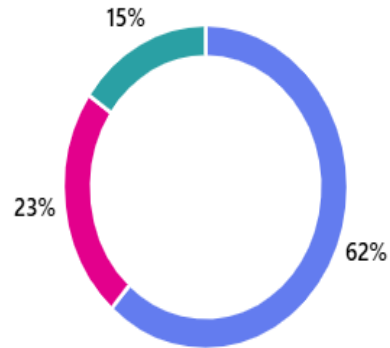
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GLOSOLAN-INSII Data Flows

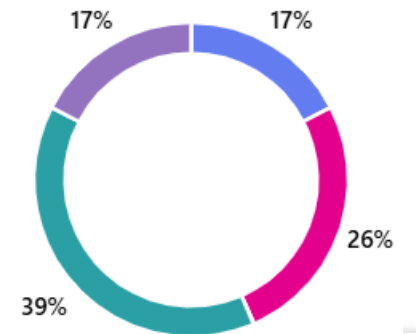
Data Generation through GLOSOLAN?

Yes	16
No	6
Not sure	4



Data Generated with GLOSOLAN 's SOPs?

yes, for all the analysis	4
yes, partially	6
No, we use other SOPs	9
Other	4

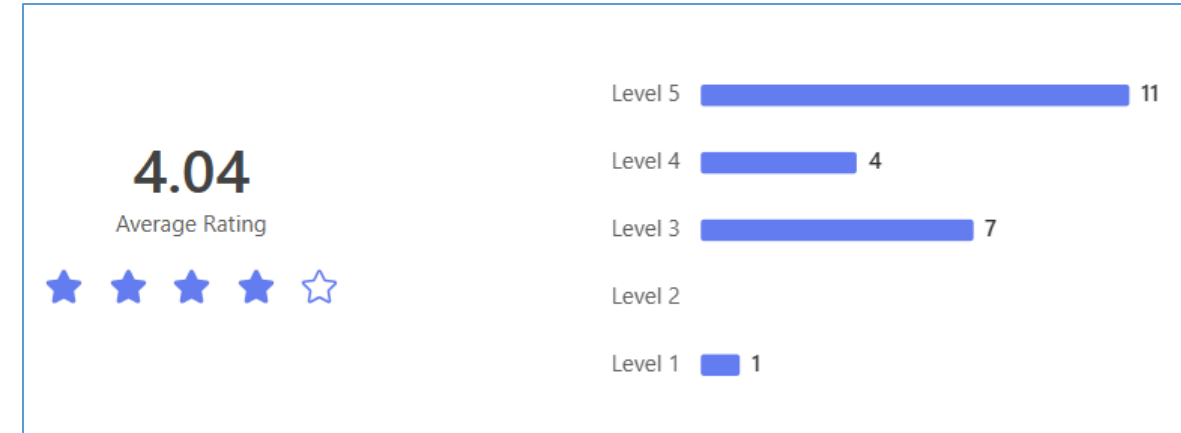


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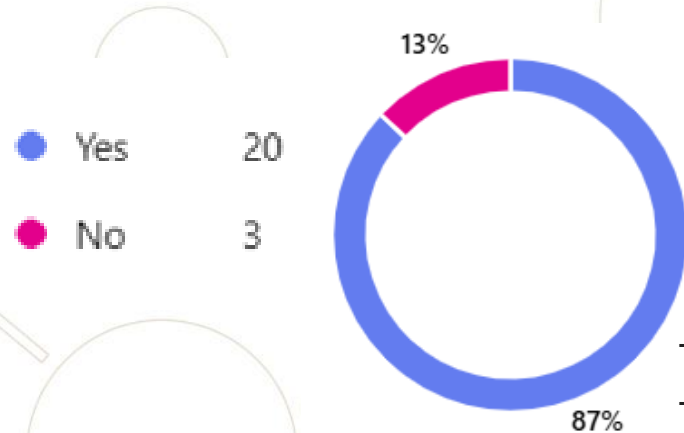


GLOSOLAN-INSII Data Flows

Laboratory Confidence Rating



Calibration of Equipment on a Regular Basis ?



How to Improve Lab Results Efficiency

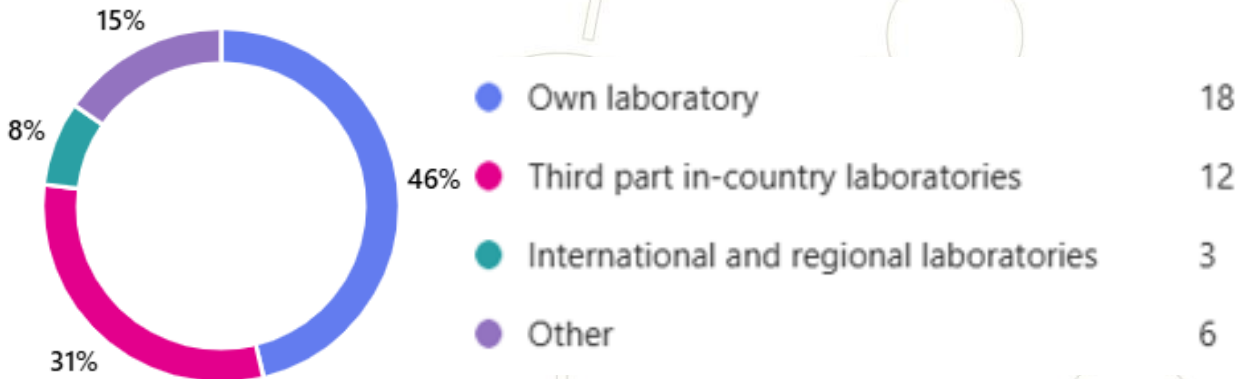
- Capacity building of staff
- Review and renew methodologies
- More validation samples helpful
- New lab equipment needed
- Regular calibration
- Increasing the inter-laboratory collaborations: e.g. with staff exchange experiences.
- Use of soil spectroscopy`

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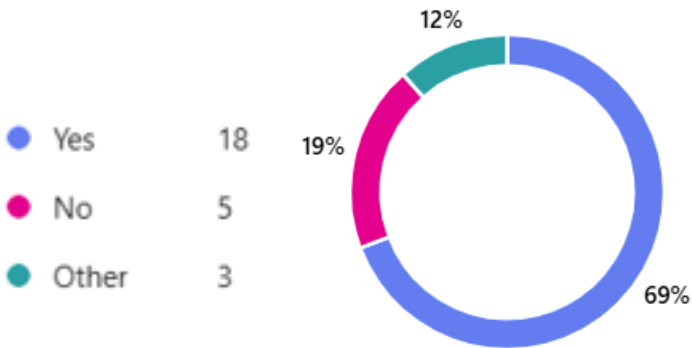


GLOSOLAN-INSII Data Flows

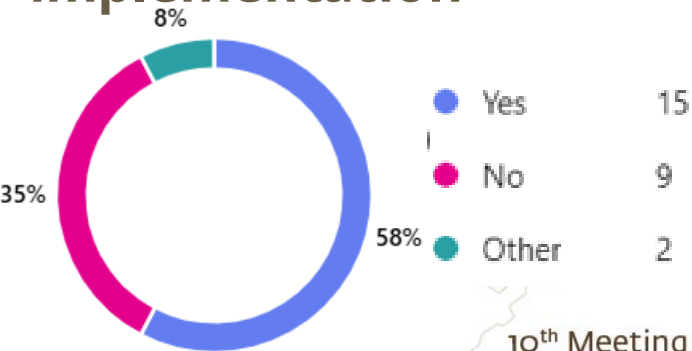
Laboratory Providing the Necessary Measurements for your Database



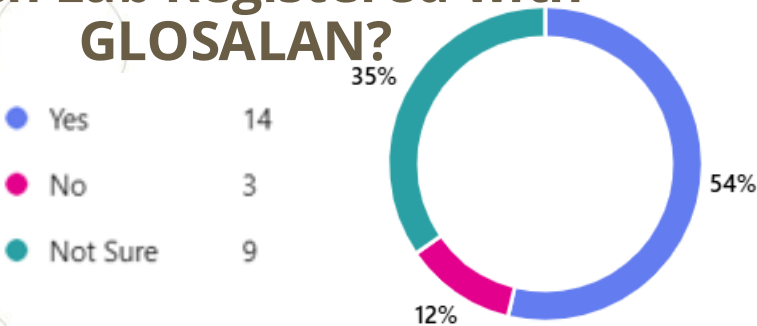
Require standardized analytical Methods?



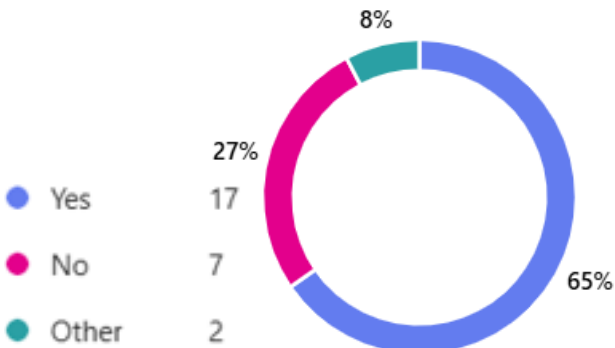
Interlab calibrations implementation



Such Lab Registered with GLOSOLAN?



Require certified quality assurance standards ?





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