

**REFRESHER SEMINAR
FOR EXPERIENCED GHG REVIEWERS
- *Reviewing QA/QC and verification* -**

Bonn, Germany, 13 March 2018

Olia Glade



Presentation outline



Introduction

- Purpose
- Terms and definitions

Results of the ARR analysis

Assessment: suggestions, outcomes and examples



Introduction

- The objective: based on analysis of QA/QC & V issues identified in 2017 inventory review cycle,
 - ❖ To identify potential improvements to the process of reviewing QA/QC and verification in terms of:
 - Consistency between ERTs in assessing potential issues;
 - Transparency of recommendations and their usefulness to the reviewed Parties;
 - Understanding when QA/QC and verification issues become a matter in the Saturday Paper.
- The analysis uses
 - ❖ ARRs from 2017 review cycle (21 reports)
 - ❖ UNFCCC Annex I inventory reporting guidelines
 - ❖ Decision 19/CMP.1 in conjunction with 4/CMP.11
 - ❖ Inventory review Guidelines (decision 13/CP.20)
 - ❖ 2006 IPCC Guidelines



Slide 3

KM2

How about "Understanding when QA/QC and verification issues become a matter in the Saturday Paper"..? I am not certain about this addition, but I think the discussion could include cases in which QA/QC&V is not a direct reason for the SP... If you do not touch upon this point, please ignore this.

Kyoko Miwa, 06/03/2019

OG1

Thank you, adjusted

Olia Glade, 08/03/2019

Terms and definitions (2006 IPCC GLs)

KM3

OG2

□ Quality Control (QC)

- ❖ Quality Control (QC) is a system of routine technical activities to assess and maintain the quality of the inventory during its compilation. It is performed by personnel compiling the inventory. The QC system is designed to:
 - provide routine and consistent checks to ensure data integrity, correctness, and completeness;
 - identify and address errors and omissions;
 - document and archive inventory material and record all QC activities.

□ Quality Assurance (QA)

- ❖ QA is a planned system of review procedures conducted by personnel not directly involved in the inventory compilation/development process.

□ Verification (V)

- ❖ Verification includes activities and procedures conducted during the planning and development, or after completion of an inventory that can help to establish its reliability for the intended applications of the inventory.



Slide 4

KM3

Please indicate the source "2006 IPCC GL(?) or UNFCCC GL

Kyoko Miwa, 06/03/2019

OG2

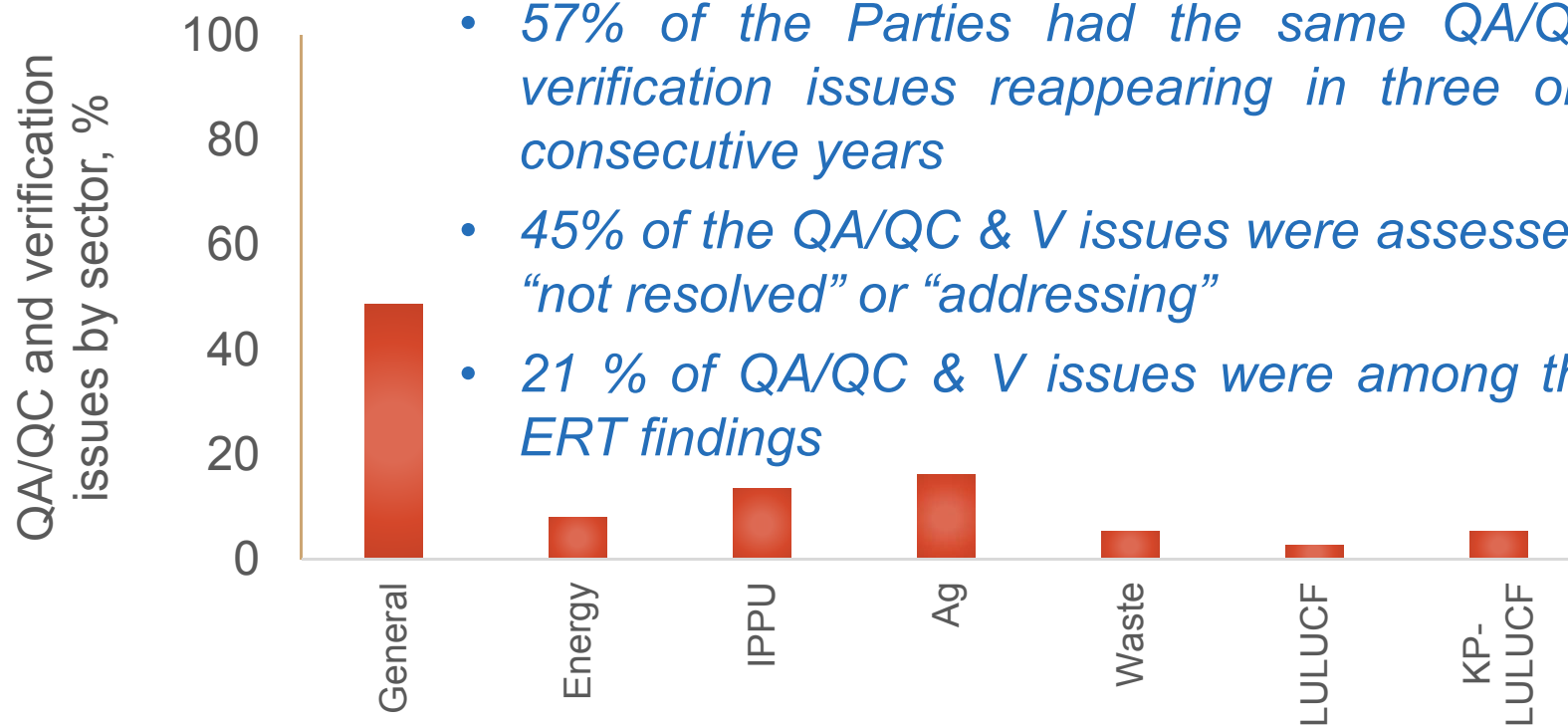
Thank you, done

Olia Glade, 08/03/2019

Results of the ARR analysis: QA/QC & V issues

- There is still a large number of QA/QC & V issues in the inventories KM4
OG3

- 97 QA/QC and verification issues across the 21 ARRAs were identified
- Only 1 Party did not have QA/QC & V issues
- 57% of the Parties had the same QA/QC and verification issues reappearing in three or more consecutive years
- 45% of the QA/QC & V issues were assessed to be “not resolved” or “addressing”
- 21 % of QA/QC & V issues were among the new ERT findings



Slide 5

- KM4** Please clarify this include "recommendation" and "encouragement", or "recommendation" only.
Kyoko Miwa, 06/03/2019
- OG3** These are recommendations only; that is why I am using the term "issues" and not "findings", as only issues result in recommendations
Olivia Glade, 08/03/2019
- KM5** "identified 97 QA/QC and verification issues across the 21 ARR's reviewed. " This point can be included in the slide, since it is important.
Kyoko Miwa, 06/03/2019
- OG4** Thank you, included
Olivia Glade, 08/03/2019

Results of the analysis: consistency between ARRs

KM6
KM7
KM8
OG5
OG6
OG7

- ❑ 81% showed possible inconsistencies between table 2 and tables 3–6
- ❑ Different interpretations of paragraphs 1(h) and 2(a, b) in tbl 2 in the ARR

Application of the requirements of the UNFCCC Annex I inventory reporting guidelines and Wetlands Supplement (if applicable)	1. Have any issues been identified in the following areas:	
	(h) QA/QC	<i>QA/QC procedures were assessed in the context of the national system (see below) OR include references to the QA/QC issues that are not considered in context of the national system</i>
Supplementary information under the Kyoto Protocol	2. Have any issues been identified related to the national system:	
	a. The overall organization of the national system, including the effectiveness and reliability of the institutional, procedural and legal arrangements	Yes/No
	b. Performance of the national system functions	Yes/No



Slide 6

- KM6** This table is not clear to me... After I read the text view, I can fully understand the purpose of this slide. I would suggest to modify this,
Kyoko Miwa, 06/03/2019
- KM7** Seeing your text, Do you mean "many ERTs considered QA/QC issues as not related to the national system, because they rarely indicate "there is an issue" in paragraph 2(a) and (b) in table 2 of the ARR template?
Kyoko Miwa, 06/03/2019
- KM8** Your point on a room for improvement in internal consistency/links/relevancy in table 2 can be included in the slide, I think. Not only orally.
Kyoko Miwa, 06/03/2019
- OG5** The table in the slide is the relevant extract from tbl 2 of the ARR as tghis is a refresher seminar and some people might not remember exactly what paragrapghs 1(h) and 2 in the table look like.
Olia Glade, 08/03/2019
- OG6** Also, I can't make the table smaller - it would be unreadable, so have to relay on the talking points here.
Olia Glade, 08/03/2019
- OG7** I am not sure why different ERTs treated this differently, but clearly there was a difference. I think, some ERTs just overlooked this.
Olia Glade, 08/03/2019

The scope: when and what to review – the “when”

- According to the UNFCCC Annex I inventory review guidelines (paras. 74–76), the scope of reviews on QA/QC &V is different **depending on the format of the review**. (centralized, in-country and desk).
- **Desk review** - focus on:
 - ❖ QA/QC issues associated with key categories;
 - ❖ Assess addressing the previous recommendations; and
 - ❖ Recalculations
- **In-country reviews** - consider the ‘paper trail’ of the inventory from the collection of data to the reported emission estimates and will examine procedures and institutional arrangements for inventory development and management, including QA and QC, record-keeping and documentation procedures (para. 74).
- **All review types** - consider whether the QA/QC findings point at the problems with the national system (para 95d)



Slide 7

KM9

"Rather, I would suggest to say that the scope of reviews on QA/QC &V are different depending on the format of the review. "within the scope of all review types" is obvious as you present three different formats with scopes in this slide.

Kyoko Miwa, 06/03/2019

OG8

Thank you, done

Olivia Glade, 08/03/2019

The scope: when and what to review – “begin with the plan”

□ Section 6.5 of the 2006 IPCC Guidelines describes key elements of the QA/QC plan, these include

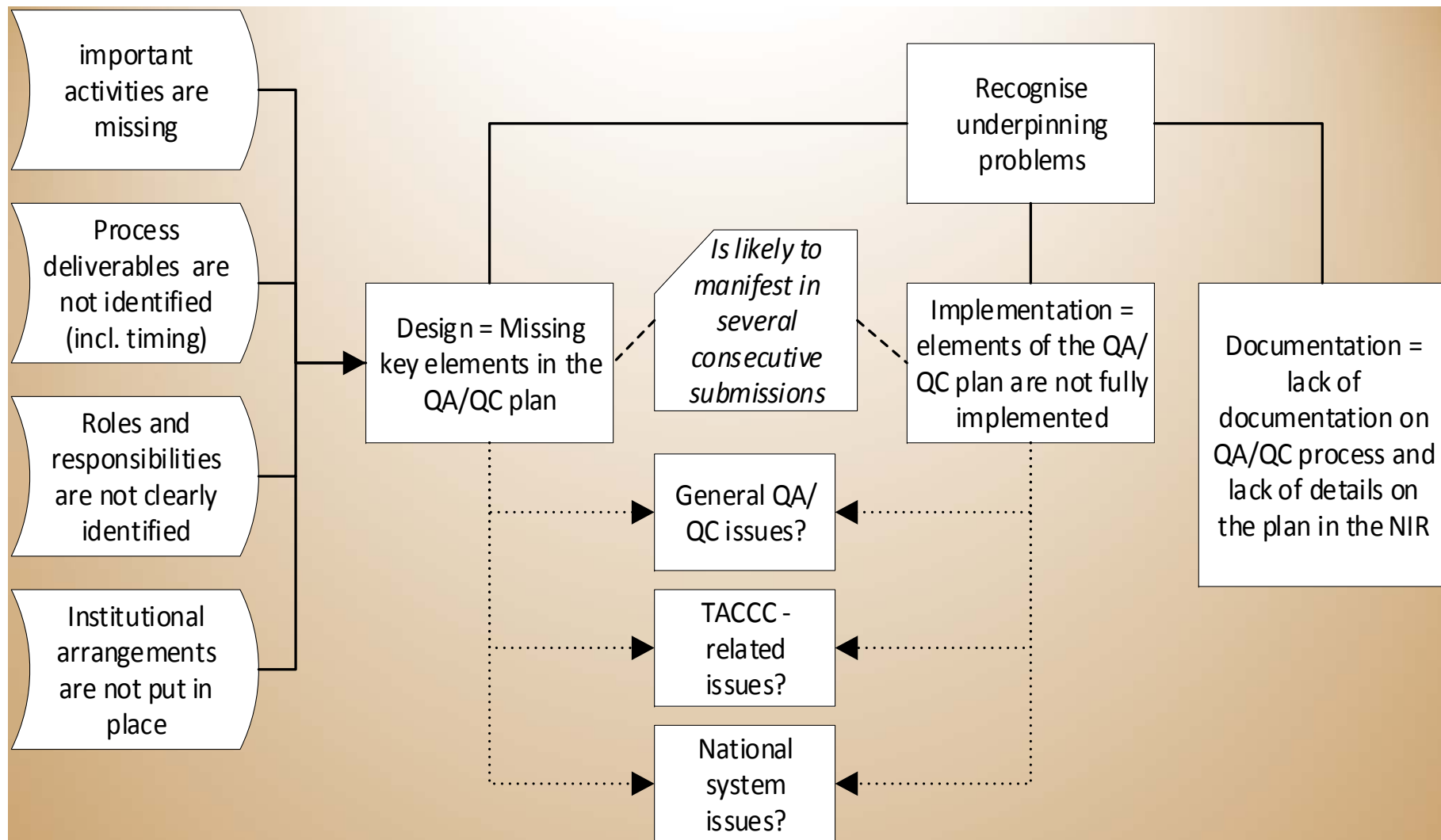
- ❖ an outline of QA/QC and verification activities that will be implemented
- ❖ institutional arrangements
- ❖ roles and responsibilities for implementing the activities
- ❖ a scheduled time frame for the QA/QC activities that follows the inventory preparation from its initial development through to final reporting in any year
- ❖ data quality objectives (concrete targets to be achieved in the inventory preparation)



Slide 8

- KM10** Please forgive me. I am going through the PPT without going back to your report. In reading this, I wonder "the what" is based on the IPCC GLs only? IPCC GLs provide methodologies to develop QA/QC&V system. The UNFCCC GLs indicate reporting requirements, and those are the what to be reviewed in the first place on QA/QC. How it is arranged and implemented can be the part of the reviews of specific issues on e.g. accuracy... Having considered, I would suggest to also include the what from the UNFCCC reporting GLs.
Kyoko Miwa, 06/03/2019
- KM11** I understand that the above my suggestion will cause an overlap with the slide on Assessment "modalities". If you will keep that slide as it is, it is OK. But here in this slide "the What", no mention about the reporting requirement is a bit strange. Please also read my comment to slide 9, before further consider my comments to this slide.
Kyoko Miwa, 06/03/2019
- OG11** I see your point. perhaps, changing the title to a more descriptive one would do the trick?
Olivia Glade, 08/03/2019

Assessment: QA/QC issues and how to find them



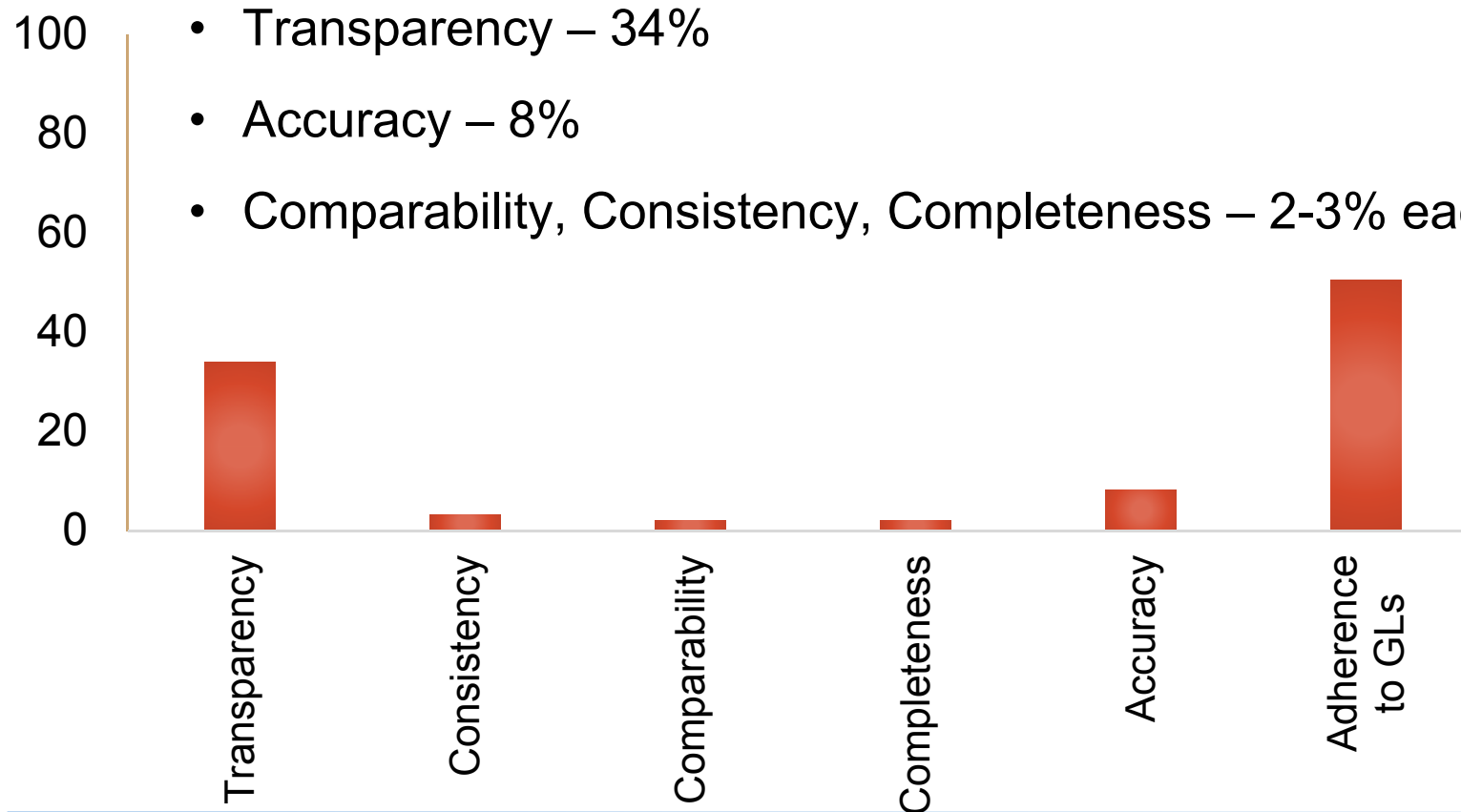
Slide 9

- KM12** Referring to my comment to the previous slide, I understand that this is based on the methodological guidance of the IPCC.
Kyoko Miwa, 06/03/2019
- OG9** Actually, this is the result of my own thoughts based on various GLs, an dreview experiences
Olia Glade, 08/03/2019
- KM13** like this slide since this is a learning for the expert who has not been involved in developing the system. Ho do you think to move these two slides (IPCC method and this figure) close to the slides on "Assessment ; IPCC GPG"? And the sildes of "the What "(scope) and the reporting requireemnts (the ones with the UNFCCCreporting GLs and the KP requirements) in the same group?
Kyoko Miwa, 06/03/2019
- OG10** I think this slide is placed correctly, because for instance, the IPCC GLs do not refer to national system issues, but this is one of the important points of this slide. It's more like an overview.
Olia Glade, 08/03/2019

TACCC-related QA/QC issues

□ From the ARR analysis:

- Adherence to GLs – 51%
- Transparency – 34%
- Accuracy – 8%
- Comparability, Consistency, Completeness – 2-3% each



Assessment: TACCC-associated QA/QC & V issues

❑ Consider both the type and the depth of the issue:

- ❖ Is it related to a mandatory requirement?
- ❖ Is it linked with the IPCC good practice?
- ❖ Is it incidental or systemic?
- ❖ Did it manifest in one sector or across the sectors?
- ❖ Which TACCC principle is it associated with?

❑ Result:

- ❖ If incidental, consider:
 - focussing the recommendation on correcting the erroneous entries
 - not including a specific QA/QC component
 - ❖ If occurs at the sectoral level:
 - consider writing one overarching QA/QC recommendation addressing QA/QC as a theme in the “general” section of the sector
 - ❖ If across sectors:
 - Consider an overarching recommendation at the inventory level under the “General” section of the ARR
 - Include associated issue ID#s from different sectors
 - Consider if the issue points to a problem with the national system
-



Assessment: modalities related to QA/QC & V

- UNFCCC Reporting GLs: 5 shalls + 12 shoulds (tbl 3.1 & 3.3 in the QA/QC paper)

paragraph	Mandatory requirement (UNFCCC)
19	Elaborate an inventory QA/QC plan
19	Implement general inventory QC procedures in accordance with its QA/QC plan following the 2006 IPCC Guidelines
41	provide in the NIR verification information consistent with the 2006 IPCC Guidelines <for T3 methods>
46	report in the NIR the QA/QC plan and give information on QA/QC procedures already implemented or to be implemented in the future
50	include in the NIR information on verification (as in para 40 & 41 – T3 & reference approach) and on QA/QC (as in para 46)



Reviewing QA/QC & V under the Kyoto Protocol

- **Shalls – under the KP:** decision 19/CMP.1 in conjunction with 4/CMP.11 (tbl 3.2 & 3.3 in the QA/QC paper)

paragraph	Mandatory requirement (KP)
12(c)	Define and allocate specific responsibilities in the inventory development process, including those relating to QC and QA.
12(d)	Elaborate an inventory QA/QC plan; facilitate overall QA procedures and establish quality objectives (to the extent possible)
12(e)	establish processes for the official consideration and approval of the inventory
14(g) + 3(b)	implement general inventory QC procedures (tier 1) in accordance with its QA/QC plan
50	archive inventory information for each year, including include internal documentation on QA/QC procedures, external and internal reviews



Assessment outcomes

- ❑ There is a difference in the outcomes of the non-compliance with mandatory requirements between reviews under the Convention and the Kyoto Protocol (tbl 3.4 in the QA/QC paper)
- ❑ If Parties reviewed under the Convention do not comply with a mandatory reporting requirement, the ERT writes a relevant recommendation in the ARR.
- ❑ A non-compliance with a mandatory requirement that is within the context of national systems under the Kyoto Protocol may result in a Saturday Paper and a Question of Implementation.



Assessment: IPCC good practices

❑ Good practice provided by the 2006 IPCC GLs cover (tbl. 3.5 & 3.7 in the QA/QC paper):

- ❖ Design & implementation of QA/QC & V system
- ❖ Roles & responsibilities in relation to QA/QC & V
- ❖ Improvement and periodic revision of the QA/QC & V plan
- ❖ Operational aspects of the QA/QC & V system associated with:
 - General QC procedures
 - Using default EFs
 - Using high tier methods
 - Uncertainties
 - QA procedures and audits
 - Documentation, archiving & reporting



Referring to IPCC good practice: examples

□ Example 1

Revise the organization of the QA activities, taking into account that, in principle and in accordance with the IPCC good practice guidance,

these should not be carried out by experts involved in the preparation of the inventory.

□ Example 2

Improve the description in the NIR of the category-specific QA/QC activities performed on the activity data using <list of sources>,

taking into consideration that in accordance with the 2006 IPCC Guidelines, when using national activity data from secondary data it is good practice to evaluate and document the associated QA/QC activities.



Higher tier QC procedures

- ❑ The 2006 IPCC GLs provide a summary of higher-tier QC procedures.
- ❑ The scope of these QC procedures includes (tbl 3.6 in the QA/QC paper):
 - ❖ a suite of checks associated with country-specific emission factors,
 - ❖ QC checks on models, direct emission measurements,
 - ❖ activity data QC including site-specific activity data
 - ❖ calculation-related QC.



Ensuring consistency in relation to SPs

□ Points for consideration:

- ❖ Whether there were significant gaps in the implementation of decision 19/CMP.1 regarding QA/QC and verification that strongly affected the performance of the national system and overall inventory quality;
- ❖ If the findings that included those of QA/QC and verification type are ongoing, whether a Party was able to demonstrate the implementation of the work plan prepared in response to the previous review;
- ❖ Whether there were any problems associated with QA/QC and verification and related to key functions of the inventory system;
- ❖ Generally, whether the QA/QC issue noted by the ERT fits in a bigger picture of serious problems associated with inventory arrangements and performance of the national

Slide 18

KM14

I think this slide can be the last one before the conclusion slide #20.

Kyoko Miwa, 06/03/2019

OG12

Thank you, moved the slide.

Olivia Glade, 08/03/2019

Summing it up

- Regardless of the type of the review and issue classifier, it is important that, in order to improve the quality of the inventory, all recommendations related to QA/QC and verification issues reflect:
- ❖ the source of the issue;
 - ❖ its nature (systemic/incidental);
 - ❖ Reference to the relevant IPCC good practice; and
 - ❖ are fit for purpose, that is

It is clear to the Party receiving those recommendations what exactly is required to resolve the issue and make an improvement to their inventory.



Slide 19

- KM15** To me, this slide is another finding from your analysis. Because it sounds to me that not all recommendations does not reflect these information. If so, I would suggest to change the heading to e.g., "drafting the issues on QA/QC&V" or similar
Kyoko Miwa, 06/03/2019
- KM16** Please explain this point a bit more. It (nature) is not clear to me
Kyoko Miwa, 06/03/2019
- OG13** systemic or incidental issues
Olia Glade, 08/03/2019
- OG14** Also added the reference to the relevant IPCC good practice
Olia Glade, 08/03/2019
- KM17** This is not clear to me. Please be more specific
Kyoko Miwa, 06/03/2019
- OG15** the explanation is underneath in the slide
Olia Glade, 08/03/2019
- KM18** Please include the conclusion slide that cover the main point of your analysis in the paper and also the points for consideration in the seminar. e.g. Any missing points to improve the review of the QA/QC&V. any different views to the points in the report, any questions/request for clarification to the point in the presentation and the report, and any other questions that you would like to make to the LRs. We need to provide them the starting points for the discussion.
Kyoko Miwa, 06/03/2019
- OG16** "Conclusions" slide is added
Olia Glade, 08/03/2019
- OG17** Also added "Points for further discussion" slide
Olia Glade, 08/03/2019

Conclusions

- ❑ A significant number of QA/QC and verification issues were noted by reviewers during the 2017 review cycle;
 - ❑ Important steps of reviewing QA/QC and ensuring consistency:
 - ❖ identifying the source of the QA/QC and verification issue and the issue depth;
 - ❖ applying an issue classification consistent with its source;
 - ❖ referring to good practices and modalities under the UNFCCC and Kyoto Protocol reporting guidelines;
 - ❖ assessing mandatory and non-mandatory reporting requirements;
 - ❖ differentiating between the inventories reported under the Convention and the Kyoto Protocol;
 - ❖ identifying which QA/QC and verification issues can result in issuing Saturday Papers and Question of Implementation;
 - ❖ assessing application of higher-tier QC procedures;
 - ❖ reporting QA/QC and verification consistently in table 2 of the ARR.
-



Points for further discussion

□ ARR table 2 in the context of KP review, or KP VS Convention :

- ❖ *How do we reflect QA/QC issues in paragraphs 1(h) in tbl 2(a,b)?*
- ❖ *Do we need paragraph 1(h) at all?*
- ❖ *If yes, what goes here that is not covered in national system?*

□ Streamlining QA/QC recommendations:

- ❖ *Do you think that we are risking to lose the point and the opportunity to improve by creating overarching QA/QC recommendations?*

□ Navigating through good practices and mandatory requirements

- ❖ *How can we make sure that the UNFCCC/KP mandatory requirements and IPCC good practices related to QA/QC & V are covered in the review and reflected in the ARR? Would tables 7-1 and 7-3 in the Review handbook be enough or a more detailed guidance is needed?*

□ When QA/QC & V become a matter in the Saturday Paper?



In relation to challenge 1:

KM6
KM7
KM8
OG5
OG6
OG7

There are different interpretations of paragraphs 1(h) and 2(a, b) in tbl 2 in the ARR template:

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Slide 22

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Olia Glade, 08/03/2019

**Thank you for your attention –
questions, please**

