MAY 2024

FACT SHEET

# ARE WE PRODUCING ENOUGH DOCTORAL GRADUATES IN SOUTH AFRICA?

## BACKGROUND

It is generally well known that investing in the education and training of PhD graduates is essential for a country's long-term growth, development and competitiveness. It is important for a country to have a sufficient number of PhD graduates for several reasons: firstly, countries need enough PhDs to **train the next generation** of students at higher education institutions (HEIs). Secondly, PhD graduates are often at the forefront of **research and innovation** in various fields; they contribute new knowledge, ideas and technologies that can drive economic growth and improve the quality of life. Thirdly, countries with a strong base of PhD graduates are more **competitive** globally – they are better positioned to attract investment, talent and opportunities for collaboration with other countries. Furthermore, they are often perceived as being more **advanced and influential** on the world stage.

In South Africa, the National Development Plan (NDP) 2030 places higher education as the major driver of information and knowledge systems that contribute to economic development. The NDP recognises that knowledge production must increase if South Africa is to achieve its development goals.

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To ensure that universities contribute to and adequately address the development needs of our society and economy, the NDP has set the following targets to be met by 2030:

- Increase the percentage of academic staff in the higher education sector with a doctoral degree from the current share of 34% to more than 75%.
- Produce more than 100 doctoral graduates per million of population per year.

This Fact Sheet provides insight into the progress made against the goal to increase doctoral graduates in South Africa. It does so by answering the following research question: **Are we producing enough doctoral graduates in South Africa?**

## TERMS AND DEFINITIONS

### NUMBER OF DOCTORAL GRADUATES PER MILLION OF POPULATION PER YEAR

The number of doctoral graduates per million of population per year is calculated by dividing the total number of doctoral degree graduates in a given year by the number of persons in the population in the same year and multiplying the result by 1 000 000.

### POSTGRADUATE STUDENTS

Postgraduate students include all students in universities enrolled for postgraduate, below Master's level, Master's level and doctoral level.

### DOCTORAL GRADUATE

A person who has completed a doctoral degree.

The number of doctoral graduates per million of population in 2022 was 61. This is a huge improvement from the 36 doctoral graduates produced in 2012.

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## SUMMARY OF FINDINGS

This section presents a summary of the key findings on South Africa's progress towards achieving the targets set out in the NDP 2030.

Figure 1 shows that 61 doctoral graduates per million of population were produced in 2022. Although this is a huge improvement compared with the 36 doctoral graduates per million produced a decade prior, it is of great concern that that number has remained far below the target envisaged in the NDP. Given current trends, it is highly unlikely that SA will achieve this target by 2030.

**FIGURE 1: Number of doctoral degree graduates per million of population per year, 2012–2022**

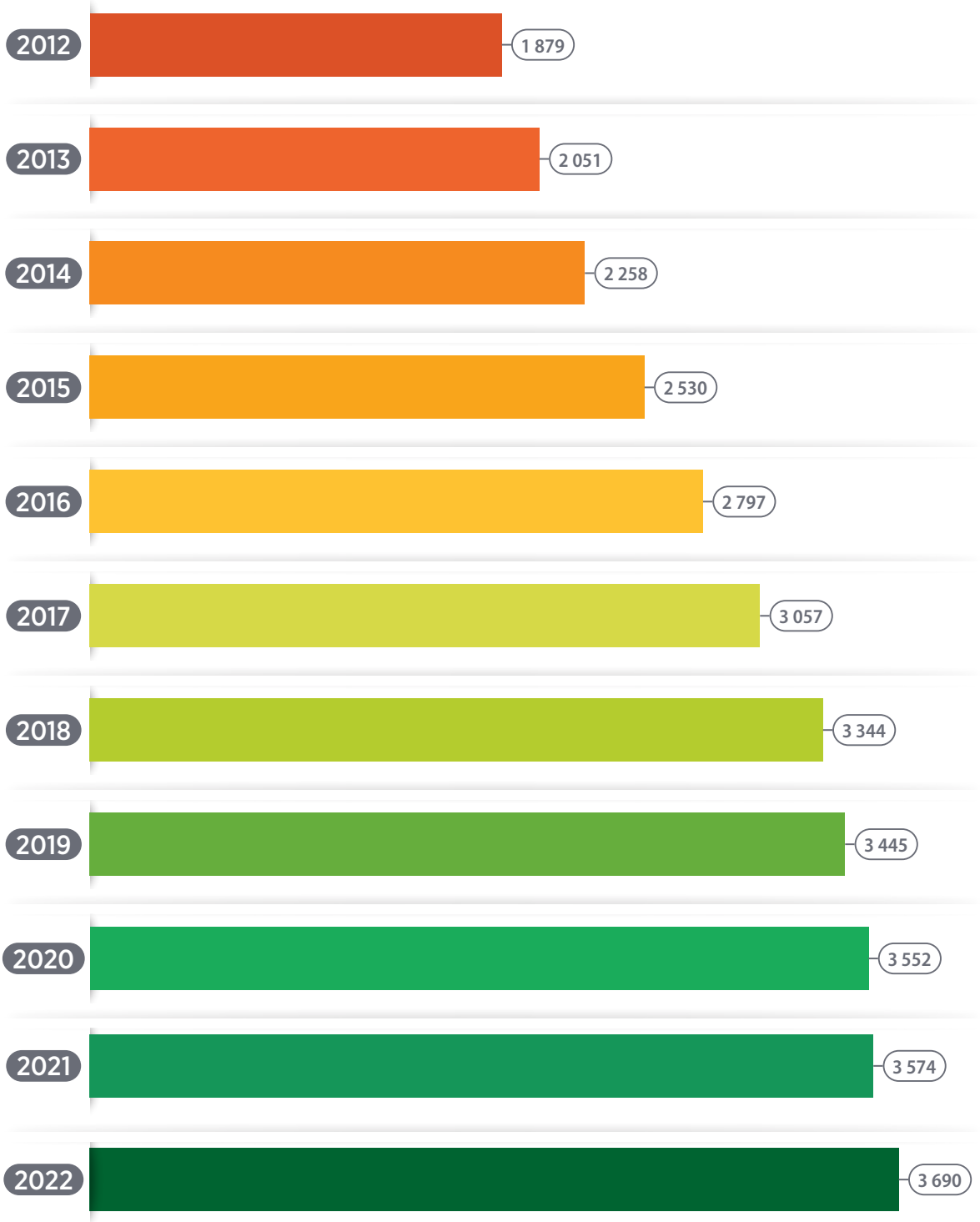

*Sources: own calculations based on Statistics on Post-School Education and Training in South Africa (Department of Higher Education and Training [DHET] 2022); Mid-year population estimates (Statistics South Africa [Stats SA], 2022).*

Note 1: The data on doctoral graduates reported above only covers public HEIs (universities). Doctoral graduates from private HEIs are not included.

Note 2: The number of doctoral graduates per million of population per year is calculated by dividing the total number of doctoral degree graduates in a given year by the number of persons in the population in the same year and multiplying the result by 1 000 000.

In order to achieve the NDP target of 100 graduates per million of population per year by 2030, universities need to produce more than 5 000 doctoral graduates per year. However, as indicated in Figure 2, universities only produced 3 690 in 2022.

**FIGURE 2:** Number of doctoral degree graduates in universities, 2012–2022




*Source: Statistics on Post-School Education and Training in South Africa (DHET, 2022).*

Note 1: The data on doctoral graduates reported above only covers public HEIs (universities). Doctoral graduates from private HEIs are not included.
Note 2: There were 33 doctoral graduates from private HEIs in 2022.

The NDP proposes that by 2030 over 25% of students enrolled in universities should be at postgraduate level. Figure 3 shows that the share of postgraduate students was 14.5% in 2022. It is of concern that the share of postgraduate students actually declined since 2020, having hovered around 16–17% from 2012 to 2019. Declining enrolments in postgraduate students is likely to impact negatively on the production of doctoral gradates, thus strengthening the conclusion that the NDP target for doctoral graduates is unlikely to be met by 2030.

**FIGURE 3: Share of postgraduate students enrolled in universities, 2012–2022**


*Sources: Statistics on Post-School Education and Training in South Africa (DHET, 2012–2022); Own calculations based on DHET HEMIS database 2022.*

Note 1: The data reported above only covers postgraduate students at public HEIs (universities). Postgraduate students from private HEIs are not included.

Note 2: Postgraduate students includes all students in universities enrolled for postgraduate, below Master's level, Master's level and doctoral level.

Note 3: The share is calculated by dividing the number of postgraduate students enrolled in universities by the total number of students enrolled in universities.

As outlined in the NDP, for South Africa to be a leading innovator, most doctoral graduates should be in the fields of science, engineering, technology and mathematics. Figure 4 shows that in 2022, 48% of doctoral graduates were in the science, engineering and technology (SET) fields of study. South Africa has generally fared well in terms of this indicator, as most doctoral graduates were in SET in the period under review, except in 2016 and 2022.

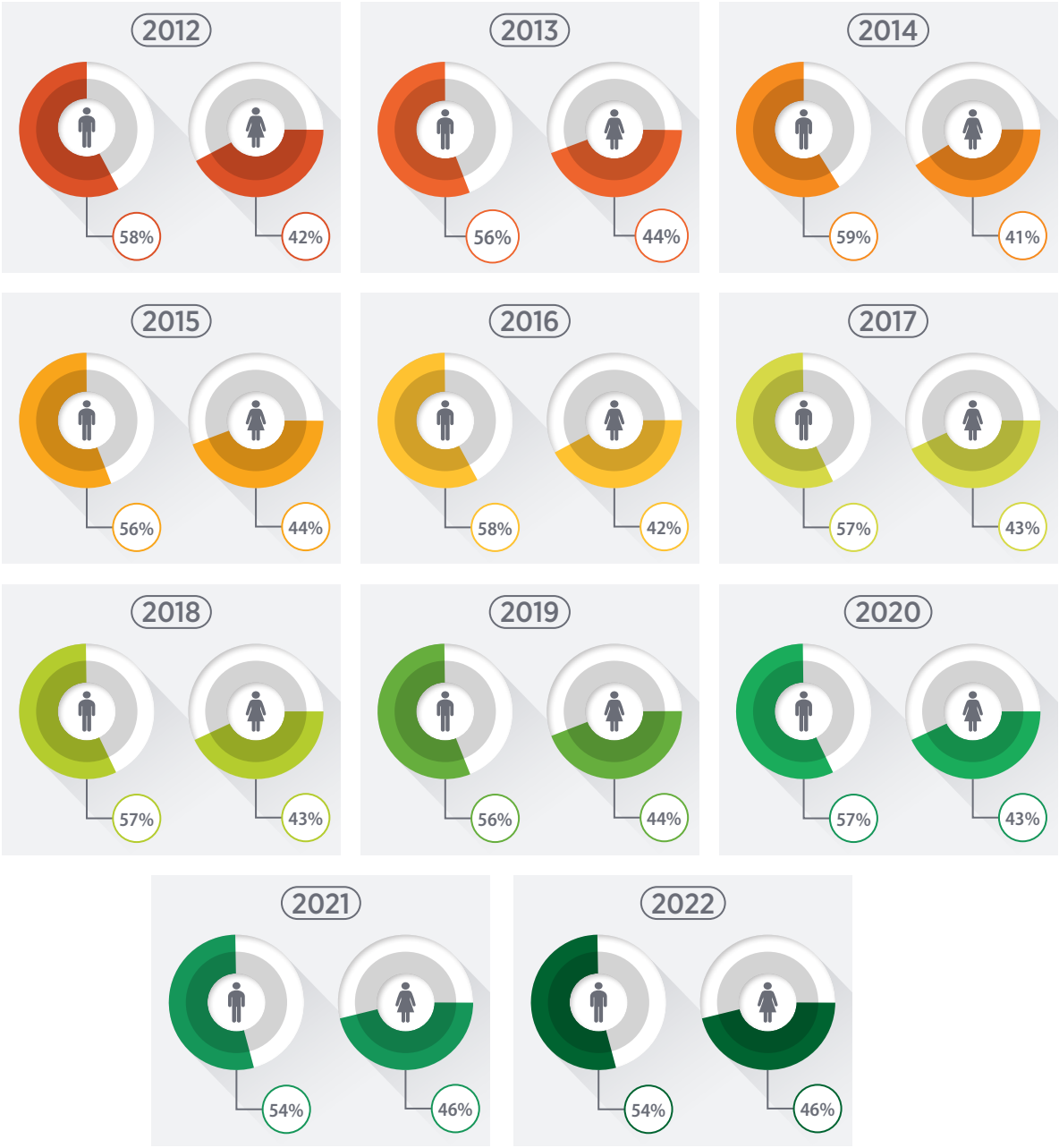
**FIGURE 4: Share of doctoral degree graduates by major field, 2012–2022**


*Source: HEMIS database (DHET, 2012–2022).*

Note: The data on doctoral graduates reported above only covers public HEIs (universities). Doctoral graduates from private HEIs are not included.

In terms of equity, most doctoral graduates were males in the 11-year period under review, as shown in Figure 5. About 46% of doctoral graduates in 2022 were female. It is, however, encouraging to note that the share of female graduates has increased over the years.

**FIGURE 5:** Share of doctoral degree graduates by gender per year, 2012–2022

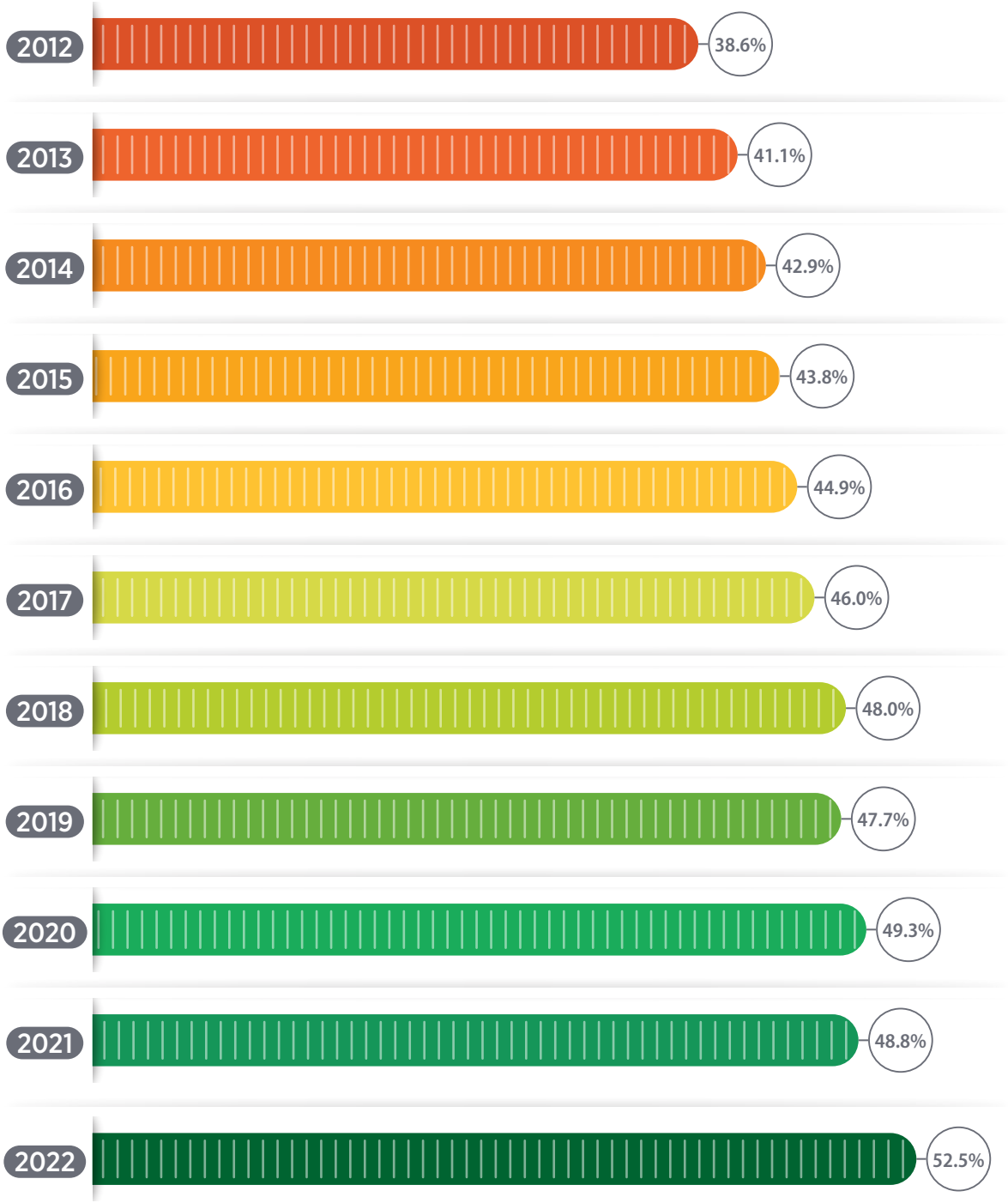



*Source: Own calculations based on HEMIS database (DHET, 2012–2022).*

Note: The data on doctoral graduates reported above only covers public HEIs (universities). Doctoral graduates from private HEIs are not included.

The NDP proposes improving the qualifications of academic staff in higher education and increasing the percentage of staff with a doctoral degree to 75% by 2030. More than half (52.5%) of academic staff had a doctoral degree in 2022, as shown in Figure 6. Despite significant gains over the past decade, it is highly unlikely that the NDP target will be met by 2030, given current trends.

**FIGURE 6:** Share of academic staff with a doctoral degree in universities, 2012–2022

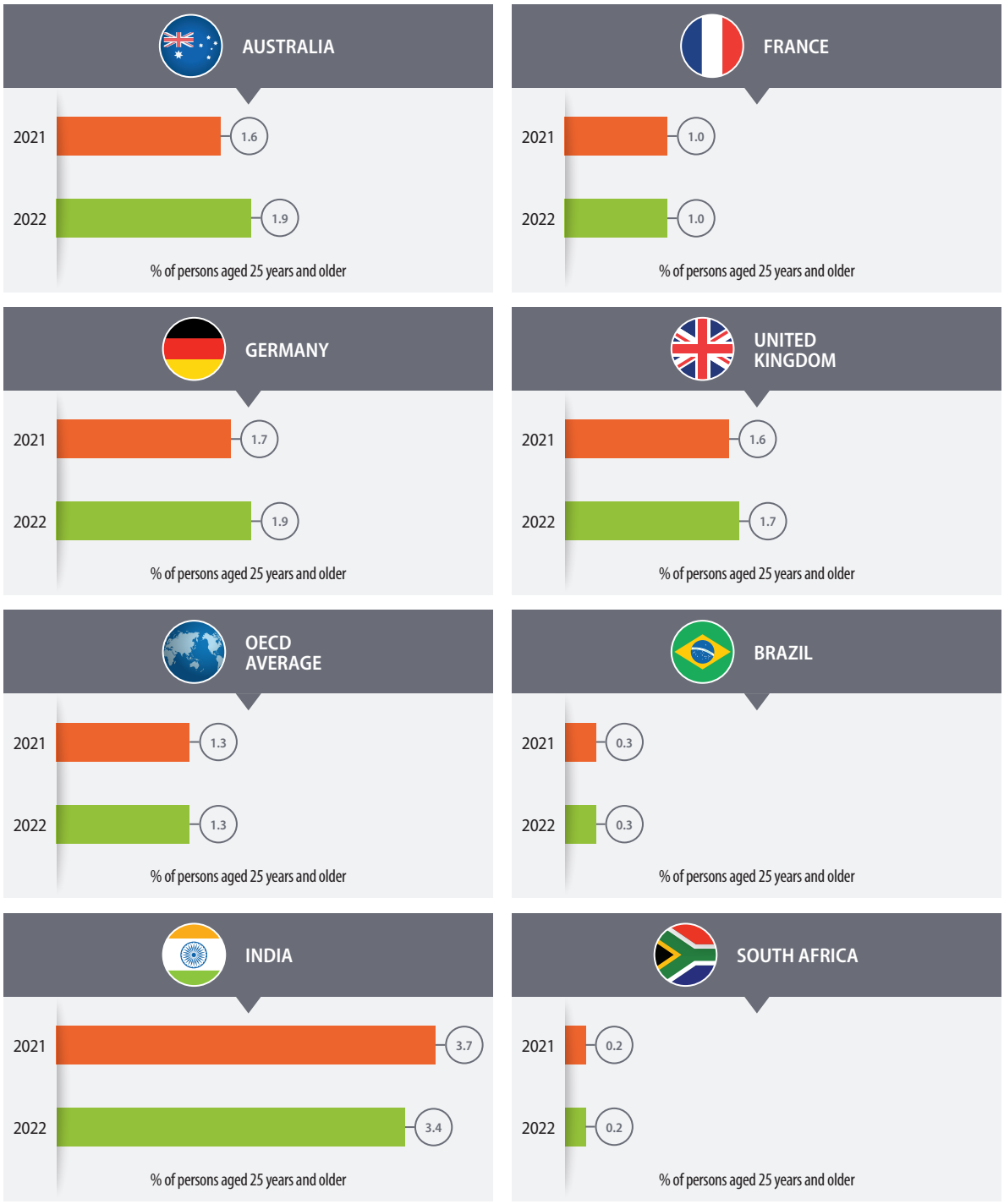



*Source: Own calculations based on HEMIS database (DHET, 2012–2022).*

Note: The data on academic staff with a doctoral degree reported above only covers public HEIs (universities). Academic staff with a doctoral degree from private HEIs are not included.

The share of South Africa's population aged 25 years and older that had a doctoral or equivalent qualification in 2022 was lower than that of many countries, both 'developed' and 'developing'. As indicated in Figure 7, The figure for South Africa was 0.2% in 2022, while that for India, Brazil and the OECD average was 3.4%, 0.3% and 1.3%, respectively.

**FIGURE 7: Share of population aged 25 years and older that attained doctoral degrees or equivalent (ISCED 8) (%) by country, 2021–2022**




*Sources: General Household Surveys (Stats SA: 2021 and 2022); Education at a Glance (OECD: 2021 and 2022).*

Note: The proportions for all other countries were obtained from the OECD, while proportions for South Africa were calculated using data from Stats SA.

Targets for doctoral graduates need to be reviewed and aligned with the projected population estimates for 2030

More needs to be done in terms of gender equity, as there were fewer women than men who graduated with a doctoral degree

Investing in research infrastructure, improved funding, more mentorship programmes and collaboration opportunities can enhance South Africa's capacity to produce a sufficient number of doctoral candidates

## CONCLUSION

Despite significant progress in the production of PhD graduates in South Africa over the past decade, it is highly unlikely that the NDP targets will be met by 2030.

The number of doctoral graduates produced per year have more than doubled since the inception of the NDP, but it is not enough to reach 100 per million of population by 2030, because the population has grown over the years. It is therefore proposed that the targets for doctoral graduates be reviewed and aligned with the projected population estimates for 2030.

The Department of Higher Education and Training's University Staff Doctoral Programme (USDP), aimed at improving the proportion of university academic staff with PhDs, needs to be strengthened to achieve the target of 75% of academics with PhDs by 2030.

South Africa has fared well in terms of doctoral graduates in relevant fields of study, as most doctoral graduates were in the SET fields (despite the slight drop in 2022). However, more needs to be done in terms of equity, as there were fewer female doctoral graduates than males. There should also be improved efforts to increase the pipeline of doctoral degree candidates, as the share of postgraduate students enrolled at universities has decreased and remained very low in the last three years.

By investing in research infrastructure, improved funding, more mentorship programmes and collaboration opportunities, South Africa can further enhance its capacity to produce a sufficient number of doctoral candidates who can drive innovation and research excellence, and contribute to the country's long-term development goals. It is imperative for stakeholders across academia, government and industry to work together towards the common goal of strengthening the doctoral education ecosystem in South Africa for a brighter and more prosperous future.

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Department of Higher Education and Training (DHET) (2024). *Are we producing enough doctoral graduates in South Africa*?, Department of Higher Education and Training, Pretoria.

This report is available on the Department of Higher Education and Training's website

www.dhet.gov.za

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