

Telefonica

The Smart Meter Revolution_

Towards a Smarter Future



m2m

Contents

- 01_ Introduction -
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- 02_ Market dissemination
- 03_ Installed base of electric
smart meters by 2020
- 04_ Global shipments
- 05_ A note of caution

Introduction

Machine to Machine (M2M) technology is set to fundamentally transform almost every aspect of business and society, supporting the shift to a more sustainable economy. Whether it's reducing crop failure or energy consumption, M2M technology will help the world to do more with less.

Next generation utility meters – or 'Smart Meters' – are a good example of the transformative potential of M2M technology. They will empower consumers by providing them with feedback on their energy usage, helping them to monitor, manage and - should they wish - reduce their energy consumption.

Smart meters will also help reduce or end estimated readings, and make it easier for consumers to change tariffs and switch between suppliers, increasing market competition. Consumers will be able to access their energy consumption and billing data online, and new methods of payment will be possible.

Smart meters also offer a range of benefits for utility companies, including a reduction in operating costs by reducing the need for manual meter reading; improved grid reliability from better outage detection; reduction of theft of service; and greater overall energy efficiency through peak demand reduction.

Telefónica was delighted to be selected by the UK Government to become a communications service provider for the UK Smart Meter Implementation Programme. Telefónica will provide the communications infrastructure to connect smart meters in the central and southern regions of Great Britain. The initiative is the world's most ambitious smart meter roll-out

The Smart Meter Revolution

01 - Introduction



and will see over 53 million smart meters installed across the UK by 2020. It is expected to deliver a net benefit to the UK of £6.7bn through reduced energy consumption and more efficient management and deployment of energy across the country.

Of course, the UK is just one of a number of countries that are embracing smart meters. We have partnered with Navigant Research to explore current and future trends in global deployment of smart electric meters. Here are some of the highlights...

Market dissemination

Smart meters represent a transformative technology for the utility industry and its customers. These technologically advanced meters enable greater insight into usage of energy and, in the case of smart electric meters, provide enhanced control of the electrical grid.

However, utilities that have yet to deploy smart meters and the related infrastructure have many options to consider. The challenges will come in deciding which communications technology is most appropriate, how quickly to deploy and what financing method makes the most business sense.

The Western European and Asia Pacific markets represent healthy growth potential, both in installation of new smart electric meters and upgrades to existing smart meter technologies. Growth in Europe is due largely to the EU smart metering policy which calls for 80% of households to have smart gas and electric meters installed by 2020. Driven primarily by China, the forecast penetration rate in Asia

Pacific will reach nearly 70% by 2022.

Meanwhile China will continue to see substantial growth due to the relative ease with which State Grid Corporation of China, the overwhelmingly dominant utility, can roll out waves of increasingly advanced meters. Similarly, in Japan the smart metering boom is just beginning, with tens of millions of devices expected to be installed during this decade, including the first large scale installation by Tokyo Electric Power Company (TEPCO) set to begin in 2014.

In North America, growth has levelled after legislative incentives drove an initial boom between 2009 and 2012, but smart meter

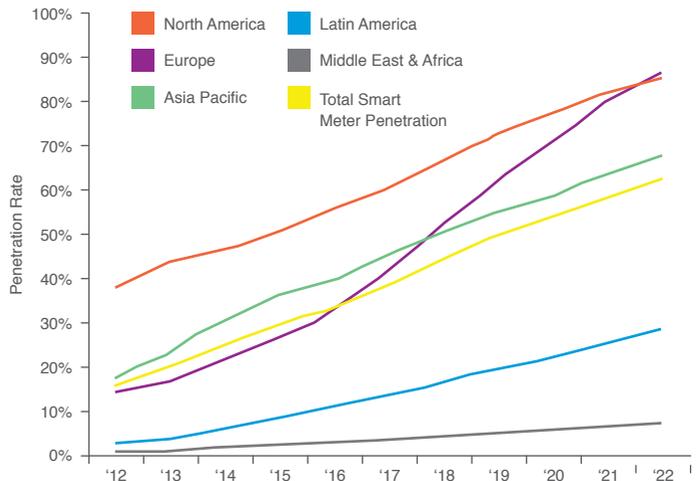
The Smart Meter Revolution

02 - Market dissemination

installations are expected to make steady progress over the next 10 years. Federal funding of smart meter projects has ended for the most part. When combined with a cautionary approach to future projects, this has led to both slower growth and increased challenges

for vendors and other stakeholders. Likewise, major Canadian utilities have completed their projects. Latin America, meanwhile, is set to display steady growth over the next decade, outstripping that of the Middle East and Africa.

Smart Meter Penetration Rate of All Electric Meters by Region, World Markets: 2012 - 2022



(Source: Navigant Research)

NB: Total UK smart meter installations (Electric and Gas) will be 53m by 2020.

Installed base of electric smart meters by 2020

The country-level installed base of electric smart meters is expected to be led by China, with more than 435 million electric devices, followed by the United States.

Japan and France are on the verge of deploying the first significant wave of new meters, with projects expected to last through most of this decade. Italy's dominant utility Enel completed its deployment of smart meters in 2005, and upgrades of those devices are not expected for several more years.

Germany could see nearly 33 million smart electric meters by 2020, and Brazil is expected to lead the way in Latin America with almost 30 million smart electric meters by 2020. The United Kingdom and Spain are on course to meet the EU smart metering guidelines. Rounding out the top 10 markets, South Korea is expected to continue deploying meters during the forecast.

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03 - Installed base



Top Smart Electric Meter Markets, Installed Base, World Markets: 2020

Country	Units	Installed at Dec. 31, 2020
China	(Meters)	437,847,228
United States	(Meters)	132,042,022
Japan	(Meters)	58,750,000
France	(Meters)	35,300,000
Italy	(Meters)	33,600,000
Germany	(Meters)	32,900,000
Brazil	(Meters)	29,576,569
United Kingdom	(Meters)	26,920,000
Spain	(Meters)	21,800,000
South Korea	(Meters)	21,328,625
Total	(Meters)	830,064, 443

(Source: Navigant Research)

Global shipments

The global smart meter market is anything but static, and its dynamic nature means everyone from utilities to technology vendors needs to be as aware of shipments as they are of penetration and installations.

Patterns in regions globally show a surge of growth upon initial adoption of smart electric meters followed by a decline as generally smaller deployments remain.

This contrasts with the traditional meter market, which has been driven by natural replacement rates and slow year-over-year installed base growth. As out-of-cycle shipments of smart meters approach the expected long-term installed base penetration rate in a given region, the annual shipment rate in that region will drop significantly.

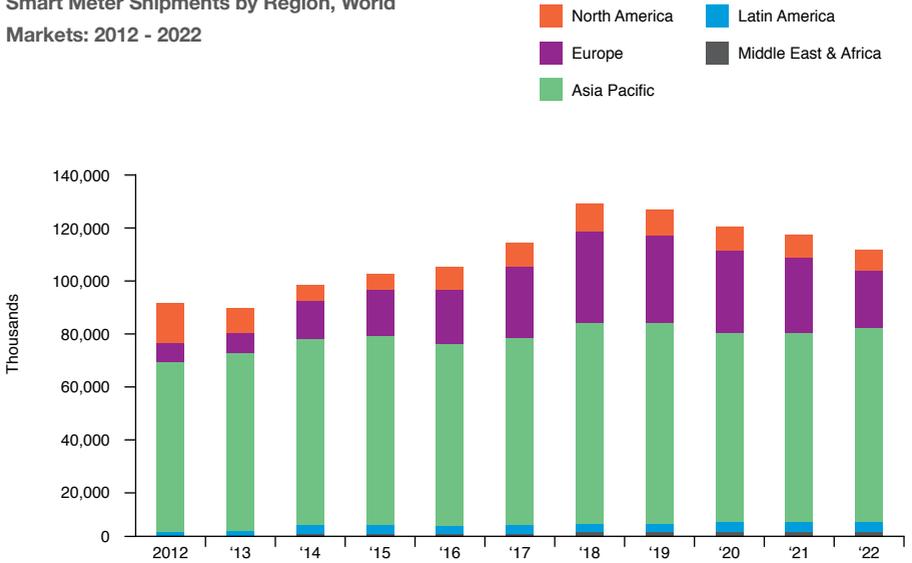
While the overall revenue opportunity in smart electric metering is substantial, amounting to nearly \$57 billion over the coming years, Navigant Research forecasts annual revenue will grow only fractionally, from \$5.2 billion in 2012 to nearly \$5.3 billion in 2022, with a compound annual growth rate (CAGR) of 0.1%.

The peak revenue year is expected to come in 2018 when the total will be \$7.4 billion. Annual revenue will decline after that as both average selling prices per meter and unit volumes taper off at the end of the forecast.

The Smart Meter Revolution

05 - A note of caution

Smart Meter Shipments by Region, World Markets: 2012 - 2022



(Source: Navigant Research)

A note of caution

Despite the promise of empowering people through enhanced consumption data, it must be acknowledged that some consumers remain sceptical and are resisting the idea of smart metering. Though relatively few in number, vocal consumer groups in Europe and North America cite concerns about meter accuracy, data security, and health. Though not a large deterrent to smart

meter deployments, utilities and other market stakeholders need to recognise this opposition and have alternative plans in place, such as opt-out programmes, as a way to mitigate the impact.

For more information about this research, or to download a copy of the whitepaper, please visit the Telefónica Digital Hub - www.blog.digital.telefonica.com

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