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Schools built for the future

Why teachers, headteachers, school staff, and construction workers back school buildings upgrades

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Summary

Making sure the UK's school buildings are fit for the future and energy efficient is a win-win.

It's good for ensuring a safe climate future for our children, cutting approximately 1.2 million tonnes of CO2 equivalent emissions.

It's good for construction jobs, with the potential to create 42,000 quality green jobs over a ten-year programme.

It's good for reducing energy bills and costs for cash-strapped schools in the long term.

And it's good for ensuring comfortable, safe working conditions for school staff and students.

Funding for school building retrofits is woefully inadequate, with existing government schemes providing only one fortieth of the funding needed.

As trade unions that represent education workers and construction workers, we call on the UK government to fund a nationwide, local authority-led programme with £1.2 billion per year for 10 years, to ensure school buildings are energy efficient and safe.

1. Our schools need future-proofing

There are approximately 26 thousand government funded schools in Britain, with a total estimated internal floor area of 90 million square metres.[1] School buildings represent close to half of the building stock used by UK public services.[2]

In our estimate, school buildings annually consume 5.4 TWh electricity and 16.2 TWh natural gas. This causes emissions of 4.1 million tonnes CO2 equivalent, out of which nearly 3 million tonnes is emitted by burning gas.[3]

With the ongoing gas price crisis, in 2022 some schools have reported energy bills rising by tens of thousands of pounds,[4] putting pressure on already stretched school resources. The House of Commons Library estimates that schools' energy bills have risen 93% in the past year.[5]

At the same time, many school buildings are in dire need of repairs. The average school in England is in need of between £300 - £700 thousand in repairs, depending on the

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[1] England: Department for Education (2021), *Condition of School Buildings Survey: Key Findings* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/989912/Condition_of_School_Buildings_Survey_CDC1_-_key_findings_report.pdf. Wales and Scotland: estimates by the TUC based on Welsh Government (2021) *Schools' census results: April 2021* https://gov.wales/schools-census-results-april-2021-html and Scottish Government (2021) *School Estate Statistics 2021* https://www.gov.scot/publications/school-estate-statistics-2021/documents/

[2] Transition Economics estimate for Unison (2021), *Getting to net zero in UK public services*. https://www.unison.org.uk/content/uploads/2021/11/26609.pdf

[3] According to statistics compiled by the Department for Business, Energy and Industrial Strategy (BEIS) in 2018, education buildings in the UK had an average electricity intensity of approximately 60 kWh/ square metre and an average gas intensity of approximately 180 kWh/ square metre. BEIS (2021), *The Non-Domestic National Energy Efficiency Data-Framework*. CO2e conversion factors used from BEIS (2021), *Greenhouse gas reporting: conversion factors 2021*. https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2021

2020 (England and Wales). https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/936797/ND-NEED.pdf

[4] Dan Worth (2022) '£63K a month bills: soaring energy prices hit schools', *TES*. https://www.tes.com/magazine/news/general/ps63k-month-bills-soaring-energy-prices-hit-schools

[5] Lizzy Buchan (2022) 'Schools face massive energy bills' *Mirror*. https://www.mirror.co.uk/news/politics/schools-face-massive-energy-bills-26649328?utm_source=mirror_newsletter&utm_campaign=morning_politics_briefing_newsletter2&utm_medium=email

region. [6] Almost half of the schools estate was built before 1970. More than 80% of schools still have asbestos present in buildings: removal should be seen as an integral part of future-proofing buildings.[7]

The need for repairs (known as 'condition need') in school buildings is more acute in some regions than others. Schools in the East and West Midlands have the highest need for improvement, both in absolute terms per school and per square metre of floor space.[8]

Nearly half the schools in the UK are at risk of flooding: [9] assessment of flood risk may needs to be considered alongside or before repairs and upgrades.

Pupil referral units experience the most acute need for repairs (£170 per square metre on average), compared to primary schools at £157 per square metre and secondary schools at £139 per square metre.[10]

Building elements crucial to energy efficiency (heating and air conditioning, external walls, windows and doors, and roofs) account for nearly half (48%) of the total school buildings condition need.[11]

Energy efficiency improvements and repairs can cut 15-25% off a school's energy bill,[12] freeing up much needed resources as well as improving the environment for students and staff. Improving ventilation as part of a retrofit – for example through a Mechanical

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[6] Department for Education (2021), *Condition of School Buildings Survey: Key Findings* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/989912/Condition_of_School_Buildings_Survey_CDC1_-_key_findings_report.pdf

[7] Department for Education (2019), Asbestos Management Assurance Process (AMAP) report https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/906343/AMAP_Report_2019.pdf

[8] Department for Education (2021), *Condition of School Buildings Survey: Key Findings* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/989912/Condition_of_School_Buildings_Survey_CDC1_-_key_findings_report.pdf

[9] Department for Education (2022) *Sustainability and climate change: a strategy for the education and children's services systems* https://www.gov.uk/government/publications/sustainability-and-climate-change-strategy/sustainability-and-climate-change-a-strategy-for-the-education-and-childrens-services-systems#action-area-3-education-estate-and-digital-infrastructure

[10] Department for Education (2021), *Condition of School Buildings Survey: Key Findings* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/989912/Condition_of_School_Buildings_Survey_CDC1_-_key_findings_report.pdf

[11] TUC calculation based on Department for Education (2021), *Condition of School Buildings Survey: Key Findings* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/989912/Condition_of_School_Buildings_Survey_CDC1_-_key_findings_report.pdf

[12] Mayor of London (2022) *Retrofitting Schools.* https://www.london.gov.uk/what-we-do/environment/energy/energy-buildings/retrofit-accelerator-workplaces/refit-london-story-so-far

Ventilation with Heat Recovery (MVHR) system – will also reduce the risk of the spread of infectious diseases, if designed correctly.[13]

Case study: Dalmain Primary School, Lewisham

The primary school was originally built in the 1920s, with additions in the 1980s, 2007 and 2010. The school has adopted a Net Zero carbon by 2030 target, and has received funding from the Public Sector Decarbonisation Scheme (PSDS) to carry out the first steps. The school's 1980s block received repairs, insulation, draught-proofing, a mechanical ventilation system, and an air source heat pump. New trees were planted to help prevent overheating in classrooms. The school's delivery partner, Retrofit Action For Tomorrow (RAFT), held workshops for pupils and staff, involving them in exploring how to take climate action at school and at home.

Case study: Robert Ferguson Primary School, Carlisle

The school fitted 83 panels on the school roof in 2021, costing £38 thousand. The installation has offset the electricity price rise for the school. The school reports saving 23.75t in CO2e emissions in the first year since installation, and expects to see the installation pay back its cost within five years.

Headteacher Graham Frost told the local newspaper News & Star:[14]

"*Installing solar panels makes sense, and something we've wanted to do for years.*

"*It is about investing in our children's futures.*

"*After the initial outlay, the school will soon be seeing the financial benefits as well as taking the climate emergency seriously.*

"*When we teach children about climate change, they often find it difficult to understand why there isn't more being done.*

"*They have been asking me, as headteacher, 'what more can be done*'.

"*Making the school more sustainable is the obvious place to start... My hope's that government grants and subsidies might be made available to encourage and accelerate such projects.*"

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[13] Tom Lipinski, Darem Ahmad, Nicolas Serey, Hussam Jouhara (2020) 'Review of ventilation strategies to reduce the risk of disease transmission in high occupancy buildings', *International Journal of Thermofluids*, https://doi.org/10.1016/j.ijft.2020.100045. Sopeyin A, Hornsey E, Okwor T, et al 'Transmission risk of respiratory viruses in natural and mechanical ventilation environments: implications for SARS-CoV-2 transmission in Africa' *BMJ Global Health* 2020;5:e003522.

[14] Richard McAllister (2021) 'Carlisle headteacher speaks about importance of solar energy project at school' *News & Star* https://www.newsandstar.co.uk/news/19046095.carlisle-headteacher-speaks-importance-solar-energy-project-school/

2. Future-proofing school buildings is good for jobs

How much would it cost to retrofit the entirety of the UK's schools estate for energy efficiency?

Based on the costs demonstrated by the Public Sector Decarbonisation Scheme so far, we estimate that improvements at the required scale for schools will cost at least £13.5 billion.[15] This includes ensuring school buildings have a well-insulated building envelope, tackling leaks and droughts, providing adequate ventilation, installing energy-saving electrics and low-carbon heating systems such as heat pumps or connections to district heat networks. These improvements would help clear up to 48% of school buildings' condition need, as explained above.

Based on job multipliers derived from government statistics, a 10-year UK-wide schools retrofit programme would support 42,000 direct and indirect jobs.[16]

(In addition to this, campaign group Teach the Future has estimated that £9.8 billion should be budgeted to ensure that all new school buildings are built to a Net Zero carbon emissions standard.)

[15] For comparison, Teach The Future estimates the cost of retrofitting the schools estate at £13.8 billion.

[16] Job multiplier modelling conducted for the TUC by Transition Economics for TUC (2020) *Rebuilding after recession: a plan for jobs*. https://www.tuc.org.uk/research-analysis/reports/rebuilding-after-recession-plan-jobs

Table 1 presents our estimate of job creation in school retrofits broken down by direct construction job creation by region / country, plus indirect (supply chain) job creation across the UK.

Table 1. Job creation potential in school retrofits, by region and direct / indirect jobs (TUC estimates)

Area	School retrofits spend over 10 years	Job creation for 10 years
Yorkshire and the Humber	£1,076,102,746	1,737
East Midlands	£1,258,212,441	2,030
East of England	£1,411,350,139	2,278
London	£1,589,320,978	2,565
North East	£579,439,940	935
North West	£1,622,431,832	2,618
South East	£1,854,207,808	2,992
South West	£707,744,498	1,142
West Midlands	£1,730,042,106	2,792
Wales	£653,817,861	1,055
Scotland	£1,030,599,922	1,663
UK total (direct jobs)	**£13,513,270,270**	**21,807**
UK supply chain jobs		**20,056**

3. There is not enough funding to future-proof schools

Currently, schools are left to their own devices with the challenge of leaky, draughty, energy inefficient buildings.

The Department for Education's new Climate and Sustainability strategy, published in April 2022, fails to make significant commitments to improving school buildings. It sets out to support schools to measure their buildings' performance, assess how to replace heating systems, and support schools to apply for existing funding. The strategy commits to building only four new ultra-low emission schools and one such college.[17] No additional funding streams are included.

This is a fundamental failure, as the existing support available is inadequate to the climate challenge.

The Public Sector Decarbonisation Scheme

The Public Sector Decarbonisation Scheme (PSDS) provides central government grants for energy efficiency projects. Under this scheme, schools around England, from Gateshead to Devon, received funding to install heating upgrades, solar panels, energy-efficient lighting, or insulation. We analysed government data published on the recipients of PSDS funding so far.

Schools received funding in two distinct ways: by applying directly, or through a project coordinated and submitted by a local authority.

Projects directly managed by schools represent over a fifth of all PSDS projects (108 out of 511 projects), showing a huge appetite on the part of schools to improve energy efficiency. But these projects represented only 6% of the scheme's value, or £106 million. That is, projects applied for by individual schools or academy trusts are on average much smaller than other PSDS funded projects.

Local authority projects present a different picture. PSDS has funded 49 local authority projects that include improvements to schools (just under 10% of all projects). We estimate that these projects' value to schools is £229.5 million (or 21% of the entire PSDS scheme value).

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[17] Department for Education (2022) *Sustainability and climate change: a strategy for the education and children's services systems*
https://www.gov.uk/government/publications/sustainability-and-climate-change-strategy/sustainability-and-climate-change-a-strategy-for-the-education-and-childrens-services-systems#action-area-3-education-estate-and-digital-infrastructure

Schools receiving upgrades as part of a larger project (mostly, local authority coordinated ones) will be able to use economies of scale, while the administrative burden of project management and reporting back on government funding is reduced.

Altogether school retrofits through the PSDS are worth £335 million, over a fifth of the scheme's total value. In our estimate, this funding should have supported approximately six thousand construction and supply chain jobs over the one and a half years of the programme so far. But this funding is less than one fortieth of what is needed to future proof our schools buildings.

Government financing schemes

Other than central government funding, loans have also been used to support schools carrying out retrofits.

- Government-backed loan provider Salix Finance used to provide interest-free loans to schools for energy efficiency measures, reaching upwards of 500 schools a year . This scheme generated approximately £75 million in lifetime savings for schools in the four years it was active.[18] The scale of savings per project is limited: in the region of £40,000 in lifetime savings (i.e. savings over the course of the lifetime of a piece of equipment or construction upgrade, likely to be over a decade). Judging by the small scale of projects, schools only use such funding for smaller, 'low hanging fruit' projects, rather than whole-building retrofits.
- The Mayor of London provides a Retrofit Accelerator scheme where schools sign up to receive advice and access to tailor-made interest-free loans. To participate, schools must form a cluster of eight within a London borough, as this is judged to be the minimum number for generating economies of scale. [19]

Schools whose buildings are financed under a Private Finance Initiative (PFI) experience additional barriers to improving their buildings. PFI contracts tie public sector bodies like schools into procuring services – including maintenance – from particular providers, which has led to inflated costs in some cases and reduced flexibility. [20]

The School Retrofit Funding Gap

[18] Department for Education (2022) *Schools Commercial: Performance of Initiatives* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1048394/Schools_Commercial_Performance_of_Initiatives_January_2022.pdf

[19] Mayor of London (2022) *Retrofitting Schools.* https://www.london.gov.uk/what-we-do/environment/energy/energy-buildings/retrofit-accelerator-workplaces/refit-london-story-so-far

[20] National Audit Office (2018) *PFI and PF2* https://schoolsweek.co.uk/wp-content/uploads/2018/01/NAO-PFI-AND-PFI-2-2018.pdf

Our analysis shows that at least £13.5 billion of investment is needed to retrofit our school buildings. The support provided via the Public Sector Decarbonisation Scheme to date only amounts to £372 million – less than 3% of what is needed.

Phases 1, 2 and 3a of the government's PSDS totalled £1.63 billion, covering 3 years from 2020-2022. Going forward, Phase 3b of the PSDS has been allocated £0.87 billion over 3 years from 2022-2025.

If government continues to fund public sector decarbonisation at this scale for the rest of the decade going forward, and if school retrofits continue to make up the same proportion of grants within this scheme, then we can project total funding allocated for schools retrofits in the next decade as £1.1 billion.

To reach every school with a meaningful retrofits programme, government must allocate at least £12 billion additional funding over the decade to 2030 (see Table 2 below).

Table 2. School retrofits funding through PSDS and the school retrofits funding gap

	Total PSDS funding	School retrofits funding
Phase 1 (2021-2022)	£999,998,297	£288,719,836
Phase 2 (2022)	£74,644,085	£6,787,451
Phase 3a (2022)	£553,271,773	£77,129,972
Phase 3b (2022-2025)	£871,728,227	£199,542,719
Total allocated	**£2,499,642,382**	**£572,179,978**
School retrofits funding needed		£13,513,270,270
School retrofits funding gap		*£12,941,090,292*

4. Local Authorities can future-proof schools

Few schools have the capacity to take on climate improvement works to their buildings. We have also seen that local authorities have successfully made use of economies of scale to retrofit clusters of schools.

What if instead of relying entirely on the interest and resourcefulness of individual headteachers or other key staff, retrofits were provided as a service coordinated via local authorities?

There is evidence that construction services delivered in-house by councils can bring down costs and improve the quality of service.[21]

Directly employed labour is best for the quality, including stability, of jobs for construction workers. Direct labour also provides the opportunity for organisations to build up expertise in specialised construction skills, which is particularly important in building retrofits, where coordination skills and energy literacy are required across construction trades. (See case study below.)

But construction programmes always involve work across a supply chain. To ensure the quality of jobs across the supply chain, public authorities can use procurement mechanisms – such as a Code of Practice developed by GMB union – that build in quality of work and skills, as well as good industrial relations, into the process.

Case study: Glasgow City Building

Glasgow City Building is a social enterprise initiated and owned by Glasgow City Council. Glasgow City Building

- Trains most of its staff directly as apprentices, through its own training centre that offers 60 apprenticeships a year, out of whom 80% stay on to work for City Building.
- Trains all trades apprentices in accredited modules on energy efficiency, including energy literacy as relevant.
- Has great relationships with its three recognised trade unions and near 100% trade union coverage of staff, with trade union representatives actively involved with management.
- Bids for commercial tenders outside of the public sector and as a result returns a profit from commercial operations to the City Council of £5-6 million a year.[22]

[21] https://www.insidehousing.co.uk/insight/insight/return-of-the-dlo-34289

[22] Linda Clarke and Melahat Sahin-Dikmen (2018) 'City Building (Glasgow): an inspirational model of low energy social housing and public building

Case study: Direct Labour at Kirklees Council

Kirklees Council used a Direct Labour Organisation which tendered for maintenance work on council buildings and social homes. Former Unite shop steward Terry Cunliffe reports that working for the Direct Labour Organisation was seen as much more secure than elsewhere in the construction industry – "a job for life" – with a permanent contract and better guaranteed pay than elsewhere, alongside a performance-based bonus scheme that encouraged productivity. The organisation's good relationship with its trade union ensured high standards on safety.[23]

production.' *Adapting Canadian Work and Workplaces to Respond to Climate Change: Canada in International Perspective (ACW).* https://adaptingcanadianwork.ca/wp-content/uploads/2019/01/106_ClarkeLinda_City-Building-Glasgow.pdf

[23] Andy Pearson (2021) 'Terry Cunliffe - Working for A Direct Labour Organisation' *Unite Oral History Project* https://anchor.fm/uniteoralhistory/episodes/Terry-Cunliffe---Working-for-A-Direct-Labour-Organisation-e144bb6

5. A Call to Action

We call on the UK government to resource a nationwide school buildings retrofit programme with at least £12 billion in funding over ten years, to create 42,000 good construction jobs and ensure all our children are learning in school buildings fit for the future.

What should a schools retrofit programme look like?

It should

- Be delivered by Local Authorities, to maximise economies of scale.
- Engage school staff and students in the design of individual retrofit projects.
- Use the opportunity to remove asbestos from buildings.
- Maximise the use of directly-employed labour in construction, to ensure the scheme provides good jobs for construction workers, and to secure the skills needed for quality retrofits.
- Employ a Good Jobs Charter for procurement standards, to ensure good employment across the supply chain.