**Fulfilling the ES Code of Practice and assessments of quality in official statistics**

Heather Bergdahl, Statistics Sweden, heather.bergdahl@scb.se

Ingegerd Jansson, Statistics Sweden, ingegerd.jansson@scb.se

Joakim Malmdin, Statistics Sweden, joakim.malmdin@scb.se

**Abstract**

*A new self-evaluation of the quality in official statistics has been launched for the Swedish System of Official Statistics, the results of which are reported annually to the Swedish government. The objective is to stimulate quality improvements in official statistics and provide a basis for the government to make a “Commitment on Confidence in Statistics”.*

*In 2016 Statistics Sweden issued executional regulations for the System as a whole specifying an updated quality concept with five main components to be used to describe quality in the development, production and dissemination of official statistics. In 2017, additional regulations were issued in the form of a self-evaluation form for statistical authorities of the quality in their official statistics. The self-evaluation focuses on change in product quality over time. An essential starting point in the assessment is the purpose of the statistics and user information needs.*

*Statistical authorities work actively towards compliance to the ES Code of Practice (CoP). In this context, a most relevant question has been raised as to how our new self-evaluations assist us in our efforts towards this goal.*

*In this paper, we will explore how our present approach to evaluate quality in official statistics can be a useful and potentially powerful tool for continuous improvements and a means to achieve quality improvements in official statistics as well as greater compliance to the CoP.*

**Keywords: Evaluation, assessment, quality concept, continuous improvements, compliance**

**1. Introduction**

*1.1 Background*

According to the European parliament’s and the Council’s regulation (EG) 223/2009, in the wording according to the European parliament’s and the Council’s regulation (EU) 2015/759 for European statistics, member states and the Commission shall take all necessary measures to maintain confidence in European statistics. According to Article 11.4 in this regulation, member states are to submit a Commitment on Confidence in order to ensure public trust in European statistics and progress in the implementation of the statistical principles contained in the Code of Practice.

The Swedish government declared its commitment to maintain confidence in statistics in its 2017 budget bill. To this end, it was concluded that the System for official statistics in Sweden needed to be further developed. The coordination of statistics and the follow-up of the quality in statistics could be strengthened. Therefore, the following measures had been taken:

* In 2013, following the quality criteria set for European statistics in the EU Regulation (EG) 223/2009 Article 12, the Official Statistics Act (2001:99)[[1]](#footnote-1) was amended with the corresponding quality criteria. Pursuantly, in 2016 Statistics Sweden issued executional regulations on, 1) an updated quality concept to describe the quality in the development, production and dissemination of official statistics, and 2) a new quality declaration/report template for official statistics[[2]](#footnote-2).
* In 2016, a new ordinance[[3]](#footnote-3) was issued appointing Statistics Sweden as National Statistical Institute (NSI) and thereby giving it a coordinating role of European Statistics in Sweden alongside its role of coordination of official statistics. The regulation also stipulated a strengthening of the Council for official statistics which supports Statistics Sweden in its coordinating role.
* In 2016, the Official Statistics ordinance (2001:100)[[4]](#footnote-4) was also amended such that all statistical authorities responsible for official statistics should annually evaluate the quality in official statistics in the statistical areas for which they are responsible. Statistics Sweden should issue executional regulations for these evaluations and submit a report to the government with an analysis of these[[5]](#footnote-5).

The government assessed that the above measures are sufficient to ensure the public’s confidence in statistics and to fulfill the requirements set out in the EU-regulation. The government will follow the developments and is prepared if needed to take additional measures to maintain confidence in statistics.

Implementation work regarding the national executional regulations is ongoing, within the statistical authorities in Sweden[[6]](#footnote-6). This work, which is also supported by guidelines in the form of a quality handbook[[7]](#footnote-7) and an evaluation handbook[[8]](#footnote-8), can be instrumental in improving the quality in official statistics of which over half comprises European statistics[[9]](#footnote-9). This work relates directly to the newly adapted principle of Coordination and cooperation in the revised European Statistics Code of Practice (CoP)[[10]](#footnote-10), and specifically to indicator 1bis.2 on national guidelines to ensure quality in the development, production and dissemination of European Statistics to be produced by the Heads of the NSIs, and where necessary, monitored and reviewed.

Alongside the work to implement these national regulations, statistical authorities in Sweden pursue compliance with the European Statistics Code of Practice (CoP) upon a formal recommendation from the Council of official statistics. The question has therefore been asked of Statistics Sweden as to the relationship between the new executional regulations and the CoP and as to how the regulations support the authorities in their compliance towards the CoP.

*1.1 Disposition*

In the following text, we will describe an important starting point in Statistics Sweden’s quality concept for official statistics for the self-evaluations of the quality in official statistics. Next, we will summarise the main features of the self-evaluations, how we may use the results towards improving quality in official statistics, as well as the lessons learned after the first round. Finally, we will explore the relationship between our self-evaluations and the CoP as well as how these can support us in our efforts for higher compliance with the Code.

**2. The quality concept for official statistics in Sweden – a starting point**

The structure of the self-evaluations is based on the updated quality concept for official statistics with five main quality components of Relevance, Accuracy, Timelines and punctuality, Accessibility and clarity[[11]](#footnote-11). These are now more fully aligned than what they were was previously with the CoP quality principles for statistical output[[12]](#footnote-12).

Among other alignments, the first main component, now *Relevance*, refers to how well statistics illuminate the issues that are of importance for users of the statistics. See Table 1 for the sub and sub-subcomponents of Relevance.

**Table 1 Main component: Relevance**

|  |  |
| --- | --- |
| Subcomponent | Sub-subcomponent |
| *Purpose and information needs* |  |
|  | *Purpose of the statistics* |
|  | *User information needs* |
| *Content of the statistics* |  |
|  | *Unit and population* |
|  | *Variables* |
|  | *Statistical measures* |
|  | *Study domains* |
|  | *Reference times* |

Source: Regulation (SCB-FS 2016:17) on quality in official statistics

The regulation states that an important element of the assessment of relevance is the agreement between the target characteristics and the so-called characteristics of interest. Before defining the target characteristics to be estimated, the statistical authority makes considerations regarding *User information needs*, quality requirements associated with the statistics, the cost of producing statistics and the response burden. Following a dialogue with important national and international users, the statistical authority formulates the *Purpose of the* *statistics*, reflecting the information needs to be met by the survey and its statistical product(s). A fundamental aspect of quality in statistics is clearly to be fitness for purpose.[[13]](#footnote-13)

The *Accuracy* that is required, or sufficient, is also one of the topics that the statistical authority should discuss with the users and take a position on. The discussions and the ensuing position should also consider requirements for other quality components of the statistics, i.e. *Timeliness and punctuality, Availability and clarity* as well as *Comparability and coherence* – bearing in mind any trade-offs between these and to maximise overall fitness for purpose of the statistics.[[14]](#footnote-14)

**3. Self-evaluations of quality in official statistics in Sweden**

Statistics Sweden has defined evaluation in this context to be:

The evaluation is a systematic assessment subsequent to the activities of development, production and dissemination of official statistics emphasising the quality of statistics[[15]](#footnote-15).

Bearing in mind the starting points described in the previous section, it follows that evaluations of the quality of statistics should be set in relation to the use of the statistics.

*3.1 Cyclical approach*

The self-evaluation follows a cyclical approach as portrayed in Figure 1. The starting point, the *Purpose of the statistics*, gives rise to requirements for the quality components. In principle, the survey design should fulfil the quality requirements. The outcome, or the quality that is achieved, should be according to the design, in principle.

**Figure 1 Cyclical approach of self-evaluations**



Source: Handbook on Evaluation of the Quality of Official Statistics of Sweden

The quality of the outcome is assessed annually during the statistical production. The results, in the form of findings and conclusions, are used in the coming year for improvements. Conceivably, the results could give rise to reformulating the *Purpose of the statistics*, quality requirements and fine-tuning the survey design. A change in user needs could also result in such changes. The cyclical approach reminds us of the general principle of continuous improvements i.e. PDCA: *Plan, Do, Check, Act*.

The user focus of *Relevance* and the cyclical approach in Figure 1 helped to formulate useful questions in the self-evaluations. The questions cover the following parts:

1. Information needs and the purpose of the statistics
2. Quality requirements per quality component
3. Quality studies and lessons learned compared to the previous evaluation
4. Survey design and quality requirements per quality component
5. Quality in statistics: the outcome of the design per quality component
6. Production of the statistics: larger differences compared to the previous evaluation
7. Quality in statistics: larger differences compared to the previous evaluation
8. Quality assessments regarding Accuracy and Comparability.

The first three parts (1.-3.) are directed towards statistical areas[[16]](#footnote-16) and the five following parts (4.-8.) to statistical products[[17]](#footnote-17) within each statistical area. Therefore two forms were launched for the self-evaluations – one on the statistical area level and one on the product level. A person with the necessary overview, for example a head of a unit, should complete the form on the statistical area level. A subject matter specialist together with a methodologist should complete the form on the product level.

*3.2 Some results from the first round and lessons learned*

The first round of self-evaluations have run for all statistical areas and for those official statistics that were released during 2017 (301 products).[[18]](#footnote-18) The results have been compiled and reported to the government of Sweden.

Among the findings[[19]](#footnote-19) are:

* One third of the statistical areas have deficiencies in the *Content of the statistics* in relation to important information needs. Statistical authorities comment that this can be due to non-existent data collection or that information is not available. Another reason commonly given is that the information cannot be broken down into sufficiently detailed study groups to satisfy user needs.
* For almost half of the statistical areas, statistical authorities report that statistics are published which are not official but that meet important information needs. One frequently stated reason is insufficient quality or that resources are lacking to meet quality requirements. For a few statistical areas, statistical authorities state that they plan to classify more statistics as official statistics.
* Regarding the question if the survey design for statistical products meets quality requirements, statistical authorities report that 12% of all statistical products do not meet the quality requirements for *Content of the statistics* and *Accuracy* –for *Comparability and coherence* 11 % and *Timeliness* 10%.
* Approximately 20% of all statistical products reported that output quality deviated tangibly from what the design intended. Seen to quality components, most reported that *Accuracy* (non-response) and *Punctuality* deviated most.

Based on these findings, Statistics Sweden will internally take measures during 2018 for areas noted with deficiencies regarding the statistical areas and products for which we are responsible. This will involve deepening our understanding of the underlying reasons for deficiencies as they relate to *Content of the statistics* for statistical products where the survey design does not meet the quality requirements.

The first round of evaluations revealed, not surprisingly, that the evaluation forms need fine-tuning. For the next round, the forms will be altered to better mirror the cyclic approach portrayed in Figure 1. This includes changes such as splitting up questions where needed, or rephrasing questions to avoid misinterpretation. Further, it was difficult for the authorities to respond to questions on quality requirements at the statistical area level. Such detailed quality requirements are traditionally not defined at this level. For the next round, these questions will be posed at the product level.

*3.3 Conclusions and follow-up with the Swedish government*

Statistics Sweden has summarized and concluded the findings of the self-evaluations. The quality in the official statistics is good and, at the authority level, characterised by an awareness of the importance of quality issues. The focus of the discussion among statistical authorities has come to regard the *Purpose of the statistics* with a clear emphasis on user needs. This is a direct effect of the self-evaluations. In an international comparison, the assessment is that the quality of official statistics is very good.

There are common challenges for the statistical authorities where, to a greater degree, we need to anticipate emerging user needs in order to ensure the timeliness and relevance of official statistics for the users. It follows that the statistical authorities need to review the product mix in each of our statistical areas to satisfy user needs.

**4. Fulfilling the CoP and self-evaluations of quality in official statistics**

Statistics Sweden sees many connections between Sweden’s self-evaluations, where the eight different parts were described in the previous section, and the principles and indicators in the CoP[[20]](#footnote-20). We will now explore a few of these connections and how the self-evaluations promote compliance to the CoP.

*4.1 Information needs, purpose of the statistics, and user requirements per quality component (parts 1, 2, and 4 in the self-evaluations)*

The questions in parts 1, 2 and 4 challenge statistical authorities to reflect largely on issues of *Relevance*, which fall under the CoP indicators 11.1-11.3. The indicators entail discussions with users about their emerging and existing needs, monitoring the relevance and the value of statistics, making priorities and checking user satisfaction. These aspects are all covered in the self-evaluations.

Other indicators in the CoP (3.3, 3.4 Adequacy of resources) speak of assessing and justifying demands for new statistics or the continuing need for all statistics relative to their cost. This is also assessed in Sweden’s self-evaluations as, according to Statistics Sweden’s guidelines (see section 2), cost is one important consideration for the statistical authority in defining the target characteristics to be estimated. Such considerations fall under the component of Relevance.

Also, the CoP indicator of 8.1 (Appropriate statistical procedures) which highlight the importance that definitions and concepts used (from data created for non-statistical purposes) are a good approximation to those required for statistical purposes. These types of considerations are made under Sweden’s sub-component, *Content of the statistics,* which are explicitly treated in parts 1, 2, and 4 of the self-evaluation.

In addition, the CoP indicator 13.3 (Timeliness and punctuality) obliging statistical agencies to take user requirements into account regarding the periodicity of statistics falls under the two parts in the self-assessments addressing user requirements.

*4.2 Quality studies (part 3 in the self-evaluations)*

The question on quality studies and lessons learned compared to the previous evaluation on the statistical area level touches on often a deeper form of evaluation. Even though quality studies may concern issues like improving statistical production processes, a statistical authority with quality awareness will most likely want to, at least periodically, study measurements of uncertainty besides sampling error, such as measurement error, non-response bias, coverage errors etc. The CoP indicator 12.2 (Accuracy) challenges us in our efforts to measure sampling and non-sampling errors as well as to document these according to European standards.

*4.3 Design, outcome of design, the production of the statistics, the quality of statistics, quality assessments (question parts 4-8 in the self-evaluations)*

CoP indicator 8.3 (Appropriate statistical procedures) requires that statistical processes are routinely monitored and revised as required. Also indicator 12.1 (Accuracy) requires that source data, integrated data, intermediate results and statistical outputs are regularly assessed and validated.

Parts 4-7 (stimulate statistical authorities to reflect on the outcome of the survey design in relation to the planned design and in terms of the quality components. In addition, to reflect on the production of the statistics regarding the different processes in relation to the previous year’s evaluation in terms of the quality components – whether improvements or deteriorations. Part 8 requests a more detailed assessment of Accuracy with most important sources of uncertainty and of Comparability relating to CoP indicators 14.2 and 14.4 (Comparability).

*4.4 Cyclical approach and the general quality principle of continuous improvement*

Finally, we believe that the cyclical approach with annual self-evaluations as the basis for the Swedish government’s follow-up and Commitment on Confidence gives great potential for working more actively with the general quality principle of *continuous improvement* in the quality of official and European statistics. Although the national executional regulations were only recently issued, we believe that we have already seen a raised quality awareness among the statistical authorities in Sweden. We realize that there is need for fine-tuning and for increased knowledge and sharing of experiences. We are, however, expectant when looking to coming years that the measures we have taken so far will lead to positive effects for the quality of official statistics in Sweden, of European statistics, and ultimately, in the public’s confidence in statistics.

**5. References**

A Handbook on Evaluation of Quality of Official Statistics of Sweden, Statistics Sweden, 2017. Available at <https://www.scb.se/contentassets/ae078cda5339493fa399c2f4048b6596/ov9999_2016a01_br_x99br1702.pdf> in Swedish. (Accessed: 18 May 2018)

A Handbook on Quality for Official Statistics in Sweden, Statistics Sweden, 2016. Available at <https://www.scb.se/contentassets/b3cf91d501e9466fae5bf1eae2a5484f/ov9999_2016a01_br_x99br1701.pdf> in Swedish. (Accessed: 18 May 2018)

European Statistics Code of Practice, European Statistical System, 2017.

European Statistics Handbook on Quality Reports 2014 (EHQR). European Statistical System, 2014.

Official Statistics of Sweden – Annual report 2017, Statistics Sweden, 2018. Available at <https://www.scb.se/en/finding-statistics/statistics-by-subject-area/other/other/other-publications-non-statistical/pong/publications/official-statistics-of-sweden---annual-report-20162/> in Swedish. (Accessed: 18 May 2018)

Official Statistics of Sweden – Annual report 2016, Statistics Sweden, 2018. Available at <https://www.scb.se/en/finding-statistics/statistics-by-subject-area/other/other/other-publications-non-statistical/pong/publications/official-statistics-of-sweden---annual-report-20162/> (Accessed: 18 May 2018)

Regulation (SCB-FS 2016:17) on quality in official statistics, Statistics Sweden, 2016. Available in English at Statistics Sweden. Available at <https://www.scb.se/Grupp/OmSCB/Verksamhet/Foreskrifter/Tillganglighet-SOS/SCB-FS-2016-17.pdf> in Swedish (Accessed: 18 May 2018).

Regulation (SCB-FS 2016:27) amending Regulation (SCB-FS 2002:16) on the official release, etc. of official statistics, Statistics Sweden, 2016. Available at <https://www.scb.se/sv_/Om-SCB/Verksamhet/Regelverk-och-policyer/Foreskrifter-och-allmanna-rad-fran-SCB/Tillganglighet-till-officiell-statistik/201627/> in Swedish. (Accessed: 18 May 2018)

Regulation (SCB-FS 2017:8) on evaluation of the quality in official statistics, Statistics Sweden, 2017. Available at <https://www.scb.se/sv_/Om-SCB/Verksamhet/Regelverk-och-policyer/Foreskrifter-och-allmanna-rad-fran-SCB/Tillganglighet-till-officiell-statistik/201781/> in Swedish. (Accessed: 18 May 2018)

1. See Annual report for Official Statistics in Sweden 2017 for a translation to English, p.61. [↑](#footnote-ref-1)
2. Regulation (SCB-FS 2016:17) on quality in official statistics and (SCB-FS 2016:27) on a quality declaration/report template. [↑](#footnote-ref-2)
3. See Annual report for Official Statistics in Sweden 2017 for a translation to English, p.65. [↑](#footnote-ref-3)
4. Ibid,p.74. [↑](#footnote-ref-4)
5. Regulation (SCB-FS 2017:8) on evaluation of the quality in official statistics was issued in 2017. [↑](#footnote-ref-5)
6. Defined as Statistics Sweden and other statistical authorities responsible for official statistics [↑](#footnote-ref-6)
7. A Handbook on Quality for Official Statistics of Sweden [↑](#footnote-ref-7)
8. A Handbook on Evaluation of the Quality of Official Statistics of Sweden [↑](#footnote-ref-8)
9. Annual report for Official Statistics in Sweden 2017 [↑](#footnote-ref-9)
10. ES Code of Practice revised in 2017. [↑](#footnote-ref-10)
11. Regulation (SCB-FS 2016:17) on quality in official statistics. [↑](#footnote-ref-11)
12. ES Code of Practice principles 11-15 for statistical output and further elaborated in the European Statistics Handbook on Quality Reports (EHQR) 2014. [↑](#footnote-ref-12)
13. A Handbook on Quality for Official Statistics of Sweden.p.5. [↑](#footnote-ref-13)
14. Ibid,p.9 [↑](#footnote-ref-14)
15. A Handbook on Evaluation of the Quality of Official Statistics of Sweden, p.3. [↑](#footnote-ref-15)
16. The Swedish government stipulates, in the Official Statistics Ordinance (2001:100), the subject areas (22) and under these, the statistical areas (110) for which official statistics should be produced, and appoints the statistical authorities (28) responsible for official statistics within each statistical area. [↑](#footnote-ref-16)
17. The statistical agencies determine which statistical products constitute the official statistics within their respective statistical area. [↑](#footnote-ref-17)
18. The parts regarding comparisons with the previous evaluation were not relevant in the first round. [↑](#footnote-ref-18)
19. Official Statistics of Sweden – Annual report 2017, p.18. [↑](#footnote-ref-19)
20. According to the revised version of European Statistics Code of Practice 2017. [↑](#footnote-ref-20)