The pathway towards a net-zero emissions future

The existing pathway to net-zero adopts optimisation (e.g. smart grid, building energy efficiency, compact mixed-use development) and substitution (e.g. renewable energy, electric vehicles) strategies. A comprehensive regulatory and funding framework underpinning this pathway was put in place in 2008 (i.e. carbon budgets, zero-carbon homes code, green deal, renewables capital investment, feed-in tariff). These instruments built capacity within the energy and construction sectors to deliver low carbon options. Internationally, the UK led the way. However, this framework was subsequently dismantled. Since 2015, a lack of consistent policies, policy levers and funding from government has undermined progress.

More recently circular pathways (and circular cities) have begun to emerge as a way to tackle GHG emissions and enable society to adapt to climate change. The circular pathway integrates three actions - resource looping (e.g. grey-water and infrastructure reuse, land and material recycling, energy recovery); adaptation of urban form (e.g. flexible buildings/ spaces); and ecological regeneration (e.g. green-blue infrastructure) - to enable the city-region to co-evolve with societal needs, whilst reducing its ecological footprint and emissions. Potentially urban planning could provide an effective tool for delivery.

This pathway tackles consumption emissions (i.e. all emissions including imports) and produces economic, social and health benefits. A variety of challenges to delivery exist; the greatest of these is political. Of course, localisation of some resource flows (food, energy, goods, infrastructure) enabled by the circular approach will address consumption emissions. Localisation of activities (industry, farming, forestry) may produce land-use conflicts and has significant implications for spatial planning.

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