

Summary

Executive summary

Smart metering has reached a stage of early maturity with mass-rollouts underway in significant parts of Western Europe. Almost one third of the 283 million electricity customers in EU28+2 had a smart meter at the end of 2016, a share that is set to double over the next five years. As a consequence, annual shipments of smart electricity meters will reach a peak of around 28 million units per year in the final years of this decade. The majority of the new installations will take place in France, Spain and the UK, with significant contribution also coming from countries like Austria and the Netherlands. After Italy, which had a head-start, Spain was the first major country in Western Europe to begin mass deployments at the start of this decade. During 2015, France and the UK started to ramp up the rate of installations, which will peak at an aggregate level of 10–12 million units per year in the period 2018–2020. At the same time nationwide rollouts will also get underway in Austria, Ireland, Luxembourg, Norway and possibly Portugal. In addition, Sweden, Finland and Denmark already have introduced smart meters for all or most customers. Including deployments in Central Eastern Europe, the penetration rate in the EU will be around 60 percent by 2020. Not quite on par with the original policy target, but nevertheless a significant achievement and a decisive technological shift in the history of electric power.

Germany is the primary reason why the EU's 80 percent target for smart meters will not be met. The country is planning for a 15–20 years' transition period during which smart meters are gradually introduced for selected customer groups. In July 2016, Germany reached a significant milestone as the new regulatory framework and roadmap for smart meters was formally approved. In the medium term, smart meters will become mandatory for around 10 percent of the customers by 2025/2028. For the remaining 90 percent, households using less than 6,000 kWh per year, the technology will be optional with a price cap. This does leave some room for more extensive rollouts during the 2020s by DSOs that can identify strong business cases.

The adoption trends in Central Eastern Europe are mixed. Estonia will be the first country in the region to complete a nationwide rollout at the end of 2016. Latvia is doing a partial rollout to larger electricity customers and Lithuania has recently launched a pilot project. Poland has several large-scale projects underway, but there is still uncertainty around the regulatory process. Czechia, Slovakia and Hungary have different approaches to smart meters. The cost benefit analysis in Czechia had a negative result and deterred the country from going ahead with a rollout. Slovakia found a positive business for a partial rollout and will deploy smart meters for around 30 percent of the customer base accounting for half of the yearly consumption until 2020. Hungary has established a subsidiary of the national TSO for the task of managing a national pilot project over the next years. Romania began to see an accelerated uptake during 2014/2015 as all three DSOs initiated significant deployments. Greece is still in the process of organising a large-scale pilot that could lead up to an eventual nationwide rollout by the country's only DSO. Outside of the EU, Montenegro has completed a large smart metering rollout and Serbia launched an ambitious project in 2015.

While most other European countries are deploying their first generation of smart meters, the early adopters Italy and Sweden are preparing for the second wave. The system solutions deployed in the early 2000s are becoming outdated in terms of functionality and performance. In addition, the meters and communications equipment are reaching the end of their technical lifespan of around 10–15 years. Enel officially showcased its second generation smart metering system for Italy in July 2016. The company intends to start with massive replacements in 2017 at the same time as it will begin a major fibre network rollout to households in metropolitan areas. Sweden has its first second wave projects underway and will see growing activity over the coming years.

Among smart meter communication technologies, Berg Insight perceives a gradual shift from PLC towards wireless technologies and hybrid PLC/RF. Massive investments in the development of new technologies for the Internet of Things has generated a plethora of wireless networking standards optimised for low cost and ultra-low power consumption. These range from evolved 4G/5G cellular standards with improved indoor coverage and lower component costs to LPWA networks and RF mesh technologies for IP-based communication.