

# Reconnecting people to power: A new future for energy

By Rebecca Willis

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Thomas J. Watson, the founder of IBM, was an immensely talented man. But prediction was not his strongest suit. “I think there is a world market for maybe five computers”, he remarked in 1943. As we all know, things didn’t quite turn out that way. Perhaps our energy future, too, will be a little different from the received wisdom touted by DTI minister Alan Johnson, in his review of energy policy.

Sixty years on from Watson’s utterance, the world of IT has changed beyond recognition, with computers embedded in every aspect of our lives. The real leap forward came with the web, and with broadband technology, which enabled a radically different role for the individual. Sites like eBay, Wikipedia and Google are the standard-bearers of what Silicon Valley commentators call ‘Web 2.0’. Web 2.0 is built by and for its users, and is nothing without them. eBay’s job is simply to provide the architecture for millions of buyers to interact with millions of sellers. Wikipedia, the online encyclopaedia, allows any user to create or edit an entry, with an ethos of trust prevailing. In Web 2.0, computing power, investment, intelligence and responsibility are distributed amongst millions of users, linking together to provide strength in numbers.

There are clear lessons here for the way we generate and distribute energy. Rooftop wind turbines have become the must-have accessory for David Cameron and other politicians keen to display their green credentials. But government has yet to acknowledge the immense potential of an energy system based on small-scale, distributed power – what could be called Grid 2.0.

It is definitely time for a change. Our current energy system, based around the National Grid for electricity, and national infrastructure for gas distribution, is distant from its users, and starved of investment. It is also surprisingly inefficient. Around 40 per cent of the coal or gas used is converted into electricity; the rest is wasted heat. Yet more energy is lost as power moves through the transmission and distribution system, and in homes and offices because they are poorly insulated and not designed with energy in mind. Nor are there any signs that the system will cope any better in the future. Investment in energy infrastructure is at an all-time low and the amount of expenditure on research and development being undertaken by UK utilities has fallen significantly over the past 15 years. No wonder that no-one wants to be energy minister: there have been seven incumbents in eight years. Ageing infrastructure, unreliable gas supplies, spiralling consumption and a changing climate: it’s time to think again.

### **Glimpses of Grid 2.0**

Like Web 2.0, a new approach to energy would involve householders in the generation of heat and power, not just its use. In Grid 2.0, every building would become a power station, with small-scale wind and solar power, and boilers that generate electricity as well as heat. Linked to other users through a reconfigured National Grid, people would be able to sell power to others when they were generating too much, and buy when they wanted to use more – a sort of energy eBay.

Instead of investing £20 billion in a small number of vastly expensive nuclear power stations, investment would happen everywhere – on a much smaller scale. Rather than passively receiving power from distant gas and nuclear stations, people would get help from government to do it themselves. Home computers are now ubiquitous: why not home generation, too? Spreading investment like this, across a range of options, would make the system more resilient and secure, preventing the instabilities which currently threaten our centralised grid. And, with the use of renewable and energy-efficient technologies, carbon emissions would fall, too.

Grid 2.0 is not just a pipe dream. All over the UK, glimpses of just such a future are emerging. Urban Splash, the housing developers known for their cutting-edge architecture, are pushing the boundaries for energy, too. Their new Budenburg Haus development in Altrincham has its own internal electricity grid and heat network. Much of the energy needed is generated on-site, through ultra-efficient combined-heat-and-power boilers. Hot water, heating and electricity are sold on to each apartment, with the system constantly fine-tuned according to demand. Each resident can check their energy usage and costs on the cable TV system, even comparing costs with the neighbours, and providing a clear incentive to reduce consumption.

With its efficiency savings, emphasis on information and involvement of energy users, Budenburg Haus is a significant departure from mainstream energy thinking. As is the Moel Moelogan wind farm – a co-operative venture set up three farming families in Wales. Faced with a decline in agricultural incomes, they took a fresh look at their land and realised that its most productive resource could be the wind that blows over it. The wind farm that they established provides much-needed income for the community, and some of the profits are ploughed back into energy efficiency savings for villagers. Then there is the Kirklees council estate powered by solar panels, whose residents have even more reason than usual to talk about the weather: the brighter the sky, the lower the electricity bills. Or the school, Spen Valley Sports College, whose school council raised the money to install their own wind turbine. It now generates a proportion of the school's electricity needs, as well as bringing the curriculum alive – it is used for teaching science, geography and maths, and has made the school and community much more aware of the power they use, as Gary Deighton, a teacher, says: "If I see an article about climate change in the papers now, I read it, whereas before I would have just gone straight to the sport."

These are isolated examples – but there is plenty of evidence to suggest that a Grid 2.0 approach to energy could become mainstream, supplying us with a significant proportion of the power that we need. A report for the DTI shows that small-scale solutions could provide up to 40 per cent of the UK's electricity needs, and Oxford University's Environmental Change Institute predicts that by 2050, buildings could be self-sufficient in energy – with significant carbon savings.

### **Why isn't it happening?**

If the case for Grid 2.0 is so compelling, there is an obvious question: Why isn't it happening yet? If small-scale distributed energy is cheaper, more efficient, causes less environmental damage and allows people to be more involved in tackling climate change, then why is the energy market not allowing the new system to emerge? To answer this, we need to delve into the murky world of energy politics.

Whether on issues of healthcare, education or early years, politicians are waking up to the need to put people back into policies. The Labour government has realised that it cannot succeed solely through technocratic reform, the introduction of markets, and imposition of managerial targets. There is a growing understanding that public services are 'co-produced' by state and citizen. Yet when it comes to the politics of energy, this analysis is nowhere to be seen.

Sure Start, Labour's flagship early years initiative, is unashamedly interventionist. It brings together education, childcare, health and family support, intervening in the lives and decisions of individual families in order to improve the life chances of young children. It aims to engage individuals and government in a joint endeavour. In health, too, attention has shifted from acute care in hospitals to primary care and public health, again with the emphasis on ways to involve people and encourage them to take responsibility for their health. Similar stories can be told for other policy areas – home-school agreements in education and community involvement in tackling crime and disorder. The citizen, as patient, parent or neighbour, is seen as an essential piece of the jigsaw. A recent Strategy Unit paper, 'Personal responsibility and changing behaviour', provides some philosophical underpinning for these approaches, and concludes that "behaviourally-based interventions can be significantly more cost-effective than traditional service delivery".

But for energy, we are stuck in the mindset that energy is something done to people, not by people. The unforgettable 'Tell Sid...' advertisements of the 1980s, which heralded the privatisation of British Gas, may have opened energy markets up to competition – but in doing so, they fossilised a simplistic notion of the consumer. The energy regulator, Ofgem, sees protection of consumers as its first priority – and it protects consumers through guaranteeing them as cheap a supply of energy as possible. In the Ofgem

worldview, consumers are at the end of a chain that begins with the production and distribution of power – a one way flow from distant producer to passive consumer. It is ironic that the privatisation of British Gas marked the beginning of a new ‘shareholding democracy’, yet the system it created offers no way for people to play a part.

This could be changed. Although both the DTI and Ofgem maintain the fiction of ‘free, competitive markets’ for energy, the energy market is actually closely controlled, through government policy and regulation. At every stage, there are rules governing the way that gas and electricity is produced, distributed and sold. Whilst this is no bad thing, as energy is clearly a public good, it means that energy outcomes are highly dependent on government action. We get the energy system that we choose. The current model of regulation and control strongly favours the status quo of centralised generation for passive consumers. And for as long as it stays in place, we will not have a responsive, people-based energy system.

### **Getting to Grid 2.0**

A new approach to energy is possible. The technologies are there. It is affordable – particularly when compared to the huge investments needed under the current system over the years ahead. And it is necessary. Energy use and carbon emissions are on the rise: Climate change and energy insecurity are with us already.

But the system we need is very different to the one we have now. Getting to Grid 2.0 will require considerable changes in the way that we approach the generation, transmission and distribution of heat and power.

First, we need to be upfront about the role of government. Energy is a public good, and it is entirely legitimate for government to shape energy outcomes. Rhetoric of a ‘free market’ for energy should be avoided, and policy interventions should not be seen as ‘interfering’ in the workings of the market. Markets play a role, but within the framework set by government. This is not to advocate a return to central, nationalised control. On the contrary, the government will need to ensure that the energy market of the future is accessible to a much wider variety of players: individuals selling home-generated power; community-owned renewables companies; energy service providers and large commercial operators. To achieve this, there should be a review of Ofgem’s mandate. Rather than being focussed around narrow consumer protection issues, objectives should be broadened: reducing carbon; enabling investment; involving individuals. Any assessment of consumer interest should factor in environmental and social, as well as economic, interests.

Second, gas and electricity networks need to be restructured, to incentivise distributed generation and energy saving. There should be a long-term aim to transform the National Grid from a one-way provider of power to consumers, to a multi-way web linking distributed sources of energy supply and demand.

This way, the National Grid will become an enabler rather than a provider of power. This could be achieved through changing the incentive structures for companies that own and manage the Grid.

Third, energy must be seen as a community issue, with greater community ownership and an increased role for local and regional players. Community ownership of energy assets should be incentivised, and there should be a requirement for a proportion of community ownership in all new centralised large- or medium-scale investments. Public buildings, like schools and hospitals, should become beacons of sustainable energy, showcasing energy saving and energy generation. Local Authorities need a duty, and funding, to promote sustainable energy.

Finally, there is a need for a clear and straightforward way of encouraging individuals to play their part. If doing the right thing is difficult and expensive, it will not happen. Energy suppliers must, with government's help, begin an ambitious programme to engage households in energy and climate change issues, starting with a 'home energy audit' to make the environmental and economic case for energy saving. Ultimately, government should move toward personal carbon allowances, which give each individual the right to emit a certain amount of carbon. Allowances would be traded, so that those needing more could buy from those using less – meaning that the system would not penalise the poorest.

Energy policy faces a crossroads. Over the next ten years, most of the UK's nuclear capacity will be retired, and with it, eight per cent of our energy supply. Other centralised plant will soon close down, too. A huge amount of investment in the energy system is needed. We could invest in yet more centralised technologies, and the infrastructure to support them. Or we could use the opportunity of the retirement of old assets to invest instead in Grid 2.0. Today's energy innovators offer a glimpse of what is possible, but unless the regulations, infrastructure and markets are made to work in their favour, they will remain isolated examples. Government must seize the chance of the energy review to set a framework which puts people first.

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