

Data centre impacts: literature review summary (March 2026)

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Literature search question:

- *What is the impact of data centres, from pre-construction and construction, through to operation and decommissioning, on local public health (including mental health) and community wellbeing, and local economies?*



Evidence review: scope and approach



- Was carried out to inform NW DsPH – current gap in guidance
- Rapid literature search via Knowledge Service (last ~5 years); **not a systematic review**
- UK and international evidence: peer-reviewed studies, grey literature, selected media*
- Focus on **direct and second-order impacts** of data centres
- Health, community wellbeing and economic impacts – also included environmental theme
- Papers with clear conflicts of interest treated cautiously; out of scope were those suggesting how impact might be minimised or efficiencies made



1) Environmental impacts: headline findings



- Yielded 50 citations, most popular; around 80% were relevant
- **Strong and consistent theme** of environmental harm associated with data centres
- Key impacts across the lifecycle (order of popularity):
 - High and rising **energy demand**
 - Significant **water use** (cooling and energy generation)
 - **GHG emissions** and overall carbon footprint
 - Critical minerals, e-waste and disposal
- AI growth (and duplication) is accelerating scale and intensity of data centre infrastructure, with impacts on resources



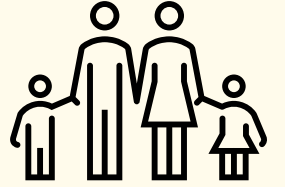
Environmental implications



- Poor access to grid infrastructure in local areas supporting data centres may increase reliance on fossil fuels - encouraging self-sufficiency
- Local impacts reported:
 - Water scarcity in stressed areas (e.g. Valdivia, 2025)
 - Air pollution and emissions (esp with increasing density)
(Bonfiglioli et al, 2025)
 - Risks from cooling chemicals (e.g. PFAS, F-gases) with limited monitoring*
- Efficiency gains often lead to **rebound effects and increased use of resources**, not absolute reduction – can't be relied on alone (Bozkurt, 2025)



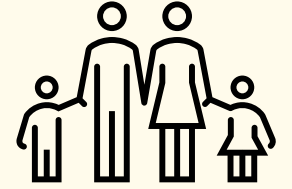
2) Health and community impacts: what is known



- Evidence base smaller (9 citations), but **emerging and concerning**
- Health impacts mainly mediated through environmental pathways:
 - Air pollution is the most direct (and clearly established pathway)
 - Water scarcity (dehydration, hygiene) and quality (contamination)
 - Interactions between AQ, heat, water stress – vulnerabilities
 - Noise from generators and cooling systems - stress
- Impacts are often **second-order, cumulative and long-term**



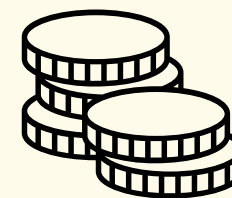
Distribution of impacts and inequalities



- Evidence points to **unequal exposure to these health impacts**:
 - Greater exposure in lower-income or marginalised communities, often where there is a history of industrial development (Lauro Accioly Filho, 2025)
 - Clustering of data centres and energy infrastructure amplifies risk (Han et al, 2024)
- Global supply chains (mining, manufacture, waste) reinforce wider and global inequalities – health and wealth
- Local communities may have limited power or information to influence decisions (Valdivia, 2025)



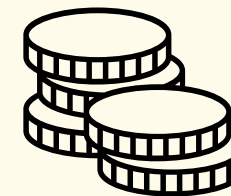
3) Economic impacts: headline findings



- 8 papers identified, 1 not relevant
- Very difficult to quantify – House of Commons (2025)
- Economic benefits frequently emphasised but **often overstated locally**
- Reported benefits focus on:
 - Short-term construction employment (Tomlinson & Lewis, 2025)
 - National-level economic and digital gains (Neff et al, 2025)
- Long-term operational jobs are relatively few; local uplift uncertain
- Several examples of HIAs/economic modelling available



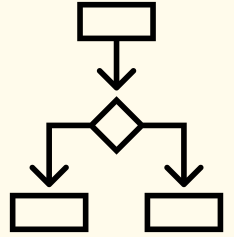
Economic impacts: health-relevant caveats



- Infrastructure for operation, cooling and service costs (energy, water, grid upgrades) often excluded (Al Kez & Foley, 2025)
- Costs likely transferred to households and public systems (Tomlinson & Lewis, 2025)
- Assumptions around skills availability, productivity and wellbeing rarely tested
- Net local economic benefit therefore unclear, complexities in calculation exist



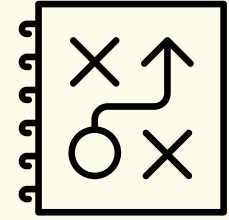
Evidence gaps for strategic health decision-making



- Limited long-term, place-based and cumulative impact studies from reliable sources
- Poor integration of **environmental, health and economic evidence**
- Weak transparency and **reporting of energy, water and emissions data**
- Current gaps limit the scope and effectiveness of **Health Impact Assessments**



Overall conclusions from available evidence



- Data centres bring **clear environmental costs** and **emerging health risks**
- Early signals suggest risks of **widening health and environmental inequalities**
- Local economic benefits are **uncertain** and often poorly evidenced
- Net local costs and benefits remain inadequately quantified

