

# The future energy landscape

A de-centralised model

A more **flexible and agile**  
energy system

The traditional model for electricity generation is set to change. In the future, everyone will have the potential to be both a producer and a consumer. Wind turbines, solar panels, electric vehicles and other low carbon technology will be within the reach of consumers.

Houses will be fully connected and enabled for smart appliances, smart meters, storage and control. Advances in electricity storage also mean that batteries can be connected to the network and charge during the day and the stored electricity can be used in the evening. This allows households to avoid paying peak demand electricity prices. We may also see the increase of peer-to-peer electricity trading, which means generators and consumers can trade directly with each other.

We expect soon to see the decline of the linear, top-down relationship between generators, network operators and customers and the rise of a de-centralised, multi-faceted community of power. Through our innovation programme we are taking an active role in developing new approaches to managing capacity and flows within the network. New intelligent storage facilities, smart management of demand side response and other smart grid technologies are high on our innovation agenda. In cooperation with a range of partners we are working to enable low carbon generators to enter the energy market. As energy exchanges become more localised, distribution network operators like us are likely to evolve into distribution system operators to ensure the system is properly coordinated to deliver secure and affordable electricity supply.

## Connected technology and microgeneration

Many homes will be equipped with smart appliances such as smart heating and lighting systems. They can be connected to smart electric meters and save energy by shifting electricity usage to off-peak hours. Some homes will also have microgeneration and micro storage. The combination of domestic storage with self-generation allows customers to store surplus power, and then use it at peak times in order to reduce bills. We are also seeing growth in electric vehicles, which will lead to increased peak demand on the network. Finally, peer-to-peer trading, which allows consumers to trade with each other and share energy at a local level, will play a bigger role in the industry.

## Distributed generation

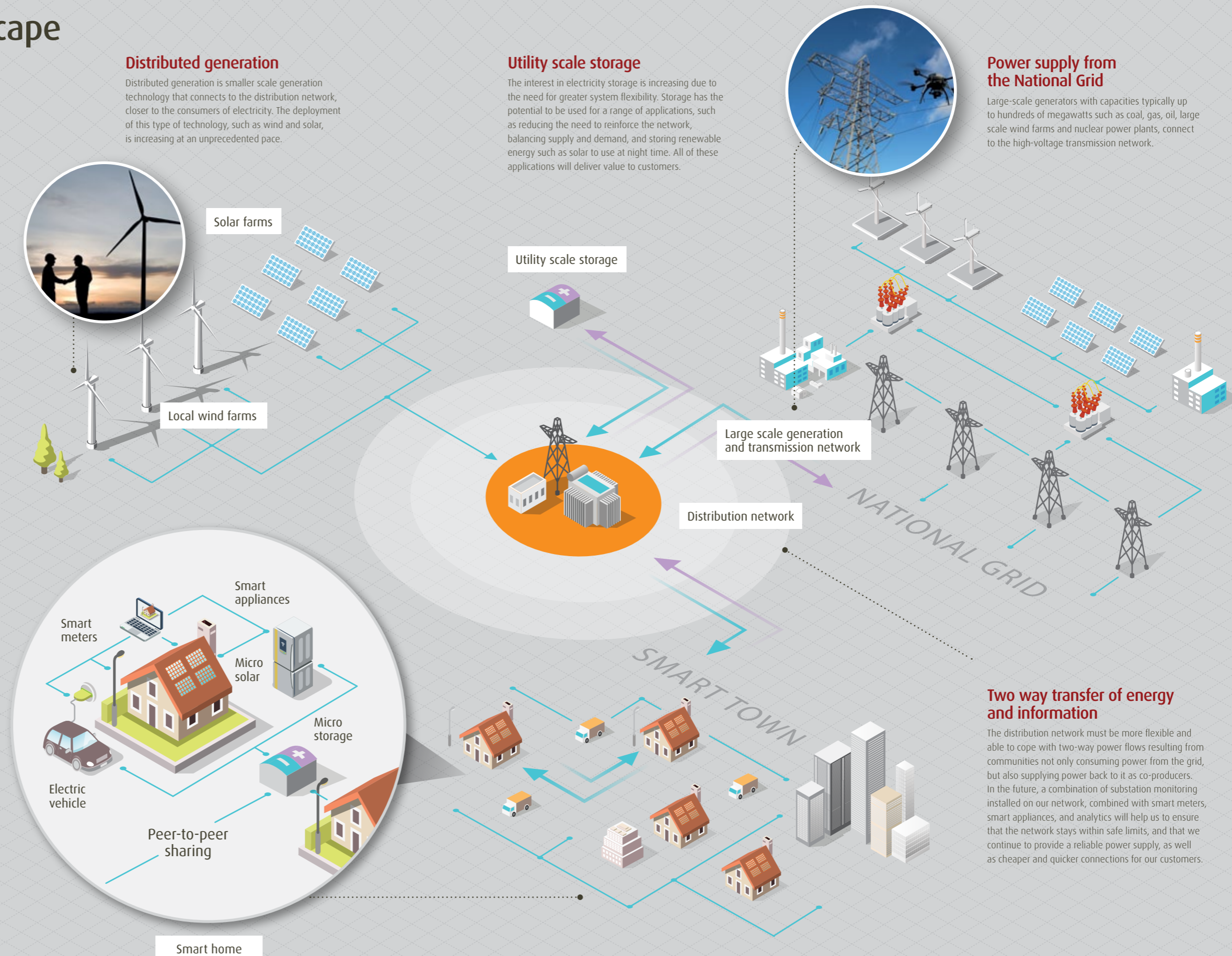
Distributed generation is smaller scale generation technology that connects to the distribution network, closer to the consumers of electricity. The deployment of this type of technology, such as wind and solar, is increasing at an unprecedented pace.

## Utility scale storage

The interest in electricity storage is increasing due to the need for greater system flexibility. Storage has the potential to be used for a range of applications, such as reducing the need to reinforce the network, balancing supply and demand, and storing renewable energy such as solar to use at night time. All of these applications will deliver value to customers.

## Power supply from the National Grid

Large-scale generators with capacities typically up to hundreds of megawatts such as coal, gas, oil, large scale wind farms and nuclear power plants, connect to the high-voltage transmission network.



## Two way transfer of energy and information

The distribution network must be more flexible and able to cope with two-way power flows resulting from communities not only consuming power from the grid, but also supplying power back to it as co-producers. In the future, a combination of substation monitoring installed on our network, combined with smart meters, smart appliances, and analytics will help us to ensure that the network stays within safe limits, and that we continue to provide a reliable power supply, as well as cheaper and quicker connections for our customers.