Food and Agriculture Organization of the United Nations

SUSTAINABLE DEVELOPMENT GOALS

FAO Laboratory Mapping Tool

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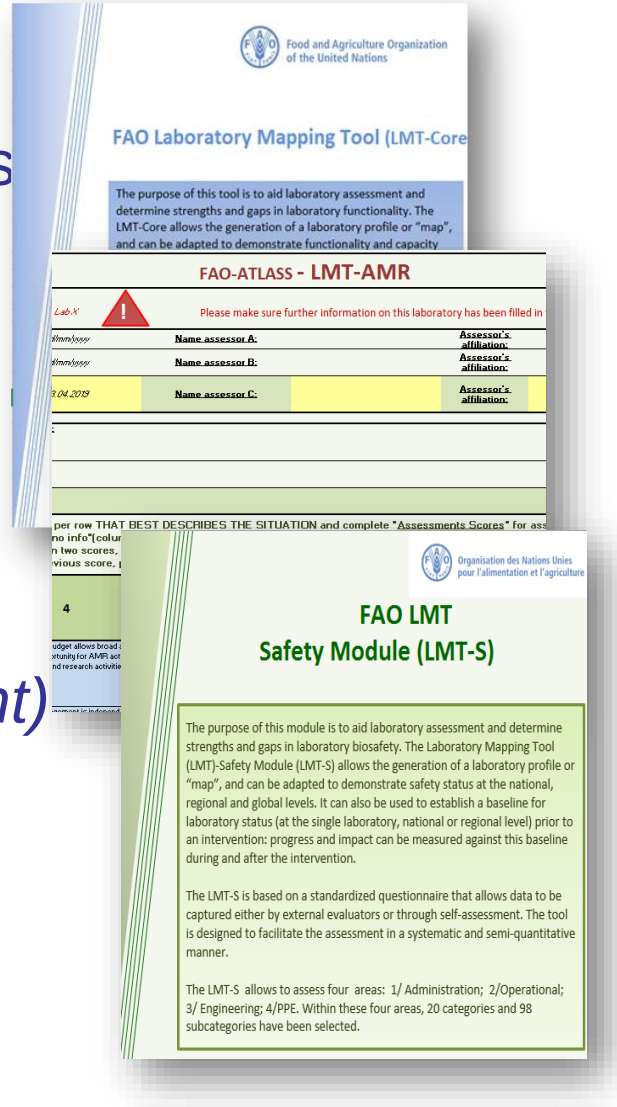
Regional Training Seminar for WOAH National Focal Points for Veterinary Laboratories (cycle III,)
Gaborone, Botswana, 8 – 10 July 2025

Background

- ✓ FAO developed the LMT Core in 2010 under the IDENTIFY
- ✓ General LMT-core: lab capacities and capabilities (17 categories 108 Sub categories)
- ✓ Further expanded through specific modules:
  - ✓ LMT-Safety module (20 categories, 98 Sub cat)
  - ✓ LMT-AMR module (part of ATLASS tool, 12 categories, 42 Sub cat)
  - ✓ *LMT Biothreat – pilots being conducted*
  - ✓ *LMT disease specific modules (e.g.FMD under development)*



Objectives of LMT-core

To aid in veterinary laboratory assessment and measure strengths and gaps – *mapping all key elements of an operational lab*

Establish a **baseline** for laboratory status prior to an intervention and monitor progress over time

Allow countries to identify and **prioritize** actions for improvement, Provide **evidence base** for action and advocacy

To allow the generation of a **laboratory profile** or "map"

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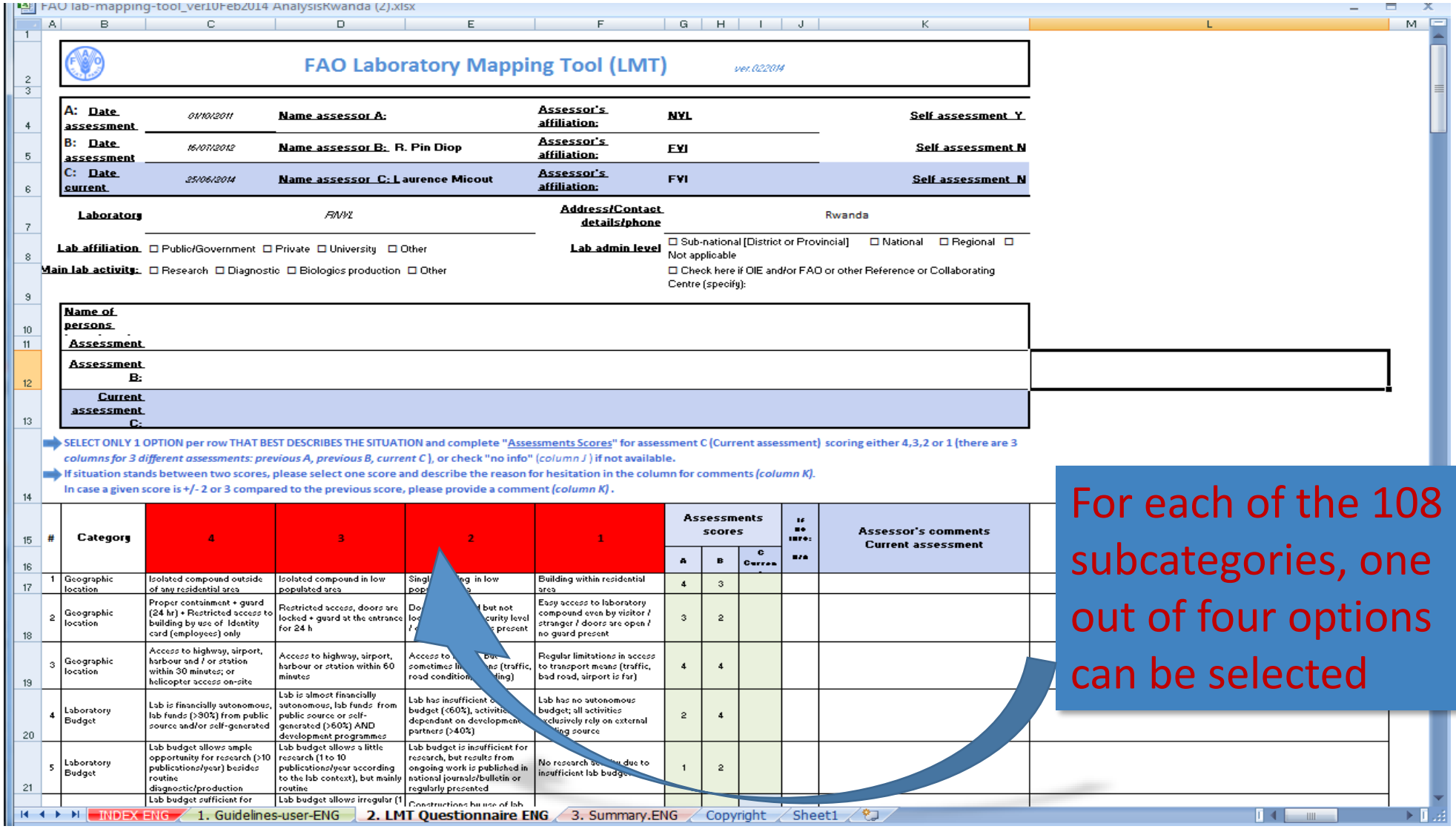

For each of the 108 subcategories, one out of four options can be selected

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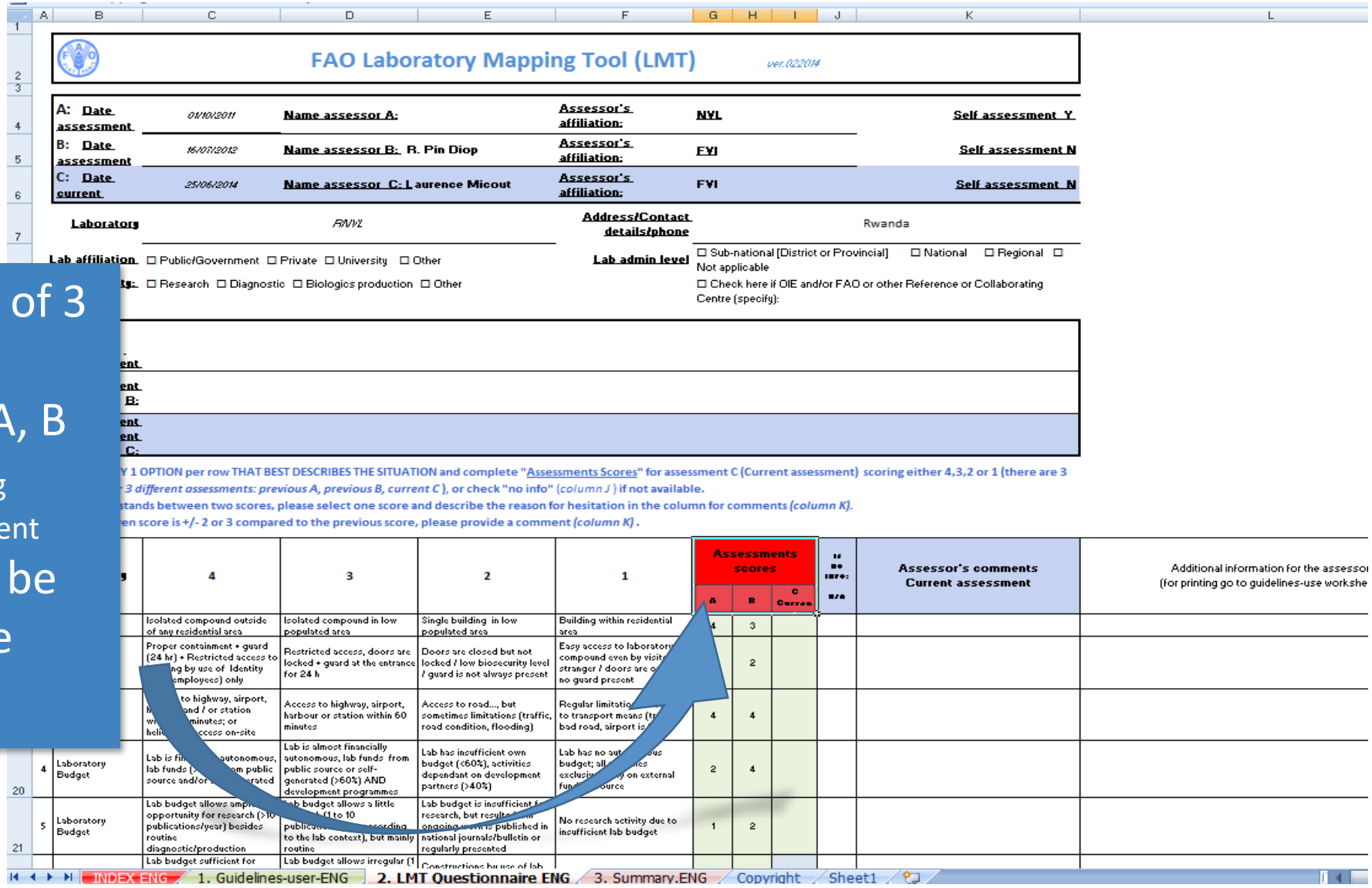
Scores (1 to 4) of 3 different assessments A, B and Current (eg different years, different assessors, etc.) can be included in the questionnaire



FAO Laboratory Mapping Tool (LMT) ver.022014

A: Date assessment	01/10/2011	Name assessor A:	Assessor's affiliation:	NVL	Self assessment Y
B: Date assessment	16/07/2012	Name assessor B: R. Pin Diop	Assessor's affiliation:	FVI	Self assessment N
C: Date current	25/06/2014	Name assessor C: Laurence Micout	Assessor's affiliation:	FVI	Self assessment N

Laboratory: RNVL — Address/Contact details/phone: Rwanda

Lab affiliation: ☐ Public/Government ☐ Private ☐ University ☐ Other

Lab admin level: ☐ Sub-national [District or Provincial] ☐ National ☐ Regional ☐ Not applicable

☐ Research ☐ Diagnostic ☐ Biologics production ☐ Other

☐ Check here if OIE and/or FAO or other Reference or Collaborating Centre (specify):

Y 1 OPTION per row THAT BEST DESCRIBES THE SITUATION and complete "Assessments Scores" for assessment C (Current assessment) scoring either 4,3,2 or 1 (there are 3 *3 different assessments: previous A, previous B, current C*), or check "no info" (*column J*) if not available.

stands between two scores, please select one score and describe the reason for hesitation in the column for comments *(column K)*.

en score is +/- 2 or 3 compared to the previous score, please provide a comment *(column K)*.

		4	3	2	1	Assessments scores A	B	C Curren	Is NO info: n/a	Assessor's comments Current assessment	Additional information for the assesso (for printing go to guidelines-use workshe
		Isolated compound outside of any residential area	Isolated compound in low populated area	Single building in low populated area	Building within residential area	4	3				
		Proper containment + guard (24 hr) + Restricted access to ng by use of Identity employees) only	Restricted access, doors are locked + guard at the entrance for 24 h	Doors are closed but not locked / low biosecurity level / guard is not always present	Easy access to laboratory compound even by visit stranger / doors are no guard present		2				
		to highway, airport, and / or station minutes; or ccess on-site	Access to highway, airport, harbour or station within 60 minutes	Access to road..., but sometimes limitations (traffic, road condition, flooding)	Regular limitatio to transport means (t bad road, airport is	4	4				
20	4 Laboratory Budget	Lab is fi autonomous, lab funds (om public source and/or erated	Lab is almost financially autonomous, lab funds from public source or self-generated (>60%) AND development programmes	Lab has insufficient own budget (<60%), activities dependant on development partners (>40%)	Lab has no aut ous budget; all es exclusi on external fu ource	2	4				
21	5 Laboratory Budget	Lab budget allows amp opportunity for research (>10 publications/year) besides routine diagnostic/production	ab budget allows a little (1 to 10 publica ording to the lab context), but mainly routine	Lab budget is insufficient f research, but regular ongoing w is published in national journals/bulletin or regularly presented	No research activity due to insufficient lab budget	1	2				
		Lab budget sufficient for	Lab budget allows irregular (1	Constructions by use of lab							

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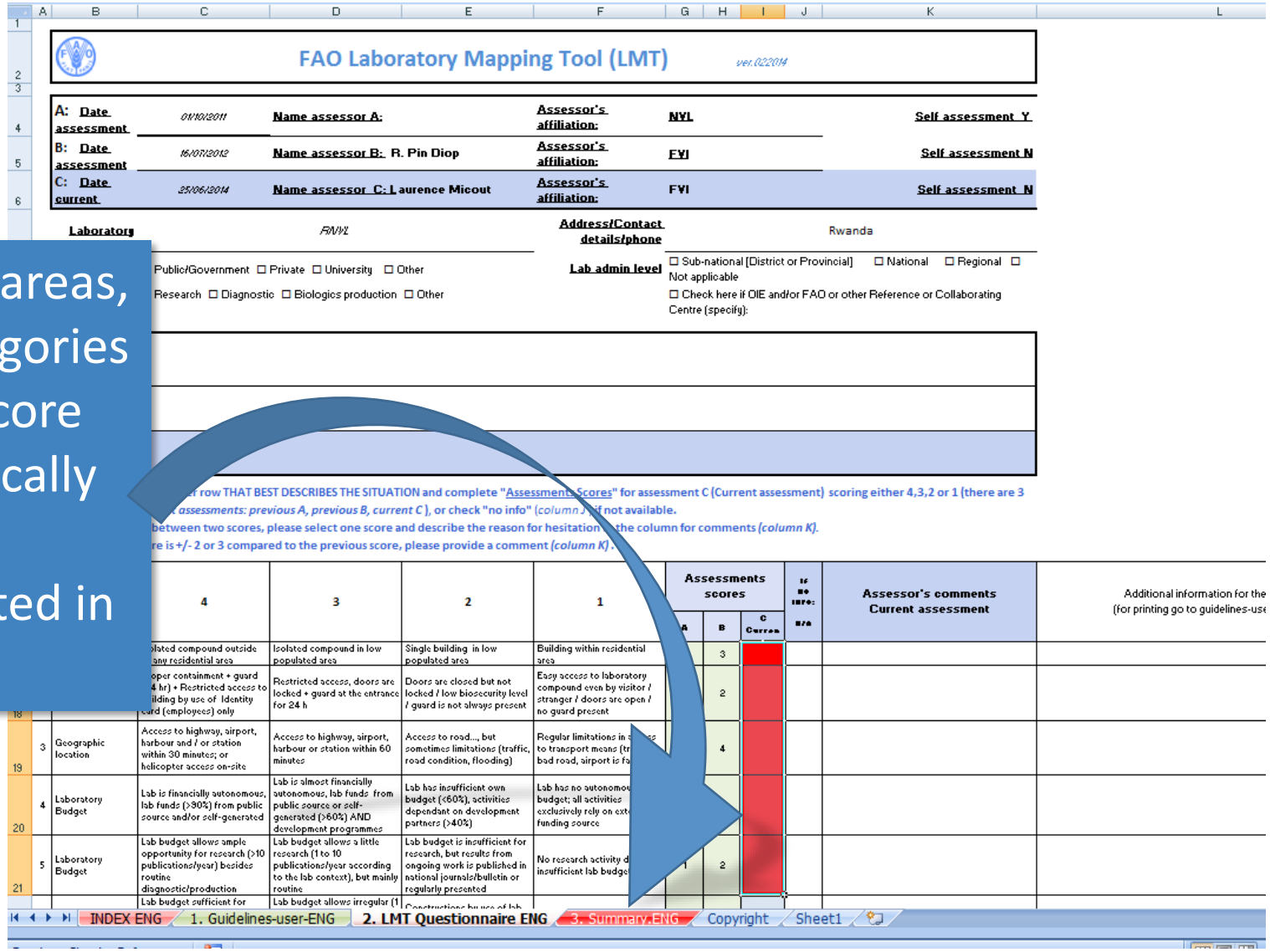
SUSTAINABLE DEVELOPMENT GOALS

Scores for the 5 areas, the 17 LMT categories and an overall score will be automatically calculated and graphics generated in the ‘’Summary’’



FAO Laboratory Mapping Tool (LMT) ver.022014

A: Date assessment	01/10/2011	Name assessor A:	Assessor's affiliation:	NYL	Self assessment Y
B: Date assessment	16/07/2013	Name assessor B: R. Pin Diop	Assessor's affiliation:	FYI	Self assessment N
C: Date current	25/06/2014	Name assessor C: Laurence Micout	Assessor's affiliation:	FYI	Self assessment N

Laboratory: RWR | Address/Contact details/phone: Rwanda

☐ Public/Government ☐ Private ☐ University ☐ Other

☐ Research ☐ Diagnostic ☐ Biologics production ☐ Other

Lab admin level: ☐ Sub-national [District or Provincial] ☐ National ☐ Regional ☐ Not applicable

☐ Check here if OIE and/or FAO or other Reference or Collaborating Centre (specify):

		4	3	2	1	Assessments scores A	B	C Current	If no info: n/a	Assessor's comments Current assessment	Additional information for the (for printing go to guidelines-use
3	Geographic location	Access to highway, airport, harbour and / or station within 30 minutes; or helicopter access on-site	Access to highway, airport, harbour or station within 60 minutes	Access to road..., but sometimes limitations (traffic, road condition, flooding)	Regular limitations in ... to transport means (tr... bad road, airport is fa...		4				
4	Laboratory Budget	Lab is financially autonomous, lab funds (>90%) from public source and/or self-generated	Lab is almost financially autonomous, lab funds from public source or self-generated (>60%) AND development programmes	Lab has insufficient own budget (<60%), activities dependant on development partners (>40%)	Lab has no autonomou... budget; all activities exclusively rely on ext... funding source						
5	Laboratory Budget	Lab budget allows ample opportunity for research (>10 publications/year) besides routine diagnostic/production	Lab budget allows a little research (1 to 10 publications/year according to the lab context), but mainly routine	Lab budget is insufficient for research, but results from ongoing work is published in national journals/bulletin or regularly presented	No research activity d... insufficient lab budge...		2				
		Lab budget sufficient for	Lab budget allows irregular (1	Constructions by use of lab							

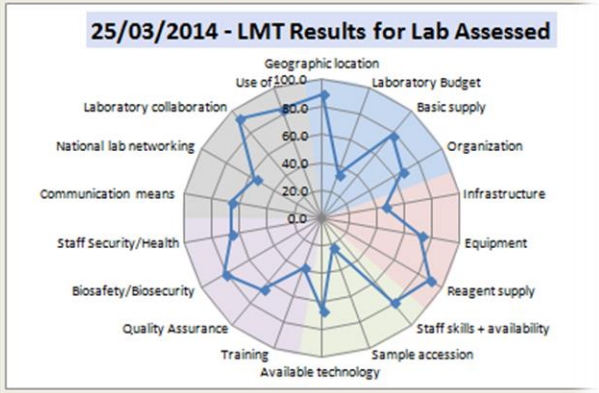
INDEX ENG | 1. Guidelines-user-ENG | 2. LMT Questionnaire ENG | 3. Summary ENG | Copyright | Sheet1

Results for the 5 areas-summary

03/25/2014 - LMT results : Summary for Lab Assessed

Current Assessment*

LMT Category	25/03/2014 - LMT Results for Lab Assessed	Reliability **
Geographic location	88.9	100
Laboratory Budget	33.3	100
Basic supply	77.8	100
Organization	66.7	100
Infrastructure	45.8	100
Equipment	71.4	88
Reagent supply	88.9	100
Staff skills + availability	79.2	100
Sample accession	22.2	100
Available technology	66.7	83
Training	38.1	100
Quality Assurance	66.7	100
Biosafety/Biosecurity	81.0	88
Staff Security/Health	66.7	100
Communication means	66.7	75
National lab networking	55.6	100
Laboratory collaboration	33.3	100
Use of	83.3	100
Assessed	65.0	95

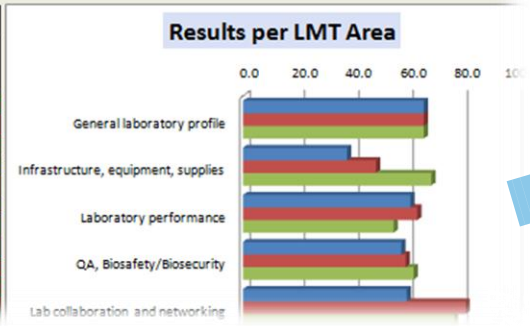


03/25/2014 - LMT Areas * Results for Lab Assessed	TOTAL (%)
TOTAL General laboratory profile	66.7
TOTAL Infrastructure, equipment, supplies	69.4
TOTAL Laboratory performance	55.6
TOTAL QA, Biosafety/Biosecurity	63.0
TOTAL Lab collaboration and networking	77.8

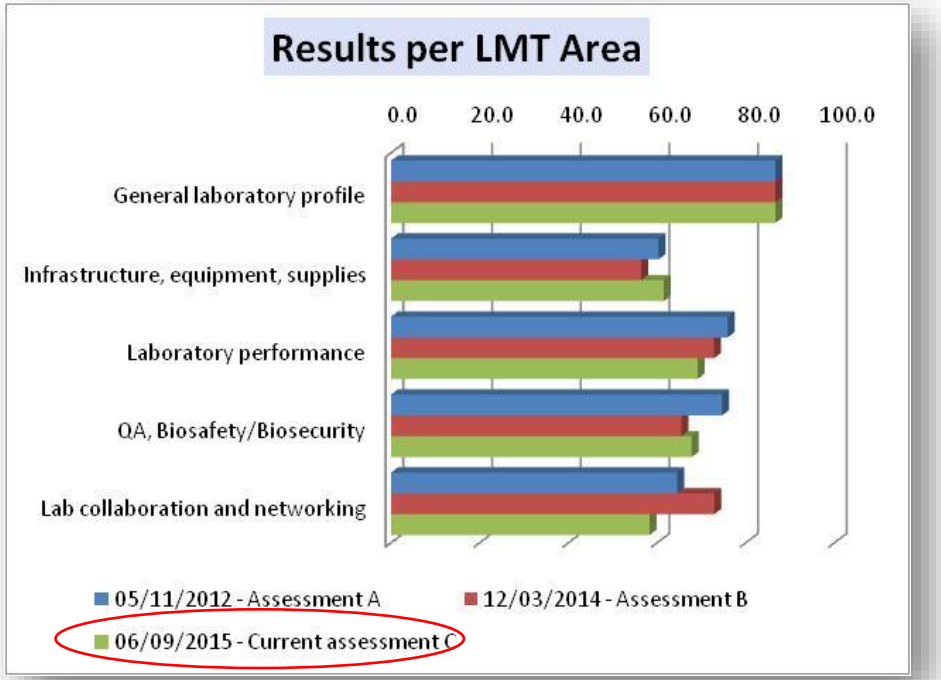
*Numbers displayed in percentage; Scoring based on the ideal situation (100%): numbers in each cell represent the achieved percentage compared to the optimum (100% being the ideal laboratory). Color coding: 0-20% , 20-40% , 40-60% , 60-80% , 80-100%
** Reliability of the result depends on the percentage of questions filled or left blanck per category in the LMT questionnaire. From 100 to 90%, the LMT scoring is reliable (green). From 90 to 70%, realiability of the scoring is medium (orange), from 70 to 0%, reliability is low (red).

Compilation - all LMT results* for Lab

LMT Category	01/10/2011 - Self assessment A	11/06/2012 - Assessment B	25/03/2014 - Current assessment
Geographic location	88.9	88.9	88.9
Laboratory Budget	22.2	44.4	33.3
Basic supply	88.9	55.6	77.8
Organization	66.7	100.0	66.7
Infrastructure	41.7	47.6	45.8
Equipment	25.0	55.6	71.4
Reagent supply	41.7	47.6	88.9
Staff skills + availability	79.2	55.6	79.2
Sample accession	53.3	83.3	22.2
Available technology	47.6	58.3	66.7
Training	47.6	46.7	38.1



All LMT areas results* for	Self 2011*	FVI 2012	FVI 2014	Self 2015	Progress 2011-2015
TOTAL General laboratory profile	70.0	86.7	86.7	86.7	16.7
TOTAL Infrastructure, equipment, supplies	35.5	60.3	56.4	61.5	26.1
TOTAL Laboratory performance	66.4	75.9	72.8	69.1	2.7
TOTAL QA, Biosafety/Biosecurity	49.5	74.7	65.5	67.8	18.3
TOTAL Lab collaboration and networking	73.6	64.6	72.9	58.3	-15.3



Results of FAO LMT lab assessments – over time

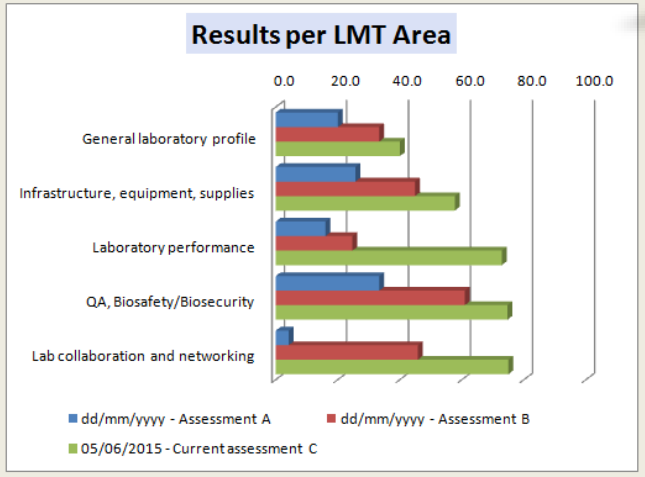
Strengths	Gaps
1. Staff security/Health	1. Basic supply
2. Quality assurance	2. Funding and Organization
3. Sample accession	3. Staff skills and availability
4. Laboratory collaboration	4. Biosafety/Biosecurity
5. Available technology	5. Equipment

Monitoring progress over time:

Compilation - all LMT results* for Lab x

LMT Category	dd/mm/yyyy - Assessment A	dd/mm/yyyy - Assessment B	05/06/2015 - Current assessment C
Geographic location	0.0	55.6	44.4
Laboratory Budget	33.3	22.2	55.6
Basic supply	22.2	22.2	22.2
Organization	33.3	33.3	33.3
Infrastructure	37.0	40.7	63.0
Equipment	20.8	50.0	50.0
Reagent supply	18.5	44.4	59.3
Staff skills + availability	14.3	23.8	47.6
Sample accession	16.7	29.2	87.5
Available technology	16.7	22.2	77.8
Training	47.6	42.9	71.4
Quality Assurance	27.3	66.7	87.9
Biosafety/Biosecurity	41.7	66.7	50.0
Staff Security/Health	0.0	66.7	100.0
Communication means	8.3	25.0	75.0
National lab networking	11.1	33.3	66.7
Laboratory collaboration	0.0	59.3	77.8
Overall level of Lab x functionality (%)	**20.5**	**41.4**	**62.9**

*Numbers displayed in percentage; Scoring based on the ideal situation (100%): numbers in each cell represent the achieved percentage compared to the optimum (100%).



All LMT areas results* for Lab x	dd/mm/yyyy - Assessment A	dd/mm/yyyy - Assessment B	05/06/2015 - Current assessment C
General laboratory profile	20.0	33.3	40.0
Infrastructure, equipment, supplies	25.6	44.9	57.7
Laboratory performance	16.0	24.7	72.8
QA, Biosafety/Biosecurity	33.3	60.9	74.7
Lab collaboration and networking	4.2	45.8	75.0

LMT Category	2011	2012	2014	2011	2012	2014	2011	2012	2014	2011	2012	2014	2012	2014
Geographic location	88	77	99	88	89	100	88	78	89	88	67	78	55	44
Laboratory Budget	69	69	91	36	78	56	16	44	33	16	67	78	16	0
Basic supply	90	90	90	90	89	100	79	56	78	79	78	89	16	16
Organization	90	90	90	57	100	100	57	100	67	57	67	67	24	90
Infrastructure	57	44	69	34	54	54	29	48	46	27	33	38	0	0
Equipment	46	46	63	16	67	50	16	60	73	27	28	44	6	15
Reagent supply	58	53	62	45	67	63	28	48	88	26	42	46	8	18
Staff skills + availability	93	66	81	89	88	83	81	56	79	73	79	86	27	20
Sample accession	69	69	63	47	89	85	47	87	33	42	61	49	12	26
Available technology	61	54	64	58	59	52	50	60	71	30	26	41	0	17
Training , including IATA	81	49	69	41	71	67	41	47	38	41	33	38	39	15
Quality Assurance	87	87	87	67	83	88	67	67	71	51	8	29	31	17
Biosafety/Biosecurity	52	29	46	38	67	56	32	73	83	29	39	50	21	12
Staff Security/Health	45	45	45	45	67	44	45	33	67	33	56	56	0	0
Communication means	66	74	82	66	50	83	41	83	67	66	75	58	24	8
National lab networking	44	55	66	88	89	89	55	50	56	88	89	89	25	14
Laboratory collaboration	90	70	70	90	93	93	83	87	93	70	67	73	15	25
Use of databases/platforms	64	56	72	50	25	25	33	100	83	33	75	67	45	14
Grand Total assessment	**69**	**60**	**71**	**56**	**72**	**69**	**48**	**63**	**67**	**45**	**48**	**54**	**18**	**16**
General laboratory profile	83	80	93	70	87	87	61	63	67	61	70	80	29	27
Infrastructure, equipment, supplies	54	48	65	33	62	56	25	51	68	27	35	42	5	10
Laboratory performance	74	62	70	66	77	71	60	67	63	48	54	57	13	20
QA,Biosafety/Biosecurity	71	56	66	49	74	68	48	60	64	41	29	40	29	13
Lab collaboration and networking	69	65	73	74	65	73	55	82	78	63	75	71	27	16

National overview

A	B	C	D	E	F	G	H	I
2015	2015	2015	2015	2015	2015	2015	2015	2015
66.7	55.7	55.6	77.8	33.3	88.9	44.4	55.6	33.3
88.9	77.8	33.3	77.8	33.3	33.3	33.3	22.2	33.3
100.0	88.9	88.9	66.7	77.8	66.7	77.8	66.7	66.7
100.0	66.7	100.0	66.7	33.3	66.7	100.0	100.0	33.3
70.4	66.7	55.6	45.8	63.0	51.9	48.1	44.4	33.3
100.0	79.2	54.2	33.3	54.2	54.2	47.6	45.8	45.8
96.3	88.9	63.0	58.3	48.1	37.0	48.1	63.0	37.0
90.5	76.2	66.7	52.4	47.6	61.9	19.0	33.3	28.6
71.4	58.3	33.3	28.6	29.2	25.0	16.7	29.2	25.0
100.0	88.9	58.3	60.6	52.8	50.0	33.3	41.7	44.4
61.9	66.7	28.6	4.8	38.1	9.5	28.6	9.5	0.0
87.9	51.5	42.4	42.4	42.4	33.3	36.4	18.2	21.2
91.7	62.5	79.2	62.5	70.8	54.2	75.0	45.8	20.8
66.7	77.8	33.3	0.0	66.7	22.2	55.6	66.7	0.0
75.0	83.3	41.7	83.3	41.7	41.7	50.0	66.7	66.7
100.0	77.8	55.6	55.6	44.4	77.8	N/A	66.7	33.3
81.5	77.8	51.9	44.4	25.9	22.2	29.2	18.5	40.7
85.7	**73.1**	**53.4**	**47.9**	**47.5**	**42.9**	**41.1**	**39.8**	**32.4**
86.7	76.7	63.3	73.3	46.7	63.3	56.7	53.3	43.3
88.5	78.2	57.7	46.4	55.1	47.4	48.0	51.3	38.5
89.7	76.5	53.1	49.3	44.4	45.7	24.7	35.8	34.6
80.5	60.9	48.3	34.5	51.7	32.2	47.1	28.7	13.8
83.3	79.2	50.0	56.3	33.3	37.5	36.1	39.6	45.8

Regional overview

Evolution in targeted laboratories-results of sustained efforts and priority areas

		N		C		L		D	
		2015	2019	2015	2019	2015	2019	2015	2019
Area	Category								
Administration	General	33.3	66.7	20.0	53.3	0.0	66.7	40.0	20.0
	Personnel Health & Safety	25.0	8.3	16.7	50.0	8.3	66.7	25.0	8.3
	Training & Competency	44.4	58.3	16.7	66.7	0.0	75.0	50.0	91.7
	Biosafety Manual/ SOPs	50.0	50.0	33.3	33.3	0.0	50.0	50.0	16.7
Operational	Good Lab Practices	81.0	95.2	33.3	66.7	23.8	85.7	61.9	42.9
	Containment	50.0	66.7	38.9	50.0	11.1	61.1	77.8	50.0
	Containment BSL3	58.3	95.8	N/A	N/A	N/A	N/A	N/A	N/A
	Waste Disposal	66.7	100.0	40.0	80.0	33.3	66.7	80.0	60.0
	Shipping of Infectious substances	86.7	86.7	46.7	93.3	46.7	80.0	100.0	86.7
	Animal facilities	47.6	55.6	11.1	22.2	33.3	14.3	0.0	33.3
Engineering	Premises	71.4	83.3	23.8	76.2	33.3	28.6	73.3	44.4
	Chemical hazard containment	66.7	44.4	0.0	77.8	0.0	33.3	11.1	66.7
	Chemical Security	25.0	83.3	0.0	33.3	0.0	33.3	41.7	22.2
	Emergencies	41.7	25.0	0.0	50.0	0.0	8.3	8.3	25.0
	Fire hazard	66.7	66.7	0.0	66.7	8.3	8.3	44.4	33.3
	Electrical	75.0	100.0	22.2	58.3	25.0	75.0	58.3	66.7
	BSC	88.9	100.0	22.2	88.9	0.0	77.8	33.3	66.7
PPE	General Situation	66.7	100.0	50.0	83.3	0.0	91.7	50.0	66.7
	Use of PPE	75.0	100.0	41.7	91.7	25.0	83.3	91.7	75.0
	PPE disposal	86.7	93.3	33.3	60.0	26.7	86.7	73.3	86.7
	Grand TOTAL (%)	**61.0**	**76.3**	**25.0**	**64.7**	**15.8**	**56.8**	**49.4**	**51.0**

The LMT Safety Module (LMT – S)

1. Based on a standardized questionnaire that allows data to be captured either by external evaluators or through self-assessment. The tool is designed to facilitate the assessment in a systematic and semi-quantitative manner
2. Allows assessment in four areas:

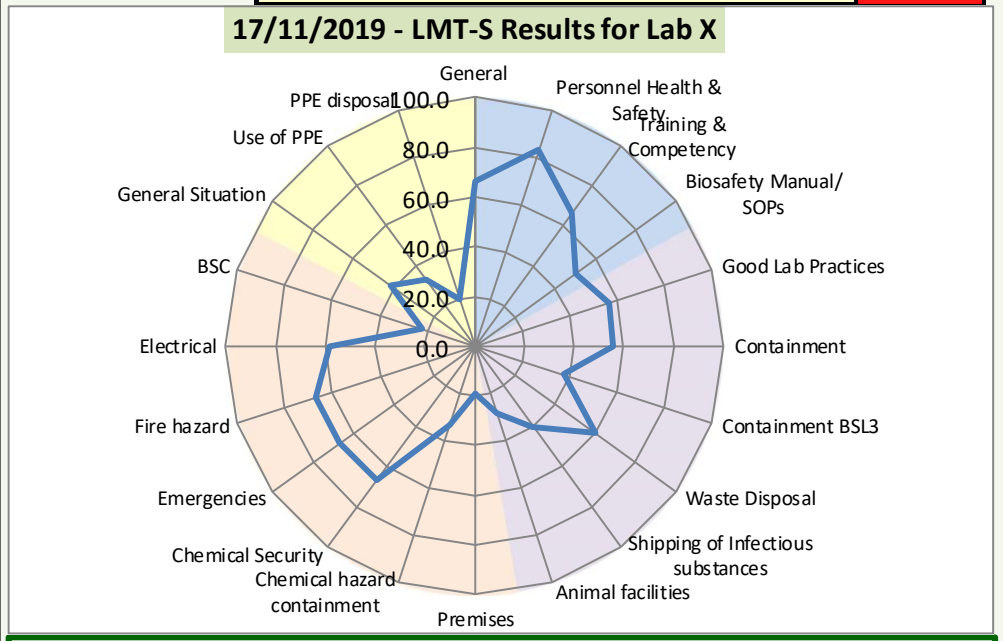
17/11/2019 - LMT-S areas results for Lab X	TOTAL (%)
Administration	68.9
Operational	45.6
Engineering	44.8
PPE	30.8

3. Within these four areas, 20 categories and 97 subcategories have been selected

The LMT – S results:

Current Assessment*			
Area	Category	17/11/2019 - LMT-S Results for Lab X	Reliability**
Administration	General	66.7	100
	Personnel Health & Safety	83.3	100
	Training & Competency	66.7	100
	Biosafety Manual/ SOPs	50.0	100
Operational	Good Lab Practices	57.1	100
	Containment	55.6	100
	Containment BSL3	37.5	100
	Waste Disposal	60.0	100
	Shipping of Infectious substances	40.0	100
	Animal facilities	28.6	100
Engineering	Premises	19.0	100
	Chemical hazard containment	33.3	100
	Chemical Security	66.7	100
	Emergencies	66.7	100
	Fire hazard	66.7	100
	Electrical	58.3	100
	BSC	22.2	100
PPE	General Situation	41.7	100
	Use of PPE	33.3	100
	PPE disposal	20.0	100
Grand Total (%) Lab X		46.9	100

Current Assessment*	
17/11/2019 - LMT-S areas results for Lab X	TOTAL (%)
Administration	68.9
Operational	45.6
Engineering	44.8
PPE	30.8



*Numbers displayed in percentage; Scoring based on the ideal situation (100%): numbers in each cell represent the achieved percentage compared to the optimum (100% being the ideal laboratory). Color coding: 0-20%, 20-40%, 40-60%, 60-80%, 80-100% N/A: non applicable in this assessment, not counted in total score)

Thank you!

Protecting people, animals, and the environment every day

Drawings: FAO/Chiara Caproni