

UK Government Levelling Up White Paper: policy briefing and analysis February 2022

The Levelling Up White Paper¹ published on 2 February 2022 is aimed at addressing the inequity across the UK that affects local opportunities, education outcomes, economic performance and infrastructures. To this end, the White Paper sets out investment to spread opportunity across the UK.

Levelling Up and physics

The regional inequity seen in society is reflected in physics. In some regions, there are low numbers studying physics due to issues such as poor access to specialist physics teachers, or low awareness of the opportunities within the subject. Other places are home to few physics-based businesses, meaning there are limited opportunities to work in the sector locally. This means those in these regions are not able to enjoy the full benefits the physics sector offers.

Physics is one of the UK's levelling tools, and can play an even greater role in achieving equity in every nation and region of society. The IOP supports and welcomes measures taken to boost the education outcomes of students in physics across the nation, and the performance of physics industry in areas which have previously been left behind.

National Levelling Up Missions

The Levelling Up White Paper has committed to 12 National Levelling Up Missions² to re-balance the nation. These include:

Addressing the productivity gap

Mission 1. By 2030, pay, employment and productivity will have risen in every area of the UK, with each containing a globally competitive city, with the gap between the top performing and other areas closing.

Mission 1 is designed to boost productivity in local economies, and increased and continued investment in physics businesses can support the delivery of this mission.

Physics is a highly productive sector which supports the economy, and it will be a key tool to delivering the levelling up agenda. Across the UK, the physics sector generates £229bn gross value added (GVA), or 11% of total UK gross domestic product (GDP). It creates a collective turnover of £643 billion, or £1,380 billion when indirect and induced turnover are included, and labour productivity in physics-based businesses is strong at £84,300 per worker, per year.³

¹https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1052064/Levelling_Up_White_Paper_HR.pdf

²https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1052046/Executive_Summary.pdf

³ <https://www.iop.org/strategy/productivity-programme/physics-and-economy>

The jobs offered by physics businesses pay well and are themselves productive. There are currently 2.7m full-time equivalent (FTE) employees in the sector, accounting for 10% of total UK employment. Those employed in physics earn on average £42,000 annually, nearly double the average annual compensation of those in the Retail sector (£20,000), and a third more than those working in Construction (£29,000).

So, overall, attracting and growing physics businesses is a demonstrably good way to boost regional productivity and income. This may also help address the low distribution of employment in the UK Nations and some English regions. In Scotland, Wales, Northern Ireland and in the West and East Midlands, South West, Yorkshire and the Humber and in the North East of England, FTE numbers in physics-based industries sit below 275,000, whereas in London, 345,000 FTEs are employed in the sector, and 403,000 FTEs are employed in the South East.

R&D investment

Mission 2. By 2030, domestic public investment in Research & Development (R&D) outside the Greater South East will increase by at least 40% and at least one third over the Spending Review period, with that additional Government funding seeking to leverage at least twice as much private sector investment over the long term to stimulate innovation and productivity growth.

- The Department for Business, Energy, and Industrial Strategy (BEIS) has committed to invest at least 55% of its domestic R&D funding outside the Greater South East by 2024/5. Commitments to increase public investment have also been made by DHSC, MOD, DfT and Defra.
- Create three new Innovation Accelerators; major place-based centres of innovation, centred on Greater Manchester, the West Midlands, and Glasgow-City Region. These will see local businesses and researchers backed by £100 million of new Government funding to turbo-charge local growth.

The IOP's data on the contribution of physics to the economy shows that there is a difference in performance between London and the South East, where GVA contributions from physics-based industries sit at £40.7bn and £35.8bn respectively, and other regions. For example in the North East, this is just £8.3bn. In Northern Ireland and Wales, these figures are £3.5bn and £7.3bn respectively.

So it is encouraging to see Government recognise the important role of R&D in growth and prosperity for all parts of the UK. However analysis by CaSE⁴ shows that the R&D investment target represents the proportional share of planned R&D increases already announced for the current spending review period (over which the Government's R&D budget will rise from £15bn in 2021/22 to £20bn in 2024/25). Therefore it will simply stabilise the current distribution of R&D investment across the UK.

The most pressing question that the announcement of this policy raises is how this commitment will be met, and whether 'place' will become an important consideration for Departments when allocating their research investments. This appears to be confirmed by the new organisational objective for UKRI to "Deliver economic, social, and cultural benefits from research and innovation

⁴ <https://www.sciencecampaign.org.uk/news-media/case-comment/deeper-look-at-the-levelling-up-white-paper.html>

to all of our citizens, including by developing research and innovation strengths across the UK in support of levelling up”.

It also reveals the conundrum that lies at the heart of government thinking: how to balance the ambition to be a science superpower with the imperative to spread opportunity and prosperity to all parts of the country.

Education

Mission 5. By 2030, the number of primary school children achieving the expected standard in reading, writing and maths will have significantly increased. In England, this will mean 90% of children will achieve the expected standard, and the percentage of children meeting the expected standard in the worst performing areas will have increased by over a third.

- The Department for Education (DfE) announced new plans for ‘Education Investment Areas’.
- 55 Education Investment Areas (EIAs) will be designated in local authorities in England where school outcomes are currently weakest. These areas, 95% of which are outside London and the South East, will benefit from intensive investment and support. This will ensure the worst off schools of the North, Midlands, South West and East of England receive the most support over this decade.
- They will be supported by DfE retention payments to schools in these areas ensuring they can retain the best teachers. They will be prioritised for new specialist sixth form free schools that will ensure talented children from disadvantaged backgrounds have access to the highest standard of education this country offers. The weakest schools in the EIAs will be provided with access to strong multi-academy trusts to attract more support and the best teachers.
- A new free-to-access digital education service, the ‘UK National Academy’, will be launched.

The focus on regional education disparities in the UK is welcome from both economic and social equity perspectives. Research has shown that disparities in educational attainment are the greatest driver of regional variation in productivity across the UK.⁵ It has also been shown that the area in which a child lives has become a powerful predictive factor of educational performance, and that this has worsened over the last 50 years.⁶

Evidence shows that there is a shortage of high-quality physics teachers in some schools, meaning those studying the subject in these schools do not have the level of support required⁷. These schools tend to be in deprived areas. Currently, pupils in schools in areas of higher deprivation are much more likely to have teachers without an academic degree in a relevant subject, and with less expenditure made on teachers’ continuing professional development (CPD). The IOP’s aspiration is that every secondary school pupil in the UK and Ireland will have access to a specialist physics teacher, and we have been calling for provisions to be made to increase the number of high-quality physics teachers in classrooms.⁸ Therefore, the announcement of more funding for teacher retention is a positive step in the right direction.

⁵ <https://www.cbi.org.uk/media/1170/cbi-unlocking-regional-growth.pdf>

⁶ <http://www.smf.co.uk/wp-content/uploads/2017/07/Education-Commission-final-web-report.pdf>

⁷ <Education-Commission-final-web-report.pdf> ([smf.co.uk](http://www.smf.co.uk))

⁸ <Strengthen-qual-teacher-status-career-prog.pdf> ([iop.org](http://www.iop.org))

However, more information is required from the Government on how such funding will be disbursed and any guidance/limits on how it should be spent. IOP's [Subjects Matter](#) report⁹ makes a number of recommendations regarding subject-specific CPD,¹⁰ which would be an important part of any package aimed at teacher retention. We also suggest that efforts to increase the number of physics teachers need to go beyond retention and include measures to improve the supply of physics teachers.

The White Paper does not go far enough on delivering specific initiatives to improve classroom culture and ensure that ambitions and perceptions of opportunities are not dependent on a student's background. IOP's Limit Less campaign makes a number of recommendations that could yield impact in that field.¹¹

Skills

Mission 6. By 2030, the number of people successfully completing high-quality skills training will have significantly increased in every area of the UK. In England, this will lead to 200,000 more people successfully completing high-quality skills training annually, driven by 80,000 more people completing courses in the lowest skilled areas. Increased focus will be placed on skills and training support for people where they currently live by strengthening locally accessible institutions and forming closer relationships between training providers and local employers. Specifically, it commits:

- An intensive package of support for the development of Further Education. This includes a £1.5bn Further Education Capital Transformation Programme, the Lifetime Skills guarantee and plus changes to student finance to balance support to HE and FE, and measures to improve links with employers.
- Local Skills Improvement Plans will be rolled out with funding across England, giving local employer bodies and stakeholders a statutory role in planning skills training in their area, to better meet local labour market needs.
- LSIPS will be supported by strategic development funding, implemented with the aid of a statutory framework and governed using a funding and accountability framework.
- A unit for Future Skills to bring together data (on current and future skills needs) from across Government to support central and local Government and education and skills providers. This is also designed to help students understand their career options.
- Nine new Institutes of Technology will be developed with strong employer links to boost higher technical skills in STEM – taking the total to 21.
- £550mil will be dedicated to further rollout of the Skills Bootcamps Programme which provides free access for adults to access training on key sectors – including the green transition, digital and construction.
- An enhanced recruitment service for SMEs will be developed to support apprenticeships in disadvantaged areas. Changes will be made to make it easier for large employers to transfer their apprenticeship levy to SMEs towards the same aim.

Skills are a crucial driver of economic disparities between people and places. This Mission will help level up opportunities in left behind areas. Boosting skills improves human capital which can drive up earning potential and life chances for people who have already left school.

⁹ [Subjects-Matter-IOP-December-2020.pdf](#)

¹⁰ <https://www.iop.org/about/publications/subjects-matter#ref>

¹¹ [IOP Limit Less report 2020](#)

The provisions summarised in the Levelling Up White Paper are broadly welcomed by the IOP, but we have concerns about the specifics around how some of these measures will be implemented. For example, many of the proposed FE interventions rely heavily on private sector engagement and regional disparities in the distribution of industry will limit the FE options that are available to students depending on where they live. This effect is likely to be especially problematic for physics-relevant technical courses, which our recent Physics and the Economy¹² and Workforce Skills¹³ reports have shown to be unevenly distributed. Travel requirements, and regional availability of courses may end up exacerbating regional disparities in opportunity rather than alleviating them.

In addition, the proposed changes to the technical education stream will result in a higher education and skills landscape that may be difficult for students to understand – especially during the transition phase – and lack of support in this regard is likely to impact students from less privileged backgrounds more. The IOP therefore welcomes the provisions made for data gathering and careers support but stresses that these need to be implemented quickly to help students navigate the new landscape.

¹² <https://www.iop.org/strategy/productivity-programme/physics-and-economy>

¹³ <https://www.iop.org/strategy/productivity-programme/workforce-skills-project>