

## The Local Dimension of Energy

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In this chapter, we postulate that some of the best opportunities for reducing energy demand and carbon emissions are through stronger involvement and leadership from local government. We show that local government can and do have a significant impact on both energy production and energy consumption and are important participants for the implementation of distributed generation (DG). We define "local energy" as a form of distributed generation that is distinct from both microgeneration and community energy in several important respects. Microgeneration usually occurs at the household level and therefore only produces very small amounts of energy. Community energy initiatives usually evolve through grass-roots community led organisations with typical energy generation capacities below 200kW and can include ground source heat pumps, biomass boilers and small CHP district heating schemes. On the other hand local energy systems tend to be driven by local or regional government, district network operators, existing energy companies (ESCO's) and tend to operate at the meso or intermediate scale. The additional power capacity of local energy systems provides the opportunity to supply electricity and heat to an entire town, city or region. Because they are locally led solutions they are able to leverage support from local organisations and businesses to best exploit local renewable resources and energy needs. Due to their larger size they are also able to benefit from economies of scale usually only afforded to large centralised plant.

In this paper, we discuss the development of local energy governance in a global political context and importantly, how locally driven energy solutions are making an important contribution to meeting energy and emissions targets. We follow this with a discussion on how to reconcile the conflicting benefits of an asymmetric centralised energy system with a more balanced and distributed energy system within the UK. We then look at the implementation of distributed energy solutions in Europe and discuss how localised energy systems have evolved in several European



states. Learning from both local and international experience, several bespoke energy strategies are identified that have significant potential to contribute to local energy demand reduction and lower CO<sub>2</sub> emissions in the UK. The strategies identified include, Combined Heat and Power with District Heating (CHP-DH), Energy from Waste Facilities (EfW) and demand side solutions using targeted financial instruments. For each of these technological strategies we show how ESCOs can be employed as an appropriate vehicle for delivering each of the above strategies.

It is shown through a simple statistical t-test that some of the most efficient countries in the world, as measured by the energy intensity of the economy, are countries that have decentralised political and energy systems. No where is this more pronounced than between the USA and Japan. The USA is considered to have one of the most centralised political and energy systems while Japan is thought to have one of the most decentralised. Interestingly, Japan has one of the lowest energy intensities in the world and the USA has one of the highest; the USA only producing half as much economic output for each unit of energy input when compared to Japan.

In conclusion the progress being made by successful local governments can be narrowed to three key factors. First, they have all recognised the co-benefits of a local energy strategy: a reduction in fuel poverty, increased employment, improved quality of life and mitigation of uncertain fuel supplies and prices. Secondly, successful councils have strong political leadership and employee support to implement the structural change to bring about change. Thirdly, leading councils have gained momentum by working in partnership with utilities, private companies, NGO's, DNO's and government departments to raise finance and garner support. With increasing uncertainty over international global climate change negotiations and similar challenges facing national energy targets, locally led solutions are set to be an increasingly important dimension for both the supply and demand of energy. It is therefore imperative that regulation reflects the benefits that local energy systems can deliver.

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