



The Global Soil Laboratory Network

Mr. Elh Moustapha Abdourahaman
GLOSOLAN vice-chair



GLOSOLAN

GLOBAL SOIL LABORATORY NETWORK

Global Soil Laboratory Network (GLOSOLAN)

Established in 2017 to harmonize soil laboratory methods and data, and to build the capacity of laboratories in soil analysis. Three plus one major areas of work:



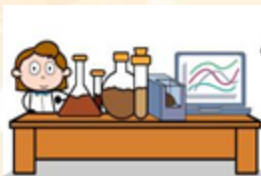
SOPs

- Harmonization of Standard Operation Procedures (SOPs)
- Training on the implementation of GLOSOLAN SOPs
- Training on safety and health



QACC

- Execution of external quality control (proficiency testing)
- Training on the execution of internal quality control



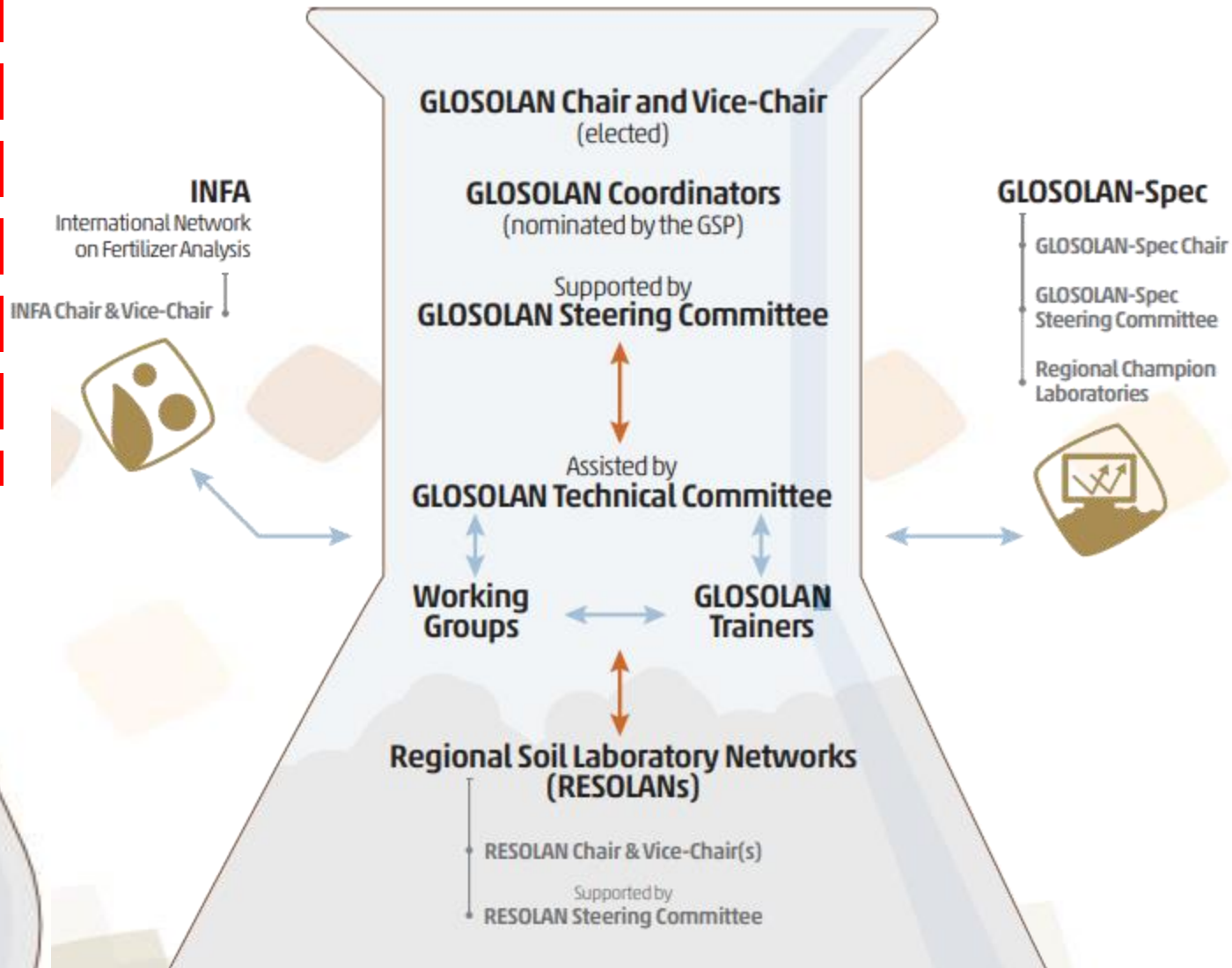
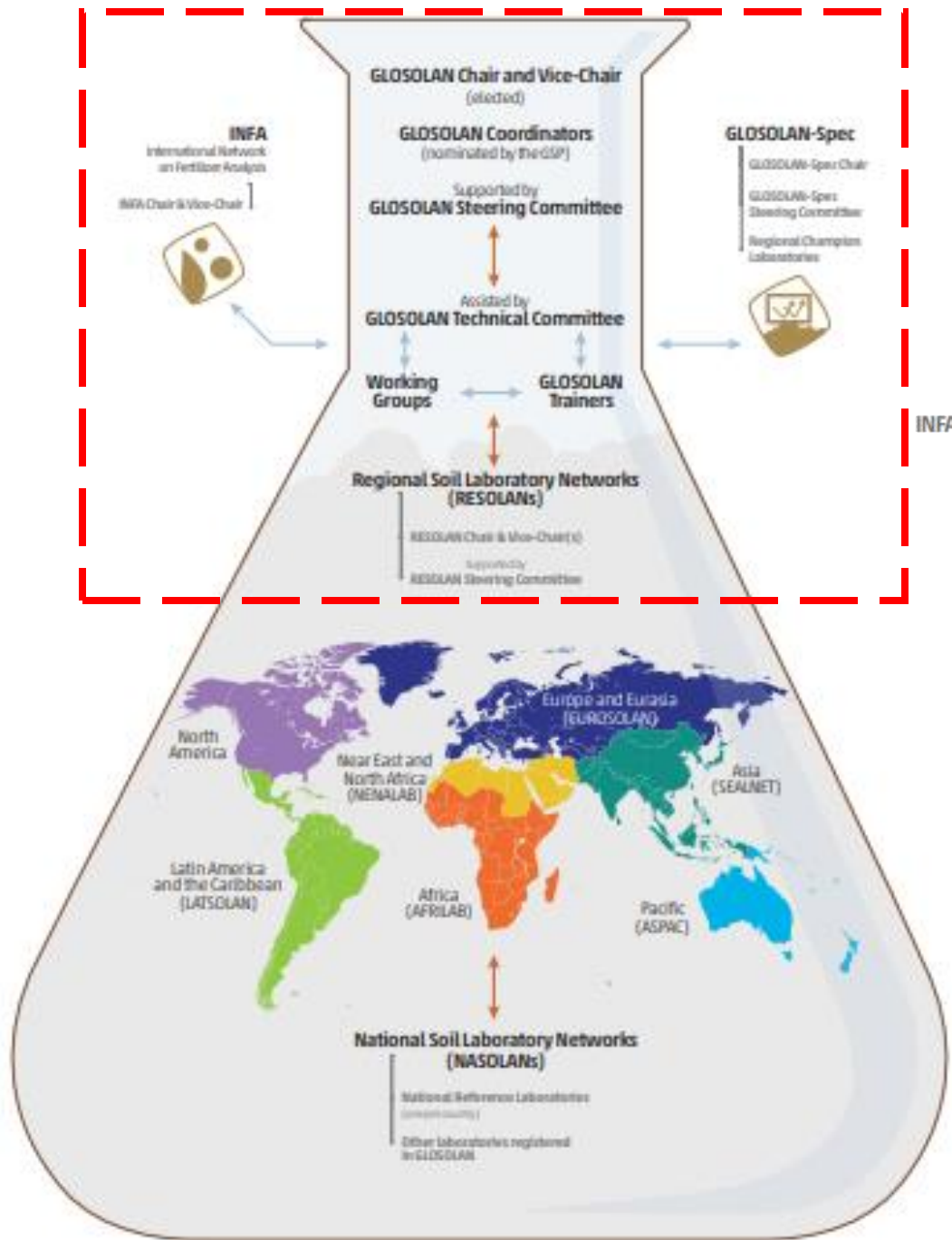
Equipment

- Training on equipment use, maintenance and purchasing
- Establishment of a donation/bartering system
- Spectroscopy



INFA
International Network
on Fertilizers Analysis

Harmonization of fertilizers
analysis procedures

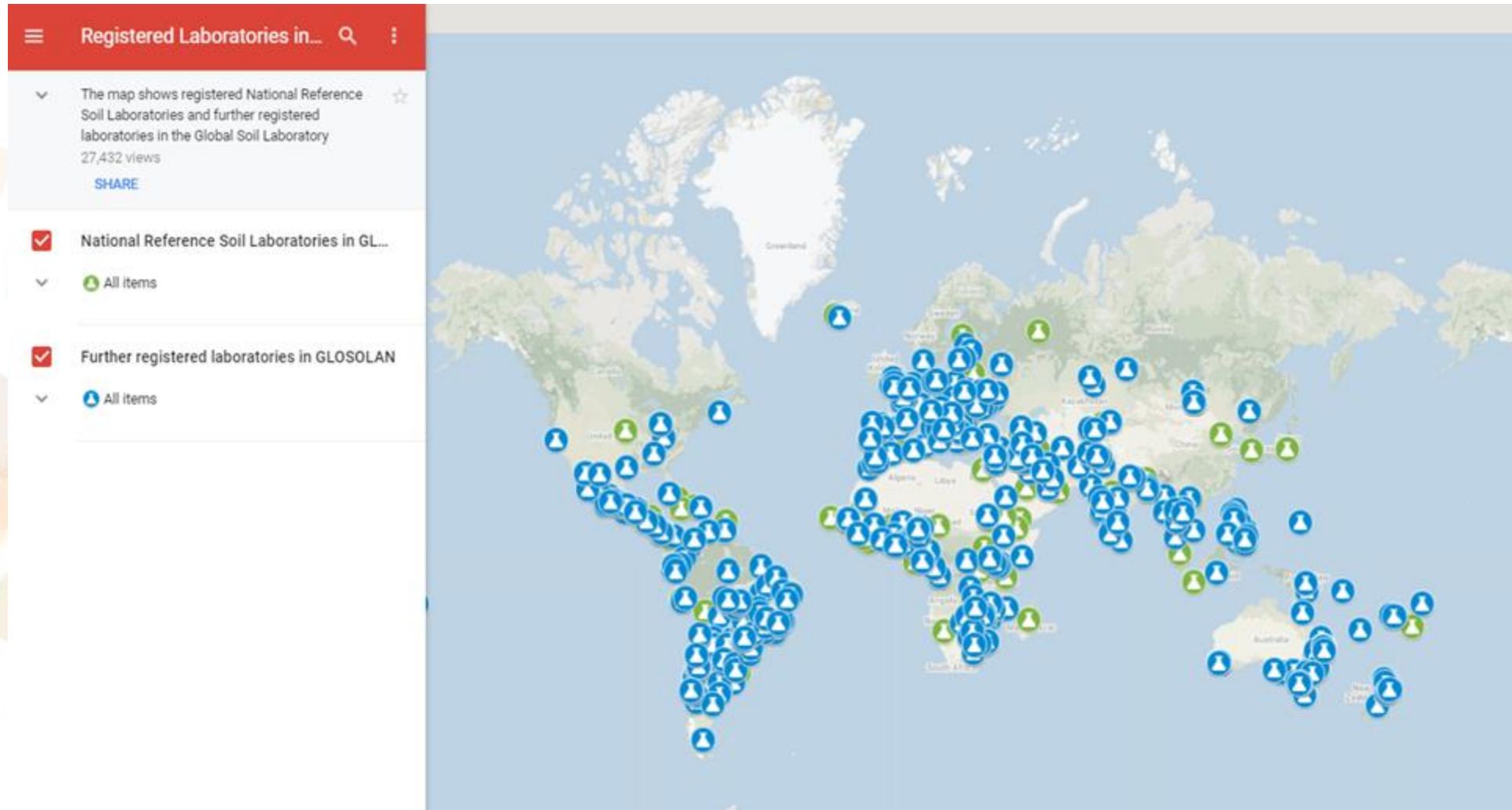


On **February 28, 2022**, the network had **801** laboratories registered



Africa AFRILAB	Asia SEALNET	Europe & Eurasia EUROSOAN	Latin America LATSOLAN	Near East & North Africa NENALAB	North America	Pacific ASPAC
143	122	164	205	77	13	77

Learn more on the laboratories registered in GLOSOLAN by consulting the GLOSOLAN interactive map at <https://www.google.com/maps/d/u/0/viewer?mid=1LrzYb6G9IMObU6M3ZXWy4BxY5UMlruyq&ll=-3.81666561775622e-14%2C130.67331682617169&z=2>





Operates through
Regional Soil Laboratory Networks (RESOLANs)



Operates at the national level through
registered laboratories and **National Reference Laboratories** especially, which are
tasked to establish
National Soil Laboratory Networks

Global
(GLOSOLAN)



Regional
(RESOLAN)



National
(NASOLAN)



*Albania, Andorra, Armenia,
Austria, Azerbaijan, Belarus,
Belgium, Bosnia and
Herzegovina, Bulgaria, Croatia,
Cyprus, Czech Republic,
Denmark, Estonia, Finland,
France, Georgia, Germany,
Greece, Hungary, Iceland,
Ireland, Israel, Italy, Kazakhstan,
Kosovo, Kyrgyzstan, Latvia,
Lithuania, Luxembourg, Malta,
Monaco, Montenegro,
Netherlands, Norway, Poland,
Portugal, Romania, Russian
Federation, San Marino, Serbia,
Slovakia, Slovenia, Spain,
Sweden, Switzerland, Tajikistan,
The former Yugoslav Republic of
Macedonia, The Republic of
Moldova, Turkey, Turkmenistan,
Ukraine, United Kingdom,
Uzbekistan, Vatican City.*

Main areas of work and achievements

- **Harmonization of Standard Operating Procedures (SOPs)** on the determination of soil chemical, physical and biological parameters – translated in various languages and available for free;
- **QA/QC:** develop guidelines for internal and external quality control procedures, implement and promote the organization of proficiency test (PTs);
- **Health and safety:** develop guidelines and raise the awareness on the sustainability of methods;
- **Equipment:** purchase laboratory equipment, establish a bartering/donation system;
- **Dry chemistry** (soil spectroscopy): build national capacity on soil spectral analysis, support the establishment of spectral library and spectral estimation services, develop standards and protocols for spectral measurement.
- **Capacity development:** organize training sessions in different languages on all network's areas of work, release training videos.



Main activities for 2022

- GLOBAL PT (targeting *SOC, available P, total N*): around 230 laboratories from 106 countries;
- New training sessions and videos;
- Harmonization of new SOPs on soil chemical, physical and biological parameters: in collaboration with other GSP Technical Networks (INBS, INSAS, NETSOB);
- Global assessment of soil laboratories **2022**;
- Support the establishment of National Soil Laboratory Networks (NASOLANs).



GLOSOLAN is doing its best to keep its webpage updated and available in the 6UN official languages: *English, French, Spanish, Arabic, Russian and Chinese*



The screenshot shows the top navigation bar of the GLOSOLAN website. On the left is the FAO logo and the text "Food and Agriculture Organization of the United Nations". On the right is a search bar with the text "ENHANCED BY Google" and a magnifying glass icon. Below the search bar are language selection links: العربية, 中文, English, Русский, and Español.

Global Soil Partnership

Home Overview Partners Regional partnerships ITPS Technical networks Areas of work Pillars of action Resources

Global Soil Laboratory Network

Soils: if you cannot measure it, you cannot manage it

The Global Soil Laboratory Network (GLOSOLAN) was established in 2017 to build and strengthen the capacity of laboratories in soil analysis and to respond to the need for harmonizing soil analytical data. Harmonization of methods, units, data and information is critical to (1) provide reliable and comparable information between countries and projects; (2) allow the generation of new harmonized soil data sets; and (3) support evidence-based decision making for sustainable soil management.

The work of GLOSOLAN supports the implementation of the Sustainable Development Goals, the Agenda 2030 for Sustainable Development and the mandate of FAO on food security and nutrition. For more information contact Lucrezia.Caon@fao.org

- GLOSOLAN homepage
- Soil Analysis
- Capacity development
- Fertilizers analysis – International Network on Fertilizer Analysis
- Equipment

GLOSOLAN FAQs

- + What are GLOSOLAN main areas of work?
- + How does GLOSOLAN work?
- + What are the differences between National Reference and other registered soil laboratories?
- + Why shall I register my laboratory in GLOSOLAN?
- + How can I register my laboratory in GLOSOLAN?
- + What laboratories are registered in GLOSOLAN?



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Organization of the
United Nations

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Food and Agriculture
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The European and Eurasian Soil Laboratory Network

Ms. Marija Romić

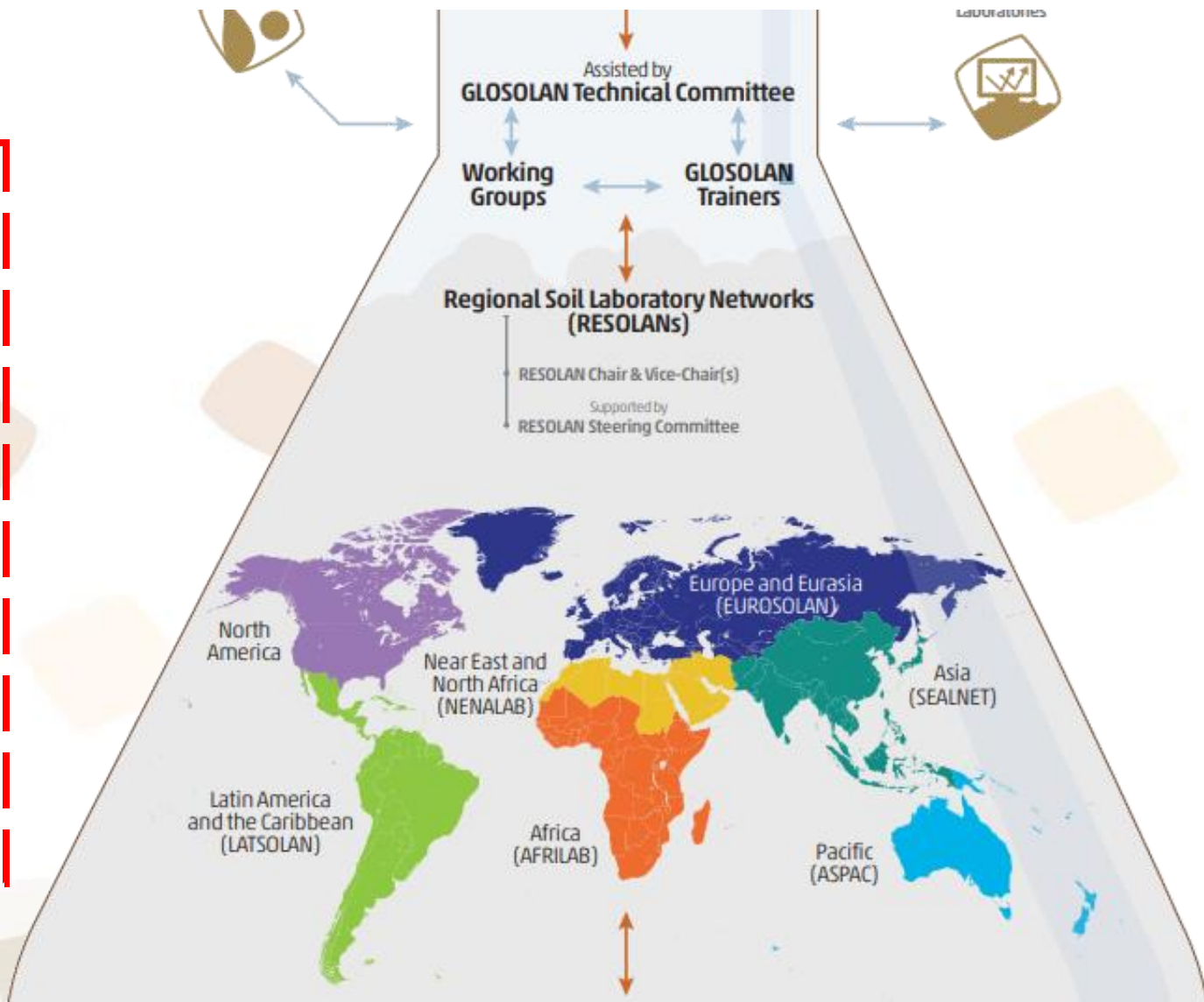
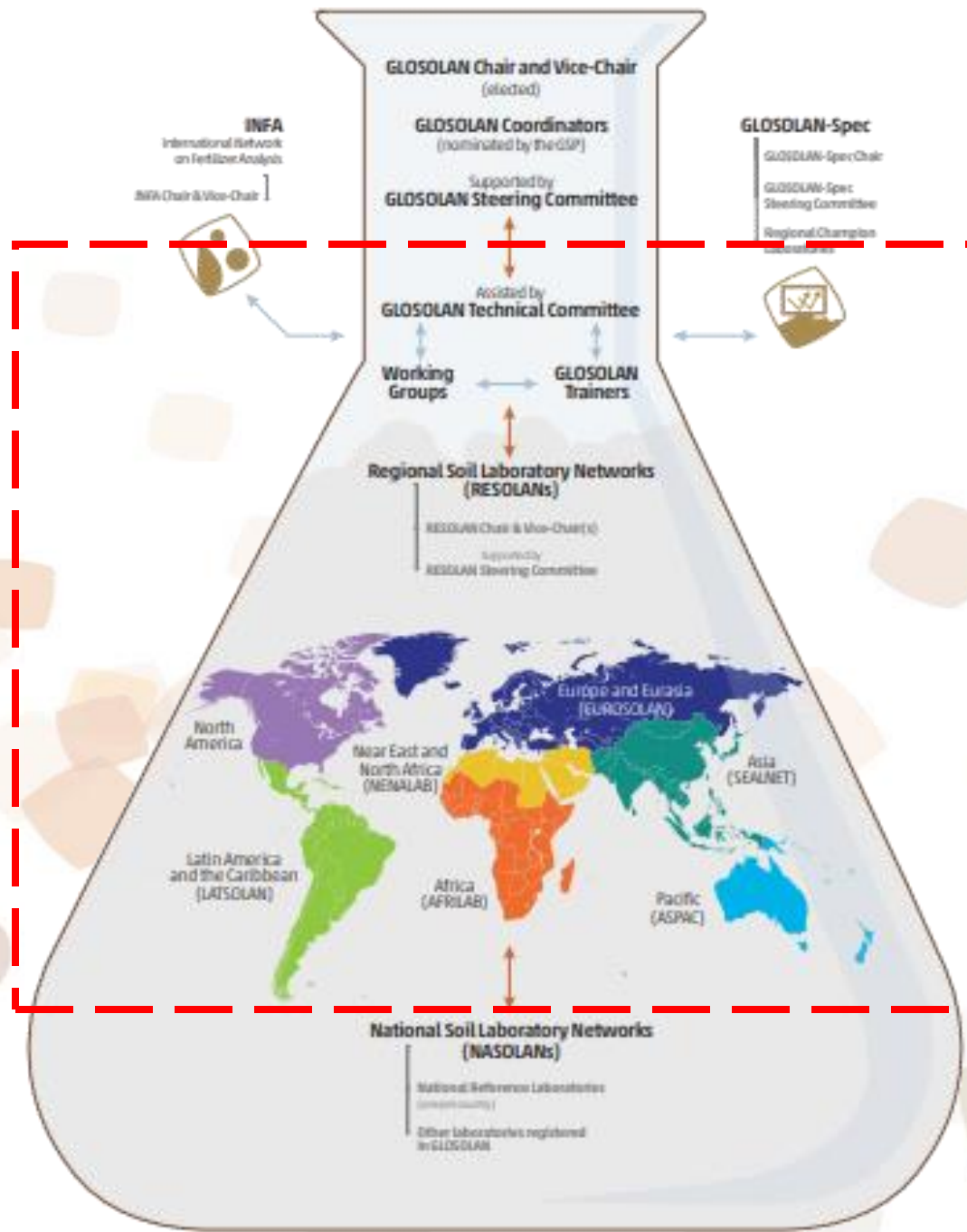
EUROSOLAN chair

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The European and Eurasian Soil Laboratory Network (EUROSOLAN)

Established through an inception meeting on 2-5 October 2019 in Chişinău, Moldova as the third RESOLAN, following the establishment of the networks for Asia (SEALNET, 2017) and Latin America (LATSOLAN, 2018)



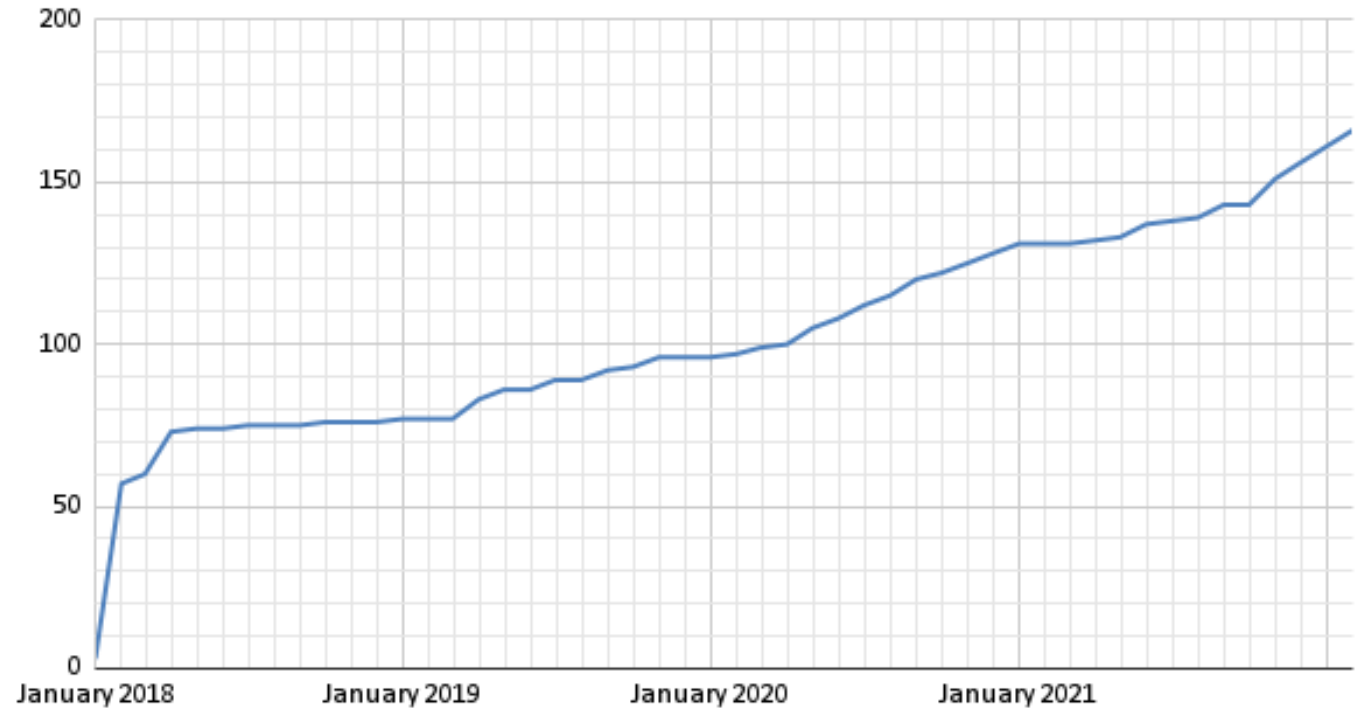
- Connecting partners and networks already operating within the European and Eurasian region;
- Organizing yearly meetings to revise the work plans of laboratories in EUROSOLAN and indicate their positions within GLOSOLAN;
- Challenging the language barriers among EUROSOLAN countries, and gain experience in the preparation of various GLOSOLAN products (SOPs, videos, trainings, etc.);
- Enhancing the interest and the participation of national laboratories on RESOLAN communications over online surveys;
- Conducting comparative studies for SOP harmonization;
- Providing assistance in the organization or/and participation in proficiency tests.

A regional network of **164** laboratories from **41** countries



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EUROSOLAN growth



Governance

One chair, two vice-chairs, and a steering committee to coordinate the network and lead the implementation of the EUROSOLAN work plan



EUROSOLAN chair and vice-chairs are tasked with:

- Contributing to the preparation of the annual EUROSOLAN meeting and leading the implementation of the regional work plan;
- Maintaining active communication with GLOSOLAN, the GSP Secretariat, the GSP's Pillar 5 Working Group, and the European Soil Partnership in relation to the implementation of the EUROSOLAN activities;
- Supporting the GLOSOLAN coordinators in evaluating the compliance of the National Reference Laboratories.

EUROSOLAN Steering Committee is tasked with:

- Supporting the EUROSOLAN chair and vice-chairs in implementing the activities and work plan defined during the EUROSOLAN meeting;
- Providing suggestions on how activities in the EUROSOLAN work plan should be adapted to particular situations within the region;
- Supporting the GLOSOLAN coordinators in organizing capacity development meetings;
- Defining indicators to monitor and assess the performance of GLOSOLAN members.

- **EUROSOLAN Chair:** Marija Romic (Croatia)
- **EUROSOLAN vice-Chair** for European countries: Oguz Can Turgay (Turkey)
- **EUROSOLAN vice-Chair** for Eurasian countries: Elena V. Shamrikova (Russian Federation)

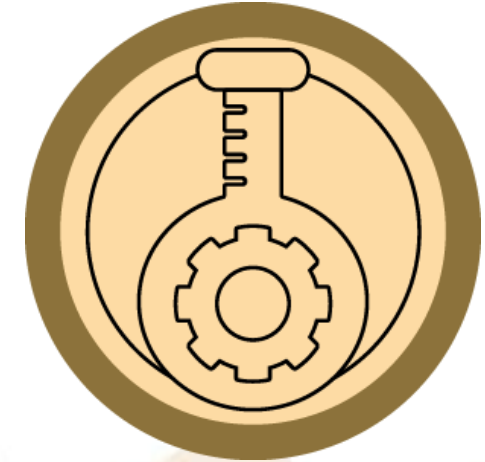
Members of the EUROSOLAN Steering Committee:

- Ágnes Nagy (Hungary)
- Christian Hartmann (France)
- Špela Velikonja Bolta (Slovenia)
- Aldis Butlers (Latvia)
- Giorgi Ghambashidze (Georgia)




Three EUROSOLAN meetings have been implemented so far...

Aim:

- Revise the network work plan, according to the needs of the laboratories in the region;
- Make proposals to be submitted to GLOSOLAN;
- Monitor the status of the laboratories and the NASOLANs in the region.



Recent EUROSOLAN meetings

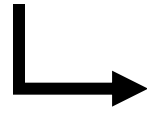
	<p>Third EUROSOLAN meeting <i>Zoom platform, 27 October 2021 - Time: 10:00-13:00 Rome time</i></p> <p>The network aims to connect partners and networks already operating within Europe and Eurasia...</p> <p>Learn More</p>
	<p>Second EUROSOLAN meeting <i>Zoom platform, 30 September - 2 October 2020</i></p> <p>The network aims to connect partners and networks already operating within Europe and Eurasia...</p> <p>Learn More</p>
	<p>First EUROSOLAN meeting <i>Chişinău, Moldova, 2 - 5 October 2019</i></p> <p>EUROSOLAN facilitates the exchange of experiences among national reference soil laboratories. This network aims to strengthen laboratory performance...</p> <p>Learn More</p>

Material available for each meeting:

- Agenda
- Presentations
- Meeting report
- Video recordings
(for those implemented virtually)
- Photo gallery

<https://www.fao.org/global-soil-partnership/glosolan/regional-soil-laboratory-networks/eurosolan/en/>

Well-functioning network



Transboundary collaboration in soil analysis by overcoming common issues and main obstacles:
Not-widely harmonized analytical procedures adopted by labs;

- Lack of adequate equipment;
- Knowledge on advanced techniques and cutting-edge technology applications;
- Implementation of quality control measures;
- Adoption of health and safety guidelines;

(across labs/countries/regions)

Key role in promoting sustainable soil management



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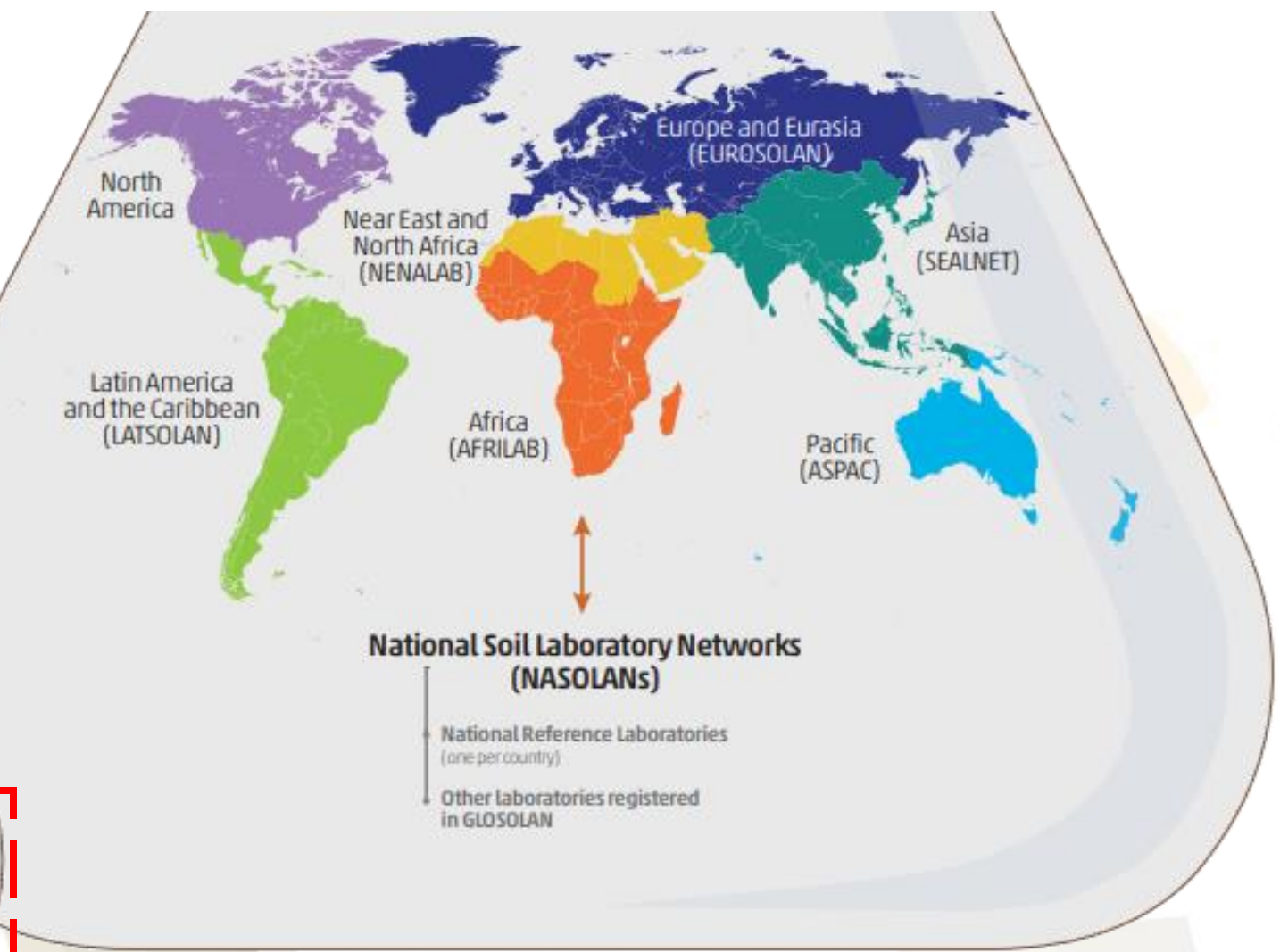
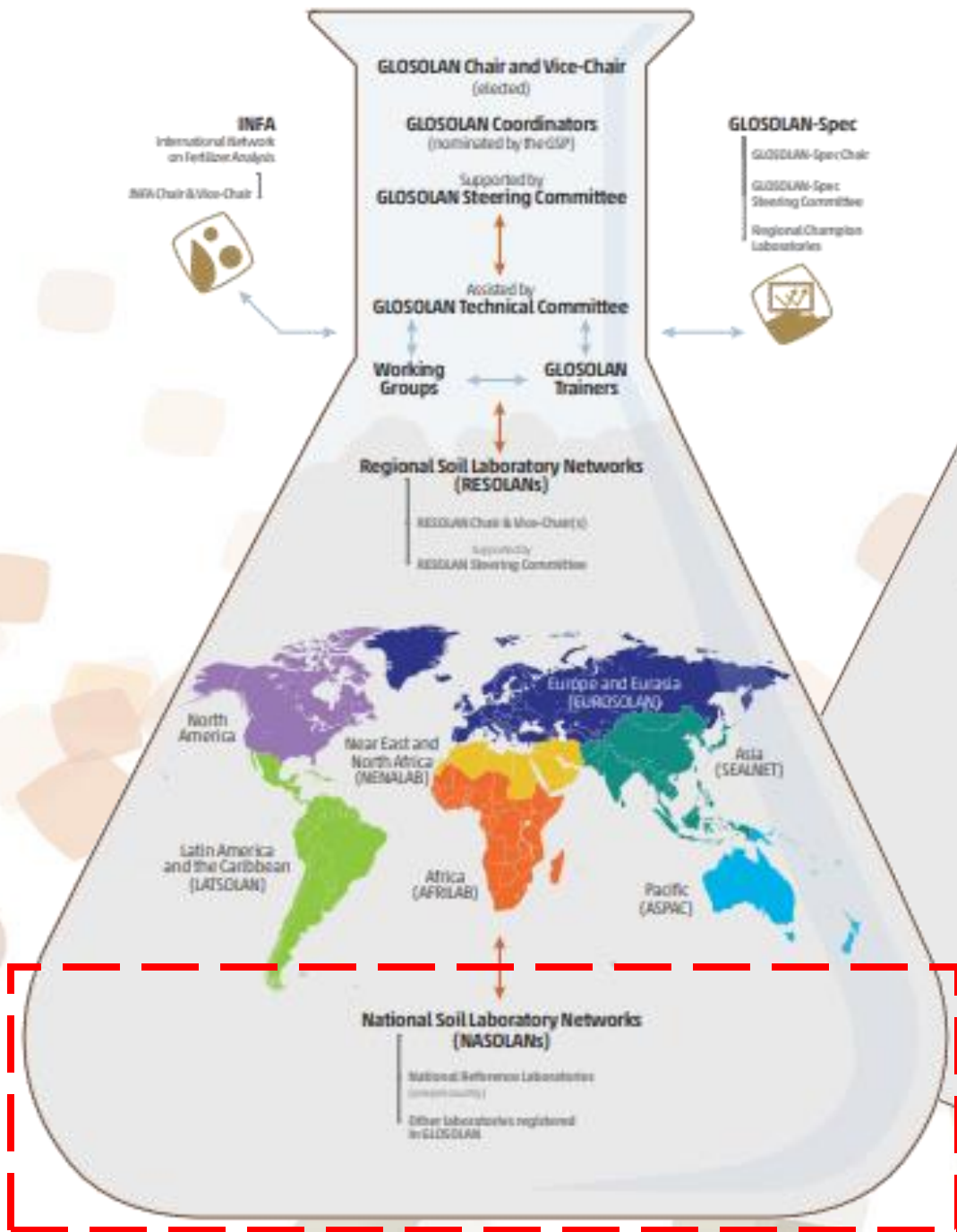
The Belgian Soil Laboratory Network - BESOLAN -

*Ms. Clémence Mariage, Mr. Gilles Colinet
& Mr. Kristof Tirez*



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Why are NASOLANs needed?

- To support the implementation of GLOSOLAN activities at the local level
- To bring local challenges to the attention of GLOSOLAN that will develop strategies to address them
- To reach a larger number of laboratories



Up-scale



Down-scale

GLOSOLAN encourages and supports the establishment of **national networks**

NASOLAN tasks

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GLOBAL SOIL LABORATORY NETWORK

- Enlarge the network by motivating other soil laboratories operating in the country to register in GLOSOLAN and, consequently, in NASOLAN
- Facilitate the implementation of GLOSOLAN activities at the local level
- Advertise GLOSOLAN activities, meetings and trainings, motivating national laboratories to take part in them
- Organize national trainings and meetings
- Organize national inter-laboratory comparison exercises
- Keep the communication active with the Chair and Vice-Chair of their RESOLAN, the GSP national focal point and the GLOSOLAN coordinator
- Keep the NASOLAN webpage updated



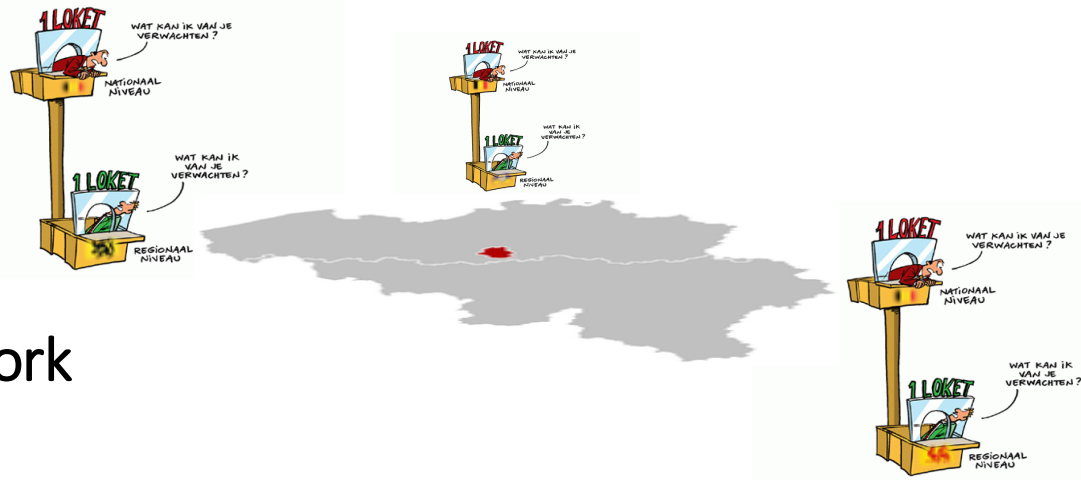
BESOLAN




- Exchange on currently used analytical methods for chemical, physical and biological parameters
- How it is possible to harmonize the methods and the data collected for a global management of soils within Belgium (and then at a higher scale)
- Exchange about sustainable soil management : field observations and problems raised, difficulties encountered, legislation, lack or divergence of data, lack of knowledge and experience, etc
- Exchange and help each other regarding analytical methods development, development of new parameters (wet or dry chemistry), lab equipment, quality controls, etc
- Help for internal quality controls : providing reference materials, etc
- Technical and scientific consultancy
- Inter-laboratory comparison exercises
- Trainings, webinars

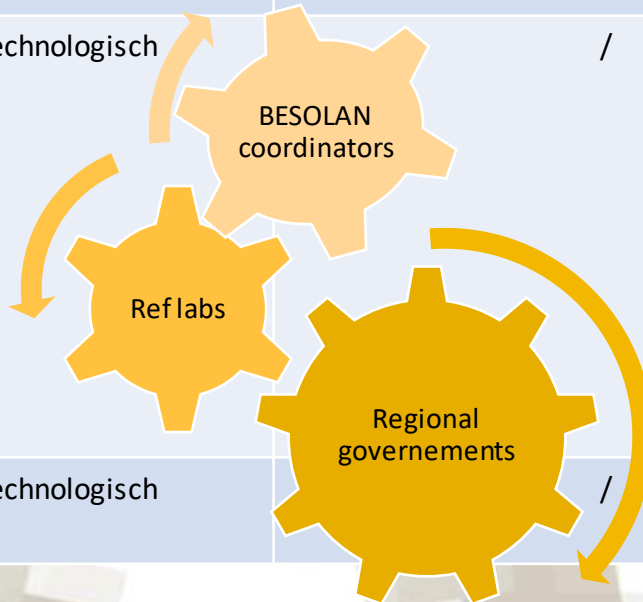


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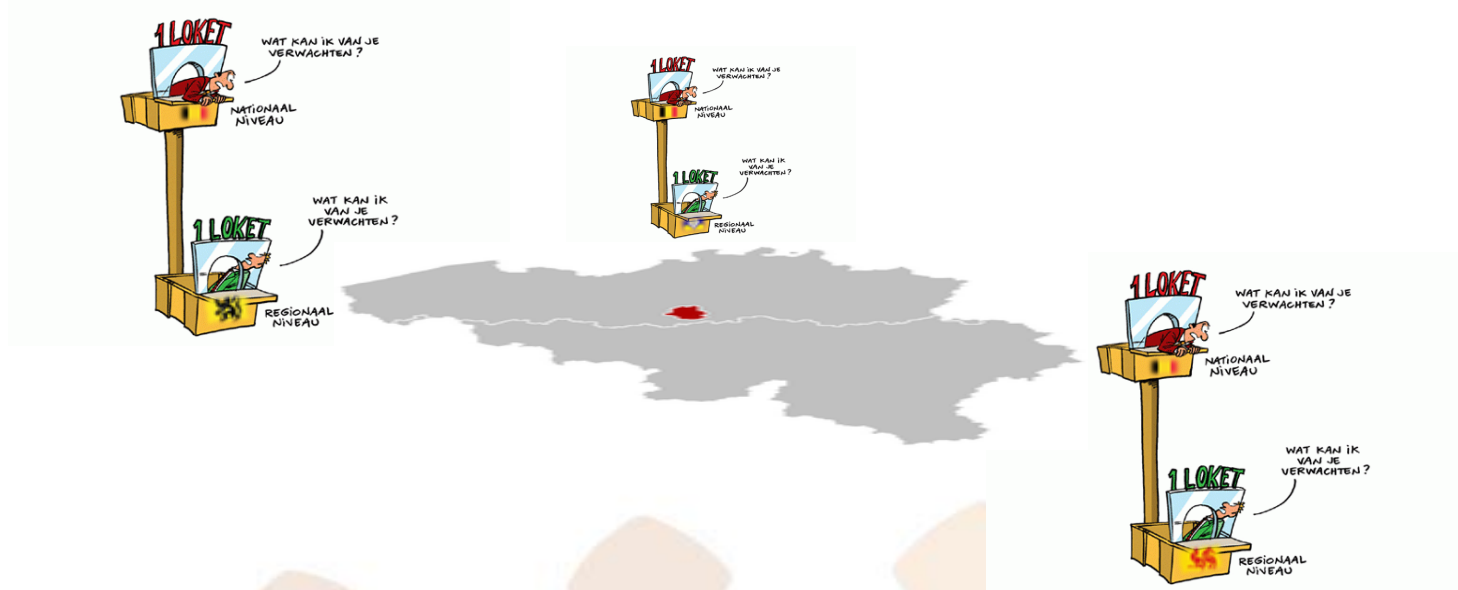
Belgian Soil Laboratory Network






SOIL			
Regional governments	<ul style="list-style-type: none"> ✓ Departement Omgeving - Afdeling Vlaams Planbureau voor Omgeving ✓ Openbare Vlaamse Afvalstoffenmaatschappij (OVAM) ✓ Vlaamse Landmaatschappij (VLM) 	<ul style="list-style-type: none"> ✓ Leefmilieu Brussel – Bruxelles Environnement /Onderafdeling bodem – Sous-division Sols 	<ul style="list-style-type: none"> ✓ Direction de la Protection des Sols (SPW - Agriculture, Ressources naturelles et Environnement - Département du Sol et des Déchets - Direction de la Protection des Sols)
Reference laboratories	<ul style="list-style-type: none"> ✓ Vlaamse Instelling voor Technologisch Onderzoek (VITO) 	/	<ul style="list-style-type: none"> ✓ Institut Scientifique de Service Public (ISSEP) ✓ GxABT, Liege University, Axe Echanges Eau-Sol-Plante, Laboratoire d'encadrement référentiel - Qualité des Sols ✓ Wallonie recherche CRA-W, Laboratoire d'encadrement référentiel - Qualité Alimentaire Technique NIR et Nitrates dans les sols ✓ UCLouvain, Laboratoire d'encadrement référentiel - Qualité Microbiologique et Qualité Minérale et Organique
BESOLAN coordinators	<ul style="list-style-type: none"> ✓ Vlaamse Instelling voor Technologisch Onderzoek (VITO) - Mol 	/	<ul style="list-style-type: none"> ✓ GxABT, Liege University, Axe Echanges Eau-Sol-Plante - Gembloux

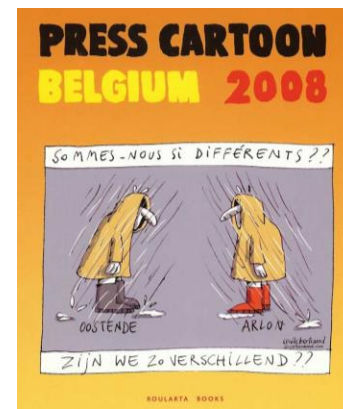
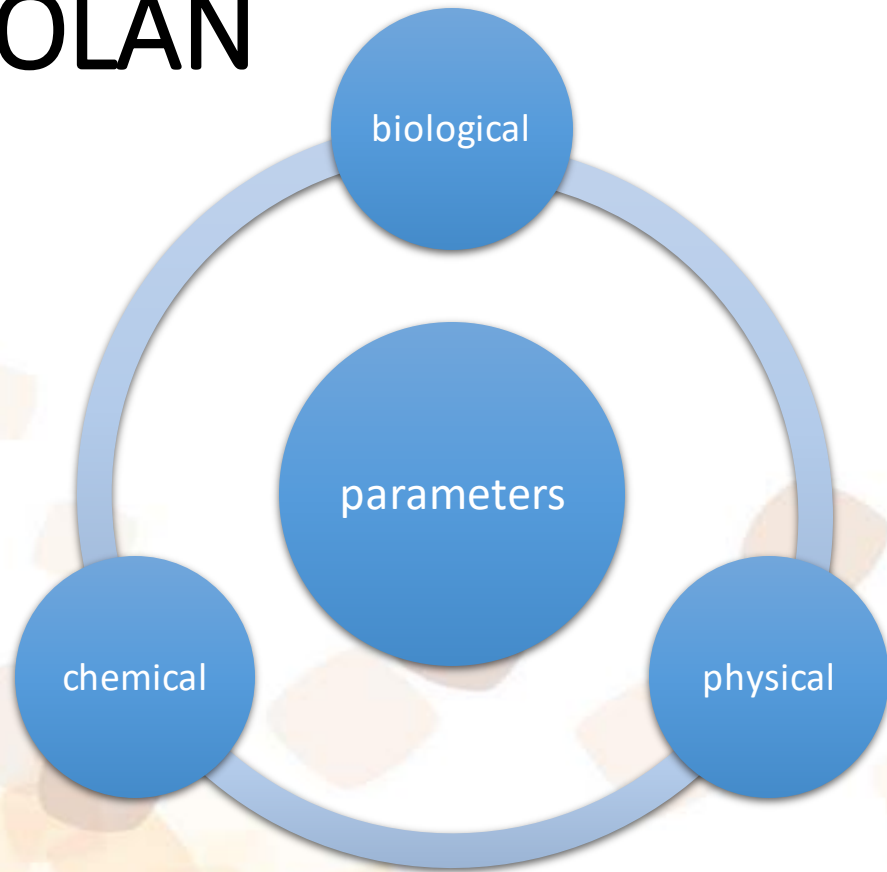


BESOLAN



			
Compendia	<ul style="list-style-type: none"> ✓ Compendium for sampling and analyzes of waste materials and soil (CMA) ✓ Compendium for Soil Protection Sampling and Analysis (BOC) ✓ Compendium for sampling and analysis methods for manure, soil and animal feed (BAM) 	<ul style="list-style-type: none"> ✓ Codes of good practice 	<ul style="list-style-type: none"> ✓ Compendium for sampling and analyzes (CWEA)
Proficiency and technical testings	<ul style="list-style-type: none"> ✓ Proficiency testing soil protection (COALLA/DO) ✓ Proficiency testing soil protection (COALLA/VLM) ✓ Proficiency testing soil protection (AARDE/OVAM) ✓ ... 	/	<ul style="list-style-type: none"> ✓ REQUASUD proficiency testings on soil (agronomic parameters and heavy metals) and other materials linked to agriculture ✓ ISSeP proficiency testings

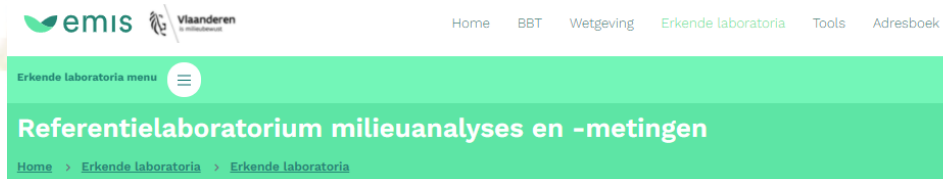
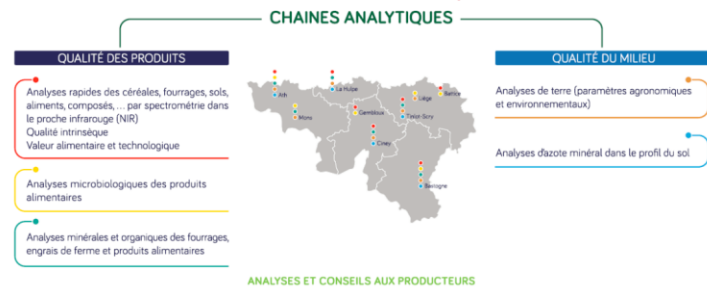
BESOLAN



The BESOLAN network was established to respond to the need for inventory and harmonization of soil analysis methods/data and bring Walloon, Brussels and Flemish actors together in an information exchange network.

How to establish a NASOLAN : a stepwise approach

Step 1 : Identify coordinators / regional reference laboratories and create webpage



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English

Global Soil Partnership

Overview Partners Regional partnerships ITPS Technical networks Areas of work Pillars of action Resources

Belgium

- Status:** BESOLAN under establishment. A network is already established in the Walloon region, since 1989.
- Expected number of members:**
 - Flemish region,** network of accredited laboratories for sampling and analysis:
 - Flemish network for soil analysis, subdomain soil protection (Department of Environment and Spatial Development)
 - Flemish network for soil analysis, subdomain soil pollutants (Public Waste Agency of Flanders, OVAM)
 - Flemish network for soil analysis, subdomain fertilizer (Flemish Land Agency, VLM)
 - Walloon region:** currently 5 routine laboratories + 1 reference laboratory. Other laboratories may be added during the establishment of the national network.

How to establish a NASOLAN : a stepwise approach

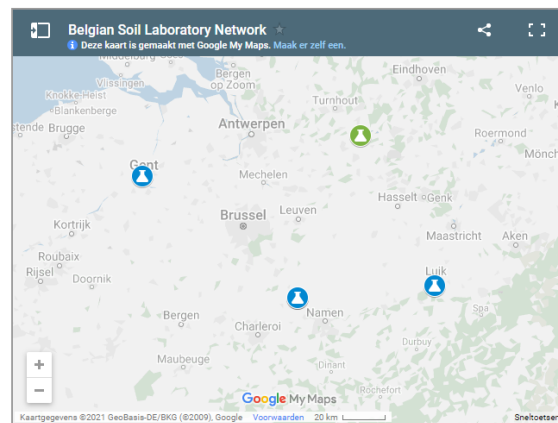
Step 2 : Identify the actors (Belgian soil experts) and invite for registration in GLOSOLAN (21/03/2022)

Information on the soil laboratories belonging to the NASOLAN

Belgium Laboratories in NASOLAN :					
Name	Address	member since	Type of Laboratory	Type of analysis performed	Head of the laboratory
Institut Scientifique de Service Public	ISSeP - Siège social de Liège Rue Chéra, 200 B-4000 LIEGE	15-Feb-2018	Public	Chemical, Pollutants, Fertilizer, Physical, Biological	Xavier Velthe
Plateau technique du Physique et Mécanique du sol	Passage des déportés 2, 5030 Gembloux	12-Apr-2018	University	Physical	Prof. Aurore Degré
UGentSoilLab	Campus Coupure Blok B, 1ste verdieping Coupure Links 653, B-9000 Gent Belgium	24-Aug-2020	University	Waiting for information	Prof. Stefaar De Neve

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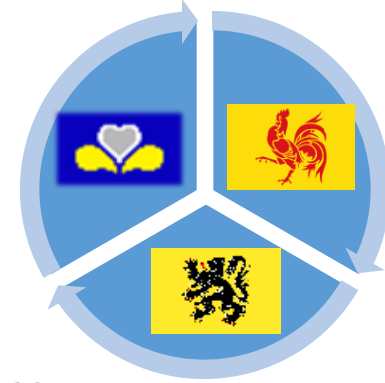
Geographical distribution of the soil laboratories within the country



How to establish a NASOLAN : a stepwise approach

Step 3 : Inventory of methods for chemical, physical and biological parameters, “matrix” of soil properties of BESOLAN members (parameters/methods versus laboratories, who does what ?)





How to establish a NASOLAN : a stepwise approach

- Step 4 : share information in network (topic related seminars)
 - Determination of soil organic carbon monitoring (current practice in different regions)
 - Soil spectroscopy (activities of regional Champions on Soil spectroscopy within GLOSOLAN)
 - Link to the International Network of Soil Information Institutions
 - Harmonization of environmental regulatory methods CWEA / CMA / BOC / BAM (link with Belgian interregional technical working group on environmental regulatory monitoring, ISSEP)
- Exchange information with technical working groups EUROSOLAN / GLOSOLAN
- Advertise GLOSOLAN activities, meetings and trainings, motivating national laboratories to take part in them

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