

CEER engaged to further improve comparability of continuity indicators

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1 Introduction

Since 2001, CEER has been engaged in the publication of periodic Benchmarking Reports on the quality of supply across Europe using well established indicators for electricity continuity of supply (i.e. SAIDI, SAIFI, and MAIFI)¹. Although these continuity indicators are internationally established, there are many implementation factors which impinge on the comparability of reported indicator values.

Continuity of supply is an important part of every CEER Benchmarking Report on the Quality of Supply. Since the very first report, it has been evident that different approaches to treatment of continuity of supply indicators weaken the reliability of benchmarking of the values provided by European countries. Six full CEER Benchmarking Reports have been published since 2001 with the 7th full report expected in late 2020. However, the overall situation has not changed significantly and it is clear that CEER needs to continue to examine the scope for improvement.

Evidence from other European countries shows that there are different rules of aggregation across Europe which, depending on specific cases, could make benchmarking of indicators for electricity continuity of supply more challenging.

Motivated by that evidence and based on experiences gathered during analysis of indicators provided for previous CEER Benchmarking Reports, the CEER Energy Quality of Supply Work Stream (EQS WS)² decided to look more closely into practices of aggregation of interruptions and performed a survey across Europe. The survey included an electricity-sector example with a series of consecutive interruptions and intervals of energy supply, with all interruptions assumed to be caused by the same event. In addition to illustrating consequences of different rules of aggregation, CEER looked also into differing definitions of long and short interruptions since both these factors affect the values of indicators.

With this work, CEER aimed to facilitate a better understanding of the impact various approaches to aggregation of interruptions might have on the comparability of reported indicator values. The goal of this note is to inform the public that CEER has done work in this area that aims to improve the quality of benchmarking in future public reports.

¹ SAIDI: System Average Interruption Duration Index, *i.e.* the yearly average of cumulative outage duration for each customer served; SAIFI: System Average Interruption Frequency Index, *i.e.* the yearly average of number of interruptions for each customer served ; and MAIFI: Momentary Average Interruption Frequency Index, *.i.e.* the yearly average of number of momentary (or “short”) interruptions for each customer served.

² Part of the Distribution Systems Working Group.

2 Objectives and Focus of the Research

The CEER research focused on whether and in which way aggregations are performed in case of multiple subsequent interruptions of electricity supply. This is only one of the many issues that hinder full comparability of indicators. Among other questions (such as their definition of reconnection and long interruptions as well as the use and rules of aggregation), NRAs were asked to evaluate an example and provide calculated values of indicators such as SAIDI, SAIFI, MAIFI and the number and duration of long and short interruptions, were such hypothetical event to occur in their country.

The review of the answers shows that – even though continuity of supply is monitored in all responding countries – there are significant differences in the way individual countries calculate corresponding indicators driven by several factors, such as differing weighting methods, inclusion of exceptional events and differing rules on aggregation, among which are:

- About one half of the responding countries aggregate interruptions of electricity in some capacity, while others count every interruption separately.
- There are countries that aggregate multiple interruptions into one if the return of energy supply between interruptions is short.
- In some cases, even the restoration of energy supply counts as an interruption if the restoration is short enough.
- Other countries would interpret the entire series in the example as a single interruption.

The analysis of the indicators based on the example provided in the survey shows that differences in the way indicators are calculated may cause high variations in the indicator values. It is important to stress that an example like the one used in this survey is very unlikely to occur in practice, which is why the differences between the calculated indicator values might be less pronounced than what was revealed by the CEER research.

Differences also arise from other circumstances, such that most countries exclude short interruptions when calculating values of SAIDI and SAIFI, while others do not distinguish between long and short interruptions resulting in indicators SAIDI and SAIFI being used for all interruptions that they monitor. On the other hand, some respondents use MAIFI as a dedicated indicator for short interruptions.

3 Main Conclusions

The analysis conducted by CEER shows that, even though continuity of electricity supply is monitored in all responding countries, there are significant differences in the way individual countries calculate their indicators. These include differences in treatment of multiple subsequent interruptions of electricity supply, which may result in diverging ways of calculating the key indicators that are used to benchmark continuity of supply. In addition, differences are affected by varying practices regarding weighting methods, data collection, inclusion or exclusion of exceptional events, voltage levels and specific types of interruptions, each affecting comparability of indicator values.

The resulting differences in continuity indicators values are more relevant for international benchmarking but generally not for incentive regulation of the quality of supply on national level. CEER recommends further discussion and work on this topic, including cooperation with European Committee for Electrotechnical Standardisation (CENELEC³) with the aim of potential revision of European Standard EN 50160 to include rules on aggregation of interruptions. Further harmonisation of the methodology to calculate key indicators remains a necessary step towards improved benchmarking. Otherwise, the lack of harmonisation might result in the continuing possibility of misleading interpretation of data in benchmarking reports that deal with continuity of supply.

³ <https://www.cenelec.eu/>