Labour Market Dynamic in Cambodia: Labour Demand and Supply

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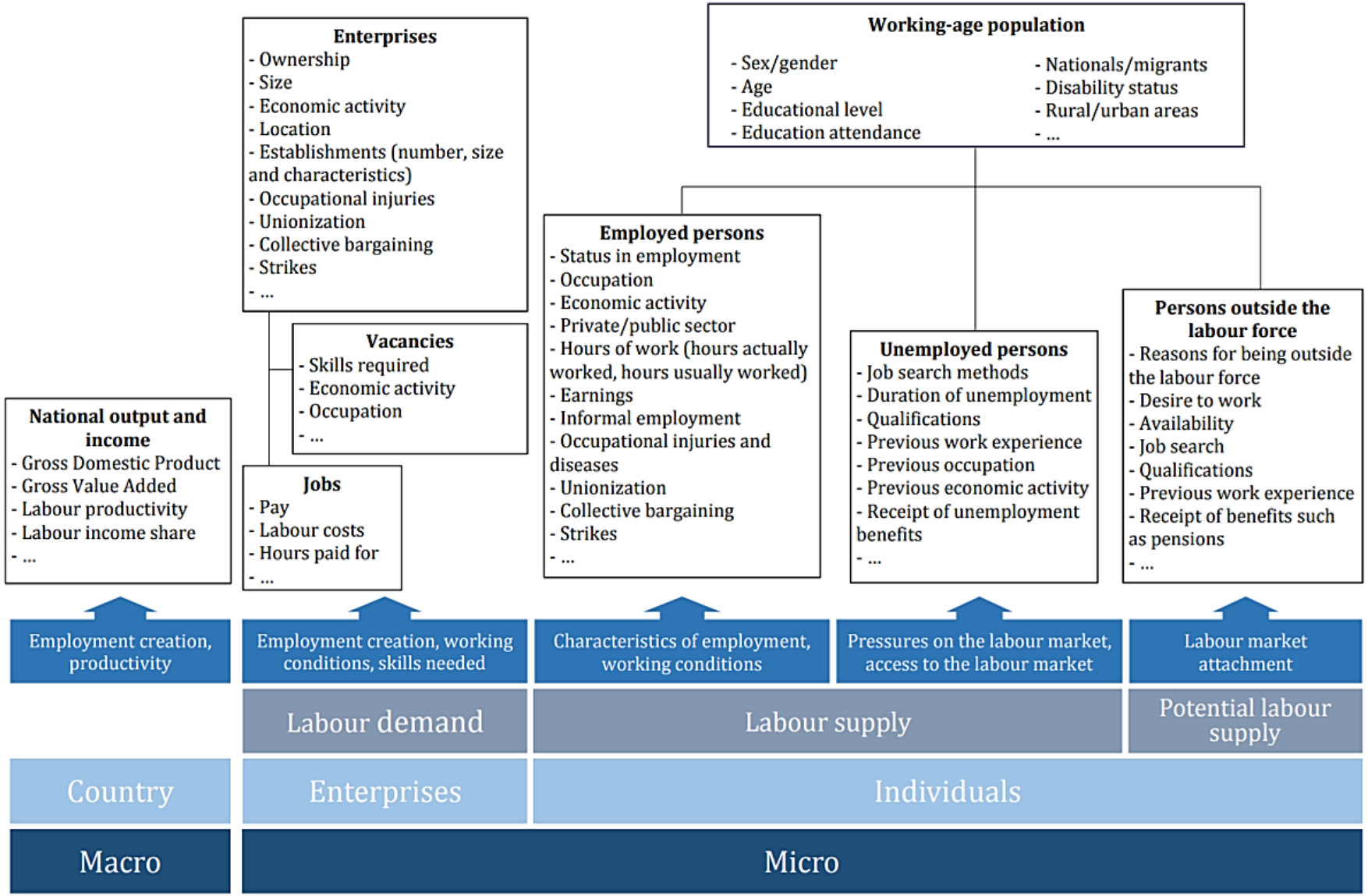
Stylized fact: Structure of Labour Market



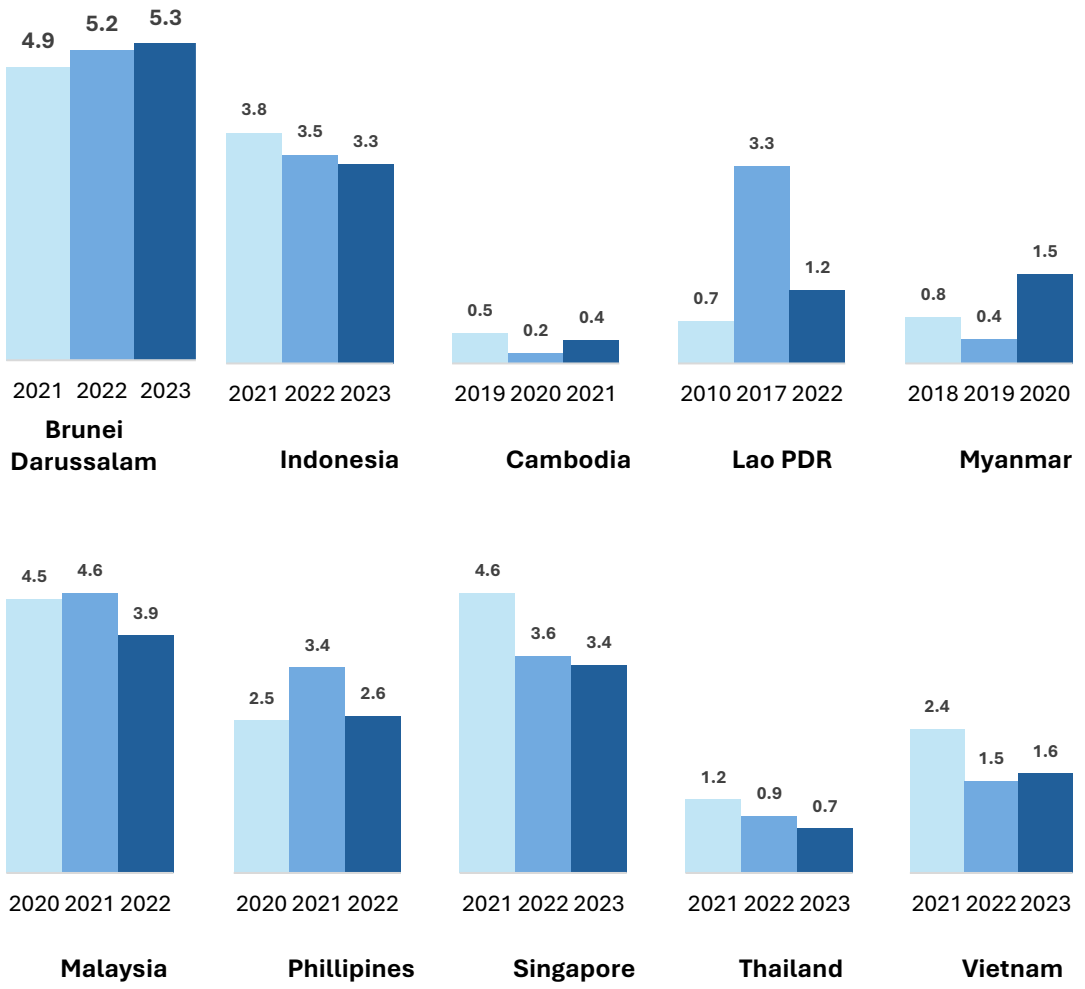
Source:: International Labour Organization (ILO) , 2019

Regional Labour Market

Share of employment by economic activity (%) by ASEAN member states, 2022

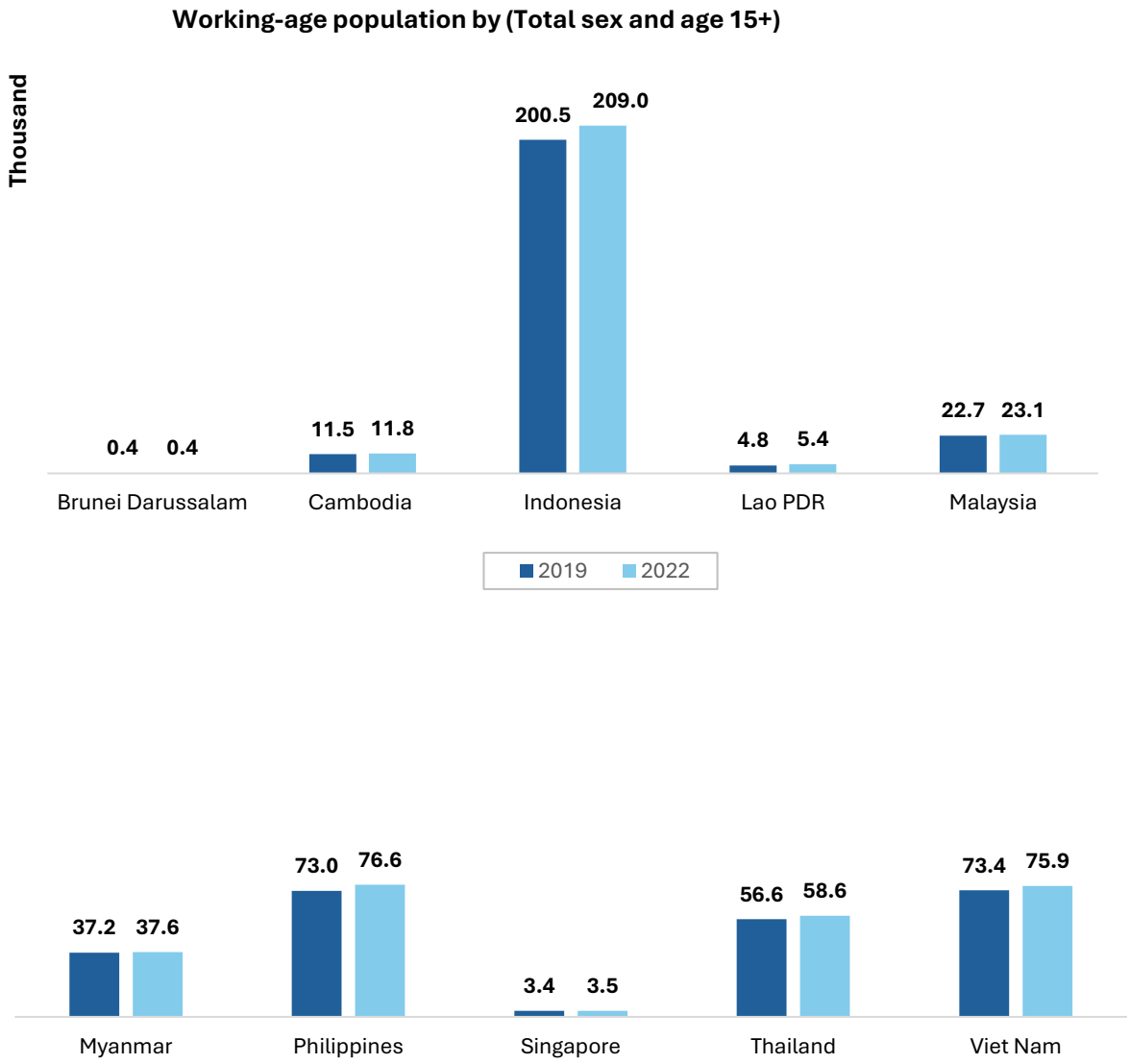
Source: World Bank, 2024

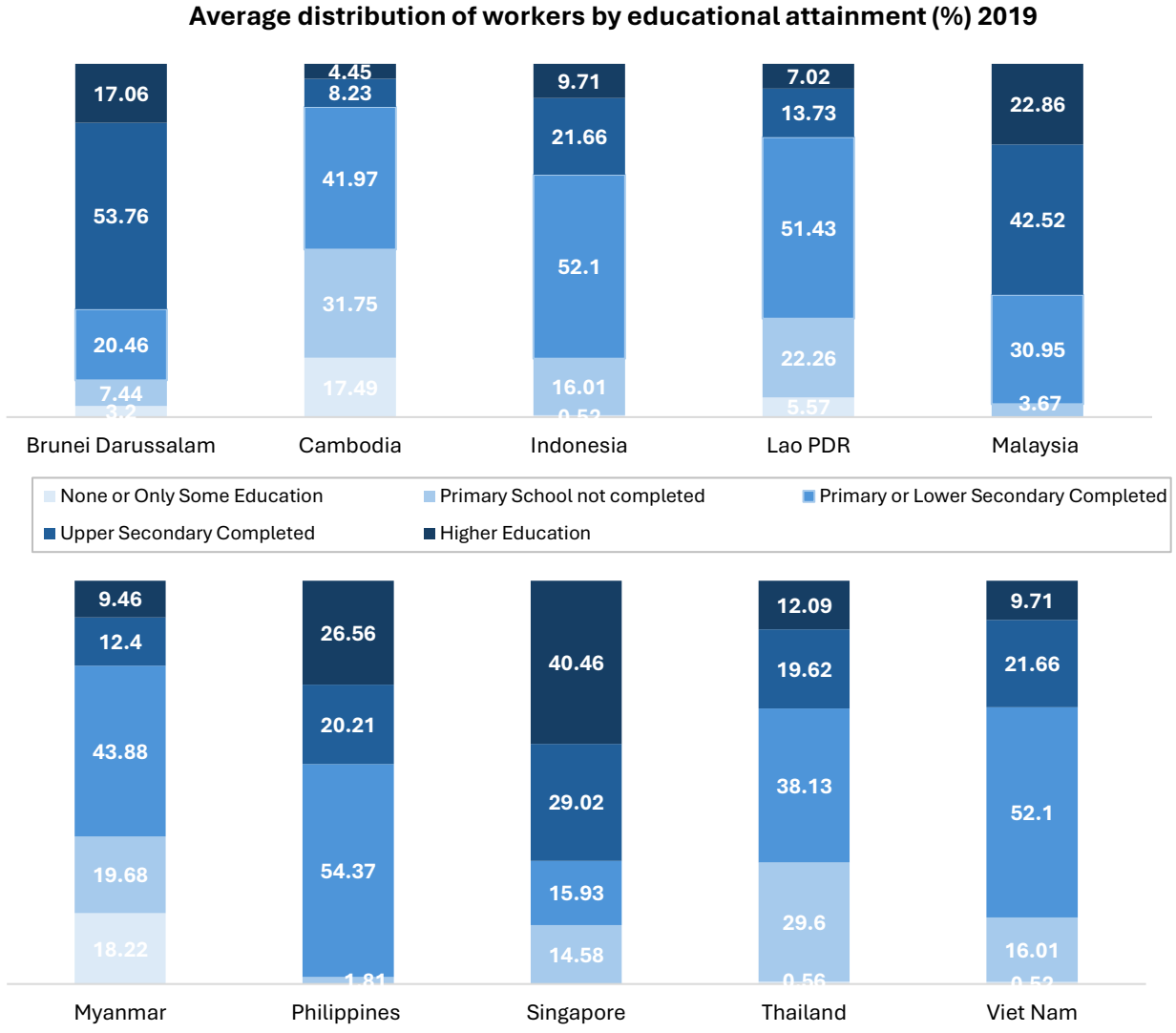
Unemployment Rate of ASEAN Member States



Source: International Labour Organization (ILO), 2024

Regional Labour Market



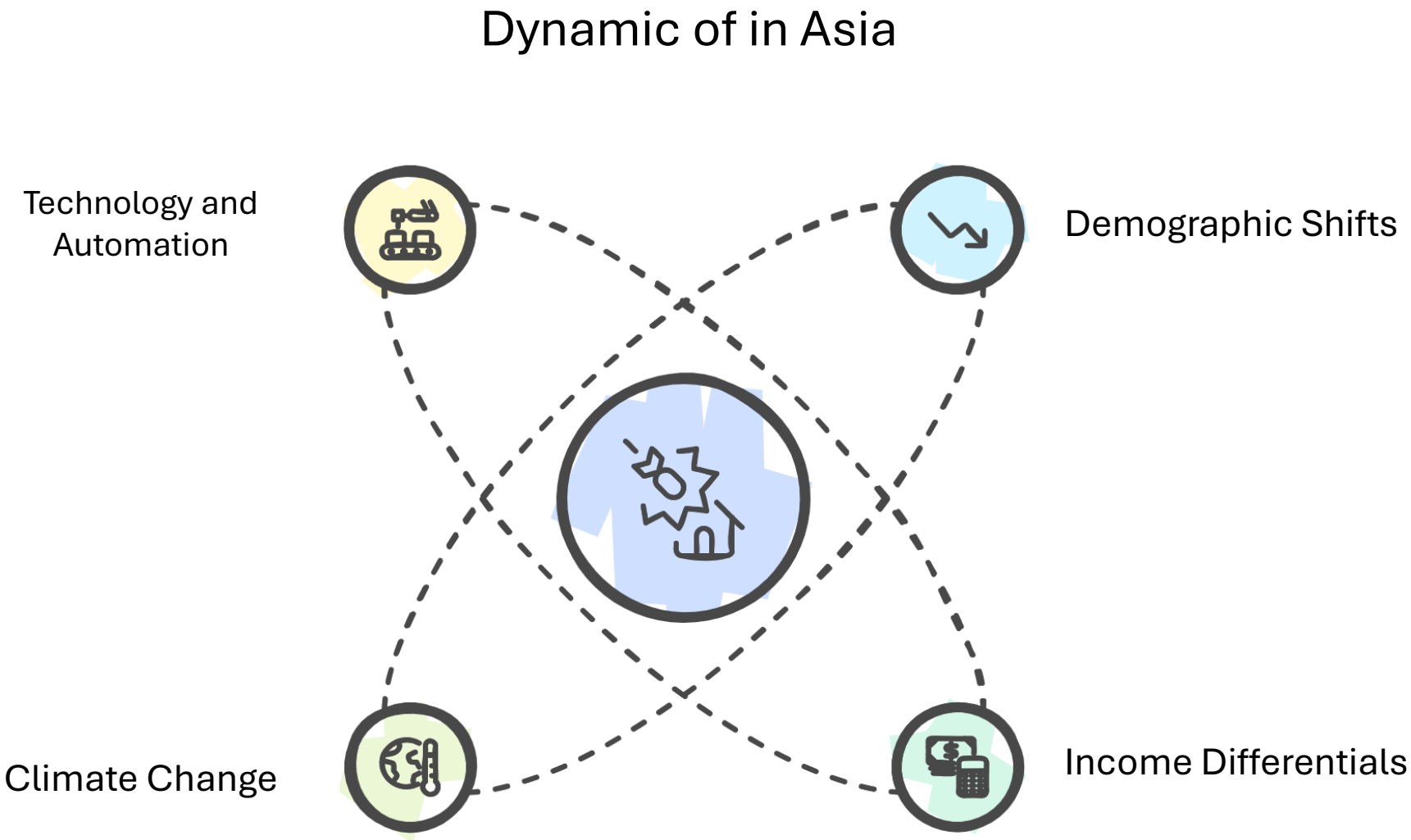


Note: Latest available data for Cambodia is 2021, Lao PDR: 2017, and Myanmar: 2020

Source: International Labour Organization (ILO), 2024

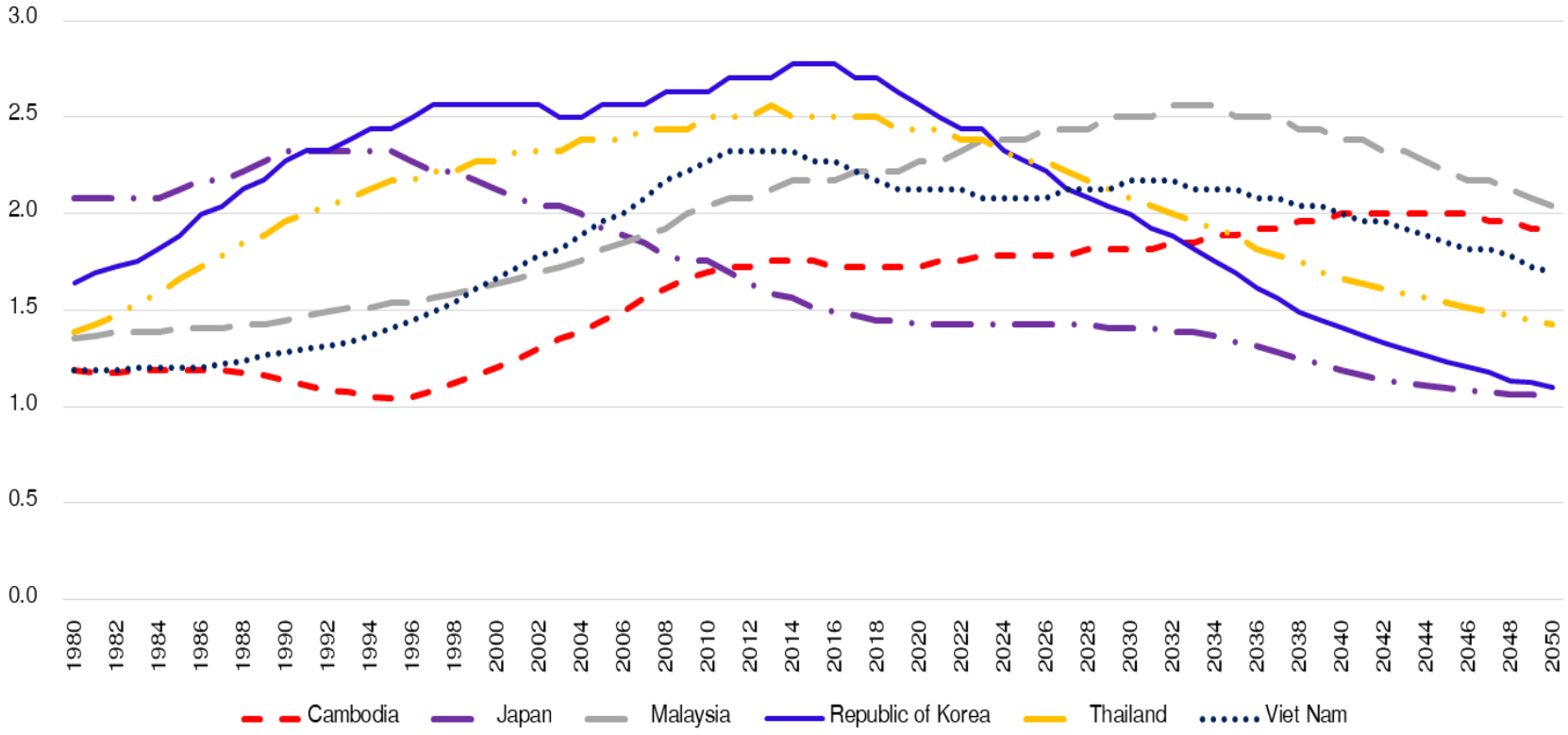
Source: International Labour Organization (ILO), 2022

Top Four Shifts in ASEAN



Cambodia's Demographic Landscape

Selected countries and Cambodia’s inverse dependency ratio

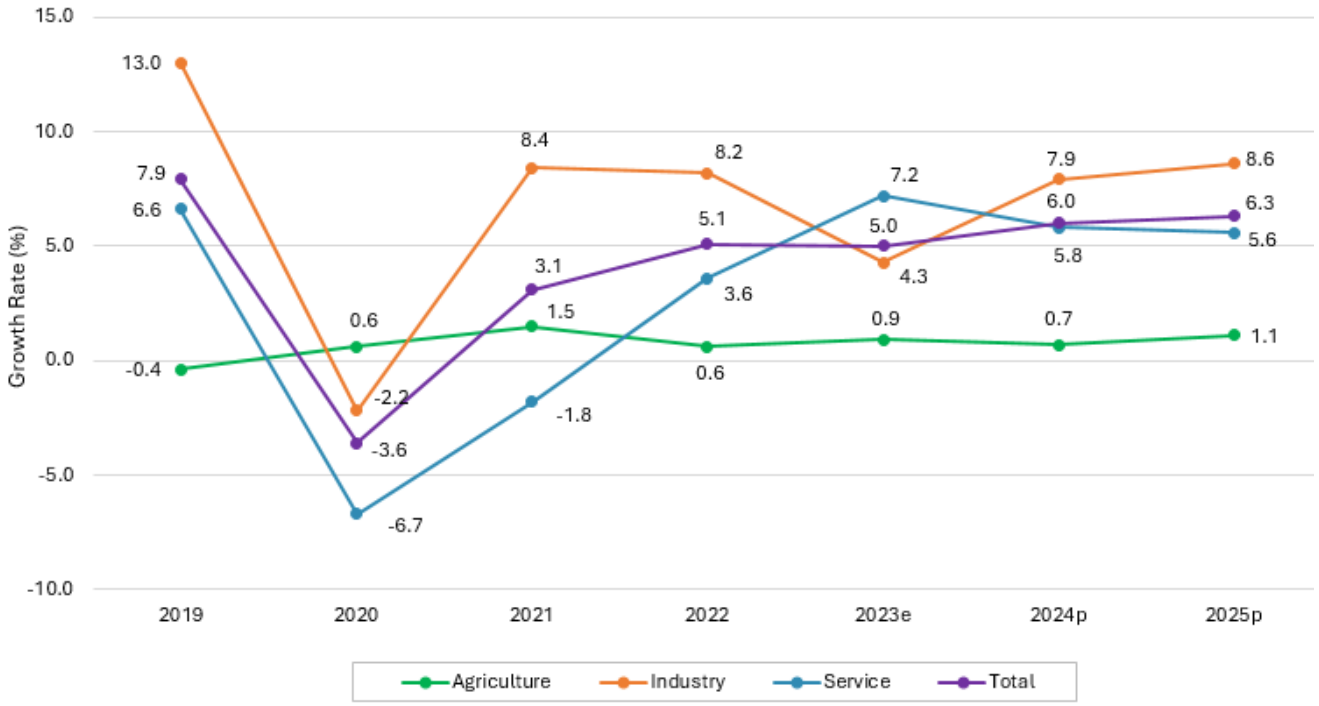


Cambodia is at the verge of a higher inverse dependency ratio means a larger workforce is available per dependent as there is a decline trend for other countries such as Japan, Korea, Thailand, Vietnam, and Malaysia

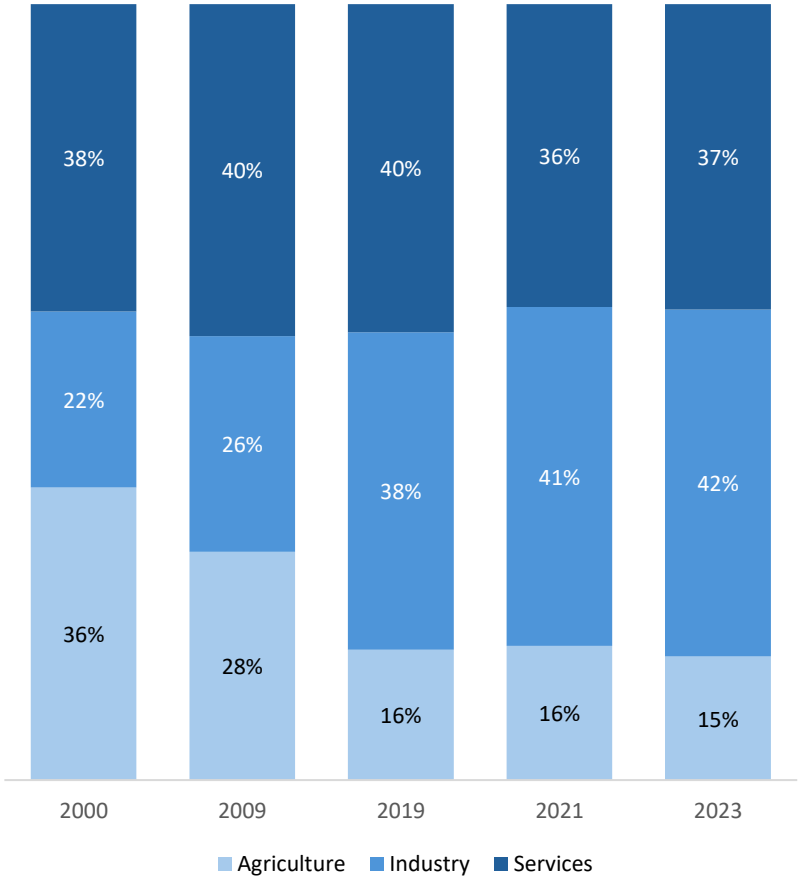
Source: UNCTAD (2023)

Cambodia's Economic Landscape

Cambodia Economic Growth (%) by Sector (2019-2025p)



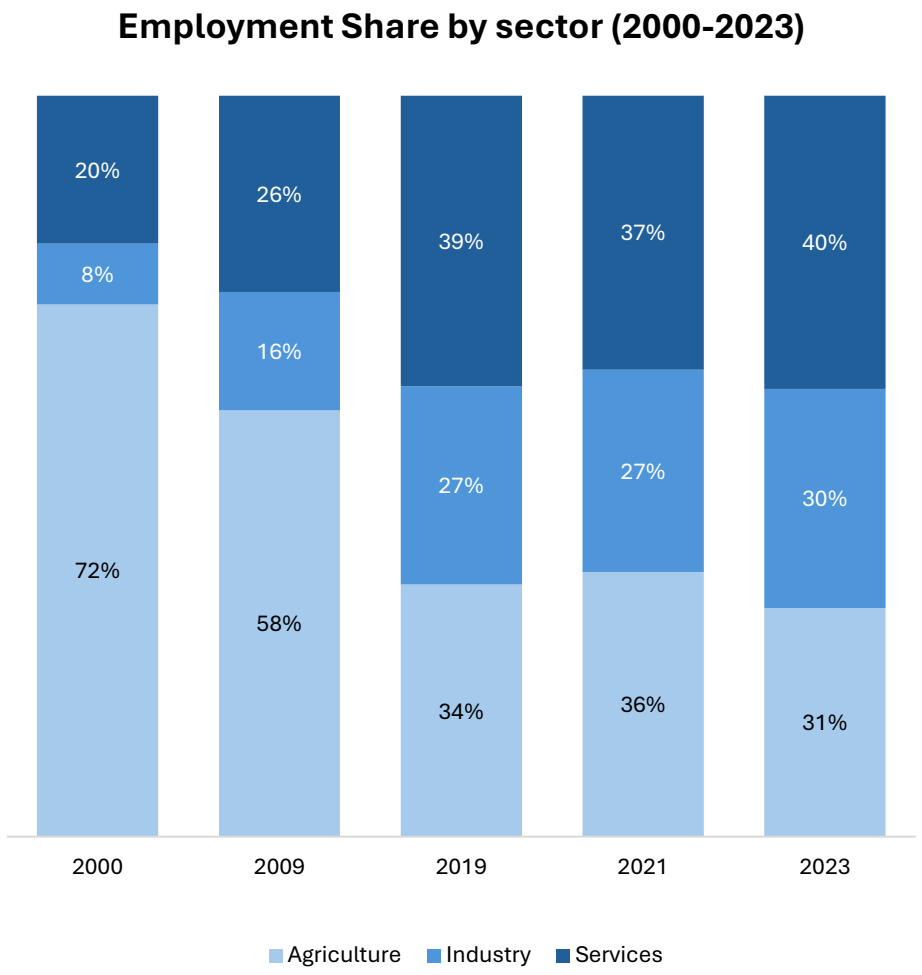
GDP Share by Sector (2000-2023)



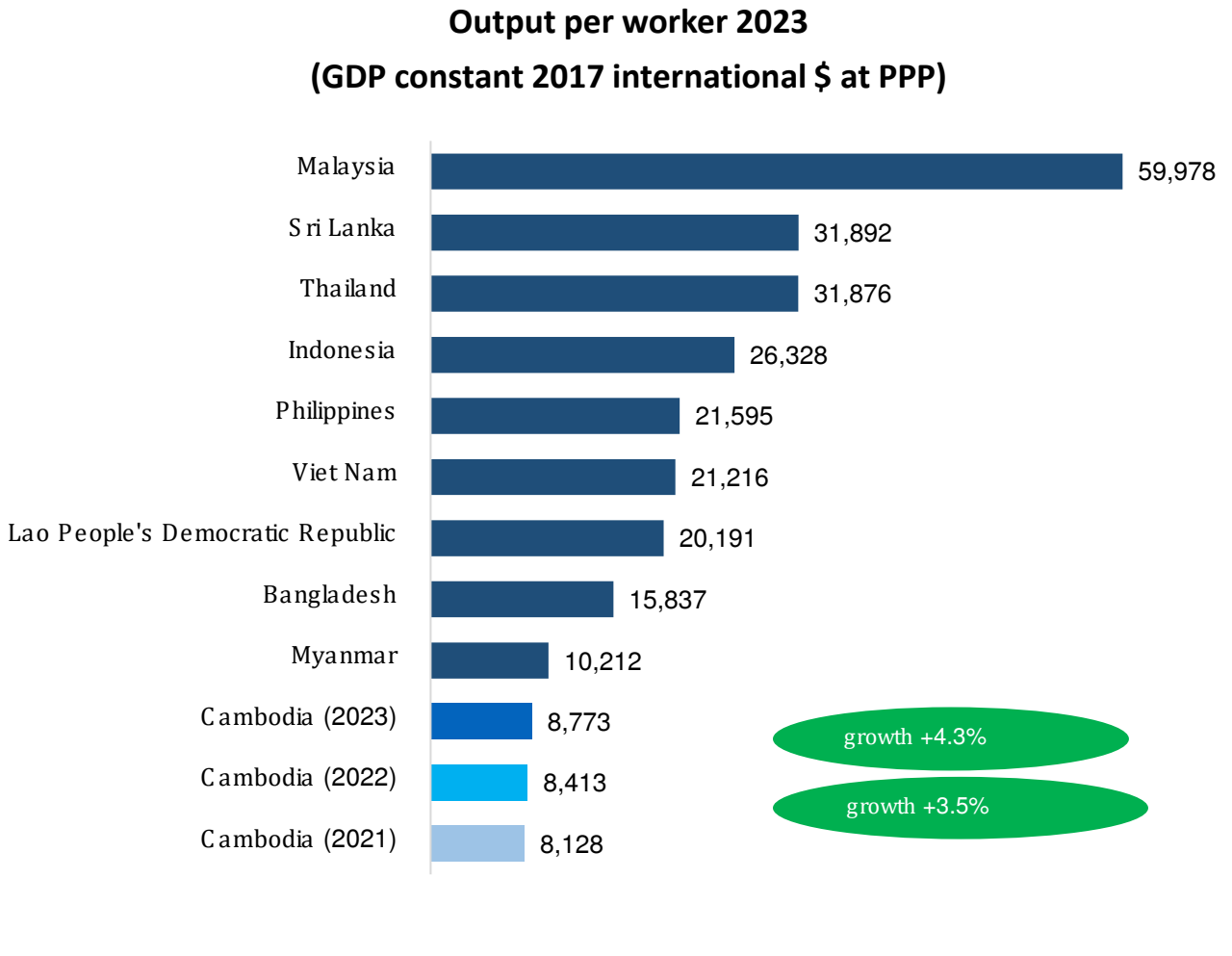
- A shift away from agriculture towards industry and, most prominently, services.
- Growth of the industry-While not the fastest-growing sector, industry plays a vital role in creating jobs, increasing exports, and contributing to overall economic development.
- Rise of service- a clear driver and source of growth. Such shift toward service is typical of economies as they mature and income rises, leading to increased demand for service sector.

Source: MEF's estimation (2024)

Cambodia's Labour Market



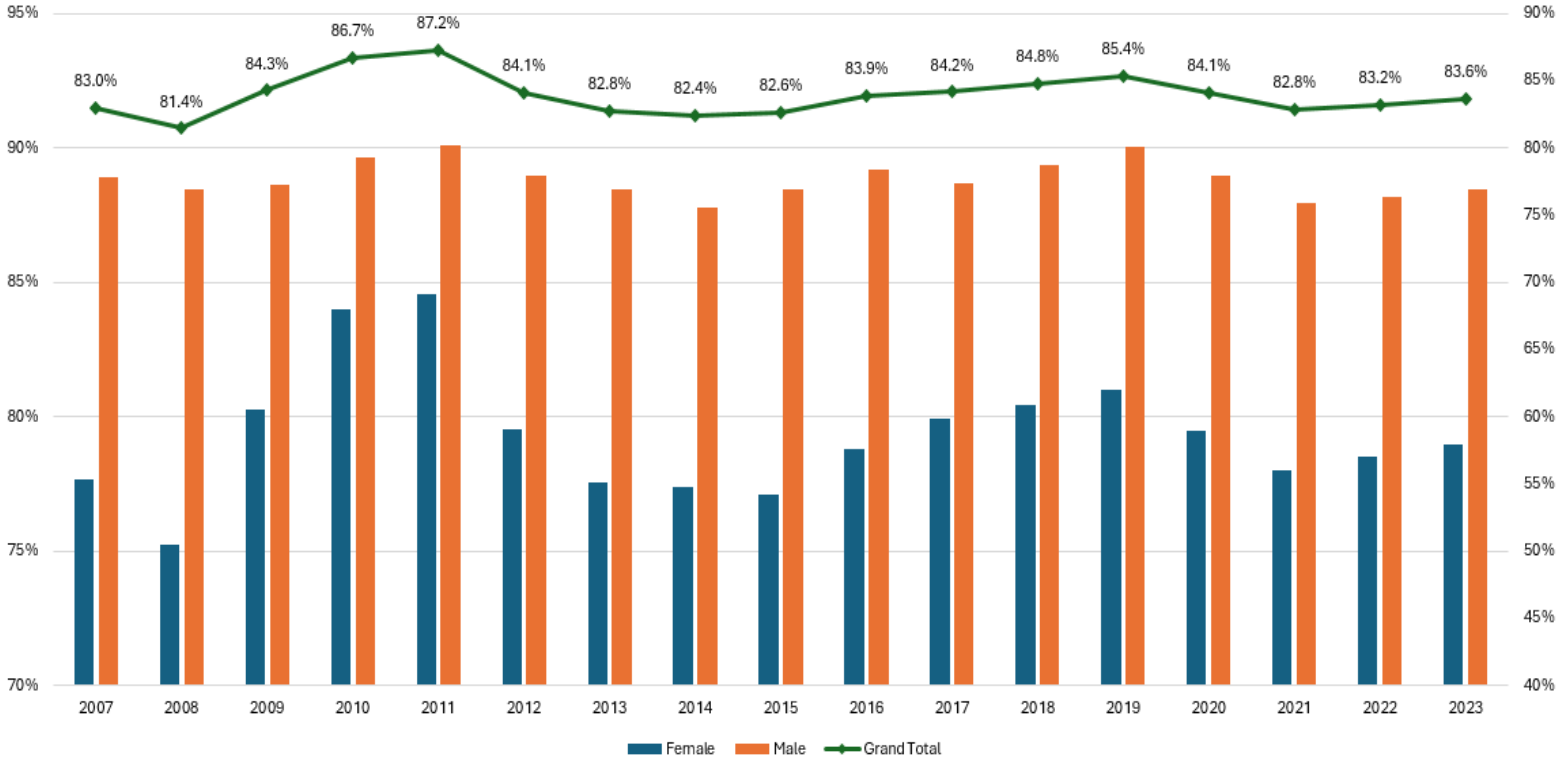
Source: MLVT's estimation



Source: International Labour Organization (ILO)

Cambodia's Employment Landscape

Cambodia’s Employment to Population Ratio (2007-2023)



Source: MLVT’s estimation

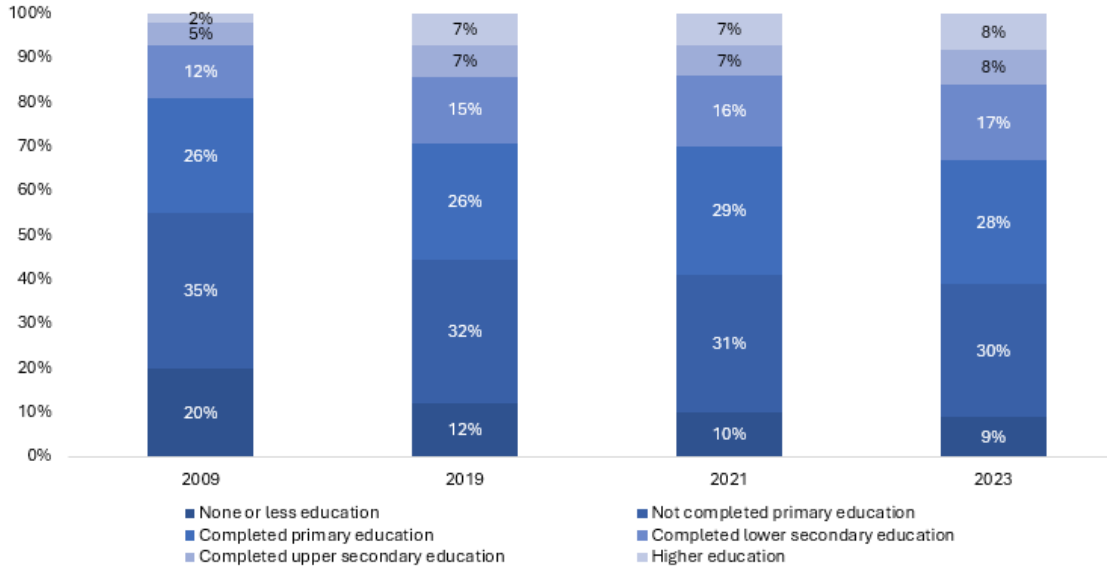
Recent Stability

In recent years, the employment rate has stabilized at around 83-84%, indicating a relatively stable labour market3

a consistent gap between male and female employment rates. While both are high, male employment is consistently higher than female employment.

Cambodia's Employment Landscape

Working-age population by education level (2019-2023)



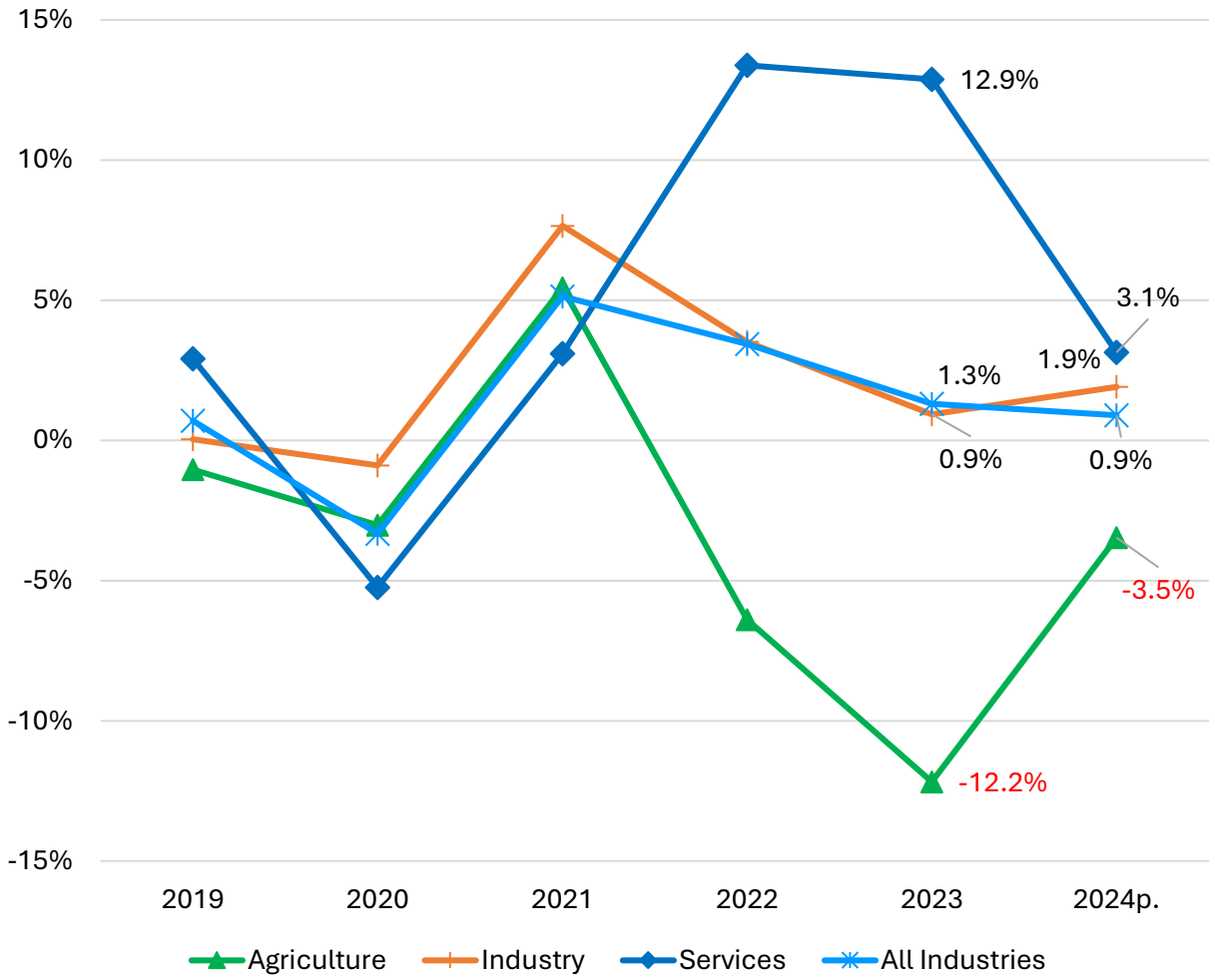
Primary Education Still Dominant:
While improving, completing primary education remains the most common level of attainment in which there is a need for continued investment in primary education to ensure universal access and completion.

Employment by skill level from 2019-2023

Occupation	2019	2020	2021	2022	2023e
Manager	1.1%	1.1%	1.0%	1.1%	1.1%
Professional	3.8%	3.4%	3.0%	3.3%	3.5%
Technicians and associate professionals	2.3%	2.3%	2.4%	2.6%	2.3%
Cleritcal support workers	3.5%	3.4%	3.3%	2.9%	3.6%
Servi ce and sale workers	18.4%	18.9%	19.5%	20.4%	21.3%
Skilled Agriculture , forestry, and fishery workers	30.3%	30.3%	30.3%	28.8%	26.3%
Craft and related trade workers	22.9%	23.4%	24.0%	24.0%	25.7%
Plants and machine operators, and assemblers	4.6%	4.4%	4.2%	4.3%	4.7%
Elementary occupation	11.9%	11.8%	11.7%	11.9%	11.5%

Source: MLVT's estimation using CSES

Cambodia's Employment Landscape



Employment rate in the agricultural sector continued to decline by about 12% in 2023 and 3.5% in 2024, while the employment growth rate in other sectors remained low

Note: e - estimated
Source: MLVT's estimation

Labour Demand Projection

Literature

Methodology

Results

Labour Demand Projection

This research aims to establish forecasting model of employment (demand side) by sector

To that end, by refocusing on a demand driven model to forecast the labour demand by sector, occupation, and skills levels capture both the current and future labour market trend.

It is possible to identify skills needed to provide the labour force with job-related relevant skills and to ensure high employment rate.

Literature

Model/Technique	Description	Authors
ARIMA (Autoregressive Integrated Moving Average)	Time series analysis for extrapolating future trends based on historical data.	Box & Jenkins (1976)
Econometric Models (e.g., Cobb-Douglas)	Analyze relationships between economic variables (GDP, inflation, etc.) and employment.	Becker (1962)
Delphi Method	Qualitative expert opinion-based technique for consensus building.	Oxinos et al. (2005); Hughes & Fox (2005)
Agent-Based Models	Simulate the behavior of individual agents (workers, firms) to understand labor market outcomes.	Cedefop (2012b)
CGE (Computable General Equilibrium) Models	Analyze the dynamics of labor markets and predict future trends.	Meagher et al. (2000); Giesecke et al. (2015)
E3ME Macroeconomic Model	Demand-driven model disaggregating labor demand by occupation and qualifications.	Cedefop (2008a, 2008b, 2009, 2012a)
Box-Jenkins Approach	Time series analysis for forecasting.	Wong et al. (2005)

Literature

Type of Model	Objective	Methodology	Data	Authors
Autoregressive Integrated model	To forecast Cambodia's labor demand for the period of 2012-15	Time series analysis (AR) combined with a top-down approach using macroeconomic indicators (Real GDP)	19 sub-sector and 10 Occupational levels	Jeong, 2013.
Autoregressive Integrated Moving Average (ARIMA) model with a top-down approach	To forecast Cambodia's labor demand from 2020 to 2025 by sector, occupation, and skill level; identify skill requirements and inform effective policies.	Time series analysis (ARIMA) combined with a top-down approach using macroeconomic indicators (real GDP growth, investment, wages, unemployment, oil price).	Sectoral forecasts of real GDP and investments from Cambodia's Ministry of Economy and Finance; employment and real wage estimates (1993-2019) from the Cambodian Socio-Economic Survey.	Ky, S. 2023.

Methodology framework

- Firstly, the employment by sector in the missing year was estimated by extrapolating the geometric growth model interpolating between two different years available within each of **# major sectors** (Agriculture, Garment, Other industries exclude garment, and Services) between **2000-2021**.
- The second step of this model is to estimate the employment coefficient of each sector i^{th} in period (t), which is written as:

$$C_{it} = \frac{E_{it}}{Y_{it}}$$

  - Where, E_{it} is the total employment in sector i^{th} in period (t), and Y_{it} the total GDP of sector i^{th} in period (t)

Methodology framework

- Thirdly, we performed the ARIMA estimation for the natural log transformation of the employment coefficient at time t, which are:

$$\ln(\hat{C}_{i,t}) = \mathrm{F}_i\left(t, t^2, \varphi_{i,t}\right)$$

  - Where, t is the time trend, and $\varphi_{i,t}$ denotes the set information available for sector (i) up to time t such as real output growth rate, Invesment, wage, regulation quality, and dummy variable (for year 1997-98, 2008-09, and 2020-21).
- If the input data are not available, they are forecasted using ARIMA model with itself and dummy variable for the remaining years.
- Forecasting period: **2024-2030**

Methodology framework

- Lastly is to perform the employment forecasts using the estimated employment coefficients from previous equation of each sector.
- $\hat{E}_{i,t+s} = \hat{C}_{i,t+s} \times \hat{Y}_{i,t+s}$

  - Where $\hat{E}_{i,t+s}$ is forecasted employment of sector i at time t+s,
  - $\hat{C}_{i,t+s}$ is employment coefficient of sector i in period t,
  - and $\hat{Y}_{i,t+s}$ is forecasted GDP of sector i in period t

Modeling

Variable Used	Agr	Ind	GFT	Con	Ser	AFS	WRT	TS	ICT	RE
t	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
t^2	✓	✓	✓	✓			✓	✓	✓	✓
Real GDP	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
FDI	✓	✓		✓	✓					✓
Wage	✓	✓	✓	✓	✓					
Regulatory quality	✓	✓		✓						
Export			✓							
Internet penetration (proxy)					✓		✓		✓	
Int'l tourist receipts						✓	✓	✓		
Oil price								✓		
Population growth					✓					
Urban population growth										✓
Domestic credits to private sector										
Dummy	✓	✓	✓	✓	✓	✓		✓	✓	✓

Data Mapping

NO	INDICATORS	SOURCE	DATA RANGE
1	Employment	Cambodia Socio Economic Survey (CSES)	2000-2021
2	Real GDP	Ministry of Economic and Finance (MEF)	2000-2028p
3	FDI	World Bank	2000-2023
4	Wage	CSES	2000-2021
5	Regulation Quality	World Bank	2000-2023
6	Export	ITC	2000-2023
7	Internet penetration (individuals using the Internet (% of population) growth rate)	World Bank	2000-2023
8	Int'l tourist receipts	Ministry of Tourism	2000-2023
9	Oil Price	World Bank	2000-2023
10	Population, Urban population	UNPOP	2000-2023
11	Domestic credits to private sector	World Bank	2000-2023

Result

Sector	Average Real GDP Growth (billion riels, yearly)						Forecasted Growth	
	2001-2019		2015-2019		2020-2023		2024-2030	
	Abs. Val.	%	Abs. Val.	%	Abs. Val.	%	Abs. Val.	%
Total Real GDP	**5,326**	**8.2%**	**8,328**	**8.0%**	**3,161**	**2.4%**	**10,451**	**6.4%**
Agriculture	**522**	**3.6%**	**157**	**0.8%**	**190**	**0.9%**	**244**	**1.1%**
Industry	**2,295**	**11.5%**	**4,673**	**13.4%**	**2,444**	**4.7%**	**6,142**	**8.6%**
Textile, Clothing, Footware & Leather Goods	932	14.3%	1,685	12.1%	721	4.0%	2,255	8.6%
Construction	706	13.3%	1,915	22.7%	(509)	-3.5%	539	3.9%
Other Industry	501	9.8%	805	9.0%	1,970	14.0%	2,905	11.8%
Service	**2,135**	**8.4%**	**2,924**	**6.9%**	**229**	**0.6%**	**3,356**	**5.7%**
Accommodation & Food Service Activities	314	7.7%	330	4.8%	(566)	-1.1%	491	7.5%
Wholesale & Retail Trade	514	7.6%	737	6.9%	139	1.2%	916	6.0%
Transportation & Storage	183	9.5%	272	8.0%	113	2.6%	324	6.1%
Information & Communication	57	8.0%	89	7.8%	171	10.3%	184	7.5%
Real Estate	260	10.2%	476	10.8%	(233)	-4.1%	192	3.6%
Other Services	806	8.8%	1,020	6.4%	604	3.0%	1,250	5.2%

The overall GDP growth is forecasted at 6.4% annually from 2024 to 2030, slightly slower than the historical average of 8.2%.

Industry will drive growth with projected annual increases of 8.6% .

Real Estate is expected to increase by 3.6%, while Construction shows a modest recovery at 3.9% annual growth.

Result

Total employment is projected to grow at 2.5% annually from 2024 to 2030, maintaining moderate growth compared to past trends.

Industry and Wholesale & Retail Trade will drive labor demand, growing at 4.7% and 6.1% annually, respectively.

Agriculture labor demand remains stagnant, while Real Estate sees a significant surge of 23.2% annually.

Sector	Average Employment Growth						Labour Demand	
	2001-2019		2015-2019		2020-2023		2024-2030	
	Abs. Val.	%	Abs. Val.	%	Abs. Val.	%	Abs. Val.	%
Total Employment	**177,418**	**2.4%**	**141,833**	**1.6%**	**131,642**	**1.4%**	**253,209**	**2.5%**
Agriculture	**(38,121)**	**-0.9%**	**(102,608)**	**-2.7%**	**(752)**	**0.0%**	**(1,566)**	**0.0%**
Industry	**94,883**	**8.4%**	**59,403**	**2.8%**	**48,223**	**2.1%**	**132,381**	**4.7%**
Textile, Clothing, Footware & Leather Goods	40,162	8.8%	3,339	0.4%	28,285	2.8%	(9,407)	-0.8%
Construction	35,260	11.3%	42,510	6.7%	28,478	3.5%	8,463	0.9%
Other Industry	19,461	6.4%	13,555	2.8%	(8,540)	-1.5%	133,325	17.1%
Service	**120,656**	**6.0%**	**185,038**	**6.5%**	**84,170**	**2.4%**	**122,395**	**3.0%**
Accommodation & Food Service Activities	17,140	47.3%	15,826	5.4%	41,346	11.8%	6,510	1.4%
Wholesale & Retail Trade	42,038	5.2%	79,390	7.5%	29,627	2.2%	99,571	6.1%
Transportation & Storage	14,034	5.9%	12,659	3.9%	15,966	4.0%	64,998	10.9%
Information & Communication	1,142	21.1%	2,502	24.6%	1,253	5.2%	2,515	7.3%
Real Estate	134	73.2%	1,024	220.3%	1,830	19.2%	4,210	23.2%
Other Services	46,168	6.0%	73,637	6.7%	(5,851)	-0.3%	(55,410)	-4.5%

Labour Supply Projection

Model Review

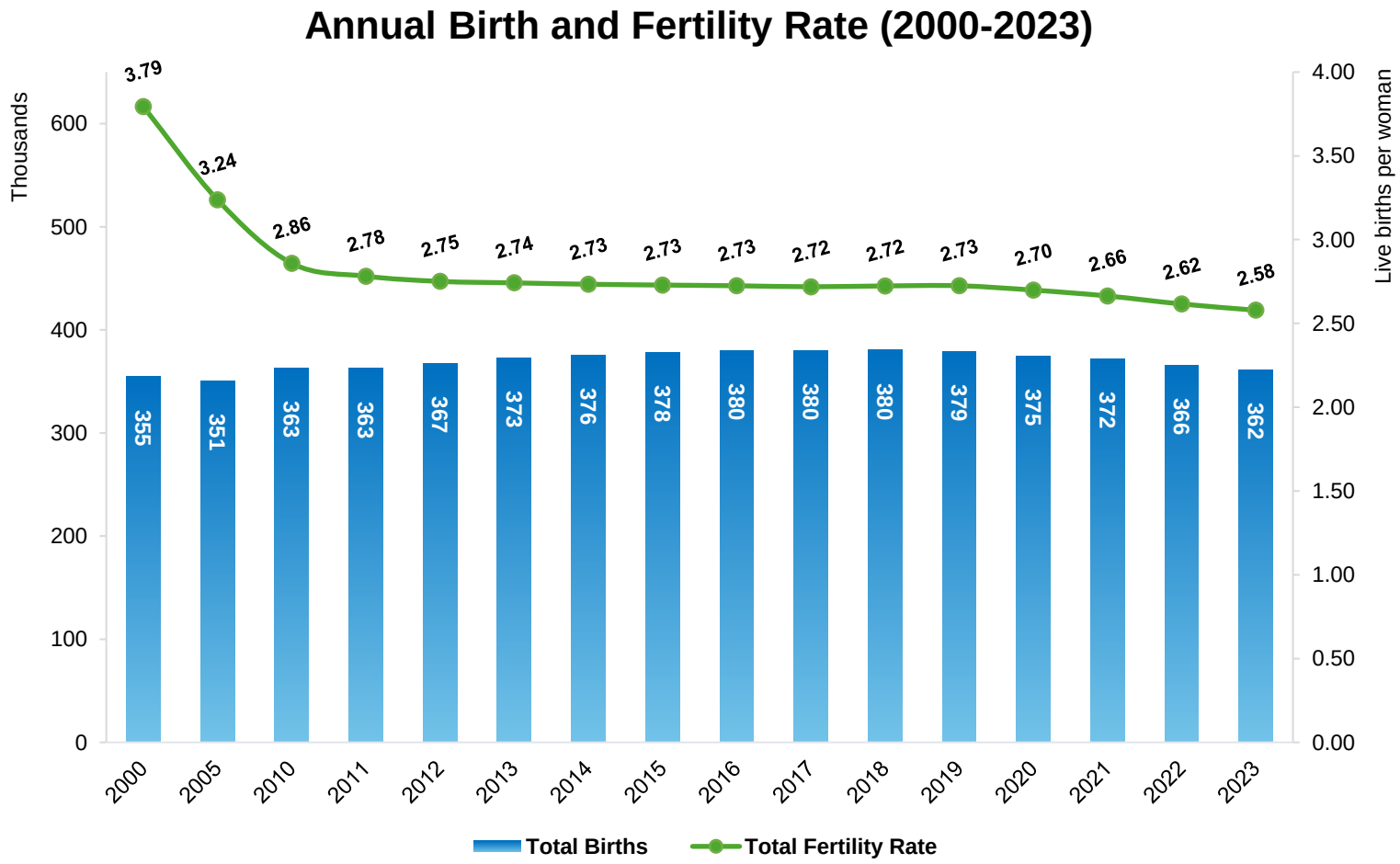
Methodology

Data

Results and Discussion

Background

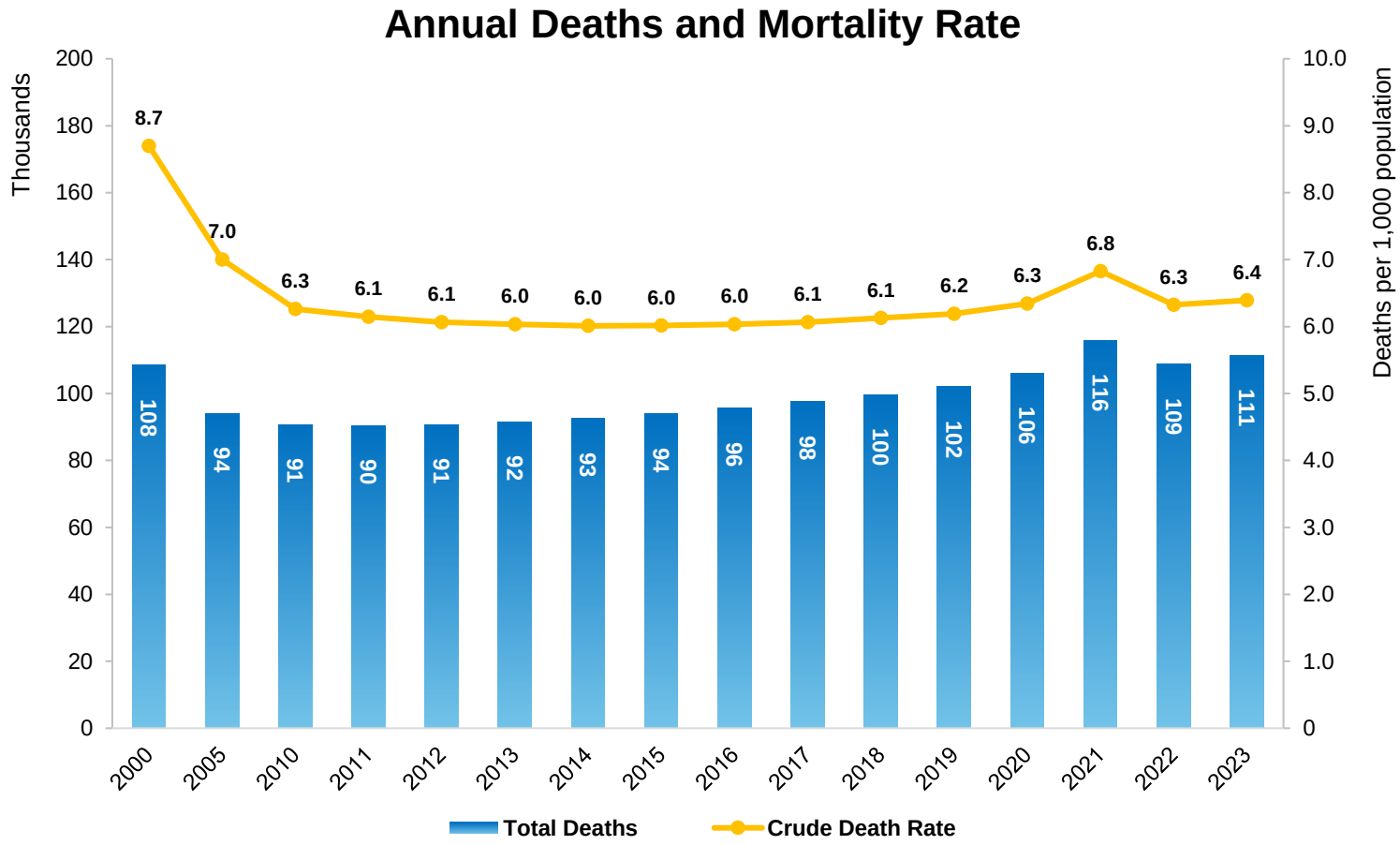
- Cambodia is experiencing a significant fertility transition, characterized by declining fertility rates and stable birth numbers.
- While this trend indicates progress in socioeconomic development, it also highlights the need for proactive planning to capitalize on the demographic dividend and prepare for the long-term challenges of a potential aging population.



Source: UNDESA, 2024

Background

- The decline in Cambodia's crude death rate from 2000 to 2023 reflects significant advancements in public health, economic development, and social welfare.
- Individuals are generally living longer and healthier lives.



Source: UNDESA, 2024

Literature review

MODEL	STRENGTH	WEAKNESSES	DATA REQUIREMENT
Stochastic Model	▪ Provides probabilistic forecasts, valuable for handling uncertainty and risks in labor supply. ▪ Captures variability with random elements, reflecting unpredictable factors.	▪ Data-intensive and complex, requiring robust datasets on labor market dynamics. ▪ Sensitive to model assumptions.	▪ Extensive demographic, labor force dynamics, and migration data
Shift-Share Model	▪ Simple, cost-effective, and data-driven, making it practical for straightforward scenarios. ▪ Suitable for projecting labor supply across age, sex, and education levels.	▪ Assumes static participation rates, lacking adaptability to social, economic, or policy changes. ▪ Not suitable for dynamic forecasts where participation rates are shifting significantly.	▪ Current labor supply data and population
Cohort-Based Model	▪ Captures life-cycle patterns in labor force participation, valuable for long-term projections. ▪ Accounts for external influences like economic cycles, providing a cyclical view.	▪ Limited adaptability to short-term changes and specific policy interventions. ▪ Assumes cohort consistency, which may not hold in rapidly changing environments.	▪ Population data
Stock-Flow Approach	▪ Account for new entrants and exits, providing a clear picture of how people flow into and out of the labor market. ▪ Adaptable for Scenario Analysis	▪ Difficult to produce stable forecasts If the data on entries or exits has high variability	▪ Population and data on education

Methodology

Population Projection

- Cohort-component approach
- Population is disaggregated by age, gender, and educational attainment
- Population components to predict future population: ***annual fertility*** and ***mortality***

  Note: Migration is not considered in the forecast due to the complexity and uncertainty in estimating the number of immigrants and emigrants.

Potential Labour Force Projection

- Stock-Flow Model
- Estimation of total entries to and exits from education by grade and year

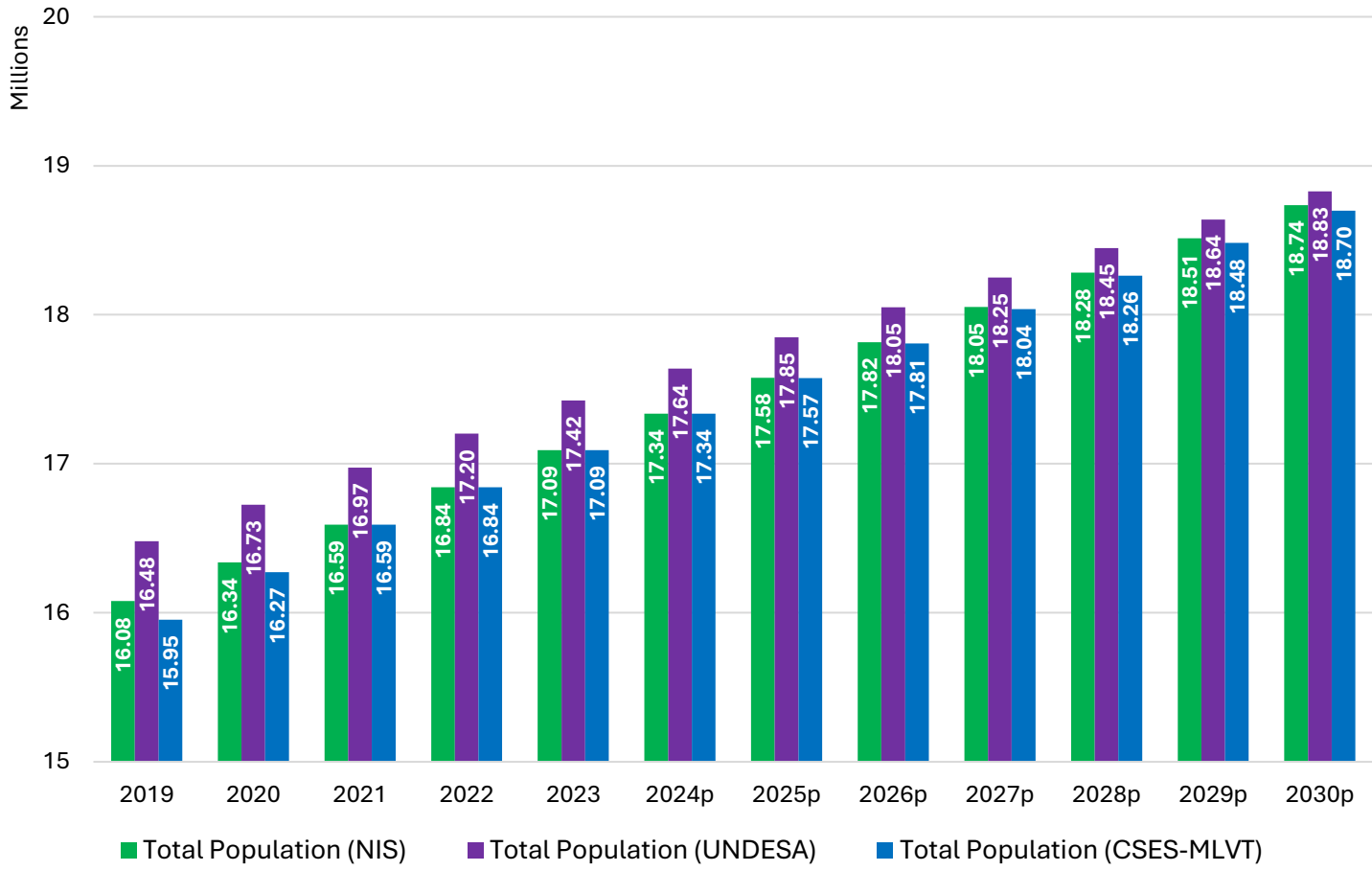
Data

VARIABLES	SOURCES
Population by age, gender and educational attainment	General Population Census, Cambodia Socio-Economic Survey (CSES), UNDESA, Barro-Lee
Fertility and mortality	UNDESA
Education Statistics (Number of Students, Enrollment, Repetition, Dropout, etc.)	EMIS

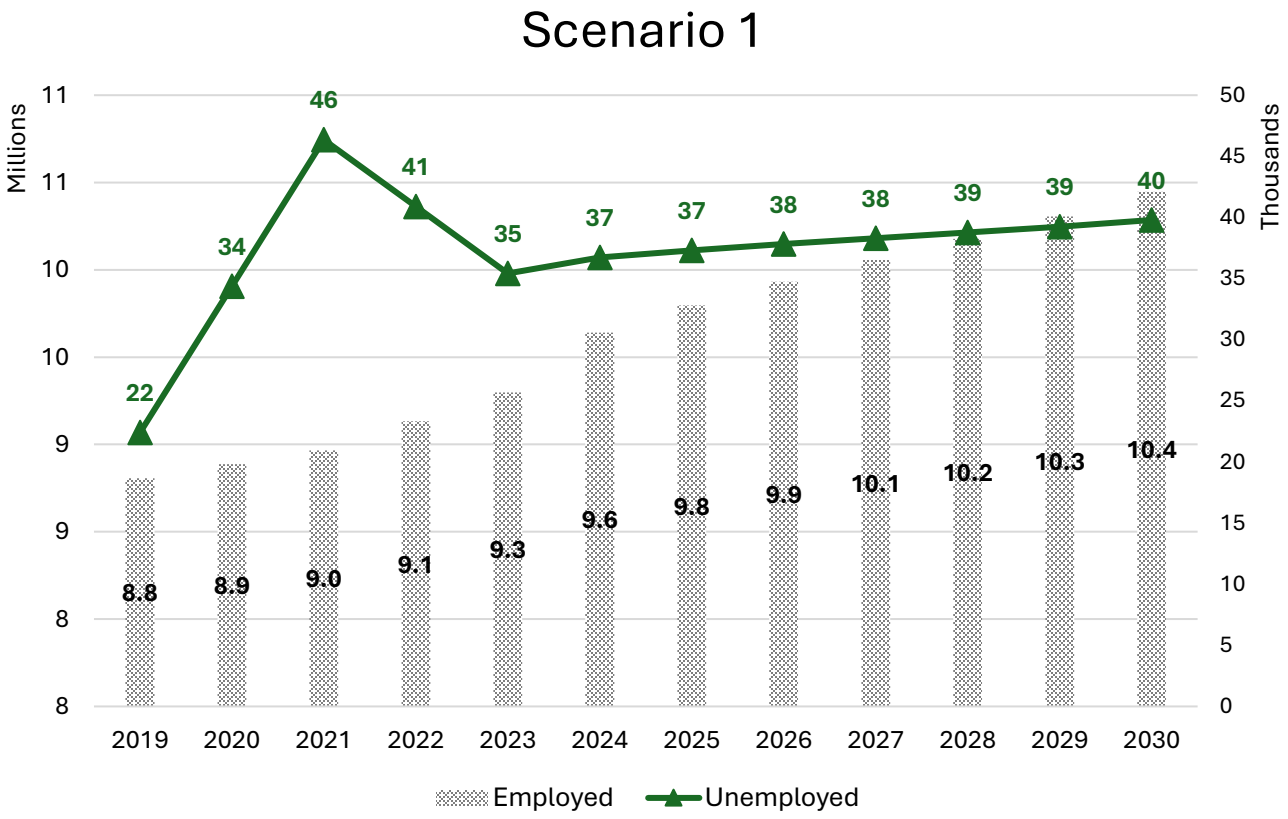
Results and Discussion

Comparison of population projection by MLVT, NIS and UNDESA (2024-2033)

- The estimation of MLVT based on CSES is identical to that of NIS.
- The estimation of UNDESA is higher due to the inclusion of migration into the projection.
- Total population will reach approximately 18.7 million people in 2030, and over 19 million in 2033.



Results and Discussion

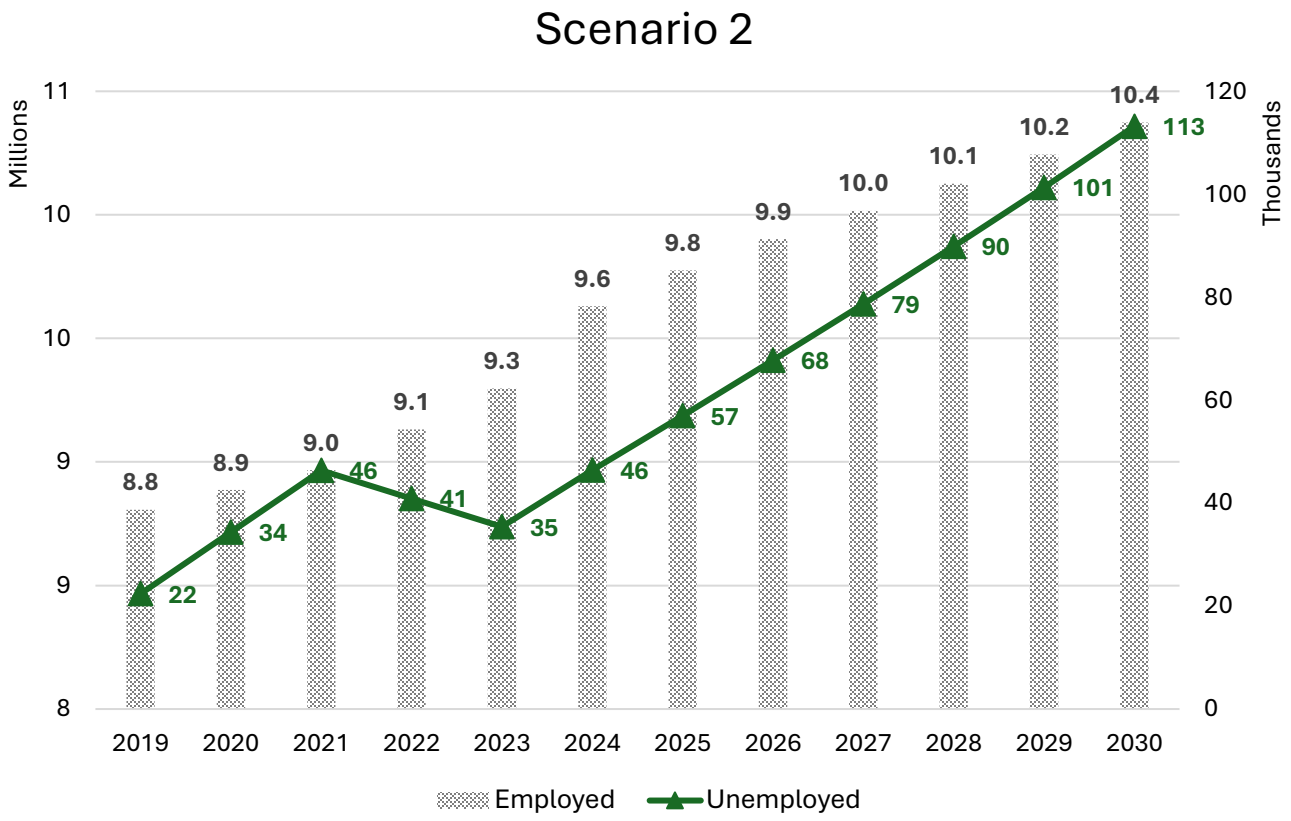


Labour Force Projection by Employment Status (WAP- 15-64)

Scenario 1: Constant unemployment rate

- A significant peak in the unemployed population at 46,4 thousand in 2021 due to the impact of the COVID-19 pandemic
- Unemployed populations will also increase by about 3 thousand during the same period.
- It could be problematic if there are shifts in demand for specific skills or industries.

Results and Discussion

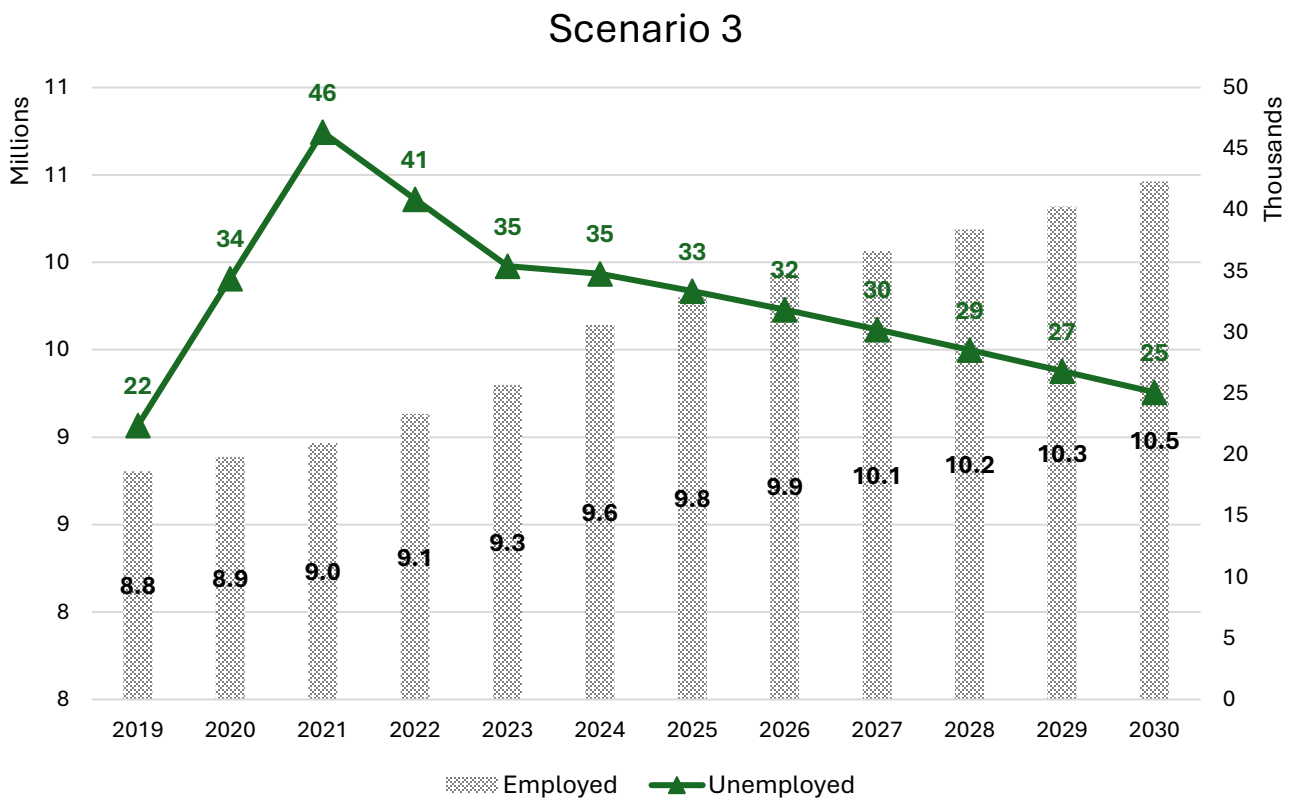


Labour Force Projection by Employment Status (aged 15-64)

Scenario 2: Increasing Unemployment due to higher demand for skilled workers

- Unemployed population will significantly increase by about 100 thousand during the same period.
- This condition could lead to long-term structural unemployment, particularly affecting workers without the requisite skills.

Results and Discussion



Labour Force Projection by Employment Status (aged 15-64)

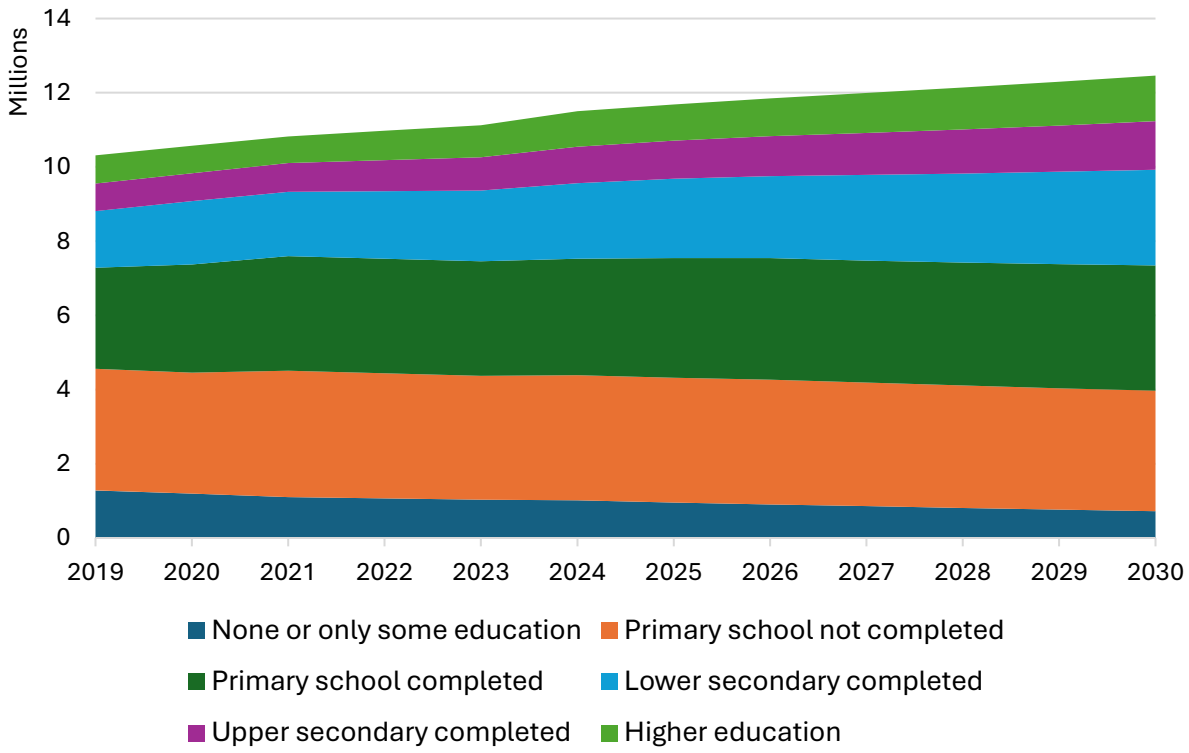
Scenario 3: Decreasing unemployment due to the increment of skilled workers

- With increasing skilled labour, unemployed population will reduce by 50% in 2033.
- Although this scenario is positive, sustaining the trend will require ongoing adaptation to evolving skill requirements.
- The workforce **needs continuous access to upskilling/reskilling** to keep pace with technological and economic changes.

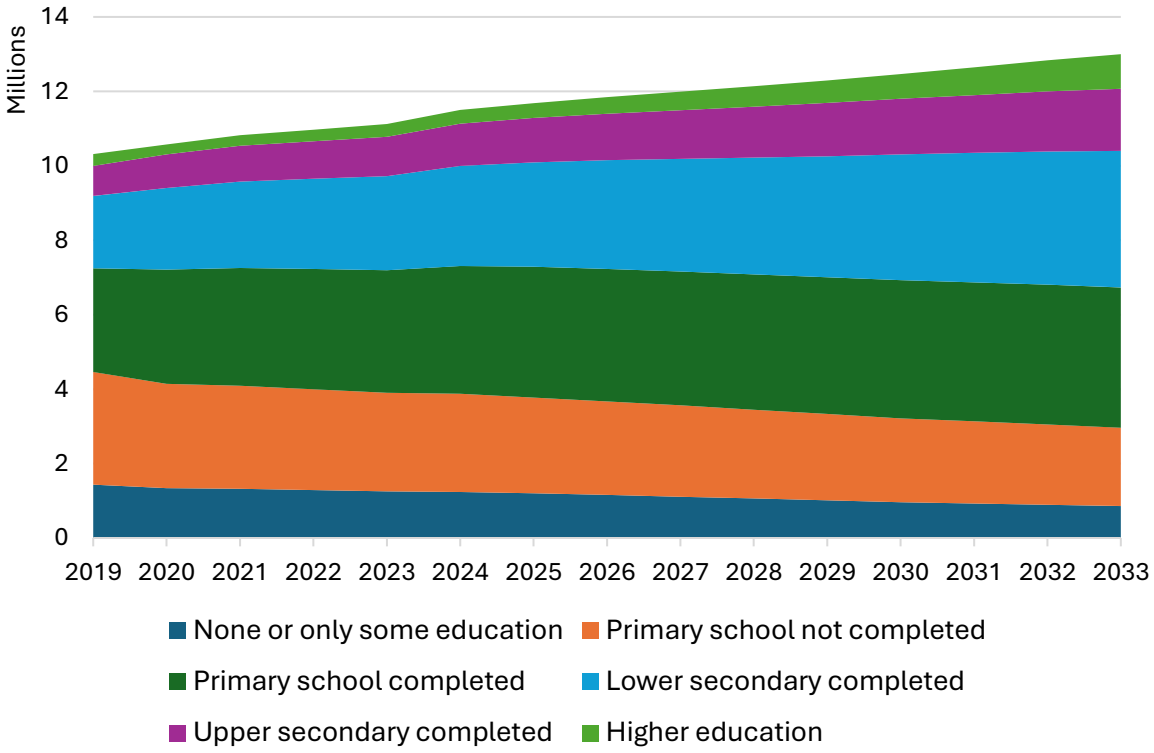
Results and Discussion

Labour Force Projection by Educational Attainment

MLVT Estimates



Barro-Lee Model



Results and Discussion

Labour Force Projection by Educational Attainment (Stock-Flow Model)

Scenario 1: Constant Survival from general education

Assumption

1. Promotion, repetition and dropout rates remain the same as those in academic year 2022-23
2. All dropouts do not return to formal education
3. 95% of dropouts enter to labour market, and 5% stay out of the labour market

Educational Attainment	2024	2025	2026	2027	2028	2029	2030
None or only some education	21,194	18,455	14,697	13,540	16,040	14,563	16,821
Primary school not completed	62,007	60,576	61,711	65,922	64,962	68,933	84,396
Primary school completed	105,219	104,547	101,471	102,400	103,302	102,402	104,566
Lower secondary completed	71,474	73,720	73,506	74,177	74,533	74,713	75,269
Upper secondary completed	22,829	22,581	25,121	24,380	24,968	24,876	25,079
Higher education	45,588	28,861	36,671	39,250	38,824	43,190	41,916
Labour Supply	**322,824**	**303,249**	**307,706**	**314,223**	**317,221**	**323,308**	**342,740**

Results and Discussion

Labour Force Projection by Educational Attainment (Stock-Flow Model)

Scenario 2: Improved Survival from general education

Educational Attainment	2024	2025	2026	2027	2028	2029	2030
None or only some education	21,194	18,455	14,697	13,540	16,040	14,563	16,821
Primary school not completed	62,007	60,576	61,711	65,922	64,962	68,330	82,538
Primary school completed	105,219	104,156	100,371	100,235	100,285	98,782	100,472
Lower secondary completed	67,712	70,020	70,171	71,362	72,430	73,508	75,154
Upper secondary completed	22,829	22,676	25,389	24,849	25,754	26,015	26,665
Higher education	45,588	28,861	36,671	39,250	38,987	43,651	42,723
Labour Supply	**319,062**	**299,254**	**303,540**	**309,714**	**313,051**	**319,480**	**339,068**

Assumption

1. Promotion, repetition and dropout rates remain the same as those in academic year 2022-23
2. All dropouts do not return to formal education
3. 95% of dropouts enter to labour market, and 5% stay out of the labour market

Results and Discussion

Labour Force Projection by Educational Attainment (Stock-Flow Model)

Assumption

1. Promotion, repetition and dropout rates are gradually improved.
2. All dropouts do not return to formal education
3. 50% of dropouts enter to labour market, 25% enroll in TVET, and 25% stay out of the labour market
4. All 25% dropouts from Grade 10-12 that enroll in TVET this year will graduate next year.

Scenario 3: Constant Survival from general education + TVET

Educational Attainment	2024	2025	2026	2027	2028	2029	2030
None or only some education	21,194	18,455	14,697	13,540	16,040	14,563	16,821
Primary school not completed	62,007	60,576	61,711	65,922	64,962	68,933	84,396
Primary school completed	105,219	104,547	101,471	102,400	103,302	102,402	104,566
Lower secondary completed	37,618	38,800	38,687	39,040	39,228	39,323	39,615
Upper secondary completed	22,829	22,581	25,121	24,380	24,968	24,876	25,079
Higher education	45,588	28,861	36,671	39,250	38,824	43,190	41,916
TVET	1,717	1,712	1,829	1,800	1,829	1,832	1,838
Labour Supply	**288,968**	**268,329**	**272,887**	**279,087**	**281,916**	**287,918**	**307,086**

TVET = Technical and Vocational Education and Training

Results and Discussion

Labour Force Projection by Educational Attainment (Stock-Flow Model)

Assumption

1. Promotion, repetition and dropout rates are gradually improved.
2. All dropouts do not return to formal education
3. 50% of dropouts enter to labour market, 25% enroll in TVET, and 25% stay out of the labour market
4. All 25% dropouts from Grade 10-12 that enroll in TVET this year will graduate next year.

Scenario 4: Improved Survival from general education + TVET

Educational Attainment	2024	2025	2026	2027	2028	2029	2030
None or only some education	21,194	18,455	14,697	13,540	16,040	14,563	16,821
Primary school not completed	62,007	60,576	61,711	65,922	64,962	68,330	82,538
Primary school completed	105,219	104,156	100,371	100,235	100,285	98,782	100,472
Lower secondary completed	37,618	38,900	38,984	39,646	40,239	40,838	41,752
Upper secondary completed	22,829	22,676	25,389	24,849	25,754	26,015	26,665
Higher education	45,588	28,861	36,671	39,250	38,987	43,651	42,723
TVET	1,717	1,687	1,781	1,734	1,749	1,741	1,741
Labour Supply	**288,968**	**268,134**	**272,352**	**277,997**	**280,859**	**286,810**	**305,666**

TVET = Technical and Vocational Education and Training

Results and Discussion

- The four scenarios of labor force projection by educational attainment highlight the importance of improved educational outcomes and diverse pathways in building a skilled and adaptable workforce.
- With stable or increasing primary and secondary school completion, alongside growth in higher education and TVET enrollment, there will be a promising future workforce with various skills.
- However, there is a need for policy planning for future education, training and the labour market need. There is still a risk of high dropout rates at the primary and secondary levels, which could lead to a large portion of the labor force entering with insufficient qualifications.

Key Takeaways

- By comparing the projection of labour demand and supply, there is a labor surplus throughout the projection period (2024-2030).
- The surplus decreases from 35,759 in 2024 to a low of 14,925 in 2025, suggesting a potential shrinking of the labor market gap due to higher retention of labour force in education.
- From 2026 onward, the surplus begins to gradually increase again.
- This result shows that labour shortage will not be an issue, but the concern will be about the availability of skilled workers to support industrial revolution.

Labour	2024	2025	2026	2027	2028	2029	2030
Labour Demand	253,209	253,209	253,209	253,209	253,209	253,209	253,209
Labour Supply (Scenario 4)	288,968	268,134	272,352	277,997	280,859	286,810	305,666
Labour Surplus (or Deficit)	**35,759**	**14,925**	**19,143**	**24,788**	**27,650**	**33,601**	**52,457**

Key Takeaways

- Based on the above forecasting on labour demand and supply from 2024 to 2030, Cambodia will not face labour shortage during this period.
- Tightened challenges that Cambodia will need to overcome are:

Structural Labour Market Issues

- Economic structure
- Demographic and Education
- Productivity
- Informal sector
- Skill mismatch

Frictional Labour Market Issues

- Labour recruitment situation
- Labour market information

Cyclical Labour Market Issues

- Change in labour market due to COVID-19
- Innovation
- Regional and global trends

Policy Recommendations

- **Strengthen Early Education Retention Programs**:
  - Policies should focus on providing support for at-risk students, including targeted retention programs, access to financial aid, and engagement initiatives for students and families.
- **Expand and Integrate TVET Programs**
  - Policies should encourage partnerships between educational institutions and industries to ensure TVET curricula align with labor market needs.
- **Encourage Lifelong Learning and Upskilling**
  - Such policy will help workers, particularly those with lower educational attainment, to adapt to changing job requirements and reduce the risk of unemployment.
- **Improve Quality and Access to Secondary and Higher Education**
  - This includes improving secondary and higher education quality and accessibility, particularly in underserved regions.
- **Incentivize Alignment of Education with Market Needs**
  - Develop incentives for education providers to align curricula with market needs, particularly in emerging sectors such as technology and renewable energy.