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The Road to 2027: Mobilizing the science and innovation system to reach the UK's 2.4% R&D spending target

20 July 2022

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This blog was kindly contributed by Adão Carvalho, Professor of Economics at the University of Evora, Portugal. Adão is the author of a previous HEPI blog, [‘Goals-based R&D policy: high popularity, low effectiveness – What is the likelihood of the UK reaching its target of spending 2.4% of GDP on R&D by 2027?’](#)

In the [2017 Industrial Strategy White Paper](#), the UK Government has set the target of spending 2.4 per cent of GDP in Research and Development (R&D) by 2027 and transforming the economy, aiming to reach three per cent in the longer term. It is an ambitious target and the likelihood of reaching it is rather small, but it can still be a successful strategy if one comes to the conclusion later on that it has dramatically shifted the R&D spending trend in the UK from 2017 onwards. 2.4% is not a particularly high score for a country like the UK that wants to be among the most technologically advanced and competitive economies of the OECD. The European Union first set a three per cent target back in 2002 and currently [12 of the 38 OECD countries](#) spend above 2.4 per cent of GDP on R&D. Even China reached the same mark in 2020. The race is on and alive since R&D is a major source of scientific and technological knowledge and new knowledge is the raw material of innovation. Many of us believe that innovation will be key in dealing with matters that have structural effects across society and the economy like climate change, energy transition and

digitalization which present both major challenges and huge economic opportunities over the coming decades.

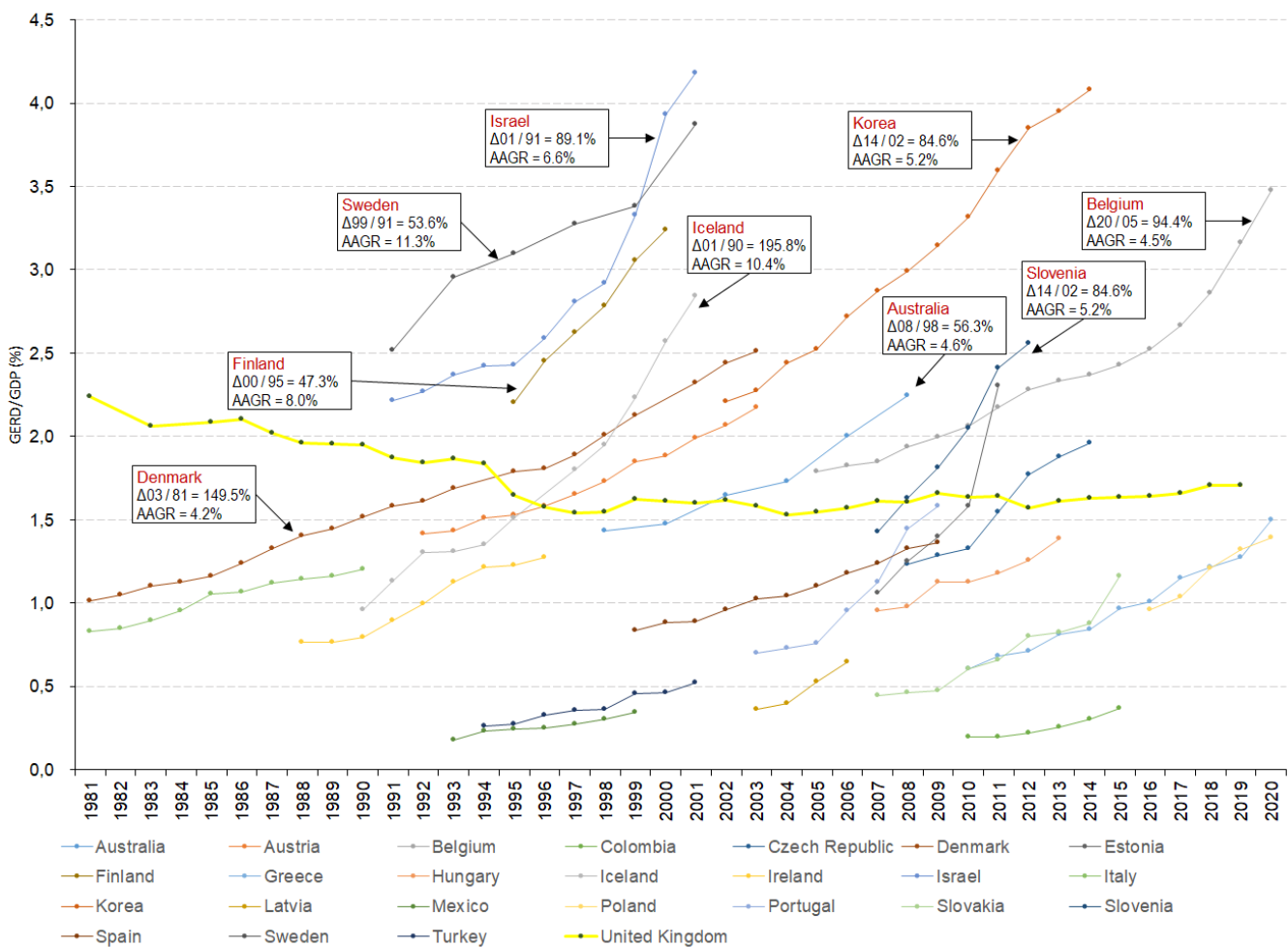
In setting R&D targets, the UK Government has the motivation (the UK is lagging behind leading OECD countries), an objective (to transform the economy), a plan (the 2017 Industrial Strategy), resources (public R&D expenditure is [expected to double](#) between 2017 and 2027 and reach £22 billion) and commitment (two Prime Ministers have expressed their commitment to the R&D target and strategy). The resolve is likely the most important element in the Government's toolbox to implement the R&D policy successfully. The Government's determination is vital to convince the actors of the UK's science and innovation system about the merits of its policy and strategy and commit to it. This is particularly important for the business sector which carried out about 67.4 per cent and funded 53.6 per cent of the total Gross Domestic Expenditure on Research and Experimental Development (GERD) in the UK in 2019. Although no specific public target has been set for Business Enterprise Expenditure on R&D (BERD) as a percentage of GDP, the UK Government certainly expects that the business sector will accompany the effort to increase R&D expenditure and keep performing at least two thirds of GERD, preferably more. Twelve OECD countries had a higher business R&D intensity than the UK in 2019, with the BERD / GERD rate ranging from 67.5 per cent (Switzerland) to 89.7 per cent (Israel).

Convincing the business sector to increase R&D expenditure at a faster rate is vital. The Government has no direct influence on the decision of private firms to invest in R&D but a consistent R&D policy and more public funding are convincing arguments. Over recent decades, most EU and OECD countries have substantially increased public financial incentives to business R&D, particularly through tax incentives. Of course, it is difficult to find the right balance between increasing public funding for business R&D to achieve the Government's objectives and ensuring the efficient use of public money. There are three factors that may raise some issues about the Government's determination to reach the R&D target:

1. Over the last two decades the UK's global R&D intensity was in the range of 1.6 per cent to 1.7 per cent, with a slight tendency to increase in recent years (Figure 1 below).
2. The R&D target of 2.5 per cent for 2014 fell short by 90 per cent.
3. [Research shows](#) that most R&D intensity targets were not met in the past.

Trust and determination are keywords if the Government is to motivate the actors of the science and innovation system.

Figure 1. OECD countries that registered a growth rate of R&D intensity above 44.6% in a given period between 1981 and 2020



Source: Author, based on [data from the OECD MSTI database](#). Accessed on 7 June 2022.

How demanding is the 2.4 per cent R&D spending target? According to OECD data, the UK's global R&D intensity in 2017 was 1.66 per cent (value not known when the target was set). The global R&D intensity is expected to grow by 44.6 per cent in the period 2017-2027 or increase at an average annual rate of 3.8 per cent. Since the R&D intensity in 2019 was 1.71 per cent, the expected Average Annual Growth Rate (AAGR) has increased to around 4.3 per cent. Figure 1 shows the OECD countries that increased their R&D intensity over several years in a row and recorded a growth rate of at least 44.6 per cent over that period. At first glance, it seems to be a pretty normal thing as 25 countries met both conditions and some of them more than once (e.g., Ireland, Finland, Latvia, and Spain). Upon closer analysis, we can group countries by year (before and after 2000) and level of R&D intensity (below and above 1.5 per cent).

Roughly after the year 2000, the vast majority are countries with relatively low R&D intensity, a 'new generation' of states that want to shorten the distance between themselves and those with high R&D expenditure. It includes countries like Spain, Portugal, Estonia, Slovenia, Czechia, Hungary and Slovakia. All these countries registered a major correction in the level of R&D intensity after the growth period, suggesting that their research structures were not yet consolidated. Before the year 2000, most are 'traditional' R&D spending countries like Denmark, Sweden, Italy, Finland, Israel and Austria. The UK belongs to this latter group of countries. The number of countries with a R&D intensity above 1.5 per cent and a high growth rate is smaller and

only three of them – Australia, Korea and Belgium – registered their period of sustained growth after the year 2000. This is the group the UK wants to be a part of.

The 2.4% R&D target is challenging but achievable. For this, it is vital that the actors of the science and innovation system believe in this objective and that the Government is fully determined to achieve it.

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