



Update on Capacity-Building activities

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BIPM

Bureau
♦ **I**nternational des
♦ **P**oids et
♦ **M**esures



CBKT FIGURES:

Over 75 % of Member States and Associates have participated in the CBKT Programme
(as trainees, lecturers and sponsors)

19 CBKT projects

- 16 Completed
- 3 Ongoing

384 people

from 85 countries have benefited

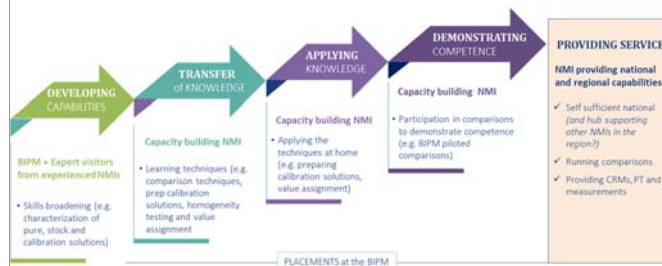
58 invited lecturers

from 28 countries supported to deliver the projects

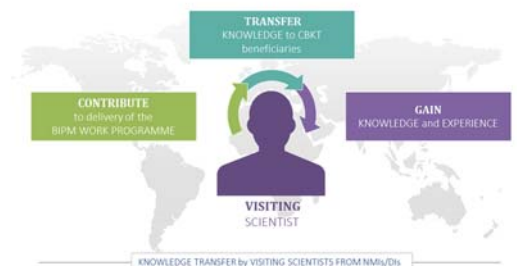
Workshop-based activities



Laboratory-based CB placements



Knowledge transfer



CBKT beneficiaries

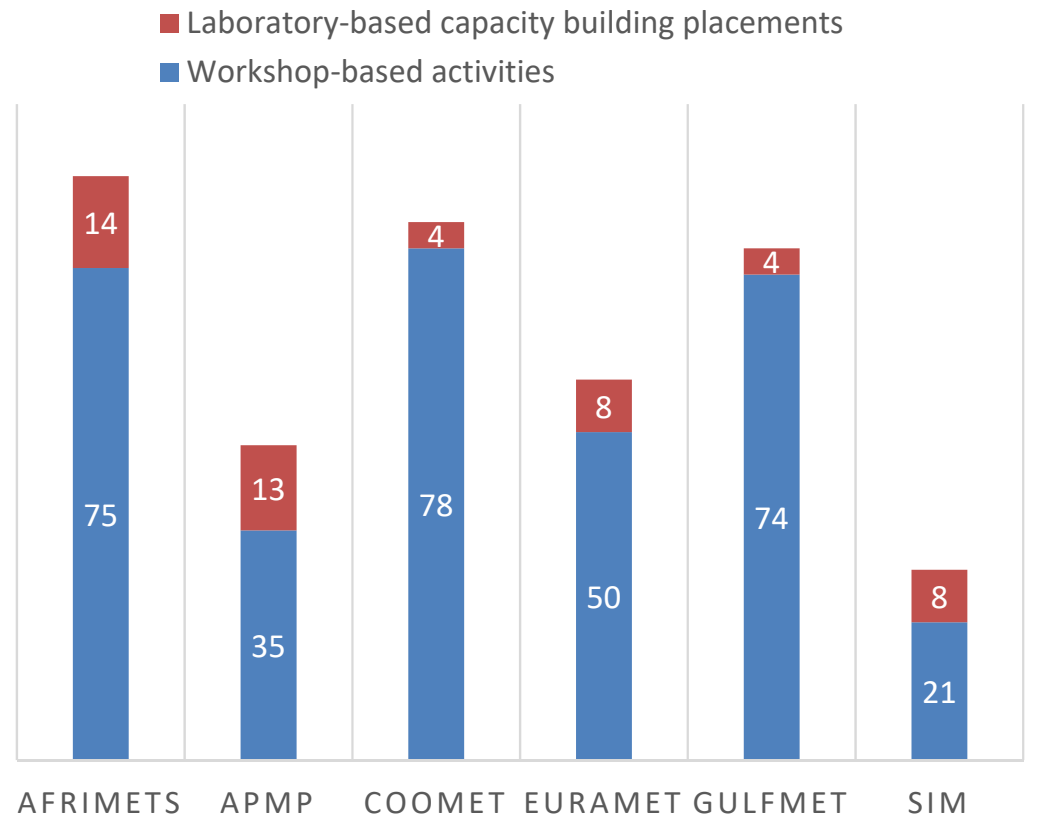
333 participants at Workshop-based

- 104 at the BIPM
- 229 at the regional RMO/BIPM

51 placements at Lab-based

- 25 at the BIPM laboratories
- 26 at the partner NMI
 - 20 TUBITAK UME project
 - 6 Metrology School – METAS project

384 participants (129 at the BIPM) from 85 countries participated in various training courses!



CBKT Projects

12 Workshop-based projects

- 5 in the BIPM
- 7 in the regional - joint RMO/BIPM

7 Lab-based placement projects

- 3 in the BIPM laboratories
- 4 with partner NMIs
 - 2 TUBITAK UME project
 - 2 Metrology School – METAS project

19 CBKT projects

- 16 Completed
- 3 Ongoing

RMOs	Projects in regions	title
AFRIMETS	1	• BIPM-AFRIMETS "Sound beginning in the CIPM MRA"
APMP	1	• APMP-DEC "Leadership training"
COOMET	2	• BIPM–COOMET "Sound beginning in the CIPM MRA" • BIPM-COOMET "CIPM MRA review outcomes"
EURAMET	1	• EURAMET - BIPM Training on review of QMS
GULFMET	2	• BIPM-GULFMET TC Workshop • BIPM-GULFMET "CMCs and QMS Review"
SIM	-	

PLANNED projects

- 2019 "Optimizing the CIPM MRA - the KCDB 2.0" **at the BIPM (Nov)** *applications closed*
- 2019 "EURAMET-BIPM "Organisation and Piloting of Inter-comparisons in IR" **at EURAMET (Oct)** *Just finished*
- 2019 BIPM-APMP Workshop "Important transitions in the CIPM MRA infrastructure" **at APMP (Nov)**
- 2019 "Metrology for Safe Food and Feed - Organic Analysis and Standards" **at GULFMET (Nov)**

- 2020 course "Optimizing the CIPM MRA - the KCDB 2.0" **for EURAMET at the BIPM (Feb)**
 - 2020 "CIPM MRA Review outcomes and the KCDB 2.0" **rollout at SIM (Dates TBC)**
 - **2020 & 2021 "BIPM - TÜBİTAK UME project placements" extended (application period: starts from 21 Oct.)**
 - **2023 (??) Varenna Metrology School and METAS project in Italy and at METAS**
 - *???... Others.... Open for suggestions*
- Funding is extended
Project is Under
discussion*

the KCDB 2.0 course

- Applications closed 31st August
- Online system registered **68 applications for 25 available slots**
- Five registrations were from non Member States and non Associates

63 applications eligible for selection arrived from:

- 10 - AFRIMETS
- 5 - APMP
- 17 - COOMET
- 6 - EURAMET
- 10 - GULFMET
- 15 SIM

Metrology areas:

- 5 AUV
- 10 Chemistry
- 4 Electricity and Magnetism
- 6 Ionizing Radiation
- 15 Mass and Related quantities
- 6 Length
- 6 Photometry and Radiometry
- 5 Thermometry
- 1 Time and Frequency
- 5 other (Quality system, general metrology...etc..)

Distribution of slots:

- 6 AFRIMETS
- 3 APMP
- 3 COOMET
- 3 EURAMET
- 3 GULFMET
- 7 SIM **+3**

Rolled-out
in the RMOs
in 2019 and
2020

www.bipm.org

PRELIMINARY AGENDA (may change marginally)			
Date	Topic	Activity	Outline of content
Day 1 Monday Nov. 4	Introduction to the CIPM MRA and its mechanisms	Registration	
		Lecture	Welcome and opening
		Lecture	General introduction to the course content
		Lecture	The BIPM
		coffee & tea	
		Lecture	CIPM MRA and its role in the QI
		Lecture	CIPM requirements/Metrological traceability
		Lunch	
		Lecture	Outcomes of the CIPM MRA review
		Case study:	CCEM CMC review approaches: experiences on reducing workload
		Group work:	What are the things you do (can do) to reduce the workload?
		coffee & tea	
		KCDB 2.0 Demonstration:	Search on CMCs, search on comparisons
		Group Work:	Test searching
Wrap up			
Home work:	Get started on the KCDB 2.0		
Close of day 1 & Welcome reception			
Day 2 Tuesday Nov. 5	Introduction to the KCDB (KCS, SCS, CMCs)	Lecture	CCEM webpage/strategy/guidelines/membership
		Lecture	CCM webpage/strategy/guidelines/membership
		Lecture	Introduction to KCDB
		coffee & tea	
		KCDB demonstration:	Environment and User accounts (WRITER, TC-CHAIR, REVIEWER)
		Group work:	Open my software and create my user account
		Wrap up	
		Lab visit:	Mass, Kibble balance
		Lunch	
		Lecture	Intra-regional CMC review process + CIPM requirements
		Lecture	Inter-regional CMC review process + CIPM requirements
		KCDB 2.0 Demonstration:	WRITER: Writer space, Preparing New CMCs (PH, RI, Chem) + Uncertainty table. Updating existing CMCs
		coffee & tea	
		Group work:	Get acquainted with space. Write at least 1 new CMC and update 1 CMC and SAVE as
Wrap up:			
Close of day 2			
Day 3 Wednesday Nov. 6	Calibration and measurement capabilities	Lecture	CCQM webpage/strategy/guidelines/membership
		Case study:	CCQM CMC review approaches: Fast Track
		coffee & tea	
		KCDB 2.0 Demonstration:	Intra-RMO review: submit CMC, TC Chair space, choose reviewer, review CMC, send back CMC for revision, accept CMC
		Group work:	First registration/ Practical exercise: develop a CMC
		Lecture	CCRI webpage/strategy/guidelines/membership
		Lab visit:	RI, Chemistry
		Lunch	
		KCDB 2.0 Demonstration:	Inter-RMO review: submit CMC, TC Chair space, choose reviewer, review CMC, send back CMC for revision, accept CMC
		Group work:	Get acquainted with space. Write at least 1 new CMC and update 1 CMC and SAVE as
		coffee & tea	
		KCDB 2.0 Demonstration:	Inter-RMO review: submit CMC, TC Chair space, choose reviewer, review CMC, send back CMC for revision, accept CMC
		Group work:	Get acquainted with space. Write at least 1 new CMC and update 1 CMC and SAVE as
		Wrap up:	
Close of day 3			
Day 4 Thursday Nov. 7	Measurement comparisons	Lecture	CCCT webpage/strategy/guidelines/membership
		Case study:	CCCT CMC review approaches
		Lecture	CIPM Requirements and documentation on comparisons
		coffee & tea	
		Lecture	Planning and monitoring of measurement comparisons
		Lecture	Calculation of reference values and associated uncertainties
		Lecture	Writing Comparison Reports
		Lecture	Common pitfalls from the practice
		Lab visit:	TAI, Electricity
		Lecture	CCL webpage/strategy/guidelines/membership
		Lecture	CCPR webpage/strategy/guidelines/membership
		KCDB 2.0 Demonstration:	Comparison registration
		Group work:	Registration and completion of comparisons. Submission of comparisons and publication in the KCDB.
		coffee & tea	
Group work:	Registration and completion of comparisons. Submission of comparisons and publication in the KCDB.		
Wrap up			
Close of day 4			
Day 5 Friday Nov. 8	Brainstorming	Lecture	CCAUV webpage/strategy/guidelines/membership
		KCDB 2.0 Demonstration:	KCDB 2.0 Statistics
		coffee & tea	
		Presenting of the work	Final preparation
		Lunch	Brainstorming on "Get started on the KCDB 2.0"
		Free discussion, Course wrap up	
Diploma ceremony and Group photo			
Close of the course (coffee & tea)			

going to be very busy!!!

Extended to 2020 and 2021:

"BIPM - TÜBİTAK UME project placements"

The number of applications received for both cycles demonstrates the huge interest and demand for this joint initiative.

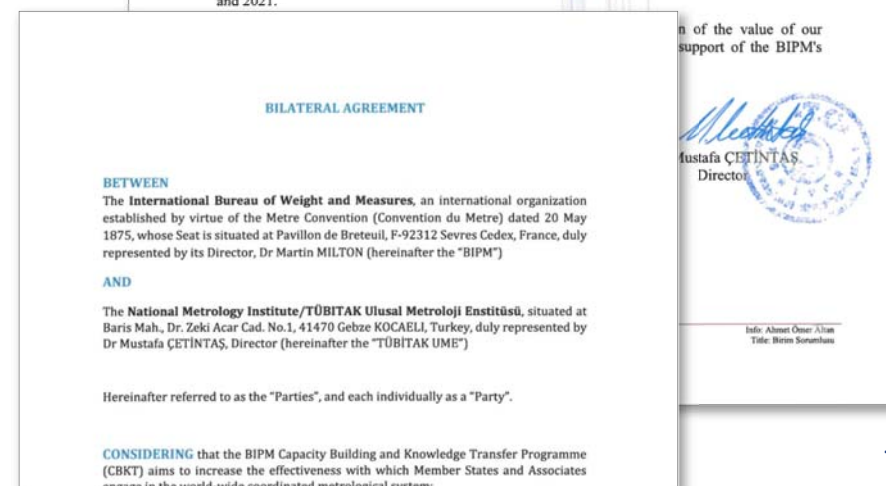
- 2018 cycle - 58 applications from 23 countries
- 2019 cycle - 48 applications from 18 countries

competing for the **10 slots** that were available in each cycle

Applications for third cycle will open
21 October – 6 December 2019
Training: March 2020.

Would other NMIs be interested in this model?

www.bipm.org



NMIs encouraged to join

(Varenda Metrology School + METAS placements)

2019 project

Name	Country	Varenda Summer Schull	METAS placem
Rafidah Rosli	Malaysia	Core and Module I: 4-9 July 2019	3 weeks: 11 June - 3
Jorge Pereira	Portugal	Core and Module I: 4-12 July 2019	2 weeks: 15 July - 2
Julián Gigena	Argentina	Module III: 7-12 July 2019	4 weeks: 15 July - 1

- 58 applications (from 27 countries)

competing for the **3 slots** providing financial support from METAS

We invite other NMIs to support this project

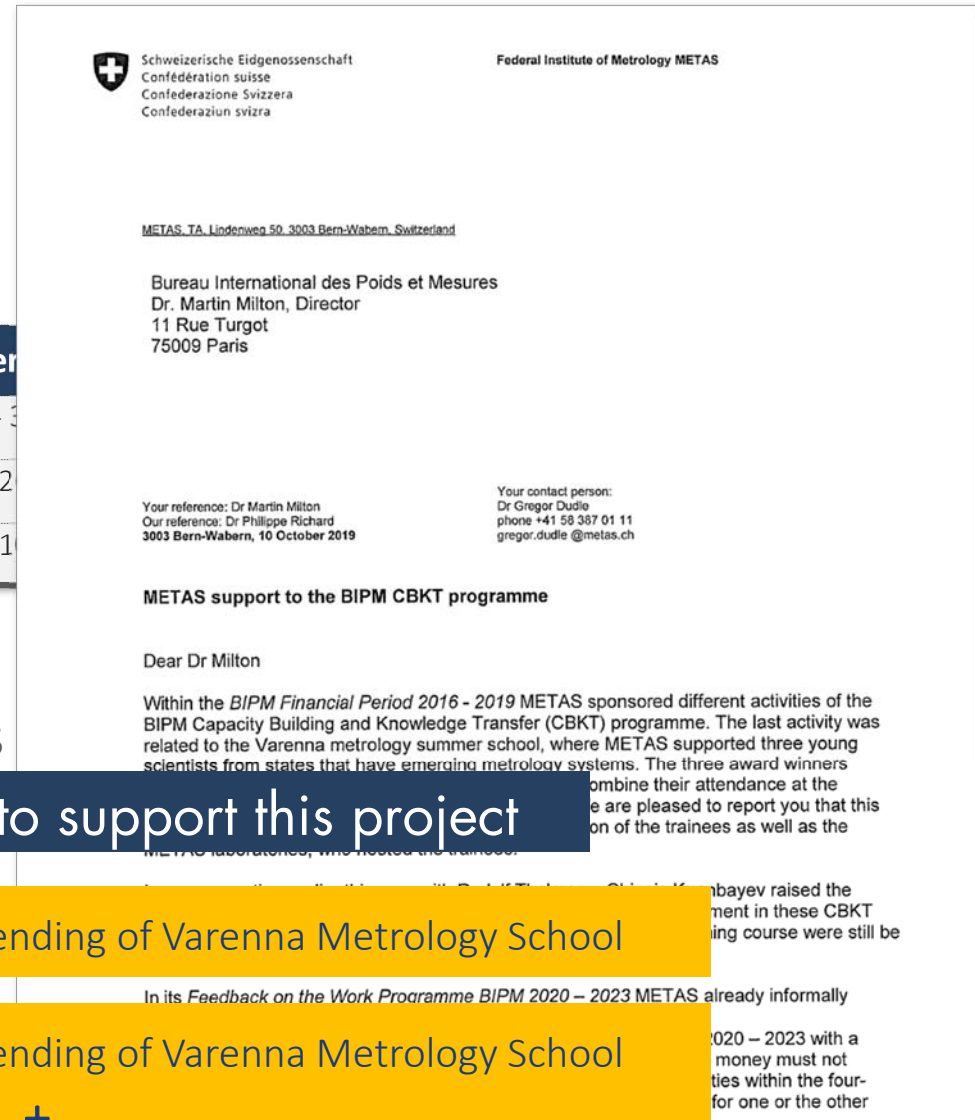
Our proposal:

option 1 – financial support for attending of Varenda Metrology School

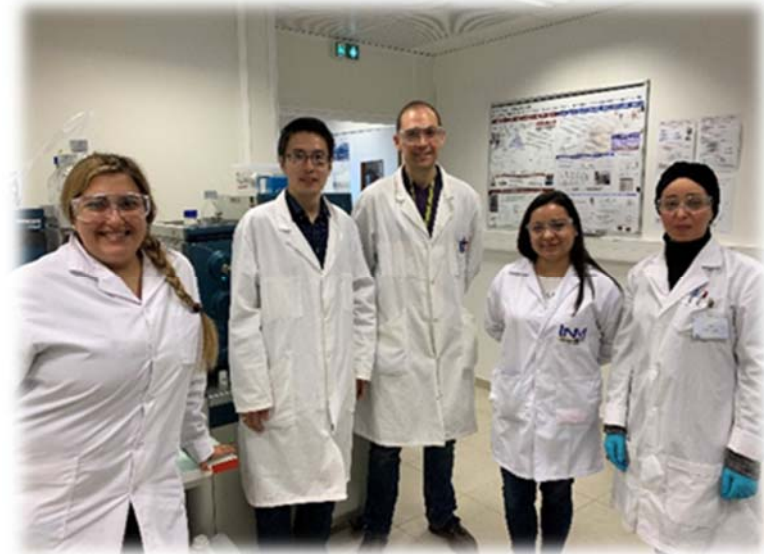
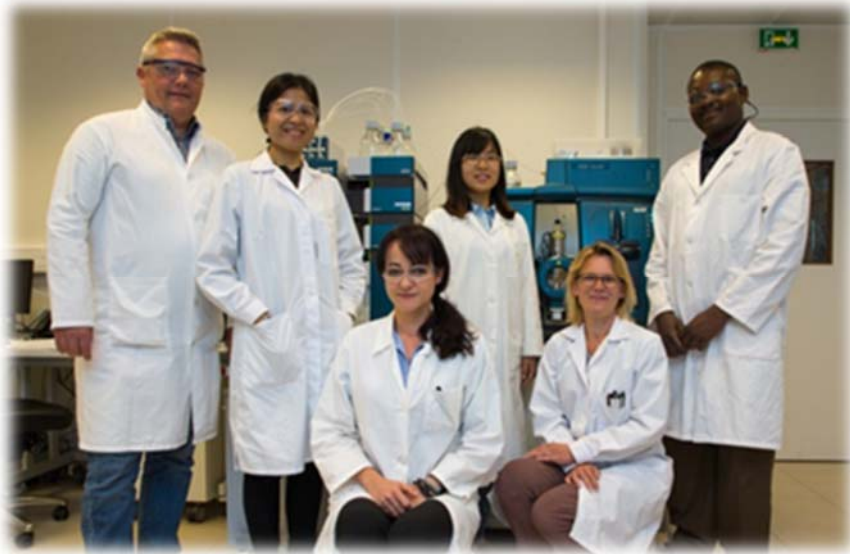
option 2 – financial support for attending of Varenda Metrology School

+

Placement at your NMI (range depends on your availability)



Metrology for Food Safety



Established with support from



Support for 7 visiting scientists



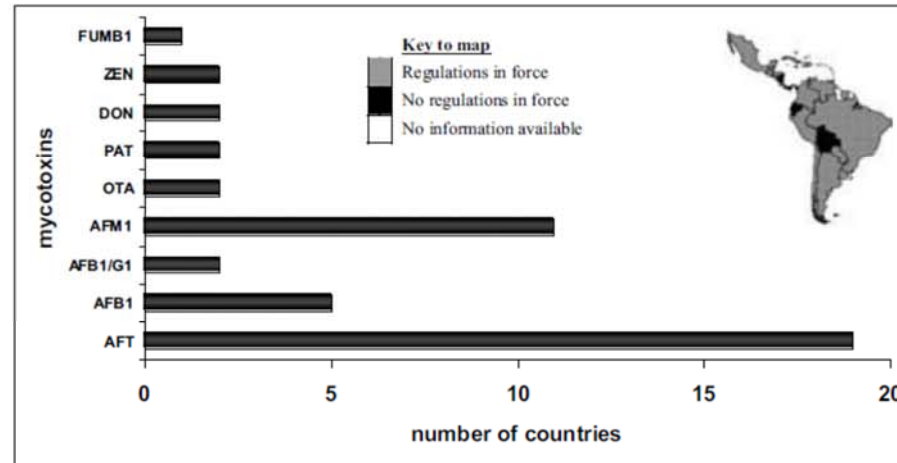
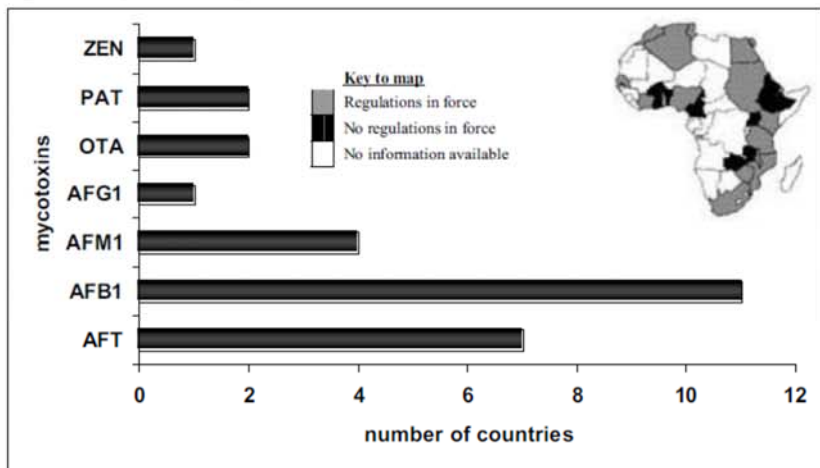
Metrology for Mycotoxin Analysis



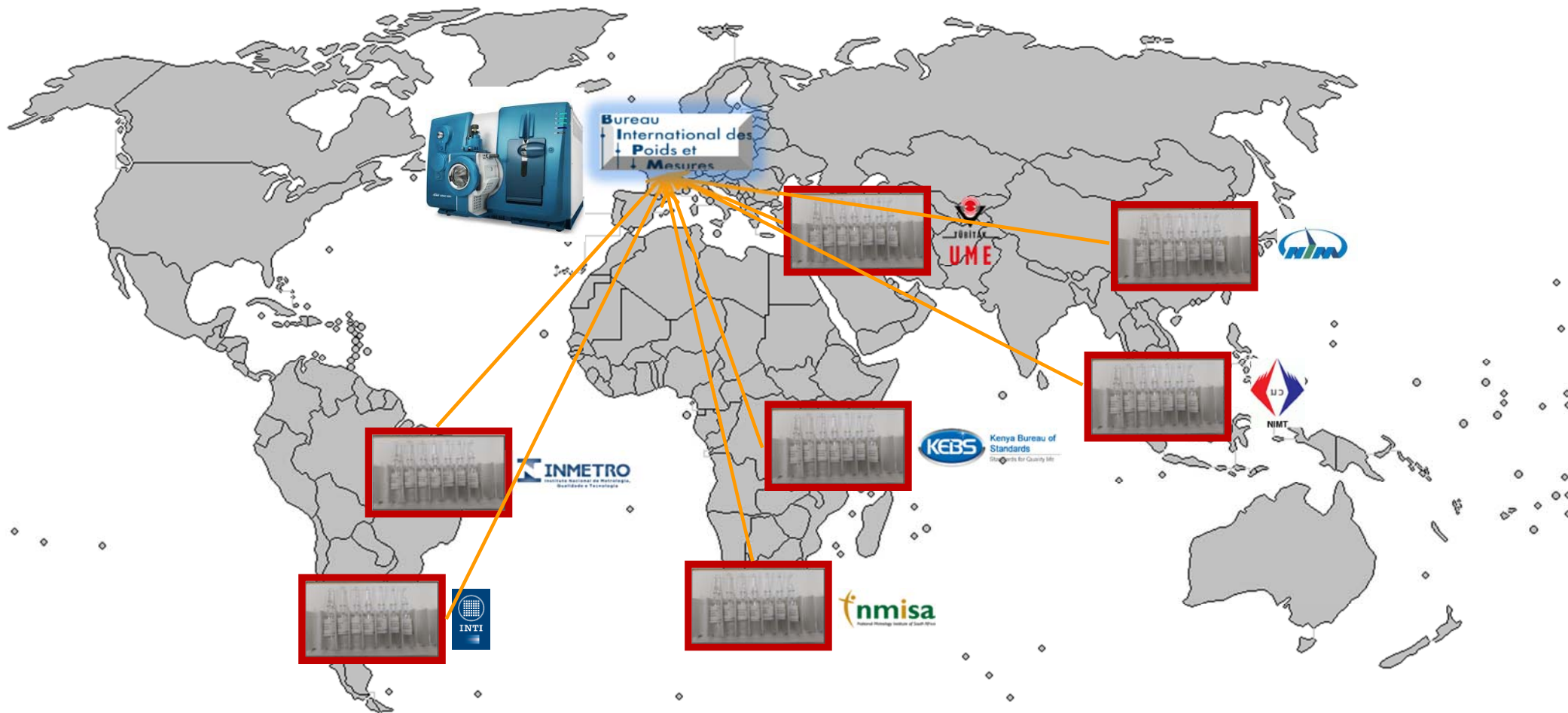
Food and Agriculture Organisation (FAO) estimates in Asia and Africa, 8–18% of cereals are lost during postharvest handling and storage, the majority due to fungal growth and contamination with mycotoxins (toxic metabolites of fungi).

Over 100 Countries have implemented regulatory limits for mycotoxins in food and feed to protect their populations.

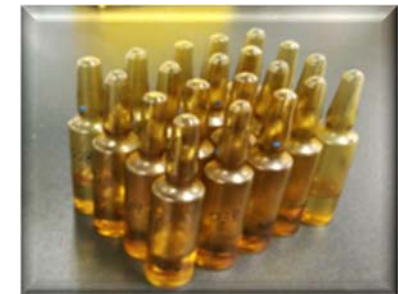
AFRIMETS has identified the regional need for certified reference materials to support its mycotoxin in food analysis requirements



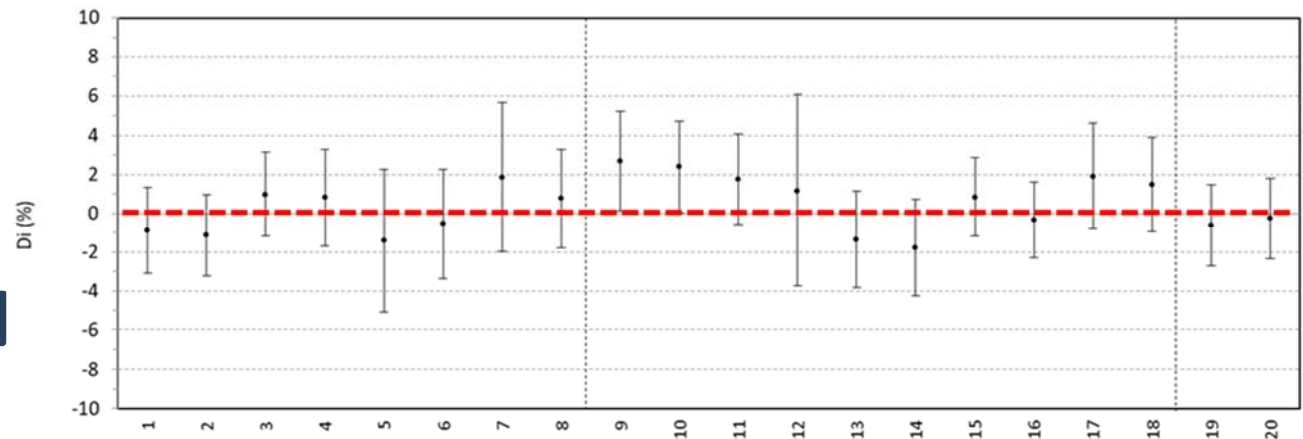
Outputs: Mycotoxin Calibrant Comparison (ZEN Calibrants: 2018/2019)



Outcomes: New services and standards available from NMIs



Demonstration of Competence – CCQM-K154.a – ZEN



Metrology for Clean Air:

Training Program on FTIR for Gas Analysis (2016-2019)



NPL National Physical Laboratory Sponsorship for 6 scientists from NPL



(2019)

Training on BIPM's B-FOS Software for



(2016)



(2017)



(2018)



Visible impacts

“Right first time” CMC
publication in the KCDB by 5
Associates joined after 2010

Balancing workload
- 14 new RMO TC/WG Chairs

Increasing efficiency
- 14% increase in CMC
review performance

**Measureable
improvements** in the
data contributions to
Circular T

**Implementations of
'validated'** projects at
the laboratories

**New CRMs and
services available** for
economy at affordable price

CBKT -

Activities coordinated by the BIPM to help the world-wide metrology community obtain, strengthen and maintain capabilities needed to fulfil their missions and objectives.

Beneficiaries:

- those Member States and Associates that have emerging metrology systems and
- more established NMIs who are expected to take on a broader role in running the world-wide system.

CBKT webpage

<https://www.bipm.org/en/cbkt/>

www.bipm.org

The screenshot shows the BIPM website's 'BIPM Capacity Building & Knowledge Transfer Programme' page. At the top, the BIPM logo and name are displayed, along with a search facility and navigation links for 'Site map', 'News', and 'Contact us'. A dark blue navigation bar contains links for 'ABOUT US', 'WORLDWIDE METROLOGY', 'INTERNATIONAL EQUIVALENCE', 'SI UNITS', 'SERVICES', 'PUBLICATIONS', and 'MEETINGS'. The main content area is titled 'BIPM Capacity Building & Knowledge Transfer Programme' and is divided into several sections:

- Future initiatives:** This section includes a paragraph about the programme's aim to increase effectiveness, followed by a list of initiatives. One initiative, '2019 course "Optimizing the CIPM MRA - the KCDB 2.0"', is highlighted with a yellow callout box labeled 'Information for PARTICIPANTS'. Below it, a list of other initiatives is shown, with '2019 EURAMET-BIPM Training Course on Organisation and Piloting of Intercomparisons in Ionizing Radiation' highlighted with a yellow callout box labeled 'Information for SPONSORS'.
- Contacts:** A list of BIPM member states and organizations, including AFRIMETS, APMP, COOMET, EURAMET, GULFMET, and SIM.
- Background and supporting documents:** This section contains a paragraph about CEEMS systems and a list of documents. A yellow callout box labeled 'BIPM CBKT PROGRAMME GUIDEBOOK' points to the 'BIPM CBKT PROGRAMME GUIDEBOOK' link in the list. Below the list is a logo for 'Capacity Building & Knowledge Transfer'.
- Sponsors:** A section titled 'The BIPM thanks...' featuring the logo of PTB (Physikalisch-Technische Bundesanstalt Braunschweig und Berlin) and the text 'Nationales Metrologieinstitut'.

At the bottom of the page, a section for 'Completed initiatives' is partially visible.



Conclusion

- Programme now very well established (started in 2016).
- Highly oversubscribed.
- Has been catalyst for greater RMO CBKT activity and interaction.
- Over 75 % of Member States and Associates have participated.
- Feedback is very positive.
- Improvements and performance are measurable in many cases
- Agile programme approach allows to adapt.
- Supports wide variety of implementation models.
- Core support from 2020 (CIPM MRA).
- Topic based activities continue with sponsor support.
- **Thank you to our existing sponsors - We welcome new sponsors.**



中国计量科学研究院
National Institute of Metrology, China

The BIPM thanks...



香港特別行政區政府
The Government of the Hong Kong Special Administrative Region



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