



10493 – Monitoring voltage quality in Sweden

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The Swedish Energy Markets Inspectorate (Ei) is the national regulatory authority commissioned to strive for well-functioning energy markets. Ei monitors the function of the electricity grid to assure a reliable and cost-effective electricity supply.

The regulation of voltage quality is based on the Electricity Act and the secondary regulation EIFS 2013:1, which states the limiting values for the voltage phenomena:

- unbalance,
- harmonics,
- dips,
- swell,
- slow voltage variations,
- rapid voltage changes.

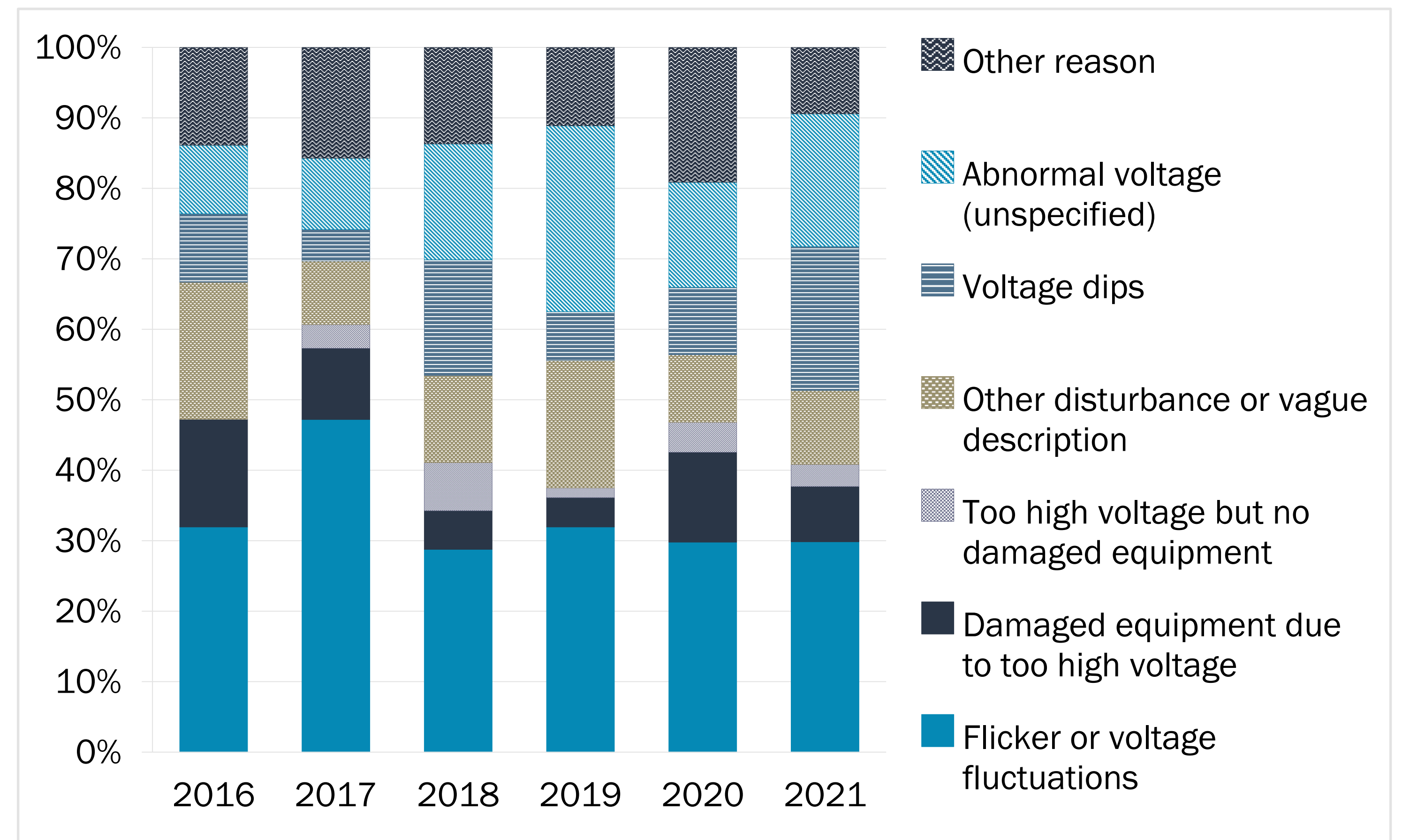
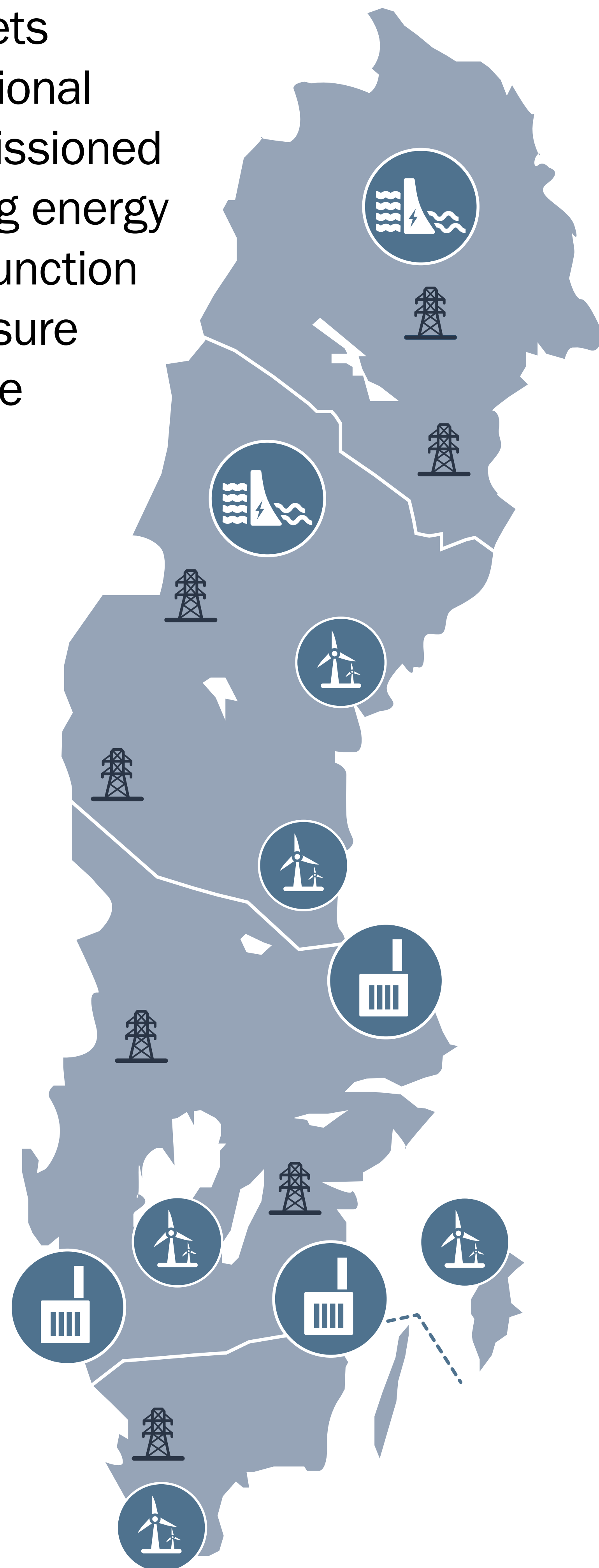


Figure 1 – Phenomena causing customers to complain about VQ per year 2016-2021

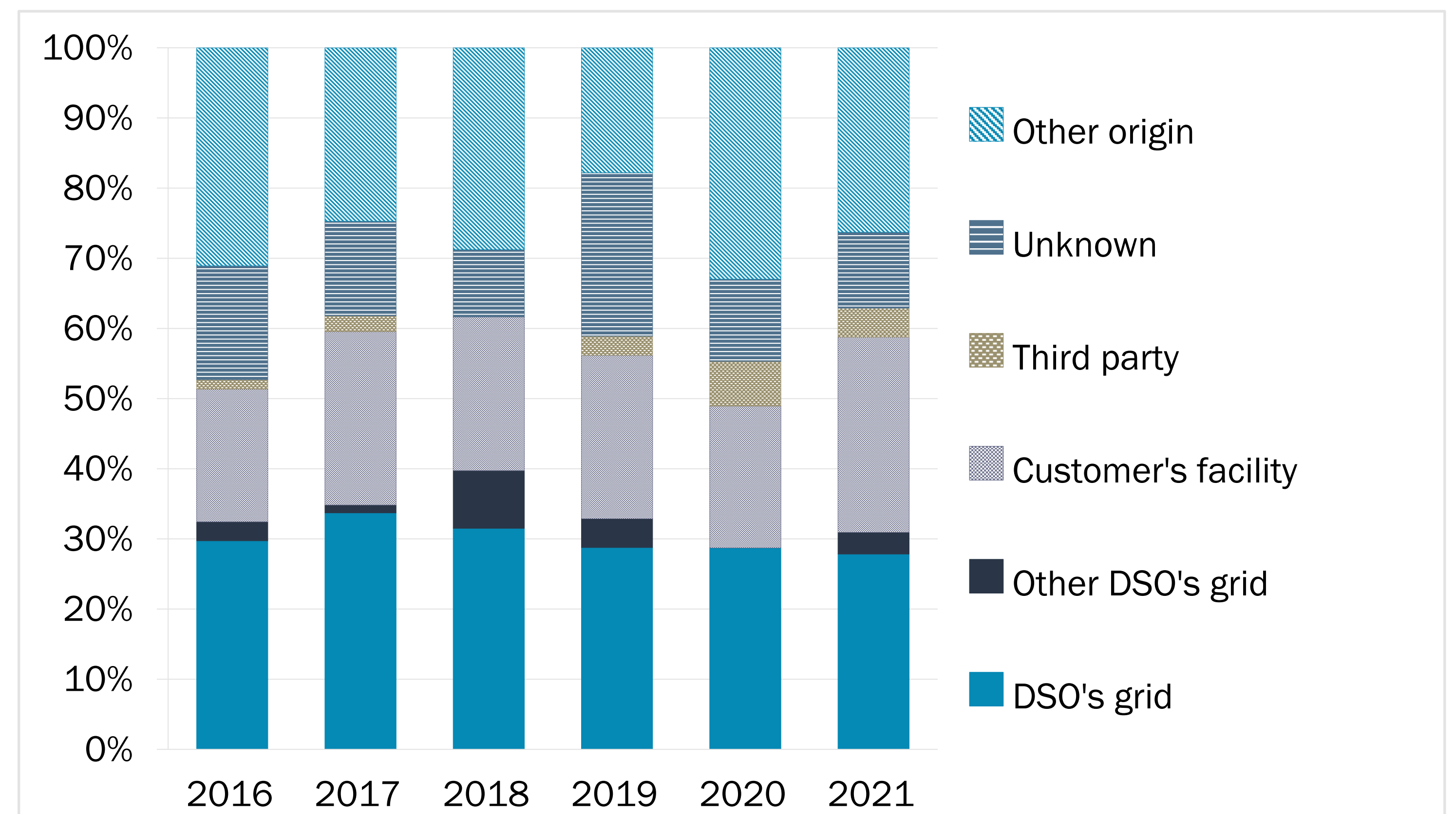


Figure 2 – Location of the fault causing the customer complaint

Method

Between 2021-2025, all 170 Swedish DS0s will be supervised regarding their voltage quality responsibilities. Each year, Ei orders about 35 DS0s to submit information on:

- complaints regarding voltage quality
- how DS0s foster good voltage quality in their grids.

Results from the 2022 supervision

Flicker or voltage fluctuations were the most common reasons for end-users to complain on voltage quality. DS0s foster good voltage quality:

- DS0s construct their grids to meet the requirements
- investigate poor voltage quality by indication
- conduct calculations on existing grid.

Conclusions

The main conclusion of the 2022 supervision is that the voltage quality in Sweden is relatively good. Ei sees a willingness from the DS0s to meet the requirements of the VQ regulation. There are not too many complaints on poor VQ. The DS0s investigate the complaints and take measures to improve the VQ within a reasonable time. There is a variation between the DS0s in how long time they take to resolve the problem causing the poor VQ due to their individual resources. It is becoming increasingly important to monitor the VQ in the grid as decentralized and intermittent electricity production is increased because of the energy transition, the integration of more electronic components but also changes in consumption patterns.