







# The China question revisited

"De-risking" higher education and research

Jonathan Adams Janet Ilieva Jo Johnson

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### **Authors**

Jonathan Adams is a Visiting Professor at the Policy Institute, King's College London, and Chief Scientist at the Institute for Scientific Information at Clarivate.

Dr Janet Ilieva is founder and Director of Education Insight.

**Rt Hon Jo Johnson** is a Visiting Professor at the Policy Institute, King's College London.

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### **Executive summary**

The UK has embraced internationalisation in research and higher education over the past 40 years, with international collaboration in research and inbound student mobility increasing significantly. China has been one of the most important partners for the UK in this period of globalisation. Amid worsening geopolitical tensions in the two years since we published *The China question: managing risks and maximising benefits from partnership in higher education and research*,<sup>1</sup> the challenges facing UK universities in their relations with one of the most important players in global R&D have become increasingly stark.

Geopolitical tensions and national security concerns have escalated, prompting the UK to adopt a tougher stance toward Beijing. UK Prime Minister Rishi Sunak has emphasised the need for "derisking" in relations with China amid national security concerns. Although disappointing to advocates of "decoupling" within the Conservative party, this represents a shift from previous policies prioritising trade and investment over national security.

The challenges of de-risking higher education and research engagement with China are considerable. It is today the single most important source of international fee income for the UK's researchintensive universities. Chinese students have, in recent years, played an important part in the talent pipeline into research careers and a wider STEM skills base in the UK. As the world's largest spender on research and development (R&D), it is a vital partner in much cutting-edge science. Recent data indicates that China's research footprint has expanded significantly, especially in technology and the biological sciences. UK-China research collaboration has grown substantially: in 2021, around 10 per cent of UK research papers had co-authors from China, up from around 1 per cent in 2000.

Universities and policymakers need to assess and mitigate the potential impact of geopolitical disruption on academic and student mobility and on the research capabilities of the UK. This report offers recommendations for policy changes that would reduce dependencies and calls for the UK government to provide greater support to higher education institutions in their efforts diversify student recruitment and clearer guidance on how to manage their research engagement with China in a period of increasing geopolitical instability.

### **1. Introduction**

The UK cannot be a "science superpower" and global leader in international education in isolation: the best and most impactful science is international and collaborative. Over the last 40 years, the UK has embraced internationalisation, with the proportion of UK research output involving international collaboration rising from around 10 per cent to over 70 per cent.



Source: Web of Science<sup>™</sup> (Clarivate).

Yet amid worsening geopolitical tensions in the two years since we published *The China question: managing risks and maximising benefits from partnership in higher education and research*,<sup>2</sup> the challenges and complexities facing UK universities in their relations with one of the most important players in global R&D have become increasingly stark. China has become the world's biggest spender on R&D. Its research output exceeds that of the US; its average research impact is up to world benchmarks; and much of its output is clearly of a high standard, attracting wide international interest. It is the first or second most important research partner for every G7 nation, the Scandinavian and Baltic states, Australia, Singapore and South Korea,<sup>3</sup> and has seen a three-fold increase in its collaboration with Iran, Egypt, Saudi Arabia and the UAE.

As a response to rising geopolitical stresses and heightened national security concerns, the UK has hardened its overall stance towards China. Prime Minister Rishi Sunak described China as the biggest challenge to global security and prosperity at the end of the G7 summit in Hiroshima, Japan in May.<sup>4</sup> The British prime minister stopped short of calling for the "de-coupling" between China and the West advocated by hawks, but said he supported "de-risking" – the expression also used by G7 leaders in their joint communiqué.<sup>5</sup>

This represents a significant toughening of the approach set out in *Global Britain in a competitive age: The Integrated Review of Security, Defence, Development and Foreign Policy*, published in March 2021. This policy paper marked a gradual exit from the language of the "golden era" of UK-China relations and had called for the UK "to pursue a positive trade and investment relationship with China, while ensuring our national security and values [were] protected".<sup>6</sup>

In his foreword to the *Integrated Review Refresh 2023: Responding to a more contested and volatile world*, published in May of this year, Prime Minister Sunak said China posed "an epoch-defining challenge to the type of international order we want to see, both in terms of security and values – and so our approach must evolve". Britain would work with its partners to engage with Beijing on issues such as climate change, but "push back where there were attempts by the Chinese Communist Party to coerce or create dependencies".<sup>7</sup>

With the US and China locked in an intensifying contest for technological leadership that is already drawing in the UK and many other countries, the chances that the global scientific endeavour will be disrupted by geopolitics, with knock-on effects on student and academic mobility, have risen sharply over the last two years. Assessing and mitigating the impact of such disruption is a critical responsibility of university leaders and policymakers as they contemplate a global knowledge economy that could begin to de-globalise at pace.

De-risking has at its core the idea that diversification increases resilience and reduces dependencies. These undoubtedly exist in the UK higher education and research system, with important ramifications for the underlying capacity and strength of the UK knowledge economy were scientific collaboration and student mobility to cease abruptly. This follow-up paper to *The China question* looks at some of the challenges the UK higher education and research system faces in diversifying away from China in both international education and research to mitigate the impact of these dependencies.

One of the biggest issues is the lack of viable alternatives, either in terms of high-quality research partners of equivalent scale or in terms of fee-paying undergraduate, master's and, most importantly for our STEM research base, doctoral students. The UK young researchers' pipeline is heavily reliant on non-UK PhDs staying on. Rejoining the EU's Horizon programme, albeit on



worse terms, as an Associate member, than those on which the UK left, is a welcome development. But with large emerging countries such as India unlikely to be plausible substitutes for the foreseeable future,<sup>8 9</sup> finding alternatives to China that reduce its importance in the UK knowledge economy remains no simple undertaking.

Our research-intensive universities have particularly deep relations with China, both in international student recruitment and in research partnerships. For example, nine Russell Group universities had more than 5,000 students from China in 2021/22. University College London alone currently has more than 10,000 Chinese students: roughly a quarter of a total student body of some 44,000. Efforts to support diversification of the international student body have yielded little progress. Research by Education Insight for Universities UK International points to an increase in the number of UK HEIs recruiting more than half of their undergraduate students from just one country. And the number of HEIs recruiting more than half of their postgraduate students from one country has increased over the past three years from 42 per cent to 50 per cent.<sup>10</sup>

Clearly, the single most effective way for the government to reduce these strategically important institutions' reliance on Chinese students, would be to allow domestic fees to increase with inflation. The legal cap on tuition fees for full-time undergraduate UK students at most universities is £9,250, barely changed from the £9,000 at introduction a decade ago.

In real terms, by May of this year, they were worth just  $\pounds 6,020$ in 2012 money. If inflation remains elevated, they will be worth materially less than  $\pounds 6,000$  in 2012 money by September. Teaching UK students at this level will be loss-making for many higher education institutions, leaving them with few options other than to recruit international students whose fees are unregulated.

This situation will continue for at least the next two years, with the government planning to keep domestic fees at current levels until the start of the 2025 academic year.

The China question – what to do about dependencies in an environment in which diversification in many respects remains difficult to achieve? – therefore remains unanswered. Universities are subject to a push-pull phenomenon, whereby they are under instruction to diversify but find themselves constrained by financial necessity and the lack of alternatives.

This vulnerability was highlighted by the Intelligence and Security Committee of Parliament, whose report from July of this year claimed China was using its leverage over UK universities as a means of exerting political influence and "controlling the narrative" about China.<sup>11</sup> Its "academic buying power" enabled it to influence the direction of research towards Chinese priorities and to gain access to prominent individuals through philanthropy.

Providing clear rules for sector engagement with China, to the extent that is still possible, must therefore be central to the government's plans for our knowledge economy. This paper offers some steps that could be taken to support "de-risking" while enabling the UK higher education and research base to remain open for scientific collaboration and student flows with China for as long as the geopolitical situation and national security concerns permit.

## 2. De-risking student flows

Dependencies on student recruitment from China have been a growing focus of recent policy debates about the future of UK higher education. Criticised for being slow to recognise the risks inherent in the recruitment practices of a number of universities, the Office for Students announced in June this year that it had written to 23 higher education providers with large numbers of students from China, "to ensure they have contingency plans in case recruitment patterns change and there is a sudden drop in income from overseas students".<sup>12</sup>

Although the regulator did not name the institutions, it is almost certainly focusing on a number concentrated in the Russell Group of research-intensive universities. Indeed, of the 18 higher education institutions with the most Chinese students on campus in the 2021/22 academic year, 17 were members of the Russell Group.<sup>13</sup> This underscores the crucial dependency of our research system on tuition income from Chinese students. University College London leads the pack, with almost 11,000 Chinese students out of a non-UK student body of around 24,000, followed by Glasgow, Manchester, Edinburgh and King's College London.

Figure 3 shows that one fifth of higher education institutions (HEIs) hosted over four-fifths of the overall Chinese students in full-time education. This number included the Russell Group universities and additional six other institutions.



Source: HESA student standard registration population 2021/22.

While the Chinese student body remains the largest international group on campus, it has recently started to show signs of decline at the undergraduate level and is losing share rapidly at higher levels of study. A shift from first degree to short-term taught master's programmes, normally nine months long, is taking place in the international student population in UK universities.<sup>14</sup> This has seen China's share of the overall student population fall amid exceptional growth in master's students from India and Nigeria.

Master's students now significantly outnumber those on undergraduate courses, principally because most undergraduates came from the EU and China, from which demand has been in decline. In 2021/22, the number of first-degree EU students in the UK fell to 84,200 from 106,500 the previous year, a decline of 21 per cent. Meanwhile, the number of first-degree Chinese students in the UK fell to 55,915 in 2021/22 from 59,275 the previous year, a decline of 6 per cent. The number of Chinese studying taught master's degrees increased to 78,265 in 2021/22 from 74,045 the previous year, an amount dwarfed by much bigger surges in numbers of students from India, Nigeria and Pakistan on short-term master's degrees. Indeed, the number of master's students from India, at 99,720, surpassed the number from China for the first time last year. In contrast to the Chinese student population, which is heavily concentrated in the Russell Group, students from India and Nigeria overwhelmingly gravitate towards post-1992 institutions.

No Russell Group university is represented in the top 10 recruiting institutions of either Indian or Nigerian students. Queen Mary University of London is the most significant Russell Group recruiter of Indian students, in 25th place, with 1,320 studying at all levels in 2021/22. The University of Glasgow is the most significant Russell Group recruiter of Nigerian students, in 53rd place, with 185 studying at all levels that year. The University of Hertfordshire recruits most Indian and Nigerian students, with 5,825 and 2,375 respectively in 2021/22.

Diversification away from Chinese students has been complicated by the fact that the political consensus that was so supportive of growth in international student numbers in 2019, when a two-year post-study work visa was reintroduced under the administration of Prime Minister Boris Johnson, has weakened considerably under the present government.<sup>15</sup> This culminated in the package of measures announced in May 2023 that aimed to curb the growth in international student numbers by limiting rights to bring in dependants to those pursuing doctoral studies. Echoing a speech by her predecessor Theresa May in 2011, in which the home secretary had abolished post-study work rights, Suella Braverman also announced that overseas students would be stopped from switching from the student visa route into work routes until their studies had been completed.<sup>16 17</sup> In addition, she said the government would review the funds students must have to demonstrate they can look after themselves and their dependants in the UK, and clamp down on "unscrupulous international student agents who may be supporting inappropriate applications".

Support has leached away, even though there is a growing awareness of the economic benefits that international students bring to the UK. These are increasingly well-understood in Westminster, not least thanks to much excellent research by organisations such as the Higher Education Policy Institute, Universities UK, Kaplan and London Economics. This shows the economic benefit of international students rose from £31.3 billion to £41.9 billion between 2018/19 and 2021/22, with each of the 650 parliamentary constituencies in the UK on average £58 million better off because of them – equivalent to approximately £560 per citizen.<sup>18</sup>

The economic benefits, and the cross-subsidies to other lossmaking university activities, including to research and to teaching domestic students in an environment of frozen domestic undergraduate tuition fees, are not enough to offset four sets of wider political concerns, which have been picked up by groups such as the New Conservatives,<sup>19</sup> a caucus of "red wall" members of parliament lobbying for tougher measures on immigration.

The first concern, albeit one based on what is largely a misunderstanding, is linked to the idea that international students

are displacing domestic students and making it harder for qualified domestic students to secure places than it otherwise would be. This is an increasingly potent political issue, which has attracted the attention of polemical commentators such as Allison Pearson.<sup>20</sup> It needs the sector to marshal stronger evidence to support its position that the two groups are symbiotic, complementing each other, rather than locked in zero-sum conflict for a fixed number of seats.

The fact that much of the recent growth in international student numbers has been at postgraduate level, which is not where the bulk of domestic students are concentrated, is an important aspect of this debate and one that the sector needs to highlight if it wants to land this argument effectively. Similarly, the sector needs to do a better job at explaining that international students make viable courses that would otherwise not be offered, thereby increasing choice for domestic students.

The second concern is that a number of higher education institutions are actually selling immigration into the UK rather than education. This was a point made explicitly by Theresa May in her 2011 crackdown, and one that was repeated frequently in the narrative presented in support of the recent package of changes. The idea that universities have been effectively offering a backdoor immigration route has resurfaced even though breaking the link between study routes and indefinite leave to remain (ILR) was an important part of the debate around the reintroduction of post-study work in 2019.

Under current immigration rules, the two years students can spend on the post-study work graduate route visa do not count towards the five years needed to secure ILR. That said, loopholes remained and the government is now planning, sensibly, to close one allowing students to drop out and switch to a skilled worker visa in the middle of their studies. That that was possible in the first place has surprised many. Closing this "switching" loophole, which may in part have explained the recent surge in drop-out rates in students from India and Bangladesh, had the support of sector bodies.

The third political concern relates to fraud and inadequate document verification generally, but especially with respect to maintenance funds. Evidence during the pandemic, when work opportunities were harder to come by, suggested many suffered hardship, with some becoming dependent on food banks. One food bank in London revealed it was feeding over 1,000 international students a week.<sup>21</sup> Further focus in the media has been on housing shortages and international students sometimes living in overcrowded conditions.<sup>22</sup>

Finally, the political consensus in support of international students has frayed because of concerns that a lack of diversity in the international student body is leading to dangerous dependencies on China and India. These dependencies are viewed as bad for the sector's financial resilience and harmful to the learning experience that universities offer. At the same time, the restrictions on international master's students from bringing dependants are likely to compound the concentration of Chinese students on campus if they deter Nigerian and Indian students who account for the bulk of dependants in the system. This represents a significant headwind to the diversification the government wants, which makes it more important that other steps are taken to de-risk recruitment from other countries. In the wake of the announcement in May, there has been considerable discussion as to whether policy towards international students is now settled, or whether universities should expect the Home Office to return with further measures to constrain recruitment, as demanded by the New Conservatives. The sector may well miss the chance to minimise the risk of that happening. A concerted push by Universities UK and the Office for Students to introduce reforms on their own initiative could prevent Suella Braverman coming back for round two in the run-up to a general election next year.

Although time is running out, it would be a mistake to be complacent. While it might be hard for this government to return to this policy area before electoral purdah brings the curtain down on new initiatives, there is still considerable scope for the Home Office to signal future areas of focus and for pressure to mount on all parties to commit to specific reforms in their manifestos as part of their wider pitches to the electorate on immigration.

Already, it would seem to be clear from the May announcement that the days of government support for further growth in numbers are over. It was striking that the statement spoke of the target of 600,000 overseas students in the International Education Strategy and of the success in meeting it for two years running, but no longer in terms of "at least" 600,000. From the sector's perspective, the best interpretation of this is that the appetite for higher targets has diminished; the worst interpretation is that 600,000 is seen as a de facto cap.

Either way, it of course means that the UK higher education sector will need to accept that it will continue to lose share in the

market for international education to competitor countries. It will also mean that transnational education (provision delivered in a country other than that in which the awarding institution is based) and online provision are going to be increasingly important for the future of international higher education at UK universities.

This is therefore an important moment for UK higher education, when the sector needs to do much more to win back political support for international students in the system. Acting quickly to tackle the abuse that has been creeping in around the edges of an overheating system will stand the sector in good stead. The sector and its regulator, the Office for Students, should embrace proactively the following four reforms before the Home Office returns for more and before political parties commit to specific policy positions for the next parliament in their election manifestos.

Address regulatory lacunae on quality. For the purposes of the sector's B3 metrics and conditions of registration, international students are not treated in the same way as domestic students.<sup>23</sup> While data on their rates of non-continuation and completion are considered in the OfS's regulatory assessments, that is not true for their performance in terms of attainment and progression. Education Insight's work for the International Higher Education Commission suggests some worrying issues lurking beneath the overall averages for non-continuation, with low drop-out rates for Chinese students papering over surging levels of non-continuation in groups of students from other countries from which growth in recruitment has been most rapid over the past three years.<sup>24</sup> Drop-out rates are approaching 25 per cent for students from India and Bangladesh, for example. This is

damaging to the reputation of the system as a whole and should be a priority for the OfS.

- 2. International student plans. The OfS should expect universities to publish an annual statement on their international student recruitment plans, as a counterpart to the access and participation plans that are required for their domestic admissions policies. This should enable the regulator to gain insights into each institution's recruitment strategies - and the risks each may be running – as well as an overall picture of trends across the sector. At the moment, there is a striking absence of forward-looking information in the public domain about the composition of the international student body, and the backward-looking data from HESA is stale by the time it is publicly available. It would be sensible to provide greater visibility into the plans universities have to diversify their international student populations and greater accountability to domestic stakeholders keen to ensure that widening international participation does not come at the expense of widening domestic participation. Universities should as part of their international student recruitment plans also be required to explain what part of their growth will be from transnational education and online delivery of higher education.
- 3. Collective action to weed out poor-quality and fraudulent applications. Universities need to act collectively to help cool things down, and Universities UK needs to play a co-ordinating role to avoid institutions suffering first mover disadvantage. Universities should do a number of things to raise the quality of applications flooding into the system:

- a) Charge an application fee for international students. This is in universities' interests, since all the evidence is that higher application fees result in higher enrolment conversion rates, the benefits of which more than offset lost applications. Universities with free applications spend at least twice as much time evaluating applicants without receiving any benefit in return.
- b) Require that tuition fees should be paid upfront, not least to weed out those who plan to drop out.
- c) Require that maintenance funds be put in escrow at the start of the year, borrowing from Canada's "guaranteed investment certificate" (GIC) system. All applicants should be able to provide irrefutable evidence of their financial wherewithal via the purchase of a GIC, which they would receive after putting their first year's maintenance funds in a sterling escrow account, from which they can draw down in instalments during the year. A Canada-style GIC would help address related problems of fraud and diversification. Many universities need to diversify their international student bodies but are wary of accepting applicants from countries not on the Home Office's narrow "low-risk" list, fearing they will lose their sponsorship licence if their visa refusal rates exceed a 10 per cent threshold. A key risk to their licences is from rogue agents providing students with forged bank statements or recycling the same funding to multiple applicants to enable them to circumvent the legitimate financial support requirements of UK Visas and Immigration (UKVI). To protect their standing with UKVI, some universities have made de facto no-go areas of certain countries or regions

where this kind of fraud is occurring. The existence of these discriminatory "blacklist" policies is not just abhorrent in itself, it is also holding back much-needed diversification of the UK's international student body and damaging the broader Global Britain agenda.

4. Greater accountability for recruitment agents. The OfS, using data from UKVI where necessary, should maintain a register of recruitment agents, and publish key performance indicators relating to visa refusals, as well as non-continuation and completion rates broken down by agent. Agents play an important and valuable part in the UK international education system and it's reasonable for the regulator to support best practice in the sector by helping institutions gravitate towards those helping to support the reputation of UK higher education.

There is much to lose from rushed announcements of further crackdowns or ill-judged manifesto promises. They will certainly not provide answers to the China question. These are some ideas for ways the sector can quickly put in place sensible reforms of its own design that will support diversification of international student recruitment and de-risking of dependencies on China. If they are implemented swiftly, they should mitigate risks of geopolitical disruption and help rebuild the political consensus necessary for UK universities to compete freely and sustainably in this global market in years to come.

# **3. Geographical diversity of international students**

Geographical diversification of international student recruitment is an essential risk-reduction (de-risking) strategy that supports long-term stability and growth. However, our analysis suggests that geographical diversification has not just stalled, but for many universities, has actually reduced, leaving them reliant on a very small number of markets. The analysis uses data from the Higher Education Statistics Agency (HESA) and focuses on full-time international entrants, adopting an approach that was first introduced in an analytical piece for Universities UK International (UUKi).<sup>25</sup>

The HESA standard registration population in 2017/18 is compared to 2021/22. Full-time first-degree international entrants are estimated to be 26 per cent of the overall international entrants across all levels of study, whereas master's entrants are 68 per cent. Collectively, bachelor's- and master's-level students accounted for 94 per cent of the UK's international entrants.

Compared to the analysis for UUKi, we have made the following methodological changes in order to build a more accurate calculation of the levels of reliance on a small number of countries. These changes are:

• The focus is on full-time entrants – ie newly recruited students in the respective academic year. This enables us to capture the latest changes in student recruitment compared to the previous year.  A suppression threshold of 50 students is introduced, which means HEIs with fewer than 50 international entrants are excluded. This is to avoid comparing HEIs with a small number of international students with those hosting thousands of international students.

The analysis shows how many countries UK HEIs recruit their international students from to make up more than half of their students, eg some HEIs recruit more than half of their non-UK students from one country. In contrast, others may recruit the same proportion of students from three or five countries. We found a growing concentration of HEIs recruiting at least half of their international students from one or two countries in 2021/22 compared to 2017/18. The collapse of EU student demand has significantly heightened HEIs' reliance on a small number of countries.

# **3.1. Geographical diversity of international student recruitment at the first-degree level**

In 2017/18, most HEIs recruited at least half of their bachelor's students from five countries. China was the top market for 52 per cent of the institutions. This proportion dropped to 46 per cent in 2021/22. India became the top recruitment market for 15 per cent of the HEIs in 2021/22, up from 1 per cent in 2017/18. There was a notable decline in EU countries as the top source markets for bachelor's students. There is an early indication that undergraduate recruitment is shifting away from China and the EU towards other countries, mainly India.



Source: Analysis of HESA standard registration population. Any institutions with fewer than 50 entrants (new students) have been suppressed from this analysis.

# 3.2. Geographical diversity of international student recruitment at the master's level

Between 2017/18 and 2021/22, there was a marked decrease in the number of markets from which HEIs recruited master's students. Almost 80 per cent of all HEIs in 2021/22 recruited more than half of their master's entrants from one or two countries:

- The proportion of HEIs sourcing at least half of their master's students from one country increased from 22 per cent in 2017/18 to 38 per cent in 2021/22.
- HEIs recruiting from two countries increased from 16 per cent to 41 per cent over the same period.

The significance of the growing reliance on master's students from a very small number of countries is amplified by the fact that master's entrants now account for 68 per cent of the student populations across all levels of study.



Source: Analysis of HESA standard registration population. Any institutions with fewer than 50 entrants (new students) have been suppressed from this analysis.

India became the top recruitment market for 44 per cent of HEIs in 2021/22 – up from 11 per cent in 2017/18. Over the same period, Nigeria increased its position as a top market for 2 per cent of HEIs in 2017/18 to 10 per cent in 2021/22. There was a notable shift away from China – the country dropped from being the top market for 50 per cent of HEIs in 2017/18 down to 24 per cent in 2021/22.

While Pakistan is the top recruitment market, a small number of HEIs, its rapid international student growth over the past four years has placed it in fourth place across the sector as a whole – behind China, India and Nigeria.

The ultimate dilemma for HEIs is between securing growth in international student recruitment and ensuring long-term sustainable international student recruitment. Geographical diversification, however, is a crude measure that does not capture the region- and province-level variations across large nations, such as India, China and Pakistan. Considering other measures of diversification beyond domiciles is critical. These could, for example, include diversity in the sources of tuition fees (savings, bank loans, scholarships, industry funding), ethnicity, socio-economic background, gender, age and other characteristics.

This analysis shows that China was the top sending country for students at the undergraduate and postgraduate levels of study. However, declines in first-degree students and growth in the demand from South Asia at the postgraduate level have resulted in reductions in the reliance on China, which has now been substituted with India as the major source of growth for international students in the UK.

One of the main implications of moving away from China and East Asia, where students are primarily funded by savings and family income, is that in India and wider South Asia, a high proportion of Indian students use bank loans to fund their studies. This signals the importance of post-study work, which enables indebted students to repay their loans quicker compared to the salaries they would have earned in their home country. The latest statistics on sponsored study visas for the year ending June 2023 show that growth in international students from India, Pakistan and Nigeria will be sustained in the next academic year.<sup>26</sup> The implication of this is that the UK is becoming heavily reliant on price-sensitive markets, where most of the students are likely to prefer institutions with low tuition fees. While student demand from China continues to slow down, there is a growing concentration of students from China in high-tariff HEIs, which typically charge higher tuition fees.

Geographical diversification is essential for sustainability and resilience in international student recruitment and must be a longterm aim. However, it does not have a simple solution.

Critically, it is also about the UK government putting in place policy initiatives that will support geographical diversification. So, for example, in the case of those countries replacing China – namely India, Nigeria and Pakistan – the UK's competitive position is heavily reliant on the competitiveness of its post-study work offer.

## 4. De-risking research

The pipeline of talent into the research system is a critical determinant of the long-term strength of UK science. The dependence of the UK research base on Chinese doctoral students is, therefore, an important aspect of the China question. De-risking the doctoral pipeline presents significant challenges, given the weak domestic doctorates and reductions in EU demand for doctoral studies in the UK. Chinese students have, in recent years, played an important part in the talent pipeline into research careers and a wider STEM skills base in the UK. This is now diminishing in what represents a significant part of a much broader phenomenon.

#### 4.1. Demand for UK research degrees

Global demand for UK postgraduate research (PGR), which includes researchers at the doctoral and master's levels, peaked in 2013. In the same year, the UK's share of PhDs across the OECD countries reached 21 per cent (data excludes the US).

The decline in international PGR students in 2014 is mainly attributed to non-EU researchers. A possible cause is the removal of post-study work rights for all students in 2013. PGR demand from the EU peaked in 2015; however, it has been in continuous decline since 2016. The decline in the number of EU doctoral entrants in the UK fell a further 42 per cent in 2021/22.



# 4.2. Global demand for doctoral education in the UK – there is no next China or EU

2013

2015

Source: Analysis of HESA standard registration population 2007-2021.

2017

2019

2021

At doctoral level, non-UK students make up 48 per cent of the total number of students in the UK. This high proportion shows that doctoral education is the most globally open part of the UK higher education system and signals the importance of international demand for the future sustainability of the talent pipeline in the UK.

This section explores the most recent changes in global demand for doctoral training in the UK. Unless specified otherwise, the analysis focuses on newly enrolled full-time non-UK students (fulltime entrants).

36,000

34.000

2007

2009

2011

The latest HESA data shows a 42 per cent decline in full-time EU doctoral entrants (1,205 entrants) in 2021/22 compared to the previous academic year. UK PhD entrants dipped by 3 per cent in the same year (380 entrants).<sup>27</sup> The numbers of non-EU students remained fairly stable (1 per cent growth). Relatively little growth across a large number of countries made up for 5 per cent reduction in doctoral entrants from China (175 fewer students compared to 2020).



Source: HESA standard registration population, full-time PhD entrants by year of entry and domicile.

Figure 8 shows the stark difference between the number of newly enrolled PhDs from China and the other top home countries for doctoral students. In 2021/22, there were 3,160 PhD entrants from China, followed by 780 entrants from Saudi Arabia, 630 from the US and 620 from India.



Source: HESA standard registration population, full-time non-UK PhD entrants from major domiciles.

While the number of Chinese doctoral entrants declined according to the most recent data, their proportion increased significantly over the past five years, from 17 per cent in 2017/18 to 28 per cent in 2021/22. The proportion of Indian PhD entrants accelerated in 2021/22 and reached 5.5 per cent, up from 3.6 per cent in 2017/18. While growth in student enrolments from India is concentrated in master's programmes, increases were noted across all levels of study. If the EU is excluded, India is the fourth largest sending country for newly enrolled PhD students in the UK. Among the UK's top five sending countries for PhD students, India is the only state with growing numbers of new doctoral students over the past academic year. Those from the US remained unchanged.





This analysis attempted to establish whether the rising proportions of Chinese research students meant growth was evenly distributed. There was an increase in the number of UK HEIs where China was the top sending country for postgraduate researchers – their number grew from 47 HEIs in 2017/18 to 59 in 2021/22.<sup>28</sup>

India was the top sending country for research students for 11 HEIs in 2017/18 and 2021/22.

However, the increasing share of PhD students from China resulted in growing concentration across the most selective HEIs. In 2017, the high-tariff HEIs, mainly Russell Group universities, accounted for 75 per cent of all doctoral students from China. In 2021, the same universities hosted 80 per cent of the Chinese PhDs.

While Saudi Arabia is home to the second largest PhD student population in the UK, the students appear to be concentrated across a small number of HEIs. Saudi Arabia was the top source country for just four HEIs in 2017/18 and 2021/22. However, just half of the Russell Group universities accounted 60 per cent of all PhDs from Saudi Arabia in 2021.

In summary, over the past five years, there has been a growing concentration of PhD students from the two largest sending countries in highly selective institutions.

# 4.3. The importance of globally mobile research students for STEM disciplines

There is no large new source of doctoral students to replace those from China and the EU in sight – collectively, these two geographies accounted for 41 per cent of all doctoral entrants in 2021. Further decline in their numbers would have a serious impact on the capacity of the UK science base in the absence of growth in domestic doctoral students from other countries.

The impact would be felt most acutely in STEM subject areas that are most reliant on non-UK demand. The reliance of different STEM fields on international demand for full-time PhD entrants varies from subject to subject, with a high concentration of non-UK students in economics and engineering-related disciplines:

- 77 per cent of doctoral students in economics.
- 67 per cent of the PhDs in electrical and electronic engineering.
- 66 per cent in engineering (non-specific) and 64 per cent in civil engineering.
- 63 per cent in mechanical engineering and materials science each.
- 61 and 60 per cent, respectively, for computer science and aeronautical and aerospace engineering.



Source: Analysis of HESA standard registration population, full-time PhD entrants 2021/22 by domicile.

Subjects most exposed to demand from China and the EU include:

- Materials science, where Chinese students represent 35 per cent of doctoral students and those from the EU a further 6 per cent;
- economics, where Chinese students represent 25 per cent of doctoral students and those from the EU a further 14 per cent;

- electrical and electronic engineering, where Chinese students represent 31 per cent of doctoral students and those from the EU a further 5 per cent;
- and engineering (non-specific), where Chinese students represent 27 per cent of doctoral students and those from the EU a further 7 per cent.

The viability of these research areas may be threatened if there are continued reductions in the domiciles making up the majority of the student population on these courses.



Source: Analysis of HESA standard registration population.

Most overseas government-funded PhDs are concentrated in STEM areas. For China, these students require Academic Technology Approval Scheme (ATAS) clearance. Heavy delays reported in the media might have resulted in students switching to other countries.<sup>29</sup> Typically, grant holders are given limited time to utilise their grants. Most self-funded PhDs are concentrated in business and management disciplines. If PhD demand is left solely to market forces, it will likely result in fewer STEM students. The analysis of the HESA data shows that "homegrown" talent is not sufficient to make up for reductions in international STEM demand.

#### 4.4. Academic staff by nationality

Research students are the natural pathway to academic careers. This section examines whether the disciplines with the highest proportion of non-UK PhDs are mirrored in the academic staff record. Staff by cost centre is used as the nearest proxy for academic disciplines. In some areas, several subjects at the PhD level were combined to arrive at broadly the same cost centre area. Caution is required to interpret the results, because the cost centres and the respective subject discipline may not be directly comparable.



Source: HESA Staff Record, total academic cost centres staff.

There were 230,230 academic staff in the UK in 2021/22. The proportion of EU and non-EU staff in full-time and part-time employment was 16 per cent each. The proportion of UK staff was 67 per cent, down from 70 per cent in 2014.

Both staff and PhD researchers follow broadly similar patterns, with greater proportions of the PhD students being non-UK. Mathematics, alongside chemical, process and energy engineering, has the same proportions. It is notable that, except for economics, there is a high concentration of research and academic talent from outside the UK in predominantly engineering and science-based subjects. The high proportions of non-UK PhDs and staff are broadly in the same subject areas, which suggests a likelihood that international PhD students progress into UK academic careers.



Source: HESA standard registration population, full-time PhD students 2021/22. HE academic staff by cost centre and nationality 2021/22.

As caveated above, the academic cost centres and the academic subjects are not directly comparable. The chart below shows that Chinese nationals at PhD and academic staff levels have the highest concentration in exactly the same subject disciplines. However, the proportions of PhD students are significantly above those of the academic staff.



Source: Analysis of HESA standard registration population, full-time PhD students 2021/22. HE academic staff by cost centre and nationality (China) 2021/22.

At the PhD level, there is no replacement for research talent from China and the EU. Reductions in students from China and the EU affect most STEM areas where the proportion of home researchers is very small.

Withdrawing from the China market brings its own risks. There is no other country with the same scale as China, and other non-European markets are much smaller and scattered and will require more investment to secure high-quality doctoral researchers. Significant reductions in EU doctoral researchers following the end of the transition period in January 2021 have resulted in a growing reliance on China as the main source of high-quality PhD students.

A comprehensive UK strategy is required, which includes policy incentives to support HEIs' efforts. Transnational education partnerships that focus on upskilling faculty and doctoral researchers at partner institutions can be utilised as a risk management tool, alongside other measures.

Significant reductions in EU doctoral researchers following the end of the transition period in January 2021 have resulted in a growing reliance on China as the main source of high-quality PhD students.

Our analysis shows a high concentration of international doctoral researchers in STEM areas, which also have a very high concentration of international academic staff. For China, this is particularly evident in engineering-based disciplines, most notably electrical and electronic engineering. It is likely that many international (non-UK) doctoral researchers have pursued careers in the UK as researchers, and they are contributing to the research engagement between the UK and other countries, China, most notably. International researchers appear to be part of the UK research ecosystem that has facilitated collaborations in subjects like electric and electronic engineering with China, which is explored in the next section of this paper. Attempts to control knowledge flows are likely to result in knowledge diversion away from the UK to countries that facilitate them.

China is the research global superpower of the future, and many research areas, of interest for UK and Chinese universities, rely on it.

The reality is that UK science is today dependent to a high degree both on the flow of Chinese doctoral students into our research base and on the ties that they and colleagues build and develop with institutions in China. These collaborations between UK and Chinese research institutions are significant to overall measures of performance of the UK research base.

# 5. China-UK research collaboration

The UK appears to perform strongly in international research comparisons. Consequently, it is rarely understood that much more than half of all UK science publications are indexed below the world average for citation impact. The country's overall performance is dragged to well above world average by the smaller proportion of much higherperforming outputs, principally authored by an elite group of institutions that are highly internationally collaborative. In addition to historic collaborations in North America and Europe, a newer and now key source of collaborative partners are the research organisations in China.



Data shows the percentage of total output by grouped category normalised citation impact (CNCI) for articles and reviews with at least one UK author and published between 2017 and 2021 in a journal indexed in Web of Science. UK total curve shows all UK papers (domestic and international); the other curves show those papers with at least one co-author from the named partner. Collaborative profiles all sit to the right of the UK curve, indicating that these papers are of higher impact. China has become the world's biggest spender on R&D and the first or second most frequent research partner for every G7 nation, the Scandinavian and Baltic states, Australia, Singapore and South Korea.<sup>30</sup> It has growing links with Iran (second), Egypt (third), Saudi Arabia (fourth) and the UAE (fourth), all of which have substantially increased their research output in the last five years, including three-fold increases in collaboration with China. China's research output exceeds that of the US; its average research impact is up to world benchmarks; and much of its output is clearly of a high standard, attracting wide international interest.

Technology research has been China's historical strength, growing out of a strong prior industrial and military but largely private research base. It has reorganised and diversified and now publishes by far the greatest number of academic papers in the 21,000 leading journals indexed in the Web of Science (Clarivate) in areas such as communications, materials, nanotechnology and much of engineering. A great deal of that output is demonstrably excellent, irrespective of reports that the "average" impact of Chinese research is still developing. These are also subject areas where China has a disproportionate level of collaboration with Anglophone countries such as the UK and the US.

The balance of output by subject is most readily evaluated as a radar diagram, or "research footprint", aggregating publications as percentages of global output for each entity in very broad subject areas. Such an analysis of papers indexed in the Web of Science from 10 years ago (specifically, 2007–2011) for the US, EU 27, China and India (to which we refer later) shows the overall dominance of the US in the life sciences complementing EU strengths in physical and environmental sciences, while China had a much smaller research footprint with a strong bias towards materials sciences.





Analysis of recent publication data (2017–2021) reveals the pace at which China's research footprint has increased. Its growth contrasts with that of India, the other major research economy in Asia, which appears to have hardly expanded at all. Furthermore, as China's research base has diversified, it is also emerging as a strong actor in the biological sciences: it now produces as many papers in molecular biology as the US. Note, these diagrams show share of global output (the global total acts as a standard) and a research footprint may shrink while the absolute number of papers increases.



The extent to which China has become a major force in world science is underscored by an analysis of 10 areas in which China is now particularly prolific in its publication of articles and reviews. Most are the technology areas that we previously identified as strengths in *The China question*. More startling is the growth in biochemistry and molecular biology, where China has now (just) overtaken the US, long seen as enjoying a commanding lead in this field. The indicative 2022 data (indexing is incomplete) show that this trajectory continues.

# **TABLE 1:** Numbers of research articles and reviews published in the 21,000 leadingjournals indexed in the Web of Science and the ratio between the outputof the US and China

2021 research articles and reviews	China	US	US/China
Computer science: information systems	17,475	6,014	0.34
Nanoscience & nanotechnology	26,774	9,468	0.35
Energy & fuels	27,511	7,350	0.27
Oncology	23,116	18,333	0.79
Biochemistry & molecular biology	21,192	20,626	0.97
Physics: applied	37,694	12,342	0.33
Chemistry: physical	41,697	13,500	0.32
Environmental sciences	43,039	20,997	0.49
Engineering: electrical & electronic	45,216	13,494	0.30
Materials science: multidisciplinary	71,803	22,851	0.32

Counts refer to papers with at least one author from that country. Data is grouped by 250 journal-based categories.

The UK-China interface is substantial. In 2021, the UK published around 225,000 papers in journals indexed in the Web of Science. Of these, 22,591, roughly 10 per cent, had a co-author in China, up from 5,105 in 2011. Data for 2022 suggest that China's contribution to UK research output will have risen to around 11.4 per cent of papers. China is as important a research partner as any in Europe: it exceeds Germany's share and it has been gaining on the US, which collaborates on about 19 per cent of UK research publications.

Much of the increasing expansion of UK collaboration with China is concentrated in technology disciplines that are likely to be economically significant because of their contribution to innovation. China-based researchers collaborate on less than 7 per cent of the UK's 2017–2021 output of 22,856 articles and reviews in Biochemistry and Molecular Biology whereas there are 10 areas where a China-located researcher is a co-author on 25 per cent or more of UK papers.

Journal category	UK total	UK plus China	China per cent of UK
Instruments & instrumentation	7,129	1,831	25.7
Engineering: environmental	6,589	1,711	26.0
Engineering: civil	8,931	2,327	26.1
Energy & fuels	15,661	4,082	26.1
Engineering: mechanical	8,519	2,341	27.5
computer science: information systems	10,800	3,344	31.0
Computer science: artificial intelligence	7,917	2,469	31.2
Engineering: electrical & electronic	24,539	8,901	36.3
Telecommunications	10,302	4,048	39.3
Automation control systems	4,095	1,862	45.5

#### **TABLE 2:** Numbers of research articles and reviews published during 2017–2021 in the 21,000 leading journals indexed in the Web of Science

Counts refer to papers with at least one author from that country. Data is grouped by 250 journal-based categories.

It is evident that a significant and rapidly expanding research engagement between the UK and China now exists. China contributed to less than 1 per cent of UK output in 2000; now it is a co-author on more than 10 per cent of articles and reviews.

The data showing the intensity of collaboration in technology is important because it points towards a particular focus, but we should not overinterpret this. First, the UK already had deep and pervasive collaborations in biomedical areas with established partners, and this may constrain additional collaboration with new and emerging economies. Second, UK engineers and technologists will have been well aware of the strength and depth of China's research in their specialisms and will likely have seen a clear benefit in engaging. Third, China's own relative capacity makes these topics a natural platform for building collaborative links. Making the assumption that this is technological "entryism" that carries security implications is not necessary, though it may be a valid consideration in any strategy for de-risking. For the UK, however, disengagement from China would have significant risks for the UK's research profile, in addition to the issues associated with undergraduate and research students. There is a need to maintain properly managed, collaborative work while paying due attention to the issues that have perturbed political and security interests.

The subject balance in UK-China research collaboration is, and appears always to have been, tilted towards technology, and shows no clear trend or direction of change. The following analyses are a breakdown of UK-China collaboration across the 20-odd journal-based subject categories used in Essential Science Indicators<sup>TM</sup> (Clarivate). This enables a reasonable deconstruction for a "first look" and covers around 15,000 of the more highly cited journals, but does not include any arts or humanities. More detailed analysis is possible, as shown above, in the 250 subject categories in the Web of Science.

A straight annual count from 1981–2021 confirms the exceptional growth rate of the UK's collaboration with China and emphasises the focus on technology. The categories are sorted by "faculty" level domains, with technology, biosciences and medical sciences in descending order.

A complementary perspective is obtained by using the same data but with stacked areas to show the proportions by category rather than the counts, which takes the eye-drawing growth rate out of the interpretation and enables a clear appreciation of the subject balance.

#### FIGURE 18: The growth of research output published collaboratively by the UK and China, showing counts of articles and reviews



#### FIGURE 19: The balance of research output published collaboratively by the UK and China, showing the proportion of articles and reviews by category in each annual tally



There may be an assumption that, if the UK's major research institutions already had extensive prior ties with the G7, then the interface with China would develop among those with few prior international programmes. This is not the case: it is the research leaders in both the UK and China who talk to one another.

The most frequent collaborating institutions on the China side will be familiar names for many researchers: Tsinghua, Peking and Shanghai Jiao Tong Universities; the University of the Chinese Academy of Sciences; and Sun Yat Sen, Nanjing, Shandong and Zhejiang Universities have all co-authored 1,500 or more papers with the UK in the past decade. The first four have collaborated on more than 600 UK papers in the past 12 months.

Similarly, on the UK side, Oxford University, Imperial College London, Cambridge University and University College London all co-author over 1,000 papers each year with Chinese institutions, including 300 or more with the Chinese Academy of Sciences. The STFC Rutherford Appleton Laboratory and the universities of Manchester, Edinburgh, Birmingham, Warwick and Liverpool complete the UK's top 10.

The citation analysis shown earlier (Figure 15) gives an idea of the impact and value of UK-China collaboration. For the UK, about 18 per cent of academic articles and reviews published over the last five years have a citation impact of twice world average or more. For the UK's publications with China, that rises to 24.8 per cent. At the low end, the percentage of uncited papers falls from 20 per cent to 14

per cent. For papers published by Cambridge, Oxford, Imperial and UCL, about 23 per cent typically exceed the threshold of twiceworld-average impact. This proportion rises to more than 30 per cent for their research with China. And, for papers where citation impact exceeds eight times world average, the percentage share of these universities' output doubles when China is a collaborator.

Attributing benefit from collaboration can be tricky, especially for multilateral research programmes. It is made easier for the UK-China interface because China's international research collaboration is strongly bilateral, whereas that of the G7 and the EU is mostly multilateral. For example, around half of UK papers co-authored with China are bilateral, whereas this is true of only 17 per cent of papers with Germany. The link, in other words, is direct, and impact is driven by partnership rather than a network.

UK-China ties are evidently valuable sources of innovation, not marginal partnerships. An abrupt cessation of research collaboration with China would damage UK research. It remains unlikely, but universities need contingency plans for such a scenario. One such plan would involve a redirection of collaboration to other partners, either established or among the emerging research economies in Asia and Latin America.

A seemingly obvious alternative, frequently discussed and the subject of many past research agreements, is India. India is unquestionably a nursery of exceptional scientific talent, to the benefit of the many countries that have attracted Indian researchers. However, India's research footprint remains smaller than that of China's, which now publishes more than five times as many research papers annually.





A comparison of the impact profiles for the UK, India and the UK's three most frequent current research partners also shows that India's research impact lags markedly on the others. The peak of its citation impact distribution is in fact around half world average.

While India may be, as often quoted, a sleeping giant, the prolonged slumber marked by the lower quantity and quality of its research output means that it can be no kind of substitute for China as a key research partner.



Data shows the percentage of total output by grouped category normalised citation impact (CNCI) for articles and reviews published between 2017–2021 in a journal indexed in Web of Science. Each curve shows those papers with at least one coauthor from the named country.

India is not the only potential partner in Asia. South Korea is making massive investments in research (gross expenditure on R&D: GERD) with very strong business and industrial backing: it has the biggest GERD-to-GDP ratio of any country and a far better BERD (business enterprise expenditure on R&D)-to-GERD ratio than the UK. Singapore is an established partner, but probably has little further capacity to expand collaboration. Additional collaboration with Australia and New Zealand remains a possible objective, but shared growth has slowed in the last decade to stabilise at around 12 per cent and 6 per cent of UK output respectively. Those countries are themselves looking at their engagement in the Asia-Pacific network as a more appropriate long-term commitment. Other alternatives would be strengthening existing collaboration with the EU and the US, which produce a similar number of papers to China. In addition to significant research capacity, they have excellent research profiles and have demonstrably contributed to UK research achievement over an extended period. It is therefore unfortunate that the UK has both disrupted its research engagement with the European network and, by doing so, made itself a less attractive partner for the US in an era of increasingly multilateral rather than bilateral research collaboration. The data on collaboration, globally, shows the rise in bilateral relationships through the 1980s and 1990s. This plateaued during the 2000s, not as activity but as a proportion of activity, and was overtaken by a shift to multilateralism as the internet enabled more networked relationships and key challenges required greater resources.

For the UK, these changes can be seen in an analysis of the balance between its various slices of collaboration with the US, with the EU, with these in tandem, and with the rest of the world (RoW). In fact, the fastest expanding slice now is with the RoW, and that is primarily due to China.





If UK research institutions were to disengage from China, they would suffer a significant loss of access to high-quality innovative research in technology, a marked drop in their average research impact, and the loss of a partner who has already contributed both intellectual and tangible resources to joint projects. No viable alternative partner exists to fill the gap; indeed, the challenge may be retaining existing research partners in the G7. There may be reasons for reassessing (de-risking) the business basis of the China relationship, but the business argument in favour of retaining that relationship (and not de-coupling) appears to be very strong. In the meantime, the government needs to give research institutions clearer guidance. Universities UK, the British Council and intelligence agencies could produce guidance that allows universities to maintain scientific collaboration and intellectual exchange with China for as long as the geopolitical context permits and it remains in the national interest. This should include advice on how to balance selective engagement with robust assessment and management. The current lack of clarity may lead universities to adopt an unduly risk-averse approach, limiting collaboration unnecessarily.

# 6. Conclusion

The UK has made less progress in managing dependencies than in addressing weaknesses in national security. Diversification is making slow progress, both in international student flows and research. The sector continues to follow a "cross your fingers" strategy that de-coupling is in the future never necessary for China, in the same ways it was for relations with Russia in February 2022. The China question therefore to a great degree remains unanswered.

While student demand from China continues to slow down overall, there is a growing concentration of students from China in hightariff HEIs that rely on high tuition fees to subsidise their lossmaking research activities.

Geographical diversification is essential for sustainability and resilience in international student recruitment and must be a longterm aim. However, it does not have a simple solution, but requires the UK government to put in place a range of policy initiatives to support it.

There is no large new source of doctoral students to replace those from China and the EU in sight – collectively, these two geographies accounted for 41 per cent of all doctoral entrants in 2021. Further decline in their numbers would have a serious impact on the capacity of the UK science base in the absence of growth in domestic doctoral students from other countries.

The impact would be felt most acutely in STEM subject areas that are most reliant on non-UK demand. The reliance of different STEM fields on international demand for full-time PhD entrants varies from subject to subject, with a high concentration of non-UK students in economics and engineering-related disciplines.

A significant and rapidly expanding research engagement between the UK and China now exists. China contributed to less than 1 per cent of UK output in 2000; now it is a co-author on more than 10 per cent of articles and reviews. Disorderly disengagement from China would have significant risks for the UK's research profile, in addition to the issues associated with undergraduate and research students.

There is a need to maintain properly managed, collaborative work while paying due attention to the issues that have perturbed political and security interests.

Maximising the benefits from research collaboration and from student and academic mobility, while managing the downsides, including the risks to national security from bad-faith actors and the dangers of over-reliance on income from a single country, is a delicate but not impossible task. The new Research Collaboration Advice Team, established in BEIS last year, is providing individual institutions with guidance on potential partnerships as they walk this tightrope.

There is no substitute, however, for the kind of system-wide contingency planning that is still needed.

Just as the Office for Students needs to focus on threats to institutional resilience and system-wide financial sustainability arising from over-reliance on income from one country, UK Research & Innovation needs to step up the pace of its work on how to mitigate any potential damage to UK research capabilities from disorderly disengagement. This is going to require detailed analysis of the many areas in which UK science is now deeply enmeshed with a country that has risen up the ranks of the UK's partners so rapidly that it is now second in importance only to the US.

Engagement with China is so much more pervasive than with Russia that it will be critical to have clear criteria in place, well in advance of any crisis, to support universities in planning for potential withdrawal from collaborations, should that be required. Detailed work must start on how to minimise future impacts on UKRI funding to UK organisations and on scoping options for different partners to take work forward so that internationally collaborative research can continue by other means.

### References

- 1 Johnson, J. et al. (2021) *The China question: Managing risks and maximising benefits from partnership in higher education and research*, the Policy Institute at King's College London and Harvard Kennedy School Mossavar-Rahmani Center for Business and Government. <u>https://www.kcl.ac.uk/policyinstitute/assets/china-question.pdf</u>
- 2 Ibid.
- 3 Adams, J. and Johnson, J. (2023) "Cutting ties to China would damage UK research", *Research Professional News*, 19 April. <u>https://www.researchprofessionalnews.com/rr-news-uk-views-of-the-uk-2023-4-cutting-ties-to-china-would-damage-uk-research/</u>
- 4 Sorgi, G. (2023) "Sunak ranks China as top challenge to global security", *POLITICO*, 21 May. <u>https://www.politico.eu/article/britain-prime-minister-rishi-sunak-ranks-china-top-threat-global-security-g7-summit/</u>
- 5 The White House (2023) G7 Hiroshima Leaders' Communiqué, 20 May. <u>https://www.whitehouse.gov/briefing-room/statements-</u> releases/2023/05/20/g7-hiroshima-leaders-communique/
- 6 HM Government (2021) Global Britain in a competitive age: The Integrated Review of Security, Defence, Development and Foreign Policy. https://assets.publishing.service.gov.uk/government/uploads/ system/uploads/attachment\_data/file/975077/Global\_Britain\_in\_a\_ Competitive\_Age-\_the\_Integrated\_Review\_of\_Security\_Defence\_ Development\_and\_Foreign\_Policy.pdf
- 7 HM Government (2023) Integrated Review Refresh 2023: Responding to a more contested and volatile world. https://www. gov.uk/government/publications/integrated-review-refresh-2023responding-to-a-more-contested-and-volatile-world/integratedreview-refresh-2023-responding-to-a-more-contested-and-volatileworld
- 8 Padma, T. V. (2019) "Intolerance and funding concern Indian scientists ahead of election", *Nature*, 10 May. <u>https://www.nature.com/articles/d41586-019-01465-3</u>
- 9 Editorial (2023) "Why is India dropping evolution and the periodic table from school science?" *Nature*, 30 May. <u>https://www.nature. com/articles/d41586-023-01750-2</u>
- 10 Universities UK International (2022) "International student recruitment: geographical diversification of markets", 20 December. https://www.universitiesuk.ac.uk/universities-uk-international/

insights-and-publications/uuki-insights/international-studentrecruitment

- 11 Intelligence and Security Committee of Parliament (2023) *China*. https://isc.independent.gov.uk/wp-content/uploads/2023/07/ISC-China.pdf
- 12 Office for Students (2023) "University finances generally in good shape, but risks include over-reliance on international recruitment", 18 May. https://www.officeforstudents.org.uk/news-blogand-events/press-and-media/university-finances-generally-ingood-shape-but-risks-include-over-reliance-on-internationalrecruitment/#:~:text=The per cent20OfS per cent20has per cent20today per cent20written,in per cent20income per cent20from per cent20overseas per cent20students
- 13 University of the Arts London is, at seventh, the highest-ranked non-Russell Group member in terms of the size of its Chinese student body. It had 5,540 Chinese students out of a total of 12,060 non-UK students.
- 14 Ilieva, J. B. and Killingley, P. (2023) *International Higher Education Strategy 2.0: Targeted Growth for Resilience*, International Higher Education Commission.
- 15 Johnson, J. (2023) "The future for international students in the UK", Higher Education Policy Institute, 14 June. <u>https://www.hepi.ac.uk/2023/06/14/future-for-international-students-in-the-uk-by-jo-johnson/</u>
- 16 Home Office (2011) "Foreign student visas: Home Secretary's statement", 21 March. <u>https://www.gov.uk/government/speeches/foreign-student-visas-home-secretarys-statement</u>
- 17 Home Office and Department for Education (2023) "Changes to student visa route will reduce net migration", 23 May. <u>https://www. gov.uk/government/news/changes-to-student-visa-route-will-reducenet-migration</u>
- 18 Cannings, J., Halterbeck, M. and Conlon, G. (2023) "International students boost UK economy by £41.9 billion", 16 May, Higher Education Policy Institute, Kaplan International Pathways, Universities UK International and London Economics. <u>https://www. hepi.ac.uk/2023/05/16/international-students-boost-uk-economyby-41-9-billion/#:~:text=The per cent20report per cent2C per cent20which per cent20was per cent20commissioned, per cent2C per cent20an per cent20increase per cent20of per cent2034 per cent25</u>
- 19 Wilcock, D. and Groves, J. (2023) "Fewer foreign workers, overseas students and refugees and a cap on council houses for non-Brits: Red Wall New Conservatives group including Lee Anderson

demand Rishi Sunak cut immigration by two-thirds before next election", *MailOnline*, 6 July. <u>https://www.dailymail.co.uk/news/article-12258275/Red-Wall-New-Conservatives-demand-Rishi-Sunak-cut-immigration-two-thirds-election.html</u>

- 20 Pearson, A. (2023) "British universities no longer want British students. They're hooked on Chinese money", *Daily Telegraph*, 18 May. <u>https://www.telegraph.co.uk/news/2023/05/18/britishuniversities-no-longer-want-british-students/</u>
- 21 Quinn. C. (2021) "'This is a complete nightmare': international students rely on London food bank", *Professionals in International Education News*, 22 February. <u>https://thepienews.com/analysis/intl-students-london-food-bank/</u>
- 22 Dickinson, J. (2023) "What happens when student numbers grow faster than bed spaces", 10 March, *WonkHE*, 10 March. <u>https://wonkhe.com/blogs/what-happens-when-student-numbers-grow-faster-than-bed-spaces/</u>
- 23 Data on UK students' outcomes is part of the HE key performance indicators calculated by HESA and can be accessed here: <u>https://</u><u>www.hesa.ac.uk/data-and-analysis/performance-indicators</u>
- 24 Ilieva, J. B. and Killingley, P. (2023), op. cit.
- 25 Ilieva, J. (2022) "International student recruitment: geographical diversification of markets", UUKi Insights, 20 December. <u>https://www.universitiesuk.ac.uk/universities-uk-international/insights-and-publications/uuki-insights/international-student-recruitment.</u>
- 26 Home Office (2023) "Why do people come to the UK? To study", 24 August. <u>https://www.gov.uk/government/statistics/immigrationsystem-statistics-year-ending-june-2023/why-do-people-come-tothe-uk-to-study</u>
- 27 This analysis is based on HESA standard registration population in various years. Unless specified otherwise, the data is based on full-time entrants across different years.
- 28 This analysis is based on full-time postgraduate research students included in the HESA standard registration population. Alternative providers were not included.
- 29 Staton, B. (2023) "Lengthy security checks disrupting UK research, universities warn", *Financial Times*, 8 March. <u>https://www.ft.com/</u> <u>content/e4f43db4-2634-4739-a5b2-c87354cd3f1c</u>
- 30 Adams, J. and Johnson, J. (2023) op. cit.



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