

The contribution of qualified migration to patent activity in Germany

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Qualified migration makes an indispensable contribution to Germany's innovative capacity: at least 14 per cent of all patent applications developed in Germany now originate from inventors with foreign roots. India makes a particularly significant contribution — in part thanks to initiatives such as “Make it in Germany.”

Methodology

The analysis for this report is based on the IW patent database, which includes all patent applications since 1994 seeking protection in Germany or beyond. Specifically, the first-name module of the IW patent database is used, containing around 45,000 different first names of all inventors residing in Germany who were involved in one of these patent applications. These first names are assigned to one of three gender categories (female, male, or unisex) and to one or more of a total of 24 language areas to determine the region of the world where the person's roots most likely lie (see Koppel et al., 2018). Since patent applications are subject to a disclosure grace period, 2022 represents the most recent year at the time of analysis.

Inventors with foreign roots

The figure shows the contribution of inventors with foreign roots to patent activity in Germany. While this group accounted for 4.9 per cent of all patent applications produced in Germany in 2000, this share has continuously increased, reaching 14.0 per cent in 2022. In

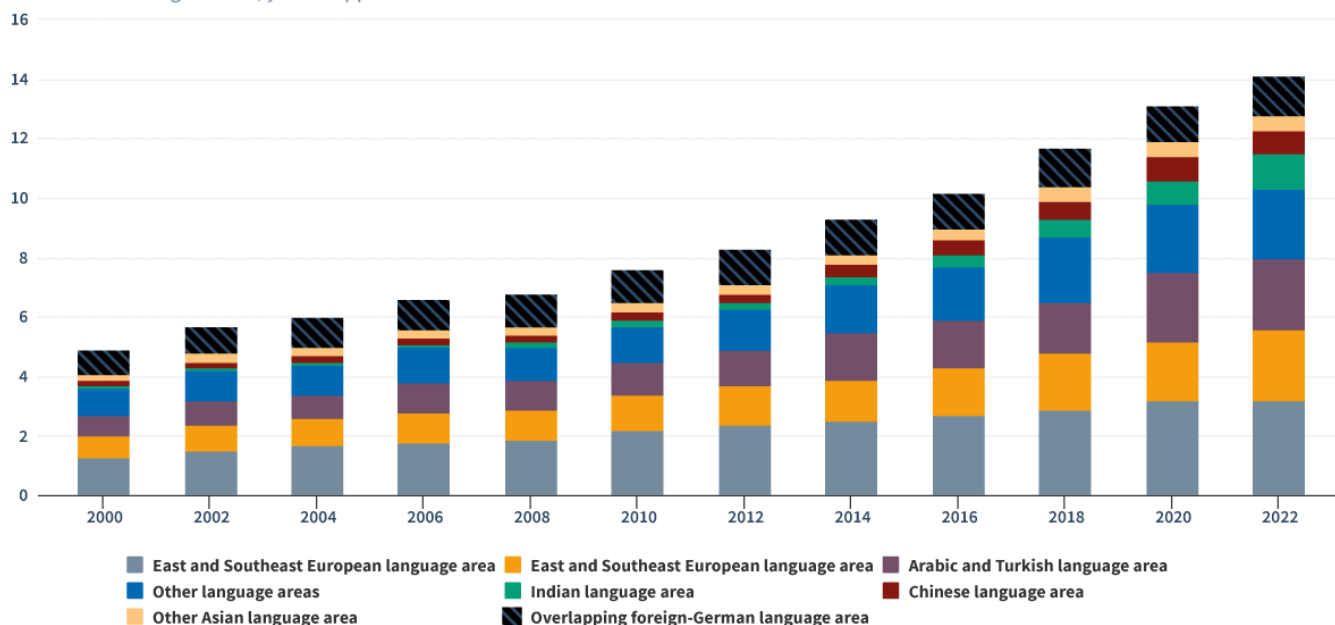
other words, one out of seven patent applications currently filed in Germany, as a research location, originates entirely from inventors with foreign roots. The figure also shows the internal structure by region of origin. The largest contribution comes from the Eastern and Southeastern European language areas, followed by the Southern European and Latin American areas, as well as the Arabic and Turkish areas. The share of each language area has risen significantly. The contribution from the Indian language area has developed most dynamically and will be discussed in more detail in a later section. The Chinese language area also shows strong growth, having more than quadrupled its share. The Southern European and Latin American language areas, as well as the Turkish-speaking and Arabic-speaking ones, have likewise shown well-above-average growth in their innovation contributions.

Women inventors

On average, women accounted for 4.7 per cent of all patent applications filed in Germany during the analysis period of 2000 to 2022. Broken down by language areas, women inventors from foreign language areas accounted for 8.5 per cent of applications, almost twice as many as women inventors from the German-speaking area. Specifically, the share of women inventors is higher in all other language areas than in the German one — especially in Eastern European language areas

Share of inventors with foreign roots in all patent applications developed in Germany

In percent; basis: all national and transnational patent applications seeking protection in Germany; inventor's residence; fractional counting method; year of application



East and Southeast European language area: e.g. Albanian, Bulgarian, Croatian, Czech, Polish, Romanian, Russian, Serbian, Ukrainian, Hungarian; Southern European and Latin American language area: e.g. Greek, Italian, Spanish, Portuguese; Arabic and Turkish language area: e.g. Arabic, Farsi, Kurdish, Turkish; Indian language area: e.g. Bengali, Hindi, Malayalam, Tamil, Urdu; Other Asian language area: e.g. Japanese, Korean, Vietnamese; Chinese language area: e.g. Cantonese, Mandarin; Other language areas: e.g. African languages, English, French, Hebrew, Dutch

Source: IW-Patent database

such as the Czech (13.6), Polish (13.2), and Romanian (12.7) areas, but also in the Korean and Spanish-Portuguese ones (each 11.1). These results support the theory of the gender-equality paradox (Stoet / Geary, 2018): the empirical observation that women in countries with high prosperity and equality tend to turn away from technical and natural scientific subjects and professions while women in countries with lower prosperity or equality pursue STEM studies as a pathway to well-paid jobs, independence, and prosperity.

Overall, the share of women inventors among all patents produced in Germany rose markedly from 3.7 per cent in 2000 to 6.0 per cent most recently, and qualified migration has made innovation in Germany increasingly female.

India

As mentioned in the first section, the contribution of inventors from the Indian language area to patent activity in Germany has developed in a particularly dynamic manner. In absolute numbers, patent applications from this group increased from 40 in 2000 to 495 in 2022 — more than a twelvefold rise. Their share of all patent applications also grew twelvefold, from 0.1 per cent to

1.2 per cent. Within an overall stagnating level of total patent applications from Germany during the analysis period, this indicates substantial structural shifts toward inventors with foreign roots, with the Indian language area gaining the most significance. Aside from being notably dynamic, this group shows a consistently high proportion of women inventors (10.3 per cent) throughout the analysis period.

A similar trend is also visible in the labour market: since 2012, the number of Indian nationals employed in technical and natural scientific professions in Germany subject to social insurance has increased roughly eightfold. India thus shows the strongest STEM employment dynamics of any country worldwide (Anger et al., 2025). These STEM qualifications are key drivers of patent applications. Germany's success in attracting qualified immigrants — supported by initiatives such as "Make it in Germany" — has therefore laid the necessary foundation for the innovative achievements of Indian inventors.

Global recruitment of highly qualified professionals

Since 2012, the German government's official information portal "Make it in Germany" has promoted Germany internationally as an attractive country for work and innovation, providing (highly) qualified professionals from third countries with cross-sector information about the legal, professional, and social conditions for immigration to Germany. It also offers practical tools such as job listings, links to specialised portals and competent institutions, and serves as a first point of contact for skilled experts interested in immigrating to Germany. Today, the website attracts around one million visitors per month, over 80% from abroad. While the website provides information relevant to all countries, India plays a key role here as well. Since the launch of "Make it in Germany," targeted online campaigns have been conducted to present Germany as an attractive place to work and live. Throughout the project period — and in current monthly figures — India consistently accounts for the largest share of website visits. The strategic importance of India was formally recognised in 2024 via the Federal Government's "Skilled Labour Strategy: India" and was also supported by "Make it in Germany". The positive development in the number of Indian nationals on the German labour market and among inventors with Indian roots is thus the result of long-term promotional and informational activities, combined with the presence of German institutions such as the Chambers of Commerce Abroad, the German Academic Exchange Service (DAAD), and the Goethe-Institut in the country.

The successes in India illustrate the path forward for other countries with high educational levels and young populations: in coordination with the respective countries of origin, Germany should intensify efforts to attract researchers and highly qualified professionals. However, in the global competition for talent, promotional and informational activities alone are not sufficient. The introduction of the Skilled Immigration Act (2020) and its amendment (2023/2024) have addressed some problems faced by various professional groups but also increased the complexity of the regulations and processes, especially in assessment and consultation. There remains a need to strengthen existing structures through digitisation, standardisation, and increased

capacity at assessment offices. While private actors play a vital role here, all recruitment activities must adhere to standards of ethical and fair migration. Finally, Germany must continue to position itself as an immigration society with a proactive welcoming culture to retain incoming professionals with expertise and to remain attractive to global talent.

Literature

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