



The butterfly effect

How smart technology is set
to completely transform utilities



An era of unprecedented change

Utility companies operate in one of the most complex, high profile, regulated and politically charged sectors. But even by these standards, the next decade is set to be the most testing yet. New legislation, market reforms and emerging technologies are set to dramatically alter the landscape and impact existing business models. And that's on top of ongoing challenges such as employee demographics, ageing infrastructures, regulatory requirements and growing consumer expectations.

The industry is clearly in transition – but it's a far more substantial transition than most industry players are ready to acknowledge.

Strategic moves need to be more fundamental than simply adapting the business and operating model of today.

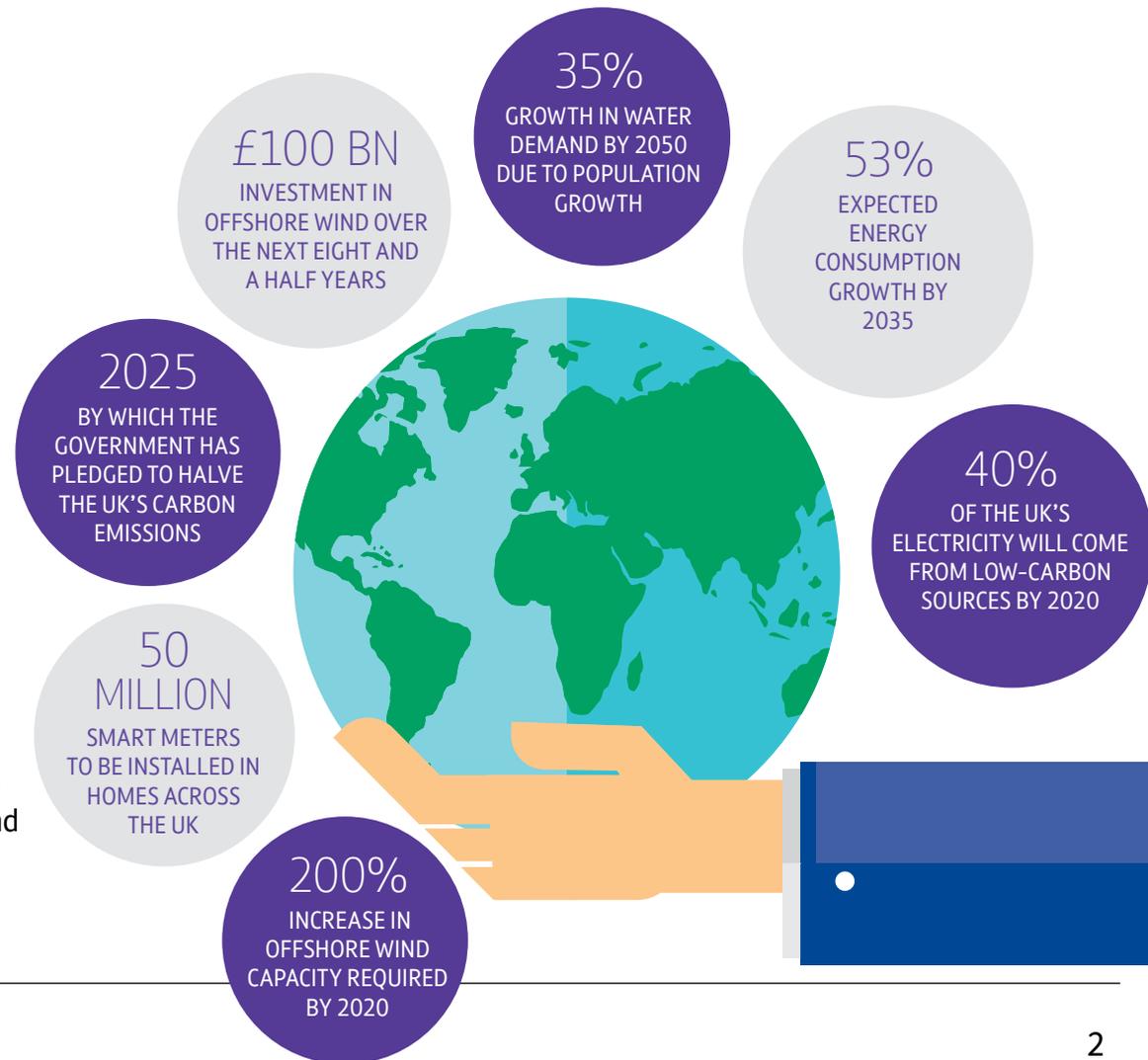
In amongst all this change there are enormous opportunities. Utilities will be one of the fastest developing sectors in the next 20 years.

Success is never guaranteed, but it seems likely that the most connected and engaged companies will be the ones to dominate the future utilities landscape.

Utility businesses are already restructuring their current IT infrastructure, systems, and tools to accommodate emerging needs such as customer prepay, demand response, self-service analytics, near-real-time operational control and distributed generation. But this is just the tip of the iceberg.

The spread of smart technology, the establishment of smart, connected cities and the internet of things will fundamentally change the role of utilities and the way they operate.

The choice now is whether to shape that change, follow it, or be left behind.



Where are we heading?

Environmental changes

More people – in bigger cities

The world's urban population has grown from 746 million in 1950 to 3.9 billion in 2014. And the UN predicts that another 2.5 billion people will be added to urban populations by 2050. There will be massive pressure on water and energy suppliers to meet these new demands – and traditional ways of working won't manage it.

Declining natural resources

Sourcing, extracting and supplying water and energy to meet this increased demand is a mammoth challenge. Energy resources are declining – and there's increasing pressure to find sustainable, renewable options.

Technological changes

Smart technology

Smartphones give people instant access to almost infinite sources of information. And this is just the beginning. Internet-enabled gadgets such as TVs, games consoles and radios are being joined by household appliances, heating systems and wearable tech. Connected things do more – so there is a drive to connect more things.

Big data

All of these smart enabled devices and all of this connectivity will generate a huge amount of data – and data is set to become an organisation's most valuable resource. It will highlight what is working,

what needs improving and what has to change. The key challenge is to securely collect, store and use data to make intelligent, high quality business decisions.

Smart cities

The Smart Cities Council describes a smart city as one that “gathers data from smart devices and sensors embedded in its roadways, power grids, buildings and other assets”. This data is shared over smart communications systems and is used by smart software to create valuable information and digitally enhanced services. The energy infrastructure is the most important asset of any city. Everything else depends on it.

“ By 2020 the number of connected entities, people, items, smart devices will be up to 50 billion. ” Cisco



Where are we heading?

Marketplace changes

Increased competition

With the market opening up and new players – such as Hive and Nest – taking an interest, making things easy for customers and putting them at the heart of the business is essential. In large, complex organisations this is a massive challenge. Often the way the business is organised actively discourages putting the customer first because an excellent customer experience depends upon everyone in the organisation having a clear line of sight to the customer. Meeting the needs of a new generation of customers will mean working smarter and more efficiently; it will mean reducing costs and being more agile.

And greater regulation

Energy and water companies are in the midst of a regulatory revolution, with a number of key initiatives set to change the landscape dramatically. Understandably, this is where much of the short-term focus is.

RIIO

(Revenue = Incentives + Innovation + Outputs)

Distribution companies will have to secure significant investment to maintain a reliable and secure network, while dealing with the changes in demand and generation.

Electricity Market Reform

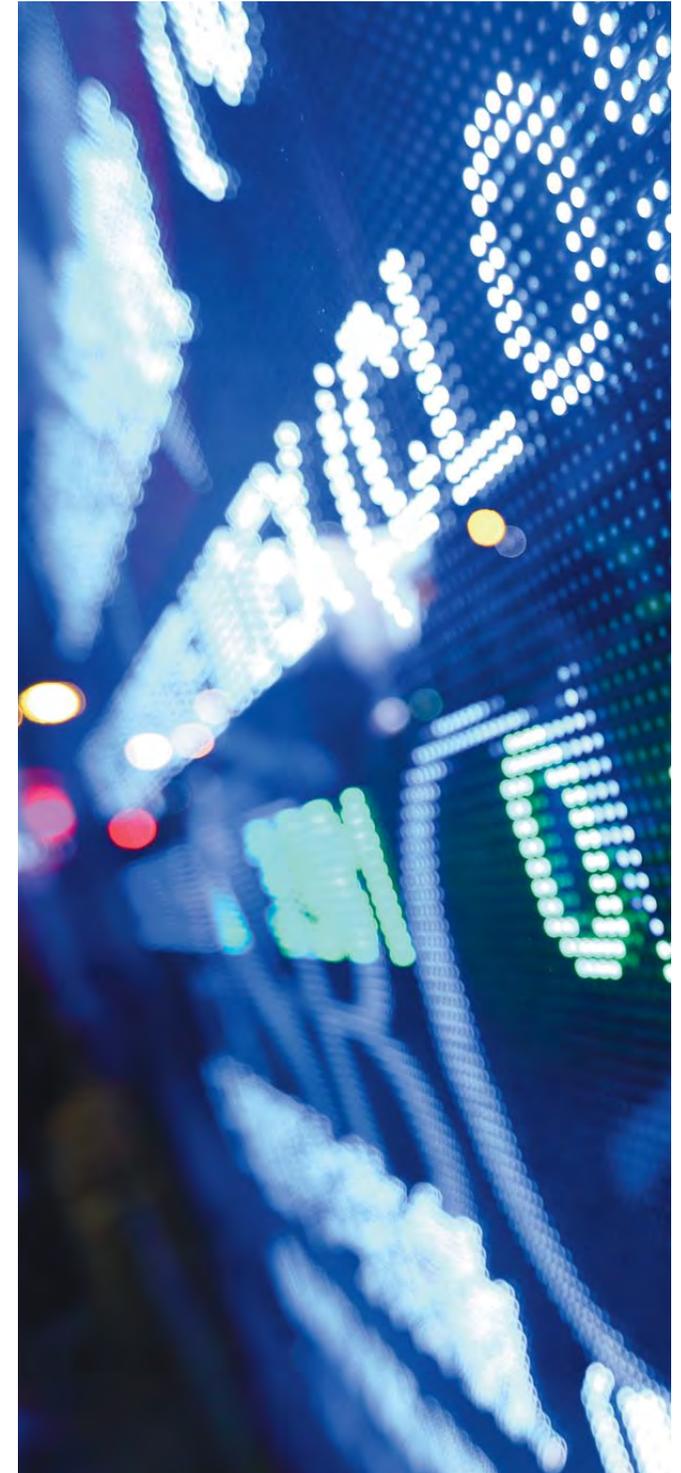
Aims to decarbonise electricity generation, keep the lights on and minimise the cost of electricity to consumers.

Water Act 2014

Hopes to make the water industry more innovative and responsive to customers, and to make water supplies more resilient.

Asset Management Programme (AMP 6)

Price setting methodology starts in 2015, and wholesale and retail functions will need to be separated with the market opening up to competition fully by April 2017.



Connected utilities and smart cities

Looking further ahead, digital networks mean limitless possibilities for utilities, and their customers. Frost and Sullivan estimate a \$1.5 trillion market potential in smart cities leading up to 2020, with 26 global Smart Cities in place by 2025.

Water and energy providers are central to smart cities. Energy grids will have to cope with growing numbers

of businesses and consumers, new technologies and many different suppliers. They need to be designed “smart”, to address this enormous complexity, and so that power and data can flow in both directions.

As smart meters roll out, businesses and consumers are increasingly equipped to make more informed choices regarding their energy use. And smart technology

gives suppliers the opportunity to develop a more value adding relationship with customers.

If utilities are central to smart cities and the smart grid at its heart – then the communications infrastructure is the enabler underpinning it all.

It all comes back to connectivity.

Smart cities in focus

The benefits of smart street lighting

Street lighting accounts for about 15% of a city's electricity. If we get it right, every single street lamp will be connected to a central control unit. Then lamp failure can be addressed in real-time, street lights can be brightened as required to support safety, or dimmed down if there is no traffic on the road.

It is estimated that between 50 and 75% of energy and maintenance costs can be saved using smart lighting (based on LED lighting and intelligent lighting management).

The UK is leading the world in the adoption of ‘smart’ street lighting with 21% (1.5 million) of the UK's 7 million street lights already committed to being equipped with smart lighting CMS (central management system) technology.



The transformation needs to start now



Dramatic changes due to regulation, increased competition and continued digital disruption will all impact utilities. But among all the changes and challenges there are huge opportunities. To grasp them, you need to be able to meet growing customer expectations; and to access, assess and act on massive amounts of data. And to do that, you need a joined up communications platform underpinning the business.

Only by getting an agile platform in place now will you have the connectivity needed to meet future challenges – in the short, medium and long term. It's all about bringing disparate elements together, extending connectivity to isolated sites and remote workers and joining up your Operational Technology (OT) and IT systems.

The changes in themselves can be small – but the cumulative effect of getting different systems, processes and people talking to one another will be enormous.

The extended benefits of a connected business

Predict the future

Fibre can help pinpoint the site of an excavation to repair a leak or predict an equipment failure. Similarly, low-cost sensors on remote devices mean engineers don't need to be deployed to check equipment. All kinds of information can be gathered almost instantly, analysed and auctioned – before it affects the business.

See the big picture

Analytics tools that use artificial intelligence can make sense of huge amounts of data by identifying patterns and predicting how an incident might develop. Predictive analytics can also follow the information flow in the contact centre and identify problems in the process.

Keep cool in a crisis

Cloud services can help a contact centre manage unprecedented demand without going into meltdown. Engaging people on social media means you can manage expectations, push updates out and keep customers in the picture – so they don't need to call.

Bring the experts in

Remote cameras can be used for lots of things – such as putting the experts at major incidents, without the need to travel. Instead, experts using video calls can be networked with colleagues at the scene and gain up-to-date information on the issue and provide timely advice.

From connected utility to smart supply chain

The convergence between smart technology and utilities is creating a new ecosystem of services to support a better quality of life while reducing consumption.

And this in turn will affect the structure of utility supply chains. Under the traditional model there was little scope for consumer empowerment and engagement. The model of a smart grid and smart meter supply chain changes all that.

A connected, data driven, information-aware business will be able to:

- 1 Operate a diverse asset portfolio more efficiently by monitoring things to make sure everything is performing as well as it can
- 2 Use operational data to determine load constraints in the network, understand grid conditions, reduce damage, predict problems and be able to respond quickly
- 3 Communicate more effectively among colleagues and with partners and suppliers
- 4 Improve customer service and consumer engagement to become a trusted long-term supplier

Getting an agile future-proof network at the heart of the business is the first step that utilities need to take. And they need to be taking that step now. In fairness, most of the technology we're talking about already exists and



forward thinking water and energy companies are using automation and ICT to improve the way they work. But this is just the tip of the iceberg.

In today's changing world, innovation can make all the difference. Technology, when designed specifically to meet your needs, can unleash your creative potential to face the challenges you face head on. You can deliver an exceptional customer experience, while better orchestrating your business; bring together your remote sites, head office, and supply chain to work in harmony with one another; improve your people's productivity and give them the freedom to perform anywhere and serve your customers better.

About BT and Cisco

Meeting the challenges of the next few years, and beyond, will require an innovative approach to technology. It's not just about getting the right technology in place, it's about the art of connecting – exploiting the potential of new digital trends to deliver stunning business outcomes.

BT and Cisco are at the forefront of this innovation. We've been working together for 25 years. And right now, we're helping make the vision of Smart Cities and connected utilities a reality.

BT is one of the largest technology investors in the UK, innovating with customers, partners and universities. The company has spent more than £4bn on R&D over the last five years and shares the fruits of that investment with its customers.

Similarly, Cisco is leading the way in the development of the internet of everything, using cutting-edge technology to transform the way we live, work and play – and to drive untapped potential value for businesses.

As well as our significant joint investment in research and development, we're innovating in cloud, collaboration and network infrastructure – and defining new solutions such as Hybrid Cloud, Hosted Unified Communication Services, Network Functions Virtualisation (NFV) and Software Defined Networks (SDN).

Together, we'll help you design the future with confidence.

Come and see us

Visit our innovation showcase at Adastral Park or come and see us at BT Centre. Alternatively you can view our virtual showcase online:

www.globalservices.bt.com/virtualshowcase



For more information on smart, connected solutions for water and energy providers, contact your account manager or visit BT.com/utilities



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