

# Policy Report

## Special Issue

*Vision 2030 and the Socio-Economic Reform  
Process: The Future of Labour and Migration in  
Saudi Arabia*

No.1

# Future Skills Needed and Profiles of Workers

## Ways to Maximise Productivity of Labour

Mehmet A. Soytas

### Executive Summary

Saudi Arabia's labour market is undergoing a transformative phase driven by Vision 2030's goals to diversify the economy, boost productivity, and prepare the workforce for emerging challenges. This policy brief analyses key labour market trends in Saudi Arabia using data from official statistics provided by the General Authority for Statistics (GaStat) and reports published by the National Labour Observatory, identifies critical skill needs, and offers actionable strategies to maximise productivity of labour. Global advancements in technology, particularly automation and artificial intelligence (AI), are reshaping labour market dynamics, necessitating workforce adaptability. Saudi Arabia has responded by investing in high-value sectors such as renewable energy, healthcare, and ICT, fostering a knowledge-based economy. Recent milestones include a rise in female workforce participation from 20 percent in 2018 to over 35 percent in 2023, as well as a youthful, increasingly educated labour force. However, skill mismatches remain a persistent challenge as the economy transitions to high-tech industries.

Emerging industries require a blend of technical and soft skills. High-demand areas include AI, data analytics, cybersecurity, and advanced manufacturing, along with critical thinking and problem-solving skills. Programmes like *Doroob* and *Tamheer* address some of these needs, but broader and more targeted interventions are essential to ensure alignment with market demands and to close productivity gaps. We found that the occupational landscape in Saudi Arabia has undergone a transformation, with Saudi nationals increasingly transitioning from lower-skilled roles to higher-skilled professional, managerial, and technical positions. This mirrors global trends identified in LinkedIn's study in 2023 of job postings across 28 countries, including Saudi Arabia, between 2018 and 2022<sup>1</sup>. The demand for highly skilled roles, particularly those requiring specialised knowledge in technology and engineering, has surged worldwide. Similarly, the National Labour Observatory's (NLO) 2023 Occupation Review Report highlights that from 2016 to 2022, Saudi Arabia experienced a shift toward roles that align with these global patterns, reflecting the growing emphasis on expertise and higher-value occupations<sup>2</sup>.

To compete in the global "war on talent," Saudi Arabia must attract skilled international professionals to complement local capacity. Measures such as streamlined immigration pathways, competitive incentives,

---

Future Skills Needed and Profiles of Workers: Ways to Maximise Productivity of Labour

and innovation hubs like NEOM are essential to addressing immediate skill shortages while fostering long-term economic growth.

To enhance workforce productivity, the brief suggests strategies rooted in international best practices and Saudi-specific labour market dynamics. Scaling sector-specific training programmes for high-demand industries aligns workforce skills with market needs. Investing in AI and digital infrastructure boosts efficiency and resilience, while strengthening public-private partnerships fosters collaboration between education and industry. Drawing on models like Germany's dual vocational training system bridges the gap between theory and practice. Promoting diversity through targeted policies and incentives for gender equity and youth engagement is crucial for a dynamic and inclusive labour market. Together, these efforts position Saudi Arabia to address challenges and achieve sustainable growth.

Policy recommendations emphasise updating educational curricula to prioritise digital and advanced technical skills, expanding training programmes for women and youth to close participation gaps, and improving feedback systems between industries and educational institutions to keep skill development relevant. Attracting international talent while nurturing local expertise is vital for filling immediate skill shortages and creating a sustainable workforce pipeline. By integrating local and global talent, aligning skills with market demands, and fostering inclusivity, Saudi Arabia can boost labour productivity and position itself as a leader in workforce innovation and economic growth.

## **Introduction**

The nature of jobs is undergoing a significant transformation in today's rapidly evolving world. The rise of AI and automation systems has brought both opportunities and challenges. While these technological advancements have the potential to enhance productivity and efficiency, they also pose a risk to certain occupations. Many jobs, particularly those in the low and middle skill segment, are vulnerable to being automated, leading to concerns about job displacement and the need for upskilling or reskilling the workforce <sup>3 4 5 6</sup>.

The Saudi Arabian labour market is undergoing a transformation of historic proportions, driven by economic reforms under the Vision 2030 framework. These changes aim to diversify the economy, reduce dependency on oil revenues, and build a dynamic, knowledge-based economy. Central to this vision is the development of a workforce equipped with skills aligned to the demands of a rapidly evolving labour market. Challenges such as skill mismatches, technological disruptions, and demographic shifts require targeted policies to ensure a resilient and productive workforce. This brief explores the summary of the findings from the main background paper on the future skill needs in Saudi Arabia, highlights the critical role of skills in driving productivity, discusses the ways of maximising labour productivity, and proposes policies to build a future-ready labour force, that is focused on challenges that necessitate compromise and specific policies such as youth employment and increasing female participation.

## **The Relationship Between Skills and Productivity**

Productivity improvements, achieved through advancements in technology, skill development, and innovation, are essential for sustainable growth as they enhance the value generated per worker, thereby supporting higher wages, improved standards of living, and overall economic resilience <sup>7 8</sup>. Increases in labour productivity can also affect labour demand, though the direction of this impact can vary depending on industry-specific factors, the pace of technological adoption, and policy frameworks.

---

Future Skills Needed and Profiles of Workers: Ways to Maximise Productivity of Labour

For instance, productivity gains in capital-intensive industries might reduce labour demand due to automation, while in knowledge-intensive sectors, productivity growth can lead to higher demand for skilled labour<sup>9</sup>. Therefore, the implications of productivity growth for the labour market are complex and multifaceted, and it is important to understand the dynamic interplay between productivity and employment, particularly in terms of short-run and long-run dynamics.

Productivity growth often implies that fewer labourers are required to complete the same tasks. This immediate effect is generally perceived as negative for employment, as technological advancements and efficiency improvements can lead to job displacement. Despite the short-term disruptions, productivity growth is closely linked to job creation and higher employment rates over time. Increased productivity often leads to economic expansion, which in turn creates new job opportunities<sup>10</sup>. This correlation suggests that countries with a strong focus on boosting productivity often experience parallel improvements in employment, as the economic expansion associated with productivity gains can lead to higher labour demand and, consequently, job opportunities in diverse sectors<sup>11</sup>.

Supportive labour market policies can mitigate transitional effects on the workforce while enhancing productivity. Empirical research further highlights that countries investing in targeted human capital development tend to see more favourable labour market outcomes as productivity increases<sup>12 13</sup>.

Skills in technology, programming, and digital management are among the most valued globally<sup>14 15</sup>. Digital tools that enable predictive analytics and efficient resource management can significantly increase productivity in traditional industries such as manufacturing and logistics, as well as in new sectors like biotechnology and green energy, where Saudi Arabia is looking to expand. Countries that have integrated these skills into their educational and training programmes experienced significant productivity gains<sup>16 17</sup>. Investment in upskilling through continuous education is necessary to equip Saudi workers with the necessary skills to adapt to changing demands, providing them with a strong foundation in complex problem-solving, creativity, and critical thinking that boosts adaptability and resilience, particularly in industries undergoing rapid automation<sup>18 19</sup>.

### **Future Skill Needs in Saudi Arabia**

Saudi Arabia's labour market is shaped by its distinct demographic structure, which includes a high level of youth participation. As per the Saudi Census 2022, Saudi Arabia has a population of approximately 32.2 million (of which 18.7 million are Saudis), with a large youth segment, which brings both potential and specific labour market challenges. This demographic structure positions the Kingdom uniquely for rapid skill development, as younger workers often have a more robust inclination for acquiring digital and technical skills—qualities vital for productivity in an increasingly tech-driven economy<sup>20</sup>.

Saudi nationals' labour force participation rate reached 51.3 percent (60.4 percent overall) in 2023, with Saudi male participation at 67 percent and female participation seeing a significant rise to around 36 percent, a notable shift due to policies promoting gender diversity in the workforce<sup>21</sup>. Saudi Arabia's labour market also features a high percentage of foreign workers—about 77 percent of the private sector workforce. However, recent labour market reforms have sought to balance this with increased Saudi employment, known as Saudisation, aiming to boost local workforce participation in private sectors traditionally dominated by foreign workers<sup>22</sup>. Compared to other countries, this dependency on foreign labour is particularly distinctive and shapes the skill strategies, as initiatives seek to build local talent pipelines and ensure that the skills landscape aligns with Saudi Vision 2030's goals.

Globally, countries are increasingly investing in skills development for AI and digital industries, recognising the long-term economic payoffs of attracting and nurturing skilled talent. This shift is also driving competition for top professionals as demand outstrips supply, **making skilled migration a vital source of talent for many economies**. Economies with a larger pool of skilled migrants tend to see increased knowledge creation and innovation, especially in technology-intensive sectors<sup>23</sup>. Future skills will also require strong non-technical competencies, including adaptability, creative problem-solving, and digital literacy, to complement specialised knowledge. This underscores that a workforce proficient in these areas is better equipped to adapt to technological disruptions, enhancing productivity across sectors<sup>24</sup>.

### **Key Sectors and High-Demand Skills**

In Saudi Arabia, skill requirements across occupational categories are evolving. According to the National Labour Observatory (NLO) analysis, there is an increasing tendency for Saudi workers to occupy higher-skilled positions over time.<sup>25</sup> This shift aligns with similar trends observed globally, where entry-level and traditionally manual jobs now require digital literacy, technical adaptability, and basic data management skills due to the impact of automation<sup>26 27</sup>.

A LinkedIn study analysed emerging occupations and in-demand skills by tracking job postings across 28 countries, including Saudi Arabia, from January 2018 to July 2022 and gathered insights on roles experiencing the fastest growth rates across various regions. The study found technology consistently leading as the fastest-growing sector globally, echoing pre-pandemic trends. Tech roles dominated the top 10 fastest-growing jobs in all 28 countries, indicating a global shift towards digitised skill sets. Besides tech, essential business roles—such as customer service, sales development, and business development—showed substantial growth worldwide<sup>28</sup>.

The top 15 fastest-growing job titles from the LinkedIn study for Saudi Arabia indicates a shift towards a more specialised and modernised workforce. Table 1 summarises some of the fastest growing occupations, their related industries, their most sought-after skills, education, and experience requirements from the study.

Table 1: Select Fastest Growing Occupations, Saudi Arabia, LinkedIn 2023.

Job Title	Industries	Skills	Education Level	Median Experience
<b>Environmental Manager</b>	Construction, Government, Oil & Gas	Environmental Compliance, Sustainability	54% Master's, 46% Bachelor's	4.8 years
<b>Human Resources Operations Specialist</b>	Manufacturing, Government, Financial Services	HR Operations, Policies	31% Master's, 66% Bachelor's	2.4 years
<b>Back-end Developer</b>	Tech, Financial Services	Node.js, PHP, Laravel	19% Master's, 81% Bachelor's	1.6 years
<b>Cyber Security Manager</b>	Financial Services, Government, Accommodation	Vulnerability Assessment, Information Security	50% Master's, 50% Bachelor's	4.4 years
<b>Data Scientist</b>	Tech, Financial Services, Education	Machine Learning, Python	40% Master's, 60% Bachelor's	1.9 years

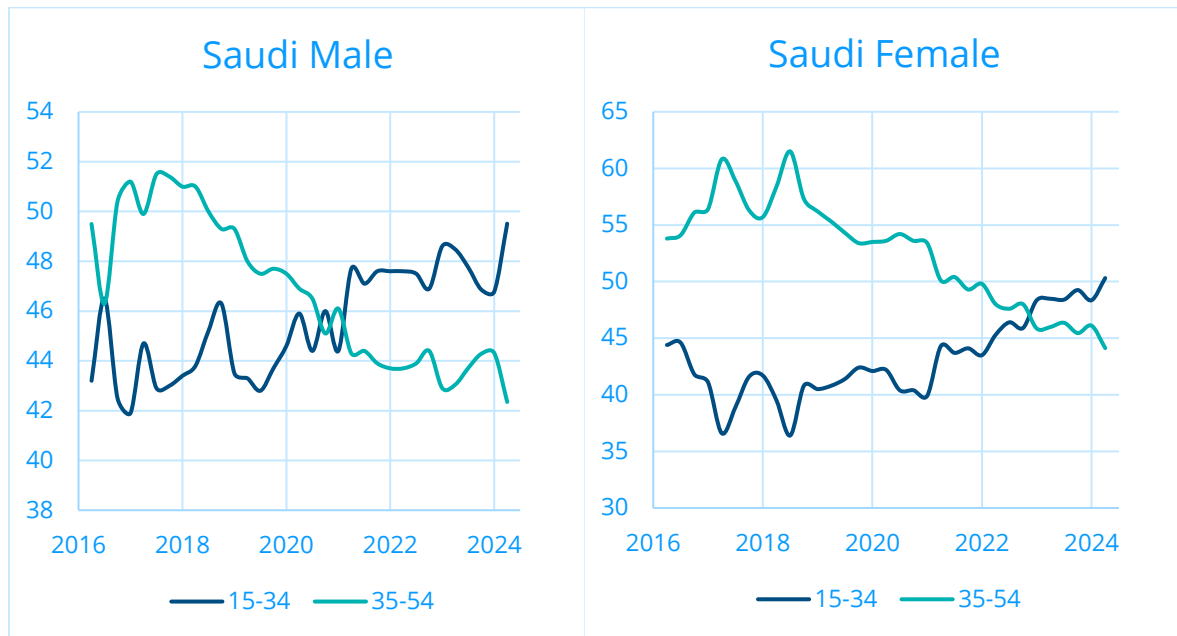
Note: Select Occupations and their demanded characteristics derived from LinkedIn 2023 Study.

The fastest-growing jobs in Saudi Arabia reflect a modernising economy and an increasing reliance on technological, environmental, and human capital management skills. Across industries, the skill and experience requirements for these roles show the importance of specialised knowledge, particularly in environmental sustainability, cybersecurity, HR, and data analytics. According to the National Labour Observatory's Report in 2023, administrative data highlights a similar transformative shift in Saudi Arabia's occupational landscape from 2016 to 2022, **mirroring similar trends observed in LinkedIn's global study**. The NLO's findings reveal that Saudi nationals have increasingly transitioned from lower-skilled roles to higher-skilled occupations, with substantial growth in professional, managerial, and technical fields.

**Profiles of Future Workers**

The Saudi labour market is experiencing a shift towards a younger workforce, a change with significant implications for future skills needs and labour dynamics. Analysis of the age distribution of workers indicates that younger individuals are now a larger proportion of the Saudi labour force (Figure 1). The composition of younger workers in the labour force also reflects proactive labour market policies and educational reforms aimed at improving youth employability and reducing unemployment.

**Figure 1:** Age distribution of the employed Saudi workers: 2016 - 2024.



Source: GaStat Labour market Statistics, 2016-2024.

Another transformative trend in Saudi Arabia’s labour market is the sharp increase in female workforce participation, a key factor shaping the future of jobs. Women’s labour force participation rose from approximately 20 percent in 2018 to over 35 percent in 2023, an unprecedented increase attributable to both policy reforms and cultural shifts aimed at gender inclusion<sup>29</sup>. The proportion of Saudi women in the private sector has nearly tripled during this period, reflecting Saudi Arabia’s active efforts to diversify the workforce. Increased female participation impacts the skills and training required across sectors, as new entrants bring fresh perspectives and expectations to the labour market.

## **Maximising Labour Productivity**

Improving workforce skills directly influences labour productivity, particularly as Saudi Arabia shifts focus toward high-value sectors such as digital technology, engineering, and advanced manufacturing. Productivity growth varies considerably across industries, driven by sector-specific factors such as the reliance on skilled labour, the intensity of physical and knowledge-based capital, the potential for product and process innovations, and exposure to global value chains. For Saudi Arabia, these global insights emphasise the need to focus on sector-specific skills and policies that enhance productivity. By channelling resources into targeted upskilling programmes within high-potential industries like technology and business services, Saudi Arabia can align its labour force capabilities with areas of strong productivity growth potential, advancing the nation's Vision 2030 goals.

As automation and digitalisation reshape labour markets worldwide, upskilling and reskilling are critical to maintaining high productivity and economic competitiveness. Leading economies have demonstrated the success of comprehensive upskilling programmes. Educational institutions play a pivotal role in aligning curricula with the labour market, particularly in areas related to AI, data science, and advanced engineering. In recent years, Saudi universities have increasingly integrated digital and technical courses into their programmes. Lifelong learning is essential for professionals needing to adapt to rapidly evolving technologies and market conditions. Saudi Arabia has developed several lifelong learning and upskilling programmes to enhance workforce productivity and prepare mid-career professionals for evolving job roles. Additionally, the Human Resources Development Fund's (HRDF) Tamheer programme focuses on graduate development through on-the-job training in collaboration with public/private sector firms, allowing participants to gain hands-on experience that matches industry needs. On-the-job training initiatives are increasingly recognised for their role in improving productivity.

## **Addressing Challenges in the Labour Market and Policy Recommendations**

Saudi Arabia has recognised the critical importance of addressing skill mismatches to align workforce capabilities with the demands of a rapidly diversifying economy. Initiatives like the Human Capital Development Program (HCDP) and coordinated efforts with the Council of Universities have focused on analysing the destinations and outcomes of Saudi graduates to guide future policy. To tackle mismatches, Saudi Arabia has also launched comprehensive sectoral foresight reports that identify skill needs and priority occupations <sup>30</sup>.

Saudi Arabia is implementing targeted programmes within sectors with high productivity potential. Initiatives like the Sector Skills Councils foster partnerships between government agencies, private industries, and educational institutions, facilitating the development of specialised training that matches emerging job roles in sectors such as technology, healthcare, and energy. Additionally, through initiatives like the Doroob and Tamheer programmes, the HRDF provides e-learning and practical training opportunities to both new graduates and mid-career professionals.

As Saudi Arabia continues to diversify its economy, attracting and retaining top global talent has become an essential strategy. The "war on talent" has intensified globally, with many countries enacting policies to attract highly skilled professionals through incentives such as tax breaks, fast-track visas, and long-term residency options. Combining Saudisation policies with selective immigration strategies and expansion of the premium residency programme to talent fields help bridge immediate skill gaps while ensuring sustainable workforce localisation. Strategic migration policies will be central to meeting workforce needs, particularly in high-demand fields like AI, data science, and engineering. These policies should prioritise selective immigration programmes that attract and retain high-skilled professionals

through competitive compensation, long-term residency opportunities, and career development pathways.

## Conclusion

Productivity improvements, achieved through advancements in technology, skill development, and innovation, are essential for sustainable growth as they enhance the value generated per worker, thereby supporting higher wages, improved standards of living, and overall economic resilience. Saudi Arabia's ambitious Vision 2030 framework requires a skilled and adaptable workforce capable of navigating the challenges of a rapidly changing global economy. By prioritising workforce development through strategic investments in education, training, and infrastructure, the Kingdom can ensure long-term economic resilience and competitiveness. Policymakers must act decisively to address skill mismatches, foster inclusivity in the labour market, invest in upskilling and reskilling initiatives, and prioritise strategic migration policies as those will be central to meeting workforce needs.

## Endnotes

- 
- 1 LinkedIn 2023: *Jobs on the Rise Report 2023*.
  - 2 National Labor Observatory (NLO) 2023: *Occupations Review Report*, in: <https://api.nlo.gov.sa/Files/attachments/6951bd8c-f2f8-464d-b6bf-6c2e14c5c72c.pdf>
  - 3 Autor, David H. / Levy, Frank / Murnane, Richard J. 2003: *The Skill Content of Recent Technological Change: An Empirical Exploration* in, *The Quarterly Journal of Economics* 118, no. 4, pp.1279–1333.
  - 4 Goos, Maarten / Manning, Alan. (2007): *Lousy and Lovely Jobs - The Rising Polarization of Work in Britain* in, *The Review of Economics and Statistics* 89, no. 1, pp.118–133.
  - 5 Michaels, Guy / Natraj, Ashwini / Van Reenen, John: 2014: *Has ICT Polarized Skill Demand? Evidence from Eleven Countries Over 25 Years* in, *The Review of Economics and Statistics* 96, no. 1, pp. 60–77.
  - 6 Acemoglu, Daron / Pascual Restrepo 2018: *The Race between Man and Machine: Implications of Technology for Growth, Factor Shares, and Employment* in, *American Economic Review* 108, no. 6, pp. 1488–1542.
  - 7 Solow, Robert M. 1957: *Technical Change and the Aggregate Production Function* in, *The Review of Economics and Statistics* 39, no. 3 pp. 312–320.
  - 8 Jorgenson, Dale W. / Griliches, Zvi. 1967): *The Explanation of Productivity Change* in, *The Review of Economic Studies* 34, no. 3, pp. 249–283.

- 
- 9 Acemoglu, Daron / Restrepo, Pascual 2018): The Race between Man and Machine: Implications of Technology for Growth, Factor Shares, and Employment in the American Economic Review 108, no. 6., pp. 1488–1542.
  - 10 Ibid.
  - 11 World Bank 2020: Global Productivity: Trends, Drivers, and Policies, in: <https://www.worldbank.org/en/research/publication/global-productivity>.
  - 12 Goldin, Claudia / Katz, Lawrence F. 2008: The Race Between Education and Technology.
  - 13 Autor, David H. 2015: Why Are There Still So Many Jobs? The History and Future of Workplace Automation, in Journal of Economic Perspectives 29, no. 3, pp. 3–30.
  - 14 World Economic Forum 2020: Future of Jobs Report 2020, in: <https://www.weforum.org/publications/the-future-of-jobs-report-2020/> [20.10.2020].
  - 15 Organisation for Economic Co-operation and Development 2021: Employment Outlook 2021, in: [https://www.oecd.org/en/publications/2021/07/oecd-employment-outlook-2021\\_e81ed73a.html](https://www.oecd.org/en/publications/2021/07/oecd-employment-outlook-2021_e81ed73a.html) [07.07.2021].
  - 16 Kagermann, Henning / Wahlster, Wolfgang / Helbig, Johannes 2013: Recommendations for Implementing the Strategic Initiative Industrie 4.0, in: <https://en.acatech.de/publication/recommendations-for-implementing-the-strategic-initiative-industrie-4-0-final-report-of-the-industrie-4-0-working-group/> [08.04.2013].
  - 17 McKinsey & Company 2015: Industry 4.0: How to Navigate Digitization of the Manufacturing Sector, in: <https://www.mckinsey.com/capabilities/operations/our-insights/industry-four-point-o-how-to-navigae-the-digitization-of-the-manufacturing-sector> [01.04.2015].
  - 18 World Bank 2019: Women, Business, and the Law 2019: A Decade of Reform, in: <https://documents1.worldbank.org/curated/en/101301551208346052/pdf/Women-Business-and-the-Law-2019-A-Decade-of-Reform.pdf> [26.02.2019].
  - 19 International Labour Organization 2020: World Employment and Social Outlook 2020 in, [https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@dgreports/@dcomm/@publ/documents/publication/wcms\\_734455.pdf](https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@dgreports/@dcomm/@publ/documents/publication/wcms_734455.pdf) [20.01.2020].
  - 20 Ibid.
  - 21 General Authority for Statistics 2023: Labor market statistics Q4,2023 in, <https://www.stats.gov.sa/en/statistics-tabs/-/categories/417515?tab=436312&category=417515&year=120090>

- 22 **International Monetary Fund 2023: Saudi Arabia 2023, in Country Reports, 2023, p. 323, in:**  
<https://www.elibrary.imf.org/view/journals/002/2023/323/002.2023.issue-323-en.xml>  
[06.09.2023].
- 23 **Bosetti, Valentina / Cattaneo, Cristina / Verdolini, Elena 2015: Migration, Cultural Diversity, and Innovation: A European Perspective in, Journal of International Economics 96, no. S1, pp. 104–122.**
- 24 **Organisation for Economic Co-operation and Development: Employment Outlook 2020: Worker Security and the COVID-19 Crisis, in:**  
[https://www.oecd.org/en/publications/2020/07/oecd-employment-outlook-2020\\_19b4fc0d.html](https://www.oecd.org/en/publications/2020/07/oecd-employment-outlook-2020_19b4fc0d.html)  
[07.07.2020].
- 25 **National Labor Observatory (NLO) 2023: Occupations Review Report, in:**  
<https://api.nlo.gov.sa/Files/attachments/6951bd8c-f2f8-464d-b6bf-6c2e14c5c72c.pdf>
- 26 **International Labour Organization 2019: Work for a Brighter Future: Global Commission on the Future of Work Report, in:**  
[https://www.ilo.org/sites/default/files/wcmsp5/groups/public/%40dgreports/%40cabinet/documents/publication/wcms\\_662410.pdf](https://www.ilo.org/sites/default/files/wcmsp5/groups/public/%40dgreports/%40cabinet/documents/publication/wcms_662410.pdf) [22.01.2019].
- 27 **McKinsey & Company 2021: The Future of Work After COVID-19, in:**  
<https://www.mckinsey.com/featured-insights/future-of-work/the-future-of-work-after-covid-19>  
[18.02.2021].
- 28 **LinkedIn 2023: Jobs on the Rise Report 2023**
- 29 **General Authority for Statistics 2023: Labor market statistics Q4,2023 in:**  
<https://www.stats.gov.sa/en/statistics-tabs/-/categories/417515?tab=436312&category=417515&year=120090>
- 30 **National Labor Observatory (NLO) 2023: Occupations Review Report, in:**  
<https://api.nlo.gov.sa/Files/attachments/6951bd8c-f2f8-464d-b6bf-6c2e14c5c72c.pdf>.

## Contact

Philipp Dienstbier  
Director  
Regional Programme Gulf States  
European and International Cooperation  
philipp.dienstbier@kas.de

## Imprint

Published by Konrad-Adenauer-Stiftung, 2025,  
Berlin, Federal Republic of Germany

This publication was published with financial support of the Federal Republic of Germany.

This policy report was written in the framework of joint project with the Gulf Labour Markets, Migration and Population (GLMM) Programme of the Gulf Research Center (GRC) entitled "Vision 2030 and the Socio-Economic Reform Process: The Future of Labour and Migration in Saudi Arabia?" This policy paper is part of a set of six. Each policy paper is based upon a larger research report which is published in a volume as well as separately. All publications can be accessed on the Konrad-Adenauer-Stiftung (KAS) website [here](#).

This publication of the Konrad-Adenauer-Stiftung e. V. is solely intended for information purposes. It may not be used by political parties or by election campaigners or supporters for the purpose of election advertising. This applies to federal, state and local elections as well as elections to the European Parliament.

Disclaimer: The views expressed in this publication are those of the author and do not necessarily reflect the official policy or position of the Konrad-Adenauer-Stiftung or its Regional Programme Gulf States.