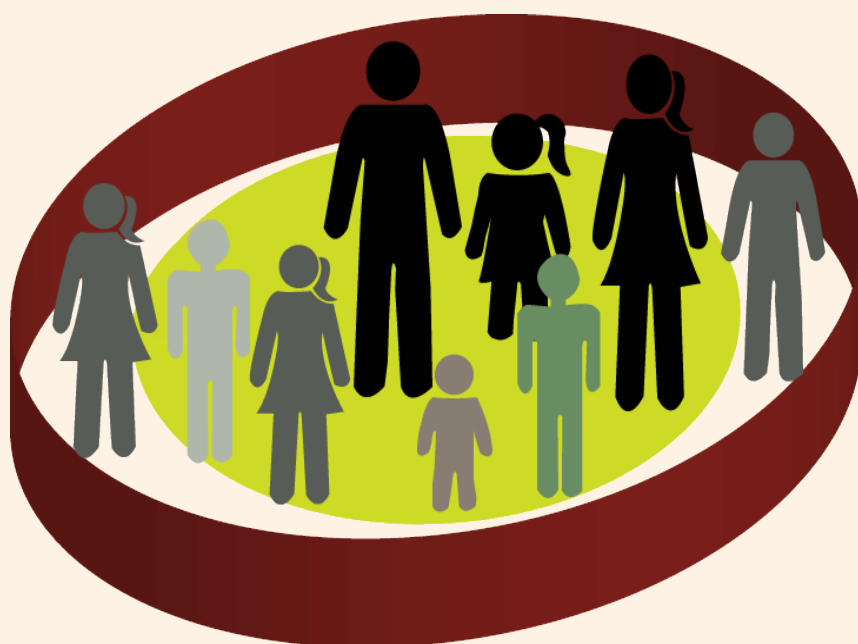


Timor-Leste Population and Housing Census



Harnessing the Demographic Dividend for Timor-Leste



Timor-Leste

Population and Housing Census 2022

Thematic Report

Harnessing the Demographic Dividend for Timor-Leste

Presented To
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The Timor-Leste National Institute of Statistics (INETL)

Dili, September 2024

Preface

The population and Housing Census 2022, conducted by the Timor-Leste National Institute of Statistics (INETL) from 5 September to 5 October 2022, underscored our continuing commitment to decision-making grounded in robust data analysis. Utilizing modern technology in the form of tablets for data collection, the census laid the foundation for a comprehensive understanding of our nation's demographic landscape. Initial census basic tablets were released in the latter part of 2023, enriching our understanding of the demographic intricacies captured during the 2022 Population and Housing Census.



This publication, is one of several detailed thematic census reports, addressing crucial areas such as fertility and nuptiality, mortality, migration, population projection, household and housing conditions, labour force and economic activity, disability, youth, gender, and a comprehensive census atlas, that will provide nuanced insights into specific demographic dimensions.

This volume provides a detailed analysis of mortality in Timor-Leste. Encompassing critical areas such as infant mortality, under five mortality, life expectancy, age specific mortality rates and maternal mortality, we expect this report to serve as a cornerstone for informed policymaking.

At this juncture, I would like to acknowledge the collective dedication of the INETL staff and the multi-stakeholder Census Technical Committee, led by Mr. Elias dos Santos Ferreira, President of INETL, I.P., in the successful completion of this Census. Their tireless efforts steered the census process from its initiation to the release of this report. Gratitude is also extended to our development partners from the UN System, among them, the UNFPA, UNICEF, UNDP, UN Women, and WFP, whose invaluable contributions have significantly enriched the census endeavour. Similarly, the support that we received from the Australian Bureau of Statistics (ABS) throughout the census process is also duly recognized.

On behalf of the Ministry of Finance, I would like to invite to all individuals with a keen interest in demographics and statistical data to leverage the insights presented in this publication. It is our hope that this compilation shall serve as reliable resource for informed discourse and evidence-based decision-making in the realm of our country's national development.

Thank you.


Santina JRF Viegas Cardoso
Minister of Finance, RDTL

The official seal of the Ministry of Finance of the Republic of Timor-Leste. It is a circular emblem with a blue border. The outer ring contains the text "MINISTRA DAS FINANÇAS" at the top and "RDTL" at the bottom. Inside the ring, there is a central emblem featuring a shield with a sun, a gear, and a scale, surrounded by the motto "JUSTIÇA E EQUILIBRIO" and "SERVIDO À NAÇÃO E ÀS PESSOAS".

Acknowledgements



The Timor-Leste National Institute of Statistics (INETL), formerly the General Directorate of Statistics, implemented the Population and Housing Census 2022 under the slogan 'Our census, our future be part of it'.

The census was largely financed by the Government of Timor-Leste through the Ministry of Finance. Additional financial and material support in form of tablets and power banks, was provided by UNFPA, UN Women, UNDP, UNICEF and WFP. I would like to express my sincere gratitude for the unwavering support towards the census.

I would like to acknowledge the invaluable technical support provided by UNFPA throughout the census process. The support provided during field staff training by UN Women is also acknowledged.

Let me also thank a team of independent international monitors from the Australian Bureau of Statistics, who worked with us throughout the enumeration period, their feedback from the field was valuable and timely.

I would like to further express my appreciation to all members of the Census Technical Committee for their advice and guidance in the census. The Census Publication Commission led a successful implementation of the census publicity campaign to ensure that the stakeholders, including the general public, were informed about the census.

Special thanks go to each and every enumerator and supervisor who worked tirelessly, visiting households across the country to collect the census information. They worked for long hours and also at odd hours in trying to collect the information.

Finally, I would like to commend the work of all staff from INETL headquarters and municipality offices, who continue to work for the success of the 2022 census project. I am grateful to the people of Timor-Leste for their cooperation, without which a successful census would not have been possible.

Elias dos Santos Ferreira, L.Ec, MM
President, Timor-Leste National Institute of Statistics



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Executive Summary

I. Background

As of 2022, Timor-Leste Population and Housing Census enumerated 1.34 million people. Timor-Leste's population is youthful, with almost 72 per cent below the age of 35. Timor-Leste's total fertility rate (TFR), the average number of children women age 15-49 would have during their reproductive years, has dropped from 7.2 children per woman in 2004 to 4.2 in 2016 (TLDHS). In 2022, there was a further drop to 3.6 children per woman. Nevertheless, it remains the highest in Southeast Asia.

With the youthful population, Timor-Leste's age structure presents benefits to reap from demographic dividend if the right investments are made to the population. The productivity of the working-age population is crucial for economic growth. Young adults' productivity depends on education, employment, and supportive policies. Mobilizing young people into the workforce and reducing gender disparities in labor force participation can significantly enhance economic output.

The growing proportion of the youthful population presents opportunities and challenges of creating enough job opportunities that will absorb the large population. High unemployment or underemployment can negate potential economic benefits. Securing a demographic dividend requires creating conducive policies as inadequate policies can make a growing youthful population a curse – a situation also known as a demographic bomb. This is because it has been argued that if the youth bulge – where 20 per cent or more of the population comprise the population in the age group 15-24 – the youth are unable to find decent work. In turn, the hopeless youthful population may become a potential source of social and political instability¹.

Poverty and inflation

Timor-Leste continues to grapple with high poverty levels, with 24.4 per cent of the population living below the international poverty line of \$2.15 per day, and 69.2 per cent living below the lower middle-income poverty line of \$3.65 per day (World Bank, 2022). The Gini index, which measures income inequality, stands at 28.7, indicating moderate inequality. Social indicators such as school enrollment rates and life expectancy have shown some progress, with primary school enrollment at 110.7 per cent and life expectancy at birth at 68.5 years (World bank, 2023). However, challenges remain in improving the quality of jobs, with more than 70 per cent of employment being informal. Headline inflation rose to 6.9 per cent in December 2022, driven by global increases in fuel and food prices.

II. Objectives

The main objective of this report was to undertake a high-quality demographic dividend analysis to understand progress made, and to identify some important investments policymakers and leaders can prioritize to foster development in Timor-Leste as the country strives to attain the Sustainable Development Goals. Specifically, the analysis aimed the following:

- i. Examine the age-sex structure resulting from the socio-economic progress.
- ii. Examine the prospects of reaching a demographic dividend under a range of scenarios.
- iii. Identify strategic policy and programming recommendations to implement policy changes and investments to improve prospects for harnessing a demographic dividend.

¹ Lin JY (2012) Youth Bulge: A Demographic Dividend or a Demographic Bomb in Developing Countries?

III. Methodology

The study involved a review of the literature on the demographic dividend, population dynamics and economic developments in Timor-Leste. Trends in national demographic and socio-economic indicators were obtained from various national data sources. Where there were information gaps from national data sources, necessary indicators were obtained from international data sources including the UN and World Bank's. The modelling tool called DemDiv, created by the Health Policy Project (HPP) at Futures Group with support from USAID (Health Policy Project & USAID, 2014) was used to demonstrate the potential demographic dividend that Timor-Leste could earn under different policy and investment scenarios.

To assess the potential benefit of harnessing the demographic dividend using several scenarios on total population and age structure to 2032 and 2062, the DemDiv model was linked to the DemProj model through the RAPID Transfer Tool in Spectrum. DemProj model is a cohort-component population projection model based on assumptions about fertility, mortality and migration. DemProj can project the population of a country by age and sex for up to 50 years into the future. DemProj is a model within Spectrum, a software programme which operates using DemDiv model inputs.

The projections were made under the following four scenarios: Base scenario; Economy only scenario; Economy and education scenario; and combined scenario.

IV. Key Findings

Age-sex structures and projection scenarios

The base scenario would lead to total population of 2,508,164 and a total fertility rate of 2.97 children per woman in 2062. The dependency ratio will decrease from 0.70 in 2022 to 0.59 in 2062. Under the Economic scenario, the total fertility rate will decline from 3.6 in 2022 to 2.87 children per woman. The dependency ratio will decline to 0.58 in 2062 from 0.7 in 2022. The results of social emphasis scenario indicate a reduction in dependency ratio to 0.44 in 2022.

Our projection results for Timor-Leste show that the country will experience a youth bulge by 2053 under the combined projection scenario, positioning the country for harnessing a demographic dividend. While the base of the population structure will shrink slightly under the business-as-usual scenario, it will not be enough to create the youth bulge required for harnessing a significant demographic dividend.

Potential to attain demographic dividend

The fertility and mortality declines show that Timor-Leste's demographic transition is underway, situating the country in the prewindow of opportunity. To ensure that Timor-Leste harnesses the benefits of demographic dividends, accelerating fertility decline is an essential precondition for creating a window of opportunity for harnessing such a dividend. Accelerating fertility decline to create a youth bulge in the age structure of the population must be accompanied by investment in education and health, as well as economic reforms to create jobs. Our projection results for Timor-Leste show that the country will experience a youth bulge by 2053 under the combined projection scenario, positioning the country for harnessing a demographic dividend

Capital Stock Formation

It is projected that Timor-Leste will experience and maintain strong economic growth due to the emergence of the oil sector, which could lead to higher incomes for households and businesses. Correspondingly, with increases in incomes, households tend to increase their spending on goods and services, leading to higher final consumption expenditure. The results show that the per capita capital formation would be USD 1235

in 2062 under the base scenario and USD 1991 under the Econ and Educa scenario in 2062. In the same year (2062), under the Economic only scenario, capital formation per capita would increase to USD 3876. Under the Combined planning scenario, the level of investment per capita would be USD 4771.29 in 2062.

Growth in GDP per Capita

The results indicate that the GDP per capita would increase modestly under the base and economy and education scenarios. Under the base scenario, the GDP per capita would increase from USD1,613 in 2022 to USD 6066 in 2062. The increase in the GDP per capita would be USD 9434 under the economy and education scenario. The projection results indicate the economy + education + family planning and economy only scenarios would produce the sharpest increases in GDP per capita. Under the combined (economy + education + family planning) scenario, the GDP per capita would be USD 24925 in 2062 while under the economy only scenario it would be USD 21559 in the terminal year.

Potential demographic dividend

The potential demographic dividend that the country can earn by 2032 is USD \$69, which is almost five per cent of the 2022 GDP amount. By 2042, the potential to earn a demographic dividend increases to USD 468 while by 2062 it would be USD \$336. Thus, the additional average income that the country would earn for adopting an integrated development model would be 7.5 times bigger than the current GDP.

Growth in GDP

The key result from the DemDiv model that illustrates the effect of change in age structure on economic growth under the different policy scenarios is the projected GDP. The modelling results show that GDP will grow modestly from the baseline level of USD 2.1 billion to USD 15 billion under the Status Quo scenario by 2062. Under the Social Emphasis scenario, GDP will rise to USD 20 billion. The performance will be much better under the Economic Emphasis and Combined Emphasis scenarios where GDP is expected to rise to USD 52 billion and USD 53 billion, respectively by 2062.

Human Development Ranking

Figure 19 displays the ranking of Timor-Leste in 2062 among countries in the world using the Human Development Index (HDI), which is a composite measure of countries' levels of social and economic development based on life expectancy at birth, years of schooling, and per capita gross national income. Because of the much better economic performance under the Combined scenario relative to the Social Emphasis scenario, the HDI would be more improved from 0.55 and to 0.82.

V. Conclusion

This demographic dividend report has synthesized some available demographic, social and economic trends to demonstrate how Timor-Leste can capitalize on the upcoming unique opportunity for a “demographic dividend” – the period, usually a single generation, when a country has a large working-age population combined with both fewer children and a low number of older dependents. The findings have demonstrated that a combined effect of investing in demographic and social economic variables has enormous potential for increasing GDP growth in the next four decades to benefit from the demographic dividend.

VI. Recommendations

Timor-Leste's Strategic Development Plan (2011-2030) is only seven years to its terminal year and the key challenges that the strategic development plan sought to accomplish to move the country to the upper-middle income range by 2030 are yet to be implemented. Some of the national development plans are already yielding results (i.e. decline in poverty and restructuring the economy). These need to be accelerated in order to tap into some of the demographic dividend.

Human capital development

- The 2021 labour force survey shows that unemployment tends to be higher among women than men with a post-secondary education, which implies that the education level of girls and women does not automatically translate into equal access to job opportunities. Nonetheless, education remains one of the pillars of efforts to promote gender equality in terms of higher wages, a greater likelihood of working outside the home, lower fertility rates, reduced maternal and child mortality, and better health and education, including health and education of future generations
- Improve equitable access to education at all levels, especially at the primary and secondary levels, by addressing social, economic, cultural and infrastructural factors affecting enrolment and completion as part of the measures to accelerate fertility declines, and consequently reduce demand for food and other social services.

Sexual Reproductive and Health Rights

Despite efforts to increase CPR, the use of modern contraceptives among women remains low at 24 per cent among married women age 15-49 years, an increase from 21 per cent in the previous demographic and health survey (2009-10).

Family planning

- There is need to invest in reducing the current high unmet need for family planning to less than five (5) per cent.
- Allocate resources to adolescents and youth programmes, particularly to adolescent girls and young women, to develop and impart skills development as required to harness the demographic dividend.
- Leverage strategic partnerships that are already underway and innovative funding modalities to leverage the finance needed for achieving the demographic dividend.
- Improvement in the education sector should be part of the overall strategy to accelerate contraceptive use and reduce fertility, as the evidence in this study shows that increasing mean years of schooling contributes to slowing population growth.
- For the health sector, increase budget allocation to prioritise increased investment in family planning as a key strategy to manage high fertility levels.
- Invest to significantly increase health infrastructure to improve the health facility to population ratio across the country.

Economic restructuring

Reduce gender gap in employment

- Labour force participation by gender remains a challenge because only one in three females (29.7 per cent) compared to males (55 per cent) have completed secondary school, the minimum education to meaningfully contribute to a productive labour force. Furthermore, women who are participating in the labour force are less (24.2 per cent) compared to males (36.9 per cent). This gender gap in labour force implies that Timor-Leste needs to focus on creating jobs that encouraging women to join the labour force.
- Emphasize the need for policies that are gender-based and aim at improving employment opportunities for women.

- Adopt an integrated set of policies that especially target the reasons underlying the late entry of young women into the labour force and higher levels of unemployment among them.

Labour force participation

- To attain Demographic Dividend, develop a strategy of attracting labour to the low productivity sectors. Identify and prioritise job creating economic activities (such as labour friendly intensive industrialisation) to absorb the surplus labour that is created through increased use of ICT.

Job creation

- A relatively high working age share of the population can only translate into growth if the workers have sufficient employment opportunities, thus there is a need to prioritise job creation for the youth and improved governance as part of the strategy for harnessing the demographic dividend.

Chapter 1: Introduction

1.1 Introduction

As of 2022, Timor-Leste's Population and Housing Census enumerated 1.34 million people. The population of Timor-Leste is youthful, with almost 72 per cent below the age of 35. Timor-Leste's total fertility rate (TFR), the average number of children women age 15-49 would have during their reproductive years, has dropped from 7.2 children per woman in 2004 to 4.2 in 2016 (TLDHS). In 2022, there was a further drop to 3.6 children per woman. Nevertheless, it remains the highest in Southeast Asia.

With the youthful population, Timor-Leste's age structure presents benefits to reap from demographic dividend if the right investments are made to the population. The productivity of the working-age population is crucial for economic growth. Young adults' productivity depends on education, employment, and supportive policies. Mobilizing young people into the workforce and reducing gender disparities in labour force participation can significantly enhance economic output.

Despite their significant proportion, presently and as projected in future, young people are often faced with age-related challenges and barriers, such as lack of relevant education and skill sets, among other things. These affect their participation in economic, political and social life, greatly hindering their development and, consequently, their contribution to sustainable economic development.

The government of Timor-Leste recognises the importance of the youth as an asset in transforming the economy of the country through imparting them with the relevant skills. Cognizant of the prospects that the population age structure offers for Timor-Leste to develop a "prosperous and strong" upper middle-income nation by 2030, the country embarked on a process of economic, social and political development, which is encapsulated in the 'National Strategic Development Plan 2011-2030 (SDP)'.

The falling albeit high fertility rate in Timor-Leste presents both opportunities and challenges for socio-economic development. While on the one hand rapid population growth – at the rate of two per cent, common in most developing countries today – acts as a brake on development (in that it may result in negative development outcomes such as poverty, unemployment and insecurity), rapid population growth can also lead to high population density, which accelerates deforestation, loss of biodiversity, and environmental pollution.

On the other hand, a youthful population resulting from high fertility can be an opportunity for accelerated socioeconomic development if there is investment to accelerate fertility decline to reduce the ratio of dependents to working-age people, and if the youth are educated and have skills for employment². High levels of fertility and rapid population growth translate into more people in the younger age group than the adult working-age group. Thus, a decline in fertility and fewer births each year means that over time, there will be a decline in the number of children in relation to the working-age adults. This period (when there

² Bloom, D.E. (2020). Population 2020

are more workers than young dependents) is a window of opportunity for a country to facilitate accelerated economic growth, known as the demographic dividend.

The demographic dividend refers to the accelerated economic growth that may result from a decline in a country's mortality and fertility rates, as well as the subsequent change in the age structure of the population. With relatively fewer people at the dependent ages, a country has a window of opportunity for rapid economic growth and improved standards of living. However, that window is temporary, and a changing age structure does not guarantee a dividend. Good policies and governance are needed to create the conditions for a demographic dividend and further advance fertility decline, which include increased investments in family planning, education, and child survival.

Early attempts to measure the prospects of attaining demographic was in 2018, whereby the government of Timor-Leste initiated estimations on how population age structure would affect economic performance in terms of a support ratio – the effective number of workers divided by the effective number of consumers. The approach used the national Accounts transfer approach. This was in line with the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) aimed at ensuring national development plans should be gender responsive and align to the Sustainable Development Goal (4) – as well as declarations such as the Beijing 30. 2030 Agenda and other global commitments, the Programme of Action of the International Conference on Population and Development (1994).

1.2 Objectives

The main objective of this report was to undertake a high-quality demographic dividend analysis to understand progress made, and to identify some important investments policymakers and leaders can prioritize to foster development in Timor-Leste as the country strives to attain the Sustainable Development Goals. Specifically, the analysis aimed at the following:

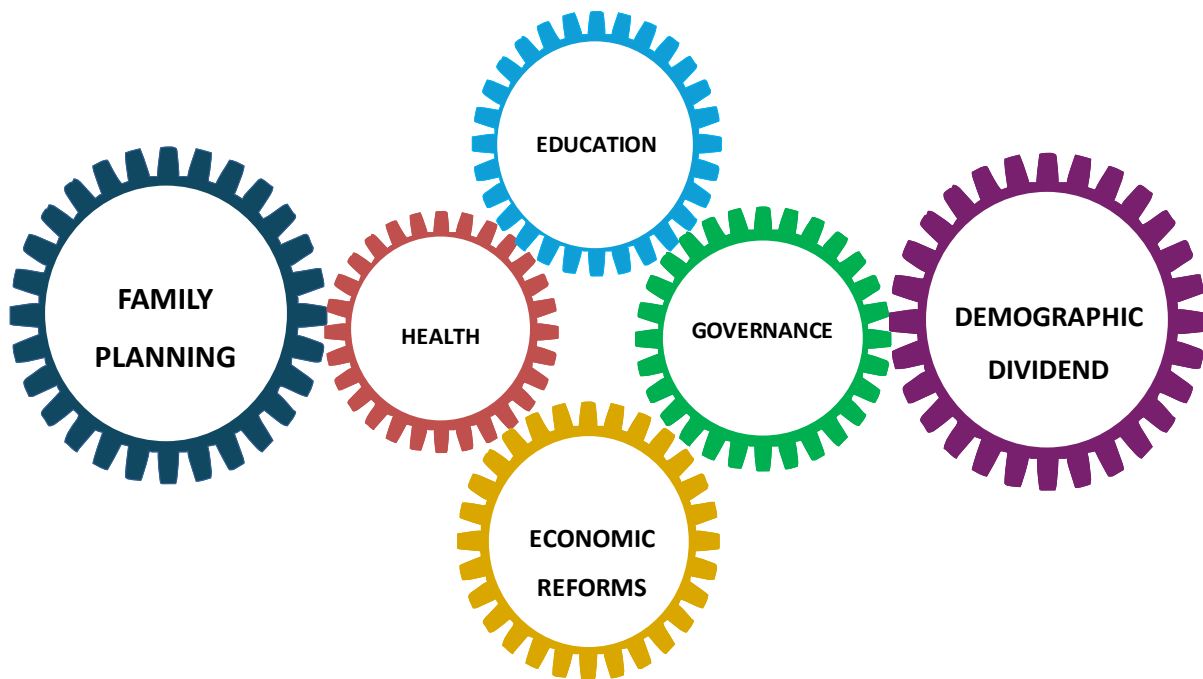
- iv. Examining the age-sex structure resulting from the socio-economic progress.
- v. Examining the prospects of reaching a demographic dividend under a range of scenarios.
- vi. Identifying strategic policy and programming recommendations to implement policy changes and investments to improve prospects for harnessing a demographic dividend.

It is envisaged that findings of this study are expected to improve understanding and raise awareness of the opportunities and challenges associated with demographic changes and serve as a basis for cross-sectoral dialogue among decision-makers and stakeholders.

Chapter 2: Demographic Dividend in Timor-Leste

The concept of the demographic dividend is based on the interrelationship of the conditions that, if met, a country may reap the benefits of demographic dividend. These include population age structure, which is achieved when a country puts in place mechanisms of managing a high and rapidly growing population. An age structure that has a high proportion of the population in the working age group can support few dependents – those under 15 years and the population age 65 and over. Addressing fertility challenges requires a holistic approach that involves both men and women.

Figure 1: Demographic Dividend pillars



Achieving the demographic dividend requires capacitated, healthy young women and men, entering the productive workforce. In this regard, the UNFPA mandate to end unmet needs for family planning, to end GBV, and to achieve women's empowerment are important contributions. Slowing population growth can only be achieved by the transformation of cultural preferences for large family sizes and the acceptance of child marriages. Reducing high rates of teenage pregnancies is also another important consideration. These, in turn, are facilitated by keeping girls in school, capacitating young women and men for productive labour, and achieving greater gender equity, as well as ensuring access to a wide range of modern contraception. Aligning family planning, ending child marriage, and increasing gender equality and women's empowerment with improved family income and security, may be an approach that resonates widely.

Economic reforms work through groups like children or the elderly because these countries have a one-time opportunity for poverty reduction and accelerated economic growth, known as the demographic

dividend. However, this dividend does not happen automatically. To secure a substantial demographic dividend, government must do four things: invest in health and education, invest in public infrastructure, create enabling conditions for new jobs that are available to young people regardless of gender, and introduce policies that aim at bringing gender equality, which can make a difference in the quality of women's lives and the country's economic trajectory overall.

Furthermore, policies aimed at promoting sustainable economic and social development, and investment in social protection and other areas also help reduce poverty and prepare the next generation to be healthier and more productive. Evidence shows that reforms in the form of social protection, such as cash transfers and health insurance, have positive impact on families in that they send their children to school. Families with better income consume more and diverse types of food and have better health seeking behaviours.

Where governments do nothing with the window of opportunity, inaction not merely maintains the status quo, but may also worsen poverty. Political and social instability may arise from a large unemployed youth bulge, a scenario known as the demographic bomb or demographic disaster. On the other hand, governments who invest in the demographic dividend can expect long-term benefits from young people who reach adulthood with better health and education, enabling them to take advantage of job opportunities, work more productively, and help accelerate poverty reduction and economic growth.

Total fertility rate (TFR) in Timor-Leste has declined substantially – the decline that started twenty years ago from 7.2 children per woman in 2004 to 3.6 children in 2022 almost half. This signals that the country is in demographic transition, and that the onset opportunity for reaping the benefits of falling fertility rates. If right investments are made, Timor-Leste may follow the pathway of some Asian countries. For example, in Malaysia the change in age structure that was accompanied with the investments in education, health and gender resulted in increasing working age population and that supported a decreasing dependent population. The decline in the dependency burden enabled the country to channel resources in to improve human capital and infrastructure.

The analysis shows that Malaysia recorded declines in mortality in the last four decades: crude death rate declined from 6.7 in 1970 to 5.1 deaths per 1000. Infant mortality which was high compared to other countries in the region declined from 39.4 deaths per 1000 births, with rapid decline during the 1980s and 1990s, with a substantial deceleration starting in the early 2000s. Similarly, Total fertility rate was five (5) children per woman in 1970 but declined to 1.7 children per woman by 2020. Fertility had reached replacement level of 2.1 children per woman by 2010³. Malaysia made appropriate investments – increasing enrolment ratios in 1980s from 4 per cent to 43 per cent in 2019, with females (attaining a higher ratio than that of males).

Investment in education and skills development propelled the country to become a developed and high-income country by 2030. Malaysia adopted a gender lens by ensuring that women were in higher position. Close to 70 percent who attained higher education were in labour force, compared those with less educated

³ Department of Statistics (DoSM), 2018. Social Statistical Bulletin, Malaysia, 2018. Putrajaya, Malaysia. United Nations, 2020b, Department of Statistics Malaysia (various years), Vital Statistics and Population Censuses reports.

(37.1 per cent). Another important element in harnessing the demographic Dividend in Malaysia saw the narrowing of the employment gap between men and women in labour force participation rates, which increased by 12 per cent points – from 47 per cent in 2000s to 55 per cent. While still low, but the increase in the LFPR entails that adding more women to the work force. Additionally, the government enacted employment policies that provide favourable conditions for women to participate in quality and decent jobs, entrepreneurial support and increasing modern technology in small and medium enterprises. to women participating in the labour force. Women are more involved in quality employment

Good governance is also one of the preconditions for a country to attain DD. Malaysia made changes to the health system making family planning services widely available to the married couples. Adolescent Health Policy was introduced in paving the way service availability in all government health clinics for individuals 10-19 years old. Similarly, the National Policy on Reproductive Health and Social Education and its Action Plan were introduced in 2009 to pave the way for increased access to reproductive health education, information, and services for adolescents and youth.

With respect to governance in driving the demographic dividend, the Economic Planning Unit coordinated all ministries that align to the five-national development plan. Additionally, the gender gap index in Malaysia has narrowed over the years due to improvements in the education, as well as participation of women in jobs that were previously considered the domain of men. For instance, in 2011, the Cabinet approved a policy that women should share about a third in decision-making positions.

2.1 Harnessing the Demographic Dividend through the Strategic Development Plan (SDP) (2011-2030)

The Government of Timor-Leste has emphasized its Strategic Development Plan of building a stronger, upper middle -income nation by 2030. This is an ambitious project, with only six years remaining to reach the target. The country aims to realize the vision by strengthening the non-oil economy through economic diversification, creating more and better job opportunities for youth, developing strategic industries, and prioritizing rural development.

Timor-Leste's National Strategic Development Plan 2011-2030 (SDP) aims to enhance small and medium enterprises, removing barriers to private sector growth and improving infrastructure such as roads. A good road network is key to people's mobility and connects supply chains for efficiently moving goods and services across borders. In this regard, government's focused on capital expenditure and infrastructure investment by increasing the budget from 18.4 per cent of GDP in 2023 to 24.5 per cent of GDP in 2024. In turn, such investments promote economic growth and reduce poverty and are also an underlying need for the success of Sustainable Development Goals (SDGs).

The growing proportion of the youthful population presents opportunities and challenges of creating enough job opportunities that will absorb the large population. High unemployment or underemployment can negate potential economic benefits. Securing a demographic dividend requires creating conducive policies as inadequate policies can make a growing youthful population a curse – a situation also known as a demographic bomb. This is because it has been argued that if the youth bulge – where 20 per cent or

more of the population comprise the population in the age group 15-24 – the youth are unable to find decent work, which in turn, may become a potential source of social and political instability⁴.

2.2 Economic profile of Timor-Leste

As Timor-Leste envisions to become an upper-middle class country and attain the Sustainable Development Goals (SDGs), effective economic strategies, including those that encourage investment, entrepreneurship, and economic diversification, are crucial to harnessing the demographic dividend. Recognized as a low -income economy by the World Bank, the country has historically relied on the Petroleum Fund (PF) to finance its fiscal and trade deficits. The economy, heavily reliant on oil and gas, accounted for over 90 per cent of government revenues and more than 70 per cent of GDP in 2023.

The country has a GDP per capita of \$1,284.3 and the economy showed signs of recovery in 2022, with a real GDP growth rate of 3.5 per cent, up from 2.9 per cent in 2021. This growth was driven by increased public consumption and investment, as well as the release of pent-up demand following the reopening of the economy after COVID-19.

However, the economy is projected to grow at a slower pace of about 3.1 per cent annually over the medium term (2023-2025), with downside risks from global economic slowdown and the slow implementation of structural reforms. With the cessation of hydrocarbon production in early 2023, the balance of the Petroleum Fund (PF) is rapidly declining. The Ministry of Finance projects that, without significant spending reforms, the PF could be depleted by 2034, posing a critical challenge to the nation's fiscal sustainability.

Despite the recent growth, Timor-Leste remains heavily dependent on government spending, which accounted for 92.5 per cent of non-oil GDP in 2021 and increased to 101.2 per cent in 2022. With high levels of expenditure, domestic revenue collection remains low at around 10 per cent of non-oil GDP.

Poverty and inflation

Timor-Leste continues to grapple with high poverty levels, with 24.4 per cent of the population living below the international poverty line of \$2.15 per day, and 69.2 per cent living below the lower middle-income poverty line of \$3.65 per day (World Bank, 2022). The Gini index, which measures income inequality, stands at 28.7, indicating moderate inequality. Social indicators such as school enrollment rates and life expectancy have shown some progress with primary school enrollment at 110.7 per cent and life expectancy at birth at 68.5 years (World bank, 2023). However, challenges remain in improving the quality of jobs, with more than 70 per cent of employment being informal. Headline inflation rose to 6.9 per cent in December 2022, driven by global increases in fuel and food prices.

According to the Asian development Bank, the appreciation of the US dollar, which Timor-Leste uses as its official currency, helped moderate some inflationary pressures but also impacted the competitiveness

⁴ Lin JY (2012) Youth Bulge: A Demographic Dividend or a Demographic Bomb in Developing Countries?

of exports. The country’s current account, which had a surplus in 2021, shifted to an 11.8 per cent deficit in 2022 due to increased imports driven by recovering domestic demand. Foreign reserves stood at approximately \$1 billion, equivalent to seven months of imports. According to the Asian development outlook (2024), the estimated GDP growth in services and agriculture decelerated, reducing their contribution to overall growth by 3.0 per cent to just 1.6 per cent, reflecting a decline in domestic demand. Manufacturing growth returned to a more typical pace after a significant rebound in 2022, adding only 0.2 per cent to growth. Meanwhile, construction showed a modest recovery following four years of significant declines, contributing a minimal 0.1 per cent to growth.

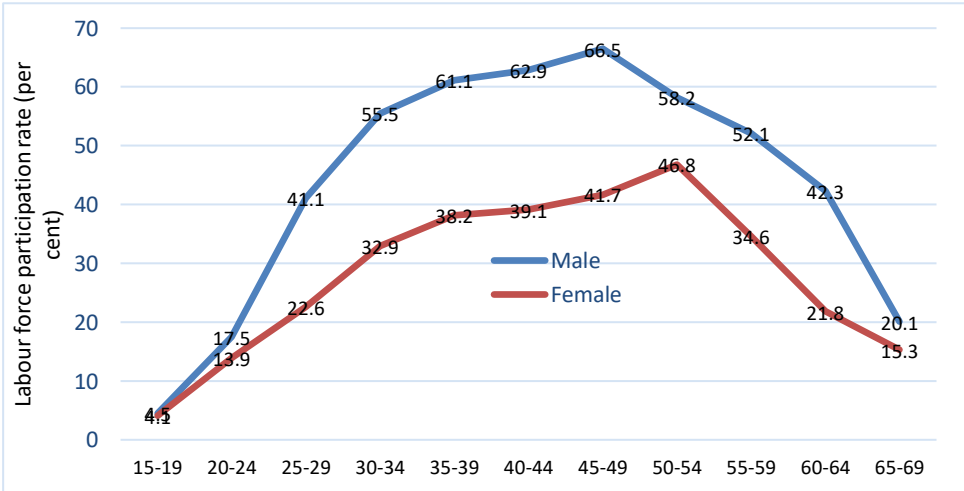
2.3 Employment and job creation

Government of Timor-Leste has initiated several policies to support better implementation of initiatives for youth. Types of skills enhanced are often skewed towards training and provision of inputs, mainly for primary production, with limited focus on soft skills and financial access and management.

Labour force participation rates

The 2021 Labour Force Survey shows that the working-age population of 15 years and above in Timor-Leste was 809.3 thousand, with slightly more women (405.8 thousand) than men (403.6 thousand). The 2015 census reports a shift in economic activity that shows a net relative decline in agricultural employment in favour of services, which decreased from 68.9 per cent to 59.3 per cent in 2015, but saw a rise in service employment from 26.1 per cent in 2010 to 35.9 per cent in 2015 (GDS, 2018). The most recent survey shows close to two in three people (59.1 per cent) of the population aged 15 years and above are employed in service employment, while those precipitating in agricultural employment accounted for 26.9 per cent. However, the Timor-Leste Labour Force Survey 2021 Report shows that there is disparity by gender; more women (31 per cent) compared to men (24.2 per cent) were employed in this sector (Figure 2).

Figure 2: Labour force participation rate by sex and five-year age group, Timor-Leste, 2021



Source: Timor-Leste Labour Force Survey 2021

Young persons, aged 15-24 years, and elderly persons, aged 65 years and above, accounted respectively for 271.2 thousand (33.5 per cent) and 65.1 thousand (8 per cent) of the total working-age population. The labour force totalled 247 thousand, comprising of 98.1 thousand women and 148.9 thousand men that were either employed or unemployed. Overall, the labour force participation rate was 30.5 per cent, with a sharp disparity by sex. The labour force participation rate for women (24.2 per cent) lagged that for men (36.9 per cent) by 12.7 per centage points.

Unemployment

The general unemployment rate was 5.1 per cent in 2021. The rate was higher for female jobseekers (5.9 per cent) compared to their male counterparts (4.6 per cent).⁵ Unemployment is higher among young people. People aged 15-26 are as twice as likely to be unemployed than adults aged 25-64 (9.6 and 4.7 per cent, respectively). Recent studies on youth economic participation shows that while improvements are noted, youth participation in the economy is skewed towards agriculture and food systems.

Of concern are the youth who are not in employment, education, or training (NEET).⁶ Reducing the percentage of youth that fall within the NEET category has been included as a target under the Sustainable Development Goal (SDG 8.6) on decent work and economic growth⁷. The per centage of youth 15-24 years in the NEET category in Timor-Leste is estimated at 30.5 per cent, which closely correspond with the 2022 Population and Housing Census where the overall NEET was estimated at 29.3 per cent, with 29.1 per cent for males and 29.6 per cent for females. This is higher than the youth NEET in the South Asian region at 16.3 per cent in 2023⁸. The NEET target in SDG 8 was to “substantially reduce the proportion of youth not in employment, education or training” by 2020.

Technical and Vocational Education and Training (TVET) and Skills development

Rising youth unemployment is one of the greatest challenges facing both developed and developing countries. The United Nations Educational, Scientific and Cultural Organisation (UNESCO) recognises Technical and Vocational Education and Training (TVET) as critical for equipping youth and adults with the required skills for employment and decent work.

Recognising that skills development among the youth is key to unlocking the country’s potential of demographic dividend, the government of Timor-Leste has developed a strong Technical and Vocational, Education and Training (TVET) system.

The program focuses on technical and vocational training, which brings young people in contact with relevant enterprises and employers with the skilled workers they seek to employ. With the higher proportion of the population residing in rural areas, the government of Timor-Leste has set up programmes

⁵ Timor-Leste Labour Force Survey 2021 Report

⁶ International Conference of Labour Statisticians (ICLS). (2013). Resolution Concerning Statistics of Work, Employment, and Labour Underutilization. In 19th International Conference of Labour Statisticians. Geneva: ILO.

⁷ SDG Target 8.6: “By 2020, substantially reduce the proportion of youth not in employment, education or training”.

⁸ Global Employment Trends for Youth 2024 Asia and the Pacific.

to improve unemployment and underdeveloped skills amongst the rural cohorts. It is envisaged that the Youth and Empowerment Promotion (YEP) programme will engage youth in employment and training activities.

Enabling environment through Partnerships

Government of Timor-Leste has created an enabling environment to absorb its growing youthful population. Timor-Leste is also a signatory to the World Trade Organisation (WTO) and the Association of South Asian Nations (ASEAN) agreement, which was set up in 2018 with a view to modernise its economy and trade integration. The integration will not only bring together countries in the region under a single trade block in a Free Trade Area (FTA), but will also develop and diversify economies within the region and expose them to multilateral trading systems. This will allow free movement of labour and capital among the members of the group. This economic integration will leverage Timor-Leste to access the WTO and the Association of South Asian Nations (ASEAN) economies, thereby boosting its trade and investment integration with the region, enabling its economy to contribute positively to the living standards of its people.

In 2011 the government of Timor-Leste established the Infrastructure Fund (IF) to guide diversification of industry. It is understood that economies which are reliant on oil are less stable as the prices of oil fluctuates. Because of this, in 2011, the government of Timor-Leste passed a policy on infrastructure aimed at increasing diversification. This diversification will provide many job opportunities to the growing youthful population. This will also create readily available jobs. The passing of the IF between 2011 and 2021 resulted in the creation of 68,571 jobs⁹. According to the budget statement, IF allocations show that roads and bridges were allocated 54 per cent of the budget, amounting to USD1,130 million (Ministry of finance, 2023).

The IF programs and projects contribute directly and indirectly to SDGs through investments in access to energy and clean water, poverty reduction and alleviation, quality of education and good health, job creation, decent work, and economic growth (SDG 6, SDG 7, SDG 9, etc.). the IF programs are also aligned with the government's plans and priorities and the Strategic Development Plan for 2011-2030 (SDP).

2.4 Education and demographic dividend

Well-educated youth can contribute to strengthening a country's economy as they enter the labour market. This results in growing productive and tax revenues, providing countries with the means to invest in their education systems. Education and training are also critical in producing a skilled labour force. From a macro-economic perspective, education contributes to accelerating the potential for countries to reap the benefits of demographic dividend. Workers with at least upper-secondary education are more likely to find employment and receive higher earnings than those with lower educational levels¹⁰. By contrast, those with

⁹ Ministry of Finance Timor-Leste Strategic Development Plan (2011 – 2030)

¹⁰ UNDESA, (2023). Population, education and sustainable development: interlinkages and select policy implications. Future of the World Policy Brief.

lower education earn less and are at greater risk of losing employment because their jobs could be automated¹¹.

2.4.1 Policy context in education

Education is interlinked to demographic dividend from the fact that educated men and women contribute to human capital. Education also contributes to increasing the demographic dividend in that educated women are likely not to adopt the traditional roles of women. Some countries have strict and old-fashioned gender roles where women marry young and start bearing children, which may limit the opportunities of advancing in school. There is ample research indicating that education indirectly influences fertility decline as women who are educated tend to have lower fertility¹².

The vision in the education sector is to remove barriers to access to education and to ensure that the right to education is upheld for every child. By 2030, the vision targets to construct or rehabilitate 169 schools out of 180 schools in pre-school level. It had also planned to build 1309 schools in 2011 with an of adding 335 new schools by 2030. It has to be acknowledged that the number of schools appear to increase at the basic year but dwindled in the projection year of 2030. This is because it assumed that having being built, the schools would have adequate child to teacher ratio.

Pre-school education

Early childhood centres offer children a foundation for more advanced literacy skills. This stage also exposes the children to a rich language environment, which helps them develop communication skills. Furthermore, children can begin to develop maths knowledge, such as counting, sorting and recognising shapes and objects. This basic knowledge prepares them for future higher-level learning, and it can also be an investment for labour force participation.

Cognisant of the role that education plays in building citizens' capacity intellectually, socially, economically and culturally, the Government of Timor-Leste designated education as one of its key priority areas. The SDP was supported by the National Education Strategic Plan (NESP) (2011-2030) and the National Technical and Vocational Education and Training Strategic Plan (TVET Strategic Plan). the policies provide insight and overall context for government strategy and plans to address the various issues affecting the education sector. This includes the provision of education as well as adolescent development.

We will invest in education and training to ensure that by 2030, the people of Timor-Leste are living in a nation where people are educated and knowledgeable, able to live

¹¹ Arntz, M., T. Gregory and U. Zierahn (2016), "The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis", OECD Social, Employment and Migration Working Papers, No. 189, OECD Publishing, Paris, <https://doi.org/10.1787/5jlz9h56dvq7-en>.

¹² Wolfgang Lutz et al 2019. Education rather than age structure brings demographic dividend PNAS <https://www.pnas.org/cgi/doi/10.1073/pnas.1820362116>

long and productive lives, and have opportunities to access a quality education that will allow them to participate in the economic, social and political development of our nation.

Furthermore, in order to guide government and other departments in achieving its education goal, the Ministry of Education, Youth and Sport with support from development partners, developed the Education Sector Plan (ESP 2020-2024) – updating the National Education Strategic Plan (NESP 2020-30) that would guide resource mobilization and implementation of the strategic priorities known as Costed Action Plan (2020-2023). The purpose of the Costed Action Plan (2020-2023) is to articulate national priorities for education and provide guidance for national and sub-national level education programming that were defined within the revised Millenium Development Goals (MGDs) and ensure consistency with relevant SDG4 targets highlighted below:

- Target 4.1: By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education, leading to relevant and effective learning outcomes.
- Target 4.2: By 2030, ensure that all girls and boys have access to quality early childhood development, care, and pre-primary education, so that they are ready for primary education.
- Target 4.4: By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills for employment, decent jobs and entrepreneurship.
- Target 4.5: By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples, and children in vulnerable situations.
- Target 4.6: By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy.

The SDGs align with the goals stipulated in the NESP (2011-2030) and the ESP (2024), focusing on Early Childhood Development (ECD) with the understanding that intervention on ECD yields a high rate of return since it creates the basis for lifelong learning through healthy brain development that starts from conception, as well as advancement of cognitive and non-cognitive skills. Research shows that age structure alone does not trigger fertility, rather, education, through changing norms and beliefs, triggers fertility decline¹³.

Similarly, the policies aim to develop human capital that is ready to contribute to the demographic dividend from primary school level. While there has been overall progress in enrolment, according to the 2022 PHC, the education thematic report shows that there has been a declining trend from the 2010 PHC. The NAR increased from 71.6 per cent with 71.2 per cent for boys, and 72.1 for girls. The 2016 DHS shows the NAR increased to 86.2 per cent (General Directorate of Statistics (GDS) and ICF,2017). However, in the 2022 PHC, the NAR was 75.2 per cent – a decline of 11 per centage points that is attributed to COVID-19, which might have prevented parents from enrolling their children in school.

¹³ Lutz W, Crespo Cuaresma J, Kebede E, Prskawetz A, Sanderson WC, Striessnig E. (2019). Education rather than age structure brings demographic dividend.

Social indicators

According to the 2022 Population and Housing Census, the Net attendance ratio for Timor-Leste was 47.5 per cent, an increase from the 2013 ratio (34.4 per cent). Girls performed better than boys with 52.4 and 42.8 per cent, respectively. Overall, the gender parity index for pre-secondary school was 1.22. Similarly, the Gross Attendance ratio was 95.5 per cent, and the girls performed consistently higher than boys at 97.6 and 93.5 per cent, respectively.

Just like at secondary level, the NAR are in favour of girls. According to the 2022 PHC, the overall NAR was 40.1 per cent, with girls being higher than boys (45.6 per cent and 34.8 per cent, respectively). This is an overall improvement from the 2010 PHC which was 16.5 per cent.

Student enrolment in higher education institutions was at 30,972 in 2018, an increase from 8,168 students enrolled in 2008. Female enrolment in public universities increased from 33% in 2008 to 37.5% in 2018 as a result of government's affirmative action. However, female enrolment remains lower than male enrolment.

Challenges affecting Higher Education

While social indicators such as school enrolment rates have shown some progress, the education sector faces some challenges. The Gender Parity Index (GPI) for primary school favours boys over girls with the index at 0.96¹⁴. At secondary level, slightly more girls enrol in school compared to males (1.06). By wealth quintile, the gender inequality index is more pronounced across the wealth quintiles, with girls coming from lowest quintile having a similar level with those from the richest, 0.97 and 0.96, respectively.

There has been an increase in both public and private universities, with the latter being more. Selection into public and some private institutions is competitive and only few secondary school graduates compete successfully. There are limited opportunities for students with disabilities to access higher education because most of the higher education institutions do not have disability friendly infrastructures.

2.5 Health Status and demographic dividend

Health reforms and population policy play an important role in changing fertility rates. The policy can create a conducive environment so that organisations (for example not- for-profit organisations) are able to implement programmes aimed at reducing fertility (May 2012). However, the institutions can also impose restrictions or inhibitions in the form of norms and rules.

Total fertility rate

Timor-Leste's total fertility rate (TFR) among women aged 15-49 years has dropped from 5.7 children per woman, according to the 2009-10 TLDHS, to 4.2 in the 2016 TLDHS. The 2022 PHC census indicate a further

¹⁴ The gender parity index for primary school is the ratio of the primary school Net attendance ratios (NAR) or the (gross attendance ratios (GAR) for females to the NAR (GAR) for males. The ratio of female to male students attending primary school and the ratio of female to male students attending secondary school. Each index reflects the magnitude of the gender gap.

drop to 3.6 children per woman, with fertility rates higher in rural than in urban areas. The age specific-fertility rates start at 42 births per 1,000 women among women aged 15-19 years.

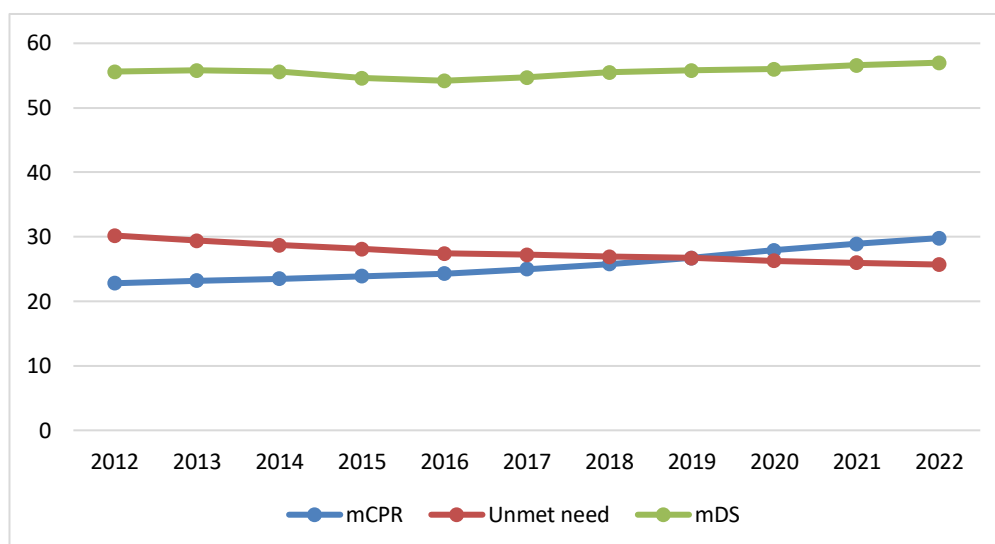
Use of family planning

Despite efforts to increase CPR, the use of modern contraceptives among women remains low at 24 per cent among married women aged 15-49 years, an increase from 21 per cent in the previous demographic and health survey (2009-10). This is worrying considering that one in four currently married women (25 per cent) are unable to space or limit childbearing. Throughout this report, modern contraception refers to injectables, implants, male and female condoms, and male and female sterilisations. Although the difference in modern CPR among current married women is small in urban and rural areas (23per cent vs. 25per cent), method mix among married women in the urban is more diverse than their counterparts in the rural areas. For example, of the 26.8 per cent of married women who use modern contraceptives, 7.4 per cent use injectables. Of the 25.7 per cent of married women, 13.9 per cent (representing 54.1 per cent) use injectables as their method of choice. The predominance of one method over the other may suggest access issues. Women who are unable to access contraceptives are more likely to experience negative outcomes, such as unprotected sexual activity, unintended pregnancies and unsafe abortion. This may result in women and their children facing avoidable and potentially severe risks to their health and quality of life.

Notwithstanding the commitments and efforts, SRHR outcomes in Timor-Leste continue to be among the poorest in the world. Available data from the FP 2030 measurement report shows that there has not been much progress in modern contraceptive prevalence in Timor-Leste over the last decade where mCPR increased slightly from about 22.8 per cent in 2012 to 25 per cent in 2017, and it is estimated at 29.8 in 2022¹⁵. Unmet need declined from 26 percent in 2012 to 17 percent in 2020. As shown in Figure 3, the country registered little success in the last ten years in reducing unmet need for modern contraceptives. It remains at 25 per cent.

¹⁵[https://track20.org/download/pdf/2022per cent20Countryper cent20Briefs/English/Timor-Lesteper cent202022per cent20Indicatorper cent20Summaryper cent20Sheet.pdf](https://track20.org/download/pdf/2022per%20Countryper%20Briefs/English/Timor-Lesteper%202022per%20Indicatorper%20Summaryper%20Sheet.pdf)

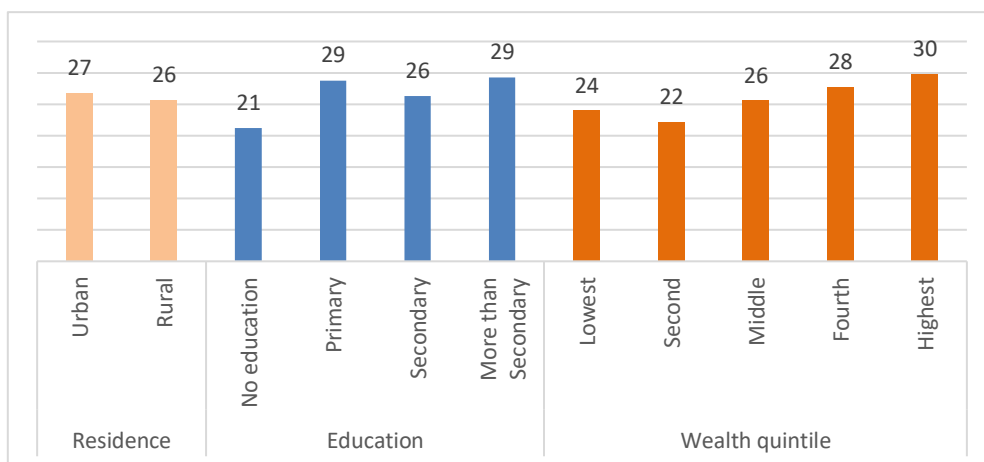
Figure 3: Changes in mCPR, mCPR and unmet need



Source: Family Planning 2030 Timor-Leste fact sheet

Timor-Leste’s FP2030 vision is for all girls and women including the most vulnerable to have access to FP and SRHR services. The country made previous commitments and efforts as part of the FP2020 agenda to accelerate access to SRHR services. For instance, Timor-Leste committed to increasing modern contraceptive prevalence of 50 per cent (mCPR) by 2020.

Figure 4: Inequalities in modern contraceptive use, Timor-Leste



Inequalities in modern contraceptive use

There are also significant inequalities in access to contraceptives, with those disproportionately underserved being rural, uneducated, poor women. For instance, current prevalence of modern contraceptive use ranges from 21 per cent among women in poor households to 30 per cent among those in the richest.

Maternal mortality

High fertility predisposes women to the risk of high maternal mortality, especially at high parity, and the risk of maternal mortality increases the more women are exposed to the risk of pregnancy and childbirth. Although estimated levels of maternal mortality differ according to data sources and estimation methods, in recent times, there have been improvements in maternal mortality ratios, declining from 570 deaths in 2010 TLPHC to 195 per 100,000 live births in 2016 (TLDHS). Yet, maternal mortality in Timor-Leste is still among the highest in the world and constitutes a major impediment to development through its impact on health, educational attainment, human capital and health outcomes for future generations.

Similarly, the 2009-10 TLDHS states that skilled birth attendants delivered 85.9 per cent of the births, but the proportion marginally declined to 84.6 per cent in 2016 TLDHS. 92 per cent of women in urban areas received ANC from a skilled worker, compared with 81 per cent of those in rural areas. The urban and rural areas show large variations in terms of access to qualified health services; of 49 per cent of the births delivered in a health facility in 2016, 84 per cent of births occurred in urban areas compared to 34 per cent in rural areas.¹⁶

To a large extent the factors accounting for the poor performance against maternal health indicators include low numbers of health facilities providing maternal health services, distance to facilities, gender and cultural norms, low education levels, poverty and costs associated with accessing services.

The desire for more children among men is higher than the actualised fertility. The wanted fertility rate in Timor-Leste is 3.5 children, compared with the actual total fertility rate of 4.2 children resulting in 0.7 more children than ideally wanted. Men are less likely to limit the number of children. Overall, 29 per cent of women and 26 per cent of men do not want another child.

To further reduce maternal mortality and morbidities, more efforts are needed to scale up the provision of and access to high-quality emergency maternal and neonatal care, including through community engagement and male involvement¹⁷.

The above discussion shows that Timor-Leste faces challenges to adequately delivering services that can combat the high levels of infant and child mortality and other morbidity conditions. In the absence of appropriate human resources and effective governance structures, as well as significant increase in health finance and family planning, the prevailing high fertility levels present challenges in attaining the Sustainable Development Goals (SDGs). Investing in family planning falls within the framework of Sustainable Development Goals, especially Target 3.7, which ensures universal access to sexual and reproductive healthcare services, including for family planning.

Family planning can help adolescent girls marry later, while reducing birth complications among the youth who become pregnant early (Mensch, Singh et al. 2005). This is similarly true among women aged 35 years and over who, because of their older age, are at higher risk of developing birth complications (Loaiza

¹⁶ General Directorate of Statistics (GDS) and ICF Macro (2017). Timor-Leste Demographic and Health Survey 2016.

¹⁷ <https://Timor-Leste.unfpa.org/en/topics/maternal-health-0>

and Liang 2013). Reducing high fertility levels may help the country realise the benefits in the window of opportunity when the population of working age (15–59 years) exceeds the number of youths (0–14 years) and retirees (over 60 years) (Ross 2004, Gribble and Bremner 2012). Family planning also ensures that births are well-spaced and allows for a longer breastfeeding period, which is beneficial for the child and the mother’s health. This can positively contribute to the nutrition status of children, including improved infant and young child feeding practices and reduced likelihood of stunting.

Teenage pregnancy

Approximately seven (7) per cent of teenagers in Timor-Leste have begun childbearing. The adolescent fertility rate is at 42 births per 1,000 women among women aged 15-19 years. Childbearing starts early in Timor-Leste, with the median age of first giving birth among women aged 25-49 being 22 years. Teenage pregnancies are more frequent among adolescent girls from rural and poor households, impairing their access to labour markets and increasing their risk of undernutrition and maternal mortality.

Nutrition

Nutrition levels have generally improved – the trend of improvement in terms of nutritional status of children below 5 years continued to decline, with a reduction in the level of stunting (from 58.1 per cent to 47.1 per cent) between 2010¹⁸ and 2020¹⁹ (Government of Timor-Leste, 2022). Overall, there has been improvement in prevalence of malnutrition in women of reproductive age (19-49). The prevalence of short stature declined from 14.8 per cent to 12.6 per cent between 2010 and 2020. Nevertheless, Timor-Leste faces challenges of overweight among women: the proportion increased from 5.1 per cent to 19.3 and almost quadrupled in the same period. Overweight among women may suggest not adhering to optimal food diets. The proportion of women who were underweight decreased (from 26.6 per cent in 2016 to 18.8 per cent in 2020) while the proportion of women who were overweight/obese increased (from 9.8 per cent in 2016 to 19.3 per cent in 2020).

Timor-Leste has made improvements in gender equality, ranking 64th in the 2021 Global Gender Gap Index from 125th in 2016.¹² The Government has prioritized action on gender equality and the prevention of gender-based violence, which is a major issue in Timor-Leste: a 2016 survey found that one-third of women age 15–49 had been subjected to sexual violence in the previous 12 months.¹³ Younger women and girls are at particular risk of sexual violence and early child and forced marriage. Women who experience intimate partner violence are twice as likely to be living with disabilities than women who do not experience such violence.¹⁴ The COVID-19 pandemic has had a disproportionate impact on women’s food insecurity due, in part, to cultural norms of women eating “least and last”.¹⁵

¹⁸ Timor-Leste Demographic and Health Survey (2010)

¹⁹ Government of Timor-Leste. 2022. Timor-Leste Food and Nutrition Survey 2020 – Final Report.

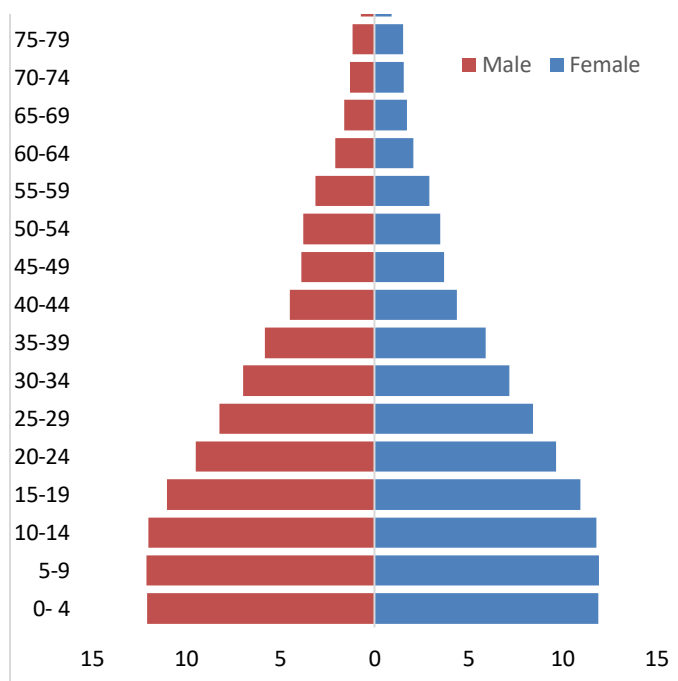
2.6 Population age-sex structure of Timor-Leste to 2050, Low, Medium and High variants

The population in Timor-Leste grew rapidly between 1950 and 2024. The population numbered 413,000 in 1950, 594,000 in 1975, and 714,000 in 2000. For the first time, the population reached one million in 2008²⁰ and 1.34 million in 2022²¹. The UNDESA medium variant estimates show that Timor-Leste's population increased by approximately 30 per cent per decade from 1950 to 2020, which was amazing considering that the growth rate in Southeast Asian countries at the same time was less than half as large.

Beyond population size, the age and sex structure are also useful for understanding the demand for services by various sub-groups of the population. The key population sub-groups of interest often include young dependants, older dependants, and working-age populations. The population age-structure of Timor-Leste in 2022 (under the medium variant scenario) shows the country's youthful population, mainly due to the persistent high fertility rate (Figure 5).

Almost 3.5 per cent of women aged 15-49 are in the reproductive age group (INETL, 2023). The proportion is expected to decline by 2.6 per cent. Because of the large number of young women who will soon enter their reproductive years, even as the fertility rate declines, Timor-Leste's population will initially continue to grow rapidly. Such a youthful population means that Timor-Leste requires significant investment in education, health, job creation, and housing for the youth to make meaningful contributions to socio-economic development as they become adults and enter the labour market.

Figure 5: Population age-sex structure of Timor-Leste in 2022

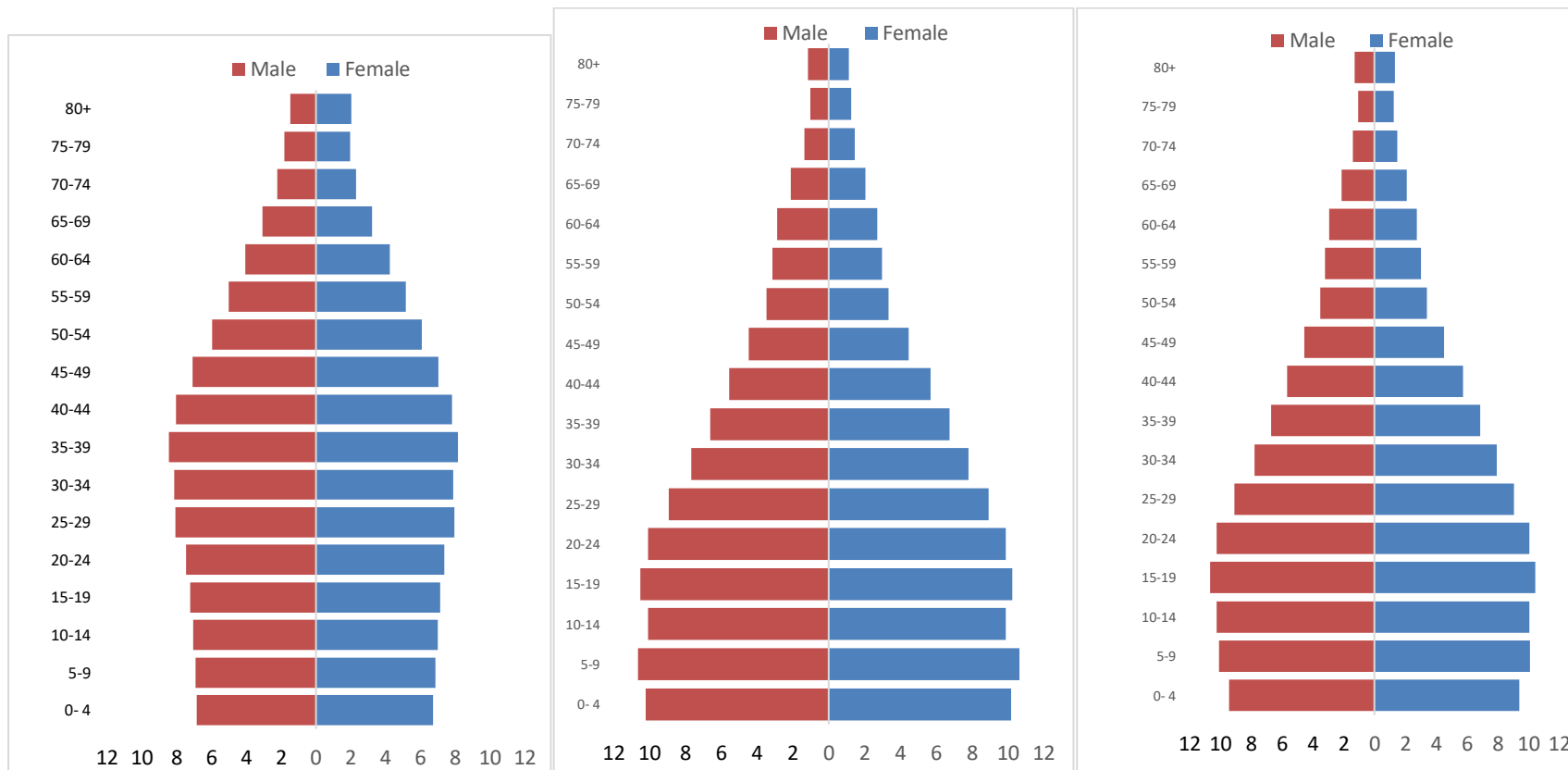


²⁰ United Nations, Department of Economic and Social Affairs, Population Division (2024). Accessed 01.08.2024

²¹ General Directorate of Statistics (GDS). 2022. Population and Housing Census Main Report. Dili, Timor-Leste

Furthermore, according to the 2022 Timor-Leste Population projections, the country's population to 2030 under the high fertility variant shows that the age-structure will not be significantly different from the structure in 2022 (Figure 6). However, if Timor-Leste experiences an accelerated fertility decline under the low fertility variant, the age-structure will begin to show signs of a youth bulge (Figure 6). By contrast, if Timor-Leste continues in its current trajectory of modest fertility decline under the medium variant scenario, the age structure will only be slightly different from the structure under the high fertility scenario. The implications of Timor-Leste's population age structure to 2030 under the various scenarios is that the country is unlikely to achieve key SDG targets, including those on infant and under-five mortality. This is partly because of the slow increase in contraceptive use and the persistent high unmet need for family planning.

Figure 6: Population (Percent) age-sex structure of Timor-Leste to 2032, Low, Medium and High variants

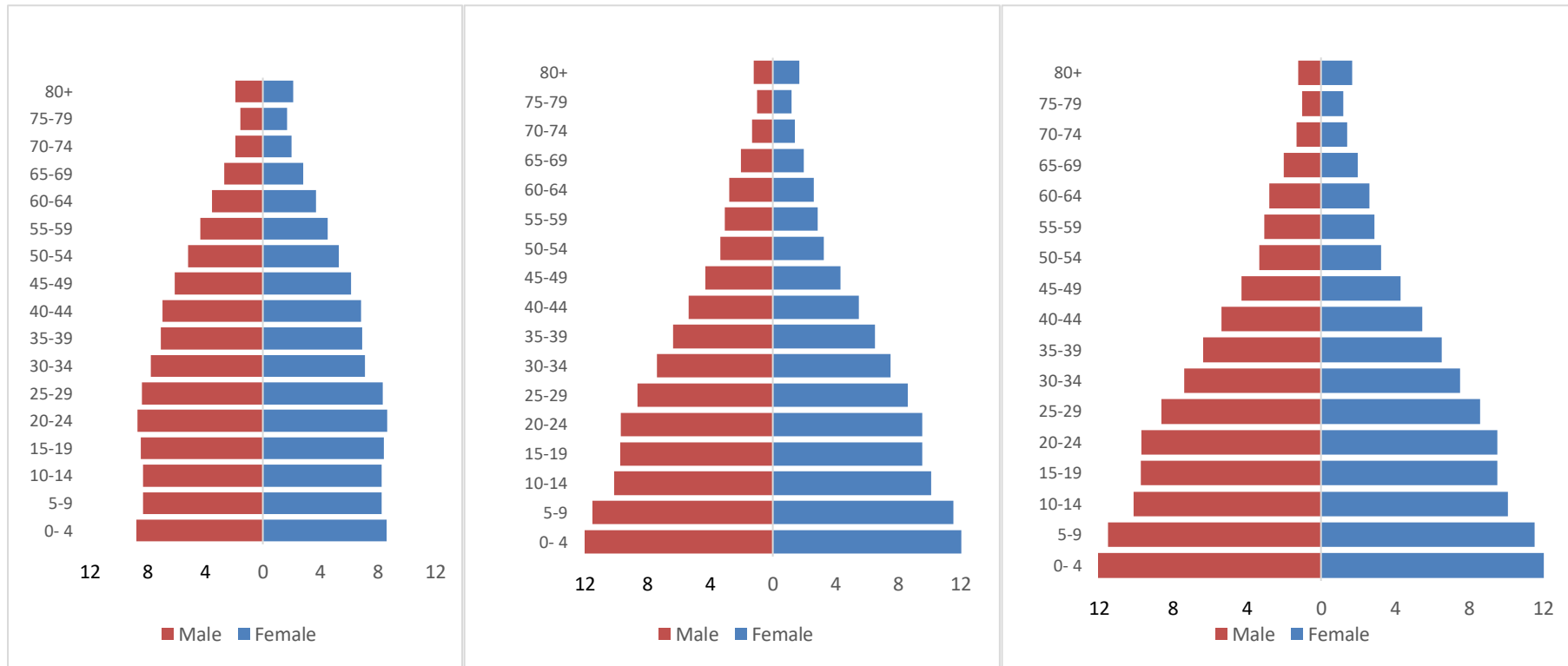


Source: General Directorate of Statistics (GDS), Population Projections 2022-2050

As Timor-Leste makes demographic transition, the age-sex distribution of the population alters due to sustained fertility and mortality rates leading to shifting of pyramids, attaining the shape of broader pyramids. The population pyramid that represents Stage 3 in the demographic transition has nearly vertical sides, with a broad base and relatively broad peak, reflecting reduced fertility, reduced childhood mortality, and increased survival; the older age categories make up a larger proportion of the population than in earlier stages, and the size of the population stabilizes.

As observed in Figure 7, the age sex distribution of the population will attain a broad-based pyramid indicating that the population in the younger age categories make up a relatively lower proportion of the population, and a broad top indicates that older people make up a relatively large proportion of the population.

Figure 7: Timor-Leste age-sex structure if Timor-Leste: low, Medium and high variant 2050



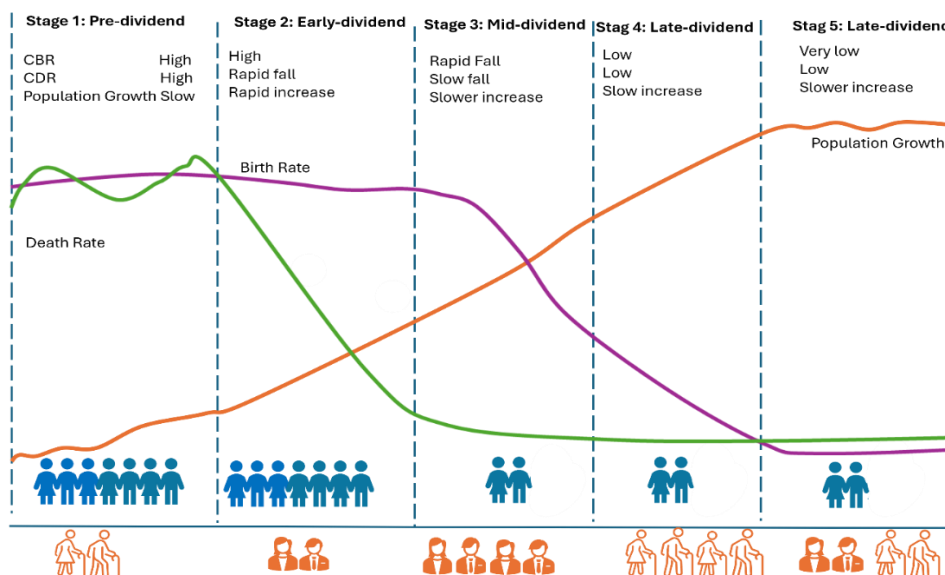
Source: General Directorate of Statistics (GDS), Population Projections 2022-2050

Chapter 3: Overview of the Demographic Transition

Population dynamics is best explained through Demographic Transition Theory (DTT). DTT was first developed by Warren S. Thompson (1929) and Frank W. Notestein (1945). The theory proposes four stages of mortality and fertility change that occur in the process of societal modernization. Demographic transition involves the reduction from high to low mortality and fertility rates, leading to changes in age distribution and increased life expectancy (Caldwell, 2006; Lee, 2003).

The first stage is characterised by mortality being at the highest level, and it surpasses fertility level. The relatively high level of mortality leads to little, or no population change as births and deaths cancel each other. The relative instability of the mortality rate means that during this stage, there were some periods of natural increase and some of natural decrease, but that over the longer period, there was very little change in population size. The first stage is the pretransitional or preindustrialization stage. It lasted for thousands of years when the world was characterized by high birth and death rates and stable population growth. It shows high rates of fluctuating mortality and high fertility. The relative instability of the fertility and mortality rates means that during this stage, there were some periods of natural increase and some of natural decrease, but that over the longer period, there was very little change in population size. Because of its high birth rate, it is also referred to as the stage of high growth potential because of the great potential for population growth if mortality were ever to fall. This stage is shown in the left portion of Figure 8.

Figure 8: Demographic Transition



Source: Adapted from: <https://geographyfieldwork.com/images/DemographicTransitionModel.png>

A country enters stage two of the DTT when societies transition to lower death rates, especially lower infant and maternal mortality, but maintain high birth rates, resulting in rapid population growth. A consequence of the decline in mortality in Stage II is an increasingly rapid rise in population growth (a "population explosion") this growth is not due to an increase in fertility (or birth rates) but to a decline in deaths.

The third stage is characterized by slow population growth due to lower birth and death rates; it is during this period that fertility begins to decline. The resulting changes in the age structure of the population include: a reduction in the youth dependency ratio and eventually population aging population structure becomes less triangular and more like an elongated balloon. There is a demographic window of opportunity that can potentially produce economic growth through an increase in the ratio of working age to dependent population, the demographic dividend

In the Stage 4, both fertility and mortality are very low. Many countries in developed countries have reached this stage.

Some countries in the Eastern Asian regions started experiencing fertility declines as early as the 1950s. The decline led to a corresponding decline in youth dependency ratios. As the relative size of the working-age population increased, which resulted in economic growth on the one hand, and increases in life saving for the working population, on the other hand (Asian bank 2011).

High-income countries like South Korea and Singapore have older populations, while lower middle-income countries such as India and the Philippines have younger populations. This demographic transition has historically contributed to economic growth, with up to 33 per cent of East Asia's growth from 1965-1990 attributed to favorable demographics (Bloom, Canning, & Malaney, 2000).

The demographic dividend refers to the accelerated economic growth that may result from the decline in a country's mortality and fertility as well as the subsequent change in the age structure of the population. With relatively fewer people at the dependent ages, a country has a window of opportunity for rapid economic growth and improved standards of living. However, that window is temporary, and a changing age structure does not guarantee a dividend. Good policies and governance are needed to maximise the potential benefits.

Sustained fertility and mortality decline suggest that in Timor-Leste, the Demographic Transition is underway. Trends in child mortality can be assessed by comparing the current indicators to the estimates from the previous data sources that collected information on child mortality. The 2022 Timor-Leste Population and Household Census results showed that, overall, childhood mortality has declined over the past thirty-year period from 1991 to 2022. According to the 2022 Population and Housing Census, 4 in every 100 new-borns die before reaching their first birthdays (infant mortality rate [IMR]).

As the country undergoes DT, improvement in mortality is also manifested in improvement in Life Expectancy. Life expectancy in Timor-Leste has improved since the 2000s. In 2004, the male life expectancy at birth was 57.4 years which has increased to 65.1 years in 2022. In the same period, female life expectancy increased from 58.9 years to 69.2 years.

Ageing

It will be an underestimate not to highlight that, due to consistent fertility declines and mortality improvements, the age structure of Timor-Leste will be transformed from a predominantly younger population towards a much older population structure, resulting in an ageing population. The

population of the elderly in 2015 was 8.2 per cent while in 2022 it was enumerated to be 7.8 per cent. According the 2022 Projections, the population is expected to reach 9.5 per cent in 2050.

The socio-economic initiatives guided by the SDP and the Timor-Leste's Roadmap to achieving the SDGs, particularly Socio-economic factors influencing mortality, education and economy, will transform the education sector, particularly improving girls' education. An inverse relationship has been observed between level of education and mortality. Assuming other factors constant, a highly educated population will live longer: the more educated one is, the greater likelihood to have good dietary habits as there is an appreciation of the importance of a balanced diet and healthy eating.

Likewise, advances in medical technology and access to quality medical services are crucial. Suffice to say that the latter does not guarantee that people will have good health, but rather that people must have access to good and affordable health service. Growth in economy is linked to affordability of services since, with all things being equal, people will have income to pay for good and quality health services. Access to good quality health services through sustainable incomes will bring a decrease in mortality. These will inevitably improve survivorship.

Chapter 4: Modelling of the Demographic Dividend for Timor-Leste

4.1 Introduction

Modelling the potential for demographic dividend adopted several methodological approaches. The [DemDiv](#)²² model is an evidence-based tool developed by the Health Policy Project at Futures Group with support from the United States Agency for International Development (USAID). The DemDiv model was used to demonstrate the potential impact of investment in multi-sectoral policies. In the modelling, various scenarios of the potential demographic dividend that can be derived from investments in health (family planning), education, and the economy.

There are several approaches commonly used to analyse the demographic dividend, namely: dependency ratios, simulation models, National Transfer Accounts, and regression and decomposition approaches (see Appendices).

Dependency ratio uses age sex population data which is categorised into 0-14 young dependency ratio, 15-64 working age group, and 65+ and older as the old dependency age group. While the dependency ratios are easy to compute, they are limited in that they assume entry into age category at specific ages re constant across the countries.

Demographic dividend can also be estimated using simulation approaches. this entails using. These models are relatively complex to design as they are, in essence, a series of mathematical equations that describe the relationships between two or more variables. The results produced by simulation models are entirely dependent on the relationships and assumptions embedded in their structure. Another approach is to use the National Transfer Accounts. are a set of accounts that describe economic flows, such as labour income and consumption, across the lifecycle and are constructed to be consistent with national accounts. The NTA utilises country-specific data that together reflect the economic, social and institutional characteristics of the country.

Regression and decomposition approaches uses historical data to estimate statistical relationship. The approach is very rigorous but requires very detailed data to estimate demographic dividend, which most developing countries do not have.

The analysis of demographic dividend using the DemDiv model is preferred because it speaks to domestic policy choices in areas such as population, health, education, labour market, and economic policy.

4.2 Base Year Information

The DemDiv models requires indicating the base population for three scenarios. The 2022 Timor-Leste Projections medium fertility variant was adopted as the base population with the medium fertility variant as the underlying assumption. The medium fertility variant assumes that effective use of modern contraceptives will result in fertility reduction, converging towards replacement fertility (2.1 children per woman).

²² Health Policy Project and USAID.

<https://www.healthpolicyproject.com/index.cfm?id=publications&get=pubID&pubId=489>

4.3 Input information for the DemDiv model

Since Timor-Leste is within the region of Asian countries, it is standard practice to use South Korea as a model for every country to reach aspirations. It is important to note that the targets for key indicators built into the DemDiv model are based on the achievements of three East Asian countries (Malaysia, South Korea and Indonesia) that have achieved significant progress in health, education and economic growth. The progress and experiences of these East Asian countries have often been sighted as an exemplary path for other developing countries²³. The basis of comparison is that these East Asian countries had similar demographic and economic trends with Timor-Leste in the 1960s. However, the East Asian countries have now surpassed many other countries in demographic and socio-economic aspects, including fertility, health, education and the economy.

4.4 Assumptions

The scenarios in the DemDiv model are therefore based on aspirations to meet and surpass the achievement of the East Asian comparators.

4.4.1 Base Year Assumptions

Table 1 provides basic information of the inputs required in DemDiv Model. Additionally, to come up with each estimate for each input, the appendix provides the computation modelling for each indicator.

²³ Mason & Kinugasa, 2005. East Asian Economic Development: Two Demographic Dividends. <https://www.imf.org/external/pubs/ft/wp/2014/wp14143.pdf>

Table 1: base year information input required for the DemDiv Model

Category	List of Indicator	Main Data Sources	Supplementary Data sources
Demography	Population distribution (by age and sex) Population growth rates Dependency Ratios (child, working age, old age) Marital status Age sex distribution by primary	Census DHS/INETL	WHO, UNICEF, UNFPA, World Bank and the UN Population Division websites/databases
Health	<ul style="list-style-type: none"> • Contraceptive Prevalence Rate (Modern methods) for currently married women • Post Partum Insusceptibility (PPI) in Months • Sterility (Per cent of All Women 45-49 who are childless) • Per cent of females aged 15– 49 years who are Married (including those in consensual unions) • Total Fertility Rate • Per cent Births at Risk (avoidable risk only) • Infant Mortality Rate • Under-5 Mortality Rate • Maternal Mortality Ratio • Contraceptive Effectiveness Rate for Modern Methods • Contraceptive Effectiveness Rate for Traditional Methods • Female Life Expectancy at Birth Life Expectancy Difference (Females – Males) 	Census DHS/ INETL Annual Reports Government Policies, Documents Health management information systems reports	Demographic and Health Survey, Multiple Indicator Surveys, STATcompiler
Education	<ul style="list-style-type: none"> • Expected Years of Schooling for females • Expected Years of Schooling for males • Mean years of schooling for females aged 25 years and above • Mean years of schooling for males aged 25 years and above • Mean years of schooling for persons (both sexes) aged 25 years and above 	Ministry of Education/Government Education Departments	

Economy	<ul style="list-style-type: none"> Imports as a percentage of GDP Public Institutions Labour Market Flexibility Financial Market Efficiency ICT Use 	Labour Force Surveys Ministry of Finance	World Bank, World Development Indicators, ILO, Key Indicators of the Labor Market
Global Economic competitiveness indicators	<ul style="list-style-type: none"> Imports as a percentage of GDP Public Institutions Labour market flexibility Financial market efficiency ICT use 	Labour Force Surveys Ministry of Finance	World Bank, World Development Indicators, ILO, Key Indicators of the Labor Market
Governance indices	<ul style="list-style-type: none"> Proportion of households with access to mass media (radio, television, internet), by sex of household head Proportion of seats held by women in (a) national (b) local governments Women's share of government ministerial positions Proportion of women in managerial positions 	Government reports/ INETL	IMF, UNDP databases, Reports.

4.4.2 Economic scenario (emphasis on economic investments)

Education and health (family planning indicators) are held at the same level as the business-as-usual scenario to examine the net effect of intensive economic reforms.

4.4.3 Social emphasis (economic and education emphasis)

The economic indicators are held at the same level as the economic emphasis scenario above. Targets for education indicators are set at the same level as the combined scenario below. It is important to note that Health (family planning) indicators are held at the business-as-usual level in this scenario.

4.4.4 Combined scenario

This is an integrated development scenario that concurrently emphasizes investment in economic reforms as well as prioritisation of health (FP) and education to prevent unplanned births and build high quality human capital. Economic indicators in this scenario are held at the same level as the Economic Only scenario; education (mean years of schooling) will be set at the targets reached by Malaysia.

Chapter 5: Results of Demographic Modelling

This section provides the results from the DemDiv Model. The model utilises effects from changing demography and dependency rates, savings rates, and labour productivity, to project demographic and economic changes of a given country for the next 40 years.

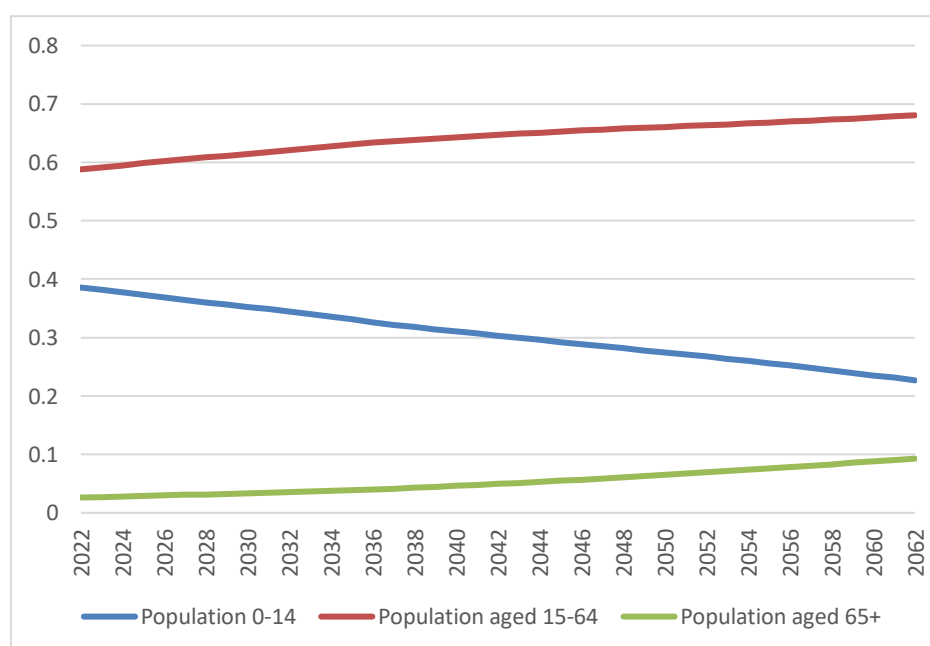
5.1 Timor-Leste's Demographic Window of Opportunities

5.1.1 Pre-window and Late-window phases

The UN scheme distinguishes three DW phases: a pre-window phase with 30 or more percent of the population under 15 years old, a window phase with less than 30 percent under 15 years old and less than 15 percent above 64 years old, and a post-window phase with 15 or more percent above 64 years old. Figure 9 shows that the projected age structure of Timor-Leste will undergo a major shift during the 2022-2062 period resulting from government investment in education, which ensures that young people acquire skills and education to enter the job market. This is also because of priority investments in health, including sexual and reproductive health, which are needed to trigger a demographic transition through declining fertility rates.

As can be seen, the population age 0-14 is expected to decline from 38.6 per cent in 2022 to 30.3 per cent in 2042, and to 22.7 per cent in 2062. In contrast, the percentages of both the populations aged 15-64 and 65+ will increase during the same period. The share of the population aged 15-64 is expected to increase from 58.8 per cent in 2022 to 64.7 per cent in 2042, and 68.1 per cent in 2062. For those aged 65+, the increase will be from 2.6 per cent in 2022 to 5.0 per cent 2042, and to 9.3 per cent in 2062.

Figure 9: Projected age structure of Timor-Leste to achieve Demographic Dividend



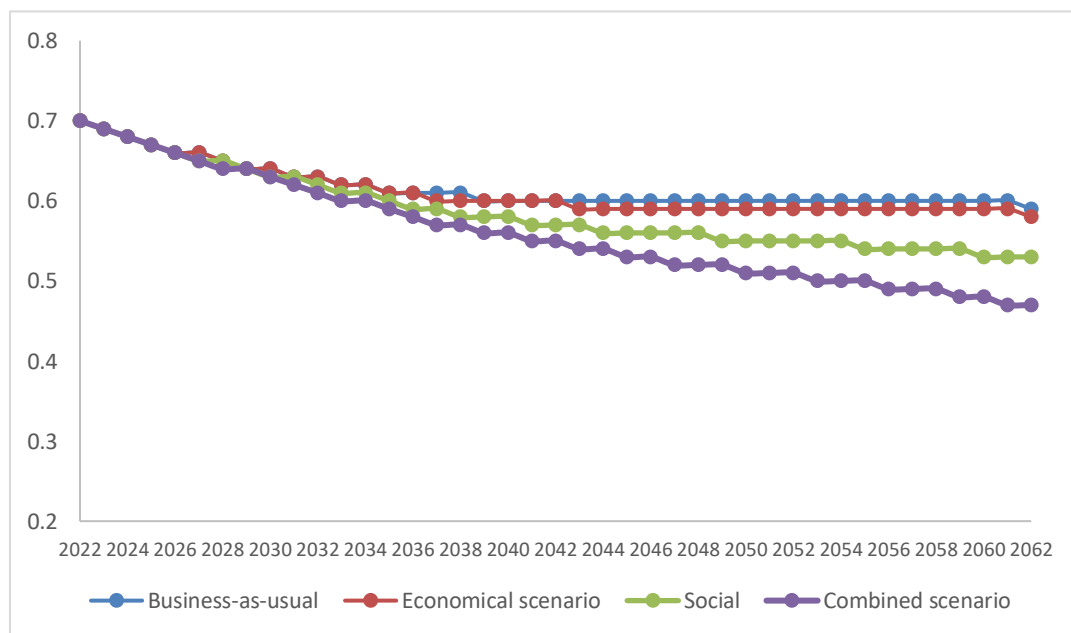
Of importance is the share of the working population aged 15-64 which is larger than the proportion of dependents (children and the elderly). This shift is a result of the falling fertility rates leading to

fewer young dependents, while mortality rates have already decreased, resulting in a relatively large working-age population. Timor-Leste will achieve this window in 2053. Using the United Nations classifications of Demographic Window of Opportunity²⁴, Timor-Leste is currently in Pre-Window phase, with an early window opening up in 2053 – in thirty years’ time. Timor-Leste will reach the Late-Window phase where the population under 15 years will be less than 20 per cent and those aged 64 years and over will be less than 15 per cent.

5.2 Prospects of reaching a demographic dividend in Timor-Leste

Having described the age-sex structure of Timor-Leste in the next 40 years, the analysis focuses on the potential for Timor-Leste to attain demographic dividend. Given the challenges and opportunities presented by Timor-Leste’s demographic profile and our review of key sectors, we examined the prospects of Timor-Leste harnessing a demographic dividend under a range of scenarios.

Figure 10: Projected ratios of dependent population (Under 15 and 64 and over to 15-64 years), Timor-Leste, 2022-2062



Accelerating fertility decline is an essential precondition for creating a window of opportunity for harnessing such a dividend. Accelerating fertility decline to create a youth bulge in the age structure of the population must be accompanied by investment in education and health as well as economic reforms to create jobs. Our projection results for Timor-Leste show that the country will experience a youth bulge by 2053 under the combined projection scenario, positioning the country for harnessing a demographic dividend.

²⁴ Combach, L. and Smits, S. (2021). The Demographic Window of Opportunity and Economic Growth at Sub-National Level in 91 Developing Countries <https://link.springer.com/article/10.1007/s11205-021-02802-8>

5.2.1 Age-Sex-distribution of Business-as-usual Scenario

Projecting the age-sex population of Timor-Leste with the current age structure, without any interventions – business as usual – when the population continues to grow as usual, will result in the age-sex distribution shown in Figure 11. The Status Quo scenario would lead to a total fertility rate of 2.97 children per woman and a total population of 2518917 people. The dependency ratio will decrease from 0.70 in 2022 to 0.59 in 2062. With a decrease in the mortality rate, female life expectancy will increase to 71.6 years in 2062 from the 2022 figure of 69.3 years.

Figure 11: Population Pyramid (under Business-as-Usual scenario), Timor-Leste 2062

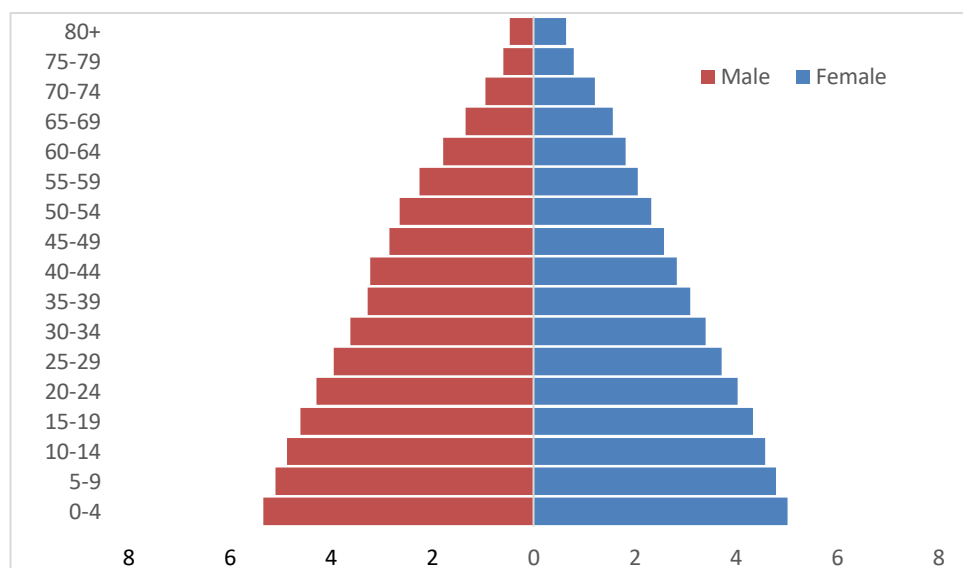


Table 2: Summary of Modelling Results per Business-as-Usual Policy Scenario, Timor-Leste, 2062

Summary of indicators	Business as usual
Total Population (millions)	2518917
Population <15 (per cent)	29.7
Total fertility rate (number of children per woman)	3.01
Per capita GDP (USD)	6066
Life expectancy at birth (female)	71.6
Dependency ratio (population ages 15–64 divided by population <15 and 65+)	0.59
Working Age Group	1579585

5.2.2 Economic emphasis

The age structure resulting from the Economic Emphasis scenario remains youthful, though the base appears to be rectangular with increasing age as compared to the business-as-usual scenario. The economic emphasis scenario will result in changes of life expectancy to increase from 69.3 years to 71.8 years in 2062. This follows from falling deaths. With the Economic Emphasis scenario, total fertility rate will decline from 3.6 in 2022 to 2.91 children per woman, while life expectancy will increase to 71.8 years, and the burden of children will be at 0.58 in 2062.

Figure 12: Population Pyramid (Economic Emphasis scenario), Timor-Leste, 2062

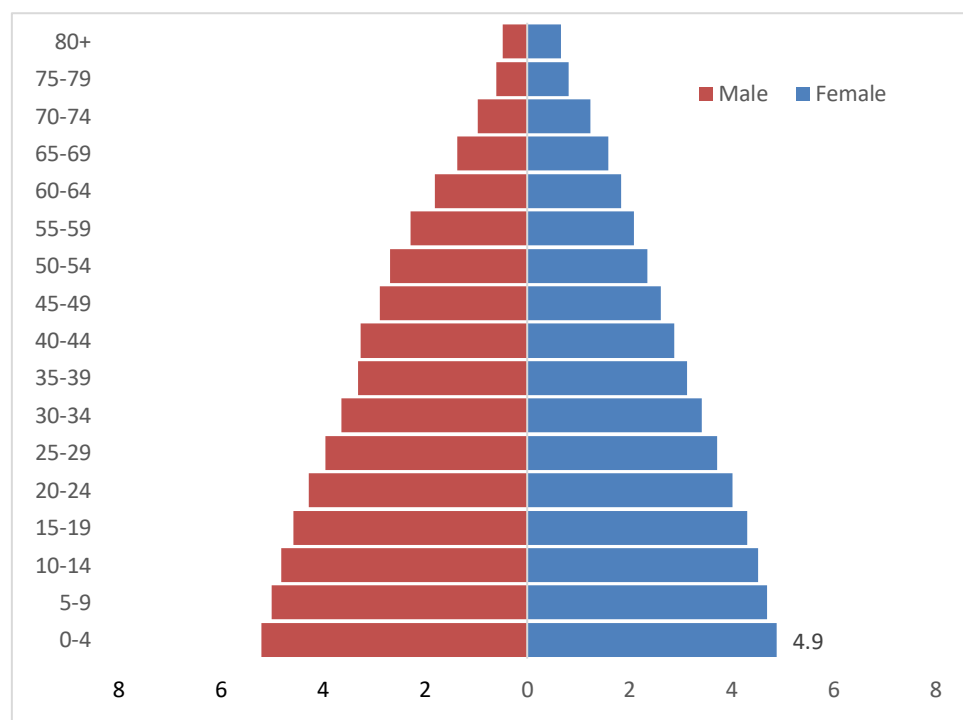


Table 3: Summary of Modelling Results per Economic Emphasis Scenario, Timor-Leste, 2062

Summary of indicators	Economic Emphasis scenario
Total Population (millions)	2331015
Population <15 (per cent)	31.1
Total fertility rate (number of children per woman)	2.91
Per capita GDP (USD)	21559
Life expectancy at birth (female)	71.8
Dependency ratio (population ages 15–64 divided by population <15 and 65+)	0.58
Working Age Group	1570136

5.2.3 Social Emphasis scenario

The striking feature resulting from the Social Emphasis is that the age structure typically takes the narrowing the base with a bulge in the middle. These result from declining births, total fertility rate, and attaining a rectangular shape. Under the social emphasis scenario, the life expectancy (for females) is projected to increase from 69.3 years to 72.8 years, while the total fertility rate is projected to reach 2.4 children per woman in 2062. The social emphasis scenario would lead to a reduction in dependency ratio to 0.53, while the working group will increase to 0.69. When the top of the pyramid becomes wider and looks less like a pyramid and instead becomes more box-shaped, the population lives through younger ages with a very low risk of death and die at an old age. Dependency burden would be at 0.44 and 21 per cent of the population would be under age 15. The resulting base of the population structure will shrink slightly under the business-as-usual scenario; it will not be enough to create the youth bulge required for harnessing a significant demographic dividend. Figure 13 shows the results of adopting of a social emphasis approach. The scenario which focuses in education.

Figure 13: Projected Population Pyramid under Social Emphasis Scenario, Timor-Leste, 2062

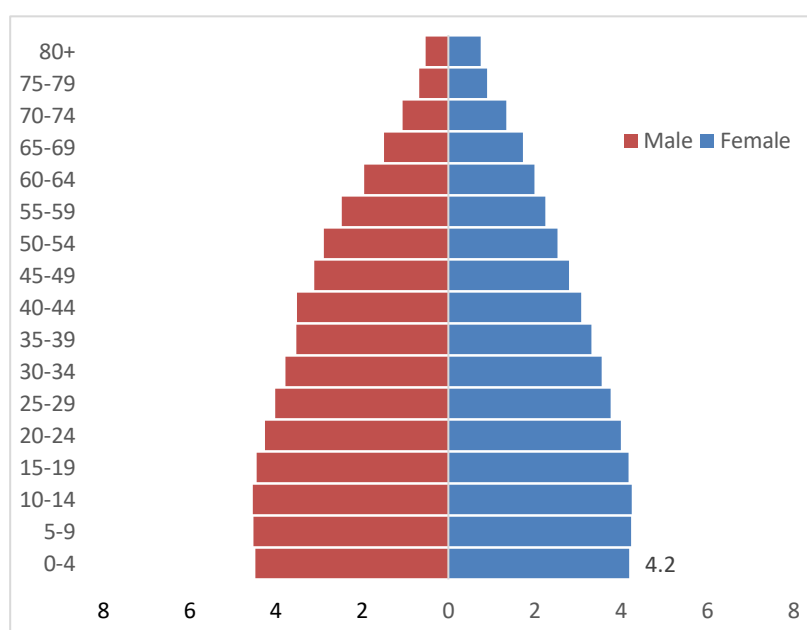


Table 4: Summary of Modelling Results per Social Emphasis Scenario, Timor-Leste, 2062

Summary of indicators	Social Emphasis
Total Population (millions)	2487972
Population <15 (per cent)	24.5
Total fertility rate (number of children per woman)	2.4
Per capita GDP (USD)	9434
Life expectancy at birth (female)	72.8
Dependency ratio (population ages 15–64 divided by population <15 and 65+)	0.53
Working Age Group	1523529

5.2.4 Combined Scenario, Timor-Leste, 2062

The combined scenario is characteristic of the Late-Window of demographic dividend, and it would result in a marked shift in the age structure of the population, with a marked increase in the working-age population. There is a marked increase in the working age population 15-64, and a dependency burden of 0.47, which suggests that, for every dependent, there will be two people in the working group.

Figure 14: Projected Population Pyramid under the combined scenario, Timor-Leste, 2062

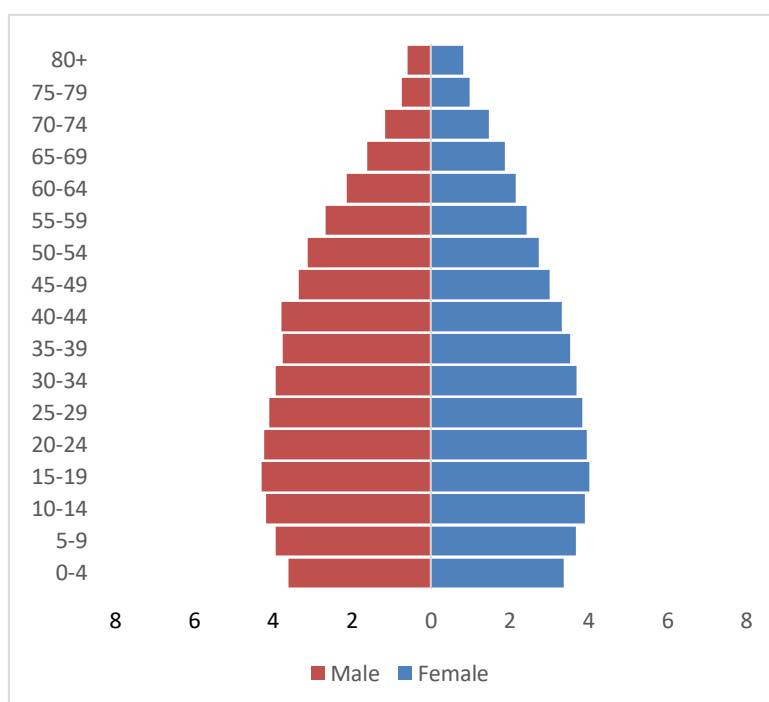


Table 5: Summary of Modelling Results per Combined Emphasis Scenario, Timor-Leste, 2062

Summary of indicators	Combined scenario
Total Population (millions)	2166605
Population <15 (per cent)	22.7
Total fertility rate (number of children per woman)	2.8
Per capita GDP (USD)	21559
Life expectancy at birth (female)	73.8
Dependency ratio (population ages 15–64 divided by population <15 and 65+)	0.47
Working Age Group	1474420

Table 6: Summary of the age-sex structures from modelling of Business as Usual, Economic Emphasis, Social emphasis and the Combined scenarios, Timor-Leste, 2062

Summary Table	Business as Usual	Economic Emphasis	Social emphasis	Combined
Total Population (millions)	2518917	2487972	2331015	2166605
Population <15 (per cent)	29.7	31.1	24.5	22.7
Total fertility rate (TFR)	3.01	2.91	2.4	1.83
Per capita GDP (USD)	6066	9434	21559	24925
Life expectancy at birth (female)	71.6	71.8	72.9	73.7
Dependency ratio	0.59	0.58	0.53	0.47
Demographic dividend	0.30	0.29	0.26	0.23
Population aged 15-64	1579585	1570136	1523529	1474420

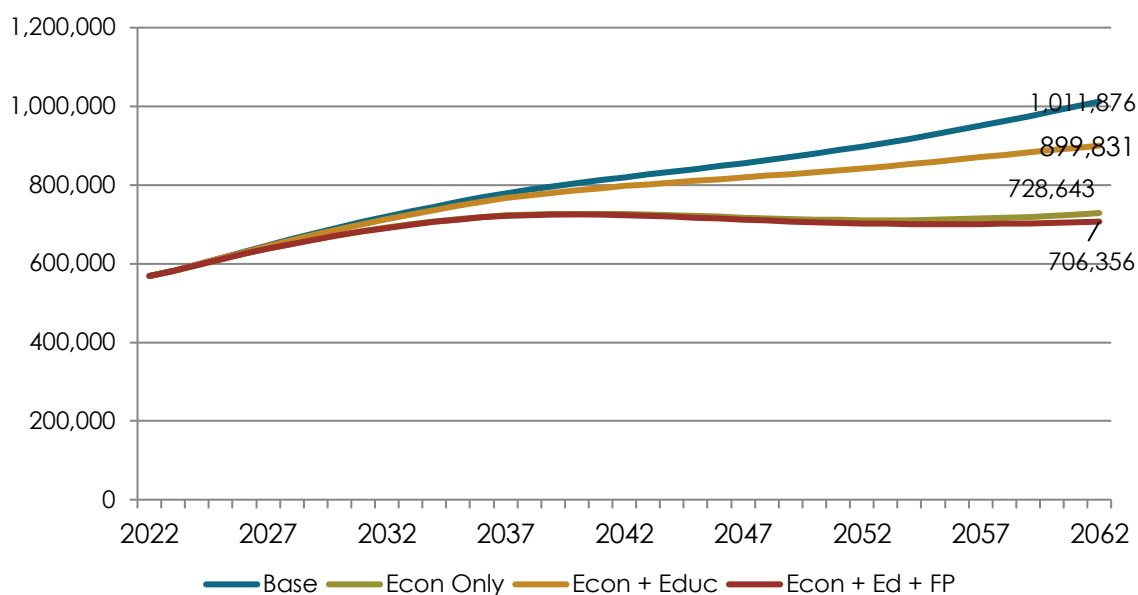
Notes: (Population ages 15–64 divided by population <15 and 65+)
TFR, Total fertility rate

5.3 The Working Age Population and Job Creation Challenge

The gap between the working age group –those that can potentially be employed – and the creation of enough jobs to absorb them is a fundamental policy problem, especially when those who can be employed have acquired the necessary skills and qualifications. A rapidly growing population means even a more rejuvenated economy, which becomes impossible to match the potential employees and the available jobs. In this context, as fertility declines, there will be a rapid growth of people in the youthful ages as Timor-Leste experiences the youth bulge. The DemDiv model attempts to model the gap between available jobs and population in the working ages over the projection period, considering the changing age structure and employment growth rate.

Figure 15 shows an examination of the gap between the potentially employable and the employed under the four scenarios and demonstrates that Timor-Leste will have to grapple with a significant demand for job-creation under all four policy scenarios. In 2022 the gap was 568,629, which will double in 2062 (1,011,876) under the business-as-usual approach. This number will be 899,831 under social emphasis, where the focus of investment is on the economic and education sectors. Adopting an economic only approach, the number will be 728,643. Under the best-case scenario, in which the Combined strategy of integrated and simultaneous investments in the five pillars of the DD is followed, the number will be 706,356.

Figure 15: Projected Gap between Total Population 15+ and Employment



5.4 Capital Stock Formation

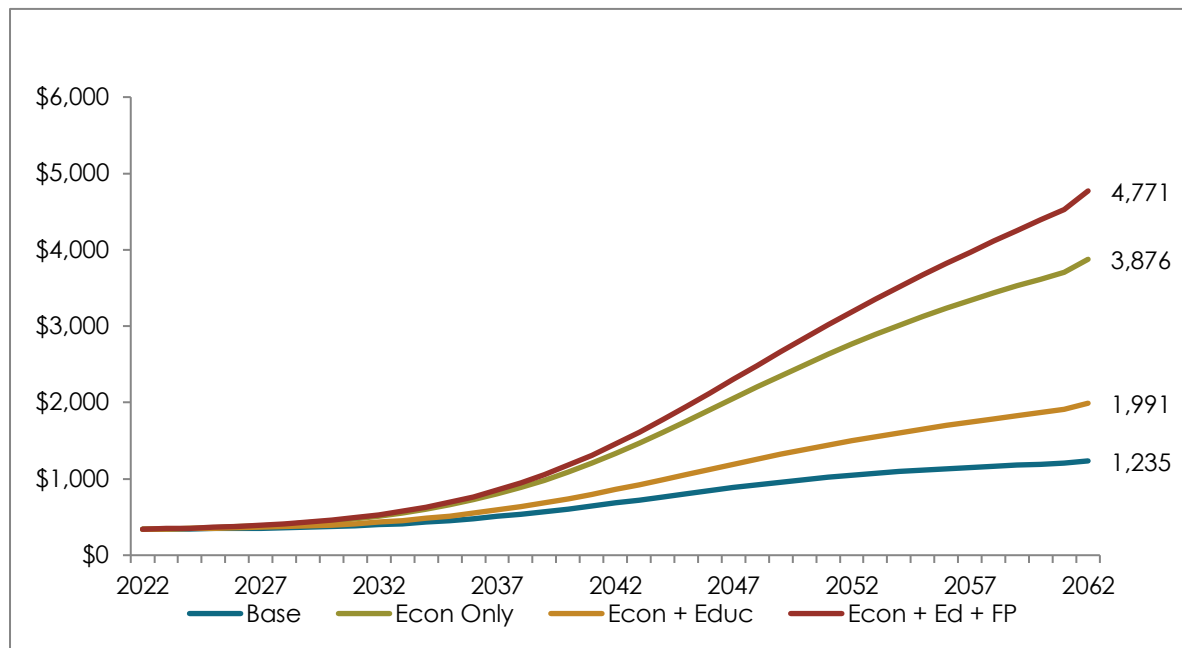
It is projected that Timor-Leste will experience and maintain strong economic growth due to the emergence of the oil sector, which could lead to higher incomes for households and businesses. Correspondingly, with increases in incomes, households tend to increase their spending on goods and services, leading to higher final consumption expenditure. The increase in the economic activities, coupled with investments in infrastructure and other sectors of the economy will spur economic activity and improve access to markets, further driving consumption. It is also quite evident from the population projections that Timor-Leste's population growth and demographic changes are taking shape as the population is growing. Particularly the working-age population is increasing, which would naturally lead to higher aggregate consumption as more people are spending on goods and services.

Further, the emergence of the oil sector has instilled consumer confidence and expectations. The oil sector has brought in various multiplier effects whereas households feel more secure about their financial future, which would lead them to spend more rather than save as influenced by political stability, economic growth, and positive employment prospects in the sector.

These factors will inevitably affect the size of capital stock formation per capita, in part due to the extent of investments in human capital and the ability of the government of Timor-Leste to invest in the sectors that generate mass decent jobs, and the existence of an enabling environment that promotes local savings and attracts direct foreign investment.

Figure 16 shows projections in per capita capital formation per capita for the four policy scenarios. Fixed capital formation measures how much of the new value added in the economy is invested in fixed assets (less disposals of fixed assets) by the business sector and governments, rather than consumed. The results show that the per capita capital formation would be USD 1235 in 2062 under the base scenario and USD 1991 under the Economic and Education scenario in 2062. In the same year (2062), under the Economic only scenario, capital formation per capita would increase to USD 3876. Under the Combined planning scenario, the level of investment per capita would be USD 4771.29 in 2062.

Figure 16: Projected Capital formation per capita by scenario, Timor-Leste, 2022-2062



5.5 Growth in per Capita GDP

The results show the difference in GDP per capita among the scenarios that will result from the population dynamics, which is the additional income Timor-Leste will earn for adopting an integrated development model that simultaneously prioritises investments in the economic sector to accelerate economic growth and job creation and the social sectors to empower women and facilitate reduction in fertility, education, skill development, and public health, as well as governance.

5.5.1 Gross Domestic Product per capita

Figure 17 shows the gross domestic product (GDP) per capita over the 40-year projection period under the four scenarios. The results indicate that the GDP per capita would increase modestly under the base and economy and education scenarios. Under the base scenario, the GDP per capita would increase from USD1,613 in 2022 to USD 6066 in 2062. The increase in the GPD per capita would be USD 9434 under the economy and education scenario. The projection results indicate the economy + education + family planning, and economy only scenarios would produce the sharpest

increases in GDP per capita. Under the combined (economy + education + family planning) scenario, the GDP per capita would be USD 24925 in 2062 while under the economy only scenario it would be USD 21559 in the terminal year.

Figure 17: Gross Domestic Product (GDP) per capita

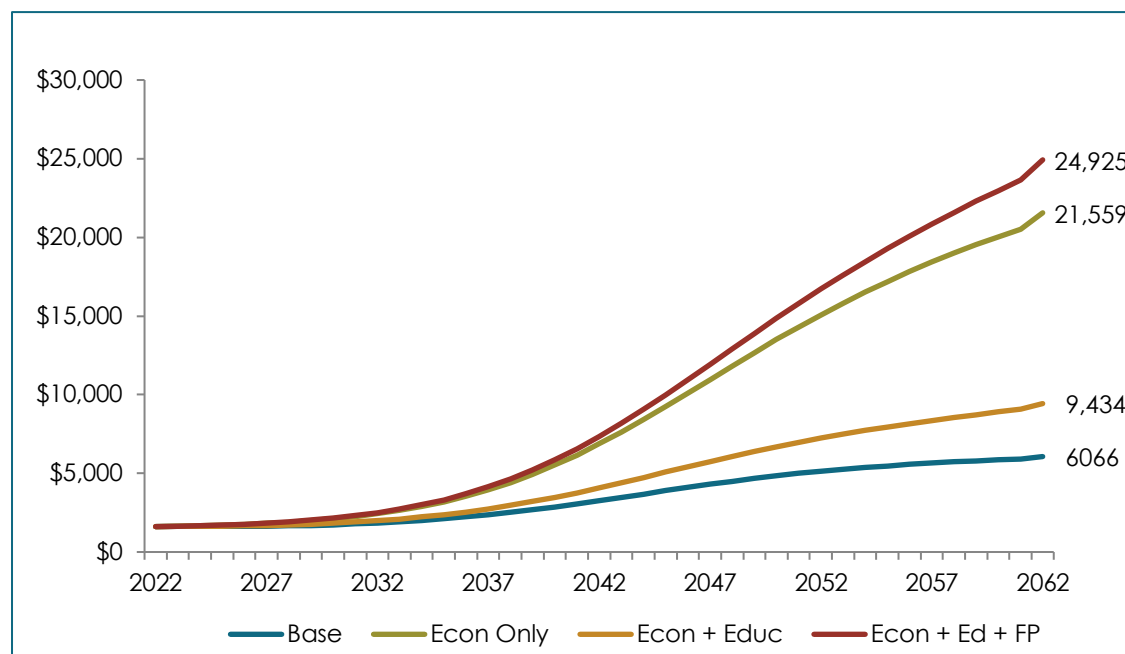


Table 7 summarises changes in GDP per capita and the consequent levels of the potential demographic dividend that Timor-Leste can earn by 2032, 2042, and 2062.

Table 7: Projected GDP Per Capita (USD) by Policy Scenarios in 2032, 2042 and 2062

Policy Scenario	2032	2042	2062
Status Quo	1836	3259	6066
Social Emphasis	1992	4077	9434
Economic Emphasis	2432	6870	21559
Combined Emphasis	2501	7338	24925
Estimated demographic dividend	69	468	3366

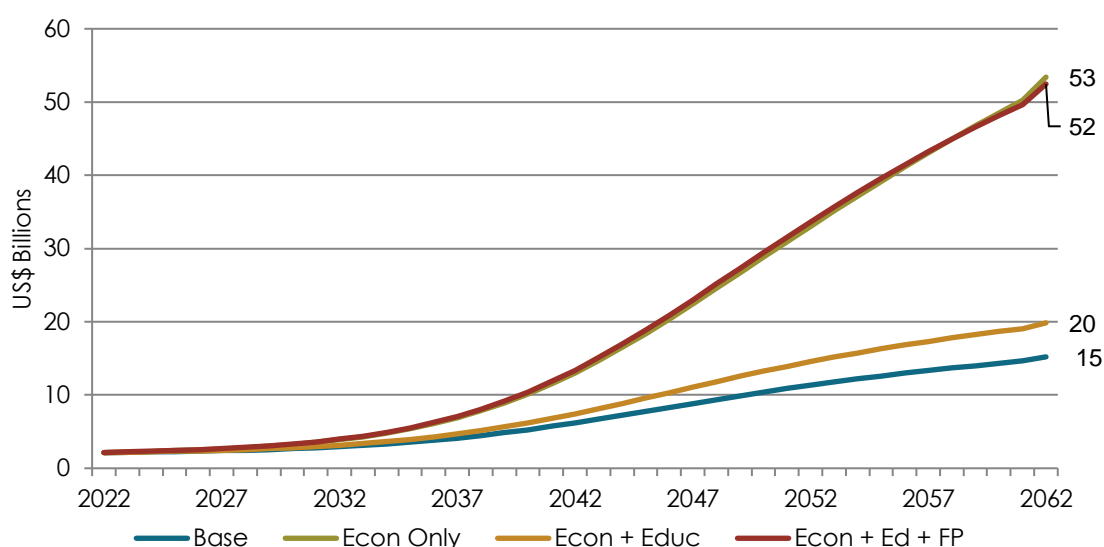
5.5.2 Potential demographic dividend

The potential demographic dividend that the country can earn by 2032 is \$69, which is almost five per cent of the 2022 GDP level. By 2042, the potential to earn a demographic dividend increase to USD468 while by 2062 it would be USD336. Thus, the additional average income that the country would earn for adopting an integrated development model would be 7.5 times bigger than the current level of per capita GDP.

5.5.3 Growth in GDP

The key result from the DemDiv model that illustrates the effect of change in age structure on economic growth under the different policy scenarios is the projected GDP. The modelling results show that GDP will grow modestly from the baseline level of USD 2.1 billion to USD 15 billion under the Status Quo scenario by 2062. Under the Social Emphasis scenario, GDP will rise to USD 20 billion. The performance will be much better under the Economic Emphasis and Combined Emphasis scenarios where GDP is expected to rise to USD 52 billion and USD 53 billion, respectively, by 2062.

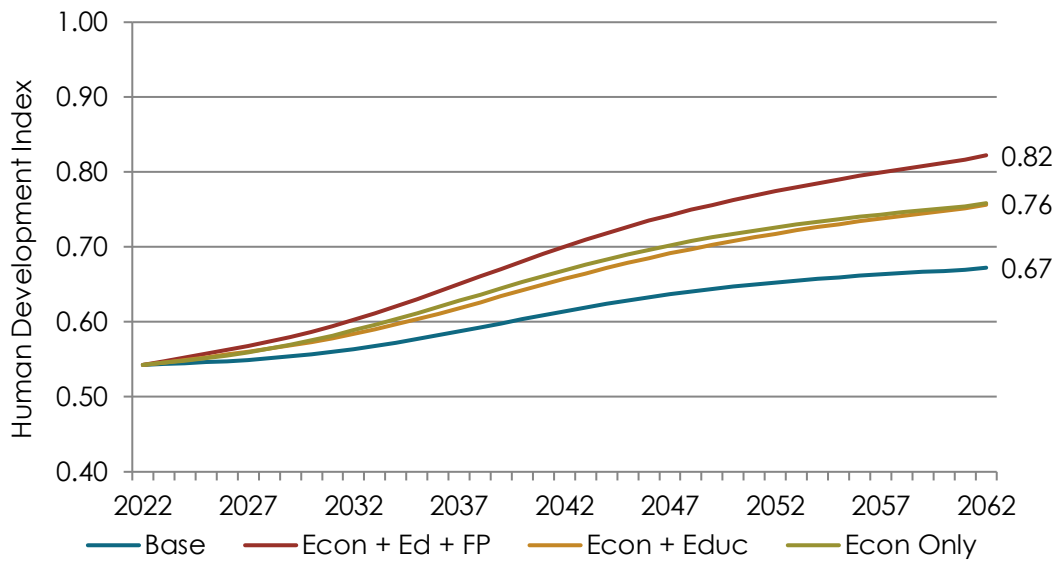
Figure 18: Projected GDP by Policy Scenarios



5.6 Human Development Ranking

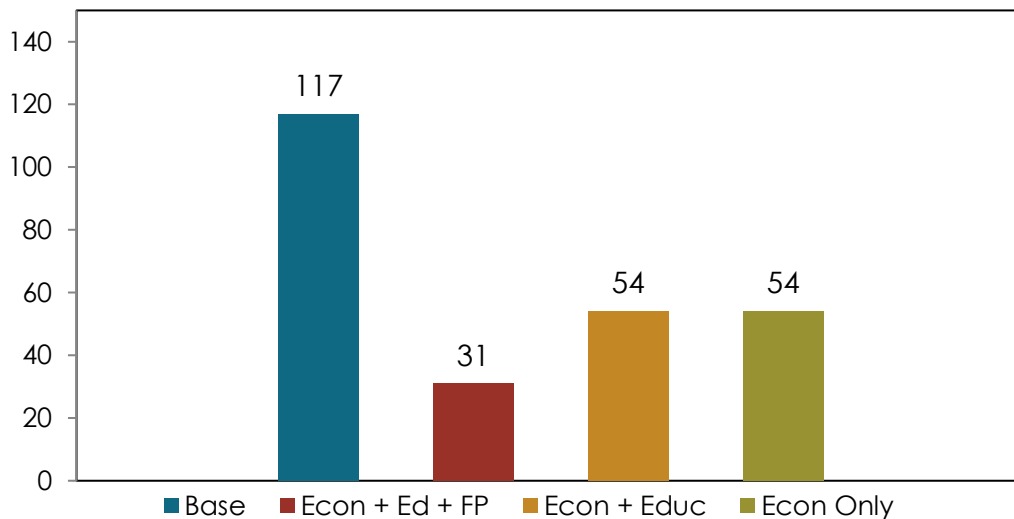
Figure 19 displays the ranking of Timor-Leste in 2062 among countries in the world using the Human Development Index (HDI), which is a composite measure of countries' levels of social and economic development based on life expectancy at birth, years of schooling, and per capita gross national income. Because of the much better economic performance under the Combined scenario relative to the Social Emphasis scenario, the HDI would be more improved from 0.55 and to 0.82

Figure 19: Improvement in Human Development Index



Under the base scenario, the country would be ranked at position 117. However, Timor-Leste’s ranking is going to dramatically improve if there are combined investments in education, economy, and family planning. With investments in the three sectors, the country would be ranked at position 31. With investments in economy only or combined investments in economy and education, Timor-Leste would be ranked at position 54 among other countries in the world.

Figure 20: Human Developing Index Ranking in 2062



Chapter 6: Policy and programming recommendations

6.1 Conclusion

This demographic dividend report has synthesized some available demographic, social and economic trends to demonstrate how Timor-Leste can capitalize on the upcoming unique opportunity for a “demographic dividend” – the period (usually a single generation) when a country has a large working-age population combined with both fewer children and a low number of older dependents. The findings have demonstrated that a combined effect of investing in demographic and social economic variables has enormous potential for increasing GDP growth in the next four decades to benefit from the demographic dividend.

Given the challenges and opportunities presented by Timor-Leste’s demographic profile and our review of key sectors, we examined the prospects of Timor-Leste harnessing a demographic dividend under a range of scenarios. A demographic dividend is defined as the economic benefits that a country derives from changes in its population structure. Accelerating fertility decline is an essential precondition for creating a window of opportunity for harnessing such a dividend. Accelerating fertility decline to create a youth bulge in the age structure of the population must be accompanied by investment in education and health, as well as economic reforms to create jobs.

Our projection results for Timor-Leste show that the country will experience a youth bulge by 2053 under the combined projection scenario, positioning the country for harnessing a demographic dividend. While the base of the population structure will shrink slightly under the business-as-usual scenario, it will not be enough to create the youth bulge required for harnessing a significant demographic dividend.

6.2 Recommendations

The Timor-Leste’s Strategic Development Plan (2011-2030) is only seven years to its terminal year and the key challenges that the strategic development plan sought to accomplish to move the country to the upper-middle income country by 2030, are yet to be implemented, some of the national development plans are already yielding the results (decline in poverty, restructuring the economy). These need to be accelerated in order in to tap some of the demographic dividend.

Education

- The 2021 labour force survey shows that unemployment tends to be higher among women than men with a post-secondary education, which implies that the education level of girls and women does not automatically translate into equal access to job opportunities. Nonetheless, education remains one of the pillars of efforts to promote gender equality in terms of higher wages, a greater likelihood of working outside the home, lower fertility rates, reduced maternal and child mortality, and better health and education, including health and education of future generations
- For Timor-Leste to effectively harness the demographic dividend, its labour force should be well-educated and should possess high-quality skills that make it more productive and competitive in the global economy.
- Huge inequality in school enrolment, especially at post-primary levels, that marginalise girl children in rural areas and those from poor families should be checked.

- Improve equitable access to education at all levels, especially at the primary and secondary levels, by addressing social, economic, cultural, and infrastructural factors affecting enrolment and completion as part of the measures to accelerate fertility decline, and consequently reduce demand for food and other social services

Economic restructuring

Reduce the gender gap in employment

- Labour force participation by gender remains a challenge because only one in three females (29.7 per cent) compared to males (55 per cent) have completed secondary school, the minimum education to meaningfully contribute to productive labour force. Furthermore, women who are participating in the labour force are less (24.2 per cent) compared to males (36.9 per cent). This gender gap in labour force implies that Timor-Leste needs to focus on creating jobs that encourage women to join the labour force.
- Emphasize the need for policies that are gender-based and aim at improving employment opportunities for women.
- adopting an integrated set of policies that especially target the reasons underlying late entry into the labour force and higher levels of unemployment among young women.

Labour force participation

- To attain Demographic Dividend, develop a strategy of attracting labour to the low productivity sectors. Identify and prioritise the job creating economic activities (such as labour friendly intensive industrialisation) to absorb the surplus labour that is created through increased use of ICT.
- In urban areas, much of the employment is characterised by informal itinerant trade activities. This cannot be described as decent work in that it does not improve the general living standards of the population or support real socio-economic transformation.
- Create an enabling environment for the growth of the private sector as the engine for job creation and improve key economic infrastructure to ensure reliable energy, transportation, and communication services.

Job creation

- A relatively high working age share of the population can only translate into growth if the workers have sufficient employment opportunities, thus there is a need to prioritise job creation for the youth and improved governance as part of the strategy for harnessing the demographic dividend.

Family planning

- There is need to invest in reducing the current high unmet need for family planning to less than five (5) per cent.
- Allocate resources to adolescents and youth programmes, particularly to adolescent girls and young women to develop and impart skills development as required to harness the demographic dividend.
- Leverage strategic partnerships that are already underway and innovative funding modalities to leverage the finance needed for achieving demographic dividend.

- Improvement in the education sector should be part of the overall strategy to accelerate contraceptive use and reduce fertility, as evidence in this study shows that increasing mean years of schooling contributes to slowing population growth.
- For the health sector, increase budget allocation to prioritise increased investment in family planning as a key strategy to manage high fertility level.

Governance

Timor-Leste can adopt the following policy options to improve governance and accountability as it strives to harness the demographic dividend:

- Good governance implies that the government offers high-quality and affordable education and health care to everyone, both of which increase human capital building. Further, the increase in tax income resulting from the relative increase in workers must be used productively. We therefore expect that, if the additional resources are wasted on corruption and inefficiencies, the demographic dividend may be substantially harmed.
- To secure future human resource, invest in Early Childhood Education (ECE) to adequately prepare children for formal education.
- Increase commitment and budgetary allocation to ensure adequate distribution of gender sensitive school facilities, well-trained and motivated teachers, and quality learning materials at all levels of education.

Health

- Invest to significantly increase health infrastructure in order to improve the health facility to population ratio across the country.

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Appendix A List of inputs for DemDiv Projection and the sources.

Category	List of Indicator	Main Data Sources	Supplementary Data sources
Demography	Population distribution (by age and sex) Population growth rates Dependency Ratios (child, working age, old age) Marital status Age sex distribution by primary	Census DHS/INETL	WHO, UNICEF, UNFPA, World Bank and the UN Population Division websites/databases
Health	Total fertility rates (TFR), infant Mortality Rates (IMR), Under-five Mortality Rates Maternal Mortality Rates, Life expectancy (by sex) Antenatal care coverage Contraceptive effectiveness, modern and traditional methods Births at any risk Unmet need for family planning Annual health expenditure per person (USD)	Census DHS/ INETL Annual Reports Government Policies, Documents Health management information systems reports	Demographic and Health Survey, Multiple Indicator Surveys, STATcompiler
Education	Mean years of education (by sex) Expected yeas of education (by sex) Contraceptive prevalence rates Age of entry into primary school Number of years of primary schooling Primary school enrolment rate (per cent) Students per primary school teacher Students per primary school Recurrent expenditure per primary school student (USD) Age of entry into secondary school Number of years of secondary schooling Secondary school enrolment rate (per cent) Students per secondary school teacher Students per secondary school Recurrent expenditure per secondary school student (USD)	Ministry of Education/ Government Education Departments	

Economy	<p>Capital Formation per capita Capital stock, GDP Employment Rates Annual change in employment Capital stock growth rate Capital stock depreciation rate Ratio of capital stock to population 15+ (per capita) labour Force Employment Primary education costs HDI labour Force Employment Labour force participation rate for persons aged 15-24 and 15+ Per centage distribution of employed population by sector, each sex Labour Force (LF) Participation Rate (Males 10-14) LF Participation Rate (Males 15-64) LF Participation Rate (Females 10-14) LF Participation Rate (Females 15-64) Base year gross domestic product (GDP Millions) (USD) Annual growth rate in GDP per cent</p>	<p>Labour Force Surveys Ministry of Finance</p>	<p>World Bank, World Development Indicators, ILO, Key Indicators of the Labor Market</p>
Global Economic competitiveness indicators	<p>Imports as a per centage of GDP Public Institutions Labour market flexibility Financial market efficiency ICT use</p>		
Governance indices	<p>Proportion of households with access to mass media (radio, television, internet), by sex of household head Proportion of seats held by women in (a) national (b) local governments Women's share of government ministerial positions Proportion of women in managerial positions</p>	<p>Government reports/ INETL</p>	<p>IMF, UNDP databases, Reports.</p>

Appendix B Final Consumption Model

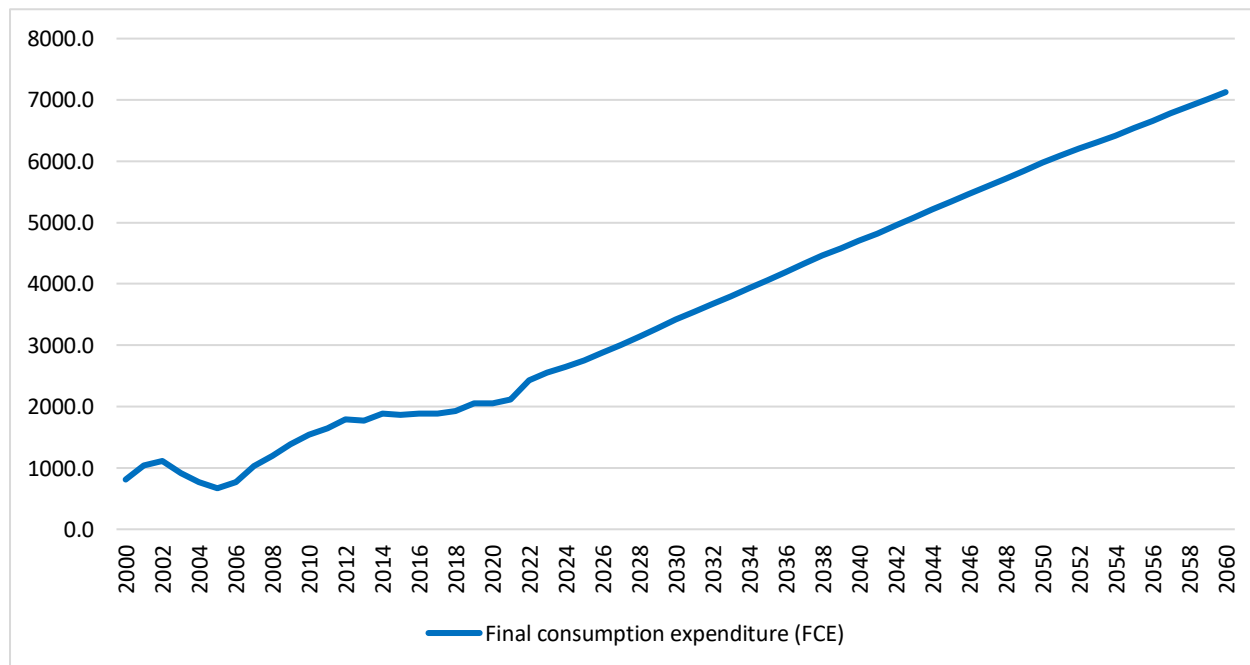
Final Consumption

Forecasts of final consumption expenditure in Timor-Leste might increase due to several economic reasons. It is projected that Timor-Leste will experience and maintain strong economic growth due to the emergence of the oil sector, which could lead to higher incomes for households and businesses. As incomes rise, households tend to increase their spending on goods and services, leading to higher final consumption expenditure. The increase in the economic activities, coupled with investments in infrastructure and other sectors of the economy, will spur economic activity and improve access to markets, further driving consumption.

It is also quite evident from the population projections that Timor-Leste's population growth and demographic changes are taking shape as the population is growing. Particularly the working-age population is increasing, this would naturally lead to higher aggregate consumption as more people are spending on goods and services.

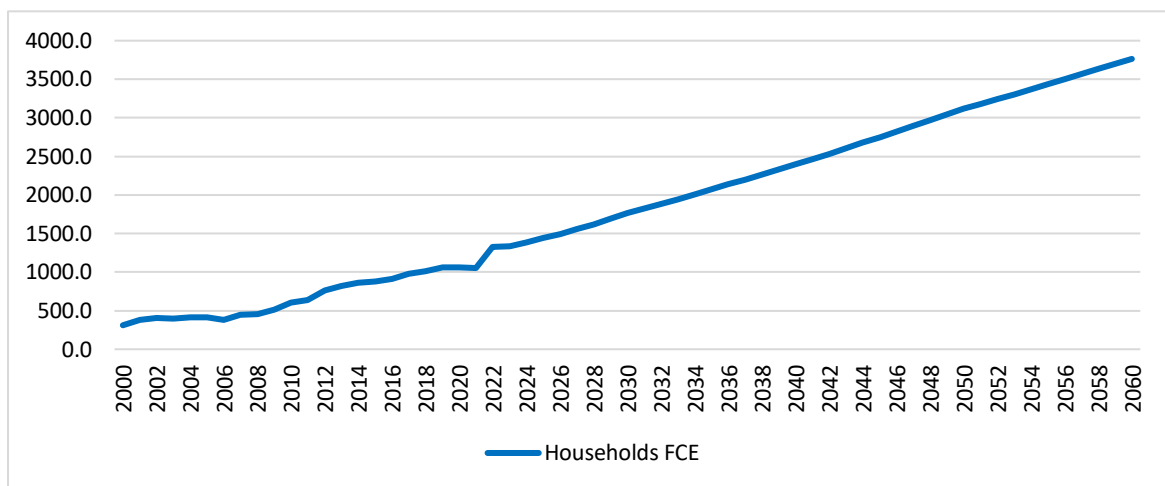
Further, the emergence of the oil sector has instilled consumer confidence and expectations. The oil sector has brought in various multiplier effects whereas households feel more secure about their financial future, which would lead them to spend more rather than save as influenced by political stability, economic growth, and positive employment prospects in the economic sector. Figure 1 below demonstrates final consumption forecasts to 2060.

Figure 21: Final consumption expenditure forecasts for Timor-Leste



Source: Authors forecasts based on Ministry of Finance data (2000 to 2022)

Figure 22: Household final Consumption expenditure pattern (forecasts from 2020 to 2060)

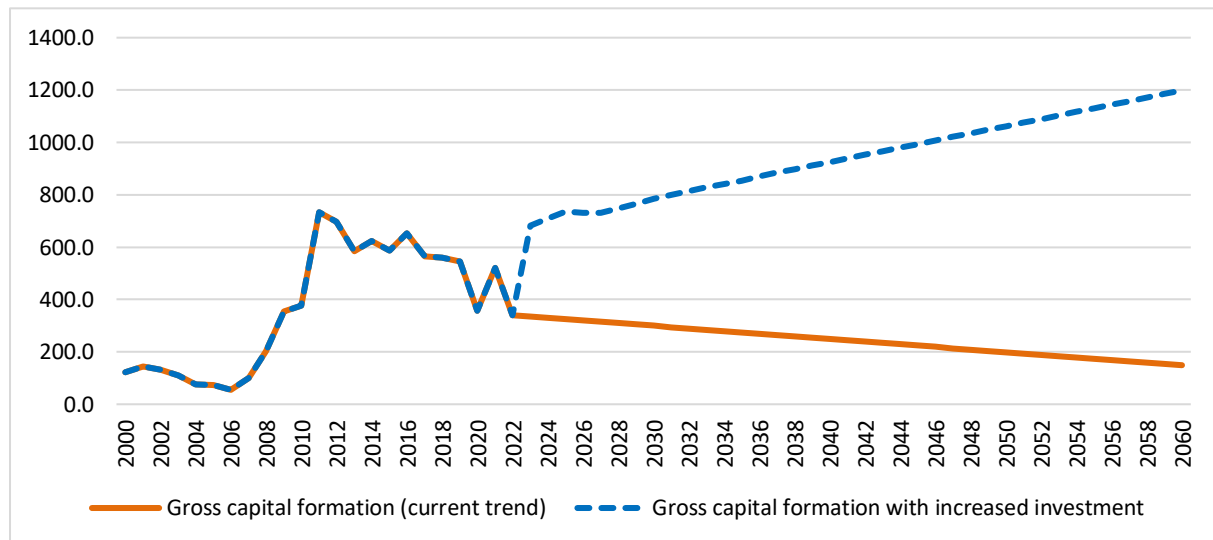


Source: Authors forecasts based on Ministry of finance data (2000 to 2022)

Appendix C Gross Capital Formation

Timor-Leste investments have been fluctuating and declining since 2012. Although the oil sector has emerged, the continued trajectory demonstrates that Timor-Leste would still experience a decline in the gross capital formation if no policy changes were considered. However, taking into consideration the oil sector that will boost economic activities in the economy, and supposing that government priorities would shift towards investment and financing the enabling sector of the economy, the gross capital formation is expected to increase at the projected trajectory until 2060.

Figure 23: Gross Capital Formation (forecast up to 2060)

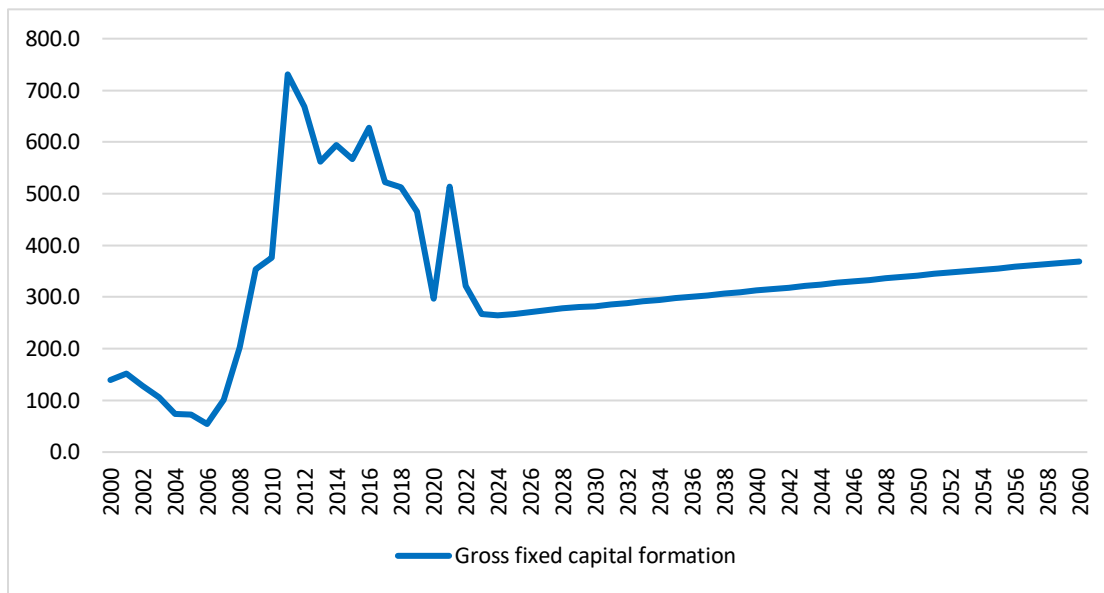


Source: Author's forecasts based on Ministry of finance data (2000 to 2022)

Sustained Economic Growth is prospected if Timor-Leste with the boost in the oil sector and considering that government is likely to invest more in capital projects, leading to an increase in gross capital formation. Further, it is estimated that exports from the oil sector will increase in the economy. These will in turn help the economy to attain macroeconomic stability whereas inflation, interest rates, and exchange rates will stabilise, providing a predictable economic environment, which is crucial for long-term investment decisions, thereby encouraging both domestic and foreign investors to commit more capital.

On the other hand, as illustrated in the graph below; whether government invests more in capital projects or not, gross fixed capital formation will moderately increase over time due to the increased economic activities by the households and the private sector. However, government interventions through capital investment would shift the growth trajectory upwards than projected.

Figure 24: Gross Fixed Capital Formation



Source: Author's forecasts based on Ministry of finance data (2000 to 2022)

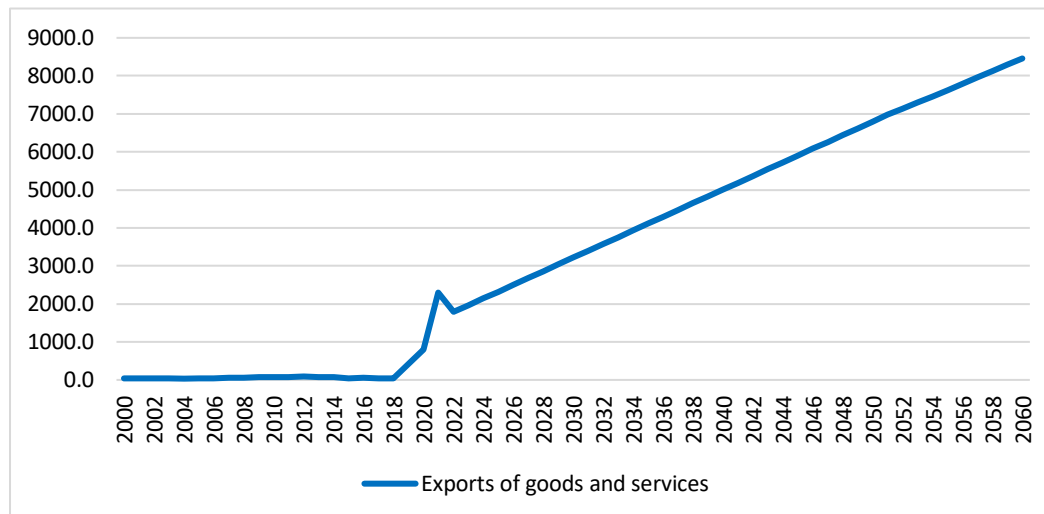
Appendix D Exports of goods and services

The export of goods and services for Timor-Leste has been constantly low until the oil sector boosted the export values. This trajectory is expected to remain the same on the assumption that as the oil sector develops, the most immediate effect is likely to be an increase in the export of crude oil, natural gas, and refined petroleum products. These exports will significantly boost the overall value of goods exported from the country.

Further, investment in extraction, processing, and refining facilities will enhance the country's ability to export oil and gas. As production increases, so does the volume of exports, especially if the global demand for oil remains strong. This would in turn bring investments in energy infrastructure, logistics infrastructure that would boost production in other sectors, leading to higher exports of non-oil goods as well.

It is further prospected that government will realise increased revenues from oil exports through taxes, royalties, and state ownership stakes in oil companies. This additional revenue is assumed to be used to invest in sectors that promote export growth, such as agriculture, manufacturing, and services. The implementation and management of all these activities will achieve improved trade balance, enhance currency stability, and of course, increased diplomatic relations as the demand for oil and its related products increases from other countries. This will further attract foreign direct investment, and the export growth trajectory is estimated to remain the same for over a period until 2060.

Figure 25: Projection for exports of goods and services



Source: Author's forecasts based on Ministry of Finance data (2000 to 2022)

Appendix E Projections of imports of goods and services

As the country exports are estimated to increase on account of oil exports and its related products, increased production from other growth-related sectors like agriculture and manufacturing are expected to increase, and the local demand for goods supplied locally will slowly be met. Further as the economy expands, there will also be an increase in disposable income resulting from the foreign direct investments that will likely be maintained including in the retail and trading sectors. The trajectory is projected to remain over time on account that the oil sector will remain stable.

Figure 26: Projections of imports of goods and services



Source: Author's forecasts based on Ministry of Finance data (2000 to 2022)

Appendix F Estimating Gross Domestic Product, Timor-Leste 2000-2022

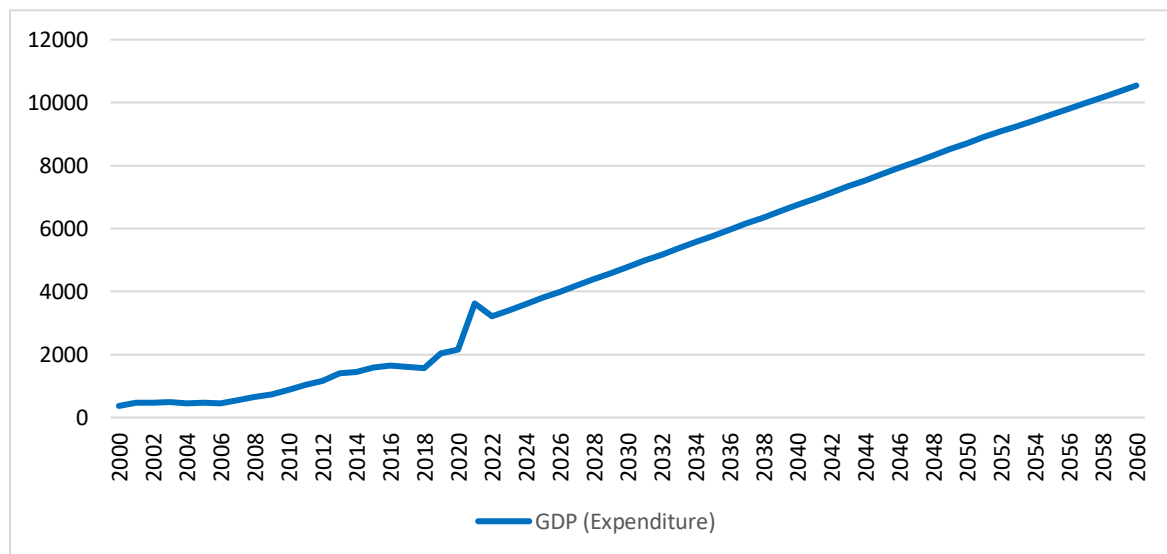
Gross Domestic Product

As Timor-Leste starts producing oil, its GDP is likely to increase due to direct contributions from oil production, increased government revenue, foreign investment, infrastructure development, and the broader economic impact of higher employment and consumer spending. This further follows the assumption that government will manage these resources effectively to ensure sustainable long-term growth and diversification of the economy beyond the oil sector.

Thus, the oil sector on its own directly add to Timor-Leste's GDP. As oil is extracted and sold, the revenue generated from these exports contributes significantly to the overall economic output and increased inflow of foreign currency as the products gets exported which in turn will boosts national income and, consequently, GDP.

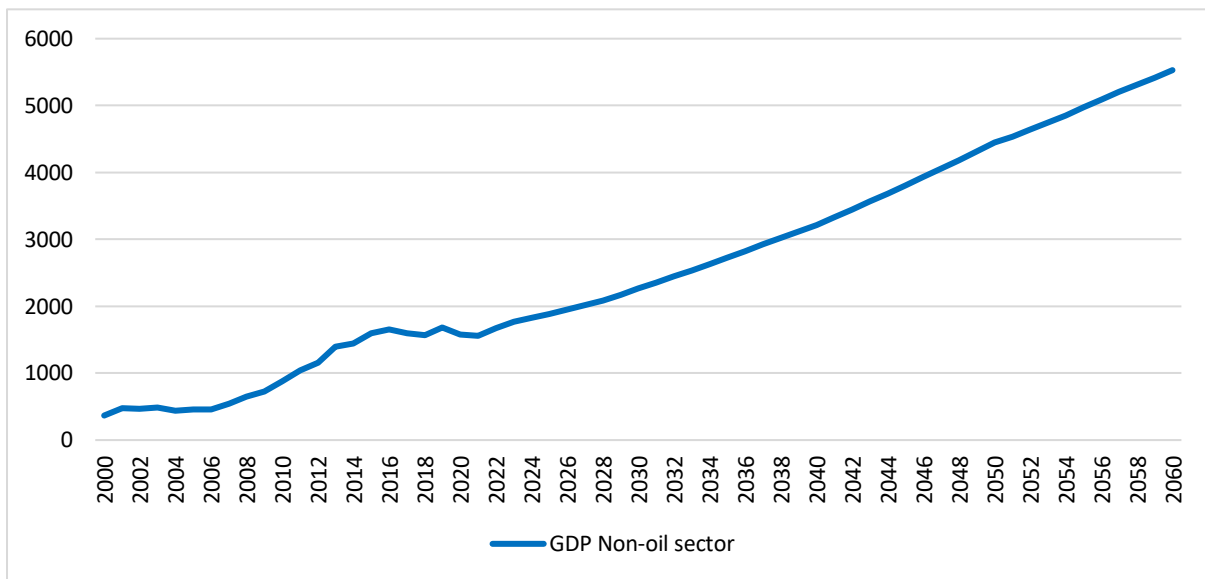
Further, it is expected that the oil industry will create a range of jobs and stimulate growth in other sectors. This employment will boost household incomes, leading to higher consumer spending and further GDP growth as the economic activities increases.

Figure 27: Projections of the GDP by expenditure



Source: Author's forecasts based on Ministry of Finance data (2000 to 2022)

Figure 28: GDP projections for non-oil sector



Source: Author's forecasts based on Ministry of Finance data (2000 to 2022)

Appendix G Econometric analysis

The analyses in this report used a mix of econometric models stem on regression time series analysis compiled by compiled jointly by the UNFPA, AFIDEP and DPRU. The regression approaches used provides projections for demographic dividends and estimates their economic statistical relationships based on historical data. Regression-based approaches are particularly useful in establishing the existence of patterns or relationships that are true for sets of data over specific time periods. In this analysis Auto regressive integrated moving average (ARIMA) model was used to project the economic prospects of the period under study. The model explored the relationship between the demographic dividend on economic growth whilst taking into considerations the projected population growth over the entire period.

The economic model forecasts maintained the standard economic variables that builds up respective economic component whilst considering and assuming some population dynamics shocks to the variable to determine their forecasted trajectory. The section below provides details of key economic variables and their respective determining variable.

Capital Formation

According to the International Monetary Fund (IMF), national capital formation, often referred to as Gross Capital Formation (GCF), is a measure of the value of acquisitions of new or existing fixed assets by the business sector, governments, and households (excluding their unincorporated enterprises), less disposals of fixed assets. It includes expenditures on fixed assets, such as buildings, machinery, and equipment, and net changes in inventories. In that regard in this analysis the word capital formation, and Gross Capital Formation (GCF) will be used interchangeably whilst depicting the same meaning.

Using the Timor-Leste national accounts, the GCF constitutes the fixed assets expenditures namely Residential Buildings (Total expenditure on constructing new residential buildings), Non-residential Buildings (Total expenditure on constructing new commercial, industrial, and other non-residential buildings), Machinery and Equipment, (Total expenditure on purchasing machinery, vehicles, equipment, and other capital goods), Intangible Fixed Assets (Expenditure on research and development, software, and other intellectual property products). Considering that Timor-Leste national accounts did not take into account intangible fixed assets like intellectual property products until 2018, this element will be extrapolated backwards for proper projections in the analysis unless otherwise provided by the government officials.

It is against this background that the below formular was used in computing the GCF:

✓ $\text{Gross Capital Formation} = \text{Gross Fixed Capital Formation (GFCF)} + \text{Change in Inventories}$

Whereas:

- i. $\text{GFCF} = \text{Expenditure on Residential Buildings} + \text{Expenditure on Non-residential Buildings} + \text{Expenditure on Machinery and Equipment} + \text{Expenditure on Intangible Fixed Assets}; \text{ and}$
- ii. $\text{Change in Inventory} = \text{Closing Inventories} - \text{Opening Inventories}$

**Change in Inventories is the net change in the value of inventories (stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales).

Capital Formation Per Capita

Timor-Leste's per capital formation was estimated by dividing the capital formation by the projected total population.

Gross Domestic Product

The author recognises the use of all the three approaches in computing TL's Gross domestic product namely expenditure, income and production approach. While each method provides a different perspective on economic activity which might results in some inconsistencies in the results from the three approaches, TL accounts demonstrate a high level of consistency in all the three approaches' accounts results. For the purposes of deducing projections, the consultant used the expenditure and it dwelled on the econometric model that constituted a closure of the general GDP formular to project the GDP figures.

The GDP closure general formular:

$$\text{GDP}=\text{C}+\text{I}+\text{G}+(\text{X}-\text{M})$$

Where:

- i. C = Consumption by households
- ii. I = Investment by businesses/private sector
- iii. G = Government spending on goods and services
- iv. X = Exports of goods and services
- v. M = Imports of goods and services

Other economic Variables

All other economic variables namely exports, imports, household consumption, government consumption were calculated based on the given past trend data with respected to the prospected population growth and investments that will be realised in the economy as the oil sector booms.

Integration of the model with data

Using ARIMA (Auto-Regressive Integrated Moving Average) for a demographic dividend model involved applying time series forecasting techniques to demographic data. The Demographic Dividend considered the economic growth potential that could result from shifts in a country's age structure, primarily when the working-age population is larger than the dependent population. In that regard data on population age structure, fertility rates, mortality rates, and economic indicators such as GDP were compiled as provided by Timor-Leste. All the data provided were in a time series format compiled on annual basis.

Since the model requires data to be stationary, all-time series data were exposed to stationarity tests using the Augmented Dickey-Fuller (ADF) test. If the data was non-stationary, differencing to make it stationary was applied before forecasting. The number of lag observations included in the model was dealt by the Auto-Regressive part whereas the number of times that the raw observations were

differenced depended on the distribution of the data. Both Autocorrelation Function and Partial Autocorrelation Function were used to identify the appropriate time lag and number of differencing the data values. The model was then integrated with the data that was provided to automatically depict the right time lag and differencing based on the distribution of the data.

Validation and model refinement

The model projections were compared with the actual past data to confirm its precision and robustness which all worked well in its accuracy.

Key assumptions considered

- i. The oil sector will continue to produce oil at a fairly stable rate until 2050
- ii. Government policy priorities will shift towards mining sector, and key strategic growth sectors like agriculture, industrialisation (manufacturing and infrastructure).
- iii. The population will keep growing at a steady rate as projected
- iv. An increase in exports due to oil production

Contributors to Harnessing the Demographic Dividend for Timor-Leste Report

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